

Health•United States

1983

and Prevention Profile

U.S. Department of Health and Human Services

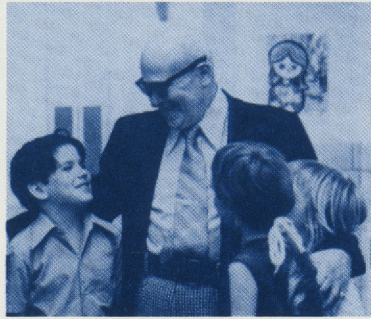
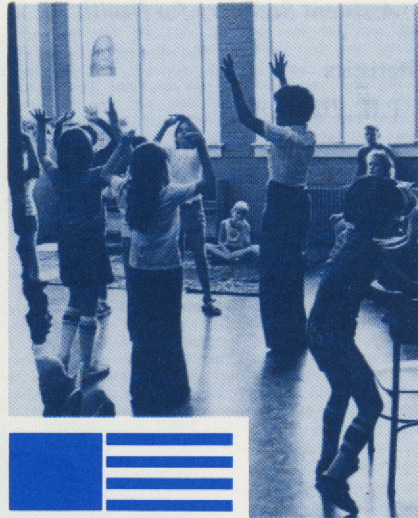
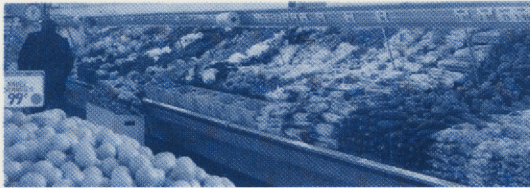
Margaret M. Heckler, Secretary

Public Health Service

Edward N. Brandt, Jr., M.D.

National Center for Health Statistics

Manning Feinlieb, M.D., D.



U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
National Center for Health Statistics

Hyattsville, Maryland
December 1983

Copyright Information

Permission has been obtained from the copyright holders to reproduce certain quoted material in this report. Further reproduction of this material is prohibited without specific permission of the copyright holder. All other material contained in this report is in the public domain and may be used and reprinted without special permission; citation as to source, however, is appreciated.

Suggested Citations

National Center for Health Statistics: *Health, United States, 1983*. DHHS Pub. No. (PHS) 84-1232. Public Health Service. Washington. U.S. Government Printing Office, Dec. 1983.

National Center for Health Statistics: Prevention profile, by P. M. Golden, R. W. Wilson, and J. Kavet. *Health, United States, 1983*. DHHS Pub. No. (PHS) 84-1232. Public Health Service. Washington. U.S. Government Printing Office, Dec. 1983.

Library of Congress Catalog Card Number 76-641496

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington, D.C. 20402

U.S. Department of Health and Human Services

Margaret M. Heckler, *Secretary*

Public Health Service

Edward N. Brandt, Jr., M.D., *Assistant Secretary for Health*

National Center for Health Statistics

Manning Feinleib, M.D., Dr. P.H., *Director*



THE SECRETARY OF HEALTH AND HUMAN SERVICES
WASHINGTON, D.C. 20201

December 1, 1983

Health, United States brings us encouraging news: Our overall health is better and we are continuing to live longer. More healthful lifestyles are paying off for millions of us.

Since the turn of the century, we have added more than 27 years in life expectancy, which has increased from just 47.3 years in 1900 to 74.5 years in 1982. We have also seen a dramatic decline in infant mortality, which has dropped from about 100 deaths per 1,000 live births in 1900 to an all-time low of 11.2 in 1982. At the other end of the life cycle, people 65 years of age could expect to live 11.9 additional years at the turn of the century, compared with 16.2 additional years in 1982.

We have made great strides in our crusade against debility and premature death. If our 1982 death rates were the same as in 1900, some 400,000 more Americans would have died of tuberculosis; diphtheria would have claimed another 80,000. Moreover, our progress over the past decade in combating today's leading killers has been even more remarkable. Approximately 200,000 additional deaths would have occurred in 1982 if heart disease mortality were at the same level as in 1970.

Of course, much remains to be done. This report underscores the unique importance of disease prevention and individual health promotion activities. Many major health problems confronting Americans are due to behavior or lifestyles. But today, Americans are adopting more healthful lifestyles—and that will contribute to continued progress for the health of our Nation in the years to come.

Sincerely,

Margaret M. Heckler
Secretary

Health, United States, 1983 is the eighth annual report on the health status of the Nation submitted by the Secretary of Health and Human Services to the President and Congress of the United States in compliance with Section 308(a)(2) of the Public Health Service Act as amended. It presents statistics concerning recent trends in the health care sector and detailed discussions of selected current health issues. This report was compiled by the National Center for Health Statistics, Office of the Assistant Secretary for Health. The National Committee on Vital and Health Statistics served in a review capacity.

This volume also contains the second issue of the triennial report *Prevention Profile*, submitted by the Secretary of the Department of Health and Human Services to the President and the Congress of the United States in compliance with Section 404 of Title IV of the Health Services and Centers Amendments of 1978 (Public Law 95-626). Although the legislation gave primary responsibility for preparation of the profile to the National Center for Health Statistics, the report was developed in cooperation with the Office of Disease Prevention and Health Promotion, Office of the Assistant Secretary for Health. This profile is an integral part of the Department's health promotion efforts and the goals included in *Healthy People: The Surgeon General's Report on Health Promotion and Disease Prevention*. The objectives contained in *Promoting Health/Preventing Disease: Objectives for the Nation* provided the base for a tracking system. The 1983 profile delineates particular health promotion objectives and presents available data to measure and evaluate the progress that has taken place since the objectives were established.

This volume is divided into two parts. Part 1 is *Health,*

United States, which includes: (a) 12 analytic articles on subjects of current interest in the health field; (b) a section of 87 detailed tables; (c) appendixes containing discussions of the sources and limitations of the data and a glossary of terms; and (d) a guide to the detailed tables. Part 2 is the *Prevention Profile*.

The analytic articles and detailed tables in Part 1 cover four major subject areas—health status and determinants, utilization of health resources, health care resources, and health care expenditures. It is obviously not possible to cover all the important health issues facing the Nation in a limited number of articles and detailed tables. Instead, an attempt is made to provide a balanced, complementary set of information. The detailed tables are designed to show continuing trends in health statistics. As a result, the major criterion used in selecting the detailed tables is the availability of comparable data over a period of several years. The tables appearing in every volume of *Health, United States* cover the same topics to enhance the use of this publication as a standard reference source. The articles, on the other hand, are selected to present data that have recently become available on topics of general interest and importance. For example, in this volume there are four articles dealing with obstetric care and maternal characteristics that affect pregnancy outcome. This emphasis was chosen because preliminary data from the 1980 National Natality Survey provide detailed information from mothers, physicians, and hospitals never before available for a national sample of live births. The importance of this topic is illustrated by the fact that the survey was jointly supported by seven different Public Health Service agencies.

Acknowledgments

Overall responsibility for planning and coordinating the content of this volume rested with the Office of Analysis and Epidemiology Program, National Center for Health Statistics, under the general supervision of Jacob J. Feldman. *Health, United States* was prepared under the direction of Joel C. Kleinman, Jennifer Madans, and Barbara G. Weichert. The *Prevention Profile* was prepared under the direction of Ronald W. Wilson and Patricia M. Golden.

Within the Office of Analysis and Epidemiology Program, statistical review for *Health, United States* was provided by Barbara G. Weichert, with the assistance of Romualdo Borja Arriola, Ilene B. Gottfried, and Rebecca A. Placek. Production planning and coordination were managed by Madelyn A. Lane, with Rebecca A. Placek and Jacqueline A. Smith responsible for production of *Health, United States*, and Dorothea J. Donahue responsible for production of the *Prevention Profile*.

Within the Publications Branch, publications management

was provided by Margot A. Brown and John E. Mounts. *Health, United States* was edited by Margot A. Brown, with the assistance of Howard Coan, and the *Prevention Profile* was edited by Rolfe W. Larson. Final production was managed by Linda L. Bean, with the assistance of Annette F. Gaidurgis. Printing coordination was managed by Naomi M. Forester.

The authors of each article and of the *Prevention Profile* are identified in their respective sections.

Publication of *Health, United States* would not have been possible without the contributions of numerous staff members throughout the National Center for Health Statistics. The *Prevention Profile* would not have been possible without the assistance of Joel Kavet of the Office of Disease Prevention and Health Promotion and staff members throughout the Public Health Service who are involved in the Department of Health and Human Services' Health Promotion Initiative.

Contents

Foreword	iii
Acknowledgments	iv

Part 1—Health, United States, 1983

Contents	3
List of Detailed Tables	4
Highlights	7
Selected Health Topics	
Changes in Heart Disease Risk Factors	13
Maternal Smoking and Drinking Behavior Before and During Pregnancy	19
Employment Characteristics of Mothers During Pregnancy	25
Variation in Use of Obstetric Technology	33
Maternal and Infant Characteristics Associated With Cesarean Section Delivery	39
Health Insurance Coverage and Physician Visits Among Hispanic and Non-Hispanic People	45
Visits to Physicians and Other Health Care Practitioners	49
Trends in Health Personnel	55
Patients in Public General Hospitals	61
Need for Care Among the Noninstitutionalized Elderly	67
Use and Costs of Medicare Services in the Last Years of Life	71
Health Care Expenditures for Major Diseases	79
Detailed Tables	87
Appendix I. Sources and Limitations of Data	203
Appendix II. Glossary of Terms	219
Guide to Tables	233

Part 2—Prevention Profile

Contents	241
Introduction	243
High Blood Pressure Control	246
Family Planning	247
Pregnancy and Infant Health	248
Immunization	250
Sexually Transmitted Diseases	253
Toxic Agent and Radiation Control	253
Occupational Safety and Health	255
Injury Prevention	256
Fluoridation and Dental Health	258
Surveillance and Control of Infectious Diseases	258

Smoking and Health	260
Alcohol and Drug Misuse Prevention.....	261
Improved Nutrition	263
Physical Fitness and Exercise	265
Control of Stress and Violent Behavior	266

List of Detailed Tables	4
Highlights	7
Selected Health Topics	
Changes in Heart Disease Risk Factors	13
Maternal Smoking and Drinking Behavior Before and During Pregnancy	19
Employment Characteristics of Mothers During Pregnancy	25
Variation in Use of Obstetric Technology	33
Maternal and Infant Characteristics Associated With Cesarean Section Delivery	39
Health Insurance Coverage and Physician Visits Among Hispanic and Non-Hispanic People	45
Visits to Physicians and Other Health Care Practitioners	49
Trends in Health Personnel	55
Patients in Public General Hospitals	61
Need for Care Among the Noninstitutionalized Elderly	67
Use and Costs of Medicare Services in the Last Years of Life	71
Health Care Expenditures for Major Diseases	79
Detailed Tables	87
Appendix I. Sources and Limitations of Data	203
Appendix II. Glossary of Terms	219
Guide to Tables	233

Symbols

---	Data not available
...	Category not applicable
-	Quantity zero
0.0	Quantity more than zero but less than 0.05
*	Figure does not meet standards of reliability or precision

List of Detailed Tables

Health status and determinants

Population

1. Resident population, according to age and race: United States, selected years 1950–81 estimates and 2000 projections 89

Fertility

2. Live births, crude birth rates, and birth rates by age of mother, according to race: United States, selected years 1950–80 90
3. Birth rates for women 15–44 years of age, according to live-birth order and race: United States, selected years 1950–80 91
4. Completed fertility rates and parity distribution for women 50–54 years of age at the beginning of selected years 1925–81, according to race and birth cohort: United States, selected birth cohorts 1871–1931 92
5. Legal abortion ratios, according to selected patient characteristics: United States, 1973–80 93
6. Legal abortions, according to selected characteristics: United States, 1973–80 94
7. Legal abortions, abortion-related deaths and death rates, and relative risk of death, according to period of gestation: United States, 1975–77 and 1978–80 95
8. Lifetime births expected by currently married women and percent of expected births already born, according to age and race: United States, selected years 1967–80 96

Mortality

9. Death rates for all causes, according to race, sex, and age: United States, selected years 1950–82 97
10. Life expectancy at birth and at 65 years of age, according to race and sex: United States, selected years 1900–1982 ... 99
11. Infant mortality rates, fetal death rates, and perinatal mortality rates, according to race: United States, selected years 1950–82 100
12. Infant mortality rates, according to race, geographic division, and State: United States, average annual 1968–70, 1973–75, and 1978–80 101
13. Infant mortality rates and average annual percent change: Selected countries, 1975 and 1980 103
14. Life expectancy at birth, according to sex: Selected countries, selected periods 104

15. Age-adjusted death rates for selected causes of death, according to race and sex: United States, selected years 1950–82 105
16. Death rates for diseases of heart, according to race, sex, and age: United States, selected years 1950–82 107
17. Death rates for malignant neoplasms, according to race, sex, and age: United States, selected years 1950–82 109
18. Death rates for malignant neoplasms of respiratory system, according to race, sex, and age: United States, selected years 1950–82 111
19. Death rates for cerebrovascular diseases, according to race, sex, and age: United States, selected years 1950–82 113
20. Death rates for motor vehicle accidents, according to race, sex, and age: United States, selected years 1950–82 115
21. Death rates for homicide and legal intervention, according to race, sex, and age: United States, selected years 1950–82 117
22. Death rates for suicide, according to race, sex, and age: United States, selected years 1950–82 119

Determinants and measures of health

23. Infants weighing 2,500 grams or less at birth, according to race, geographic division, and State: United States, average annual 1968–70, 1973–75, and 1978–80 121
24. Live births, according to race and selected characteristics: United States, selected years 1970–80 123
25. Vaccination status of children 1–4 years of age, according to race and standard metropolitan statistical area (SMSA) component: United States, 1976 and 1981 124
26. Selected notifiable disease rates, according to disease: United States, selected years 1950–81 125
27. Self-assessment of health and limitation of activity, according to selected characteristics: United States, 1976 and 1981 126
28. Restricted-activity and bed-disability days, according to selected characteristics: United States, 1976 and 1981 ... 127
29. Disability days associated with acute conditions and incidence of acute conditions, according to age: United States, selected years 1970–81 128
30. Cigarette smoking status of persons 20 years of age and over, according to sex, race, and age: United States, 1965, 1976, and 1980 129
31. Cigarettes smoked per day by persons 20 years of age and over, according to sex, race, and age: United States, 1965, 1976, and 1980 131

32. Frequent use of marijuana, alcohol, and cigarettes by high school seniors, according to sex: United States, 1975-82 . . .	133
33. Alcohol consumption status of persons 18 years of age and over, according to sex: United States, selected years 1971-79	134
34. Persons 25-74 years of age with elevated blood pressure, according to race, sex, and age: United States, 1971-75 and 1976-80	135
35. Air pollution, according to source and type of pollutant: United States, selected years 1970-81	136

Utilization of health resources

Ambulatory care

36. Physician visits, according to source or place of care and selected patient characteristics: United States, 1964, 1976, and 1981	137
37. Interval since last physician visit, according to selected patient characteristics: United States, 1964, 1976, and 1981	138
38. Office visits to physicians, according to physician specialty and selected patient characteristics: United States, 1976 and 1981	139
39. Office visits to physicians, according to selected characteristics: United States, 1976 and 1981	140
40. Dental visits and interval since last visit, according to selected patient characteristics: United States, 1964, 1976, and 1981	141

Inpatient care

41. Admissions, average length of stay, and outpatient visits in short-stay hospitals, according to type of ownership: United States, selected years 1960-81	143
42. Discharges from and days of care in non-Federal short-stay hospitals, according to sex, age, and selected first-listed diagnosis: United States, 1979 and 1981	144
43. Discharges from, days of care, and average length of stay in non-Federal short-stay hospitals, according to sex, age, and selected first-listed diagnosis: United States, 1979 and 1981	146
44. Discharges from, days of care, and average length of stay in non-Federal short-stay hospitals for all patients and for patients with surgery, according to selected characteristics: United States, 1979 and 1981	148
45. Discharges from, days of care, and average length of stay in short-stay hospitals, according to selected characteristics: United States, 1976 and 1981	149
46. Operations for inpatients discharged from non-Federal short-stay hospitals, according to sex, age, and surgical category: United States, 1979 and 1981	150
47. Diagnostic and other nonsurgical procedures for inpatients discharged from non-Federal short-stay hospitals, according to sex, age, and procedure category: United States, 1979 and 1981	152
48. Nursing home residents, according to selected functional status and age: United States, 1973-74 and 1977	154

49. Nursing home and personal care home residents 65 years of age and over and number per 1,000 population, according to sex and race: United States, 1963, 1969, 1973-74, and 1977	156
50. Additions to mental health facilities and average annual percent change, according to service setting and type of facility: United States, 1971 and 1979	157
51. Inpatient and outpatient care episodes in selected mental health facilities and number per 1,000 population, according to type of facility: United States, selected years 1955-79	158
52. Inpatient days of care in mental health facilities and average annual percent change, according to type of facility: United States, 1971, 1975, and 1979	159

Health care resources

Manpower

53. Persons employed in the health service industry, according to place of employment: United States, selected years 1970-82	160
54. Active physicians (M.D.'s and D.O.'s), according to type of physician, and number per 10,000 population: United States and outlying U.S. areas, selected 1950-80 estimates and 1985, 1990, and 2000 projections	161
55. Physicians (M.D.'s), according to activity: United States, selected years 1970-81	162
56. Active health personnel and number per 100,000 population, according to occupation and geographic region: United States, 1970 and 1980	163
57. Active non-Federal physicians (M.D.'s) per 10,000 civilian population, according to geographic region, primary specialty, and activity: United States, 1976 and 1981	164
58. Graduates of health professions schools and number of schools, according to profession: United States, selected 1950-80 estimates and 1990 and 2000 projections	165

Facilities

59. Short-stay hospitals, beds, and occupancy rates, according to type of ownership: United States, selected years 1960-81	166
60. Community hospital beds per 1,000 population and average annual percent change, according to geographic division and State: United States, selected years 1940-81	167
61. Occupancy rate in community hospitals and average annual percent change, according to geographic division and State: United States, selected years 1940-81	169
62. Full-time equivalent employees per 100 average daily patients in community hospitals and average annual percent change, according to geographic division and State: United States, selected years 1960-81	171
63. Long-term hospitals, beds, and occupancy rates, according to type of hospital and ownership: United States, selected years 1970-81	173
64. Nursing homes with 25 or more beds, beds, and bed rates, according to geographic division and State: United States, 1976 and 1980	174

65. Beds and bed rates in psychiatric facilities, according to type of facility: United States, 1972, 1976, and 1980	176
--	-----

Health care expenditures

National health expenditures

66. Gross national product and national health expenditures: United States, selected years 1929-82	177
67. Average annual percent change in personal health care expenditures and percent distribution of factors affecting growth: United States, 1965-82	178
68. Personal health care per capita expenditures and average annual percent change, according to geographic division and State: United States, selected years 1966-78	179
69. Consumer Price Index (1967=100) and average annual percent change for all items and selected items: United States, selected years 1950-82	181
70. Consumer Price Index (1967=100) for all items and medical care components: United States, selected years 1950-82	182
71. Consumer Price Index (1967=100) average annual percent change for all items and medical care components: United States, selected years 1950-82	183

Sources and types of payment

72. National health expenditures, according to source of funds: United States, selected years 1929-82	184
73. National health expenditures average annual percent change, according to source of funds: United States, 1929-82	185
74. Personal health care expenditures and percent distribution, according to source of payment: United States, selected years 1929-82	186
75. National health expenditures and percent distribution, according to type of expenditure: United States, selected years 1950-82	187
76. National health expenditures average annual percent change, according to type of expenditure: United States, selected years 1950-82	188

77. Hospital care per capita expenditures and average annual percent change, according to geographic division and State: United States, selected years 1966-78	189
78. Nursing home care per capita expenditures and average annual percent change, according to geographic division and State: United States, selected years 1966-78	191

Institutional care

79. Hospital expenses per inpatient day, personnel and number per 100 patients, and average annual percent change: United States, 1971-81	193
80. Average annual percent change in hospital inpatient expenses per patient day and percent distribution of factors affecting growth: United States, selected years 1960-81	194
81. Nursing home average monthly charges and percent distribution of residents, according to primary source of payments and selected facility characteristics: United States, 1973-74 and 1977	195
82. Monthly charge for care in nursing homes and percent distribution of residents, according to selected facility and resident characteristics: United States, 1964, 1973-74, and 1977	197

Major population dimensions

83. Medicare expenditures and percent distribution, according to type of service: United States, selected years 1967-82	198
84. Medicaid expenditures and percent distribution, according to type of service: United States, selected years 1967-82	199
85. Veterans' medical care expenditures and percent distribution, according to type of expenditure: United States, selected fiscal years 1965-82	200

Research and development

86. National funding for health research and development and average annual percent change, according to source of funds: United States, selected years 1960-82	201
87. Federal obligations for health research and development and percent distribution, according to agency: United States, selected fiscal years 1970-82	202

Highlights

Health status and determinants

- After a temporary decline resulting from the 1980 influenza epidemic, life expectancy resumed its upward trend reaching new highs of 74.1 years in 1981 and 74.5 years in 1982 (provisional data). Life expectancy for females (78.2 years in 1982) exceeds that for males (70.8 years) by 7.4 years.
- The infant mortality rate continued to decline, reaching 12.6 deaths per 1,000 live births in 1980. Provisional data for 1981 and 1982 show continued declines in the infant mortality rate (11.7 and 11.2 deaths per 1,000 live births, respectively). However, the mortality rate for black infants remains almost twice as high as for white infants.
- Cigarette smoking and high levels of blood pressure and cholesterol have been associated with mortality from heart disease. During the 1970's, the prevalence of elevated blood pressure declined substantially. In addition, the prevalence of cigarette smoking declined slightly (after a substantial reduction in the late 1960's). Although the prevalence of elevated cholesterol did not change during the 1970's, a decline did occur during the 1960's. The net impact of these changes in heart disease risk factors may account for a substantial proportion of the decline in heart disease mortality.
- In 1980, the fertility rate was 68.4 live births per 1,000 women 15–44 years of age, a slight increase from 1979 and the highest rate observed since 1973. Continuing the recent trend, the largest increase in fertility was observed for women 30–34 years of age. However, provisional data for 1981 and 1982 suggest that the fertility rate may be stabilizing.
- The average number of lifetime births expected by women 18–34 years of age has decreased during the past decade—from 2.6 in 1971 to 2.2 in 1980.
- About one-third of all married mothers with live births during 1980 smoked prior to pregnancy. Approximately half of the mothers with less than 12 years of education smoked, compared with only 15 percent of those who graduated from college. Moreover, those with higher educational attainment were more likely to stop smoking during pregnancy (10 percent of mothers with less than 12 years of education compared with 24 percent of mothers with 16 or more years).
- Although 55 percent of the married mothers with live births during 1980 drank alcoholic beverages before pregnancy, a substantial proportion stopped drinking or reduced their

consumption during pregnancy. As a result, 61 percent did not drink during pregnancy and 36 percent drank the equivalent of fewer than three drinks per week.

- Among married mothers with live births during 1980, 63 percent of those 20 years of age and over worked at some time during the 12 months before delivery. About 85 percent of mothers with no other children worked, compared with about 50 percent of those with one other child or more. Employment increased with increasing educational attainment. Of those who worked, 72 percent worked full time. This varied from 82 percent of those with no other children to about 62 percent of those with one other child or more. Twenty-eight percent of the employed mothers worked in blue-collar, service, or farm jobs.
- In 1980, among married white-collar workers who were employed during the first month of pregnancy, 78 percent were employed at the beginning of the seventh month and 41 percent at the start of the ninth month of pregnancy. Among blue-collar workers, only 57 percent were still employed at the beginning of the seventh month and 22 percent at the start of the ninth month of pregnancy.
- An estimated 314,000 married mothers with live births in 1980 (17 percent of those employed before delivery) worked in jobs with potential exposure to one or more selected teratogens.
- During 1979–80, an estimated 4.7 million adults in the civilian noninstitutionalized population needed functional assistance from another person for selected personal care or home management activities. More than half of these people were 65 years of age and over.
- The proportion of adults needing functional assistance increases with age. The increase is especially large for those needing help in personal care activities. For example, 2 percent of the adults 65–74 years of age required such help during 1979–80 compared with 18 percent of those 85 years of age and over.

Utilization of health resources

- Among mothers 35 years of age and over with live births during 1980, 30 percent of white mothers and 17 percent of black mothers had amniocentesis during pregnancy. Amniocentesis was performed less frequently in the South and outside metropolitan areas.
- About 30 percent of all women with 1980 live births received at least one ultrasound examination at some time

during their pregnancy. Women in metropolitan areas were more likely to receive an ultrasound examination than were those in nonmetropolitan areas.

- Thirteen percent of mothers with 1980 live births received a medical X-ray during pregnancy. More than one-third of the mothers with an X-ray could have potentially received an ultrasound examination instead. X-ray examinations were more likely to occur outside metropolitan areas.
- About half of all mothers with 1980 live births received electronic fetal monitoring (EFM) during pregnancy. EFM was more prevalent in metropolitan than in nonmetropolitan areas. Black women in nonmetropolitan areas in the South were the least likely to receive EFM.
- In 1980, 17 percent of all live births were delivered by cesarean section. Nearly 40 percent of the 1980 cesarean section deliveries were to women with previous delivery by cesarean section. The cesarean section rate increased substantially with increasing age. Furthermore, first births were more likely than higher order births to be delivered by cesarean section. Differences in the cesarean rate by marital status, income, or education were minimal. However, cesarean delivery was more common among births of infants weighing less than 2,500 grams (5 lb 8 oz) and infants weighing 4,000 grams (8 lb 14 oz) or more.
- In 1978 and 1980, Hispanic and black people under 65 years of age were much more likely than white people of the same ages to have no health insurance of any type. Among Hispanic people, Mexican Americans had the highest proportion uninsured.
- Persons under 65 years of age with no insurance coverage were more likely to have had no physician visit during the past year than were those with coverage (35 percent versus 22 percent). Moreover, within each type of insurance coverage, Mexican Americans were considerably more likely than other ethnic groups to have had no physician visit during the past year.
- In 1980, 35 percent of the civilian noninstitutionalized population made one or more visits to nonphysician health care practitioners. Use varied by type of practitioner: 13 percent of the population visited nurses; 9 percent, optometrists; 4 percent, chiropractors; 2 percent, podiatrists; and 1 percent, psychologists.
- For physicians and each of the previous five types of health practitioners, a considerably higher percent of females than of males received services in 1980. Utilization of each practitioner was also higher for white persons than for black or Hispanic persons. Those with more education tended to visit all practitioners excluding chiropractors more frequently than did those with less education.
- The likelihood of visiting nonphysician health practitioners increased with increasing use of physician services.
- Cardiac catheterization among middle-aged and elderly men continues to increase rapidly. Between 1979 and 1981, cardiac catheterization increased 97 percent for men 65 years of age and over and 34 percent for men 45–64 years of age (replacing hernia repair as the leading surgical procedure in this age group). Moreover, during the same period, coronary bypass surgery increased 27 percent for

men 45–64 years of age (from 3.0 to 3.8 per 1,000) and 89 percent for older men (from 1.8 to 3.4 per 1,000).

- Between 1979 and 1981, the use of computerized axial tomography (CAT scan) among hospitalized persons doubled, increasing from 0.8 to 1.8 per 1,000 population. This rapid increase occurred for all age and sex groups.
- The use of diagnostic ultrasound among hospitalized women increased 91 percent between 1979 and 1981. The increase was particularly notable for women 65 years of age and over for whom diagnostic ultrasound increased 126 percent.
- Lens extraction (cataract operations) among the elderly increased by about 30 percent between 1979 and 1981. Furthermore, 57 percent of these procedures were accompanied by the insertion of a prosthetic lens in 1981, compared with 36 percent in 1979.

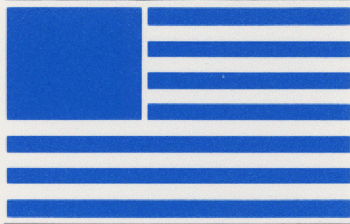
Health care resources

- During the past two decades, the supply of health practitioners has increased greatly both in absolute numbers and in relation to the population. The greatest increase has occurred in the number of registered nurses, while the smallest increase has occurred for podiatrists.
- The number of active registered nurses increased from 335,000 in 1950 to 1.3 million in 1980. The proportion of the nurses working part time increased from 11 percent to 32 percent over the same time period.
- The proportion of minority group members among first-year students in health professions schools increased between the late 1960's and the early 1970's. For example, black students accounted for 2.7 percent of first-year medical students in 1968, compared with 7.5 percent in 1974. However, this proportion declined slightly in the late 1970's. In 1979, 6.5 percent of first-year medical students were black.
- The proportion of women among graduates of health professions schools has increased steadily since the 1960's. For example, the proportion of women among medical school graduates jumped from 5 percent in 1955 to 23 percent in 1980. In 1980, the proportion of female graduates ranged from 14 percent in dentistry to 41 percent in pharmacy.
- Public general hospitals accounted for nearly one-third of all short-term, general non-Federal hospitals in 1977. However, they accounted for 17 percent in metropolitan areas, compared with 45 percent in nonmetropolitan areas.
- In 1977, differences between public and voluntary hospitals outside metropolitan areas were small. In metropolitan areas, however, public hospitals treated more minority patients (20 percent for public versus 11 percent for voluntary), more Medicaid patients (15 percent versus 8 percent), and more uninsured patients (12 percent versus 6 percent).
- In metropolitan areas, public hospitals had fewer elderly patients than did voluntary hospitals although the reverse was true outside metropolitan areas.

- Compared with voluntary hospitals, both urban and rural public hospitals had higher newborn death rates and a greater incidence of low-birth-weight infants.

Health care expenditures

- In 1982, health care expenditures in the United States totaled \$322.4 billion, an average of \$1,365 per person, and comprised 10.5 percent of the gross national product.
- Medical care prices continued to increase rapidly between 1981 and 1982 despite the marked decrease in the rate of price inflation for the general economy. During this period, the overall Consumer Price Index increased by 6.1 percent, compared with 11.6 percent for the medical care component. Between 1980 and 1981, the overall index increased by 10.4 percent and the medical care component by 10.8 percent.
- Hospital care expenditures continue to claim the largest share of the health care dollar, accounting for 42 percent of health care expenditures in 1982. Physician services, dentist services, and nursing home care accounted for 19 percent, 6 percent, and 9 percent, respectively.
- In 1980, females represented 52 percent of the population but accounted for 58 percent of personal health care expenditures. Although the elderly represented only 11 percent of the population, they accounted for 31 percent of personal health care expenditures.
- Diseases of the circulatory system accounted for the highest amount of personal health care expenditures (\$33 billion), followed closely by diseases of the digestive system (\$32 billion, including \$15 billion for dental care). Almost \$20 billion was spent on each of the following conditions: mental disorders, injury and poisoning, and diseases of the respiratory system. Finally, about \$14 billion was spent on each of the following: neoplasms, diseases of the musculoskeletal system and connective tissue, diseases of the genital urinary system, and diseases of the nervous system and sense organs.
- Hospital care usually accounted for the largest share of expenditures in each disease class. However, the proportion varied from about 35 percent for diseases of the nervous system and sense organs and diseases of the digestive system to more than 60 percent for neoplasms, injury and poisoning, and mental disorders.
- The 1.3 million Medicare enrollees who died during 1978 comprised 5 percent of Medicare enrollment but accounted for 28 percent of program expenditures for that year. Reimbursement per enrollee for medical services received during the last year of life for those who died was \$4,527, compared with \$729 spent in 1978 for those who survived.
- Of all Medicare expenses for persons in their last year of life, 30 percent is spent in the last 30 days and another 16 percent in the 60th to the 31st day before death. To a large extent, this reflects the intense use of expensive hospital care in the final months.



**Selected
Health Topics**

Changes in Heart Disease Risk Factors

by Michael Rowland, Robinson Fulwood, and Joel C. Kleinman, Ph.D., National Center for Health Statistics

Introduction

Heart disease is the leading cause of death in the United States, accounting for more than one-third of all deaths (National Center for Health Statistics, 1982a). The economic cost of heart disease was estimated to be at least \$40 billion annually in the United States in 1977 (Rice, 1981). It accounts for more than 11 million physician visits each year (National Center for Health Statistics, 1982b) and is ranked first among disease conditions in utilization of short-stay hospitals (National Center for Health Statistics, 1982c).

Since the mid-1960's, mortality from heart disease has declined rapidly. Many factors have been cited as possibly contributing to this decline, including improved medical services, greater availability of coronary care units, advanced surgical and medical treatment of coronary heart disease, improved control of blood pressure, decreased smoking, modified eating habits, and increased exercise (Gillum, Blackburn, Feinleib, 1982; Kannel, 1982).

Elevated blood pressure, cigarette smoking, and elevated cholesterol level have been identified as major controllable risk factors for coronary heart disease in several epidemiologic studies (McGee and Gordon, 1976; Pooling Project Research Group, 1978). This article examines changes for adults 35-74 years of age in the national prevalence of these three modifiable risk factors. It also assesses the extent to which these changes might account for the reduction in coronary heart disease mortality.

Methods

The data are from the National Health and Nutrition Examination Survey Cycles I and II (NHANES I and NHANES II). NHANES I, conducted from 1971 through 1975, included a subsample of 5,350 persons 35-74 years of age who received a detailed medical examination; and NHANES II, conducted from 1976 through 1980, included 8,213 persons 35-74 years of age.

This article focuses on the proportion of the adult population 35-74 years of age with one or more of these three risk factors for coronary heart disease (CHD). Elevated blood pressure is defined as systolic blood pressure of at least 160 mmHg or diastolic blood pressure of at least 95 mmHg or both. Persons with serum cholesterol of at least 260 mg/dl are classified as having elevated cholesterol level. (Although recent studies have shown that separating cholesterol level into its

high- and low-density components will result in more appropriate indicators of CHD risk, these individual measures are available from NHANES II but not NHANES I.)

Although the prevalence of risk factors in the population provides useful information, the complete distribution of actual values of the risk factors and changes in these values are important considerations. In particular, epidemiologic studies have found that the risk of dying from CHD is not only greater for those with risk factors but that the risk increases steadily with increasing blood pressure, cholesterol, and number of cigarettes smoked. Furthermore, the joint impact of two or more elevated risk factors on CHD is greater than the sum of their individual effects; that is, the effects are multiplicative rather than additive.

A mathematical form of the risk function that has provided a good fit to the data in several epidemiologic studies is the multiple logistic function (Gordon and Kannel, 1982), the implications of which are best illustrated by an example. Using a modified version of this function (Kleinman et al., 1981), the probabilities of a man 50 years of age dying from CHD during a given year according to selected values of systolic blood pressure (BP), serum cholesterol, and number of cigarettes smoked per day are shown below:

Systolic BP	Cholesterol	Cigarettes per day	Probability per 10,000
130	185	0	16
150	185	0	22
170	185	0	30
130	260	0	26
130	185	20	31
170	260	20	88

Note that the probability of dying increases with increasing blood pressure even when blood pressure is below 160 mmHg. If the risk of each risk factor were additive, the probability of dying for a man who has blood pressure of 170 mmHg, cholesterol of 260 mg/dl, and who smokes 20 cigarettes per day would be $16 + (30 - 16) + (26 - 16) + (31 - 16) = 55$ per 10,000. However, the probability estimated by the multiple logistic function is 88, 60 percent greater than the additive risk.

The multiple logistic function is used in this article to summarize the joint impact on CHD mortality of changes in the three risk factors between NHANES I and NHANES II. For each respondent, a probability of CHD death based on age, sex, systolic blood pressure, serum cholesterol, and number of cigarettes smoked per day was calculated. This probability was computed by applying a logistic equation derived from the

Framingham Heart Study to the values of the risk factors measured in NHANES (Kleinman et al., 1981). The mean value of these probabilities for each age-race-sex group of NHANES respondents provides an estimate of the group's "expected" CHD mortality rate.¹ Change in the expected death rates between NHANES I and NHANES II provides an estimate of the potential impact of risk-factor changes on CHD mortality.

Several important assumptions underlie this approach. One is that the effects of the risk factors on CHD have not changed over time. Second, although different risk-factor effects are used for men and women, it is assumed that the effects of the risk factors on CHD are the same for each age and race group. Although the assumption regarding age has been examined and found to hold approximately (Shurtleff, 1974), available data are not adequate to test whether risk-factor effects differ by race (Gillum, 1982). Finally, it is assumed that the effect on CHD mortality of a modified risk factor is the same as if the risk factor were at the lower level "naturally." For example, it is assumed that a person who is taking antihypertensive drugs and, as a result, has a blood pressure of 140 mmHg has the same risk of CHD death as one who has blood pressure of 140 and has never been treated for hypertension. The latter assumption has recently been called into question (National Institutes of Health, 1982).

Results

Individual risk factors

The prevalence of elevated blood pressure increases with age and is greater among black people than among white people. In general, men in the age group 35–44 years are more likely to have elevated blood pressure than are women of the same age, but such differences are minimal for those 45 years of age and over (National Center for Health Statistics, 1982d).

Between NHANES I and NHANES II, the proportion of persons with elevated blood pressure decreased substantially (table A). The relative decrease was greatest for black men (37 percent). As a result, the race differentials so evident in the 1971–75 survey narrowed substantially by the 1976–80 survey.

The prevalence of elevated cholesterol generally varies according to age and sex but not according to race. Among men, the prevalence is lowest in the age group 35–44 years but prevalence by age varies little for those 45–74 years. Among women, however, the prevalence increases with age. As a result, women under 45 years of age have a lower prevalence of elevated cholesterol than do men while the reverse is true for those 55 years of age and over (National Center for Health Statistics, 1978). However, the change in prevalence of elevated cholesterol between survey periods was not statistically significant for the four race-sex groups (table B).

In general, the proportion of adults who were current cig-

¹Since these probabilities are rough approximations and occasionally result in unusually large or small values, "trimmed" means (omitting the upper and lower 10 percent of the values) were used to provide more stable estimates of "expected" death rates.

Table A. Age-adjusted¹ prevalence rates of elevated blood pressure² for persons 35–74 years of age, according to race and sex: United States, 1971–75 and 1976–80

Race and sex	Elevated blood pressure	
	1971–75	1976–80
White		
Rate per 100 population		
Men	22.2	19.0
Women	19.0	14.5
Black		
Men	43.5	27.6
Women	37.8	32.4

¹Age adjusted by direct method to the 1976–80 National Health and Nutrition Examination Survey population.

²Systolic blood pressure of at least 160 mmHg and/or diastolic blood pressure of at least 95 mmHg.

SOURCE: National Center for Health Statistics: Data from the National Health and Nutrition Examination Survey.

Table B. Age-adjusted¹ prevalence rates of elevated serum cholesterol levels² for persons 35–74 years of age, according to race and age: United States, 1971–75 and 1976–80

Race and sex	Elevated serum cholesterol	
	1971–75	1976–80
White		
Rate per 100 population		
Men	17.7	19.5
Women	25.9	24.9
Black		
Men	28.2	22.6
Women	23.9	24.3

¹Age adjusted by the direct method to the 1976–80 National Health and Nutrition Examination Survey population.

²Serum cholesterol of at least 260 mg/dl.

SOURCE: National Center for Health Statistics: Data from the National Health and Nutrition Examination Survey.

arette smokers decreased between NHANES I and NHANES II (table C). The decline was greatest for black women (24 percent)² and intermediate for white and black men (7 percent and 5 percent, respectively). There was no change in smoking for white women. As a result, the race differential among women disappeared in NHANES II. Black men had the highest prevalence of smoking in both survey periods.

The proportions of heavy smokers (25 cigarettes or more per day) in the population did not change significantly between survey periods. Thus, the decrease in smoking between survey periods resulted from a reduction in the proportion of light and moderate smokers.

²It should be noted that the age-adjusted prevalence rate of smoking among black women estimated from NHANES I (40 percent) is higher than the 35 percent estimate from the 1974 National Health Interview Survey (NHIS). The decrease in smoking prevalence among black women estimated from NHIS is about 10 percent, compared with 24 percent from NHANES. NHIS and NHANES data for the other three groups agree quite well.

Table C. Age-adjusted¹ rates of current smokers² and those who smoke 25 cigarettes or more per day for persons 35–74 years of age, according to race and sex: United States, 1971–75 and 1976–80

Race and sex	Current smoker		25 cigarettes or more per day	
	1971–75	1976–80	1971–75	1976–80
White				
Rate ³ per 100 population				
Men.....	40.6	37.6	17.1	17.5
Women.....	31.3	31.3	6.0	8.2
Black				
Men.....	48.7	46.5	5.6	9.6
Women.....	39.5	29.9	1.1	3.5

¹Age adjusted by the direct method to the 1976–80 National Health and Nutrition Examination Survey population.

²A current smoker is a person who has smoked at least 100 cigarettes and who now smokes; includes occasional smokers.

³Base of percent excludes persons with unknown smoking status.

SOURCE: National Center for Health Statistics: Data from the National Health and Nutrition Examination Survey.

Multiple risk factors

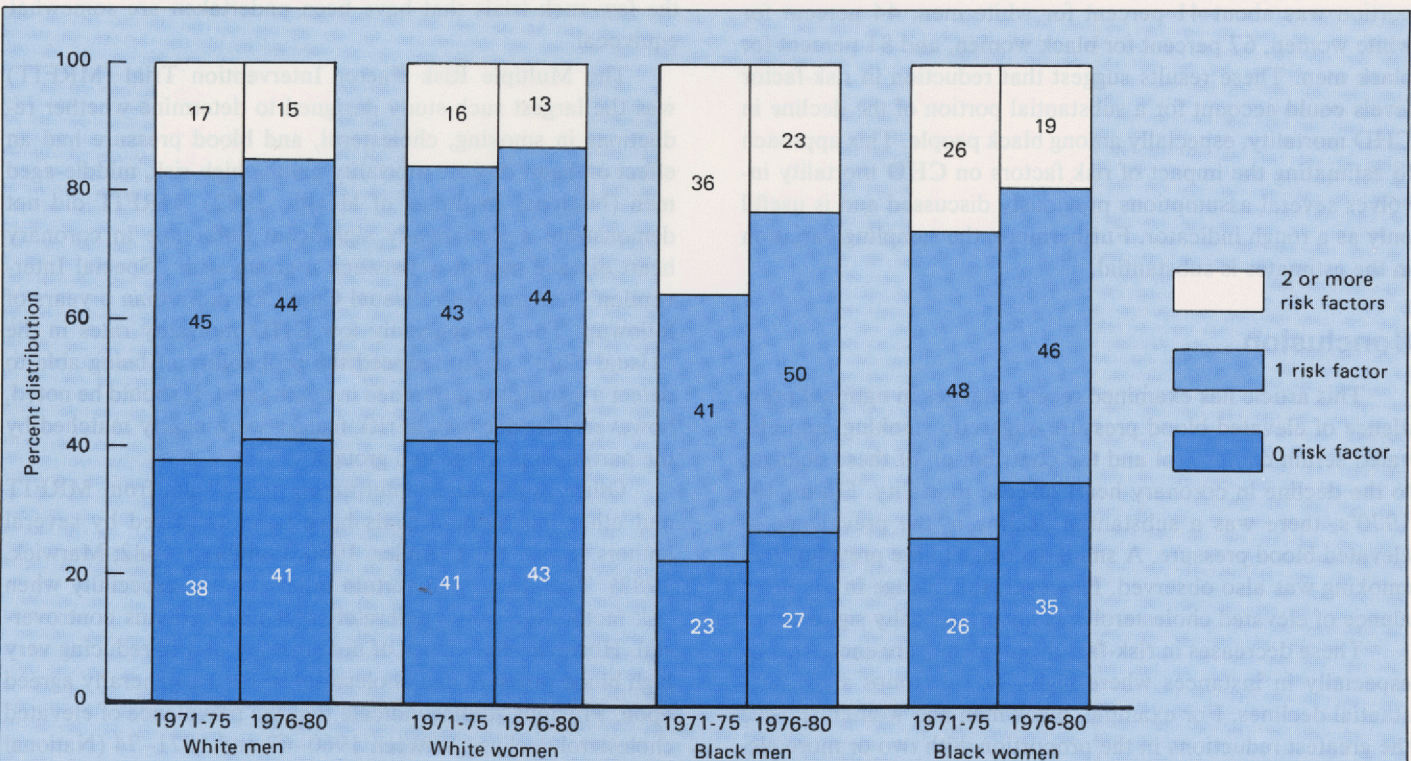
As discussed, people with more than one elevated risk factor are at especially high risk of CHD mortality. The percent of the population with two or more risk factors is higher among black people than among white people, but there is little difference

between men and women (figure 1). As previously noted, the proportion of adults with elevated blood pressure and the proportion of adult cigarette smokers decreased between NHANES I and NHANES II. These decreases were greater for black people than for white people and are reflected in a greater decrease in the proportion of black people with two or more risk factors. Despite these marked changes in the risk-factor distribution between surveys, only 27 percent of black men, 35 percent of black women, 41 percent of white men, and 43 percent of white women had no elevated risk factor in the late 1970's.

Impact on coronary heart disease mortality

Previous sections of this article have examined the change in national prevalence of elevated blood pressure, cigarette smoking, and elevated serum cholesterol levels among adults 35–74 years of age. In this section, the impact of these changes on CHD mortality is examined using the approach outlined in the Methods section. Changes in observed CHD mortality reported from vital statistics are compared with expected CHD mortality estimated from NHANES risk-factor data for adults 35–74 years of age.

Expected CHD mortality based on risk-factor data from NHANES declined by 13–16 percent for black people and 7–8 percent for white people (table D). The differences between men and women were not statistically significant. Observed



¹Age adjusted by the direct method to the population at midpoint of the 1976-80 National Health and Nutrition Examination Survey.

²Risk factors are systolic blood pressure of at least 160 mmHg and/or diastolic blood pressure of 95 mmHg, serum cholesterol level of at least 260 mg/dl, and current smoker.

SOURCE: National Center for Health Statistics: Data from the National Health and Nutrition Examination Survey.

Figure 1. Age-adjusted¹ percent distribution of persons 35-74 years of age, according to selected number of coronary heart disease risk factors,² race, and sex: United States, 1971-75 and 1976-80.

Table D. Percent decrease in age-adjusted¹ rates for observed² and expected³ coronary heart disease mortality among persons 35–74 years of age, according to race and sex: United States

Race and sex	Coronary heart disease mortality	
	Observed	Expected
White		
Percent decrease		
Men	17	7
Women	18	8
Black		
Men	16	13
Women	24	16

¹Age adjusted by direct method to the 1976–80 National Health and Nutrition Examination Survey population.

²Percent decrease between 1973 and 1977–78.

³Estimated from risk factors measured in the 1971–75 and 1976–80 National Health and Nutrition Examination Surveys.

NOTE: Codes for coronary heart disease are 410–413 based on the *Eighth Revision International Classification of Diseases, Adapted for Use in the United States*.

SOURCES: National Center for Health Statistics: Data from the National Health and Nutrition Examination Survey and the National Vital Statistics System.

CHD mortality declined 24 percent among black women and 16–18 percent for each of the other three groups. Dividing the percent change in expected rates by the percent change in observed rates gives a rough measure of the portion of the decline in mortality that can be attributed to risk-factor changes. That portion was about 41 percent for white men, 44 percent for white women, 67 percent for black women, and 81 percent for black men. These results suggest that reduction in risk-factor levels could account for a substantial portion of the decline in CHD mortality, especially among black people. This approach to estimating the impact of risk factors on CHD mortality involves several assumptions previously discussed and is useful only as a rough indicator. Furthermore, the sampling variation in the estimates is substantial.

Conclusion

This article has examined recent changes in national prevalence of elevated blood pressure, cigarette smoking, and elevated serum cholesterol and the contribution of these changes to the decline in coronary heart disease mortality. During the 1970's, there was a substantial decline in the prevalence of elevated blood pressure. A small decrease in the prevalence of smoking was also observed. However, the change in the prevalence of elevated cholesterol was not statistically significant.

These decreases in risk-factor prevalence are encouraging, especially in instances where high-risk subgroups show substantial declines. For example, black men and women showed the greatest reductions in the proportion with two or more elevated risk factors between NHANES I and NHANES II. As a result, the race differentials so evident in NHANES I narrowed substantially by NHANES II. Furthermore, by applying a model developed in the Framingham Heart Study to the risk-factor measurements in the two surveys, it appeared that the joint impact of these risk-factor changes may account for a

substantial portion of the decline in CHD mortality, especially among black people.

The declines in risk factors have come about after sustained effort on the part of voluntary and government agencies to inform the public about the benefits of hypertension control, cessation of smoking, exercise, and a more healthy lifestyle in general. Although it is not possible to verify a causal link between these events, the temporal sequence suggests that changes were accelerated by making information available to the public and health professionals. For example, the decline in smoking began just after the release of the first Surgeon General's Report on Smoking and Health (Warner, 1981). Similarly, decline in prevalence of elevated blood pressure was barely evident between 1960–62 and 1971–75 (National Center for Health Statistics, 1981). Yet the decline between 1971–75 and 1976–80 coincides with several programs to inform physicians and the public about the benefits of hypertension control (Hypertension Study Group, 1971; National Heart and Lung Institute, 1973; Stross, 1981; Stamler, 1976; Levy, 1982).

However, the link between the declines in risk factors and the decline in CHD mortality is even more difficult to ascertain. Although the results presented here suggest that risk-factor reduction could have accounted for a substantial part of the decline in CHD mortality, the methodology used is approximate and subject to many limitations (Kleinman et al., 1979; Kleinman et al., 1981). The only direct way to investigate the effects of risk-factor change on CHD mortality is through the use of randomized clinical trials. Unfortunately, the results of the few such trials that have been undertaken are somewhat equivocal.

The Multiple Risk Factor Intervention Trial (MRFIT) was the largest such study designed to determine whether reductions in smoking, cholesterol, and blood pressure had an effect on heart disease mortality among high-risk, middle-aged men (National Institutes of Health, 1982). MRFIT did not demonstrate a statistically significant difference in coronary heart disease mortality between a group with "Special Intervention" and one with "Usual Care" for more than 6 years of followup. The unexpectedly low CHD mortality rates in the "Usual Care" group reduced the probability of being able to detect a significant difference in death rates. It should be noted, however, that declines in risk factors were nearly matched by the participants in the two groups.

Other problems in interpreting the results from MRFIT and other intervention trials have been discussed by several authors (Freis, 1982; Kuller, 1980; Lundberg, 1982; Marwick, 1982). The efficacy of certain interventions, especially when risk factors are only moderately elevated, remains controversial. However, the values of not smoking and of reducing very high blood pressure and cholesterol levels are generally agreed upon. Previous studies indicate that the prevalence of elevated cholesterol declined between 1960–62 and 1971–74 (National Center for Health Statistics, 1978) and that the prevalence of smoking declined since the mid-1960's (Kleinman et al., 1979). The data presented here show that the prevalence of elevated blood pressure declined between 1971–75 and 1976–80. Although definitive evidence linking the reduction in risk-factor levels to the decline in CHD mortality is lacking, the results

presented in this article suggest that changes in risk-factor levels could account for a portion of the mortality decline.

References

- Freis, E. D.: Should mild hypertension be treated? *New Engl. J. Med.* 307(5):306-309, July 1982.
- Gillum, R. F.: Coronary heart disease in black populations. *Am. Heart J.* 104(4):839-864, Oct. 1982.
- Gillum, R. F., Blackburn, H., and Feinleib, M.: Current strategies for explaining the decline in ischemic heart disease mortality. *J. Chronic Dis.* 35(6):467-474, 1982.
- Gordon, T., and Kannel, W. B.: Multiple risk functions for predicting coronary heart disease, The concept, accuracy, and application. *Am. Heart J.* 103(6):1031-1039, June 1982.
- Hypertension Study Group of the Inter-Society Commission on Heart Disease Resources: Guidelines for the detection, diagnosis and management of hypertensive populations. *Circulation* 44(5):A263-A272, Nov. 1971.
- Kannel, W. B.: Meaning of the downward trend in cardiovascular mortality. *JAMA* 247(6):877-880, Feb. 1982.
- Kleinman, J. C., Feldman, J. J., and Monk, M. A.: The effects of changes in smoking habits on coronary heart disease mortality. *Am. J. Public Health* 69(8):795-802, Aug. 1979.
- Kleinman, J. C., DeGruttola, V. G., Cohen, B. B., and Madans, J. H.: Regional and urban-suburban differentials in coronary heart disease mortality and risk factor prevalence. *J. Chronic Dis.* 34(1):11-19, 1981.
- Kuller, L. H.: Prevention of cardiovascular disease and risk-factor intervention trials. *Circulation* 61(1):26-28, Jan. 1980.
- Levy, R. I.: The National Heart, Lung, and Blood Institute, Overview 1980, The Director's report to the NHLBI Advisory Council. *Circulation* 65(2):217-225, Feb. 1982.
- Lundberg, G. D.: MRFIT and the goals of The Journal. *JAMA* 248(12):1501, Sept. 1982.
- Marwick, C.: "Mild" hypertension, The gray zone gets more confusing. *Medical World News* 66-85, Dec. 20, 1982.
- McGee, D., and Gordon, T.: The results of the Framingham Study applied to four other U.S.-based epidemiologic studies of coronary heart disease. *The Framingham Study*. Section 31. DHEW Pub. No. (NIH) 76-1083. National Institutes of Health. Washington. U.S. Government Printing Office, 1976.
- National Center for Health Statistics: Total serum cholesterol levels of adults 18-74 years, United States, 1971-1974, by S. Abraham, C. L. Johnson, and M. Carroll. *Vital and Health Statistics*. Series 11-No. 205. DHEW Pub. No. (PHS) 79-1652. Public Health Service. Washington. U.S. Government Printing Office, Apr. 1978.
- National Center for Health Statistics: Hypertension in adults 25-74 years of age, United States, 1971-1975, by J. Roberts and M. Rowland. *Vital and Health Statistics*. Series 11-No. 221. DHHS Pub. No. (PHS) 81-1671. Public Health Service. Washington. U.S. Government Printing Office, Apr. 1981.
- National Center for Health Statistics: Births, marriages, divorces, and deaths, United States, 1982. *Monthly Vital Statistics Report*, Vol. 31, No. 7. DHHS Pub. No. (PHS) 82-1120. Public Health Service. Hyattsville, Md. Oct. 1982a.
- National Center for Health Statistics: The National Ambulatory Medical Care Survey, United States, 1979 Summary, by R. O. Gagnon, J. E. DeLozier, and T. McLemore. *Vital and Health Statistics*. Series 13-No. 66. DHHS Pub. No. (PHS) 82-1727. Public Health Service. Washington. U.S. Government Printing Office, Sept. 1982b.
- National Center for Health Statistics: Utilization of short-stay hospitals, Annual summary for the United States, 1980, by B. J. Haupt. *Vital and Health Statistics*. Series 13-No. 64. DHHS Pub. No. (PHS) 82-1725. Public Health Service. Washington. U.S. Government Printing Office, Mar. 1982c.
- National Center for Health Statistics: Blood pressure levels and hypertension in persons ages 6-74 years, United States, 1976-80, by M. Rowland and J. Roberts. *Advance Data From Vital and Health Statistics*. No. 84, DHHS Pub. No. (PHS) 82-1250. Public Health Service. Hyattsville, Md. Oct. 8, 1982d.
- National Heart and Lung Institute: *National Conference on High Blood Pressure Education, Report of Proceedings*. DHEW Pub. No. (NIH) 73-486. National Institutes of Health. Washington. U.S. Government Printing Office, 1973.
- National Institutes of Health: National Heart, Lung and Blood Institute. Multiple Risk Factor Intervention Trial. *JAMA* 248(12):1465-1477, Sept. 1982.
- Pooling Project Research Group: Relationship of blood pressure, serum cholesterol, smoking habit, relative weight and ECG abnormalities to incidence of major coronary events, Final report of the Pooling Project. *J. Chronic Dis.* 31(4):201-306, 1978.
- Rice, D. P.: Sex Differences in Mortality and Morbidity, Some Aspects of the Economic Burden. Paper presented at the Australian National University, United Nations, World Health Organization meeting on Sex Differentials in Mortality, Trends, Determinants, and Consequences. Canberra, Australia, Dec. 4, 1981.
- Shurtleff, D.: Some characteristics related to the incidence of cardiovascular disease and death. *The Framingham Study*. Section 30. DHEW Pub. No. (NIH) 74-599. National Institutes of Health. Washington. U.S. Government Printing Office, 1974.
- Stamler, J., Stamler, R., Riedlinger, W. F., et al.: Hypertension screening of 1 million Americans, Community Hypertension Evaluation Clinic (CHEC) Program, 1973 through 1975. *JAMA* 235(21):2299-2306, May 1976.
- Stross, J. K., and Harlan, W. R.: Dissemination of relevant information on hypertension. *JAMA* 246(4):360-362, July 1981.
- Warner, K. E.: Cigarette smoking in the 1970's, The impact of the antismoking campaign on consumption. *Science* 211(13):729-731, Feb. 1981.

Maternal Smoking and Drinking Behavior Before and During Pregnancy

by Kate Prager, Sc.D., National Center for Health Statistics; Henry Malin, Carol Graves, Ph.D., Danielle Spiegler, National Institute on Alcohol Abuse and Alcoholism; Louise Richards, Ph.D., National Institute on Drug Abuse; and Paul Placek, Ph.D., National Center for Health Statistics

Introduction

The Surgeon General has warned women about the hazards to the infants of mothers who smoke cigarettes or consume alcohol before or during pregnancy:

Smoking slows fetal growth, doubles the chance of low birth weight, and increases the risk of stillbirth. Recent studies suggest that smoking may be a significant contributing factor in 20 to 40 percent of low weight infants born in the United States and Canada. Studies also indicate that infants of mothers regularly consuming large amounts of alcohol may suffer from low birth weight, birth defects, and/or mental retardation. Clearly, both previously developed habits need careful attention during pregnancy. (Office of the Assistant Secretary for Health and the Surgeon General, 1979)

Excessive alcohol use is also associated with a pattern of abnormalities called Fetal Alcohol Syndrome (FAS). The National Institute on Alcohol Abuse and Alcoholism has reported to Congress:

Some clinical studies of alcoholic mothers and some animal studies give evidence that heavy use of alcohol during pregnancy may result in a pattern of various abnormalities in the offspring. . . . Current estimates conservatively suggest an incidence on the order of magnitude of 1 per 2,000 live births. Some evidence suggests that among 100 mothers drinking more than 1 ounce of absolute alcohol per day one might find one case of FAS. On this basis, FAS would be the third leading cause of birth defects associated with mental retardation, exceeded only by Down's syndrome and spina bifida. Of the three, only FAS is preventable. (Malin and Munch, 1980)

Although studies have reported a decrease in drinking (Little, Schultz, and Mandell, 1976; Stein and Kline, 1983) and smoking during pregnancy (Hook, 1976), they have been based on small numbers of women in selected localities. This article reports on changes in drinking and smoking behaviors during pregnancy for a national sample of married mothers who had live births in 1980. Variations in smoking and drinking are examined before and during pregnancy according to maternal race, Hispanic origin, age, and education.

Data source

Data used in this article are from the 1980 National Natality Survey. (See Appendix I.) About 6 months after delivery, a sample of married mothers of live-born infants were mailed a

questionnaire to assess social and demographic characteristics and prenatal health behavior, including smoking and drinking. (Unmarried mothers were not sent questionnaires because of confidentiality constraints in certain States.) This article is based on the 56 percent of married mothers who responded to the mail questionnaire (4,405 respondents), the only source of information on smoking and drinking practices before and during pregnancy.

Several things are important to note. The proportion of births to unmarried mothers varies widely by race, age, and other variables. For example, in the U.S. population nearly 90 percent of all white mothers are married but only 45 percent of black mothers are married. The smoking and drinking behaviors of unmarried mothers may differ from those of married mothers. It is also important to note that the data in this article are unweighted, but selected comparisons with weighted data did not reveal any serious differences.

Mothers were asked which national origin they identified with most. Nearly two-thirds of those who identified with the Hispanic origin reported their race as white. Approximately one-third reported their race as other than black or white, leaving about 1 percent reporting themselves as black. Therefore, in this article race and Hispanic ethnicity are not mutually exclusive categories.

Regarding smoking, mothers were asked, "On the average, how many cigarettes did you smoke per day before you found out that you were pregnant?" and "On the average, how many cigarettes did you smoke per day after you found out that you were pregnant?" Women who reported smoking one or more cigarettes per day were defined as smokers.

Regarding drinking, women were asked "Did you drink any alcoholic beverages (beer, wine, or liquor) during the 12 months before your 1980 delivery?" and, if yes, "How often did you usually drink alcoholic beverages; that is beer, wine, and/or liquor?" and "On the day or days that you drank, how much did you drink on the average per day?" Identical questions were asked for the periods before pregnancy and during pregnancy. Convenient check boxes with a wide range of possible responses were provided.

From responses to the above questions regarding drinking, alcohol consumption, defined as the average daily consumption of absolute alcohol expressed in ounces, is calculated as follows:

$$\begin{aligned} \text{alcohol consumption} &= \text{ounces of absolute alcohol consumed per day} \\ &\quad \text{on the average} \\ &= 0.5 \times \text{quantity factor} \times \text{frequency factor.} \end{aligned}$$

The factor of 0.5 ounces per drink is used to translate the questionnaire response to ounces of alcohol consumed. This is approximately the amount of absolute alcohol contained in one beer, one glass of wine, or one mixed drink. The quantity factor is the average number of drinks per drinking day. The frequency factor translates the answer to "How often do you drink?" into a proportion of the time that is spent drinking. A mother who had one drink three times a week or three drinks once a week would have had the same average daily consumption of alcohol.

Findings

Prepregnancy smoking and drinking behavior

Figure 1 shows the distribution of mothers according to both smoking and drinking. Before pregnancy, nearly one-third of mothers smoked and more than one-half drank. More than one-third of mothers abstained from both smoking and drinking, and one-fifth both smoked and drank. However, these behaviors varied substantially among different subgroups of mothers.

Smoking—The prevalence of smoking was higher among white mothers than among black mothers and other mothers (table A). Almost one-third of white mothers smoked before pregnancy, compared with about one-fourth and one-fifth of black and other mothers, respectively. Less than one-quarter of Hispanic mothers smoked.

Smoking prevalence decreased with age among white mothers. Nearly 1 out of 2 mothers under 20 years of age smoked, but about 1 out of 4 mothers 25 years of age and over smoked. Among all other mothers, the same pattern of decreased smoking with age prevailed.

Mothers under 20 years of age are excluded from the analysis by educational attainment because some of these mothers would not have had a chance to complete their education. The prevalence of smoking declined steadily with increased education among white mothers. Prevalence ranged from nearly 60 percent of mothers with less than 12 years of education to only 15 percent of those with 16 years or more. Among all other mothers, college graduates were the least likely to smoke, but no other differences by years of education were found.

Drinking—As with smoking, drinking was more common among white mothers than among black and other mothers. Nearly 58 percent of white mothers drank, compared with 39 percent and 35 percent of black and other mothers, respectively. Forty percent of Hispanic mothers drank.

Although smoking decreased with age and education for all mothers, drinking increased with age and education. Among white mothers, drinking increased from 42 percent for mothers with less than 12 years of education to 67 percent for mothers with 16 or more years of education. Among all other mothers, drinking was less prevalent for those 30 years of age and over but did not vary by education.

Smoking and drinking—About 22 percent of white mothers both smoked and drank, compared with about 14 percent of black mothers and 13 percent of all other mothers. The

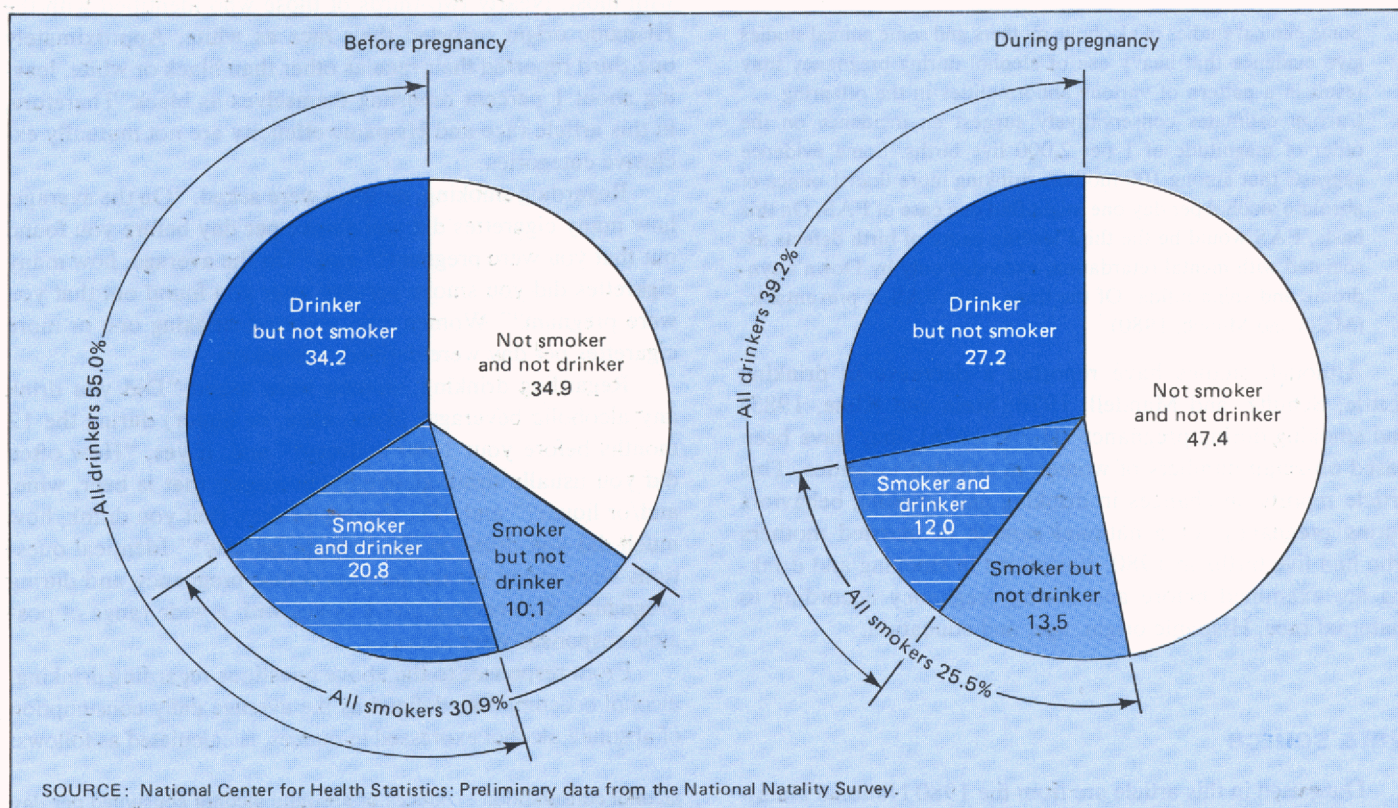


Figure 1. Percent distribution of married mothers of live-born infants, according to smoking and drinking behaviors before and during pregnancy: United States, 1980

Table A. Smoking¹ and drinking² behavior before pregnancy of married mothers of live-born infants, according to selected characteristics: United States, 1980

Characteristic	Number	Percent of mothers		Percent distribution				
		All smokers	All drinkers	Total	Not smoker and not drinker	Smoker but not drinker	Smoker and drinker	Drinker but not smoker
All married mothers	4,405	30.9	55.0	100.0	34.9	10.1	20.8	34.2
Race								
White	3,888	32.0	57.5	100.0	32.3	10.2	21.8	35.6
Black	250	24.8	39.2	100.0	49.6	11.2	13.6	25.6
Other ³	267	19.9	34.5	100.0	58.4	7.1	12.7	21.7
Hispanic origin								
Hispanic	253	23.3	39.9	100.0	51.0	9.1	14.2	25.7
Non-Hispanic	4,152	31.4	55.9	100.0	33.9	10.2	21.2	34.8
Age								
All races:								
Under 20 years	330	47.3	40.3	100.0	39.1	20.6	26.7	13.6
20-24 years	1,393	36.8	53.0	100.0	35.1	11.9	24.8	28.1
25-29 years	1,608	27.3	58.2	100.0	33.8	8.0	19.3	38.9
30-34 years	846	23.2	58.6	100.0	34.2	7.2	16.0	42.7
35 years and over	228	25.4	53.1	100.0	37.3	9.6	15.8	37.3
White:								
Under 20 years	282	48.9	40.4	100.0	38.3	21.3	27.7	12.8
20-24 years	1,239	37.9	54.2	100.0	33.5	12.3	25.7	28.6
25-29 years	1,442	27.9	60.5	100.0	31.8	7.8	20.2	40.3
30-34 years	740	24.9	63.4	100.0	29.2	7.4	17.4	45.9
35 years and over	185	27.6	57.8	100.0	31.9	10.3	17.3	40.5
All other: ³								
Under 20 years	48	37.5	39.6	100.0	43.8	16.7	20.8	18.8
20-24 years	154	27.3	42.9	100.0	48.1	9.1	18.2	24.7
25-29 years	166	21.7	38.6	100.0	51.8	9.6	12.0	26.5
30-34 years	106	11.3	25.5	100.0	68.9	5.7	5.7	19.8
35 years and over	43	16.3	32.6	100.0	60.5	7.0	9.3	23.3
Education ⁴								
All races:								
0-11 years	432	49.8	40.7	100.0	36.3	22.9	26.9	13.9
12 years	1,823	34.4	54.5	100.0	35.1	10.4	24.0	30.5
13-15 years	936	25.0	59.4	100.0	33.2	7.4	17.6	41.8
16 years or more	884	14.5	63.9	100.0	33.9	2.1	12.3	51.6
White:								
0-11 years	332	57.2	41.9	100.0	30.4	27.7	29.5	12.3
12 years	1,666	35.7	56.2	100.0	33.1	10.6	25.0	31.2
13-15 years	827	25.3	62.6	100.0	30.5	6.9	18.4	44.3
16 years or more	781	14.7	67.3	100.0	31.1	1.5	13.2	54.2
All other: ³								
0-11 years	100	25.0	37.0	100.0	56.0	7.0	18.0	19.0
12 years	157	21.7	36.3	100.0	55.4	8.3	13.4	22.9
13-15 years	109	22.9	34.9	100.0	54.1	11.0	11.9	22.9
16 years or more	103	12.6	37.9	100.0	55.3	6.8	5.8	32.0

¹Smokers are those who smoked at least 1 tobacco cigarette per day.

²Drinkers are those who consumed at least 1 drink (0.5 oz. of absolute alcohol) once a month.

³Includes all other races not shown separately.

⁴Includes mothers who are 20 years of age and over.

SOURCE: National Center for Health Statistics: Preliminary data from the National Natality Survey.

prevalence of the combination of behaviors decreased with age and education for both white mothers and all other mothers.

Abstinence—Abstinence from smoking and drinking before pregnancy was much higher among black and other mothers than among white mothers. One-half of black mothers, nearly three-fifths of other mothers, but less than one-third of white mothers abstained before pregnancy. More than one-half of Hispanic mothers abstained.

Through 30-34 years of age, abstinence increased with age for other mothers and decreased with age for white mothers but varied little by educational attainment.

Typically, smokers were white mothers under 25 years of age with a high school education or less, and drinkers were white mothers 25 years of age and over with more than a high school education. Younger white mothers and white mothers with 12 years of education or less were most likely to consume

both alcohol and cigarettes. Hispanic mothers, black mothers, and other mothers were most likely to abstain and least likely to either smoke or drink.

Change in smoking and drinking behavior during pregnancy

Mothers were much more likely to stop drinking than to stop smoking during pregnancy (table B). Of those who had the habit before pregnancy, 30 percent stopped drinking and 18 percent stopped smoking. Of mothers who both smoked and drank prior to pregnancy, 43 percent gave up either cigarettes or alcohol or both, reducing the prevalence of both habits from 1 out of 5 pregnant women to 1 out of 8 (figure 1). Twenty percent of mothers with either of these habits before pregnancy

became abstinent during pregnancy, increasing the prevalence of abstinence from 1 out of 3 to 1 out of 2 mothers.

Change in smoking—No significant differences by age, race, or Hispanic origin were found in the proportion who stopped smoking. However, educational attainment was directly related to the tendency to stop smoking. Of white mothers who smoked, the proportion who stopped during pregnancy ranged from 10 percent for mothers with the least education to 24 percent for mothers with the most education. Thus, the difference between the highest and lowest educational groups in the prevalence of smoking became even greater during pregnancy than it was before.

Change in drinking—White mothers who drank were not as likely to stop drinking as were other mothers. For mothers under 35 years, the age of the mothers who drank was inversely

Table B. Change in smoking¹ and drinking² behavior during pregnancy of married mothers of live-born infants, according to selected characteristics: United States, 1980

Characteristic	With 1 or both habits			With both habits and stopped 1 or both
	Stopped smoking	Stopped drinking	Became abstinent	
	Percent of mothers			
All married mothers.....	17.6	29.6	19.6	43.1
Race				
White.....	17.7	29.0	19.1	42.9
Black.....	12.9	37.8	26.2	35.3
Other ³	20.8	37.0	23.4	55.9
Hispanic origin				
Hispanic.....	25.4	27.7	20.2	50.0
Non-Hispanic.....	17.3	29.7	19.6	42.8
Age ⁴				
All races:				
Under 20 years.....	19.9	39.1	17.4	54.5
20-24 years.....	17.4	33.2	19.1	46.5
25-29 years.....	18.0	29.5	21.3	41.2
30-34 years.....	18.9	22.4	18.5	33.3
35 years and over.....	6.9	28.1	17.5	36.1
White:				
Under 20 years.....	20.3	39.5	17.2	55.1
20-24 years.....	17.0	32.4	18.4	45.9
25-29 years.....	18.1	29.5	21.2	41.6
30-34 years.....	19.6	21.3	17.7	33.3
35 years and over.....	7.8	25.2	15.9	34.4
Education ^{4,5}				
All races:				
0-11 years.....	9.8	29.5	9.5	40.5
12 years.....	16.9	30.8	19.3	42.0
13-15 years.....	21.8	25.2	20.0	40.0
16 years or more.....	24.2	29.7	25.5	45.9
White:				
0-11 years.....	10.0	30.2	9.5	39.8
12 years.....	16.5	30.2	18.6	41.7
13-15 years.....	23.0	24.5	19.7	40.8
16 years or more.....	24.3	28.5	24.5	44.7

¹Smokers are those who smoked at least 1 tobacco cigarette per day.

²Drinkers are those who consumed at least 1 drink (0.5 oz. of absolute alcohol) once a month.

³Includes all other races not shown separately.

⁴For all other races, number of cases was too few to meet standards for precision or reliability.

⁵Includes mothers who are 20 years of age and over.

SOURCE: National Center for Health Statistics: Preliminary data from the National Natality Survey.

related to the tendency to stop drinking. For example, of white mothers under 35 years who drank, the older the mother the smaller the proportion who stopped drinking. However, there were no significant differences by education in the proportion who stopped drinking.

Change in behavior of mothers who smoked and drank— Mothers who both smoked and drank before pregnancy were more likely to give up alcohol than cigarettes during pregnancy. Of these mothers, 43 percent of white mothers and 35 percent of black mothers gave up one or both behaviors during pregnancy, compared with 56 percent of other mothers. Half the Hispanic mothers stopped one or both habits during pregnancy (table B).

Percent becoming abstinent—Of mothers who either smoked or drank or had both habits before pregnancy, about 1 out of 5 became abstinent during pregnancy.

Quantity and frequency of cigarettes and alcohol consumed

Table C shows the changes in amount of smoking and drinking after pregnancy was confirmed. Of the 31 percent of mothers who smoked before pregnancy, most smoked more than 10 cigarettes per day. About 12 percent of these stopped smoking during pregnancy, and an additional 27 percent reduced their consumption. In addition, nearly one-third of those who smoked 1–10 cigarettes per day stopped smoking during pregnancy. The prevalence of those who smoked more than 10 cigarettes per day dropped to about 14 percent during pregnancy, and the prevalence of nonsmokers increased from 69 percent before pregnancy to 75 percent during pregnancy.

Fifty-five percent of mothers drank before pregnancy, but only 16 percent drank three drinks or more per week. About 17 percent of these stopped their drinking during pregnancy, and another 65 percent reduced their consumption. In addition, one-third of those who consumed less than three drinks per

week stopped drinking altogether during pregnancy. The prevalence of women drinking three or more drinks per week dropped to only 3 percent during pregnancy, while the prevalence of nondrinkers increased from 45 percent before pregnancy to 61 percent during pregnancy.

Conclusion

This article has shown major differences in smoking and drinking by maternal race, Hispanic origin, age, and education. However, certain limitations of the data should be noted. First, it is important to emphasize that these differences are based on married mothers only. Since the proportions of births to unmarried mothers vary substantially by these same variables, the differences in smoking and drinking should not be generalized to all mothers. Second, the response rate to the mail questionnaire was only 56 percent. If nonresponding mothers are more likely to be smokers or drinkers, the estimates presented here will be low. Finally, mothers may have underreported their behavior because of guilt feelings aroused by media campaigns to persuade them to reduce smoking and drinking during pregnancy. If so, the estimates of smoking and drinking could be considered minimum estimates.

Despite these limitations, however, the results obtained here for married mothers' smoking and drinking behaviors before pregnancy are similar to those for the general population of women in the reproductive ages 15–44 years (National Center for Health Statistics, 1979; National Institute on Alcohol Abuse and Alcoholism, 1982a and 1982b; Malin, Hartsock, and Frank, 1982). When pregnancy is confirmed, reductions in smoking and drinking occur. Although the prevalence of drinking is much higher than the prevalence of smoking among mothers included in the survey, the reduction in drinking is much more pronounced than the reduction in smoking. This is opposite to what might have been expected. Media messages have documented the deleterious effects of maternal smoking

Table C. Smoking and drinking behavior during pregnancy of married mothers of live-born infants, according to level of behavior before pregnancy: United States, 1980

Behavior	Before pregnancy		During pregnancy			
	Number	Percent distribution	Total	None	Level 1	Level 2
Average daily smoking						
All behaviors.....	4,405	100.0	100.0	74.5	12.0	13.5
None ¹	3,044	69.1	100.0	99.9	0.1	0.0
1–10 cigarettes (Level 1).....	412	9.4	100.0	31.3	65.8	2.9
11 cigarettes or more (Level 2).....	949	21.5	100.0	11.8	26.8	61.4
Average weekly drinking						
All behaviors.....	4,405	100.0	100.0	60.9	35.9	3.2
None ²	1,981	45.0	100.0	99.1	0.8	0.1
Less than 3 drinks (Level 1) ³	1,741	39.5	100.0	34.5	64.6	0.9
3 drinks or more (Level 2) ⁴	683	15.5	100.0	17.4	64.6	18.0

¹Did not smoke even 1 cigarette a day.

²Consumed less than 1 drink (0.5 oz. of absolute alcohol) less than once a month.

³Consumed 0.01–0.19 oz. absolute alcohol each day on the average.

⁴Consumed 0.19 oz. or more absolute alcohol each day on the average.

SOURCE: National Center for Health Statistics: Preliminary data from the National Natality Survey.

for two decades, while messages concerning the hazards of maternal drinking have been more recent and more modest. However, it is likely that giving up nicotine is more difficult than giving up alcohol (Eysenck, 1973). Given the levels of smoking and drinking observed in this study, smoking may have been more deleterious to the fetus than drinking.

Since smoking is usually a daily habit, a strong physiological and psychological dependency can be created. Most of the mothers in this survey who smoked did so daily, and most of the mothers who drank did so less frequently. In fact, the largest number of mothers who drank consumed the weekly equivalent of only one or two drinks. Apparently, drinking three or more alcoholic beverages per week was extremely rare among the women in this survey. Therefore, alcohol addiction probably was not a factor for the majority of drinking mothers and may have accounted in part for the larger reduction in drinking than smoking. Furthermore, one study suggested that moderate to heavy drinkers may decrease their drinking during pregnancy because alcohol becomes distasteful or causes adverse physiological effects (Little, Schultz, and Mandell, 1976).

Studying the smoking and drinking behavior of pregnant women is the first step in researching the effects of maternal behavior on fetal growth, development, and survival. The next step, already underway, is to explore the effects of smoking and drinking on pregnancy outcome. In these analyses, sociodemographic factors must be carefully controlled to rule out their confounding effects.

References

- Eysenck, H. J.: Personality and the Maintenance of the Smoking Habit, in W. L. Dunn, ed., *Smoking Behavior, Motives and Incentives*. Washington. Winston and Sons, 1973. pp. 113-146.
- Hook, E. B.: Changes in Tobacco Smoking and Ingestion of Alcohol and Caffeinated Beverages During Early Pregnancy—Are These Consequences, in Part, of Feto-Protective Mechanisms Diminishing Maternal Exposure to Embryotoxins?, in S. Kelly, E. B. Hook, and P. Janerich, eds., *Birth Defects, Risks and Consequences*. New York. Academic Press, 1976.

- Little, R. E., Schultz, F. A., and Mandell, W.: Drinking during pregnancy. *J. Stud. Alcohol* 37(3):375-379, 1976.
- Malin, H., Hartsock, P., and Frank, J.: Alcohol Use and Abuse Among U.S. Hispanics and in Latin American Countries, Working Paper No. 61. Alcohol Epidemiologic Data System. Contract No. ADM 281-79-0012. Prepared for the National Institute on Alcohol Abuse and Alcoholism, Alcohol, Drug Abuse, and Mental Health Administration. Rockville, Md., Sept. 1982.
- Malin, H. J., and Munch, N. E.: *Implicated Alcohol and Disease Entities, Alcohol as a Risk Factor in the Nation's Health*. Report of the Alcohol Epidemiologic Data System. Contract No. ADM 281-79-0012. Prepared for the National Institute on Alcohol Abuse and Alcoholism, Alcohol, Drug Abuse, and Mental Health Administration. Rockville, Md., Mar. 28, 1980.
- National Center for Health Statistics: Changes in cigarette smoking and current smoking practices among adults, United States, 1978, by A. J. Moss. *Advance Data From Vital and Health Statistics*. No. 52. DHEW Pub. No. (PHS) 79-1250. Public Health Service. Hyattsville, Md. Sept. 19, 1979.
- National Institute on Alcohol Abuse and Alcoholism: Alcohol use and alcohol problems among U.S. adults, Results of the 1979 national survey, by W. B. Clark and L. Midanik. *Alcohol and Health Monograph No. 1, Alcohol Consumption and Related Problems*. DHHS Pub. No. (ADM) 82-1190. Alcohol, Drug Abuse, and Mental Health Administration. Washington. U.S. Government Printing Office, 1982a.
- National Institute on Alcohol Abuse and Alcoholism: An Epidemiologic Perspective on Alcohol Use and Abuse in the United States, H. Malin, J. Coakley, and C. Kaelber. *Alcohol and Health Monograph No. 1, Alcohol Consumption and Related Problems*. DHHS Pub. No. (ADM) 82-1190. Alcohol, Drug Abuse, and Mental Health Administration. Washington. U.S. Government Printing Office, 1982b.
- Office of the Assistant Secretary for Health and the Surgeon General: *Healthy People, The Surgeon General's Report on Health Promotion and Disease Prevention, 1979*. DHEW Pub. No. (PHS) 79-55071. Public Health Service. Washington. U.S. Government Printing Office, July 1979.
- Stein, Z., and Kline, J.: Smoking, alcohol and reproduction. *Am. J. Public Health* 73(10):1154-1156, 1983.

Employment Characteristics of Mothers During Pregnancy

by Diane Makuc, Dr.P.H., National Center for Health Statistics, and Nina Lalich, National Institute for Occupational Safety and Health

Introduction

Reproductive hazards in the workplace are receiving more attention as the number of women in the work force increases. In 1960, 38 percent of women over 15 years of age were employed. By 1980, this figure had increased to 52 percent (U.S. Bureau of the Census, 1981). The proportion of married women employed increased at an even greater rate, from 32 percent in 1960 to 51 percent in 1980. Married women with children accounted for most of this increase. Among married women with children 6–17 years of age, the proportion employed rose from 39 percent in 1960 to 62 percent in 1980. Among married mothers with younger children, the proportion employed more than doubled from 19 percent in 1960 to 45 percent in 1980.

Excess numbers of adverse pregnancy outcomes have been observed among workers in several occupational groups, but it has been difficult to attribute these excesses to specific substances (Strobino, Kline, and Stein, 1978). Women may be exposed to a variety of potentially harmful substances at work, including substances that can cause abnormal development of the fetus. These substances, known as teratogens, include physical, biological, and chemical agents.

Although many environmental agents have been identified as teratogens in mammals, only a few have been confirmed as teratogens in humans. These include alcohol, ionizing radiation, biological agents such as the rubella virus, and pharmaceuticals such as thalidomide, dilantin, and diethylstilbestrol (DES) (Wilson, 1973; Shepard, 1980). Few human teratogens have been identified because the effects of teratogens on the human fetus are extremely varied and often difficult to measure. Teratogens can cause spontaneous abortions, malformations, low birth weight, stillbirth, neonatal death, developmental disabilities, and childhood cancer (Strobino, Kline, and Stein, 1978). A single hazardous agent may operate by different mechanisms to produce a variety of outcomes. Variation in the amount of exposure or the timing of exposure in relation to the development of the fetus also may lead to different adverse outcomes.

Associations between specific occupational exposures and adverse pregnancy outcomes have usually been demonstrated by studying women in workplaces where certain exposures are known to occur. For example, a study of women in the plastics industry who were exposed to styrene and viscose rayon found an excess number of spontaneous abortions (Hemminki, Fransilla, and Vainio, 1980). Studies of hospital operating room personnel and other workers exposed to waste anesthetic

gases have found associations between anesthetic gases and spontaneous abortions, congenital malformations, and low birth weight (Cohen et al., 1974; Pharoah et al., 1977). Other studies have shown an increased incidence of congenital malformations among laboratory technicians (Meirik et al., 1979) and women exposed to organic solvents during pregnancy (Holmberg, 1979).

In addition to exposures encountered in traditionally female occupations, women face new exposures as they take jobs that traditionally employ men. For example, the number of women in blue-collar jobs increased 20 percent between 1975 and 1980, from 4.7 million to 5.7 million (U.S. Bureau of the Census, 1981).

Changing female work patterns and mounting evidence of associations between maternal employment and pregnancy outcomes point to a need to monitor more closely the work patterns of women during pregnancy. This article examines the work experience of pregnant women, using data from the 1980 National Natality Survey conducted by the National Center for Health Statistics.

Data sources and limitations

Data used in this article are from the 1980 National Natality Survey (NNS). (See Appendix I.) Of the 7,825 married mothers with live births in the sample, nearly 80 percent (6,223) responded to questions on maternal employment, including whether the mother worked at any time during the 12 months before delivery and a description of the mother's chief job activity during that period. Questions also were asked about employment dates and weekly hours worked at the chief job activity. All tabulations in this article are based on the 6,223 married respondents in the sample. These were weighted up to national estimates of 2,944,580 married mothers who had live births in 1980. Unmarried mothers were not included in the survey because of confidentiality constraints in certain States.

The percent of pregnant mothers exposed at work to teratogens cannot be estimated directly because NNS lacks data on occupational exposures to specific hazards. However, adverse exposures among pregnant workers can be estimated indirectly by (1) identifying chemical and physical hazards known to be human or animal teratogens, (2) identifying occupations and industries where the teratogens have been observed, and (3) estimating the number of married mothers employed in these occupations and industries during pregnancy. Since all workers in a particular occupation or industry do not have the same

exposures, this approach does not estimate the number of pregnant workers with actual teratogenic exposures. Instead, this approach estimates the percent of employed mothers who worked in jobs where teratogens have been observed by using NNS and two data bases from the National Institute for Occupational Safety and Health (NIOSH), the National Occupational Hazard Survey (NOHS)¹ (National Institute for Occupational Safety and Health, 1974) and the teratogen subfile of the Registry of Toxic Effects of Chemical Substances² (National Institute for Occupational Safety and Health, 1977).

The teratogens selected for study include three physical agents and seven chemicals. The chemicals were chosen from 132 chemical compounds that appear in both NIOSH data bases. The analysis in this article is restricted to the compounds in this group that were classified in 1979 by NIOSH teratologists as "recognized animal teratogens" and have uses other than pharmaceutical. To be classified as "recognized," the teratogens were required to have positive findings from at least two different laboratories and in at least two different mammalian species. Three chemicals classified as "recognized human teratogens" are used only as drugs and are therefore excluded. By using data from NOHS, it is possible to identify the occupations and industries where the selected teratogens have been observed. The distribution of NNS respondents employed in those occupations and industries is used to estimate the percent of employed married mothers working in jobs similar to those where the selected teratogens were observed.

¹This survey was conducted by NIOSH from 1972 to 1974 on a probability sample of 4,636 businesses employing nearly 900,000 workers. Its purpose was to determine the potential for worker exposure to chemical and physical agents by identifying those agents present in the work area.

²This data base is a compilation of published chemical toxicological and related data, with information on almost 34,000 chemicals with positive toxic effects, primarily in animals.

Because questionnaires were sent only to married mothers, no data are available on the employment characteristics of unmarried mothers. While only 13 percent of white mothers surveyed were unmarried, 60 percent of black mothers were unmarried. Thus, results for black mothers should be interpreted very cautiously.

Eight percent of the women who responded were under 20 years of age, 68 percent were 20–29 years, and 24 percent were 30 years of age and over. Because of the small number of married mothers under 20 years of age and the basic differences in teenage employment, detailed tabulations are not presented for this age group. However, some overall data on teenage mothers are presented in the text. In addition, because only 7 percent of NNS respondents were black, less detailed calculations are presented for black than for white mothers.

Results

Labor force participation

Among married mothers with live births during 1980, 63 percent of those 20 years of age and over worked at some time during the 12 months before delivery (table A). Among teenage married mothers, labor force participation was lower—35 percent for those 15–17 years of age, and 57 percent for mothers 18–19 years of age. The lower labor force participation of teenagers is at least partially explained by school enrollment. Among mothers 15–17 years of age, 46 percent attended school during their pregnancy; among mothers 18–19 years of age, 20 percent attended school. Labor force participation during pregnancy also varied by live-birth order, mother's race, mother's education, and interval since a previous live birth. After controlling for these variables, differences in the percent employed by age are minimal among women 20 years and over.

The number of previous children is the major factor determining whether a woman works before delivery. White

Table A. Married mothers 20 years of age and over employed at any time during 12 months before delivery, according to selected characteristics: United States, 1980

Live-birth order and interval since last live birth	Total ¹	Race		Education for white women ²		
		White	Black	Less than 12 years	12 years	More than 12 years
		Percent employed				
Live-birth order						
All birth orders	63.2	63.0	66.6	40.4	61.7	71.1
1st child	85.1	85.7	82.9	59.3	82.8	91.3
2d child	57.0	56.1	69.6	49.6	54.5	59.7
3d child or more	42.6	40.5	55.2	28.4	43.0	45.9
Interval						
2d child:						
More than 2 years	60.3	59.2	74.5	52.1	57.8	63.2
2 years or less	45.0	45.0	*46.6	*34.1	43.9	48.2
3d child or more:						
More than 2 years	44.9	43.0	57.6	29.7	44.7	49.8
2 years or less	33.6	31.9	*43.2	*25.4	34.9	31.7

¹Includes all other races not shown separately.

²For white women only; numbers for other women too few to meet standards of reliability or precision.

SOURCE: National Center for Health Statistics: Preliminary data from the National Natality Survey.

women having a first child in 1980 were 50 percent more likely than those with one other child to work during the 12 months before delivery and were twice as likely to work as those with two or more previous children. Black and white women having a first child were about equally likely to work. However, black women with at least one previous child were more likely to work than white women with comparable live-birth order.

The percent of white mothers who work during pregnancy also differs substantially according to mother's education. Comparable results are not shown for black mothers because of the small number of black mothers in the survey. Regardless of live-birth order, the percent employed during pregnancy increases with years of education. The differences are greatest between those with less than a high school education and other mothers. For example, among mothers having their first child in 1980, 59 percent of those with less than a high school education were employed, compared with 83 percent of high school graduates and 91 percent with education beyond high school.

Finally, employment before delivery varies according to the interval since a previous live birth. Mothers whose previous live birth occurred more than 2 years before were more likely to work than mothers with a more recent live birth, regardless of live-birth order, race, or education.

Full-time and blue-collar employment

Among married mothers who worked during the 12 months before delivery, 72 percent 20 years of age and over and 58 percent under 20 had full-time jobs, working at least 35 hours per week. The percent of mothers employed full time varies for characteristics other than age, but the variation is less than that shown for labor force participation (table B). Among those 20 years of age and over employed before delivery, 82 percent of the black mothers worked full time. The percent remained essentially the same regardless of live-birth order. In addition, among employed white mothers, 82 percent of those with no previous children worked full time. However, only 61 percent

of pregnant white mothers with one child and 55 percent of those with two or more children worked full time.

The percent of white mothers employed full time also varies with education for mothers with one or more previous children. Less educated mothers were more likely to work full time than the more educated. Education differentials in full-time employment could result from fewer opportunities for part-time employment among less educated women, different reasons for working, and differences in salaries received.

To study variation in type of employment by maternal characteristics, it is helpful to define two occupation classes. The first group, white-collar jobs, includes professional and technical workers, managers, sales workers, and clerical workers. The second group, including all other occupational categories, is labeled blue-collar, farm, and service jobs (abbreviated to blue-collar jobs in subsequent text).

Among employed married mothers over 20 years of age, 28 percent held blue-collar jobs in 1980 (table B). Almost half (47 percent) of employed teenage mothers were blue-collar workers. The percent of employed mothers with blue-collar jobs varies according to education, live-birth order, and mother's race. As expected, mother's education is the most important variable in determining occupation class. White mothers over 20 years of age with less than a high school education were more than twice as likely as mothers with a high school education and more than five times as likely as mothers with more than a high school education to work in blue-collar jobs. After controlling for education among white mothers, those with no previous children were less likely to hold blue-collar jobs than mothers with two or more children. Black mothers were more likely to hold blue-collar jobs than white mothers.

Occupation and industry

The trend toward increasing numbers of women in the workplace has been accompanied by the movement of women into a greater diversity of jobs (U.S. Bureau of the Census,

Table B. Employment characteristics of married mothers 20 years of age and over employed at any time during 12 months before delivery, according to race, education, and live-birth order: United States, 1980

Live-birth order	Total ¹	Race		Education for white women ²		
		White	Black	Less than 12 years	12 years	More than 12 years
Percent employed full time ³						
All birth orders	71.9	70.4	82.2	72.8	71.5	68.6
1st child	81.8	81.5	84.7	81.5	82.7	80.2
2d child	63.4	60.7	82.5	77.8	62.8	54.5
3d child or more	60.2	55.0	79.6	60.5	57.6	48.8
Percent employed in blue-collar, service, or farm jobs						
All birth orders	28.1	26.7	41.9	72.2	33.6	12.4
1st child	20.9	20.2	27.8	58.5	28.6	10.5
2d child	30.9	30.4	37.0	71.5	34.5	15.7
3d child or more	42.0	39.4	58.6	82.8	45.1	13.5

¹Includes all other races not shown separately.

²For white women only; numbers for other women too few to meet standards of reliability or precision.

³Employed at least 35 hours per week.

SOURCE: National Center for Health Statistics: Preliminary data from the National Natality Survey.

1981). Despite this trend, employed mothers are found primarily in jobs traditionally dominated by women. The occupation and industry percent distributions for the mother's chief job activity during the 12 months before delivery are shown in tables C and D. National estimates of the numbers of married mothers employed in each occupation and industry are also shown.

About 39 percent of employed mothers worked in clerical or similar jobs, mainly secretarial work (13 percent) (table C). Professional, technical, and similar workers made up 22 percent of employed mothers, with teachers (7 percent) and registered nurses (4 percent) accounting for half. Fifteen percent were employed in some service occupation. The majority of them were food service workers (6 percent) or health service workers (4 percent). The remaining employed mothers worked as operatives (10 percent), managers and administrators (5 percent), sales workers (4 percent), craftsmen (2 percent), laborers or farmers (2 percent), or some other occupation (1 percent).

The industries that employ pregnant women are concentrated in a few categories (table D). The largest employers were professional and related services (32 percent); wholesale and retail trade (22 percent); manufacturing (15 percent); and finance, insurance, and real estate (10 percent). Among the mothers employed in professional services, almost half (15 per-

Table C. Married mothers employed at any time during 12 months before delivery, according to occupation: United States, 1980

Occupation	Employed married mothers	
	Percent distribution	Number in thousands
Total	100.0	1,826
Professional, technical, and kindred workers	21.9	400
Registered nurses	4.2	77
Health technologists and technicians	1.6	29
Social and recreation workers	0.9	16
Preschool, elementary, and secondary teachers	7.4	135
Writers, artists, and entertainers	1.0	18
Managers and administrators, except farm	5.3	97
Sales workers	3.9	71
Sales clerks, retail trade	1.9	35
Clerical and kindred workers	39.3	717
Bookkeepers	3.8	69
Cashiers	6.1	111
Office machine operators	2.2	40
Receptionists, secretaries, stenographers, and typists	13.0	237
Craftsmen and kindred workers	1.8	33
Operatives, except transport	9.5	173
Assemblers	1.9	35
Seamstresses, sewers, and stitchers	1.9	35
Laborers, except farm	1.2	22
Farm workers	0.9	16
Service workers	15.1	276
Cleaning service workers	1.3	24
Food service workers	6.1	111
Health service workers	4.1	75
Barbers and hairdressers	1.7	31
Other	1.1	20

SOURCE: National Center for Health Statistics: Preliminary data from the National Natality Survey.

Table D. Married mothers employed at any time during 12 months before delivery, according to industry: United States, 1980

Industry	Employed married mothers	
	Percent distribution	Number in thousands
Total	100.0	1,826
Agriculture, forestry, and fisheries	1.5	27
Construction	1.1	20
Manufacturing	15.4	281
Metal industries	1.3	24
Machinery, except electrical	1.8	33
Electrical machinery and equipment	1.9	35
Textile mill products	1.0	18
Apparel and other textile products	2.2	40
Printing, publishing, and allied industries	1.2	22
Transportation, communication, and other public utilities	4.0	73
Transportation	1.7	31
Communication	1.8	33
Wholesale and retail trade	21.9	400
Wholesale trade	1.9	35
Eating and drinking places	6.3	115
Finance, insurance, and real estate	9.7	177
Business and repair services	3.1	57
Personal services	4.7	86
Hotels and other lodging places	1.5	27
Beauty and barber shops	1.7	31
Professional and related services	32.2	588
Offices of dentists and physicians	2.3	42
Hospitals	9.2	168
Convalescent institutions	2.2	40
Other health services	1.4	26
Elementary and secondary schools	10.9	199
Colleges and universities	1.4	26
Religious, welfare, and nonprofit organizations	2.0	37
Public administration	5.6	102
Other	0.9	16

SOURCE: National Center for Health Statistics: Preliminary data from the National Natality Survey.

cent) were employed in the health industry and two-fifths (12 percent) were employed in educational institutions.

Potential exposure to teratogens at work

An estimated 314,000 married mothers in the United States, 17 percent of those employed before delivery, worked in jobs similar to those where one or more selected teratogens were observed in the NOHS. Of the seven chemicals that were defined as teratogens, salicylic acid, methyl salicylate, and halothane were the most frequently observed in occupations held by married mothers. All three substances are commonly used in medical professions, but workers in many nonmedical occupations also have the potential for exposure to these compounds. Salicylic acid is used in the treatment of skin conditions, as a fungicide, an analytical reagent, and a precursor in the manufacture of aspirin and related compounds (Van Nostrand Reinhold, Co., 1977). Methyl salicylate, which may cause extreme poisoning when ingested, is used medically as a counterirritant (Merck and Co., Inc., 1976). Halothane is an anesthetic gas used in operating rooms. The percent of employed

mothers working in jobs where these substances were observed and some of their occupations and industries are as follows:

- *Salicylic acid* was observed in occupations held by 11.2 percent or an estimated 204,000 employed married mothers. Some of these mothers worked as (1) nurses, technicians, aides, administrators, and cleaners in the health services industry; (2) assembly line workers, inspectors, and machine operators in certain manufacturing industries; and (3) hairdressers.
- *Methyl salicylate* was observed in occupations held by 10.9 percent or an estimated 199,000 employed married mothers. Some of these mothers were (1) nurses, technicians, aides, food service workers, and cleaners in the health services industry; and (2) assembly line workers, packers, machine operators, and clerical workers in certain manufacturing industries.
- *Halothane* was observed in occupations held by 6.3 percent or an estimated 115,000 employed married mothers. Some of these mothers worked as (1) physicians, nurses, technicians, and aides in hospitals; (2) animal caretakers and health technicians in agricultural services.

Occupations and industries with potential exposures to four other chemical teratogens were also identified. These teratogens are lead nitrate, lead acetate, sodium arsenite, and trypan blue. The percent of employed married mothers in jobs with potential exposures to these chemicals was less than 1 percent for each compound.

Occupations and industries with potential exposures to each of three physical hazards also were identified. The percent of employed married mothers working in jobs where these substances were observed are as follows:

- *X-rays* were observed in occupations held by 10.7 percent or an estimated 195,000 employed married mothers. The occupations and industries of these mothers included (1) physicians, nurses, therapists, technicians, aides, and typists in the health services industry; (2) assembly line workers, inspectors, and machine operators in manufacturing industries.
- *Ionizing radiation other than X-rays* was observed in occupations held by 8.4 percent or an estimated 153,000 employed married mothers. Among the occupations and industries of these mothers were (1) physicians, nurses, technicians, secretaries, and aides in the health services industry; (2) assembly line workers, inspectors, and machine operators in certain manufacturing industries.
- *Elevated temperature* was observed in occupations held by 1 percent or an estimated 18,000 employed married mothers. Some of these mothers worked as (1) therapists in hospitals; (2) laborers, machine operators, welders, and solderers in certain manufacturing industries.

Months employed during pregnancy

Another maternal employment characteristic of interest is the length of employment during the pregnancy. Although a complete work history during pregnancy is not available from

NNS, information is available on the dates of employment for the mother's chief job activity. Of the 3,870 married mothers who worked at some time during the 12 months before delivery, 2,546 reported that they were employed during the first month of their pregnancy. The remaining mothers either started working at their chief job activity closer to their delivery date (12 percent), stopped working at their chief job before their pregnancy (3 percent), or had dates missing (20 percent).

Among white-collar workers who were employed at their chief job activity during the first month of pregnancy, 91 percent were employed at the same job at the beginning of the second trimester, 78 percent at the beginning of the third trimester, and 41 percent were still employed at the start of the ninth month of pregnancy (figure 1). Each of the comparable percents for blue-collar workers was lower, with the difference increasing in the later months. By the ninth month of pregnancy, only 22 percent of blue-collar workers were still working. The differences between white-collar and blue-collar workers probably reflect greater job stability and fewer physical demands associated with white-collar jobs.

Conclusion

Previous studies have identified a number of reproductive hazards in the workplace. This article has described the employment patterns of a representative national sample of married women who had live births in 1980. Employment characteristics before delivery differ substantially according to live-birth order; maternal age, race, and education; and interval since previous live birth.

The percent employed before delivery was greatest for women without previous children and with education beyond high school. Black mothers with previous children were more likely to work than white mothers with the same number of children, and women with a live-birth interval greater than 2 years were more likely to work than those with a more recent birth. Among employed white mothers, a greater percent of the less educated worked full time and worked in blue-collar jobs. Black mothers were more likely than white mothers to hold blue-collar jobs and to work full time. White-collar workers were more likely than blue-collar workers to remain employed at their chief job activity as their pregnancy progressed; by the ninth month of pregnancy, the percent still employed was twice as high for white-collar jobs as for blue-collar jobs. Of the women who worked at any time during the year before delivery, an estimated 17 percent or 314,000 mothers worked in industries and occupations with potential teratogenic exposures.

A limitation of the results presented in this article is that they are based on married respondents to NNS with live births. The response rate to NNS among married mothers was 80 percent; but response was lower for black mothers, teenage mothers, and those without a high school education. The omission of unmarried mothers has serious implications, especially regarding the results for black mothers. About 60 percent of black mothers were unmarried. Because of the large percent of unmarried black mothers and the greater nonresponse among married black mothers, employment data were collected on only 25 percent of sampled black mothers, compared with 71

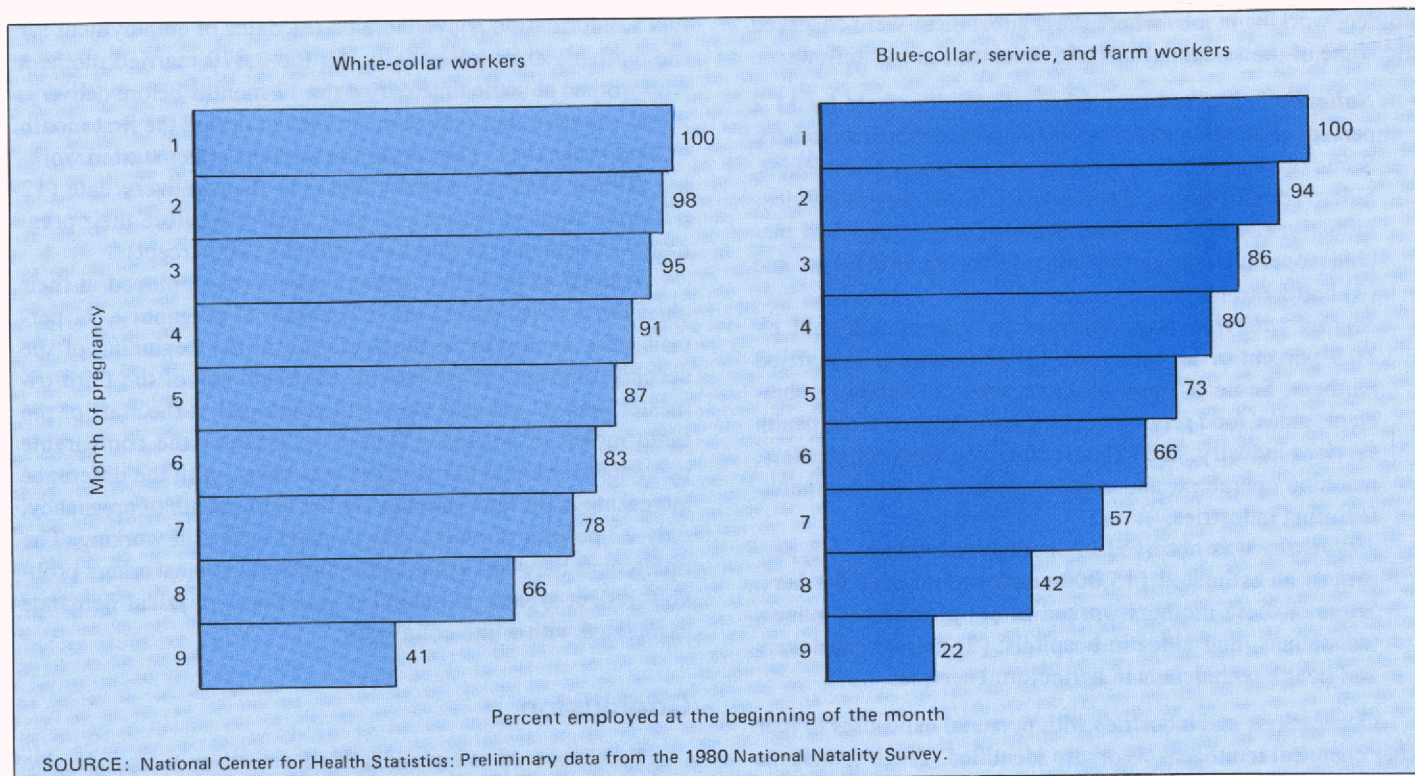


Figure 1. Percent of married mothers 20 years of age and over employed at the beginning of each month of pregnancy among those employed during the 1st month of pregnancy, according to type of employment: United States, 1980

percent of sampled white mothers. Thus, the generalizability of the results for black mothers is limited.

Even though the NNS data on employment characteristics are based only on married respondents, results on the percent employed are consistent with data from the U.S. Bureau of the Census, which found that 66 percent of women 20–44 years of age were employed in 1980 (U.S. Bureau of the Census, 1981). This is similar to the NNS result that 63 percent of married women 20 years of age and over were employed at any time during the 12 months before delivery.

Other previously cited data from the U.S. Bureau of the Census indicate that women's labor force participation increased dramatically between 1960 and 1980, especially among married women with children. Earlier studies conducted by the National Center for Health Statistics in 1963 and 1973 show that employment during pregnancy has also increased (National Center for Health Statistics, 1968 and 1980).

Among married women having a first child in 1963, 58 percent worked during pregnancy. Employment increased slightly to 61 percent for married women with a first pregnancy in 1970–73 and then increased even more to 79 percent in 1980. Among women with at least one other child, the percent employed during pregnancy has more than doubled between 1963 and 1980. In 1963, only 22 percent of these mothers worked during pregnancy. This increased to 32 percent for 1970–73 and then to 50 percent in 1980. These data indicate that dramatic increases in labor force participation during pregnancy have occurred since 1963 and that the greatest increases have occurred during the past decade and for mothers who have at least one other child. The social and economic implications of these changes have received a great deal of attention,

but few research studies provide definitive evidence about the effects of working on the mother or child.

One issue that has been studied is the adverse health effects resulting from exposures of pregnant women to harmful substances in the workplace. It is important to monitor this expanding segment of the work force to ensure early detection of adverse effects on pregnancy outcome as new chemicals are introduced to the occupational environment. Animal testing cannot provide the only basis for developing safeguards against adverse occupational exposures during pregnancy because only a small portion of chemicals have been tested. Of the 4–5 million registered chemical compounds in existence today, toxicity data are available for only about 100,000 chemicals; more than 45,000 of these have exhibited positive toxic effects ranging from skin irritation to cancer (National Institute for Occupational Safety and Health, 1982).

This article estimated the percent of pregnant workers employed in industries and occupations similar to those where specific teratogens had been observed during NOHS. This procedure gives an approximation of possible adverse exposures among pregnant workers. It was estimated that approximately 314,000 married mothers in the United States held jobs with potential exposures to selected teratogens in 1980. Many other chemicals show some evidence of human or animal teratogenicity but do not meet the selection criteria for this analysis. Furthermore, NOHS does not provide adequate coverage of certain workers, for example farmers, so that potential exposure to chemicals such as herbicides and pesticides is underrepresented. In addition, because the NOHS took place from 1972 through 1974, certain exposures observed in that survey may not apply to the 1980 NNS respondents. New industrial

applications for some chemical and physical agents may have been introduced since that time. The use of other agents may be more restricted or better controlled, especially those, like X-rays and halothane, which are now known to have adverse health effects in humans.

The results presented here document the large numbers of women who work at some time during pregnancy. Future analyses of NNS (together with other surveys) will investigate the relationship between maternal employment and adverse pregnancy outcomes such as fetal death and low birth weight. In addition, further study by public and occupational health researchers and the obstetric community is needed to increase our knowledge of the effects of specific occupational exposures during pregnancy.

References

- Cohen, E. N., Brown, B. W., Bruce, D. L., et al.: Occupational disease among operating room personnel, A national study. *Anesthesiology* 41(4):321-340, Oct. 1974.
- Hemminki, K., Fransilla, E., Vainio, H.: Spontaneous abortion among female chemical workers in Finland. *Int. Arch. Occup. Envir. Health* 45(2):123-126, Feb. 1980.
- Holmberg, P. C.: Central nervous system defects in children born to mothers exposed to organic solvents during pregnancy. *Lancet* 2(8135):177-179, July 1979.
- Meirik, O., Kallen, B., Gauffin, U., and Ericson, A.: Major malformations in infants born to women who worked in laboratories while pregnant. *Lancet* 2(8133):91, July 1979.
- Merck and Co., Inc.: *The Merck Index, An Encyclopedia of Chemicals and Drugs*. 9th Edition. Rahway, N.J. Merck and Co., Inc., 1976.
- National Center for Health Statistics: Employment during pregnancy, Legitimate live births, United States, 1963, by M. G. Kovar. *Vital and Health Statistics*. Series 22-No. 7. DHEW Pub. No. (PHS) 1000. Public Health Service. Washington. U.S. Government Printing Office, 1968.
- National Center for Health Statistics: Patterns of employment before and after childbirth, United States, by L. L. Bumpass and J. A. Sweet. *Vital and Health Statistics*. Series 23-No. 4. DHEW Pub. No. (PHS) 80-1980. Public Health Service. Washington. U.S. Government Printing Office, 1980.
- National Institute for Occupational Safety and Health: *National Occupational Hazard Survey*. Volume 1, Survey Manual. DHEW Pub. No. (NIOSH) 74-127. National Institute for Occupational Safety and Health. Cincinnati, Ohio, May 1974.
- National Institute for Occupational Safety and Health: *Registry of Toxic Effects of Chemical Substances*. DHEW Pub. No. (NIOSH) 78-104-A. National Institute for Occupational Safety and Health. Washington. U.S. Government Printing Office, Sept. 1977.
- National Institute for Occupational Safety and Health: *Registry of Toxic Effects of Chemical Substances*. 1980 Edition, Vol. 1. DHHS Pub. No. (NIOSH) 81-116. National Institute for Occupational Safety and Health. Washington. U.S. Government Printing Office, Feb. 1982.
- Pharoah, P., Alberman, E., Doyle, P., Chamberlain, G.: Outcome of pregnancy among women in anesthetic practice. *Lancet* 1(8001):34-36, Jan. 1977.
- Shepard, T. H.: *Catalog of Teratogenic Agents*. Baltimore. The Johns Hopkins University Press, 1980.
- Strobino, B. R., Kline, J., and Stein, Z.: Chemical and physical exposures of parents, Effects on human reproduction and offspring. *Journal of Early Human Development* 1(4):371-399, Feb. 1978.
- U.S. Bureau of the Census: *Statistical Abstract of the United States, 1981*. 102d Edition. Washington. U.S. Government Printing Office, Dec. 1981.
- Van Nostrand Reinhold, Co.: *The Condensed Chemical Dictionary*. 9th Edition. New York. Van Nostrand Reinhold, Co., 1977.
- Wilson, J. G.: *Environment and Birth Defects*. New York. Academic Press, 1973.

Variation in Use of Obstetric Technology

by Joel C. Kleinman, Ph.D., Margaret Cooke, Steven Machlin, National Center for Health Statistics, and Samuel S. Kessel, M.D., National Institute of Child Health and Human Development

Introduction

In recent years, the development and use of high technology diagnostic techniques has increased in all medical specialties. This increase has been especially rapid in obstetric and newborn care. Many techniques for information gathering and risk assessment that were unavailable a few years ago are now frequently used in the management of pregnancy and delivery (Office of Technology Assessment, 1978).

The spread of technology in medicine has raised several concerns. For example, the training of medical personnel to use new technology properly may have lagged behind the acquisition of equipment in some areas (Office of Technology Assessment, 1978). Furthermore, because the applications of the technology are constantly evolving and expanding, it is difficult for physicians to keep abreast of the most appropriate uses for some procedures. A concern also exists that sophisticated medical technologies may be overused. Finally, another concern especially important in prenatal care is that the new technologies may tend to depersonalize medical care (Office of Technology Assessment, 1978).

In general, the proliferation of new medical technology follows a certain diffusion pattern. Initially, tests are developed and used in university hospital centers. Usually other urban hospitals will follow and begin to use the procedures. Finally, the technology spreads to rural areas.

This article focuses on the use of four prenatal diagnostic techniques in the United States: amniocentesis, ultrasound, X-rays, and electronic fetal monitoring. It describes differentials by race and location of mother's residence in the application of these procedures to pregnant women with live births in 1980.

Data source

The data were obtained from the 1980 National Natality Survey (NNS), which is the first nationally representative survey to provide information on obstetric practices for mothers with live births in the United States. Information was collected from a variety of sources including the birth certificate, the mother, the hospital of delivery, the attendant at delivery, the physician providing prenatal care, and other providers of radiation examinations and treatments.

Data for this article are based on responses from different combinations of NNS sources. The month prenatal care began was obtained from birth certificates of all 9,941 births in the NNS (excluding the 309 births with this item omitted on the certificate). Information on amniocentesis, ultrasound, and

X-ray was obtained from the hospital and physician questionnaires. Data on ultrasound and X-rays are limited to the 5,343 births for which responses were received from all sources of care (3,980 with both physician and hospital responses, 1,334 with hospital response but no physician source indicated on birth certificate, and 29 with physician response but no hospital source). The data for amniocentesis are based on the 4,893 births with responses from all sources of care and responses to the amniocentesis item. Information on electronic fetal monitoring was obtained from the 7,504 births with responses to the hospital questionnaire, which was the only questionnaire to include this item.

Prenatal care

The use of prenatal diagnostic technology requires the entry of the pregnant woman into the health care delivery system. Only 1 percent of mothers had no prenatal care. However, differences were significant in the timing of care (table A). Overall, a larger proportion of white mothers than black mothers began prenatal care in the first trimester of pregnancy (80 percent and 65 percent, respectively).

Women living in southern States and in nonmetropolitan areas were less likely to receive early prenatal care. Black women in southern nonmetropolitan areas have especially low use; only 57 percent received early prenatal care compared with 67 percent in southern metropolitan areas.

Of the four technologies reviewed, amniocentesis, ultra-

Table A. Mothers beginning prenatal care in first trimester of pregnancy, according to race and location of residence: United States, 1980

Location of residence	Race		
	All races	White	Black
	Percent of mothers		
All locations	77.9	80.4	65.0
Metropolitan	79.2	81.7	67.7
South	76.4	80.3	66.5
Other regions	80.3	82.1	68.7
Nonmetropolitan	75.3	78.1	56.9
South	71.4	76.3	56.6
Other regions	78.4	79.2	*

NOTE: Based on 9,632 births with month prenatal care began stated on birth certificate.

SOURCE: National Center for Health Statistics: Preliminary data from the National Natality Survey.

sound, and X-ray are usually performed before labor while electronic fetal monitoring (EFM) is usually done during labor. However, under certain circumstances ultrasound may be used during labor and EFM during the prenatal period.

Amniocentesis

Amniocentesis is performed by inserting a needle through the abdominal wall into the uterus to obtain a sample of the amniotic fluid surrounding the fetus. An ultrasound examination is recommended before amniocentesis to guide the insertion of the needle (National Institute of Child Health and Human Development, 1979). A laboratory culture and examination of the fluid and cell sample can detect chromosomal abnormalities, metabolic disorders, and associated physical abnormalities of the fetus.

Since the early 1970's, midtrimester amniocentesis (at about 16 weeks of gestation) has been an accepted part of genetic counseling for assessment of fetal conditions. The safety and efficacy of amniocentesis have been established by several reviews (National Institute of Child Health and Human Development, 1978). The 1979 Consensus Development Conference on Antenatal Diagnosis sponsored by the National Institute of Child Health and Human Development defined several categories of pregnant women who should be offered amniocentesis for prenatal genetic diagnosis. The largest category consists of women 35 years of age and over.

Amniocentesis is also used to help determine fetal maturity when an induced delivery or cesarean section is being considered and the date of conception is uncertain. This type of amniocentesis is performed during the final weeks of pregnancy. Unfortunately, it is not possible to determine from NNS data whether amniocentesis was performed for prenatal genetic diagnosis or for fetal age determination.

Since mothers 35 years of age and over are more likely than younger mothers to have babies with chromosomal abnormalities, it has been recommended that they receive amniocentesis for prenatal diagnosis (National Institute of Child Health and Human Development, 1979). Data from the 1980 NNS indicate that 30 percent of white mothers and 17 percent of black mothers 35 years of age and over received amniocentesis (table B). Rates for specific geographic areas are not sta-

tistically reliable for black mothers in this age group because of the small number of these women in the survey. However, the rates for white mothers did vary significantly. Among white mothers 35 years of age and over in metropolitan areas, amniocentesis was done only half as frequently in the South as in other parts of the country (21 versus 39 percent). Furthermore, white mothers in metropolitan areas outside the South received amniocentesis more often than their counterparts in the non-metropolitan areas. For white mothers in the South, there was no significant difference between metropolitan and nonmetropolitan areas. Approximately 5 percent of both white and black mothers under 35 years of age received amniocentesis during pregnancy. Geographic differences in use were not significant.

The results of several other studies are reasonably consistent with those presented in this article. A recent report on use of amniocentesis for prenatal diagnosis in New York in 1980 also found lower rates of use in nonmetropolitan areas (Hook and Schreinemachers, 1983).

A 1977-78 study of women 35 years of age and over in Alabama, California, Nebraska, and in Manhattan found low rates of amniocentesis for chromosomal diagnosis in rural areas for black women and women 40 years of age and over (Adams et al., 1981). Use of the procedure varied from 6 percent in Nebraska to 29 percent in Manhattan. The rate for Manhattan in this study is lower than the 41 percent found for the New York City metropolitan area in the 1980 New York study, perhaps reflecting the less widespread use during the earlier time period.

Finally, a 1978 Georgia study of women 40 years of age and over at delivery found 15 percent received amniocentesis for prenatal genetic diagnosis (Sokal et al., 1980). As in NNS, geographic and racial variations were evident, with particularly low use among rural black women.

Ultrasound

The technique of ultrasound in obstetrics permits the physician to view the reproductive organs, the embryo, the fetus, the placental implantation site, the uterus, and some fetal structures with little or no discomfort to the pregnant or potentially pregnant woman. At the levels used in obstetrics, ultrasound has no known adverse side effects and can be used in place of diagnostic

Table B. Mothers receiving amniocentesis during pregnancy, according to age, race, and location of residence: United States, 1980

Location of residence	Under 35 years			35 years and over		
	All races	White	Black	All races	White	Black
	Percent of mothers					
All locations	3.9	3.8	5.0	29.0	30.0	16.7
Metropolitan	4.0	3.7	5.4	33.0	34.8	*
South	4.1	4.5	3.3	23.5	20.6	*
Other regions	3.9	3.5	6.8	35.7	38.5	*
Nonmetropolitan	3.8	3.8	4.0	22.0	22.0	*
South	3.5	3.6	3.6	18.5	19.5	*
Other regions	4.1	3.9	*	25.0	24.0	*

NOTE: Based on 4,893 births with responses to the item on amniocentesis on the hospital or physician questionnaire.

SOURCE: National Center for Health Statistics: Preliminary data from the National Natality Survey.

X-ray procedures (National Institute of Child Health and Human Development, 1979). Its use expanded significantly during the late 1970's. In fact, some obstetricians and some pregnant women now regard it as a procedure routinely done during pregnancy (Harvard Medical School, 1983). However, because obstetric ultrasound has been used for a relatively short period of time, the long-term effects cannot be assessed.

According to the 1980 NNS, nearly one-third of all pregnant women received at least one ultrasound examination at some time in their pregnancy (table C). Among white mothers, there were no significant differences in use by region but metropolitan residents were more likely than nonmetropolitan residents to receive an ultrasound exam (32 versus 25 percent). Black mothers in metropolitan areas outside the South had the highest proportion receiving ultrasound (39 percent). Although use in the South was much lower for black mothers, metropolitan residents were still more likely than nonmetropolitan residents to receive an ultrasound examination (30 versus 19 percent).

Regardless of race or residence, about half the ultrasound examinations were for fetal age determination and less than 5 percent were for amniocentesis guidance. The remainder were for reasons such as diagnosis of multiple pregnancy and con-

firmation of fetal life. Most ultrasound examinations were performed after the first 3 months of pregnancy.

Medical X-rays

Medical X-rays are used during pregnancy to diagnose obstetric complications, such as inadequate pelvic dimensions, as well as for reasons not related to pregnancy, such as a suspected fracture. However, the improper use of X-rays during pregnancy may produce genetic damage in the vulnerable fetus. Although the exact radiation dosage that causes fetal damage is unknown, the greatest potential for fetal damage from X-rays is believed to occur in the early part of pregnancy. Therefore, women are generally advised to avoid radiation exposure during pregnancy, particularly during the first 3 months (Cooke and Dworkin, 1979).

In the past, the use of X-rays during pregnancy was more extensive than is currently considered safe. Ultrasound is now considered a potential X-ray replacement for such obstetric purposes as determination of fetal age, fetal position, and multiple pregnancy. In the future, ultrasonography may be used to diagnose an even wider range of obstetric conditions. If the long-term safety of ultrasound is established, it may replace X-rays as an obstetric diagnostic technique for pregnant women.

Thirteen percent of the NNS sample received a medical X-ray during pregnancy (table D). The percent of white mothers with one or more X-rays during pregnancy is slightly larger in nonmetropolitan than in metropolitan areas (16 versus 12 percent). This difference is even larger for black women; those living in the rural South were twice as likely to be X-rayed as those in urban areas (17 versus 8 percent). In metropolitan areas, black women were less likely to be X-rayed than were white women (8 versus 12 percent).

An attempt was made to identify those X-ray procedures for which ultrasound could have been used. This group, labeled as "Potential ultrasound" in table D, includes X-rays for determination of fetal position, fetal age, and multiple pregnancy. Approximately one-third of the mothers with an X-ray could have potentially received ultrasound instead (table D). Reasons for the remaining X-rays included assessment of pelvic dimen-

Table C. Mothers with at least 1 ultrasound procedure during pregnancy, according to race and location of residence: United States, 1980

Location of residence	Race		
	All races	White	Black
	Percent of mothers		
All locations	29.3	29.1	30.6
Metropolitan	32.0	31.6	34.9
South	31.1	31.7	29.8
Other regions	32.4	31.6	38.6
Nonmetropolitan	24.2	24.5	19.0
South	22.3	23.1	18.5
Other regions	25.6	25.4	*

NOTE: Based on 5,343 births with complete responses from medical sources.

SOURCE: National Center for Health Statistics: Preliminary data from the National Natality Survey.

Table D. Mothers with at least 1 medical X-ray during pregnancy, according to reason for X-ray, race, and location of residence: United States, 1980

Location of residence	All reasons			Potential ultrasound		
	All races	White	Black	All races	White	Black
	Percent of mothers					
All locations	13.1	13.5	10.8	4.9	4.9	4.5
Metropolitan	11.8	12.4	8.3	3.9	4.1	2.4
South	12.2	12.9	8.0	4.3	4.1	3.4
Other regions	11.7	12.3	8.5	3.8	4.1	1.7
Nonmetropolitan	15.5	15.3	17.4	6.8	6.3	10.1
South	16.8	16.6	16.9	8.5	7.8	10.2
Other regions	14.6	14.6	*	5.5	5.4	*

NOTE: Based on 5,343 births with complete responses from medical sources.

SOURCE: National Center for Health Statistics: Preliminary data from the National Natality Survey.

sions, obstetric complications, chest X-rays, and trauma. Most of the X-rays (about 80 percent), however, took place during the last trimester when risks to the fetus are lower. Incidentally, about 5 percent of the mothers in the survey received a dental X-ray during pregnancy.

Geographic and racial variation also occurred in the proportions receiving X-rays for procedures for which ultrasound potentially could have been substituted. Overall, about 5 percent of all mothers received such X-rays but black mothers showed much greater geographic variation than white mothers. Ten percent of the black mothers in the nonmetropolitan South received X-rays when ultrasound potentially could have been used, compared with only 3 percent in southern metropolitan areas.

In summary, mothers in nonmetropolitan areas received X-rays more frequently for procedures that might have been accomplished through ultrasound than did mothers in metropolitan areas. The more extensive use of X-rays in nonmetropolitan areas is consistent with the finding that a smaller proportion of these mothers received ultrasound. These results suggest that obstetric ultrasound may not be available in some nonmetropolitan areas.

Electronic fetal monitoring

Electronic fetal monitoring (EFM) is a procedure usually used during labor to monitor the fetal heart rate and the strength and frequency of uterine contractions. EFM may also be used for various tests during the prenatal period. During labor, EFM is used to detect patterns in the fetal heart rate that indicate insufficient oxygen and blood are reaching the infant's brain, which could lead to brain damage or death (National Institute of Child Health and Human Development, 1979).

Monitoring can be either external or internal. In external monitoring, sensors are placed on the woman's abdomen. Later in labor, part of the external monitor can be replaced by an electrode attached to the head of the fetus. This procedure, internal monitoring, is more invasive but is generally considered more accurate than external monitoring (National Institute of Child Health and Human Development, 1979).

EFM has become a controversial procedure for several reasons. Some authors have suggested that false indications of fetal distress from EFM are frequent, leading to many unnecessary cesarean section deliveries (Banta and Thacker, 1980). Whether this is true remains questionable. Still others are concerned about the intrusion of yet another technology in what is usually a natural and uncomplicated delivery (National Institute of Child Health and Human Development, 1979).

The 1979 Consensus Development Conference on Antenatal Diagnosis concluded that evidence of benefit from EFM is not clear in low-risk patients but that its use should be strongly considered in high-risk patients. The Office of Technology Assessment concluded, however, that "although many believe that electronic fetal monitoring is useful, its relative efficacy and benefit have not been established" (Office of Technology Assessment, 1978).

Information from NNS indicates that in 1980 about one-half of both the white and black mothers in the survey received

Table E. Mothers with electronic fetal monitoring during labor, according to race and location of residence: United States, 1980

Location of residence	Race		
	All races	White	Black
	Percent of mothers		
All locations	47.2	47.1	47.6
Metropolitan	51.8	51.1	54.7
South	50.4	49.6	53.4
Other regions	52.3	51.6	55.6
Nonmetropolitan	38.8	40.2	29.3
South	37.9	40.4	29.1
Other regions	39.4	40.1	*

NOTE: Based on 7,504 births with responses from hospitals.

SOURCE: National Center for Health Statistics: Preliminary data from the National Natality Survey.

EFM (table E). About 51 percent of the white mothers in metropolitan areas received EFM, compared with 40 percent in nonmetropolitan areas. The use of EFM for white mothers is about the same in the South as in other regions. The use of EFM by black women in metropolitan areas (55 percent) was similar to use by white women. However, black women in the nonmetropolitan South received EFM much less often than black women in urban areas (29 versus 55 percent).

Conclusion

The 1980 National Natality Survey is the first source of national data on the use of amniocentesis, ultrasound, and electronic fetal monitoring during pregnancy and delivery. The data presented in this report indicate that these obstetric technologies, which became available for general use in the 1970's, were used in the management of many pregnancies by 1980.

While amniocentesis is largely regarded as a recommended procedure for pregnant women 35 years of age and over, about 30 percent of the women surveyed in this age group received amniocentesis. Furthermore, this study found that this procedure was used less frequently among black women and among women in rural areas, as has been found in two other studies (Adams et al., 1981; Sokal et al., 1980).

In contrast to amniocentesis which has reasonably clear guidelines for use, the indications for ultrasound use are still changing. The 1979 Consensus Development Conference on Antenatal Diagnosis recommended limited use of ultrasound because its long-term effects on the fetus are unknown. Yet the National Natality Survey of the following year shows that about 30 percent of the mothers received at least one ultrasound examination during pregnancy. Even if ultrasound waves pose no danger, routine use of ultrasound may risk the "possibility that a normal image will be misinterpreted and inappropriate action taken" (Harvard Medical School, 1983). Furthermore, routine use of ultrasound will inevitably raise the cost of prenatal care. It should be noted that ultrasound is an evolving field, making it difficult to formulate long-lasting guidelines (National Institute of Child Health and Human Development, 1979).

An important benefit of the development of obstetric ultra-

sonography has been the ability to use ultrasound to perform some obstetric examinations during pregnancy that previously required an X-ray. Nevertheless, 13 percent of mothers had at least one X-ray in 1980. Furthermore, the use of X-rays during pregnancy is more frequent in rural than in urban areas and is, as might be expected, negatively correlated with the use of ultrasound. This pattern suggests that ultrasound may not yet be available in some rural areas.

In 1980, about 50 percent of the women received EFM, which is the most frequently used fetal technology discussed in this report. A primary concern associated with routine use of EFM is that it may contribute to a rise in the rate of unnecessary cesarean section deliveries (Banta and Thacker, 1979). As for amniocentesis and ultrasound, the frequency of EFM in rural areas is lower than in urban areas. Race differentials in use occur only in the rural South, where black women are less likely to receive EFM than white women.

The data presented in this report suggest that black women (especially in the South) and women in rural areas have less access to prenatal care and these obstetric technologies. The results are consistent with other studies showing lower utilization of medical care in nonmetropolitan areas, the South, and among black people (especially in the South). For example, ambulatory care utilization is considerably lower for residents of nonmetropolitan areas than for those of metropolitan areas (National Center for Health Statistics, 1981a). In general, black people and people in nonmetropolitan areas have lower utilization of dental services (National Center for Health Statistics, 1981b). For certain age groups, black people have lower rates of surgery than white people and the largest race differentials are in the South (National Center for Health Statistics, 1980).

The fetal technologies discussed in this article were developed to improve pregnancy outcomes but concerns have been expressed over the intrusion of technology into the natural birthing process (National Institute of Child Health and Human Development, 1979). On the other hand, the use of these technologies may reduce anxiety for many women. For example, the use of amniocentesis by women 35 years of age and over and other high-risk women reduces the concern about possible fetal abnormalities (Roghmann and Doherty, 1983). A positive side effect of ultrasound is that the procedure allows the parents to view the fetus and thereby may accelerate parental bonding with the fetus early in the pregnancy (Fletcher and Evans, 1983).

The data presented here show marked differentials in the use of four obstetric technologies according to mother's race and residence. However, these data alone cannot be used to determine whether a procedure is used appropriately, inappropriately, too frequently, or not frequently enough. The costs, risks, and benefits of these procedures need further evaluation. Determination of standards of care most often require carefully conducted clinical trials, well beyond the scope of the survey from which these data were derived. Nevertheless, knowledge

of the extent to which these procedures are used is an important consideration in planning future studies and understanding the process of diffusion of medical technology.

References

- Adams, M. M., Finley, S., Hansen, H., et al.: Utilization of prenatal genetic diagnosis in women 35 years of age and older in the United States, 1977. *Am. J. Obstet. Gynecol.* 139(6):673-677, Mar. 1981.
- Banta, D., and Thacker, S.: Assessing the costs and benefits of electronic fetal monitoring. *Obstet. Gynecol. Surv.* 34(8):627-642, Aug. 1979.
- Cooke, C. W., and Dworkin, S.: *The Ms. Guide to a Woman's Health*. New York. Doubleday and Co., Inc., 1979.
- Fletcher, J. C., and Evans, M. I.: Maternal bonding in early fetal ultrasound examinations. *New Engl. J. Med.* 308(7):392-393, Feb. 17, 1983.
- Harvard Medical School: Ultrasound in pregnancy. *The Harvard Medical School Health Letter* VIII(8):5-6, June 1983.
- Hook, E. B., and Schreinemachers, D. M.: Trends in utilization of prenatal cytogenetic diagnosis by New York State residents in 1979 and 1980. *Am. J. Public Health* 73(2):198-202, Feb. 1983.
- National Center for Health Statistics: Regional and income differentials in surgery, by S. R. Machlin and J. C. Kleinman. *Health, United States, 1980*. DHHS Pub. No. (PHS) 81-1232. Public Health Service. Washington. U.S. Government Printing Office, Dec. 1980.
- National Center for Health Statistics: Medical care use in nonmetropolitan areas, by J. C. Kleinman. *Health, United States, 1981*. DHHS Pub. No. (PHS) 82-1232. Public Health Service. Washington. U.S. Government Printing Office, Dec. 1981a.
- National Center for Health Statistics: Use of dental services. *Health, United States, 1981*, by J. E. Foster, S. R. Machlin, and J. C. Kleinman. DHHS Pub. No. (PHS) 82-1232. Public Health Service. Washington. U.S. Government Printing Office, Dec. 1981b.
- National Institute of Child Health and Human Development: *The Safety and Accuracy of Mid-Trimester Amniocentesis, The NICHD Amniocentesis Registry*. DHEW Pub. No. (NIH) 78-190. National Institutes of Health. Washington. U.S. Government Printing Office, 1978.
- National Institute of Child Health and Human Development: *Antenatal Diagnosis*. Report of the Consensus Development Conference. NIH Pub. No. 79-1973. National Institutes of Health. Washington. U.S. Government Printing Office, Apr. 1979.
- Office of Technology Assessment: *Assessing the Efficacy and Safety of Medical Technologies*. OTA-H-75. Washington. U.S. Government Printing Office, Sept. 1978.
- Roghmann, K. J., and Doherty, R. A.: Reassurance through prenatal diagnosis and willingness to bear children after age 35. *Am. J. Public Health* 73(7):760-762, July 1983.
- Sokal, D. C., Byrd, J. R., Chen, A. T. L., et al.: Prenatal chromosomal diagnosis, racial and geographic variation for older women in Georgia. *JAMA* 244(12):1355-1357, Sept. 19, 1980.

Maternal and Infant Characteristics Associated With Cesarean Section Delivery

by Paul J. Placek, Ph.D., Selma M. Taffel, and Kenneth G. Keppel, Ph.D., National Center for Health Statistics

Introduction

Only a decade ago, cesarean section delivery of an infant was relatively infrequent. Usually, it was performed when the mother or infant could not physically withstand the stress of vaginal delivery or the fetus was in serious distress. In recent years, however, the number and rate of cesarean deliveries have increased dramatically at a time when many women are asking their physicians to make their deliveries as "natural" as possible. This has focused attention on cesarean section delivery. This report examines maternal and infant characteristics associated with cesarean section delivery, based on 1972 and 1980 data from national surveys of maternal and infant health.

Methods

In 1972, the National Center for Health Statistics conducted the National Natality Survey (NNS), which sampled 1 of every 500 live births to married mothers in the United States. Questionnaires were sent to all married mothers, physicians, and hospitals named on certificates of live birth. These potential respondents were "followed back" through a nationwide mail survey to expand the amount of information reported through the National Vital Statistics System.

In 1980, the Center again conducted this survey and expanded the scope to include all infants, not just infants born to married mothers. However, the methodologies for the two surveys were similar in most other ways. The 1980 NNS is discussed further in the Technical Appendix. The 1972 NNS has been extensively described in other publications (National Center for Health Statistics, 1977 and 1978).

Data on type of delivery were obtained from the hospital questionnaires in both the 1972 and 1980 surveys. In 1972, 85 percent of the 5,632 hospital deliveries had completed hospital questionnaires, compared with 79 percent of the 9,842 hospital deliveries in 1980.

Findings

The percent of married women delivering their babies by cesarean section more than doubled from 1972 to 1980, as cesarean section deliveries of live births increased from 7 percent in 1972 to 17 percent in 1980 (table A). This steady increase in the rate during the 1970-80 period has been verified in other studies (National Center for Health Statistics, 1980;

Table A. Percent distribution of live births to married mothers in hospitals, according to type of delivery: United States, 1972 and 1980

Type of delivery	Year	
	1972	1980
	In thousands	
All deliveries	2,818	2,921
	Percent distribution	
Total	100.0	100.0
Spontaneous ¹	52.7	62.0
Forceps	36.8	17.8
Cesarean section	7.3	17.2
Breech	2.3	0.9
All other	0.9	2.1

¹Spontaneous birth is one in which the entire fetus is expelled by natural forces of labor without traction or manipulation other than support of the body of the fetus.

SOURCE: National Center for Health Statistics: Final data from the 1972 National Natality Survey and preliminary data from the 1980 National Natality Survey.

Placek and Taffel, 1980, 1981, and 1982). Reasons for this increase include the following:

- An effort by physicians to reduce the number of particularly difficult forceps deliveries because of the high risk of birth injury to the fetus.
- The growing reluctance of obstetricians to deliver breech babies (e.g., buttocks first) vaginally because of high perinatal mortality and morbidity among these births (National Institute of Child Health and Human Development, 1981; Placek and Taffel, 1983).
- The policy of repeating cesarean section deliveries after a woman's first delivery by cesarean section because of concern about rupturing the first cesarean scar (Taffel and Placek, 1983; Marieskind, 1979).

Cesarean section rates for 1972 and 1980 can be compared according to maternal characteristics (figure 1). A twofold to threefold increase in the cesarean section rate occurred for almost all maternal characteristics examined. For example, 6.6 per 100 deliveries to married mothers under 20 years of age in 1972 were by cesarean section, compared with 13.9 per 100 in 1980.

Comparisons in the cesarean rate can also be made according to infant characteristics (figure 2). As with mothers, a twofold to threefold increase is observed for a variety of infant

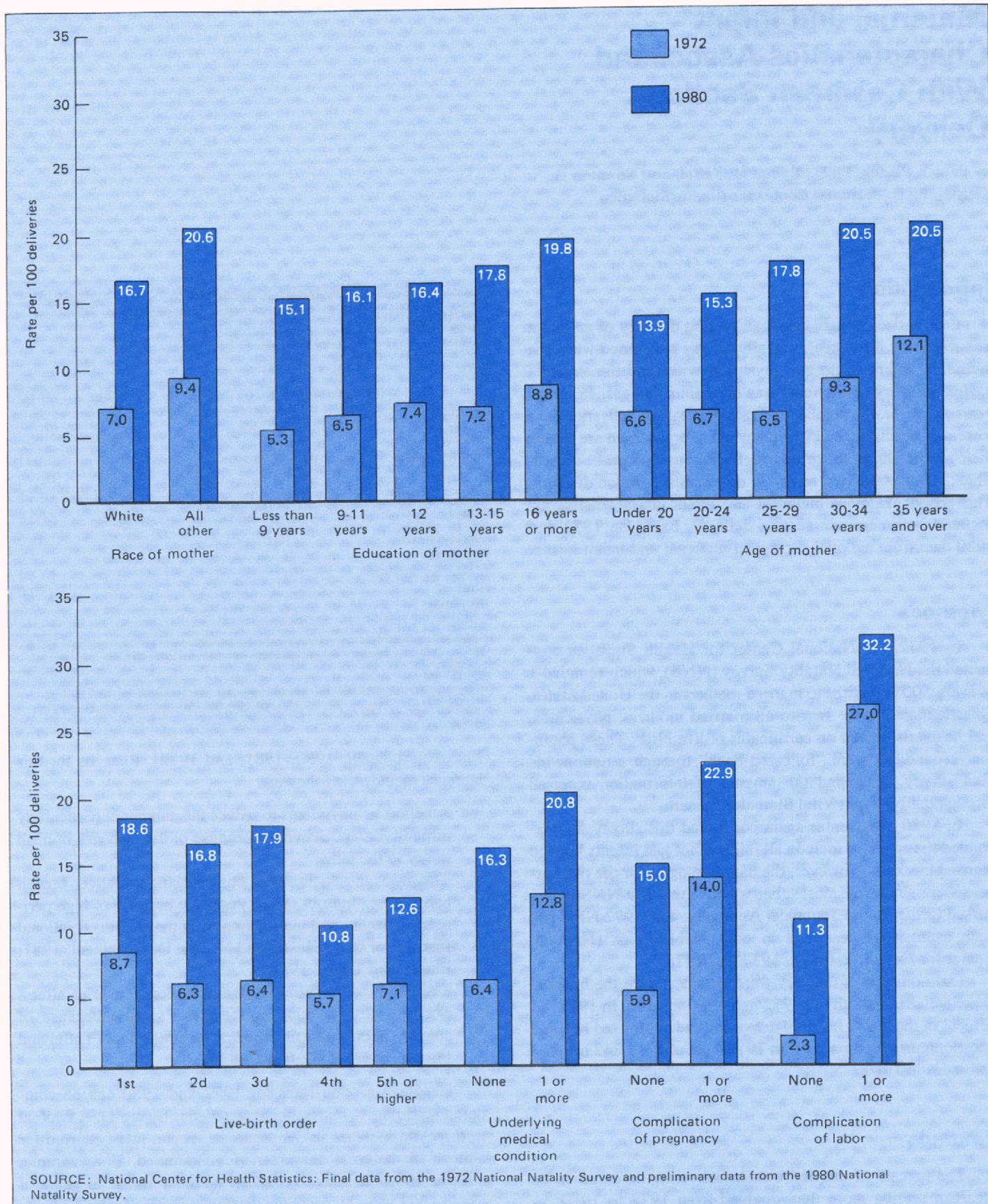


Figure 1. Cesarean section rate per 100 deliveries of live births to married mothers in hospitals, according to selected maternal characteristics: United States, 1972 and 1980

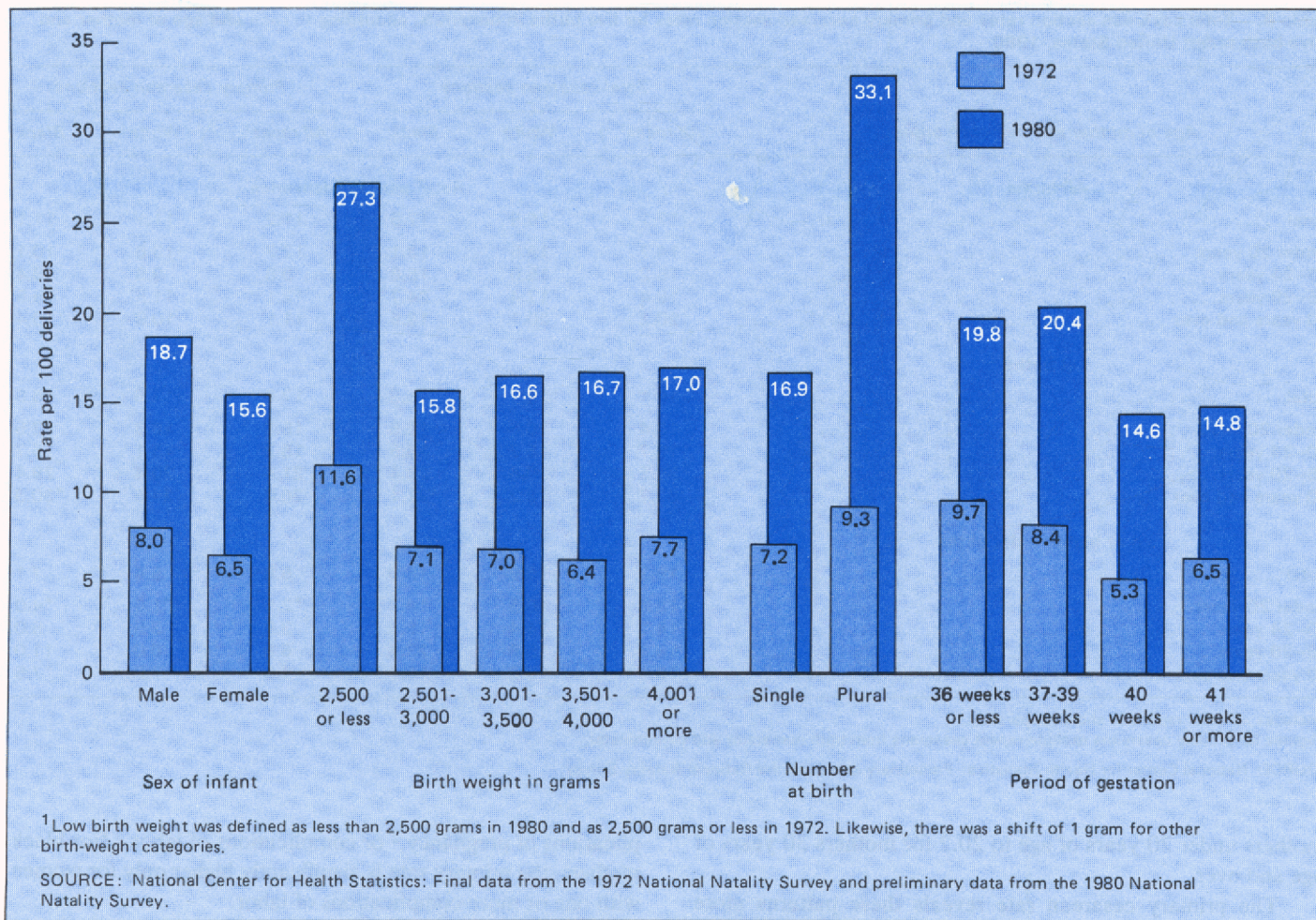


Figure 2. Cesarean section rate per 100 deliveries of live births to married mothers in hospitals, according to selected infant characteristics: United States, 1972 and 1980

characteristics. For example, in 1972, 11.6 per 100 deliveries of infants weighing 2,500 grams (5 lb 8 oz) or less were by cesarean section, and this increased to 27.3 in 1980. Apparently, a fundamental and widespread change took place because the increase in cesarean section rates was nearly uniform for mothers of all races, educational levels, ages, birth orders, and health statuses, and for infants regardless of sex, birth weight, plurality, and period of gestation.

The 1972 and 1980 national estimates compare only births to married women because the 1972 NNS was limited to the study of marital births. However, the 1980 NNS provides national estimates for all births, including those to unmarried women. Information on type of delivery was obtained for all hospital births in 1980, which accounted for 99.0 percent of all live births that year (National Center for Health Statistics, 1982). Therefore, all data that follow are national estimates for hospital deliveries in the United States in 1980.

In 1980, 612,000 cesarean deliveries were performed, a rate of 17.1 cesareans per 100 deliveries. Nearly 40 percent (236,000) were repeat cesareans. Furthermore, about two-thirds of the cesareans of higher order births are repeats. Since it has been a common obstetric practice to automatically repeat cesareans (National Institute of Child Health and Human De-

velopment, 1981), it has been suggested that a clearer picture of the risk of cesarean delivery is obtained by excluding the repeat operations (Zdeb, Therriault, and Logrillo, 1980; Neutra, Greenland, and Friedman, 1980). This risk can be measured by the primary cesarean rate, defined as the number of cesarean sections per 100 deliveries to mothers who have never had a cesarean. Unfortunately, the NNS only collected information on whether the 1980 delivery was a first or repeat cesarean; therefore, it is not possible to exclude from the denominator women whose 1980 delivery was vaginal but whose prior delivery was cesarean. However, because the number of such births is relatively small (National Institute of Child Health and Human Development, 1981), the primary rate is hardly affected by their inclusion in the denominator. Thus, the primary cesarean rate will be estimated in this article by calculating the number of first cesareans divided by all deliveries less repeat cesareans.

The total cesarean rate indicates that first births are somewhat more likely than second or higher order births to be delivered by cesarean section (18.1 compared with 16.3 per 100, respectively, table B). This pattern persists within almost every age group for white and black mothers. Also, the total cesarean rate generally increases with maternal age, rising from 14.7 for

Table B. Total cesarean section rates and primary cesarean section rates for live births in hospitals, according to race and age of mother and live birth order: United States, 1980

Age of mother and live-birth order	Total cesarean sections			Primary cesarean sections		
	All races ¹	White	Black	All races ¹	White	Black
All births						
	Rate ² per 100 deliveries					
Total	17.1	16.9	17.5	11.2	11.1	11.1
Under 20 years	14.7	15.5	13.1	12.7	13.8	10.1
20-24 years	15.2	15.0	15.8	9.8	9.9	9.4
25-29 years	18.4	17.4	24.7	12.1	11.5	15.5
30 years and over	20.2	20.1	18.5	11.1	10.9	10.4
1st births						
Total	18.1	18.1	16.8	17.6	17.6	16.5
Under 20 years	15.4	16.5	12.5	15.3	16.3	12.5
20-24 years	15.7	15.7	16.5	15.2	15.1	15.7
25-29 years	21.5	20.6	28.4	21.4	20.4	28.4
30 years and over	27.7	26.2	*31.1	26.0	24.5	*30.3
2d or higher order births						
Total	16.3	15.9	18.0	5.8	5.4	7.1
Under 20 years	12.0	10.9	14.3	*2.5	*1.6	*4.0
20-24 years	14.7	14.4	15.3	3.8	3.5	5.0
25-29 years	16.8	15.6	23.6	6.8	6.0	11.0
30 years and over	18.4	18.6	16.9	7.3	7.2	*7.5

¹Includes all other races not shown separately.

²Figures for primary cesareans exclude repeat cesareans from both numerator and denominator.

SOURCE: National Center for Health Statistics: Preliminary data from the National Natality Survey.

mothers under 20 years of age to 20.2 for mothers 30 years of age and over.

The primary cesarean rate reveals these patterns more clearly than does the overall cesarean rate (table B). Birth order has the major effect on the primary cesarean rate. The primary rate for first births is 17.6 per 100 deliveries, significantly higher than the 5.8 rate for second or higher order births. In fact, women in every age group are at least three times as likely to have a primary cesarean with a first birth than with a second or higher order birth. Apparently, once a woman has demonstrated the ability to successfully deliver a vaginal birth, the probability of a later cesarean is greatly diminished. Also, the primary rate generally increases with increasing maternal age for both first and higher order births.

In tables C and D, primary cesarean rates are presented in relation to maternal and infant characteristics. These rates are for first births only and are age adjusted to control for the effects of birth order and age.

Regardless of race, differences are not statistically significant in the primary cesarean rate for the married compared with the unmarried, for low income compared with high income, and for low education compared with high education (table C). For white mothers, the primary rate is significantly higher for mothers with one or more underlying medical conditions,¹ com-

plications of pregnancy,² or complications of labor.³ For black mothers, the primary rate is significantly higher only for women with one or more complications of labor.

Table D shows age-adjusted primary cesarean rates for first births according to selected infant characteristics. For mothers in each race category, the primary rate is nearly twice as high for plural births as for single births. Also, first-born infants weighing less than 2,500 grams (5 lb 8 oz) and infants weighing 4,000 grams (8 lb 14 oz) or more are generally about 1½ times as likely to be delivered by cesarean as infants weighing 3,000-3,499 grams (6 lb 10 oz-7 lb 11 oz), the most common birth-weight category. The likelihood of cesarean delivery appears greater for infants with long and short gestations, but the differences are not statistically significant.

Conclusion

Data from the National Natality Survey (NNS) can be used to examine trends from 1972 to 1980 in the rate of cesarean section deliveries for married women. Based on NNS data, the rate of cesarean sections per 100 deliveries to married mothers

¹Includes varicosity, congenital heart disease, thyroid condition, obesity, anemia, cardiovascular-renal disease, asthma, other chronic pulmonary, orthopedic condition, Rh incompatibility, diabetes-gestational only, diabetes-juvenile, diabetes-adult onset type, sickle cell anemia, alcoholism, other drug abuse, and other unspecified.

²Includes urinary infection, anemia, rubella, obesity, inadequate weight gain, excessive weight gain, abnormal position of cord, hypertension, toxemia preeclampsia, eclampsia, embolism, and other unspecified.

³Includes inadequate pelvis, transverse lie, multiple birth, premature rupture of membranes, unusual bleeding or hemorrhage, prolonged labor, anesthesia reaction, abruptio placentae, abnormal position of placenta (placenta previa), abnormal position of cord, hypertension, toxemia preeclampsia, eclampsia, embolism, and other unspecified.

Table C. Age-adjusted¹ primary cesarean section rates for first births, according to race of mother and other selected maternal characteristics: United States, 1980

Maternal characteristic	Race of mother		
	All races ²	White	Black
	Rate ³ per 100 deliveries		
All first births.....	17.6	17.6	16.5
Marital status			
Married.....	17.6	17.2	19.4
Not married.....	17.5	18.8	15.1
Annual family income ⁴			
Less than \$9,000.....	15.0	15.5	}*12.7
\$9,000–\$14,999.....	18.0	17.6	
\$15,000–\$20,999.....	18.9	18.1	*21.5
\$21,000–\$29,999.....	18.7	17.5	*35.9
\$30,000 or more.....	16.8	16.0	*17.9
Education ⁵			
Less than 12 years.....	17.9	18.6	*15.5
12 years.....	18.6	18.1	16.4
13–15 years.....	18.5	18.4	18.3
16 years or more.....	19.5	16.9	42.0
Underlying medical condition			
None.....	16.7	16.5	16.4
1 or more.....	22.1	23.5	16.6
Complication of pregnancy			
None.....	14.9	14.5	15.2
1 or more.....	23.8	25.0	18.9
Complication of labor			
None.....	6.8	6.7	7.5
1 or more.....	34.6	35.0	31.3

¹Age adjusted by the direct method, using the 1980 distribution of all first births by age of mother as the standard population.

²Includes all other races not shown separately.

³Figures for primary cesareans exclude repeat cesareans from both numerator and denominator.

⁴For married mothers only.

⁵For mothers 20 years of age and over.

SOURCE: National Center for Health Statistics: Preliminary data from the National Natality Survey.

rose significantly from 7.3 in 1972 to 17.2 in 1980. Increases of about this magnitude were observed for almost all maternal and infant characteristics considered. Part of this increase is attributed to the shift away from attempting forceps deliveries (and to a much lesser extent, breech deliveries) because cesareans may represent less risk to the infant. Another part of the increased cesarean rate is attributable to the obstetric norm “once a section, always a section.” The number of women who have previously delivered by cesarean continues to rise, thereby making it likely that nearly all their subsequent deliveries will be by cesarean. Nearly 40 percent (236,000) of the 612,000 hospital cesareans to all women (married and unmarried) in 1980 were repeat cesareans.

Data from the 1980 NNS can be used to examine the rate of cesarean section deliveries for all women. Most analyses use the overall cesarean rate (17.1 for all women in 1980), calculated by dividing total cesareans by total deliveries. However,

Table D. Age-adjusted¹ primary cesarean section rates for first births, according to race of mother and selected infant characteristics: United States, 1980

Infant characteristic	Race of mother		
	All races ²	White	Black
	Rate ³ per 100 deliveries		
All first births.....	17.6	17.6	16.5
Number at birth			
Single.....	17.5	17.4	16.4
Plural.....	*30.4	*32.2	*27.3
Birth weight			
Less than 2,500 grams.....	26.3	28.8	19.9
Less than 1,500 grams.....	29.5	*28.9	*28.1
1,500–2,499 grams.....	25.6	28.6	*17.6
2,500–2,999 grams.....	14.2	14.7	10.3
3,000–3,499 grams.....	15.8	15.3	18.5
3,500–3,999 grams.....	17.9	17.8	19.1
4,000 grams or more.....	24.3	23.6	*28.5
Length of gestation			
Under 32 weeks.....	*20.3	*23.6	} 13.8
32–35 weeks.....	17.8	21.0	
36 weeks.....	15.7	*13.8	} 19.2
37–39 weeks.....	18.9	18.6	
40 weeks.....	16.7	16.9	13.8
41 weeks.....	14.8	14.1	*16.1
42 weeks and over.....	19.3	19.5	16.3

¹Age adjusted by the direct method, using the 1980 distribution of all first births by age of mother as the standard population.

²Includes all other races not shown separately.

³Figures for primary cesareans exclude repeat cesareans from both numerator and denominator.

SOURCE: National Center for Health Statistics: Preliminary data from the National Natality Survey.

the primary cesarean rate (11.2 in 1980) is particularly useful because it indicates the probability of a first cesarean section to women who have not previously had a cesarean delivery. Thus, the primary rate better indicates the maternal and infant characteristics associated with cesarean section delivery. The primary rate clearly showed, for example, that first births are about three times as likely to be delivered by cesarean as higher order births.

When the primary cesarean rate for first births is adjusted for age, there is no statistically significant association between education or income and the cesarean section rate. Plural births and both low-birth-weight and very high-birth-weight infants are much more likely to be delivered by cesarean. Thus, the relationship between cesarean section and virtually any characteristic of interest is clearer if the focus is on primary cesarean section alone.

Cesarean delivery is a major surgical procedure that has become common among obstetricians as an intervention strategy for maternal complications and fetal distress. It is routinely repeated for subsequent deliveries. The cesarean section’s risk to mother and fetus and higher cost must be weighed against possible benefits such as reduced mortality and morbidity and future medical costs averted throughout the infant’s lifetime. Thus, data on maternal and fetal benefits derived from cesarean delivery are necessary for cost-benefit comparisons.

In the absence of definitive studies on costs versus benefits, the rising cesarean delivery rate continues to be a matter of concern (National Institute of Child Health and Human Development, 1981; Minkoff and Schwarz, 1980). The policy of repeating cesarean sections has been addressed by the American College of Obstetricians and Gynecologists; in February 1982, the College issued *Guidelines for Vaginal Delivery after a Cesarean Childbirth*. Greater public awareness and patient education relating to cesarean birth may also increase maternal participation in the decisionmaking process regarding type of delivery.

References

- Marieskind, H. I.: *An Evaluation of Cesarean Section in the United States*. Report to the Office of the Assistant Secretary for Planning and Evaluation/Health. Department of Health, Education, and Welfare. Washington. June 1979.
- Minkoff, H. L., and Schwarz, R. H.: The rising cesarean section rate, Can it safely be reversed? *Obstet. Gynecol.* 56(2):135-143, Aug. 1980.
- National Center for Health Statistics: The relationship of maternal health factors to sterilization following delivery of legitimate live births in hospitals, United States, by P. J. Placek. *Monthly Vital Statistics Report*. Vol. 26-No. 3, Supp. 2. DHEW Pub. No. (HRA) 77-1120. Health Resources Administration. Rockville, Md., June 20, 1977.
- National Center for Health Statistics: Wanted and unwanted childbearing in the United States, 1968, 1969, and 1972 National Natality Surveys, by R. H. Weller and R. L. Heuser. *Vital and Health Statistics*. Series 21-No. 32. DHEW Pub. No. (PHS) 78-1918. Public Health Service. Washington. U.S. Government Printing Office, Sept. 1978.
- National Center for Health Statistics: Trends and variations in cesarean section delivery, by P. J. Placek, S. M. Taffel, and J. C. Kleinman. *Health, United States, 1980*. DHHS Pub. No. (PHS) 81-1232. Public Health Service. Washington. U.S. Government Printing Office, Dec. 1980.
- National Center for Health Statistics: Advance report, final natality statistics, 1980. *Monthly Vital Statistics Report*. Vol. 31-No. 8. Supp. DHHS Pub. No. (PHS) 83-1120. Public Health Service. Hyattsville, Md., Nov. 30, 1982.
- National Institute of Child Health and Human Development: *Cesarean Childbirth*. Report of the Consensus Development Conference. Public Health Service. NIH Pub. No. 82-2067. National Institutes of Health. Washington. U.S. Government Printing Office, Oct. 1981.
- Neutra, R. R., Greenland, S., and Friedman, E. A.: Effect of fetal monitoring on cesarean section rates. *Obstet. Gynecol.* 55(2):175-180, Feb. 1980.
- Placek, P. J.: Type of delivery associated with social and demographic, maternal health, infant health, and health insurance factors, Findings from the 1972 U.S. National Natality Survey. *Proceedings of the Social Statistics Section, 1977, Part II*. Washington. American Statistical Association, 1978.
- Placek, P. J., and Taffel, S. M.: Trends in cesarean section rates for the United States, 1970-78. *Public Health Reports* 95(6):540-548, Nov.-Dec. 1980.
- Placek, P. J., and Taffel, S. M.: U.S. cesarean section rate rises higher in 1979. *Public Health Reports* 96(4):380, July-Aug. 1981.
- Placek, P. J., and Taffel, S. M.: One-sixth of 1980 U.S. births by cesarean section. *Public Health Reports* 96(2):183, Mar.-Apr. 1982.
- Placek, P. J., and Taffel, S. M.: Trend in complications associated with cesarean and non-cesarean deliveries, United States, 1970 and 1978. *Public Health Reports* 98(4):396-400, July-Aug. 1983.
- Taffel, S. M., and Placek, P. J.: Complications in cesarean and non-cesarean deliveries, United States, 1980. *Am. J. Public Health* 72(7):856-860, July 1983.
- Zdeb, M. S., Therriault, G. D., and Logrillo, V. M.: Cesarean sections in upstate New York, 1968-1978. *Am. J. Epidemiol.* 112(3):395-403, Sept. 1980.

Health Insurance Coverage and Physician Visits Among Hispanic and Non-Hispanic People

by Fernando M. Trevino, Ph.D., and Abigail J. Moss,
National Center for Health Statistics

Introduction

The United States has the sixth largest Hispanic population in the world. Demographic projections indicate that the U.S. Hispanic population will double in size every 25 years if it sustains its present growth rate (Cruz and Sheir, 1982). The ability of the Nation's health care system to effectively serve the ever-increasing health needs of Hispanic Americans will depend to a large degree on a sound body of data regarding their health status, use of services, unmet health care needs, and the health resources available to them. Unfortunately, many of these data are unavailable at present and much of the available data fail to differentiate the Hispanic population on the basis of national origin (e.g., Mexican American, Puerto Rican). Therefore, important geographic, socioeconomic, and cultural differences among these groups are ignored (Trevino, 1982; Roberts and Lee, 1982).

Hispanic families are generally larger and have lower incomes than non-Hispanic families and therefore would be expected to have less disposable income to pay out-of-pocket expenses for health care. Yet few comparative studies have been made of health insurance coverage among the Hispanic and non-Hispanic populations. Aday and others (1980) reported that Mexican Americans are less likely than the general population to have health insurance coverage. The authors attributed much of this difference to Mexican Americans' employment in firms that generally do not provide health insurance. In another study, Andersen and others (1981) found that one-third of the Hispanic population had neither public nor private health insurance, compared with 11 percent of the general population. However, these findings are specific to the Hispanic population of the southwestern United States (Colorado, Texas, New Mexico, Arizona, California) and only 10 percent of the Hispanic people in the sample were of Puerto Rican or Cuban origin. Thus, only limited geographic and ethnic generalizations can be made from these findings. Until now, no national data have been available on health insurance coverage among Hispanic people by national group.

This article compares public and private health insurance coverage among white and black non-Hispanic people, Mexican Americans, Puerto Ricans, and Cuban Americans under 65 years of age. It also explores the relationship between the health insurance coverage of these groups and their use of medical services as measured by physician visits. Because physician visit rates also reflect the availability of physicians, the analysis was limited to the standard metropolitan statistical areas

(SMSA) in the United States to minimize urban and rural differences in physician availability.

Data source and limitations

Data source

The data are based on information obtained in 1978 and 1980 from the National Health Interview Survey. This is a continuous, nationwide survey consisting of a probability sample, representative of the U.S. civilian noninstitutionalized population. In the 2 survey years, interviews were conducted in the 50 States with more than 210,000 persons, 132,000 of whom were under 65 years of age, resided in SMSA's, and constituted the sample for this report. This sample represents 66 percent of white non-Hispanic people; 77 percent of black non-Hispanic people; and 86 percent of all Hispanic people, including 82 percent of Mexican Americans, 94 percent of Puerto Ricans, and 87 percent of Cuban Americans.

Health insurance questions in the National Health Interview Survey identify which family members are covered by Medicare, Medicaid, and/or private health insurance. Reasons for noncoverage are also obtained.

According to the definition used for this report, insured persons include those covered by either private health insurance or public health insurance, i.e., Medicare or Medicaid or both. The Medicaid-covered population consists of persons who (1) had a valid Medicaid card at the time of interview, (2) were receiving Aid to Families with Dependent Children or Supplemental Security Income payments, or (3) reported Medicaid coverage as a reason for not being covered by any private health insurance plan. The uninsured population includes persons not covered by private health insurance, Medicare, Medicaid, or by military or Veterans Administration health benefits. A physician visit is defined as consultation with a physician, in person or by telephone, for examination, diagnosis, treatment, or advice. Also included are visits where the service was provided by a nurse or other person acting under a physician's supervision.

Data limitations

The National Health Interview Survey questionnaire has not been translated into Spanish. Consequently, in households where the adult respondent does not speak English, interviewers

must rely on translators (often a bilingual household member) to translate the questions and answers or must act as translators themselves. This practice may result in a certain amount of misinterpretation of the questions and some misclassification of responses.

To identify persons of Hispanic ancestry or origin, respondents were given a flashcard containing the following list of Hispanic groups—Puerto Rican, Cuban, Mexican, Mexicano, Mexican American, Chicano, Other Latin American, and Other Spanish. Similarly, a flashcard was used by respondents to select each family member's racial background. Data on the Hispanic population are combined estimates for all Hispanic people regardless of race. Furthermore, estimates for the Hispanic population include those specifying Other Latin American or Other Spanish, whereas estimates by national origin include only those who specified that national origin.

Health insurance coverage

Uninsured population

As shown in table A, about 12 percent of the U.S. population under 65 years of age residing in SMSA's was uninsured for medical expenditures. Nearly 30 percent of the Mexican American population was uninsured, compared with only 9 percent of the white non-Hispanic population. Black people, Cuban Americans, and Puerto Ricans had about the same proportion uninsured (nearly one-fifth).

People with low family incomes were less likely to have health insurance coverage (table B). Almost one-half of Mexican Americans with an annual family income less than \$7,000 were uninsured, compared with approximately one-third of Cuban Americans, one-fourth of the white and black non-Hispanic populations, and one-fifth of the Puerto Ricans. The proportion uninsured was somewhat lower for the \$7,000–9,999 income group (compared with the less than \$7,000 income

Table B. Percent of population under 65 years of age not covered by health insurance, according to family income, Hispanic origin, and race: Standard metropolitan statistical areas, average annual 1978 and 1980

Hispanic origin and race	Family income		
	Less than \$7,000	\$7,000–\$9,999	\$10,000 or more
	Percent of population		
All persons	29.1	23.8	6.4
Non-Hispanic			
All races ¹	27.3	21.4	5.7
White	27.9	19.9	5.3
Black	25.9	24.6	9.1
Specified Hispanic			
All Hispanic ²	39.2	37.6	16.4
Mexican American	48.6	46.0	18.3
Puerto Rican	21.0	25.4	16.8
Cuban	30.6	23.7	10.6

¹Includes all other races not shown separately.

²Includes Other Latin American, Other Spanish, and those with unknown specific Hispanic origin.

SOURCE: National Center for Health Statistics: Data from the National Health Interview Survey.

group) for white people and Cuban Americans but was essentially the same for the other ethnic groups.

Reported reasons for not having health insurance were obtained for uninsured persons. Inability to pay was the most frequent reason provided by all ethnic groups described in this report. Approximately one-half of each group reported this as their main reason for being uninsured. Mexican Americans, the group with the highest percent uninsured, were among the most likely to report they could not afford insurance and the least likely to report unemployment as their chief reason for noncoverage.

Table A. Percent distribution of persons under 65 years of age, according to insurance coverage status, Hispanic origin, and race: Standard metropolitan statistical areas, average annual 1978 and 1980

Hispanic origin and race	Total	Coverage status			
		Private	Medicaid only	Not covered	Other ¹
	Percent distribution				
All persons	100.0	80.0	6.1	11.6	2.4
Non-Hispanic					
All races ²	100.0	82.1	5.3	10.2	2.3
White	100.0	86.1	2.7	8.7	2.5
Black	100.0	61.3	20.0	17.8	1.0
Specified Hispanic					
All Hispanic ³	100.0	58.6	13.4	25.7	2.3
Mexican American	100.0	59.0	10.7	29.9	0.4
Puerto Rican	100.0	47.7	31.9	19.7	*0.7
Cuban	100.0	74.2	5.4	16.6	3.8

¹Includes persons covered by military or Veterans Administration health benefits, persons whose health insurance coverage is unknown, and all others.

²Includes all other races not shown separately.

³Includes Other Latin American, Other Spanish, and those with unknown specific Hispanic origin.

SOURCE: National Center for Health Statistics: Data from the National Health Interview Survey.

Table C. Percent of population under 65 years of age covered by Medicaid only, according to family income, Hispanic origin, and race: Standard metropolitan statistical areas, average annual 1978 and 1980

Hispanic origin and race	Family income		
	Less than \$7,000	\$7,000–\$9,999	\$10,000 or more
	Percent of population		
All persons	30.2	8.8	1.1
Non-Hispanic			
All races ¹	28.7	7.7	0.9
White	18.2	4.8	0.7
Black	46.6	17.2	3.4
Specified Hispanic			
All Hispanic ²	37.5	14.2	2.9
Mexican American	31.5	11.1	3.0
Puerto Rican	63.4	26.3	5.9
Cuban	18.5	*1.3	*1.8

¹Includes all other races not shown separately.

²Includes Other Latin American, Other Spanish, and those with unknown specific Hispanic origin.

SOURCE: National Center for Health Statistics: Data from the National Health Interview Survey.

Insured population

Black non-Hispanic and Hispanic people were considerably less likely than white non-Hispanic people to be covered under private health insurance. Eighty-six percent of white people, 61 percent of black people, and 59 percent of Hispanic people had private health insurance (table A). Puerto Ricans had the

lowest rate of private coverage of all groups, with less than half having private health insurance.

However, the Puerto Rican population was the most likely to have only Medicaid; about one-third had such coverage (table A). Black people had the second highest proportion covered by Medicaid only (20 percent), followed by Mexican Americans (11 percent), Cuban Americans (5 percent), and white non-Hispanic people (3 percent).

Even considering only persons with low family incomes, the Puerto Rican population was still considerably more likely than other groups to have only Medicaid (table C). Almost two-thirds of the Puerto Rican population under 65 years of age with an annual family income under \$7,000 had Medicaid coverage, compared with one-half of the black population, one-third of the Mexican American population, and one-fifth of the white and Cuban American populations.

Physician visits

Analysis of age-adjusted data revealed that Mexican Americans and Cuban Americans had the highest proportions with no physician visit in the past year (table D). For each ethnic group, people with only Medicaid coverage had the smallest proportion with no physician visit in the past year. In general, the Medicaid population uses more health services because it experiences a higher level of illness (Rabin and Schach, 1975).

Obviously, the lack of health insurance reduces an individual's financial access to health care. After age adjustment, a higher proportion of uninsured persons than insured persons had not consulted a physician in the past year, 35 percent compared with 22 percent, respectively (table D). Uninsured

Table D. Age-adjusted¹ percent of population under 65 years of age with no physician visits in the past year, according to insurance coverage status, Hispanic origin, and race: Standard metropolitan statistical areas, average annual 1978 and 1980

Hispanic origin and race	All persons	Coverage status			
		Type of coverage			
		Total ²	Private	Medicaid only	Not covered
		Percent of population			
All persons	23.8	22.4	22.8	15.9	34.6
Non-Hispanic					
All races ³	23.1	22.0	22.4	15.3	33.2
White	22.7	21.8	22.0	15.3	33.2
Black	23.3	21.6	23.6	14.6	31.1
Specified Hispanic					
All Hispanic ⁴	30.5	27.0	29.0	18.4	40.8
Mexican American	35.9	31.7	33.3	26.5	45.8
Puerto Rican	21.8	19.8	24.7	11.4	30.9
Cuban	28.5	28.0	27.9	15.7	31.2

¹Age adjusted by the direct method to the 1970 civilian noninstitutionalized population, using 4 age groups.

²Includes persons covered by military or Veterans Administration health benefits, persons whose health insurance coverage is unknown, and all others.

³Includes all other races not shown separately.

⁴Includes Other Latin American, Other Spanish, and those with unknown specific Hispanic origin.

SOURCE: National Center for Health Statistics: Data from the National Health Interview Survey.

Mexican Americans were the least likely to have seen a physician in the past year.

Conclusion

Hispanic and black people were much more likely than white people to have no health insurance of any type. Twenty-six percent of Hispanic people, 18 percent of black people, and 9 percent of white people had no coverage. Among the groups investigated, Mexican Americans were identified as the group with the highest proportion uninsured (almost one-third). Although about one-quarter of all low-income persons (annual family income less than \$10,000) lacked insurance, almost half of low-income Mexican Americans did not have insurance.

Medicaid provides a substantial portion of the insurance coverage for low-income persons. States participating in the Medicaid program are required to cover all persons who are receiving public assistance under Aid to Families with Dependent Children and most receiving Supplemental Security Income for the aged, blind, and disabled. At State option, coverage may be extended to financially eligible pregnant women, families in which the parent who is the principal wage earner is unemployed, and families determined to be "medically needy" (U.S. Department of Health and Human Services, 1981).

Almost two-thirds of the Puerto Rican population under 65 years of age with incomes less than \$7,000 had only Medicaid coverage, compared with one-half of the black non-Hispanic population, one-third of the Mexican American population, and one-fifth of the white non-Hispanic and Cuban American populations. There are several possible reasons for the greater Medicaid coverage rates among Puerto Ricans and black people. First, 40 percent of Puerto Rican and black families are headed by a female with no husband present, compared with 12 percent of white families and 16 percent of Mexican American families (U.S. Bureau of the Census, 1979a and 1979b). (Figure for Cuban Americans is unavailable.) Therefore, it is probable that greater numbers of Puerto Rican and black people are qualifying for Medicaid coverage under Aid to Families with Dependent Children. Second, Puerto Rican and black non-Hispanic people may be more likely to reside in States that provide greater optional coverage under Medicaid. Also, almost 5 percent of Mexican Americans reside in Arizona (U.S. Bureau of the Census, 1980), which did not participate in the Medicaid program during the same time period of this study. This group was thus excluded from participation in the Medicaid program. Finally, it is unknown how many undocumented Mexican workers, who may be less likely to have public health insurance, were interviewed in the National Health Interview Survey.

Mexican Americans were among those most likely to report they could not afford health insurance as the main reason they did not have coverage. However, they were also the least likely to cite unemployment as the main reason for noncoverage. While not providing direct evidence, these findings would lend support to the hypothesis of Aday and others (1980). Their theory is that low rates of private health insurance coverage among Mexican Americans may result largely from their low

income and employment in firms that generally do not provide such coverage.

The uninsured were more likely to have experienced a long time interval since their last visit to a physician. Among all groups except Cuban Americans, persons without insurance were 50 percent more likely than insured persons to have not visited a physician in the past year. Mexican Americans experienced the greatest proportion with a long time interval since their last physician visit.

Black people, Puerto Ricans, and Cuban people lack health insurance coverage at twice the rate of white people. Among Mexican Americans, the noncoverage rate is 3½ times greater than that of white non-Hispanic people. Compared with Mexican Americans, the smaller noncoverage rate among black people and Puerto Ricans is largely attributed to the fact that proportionately twice as many black people and three times as many Puerto Ricans have Medicaid coverage. The smaller noncoverage rate among Cuban Americans largely results from their higher participation in private health insurance, which may be attributed to a higher per capita income and/or employment in firms that provide employee health insurance coverage.

References

- Aday, L. A., Andersen, R., and Fleming, G. V.: *Health Care in the U.S., Equitable for Whom?* Beverly Hills, Calif. Sage Publications, 1980.
- Andersen, R., Lewis, S. Z., Giachello, A. L., et al.: Access to medical care among the Hispanic population of the southwestern United States. *J. Health Soc. Behav.* 22(1):78-89, Mar. 1981.
- Cruz, B. R., and Sheir, R.: The 1980 Decennial Census and Hispanics, Some Policy Implications, in *The State of Hispanic America*, Vol. II. Oakland, Calif. The National Hispanic Center for Advanced Studies and Policy Analysis and the National Hispanic University, 1982, p. 6.
- Rabin, D. L., and Schach, E.: Medicaid, morbidity and physician use. *Med. Care* 13(1):68-78, Jan. 1975.
- Roberts, R. E., and Lee, E. S.: The health of Mexican Americans, Evidence from the Human Population Laboratory Studies. *Am. J. Public Health* 70(4):375-384, Apr. 1980.
- Trevino, F. M.: Vital and health statistics for the U.S. Hispanic population. *Am. J. Public Health* 72(9):979-982, Sept. 1982.
- U.S. Bureau of the Census: Household and family characteristics. *Current Population Reports*. Series P-20, No. 352. Washington. U.S. Government Printing Office, Mar. 1979a.
- U.S. Bureau of the Census: Persons of Spanish origin in the U.S. *Current Population Reports*. Series P-20, No. 354. Washington. U.S. Government Printing Office, Mar. 1979b.
- U.S. Bureau of the Census: Persons of Spanish origin by State, 1980. *1980 Census of Population, Supplementary Reports*. Series PC80-S1-7. Washington. U.S. Government Printing Office, Aug. 1982.
- U.S. Department of Health and Human Services: *Better Health for Our Children, A National Strategy*. The Report of the Select Panel for the Promotion of Child Health. Vol. II. DHHS Pub. No. (PHS) 79-55071. Public Health Service. Washington. U.S. Government Printing Office, 1981. p. 42.

Visits to Physicians and Other Health Care Practitioners

by Robert H. Mugge, National Center for Health Statistics

Introduction

Although physicians (doctors of medicine and doctors of osteopathy) predominate in providing or administering health care services in the United States, various other health practitioners also provide direct health services to patients. In 1980, 71 percent of the civilian noninstitutionalized population made ambulatory visits to physicians. Thirty-five percent made one or more visits to other practitioners, which did not directly involve a physician. This article will focus on five specific types of practitioners: nurses, optometrists, chiropractors, podiatrists, and psychologists.

These practitioners vary widely in the kinds of services they provide, their methods for delivering services, and their roles in relation to those of physicians. Many nurses work very closely with physicians in providing services, although a large number of nurses work independently. The other four types of practitioner generally provide their services independently of physicians.

How do these types of practitioners vary in terms of their relationship to physicians? Do they tend to replace or supplement physician services? These are important questions in relation to society's needs for health care resources. During the 1960's, when it was generally thought a serious shortage of physicians existed, a proposal was made that "other practitioners" be trained to replace physicians in providing certain services (Rafferty, 1974). Although apparently a physician shortage no longer exists, concern over a maldistribution of certain physician specialists persists (Bureau of Health Professions, 1982; National Commission on Allied Health Education, 1980). Therefore, it has been proposed that other health practitioners be used to help alleviate local shortages (National Institutes of Health, 1975).

This article examines the extent of overlap among those people who visit physicians and those who visit these other types of practitioners. In addition, the degree of association between frequency of visits to physicians and frequency of visits to the other practitioners is considered. The discussion will provide a general answer to the question whether other practitioner services tend to replace or supplement physician services. Findings also will suggest areas of further analysis to determine the kind and character of supplementation or substitution that occur.

Data source and limitations

Data for this paper are derived from the household survey component of the National Medical Care Utilization and Expenditure Survey, which sampled 17,123 persons who represented the U.S. civilian noninstitutionalized population. Information about all family members was collected from one household member during five interviews conducted approximately 3 months apart. Data on health conditions, health care services, and expenditures for health care covered calendar year 1980.

Only ambulatory visits to practitioners are included in this report; health care visits in emergency rooms or involving hospital inpatients are excluded. Visits to other practitioners are counted only when a physician was not seen in the same visit.

Because sex and age are two strong determining factors influencing the extent of services received from physicians and also from each of the other practitioner types, estimates are adjusted for sex and age.

Findings

Variables related to utilization

Data in tables A, B, and C show the relationships between various individual characteristics and the utilization of services rendered by physicians and by each of the five other types of practitioner. These data provide some insight into factors accounting for the overlap between those patients visiting physicians and those visiting other practitioners.

For each of the six practitioner types, a considerably higher percent of females than of males received services in 1980. This was especially notable for podiatric services, where the proportion of females having visits was more than double the proportion of males (table A). Age also was strongly related to the receipt of services for all practitioners, but in different patterns. For physician and nurse services, the relationship was U-shaped, with utilization highest for young children and the elderly and lowest for other age groups. Utilization was highest among adults for optometrists and chiropractors, and it increased markedly with age for podiatric services. Psychological services were used most heavily by older children and younger adults.

Table A. Percent of population receiving services from selected medical practitioners, according to type of practitioner, sex, and age: United States, 1980

Sex and age	Population in thousands	Medical practitioner					
		Physician ¹	Nurse	Optometrist	Chiropractor	Podiatrist	Psychologist
		Percent of population					
Total	222,876	70.8	13.1	9.2	4.0	2.0	1.3
Male							
All ages.....	107,539	64.9	11.0	7.9	3.7	1.2	1.1
Under 6 years.....	10,717	82.6	19.0	1.1	*0.3	0.4	0.5
6-16 years.....	20,898	63.9	14.0	7.5	1.0	0.5	2.0
17-24 years.....	15,765	56.5	7.2	6.8	2.9	0.7	1.2
25-44 years.....	29,840	58.7	7.3	8.2	5.0	1.3	1.2
45-64 years.....	20,828	67.0	9.1	11.6	6.1	1.0	0.8
65 years and over.....	9,491	76.7	18.1	9.2	5.2	4.4	*-
Female							
All ages.....	115,337	76.3	14.9	10.5	4.4	2.7	1.5
Under 6 years.....	10,088	81.6	19.6	1.3	0.9	*-	*0.1
6-16 years.....	19,924	63.8	14.3	8.2	2.1	0.8	1.6
17-24 years.....	17,121	77.5	17.6	13.1	3.0	1.6	1.8
25-44 years.....	31,476	79.0	12.0	10.7	6.2	1.5	2.6
45-64 years.....	22,750	77.1	13.2	13.8	5.7	4.0	0.9
65 years and over.....	13,978	81.3	18.5	11.3	5.6	9.5	*0.2

¹Includes doctors of medicine and doctors of osteopathy.

SOURCE: National Center for Health Statistics: Data from the National Medical Care Utilization and Expenditure Survey.

Table B. Percent¹ of population receiving services from selected medical practitioners, according to type of practitioner, race, Hispanic origin, education, and family income: United States, 1980

Race, Hispanic origin, education, and family income	Population in thousands	Medical practitioner					
		Physician ²	Nurse	Optometrist	Chiropractor	Podiatrist	Psychologist
		Percent of population					
Total	222,876	70.8	13.1	9.2	4.0	2.0	1.3
Race							
White	191,722	71.9	13.6	9.8	4.4	2.1	1.4
Black.....	26,050	64.3	9.1	4.6	1.5	1.1	0.5
Other.....	5,104	65.6	12.5	10.7	2.3	1.3	*-
Hispanic origin							
Hispanic.....	15,013	66.9	7.9	6.4	2.7	1.8	0.6
Non-Hispanic.....	207,863	71.2	13.4	9.4	4.1	2.0	1.3
Education³							
Less than 9 years.....	24,137	65.3	8.8	7.4	3.5	2.2	1.4
9-11 years.....	28,604	68.7	10.7	10.0	4.8	2.7	1.1
12 years.....	59,792	70.4	11.2	11.1	6.2	2.2	0.8
13-15 years.....	26,450	72.2	14.6	10.6	5.1	2.6	1.2
16 years or more.....	22,267	76.0	14.1	12.0	4.3	3.9	3.1
Family income							
Less than \$10,000.....	45,658	68.9	13.1	7.9	3.1	1.3	1.3
\$10,000-\$14,999.....	31,314	68.3	13.2	7.8	5.0	2.2	1.3
\$15,000-\$19,999.....	28,423	69.8	13.5	9.8	3.9	1.9	1.3
\$20,000-\$24,999.....	31,987	71.8	13.1	9.7	4.2	2.0	0.9
\$25,000-\$34,999.....	42,631	71.1	12.0	10.2	4.3	2.1	1.2
\$35,000 or more.....	42,864	72.9	12.2	9.0	4.0	2.6	1.4

¹Adjusted for age and sex by the direct method to the 1980 civilian noninstitutionalized population using the age groups shown in table A.

²Includes doctors of medicine and doctors of osteopathy.

³Persons 17 years of age and over. Adjustment based on 1980 population 17 years of age and over.

SOURCE: National Center for Health Statistics: Data from the National Medical Care Utilization and Expenditure Survey.

The relationships of other factors to the utilization of practitioner services were examined after adjustment for age and sex (tables B and C). For all six practitioners, a significantly higher proportion of white than of black persons received services. Those not of Hispanic origin visited all types of practitioners except podiatrists significantly more than those of Hispanic origin. Persons with more education tended to visit all practitioners except chiropractors more frequently than those with less education. With respect to chiropractic services, persons with 12 years of education had the highest utilization, and those with less than 9 years or more than 16 years had the lowest. Utilization tended to increase with income for physician and optometrist services but not for the others. Since income tends to increase with education, it is surprising that nurse, podiatrist, and psychologist services did not clearly increase with income as they did with education. This may be explained partly by the fact that higher education of younger adults may not yet be reflected in higher incomes.

Regional differences were also found (table C). Higher proportions of the population received physician services in the North Central and Northeast Regions than in the West and the South Regions. Nursing services were utilized most in the North Central Region and least in the Northeast. Optometry utilization was highest in the North Central Region and lowest in the South. Chiropractic use was highest in the West and North Central Regions. Podiatric services were used much more in the Northeast than in the other Regions. Finally, psychological services were used most in the Northeast and West Regions.

Persons perceived to have fair or poor health or having activity limitation resulting from chronic illness saw physicians, nurses, and psychologists in higher proportions than those reported to have excellent or good health (table C). However, the

use of optometric, chiropractic, and podiatric services was not related to perception of having fair or poor health.

Generally, in relation to these characteristics, the pattern of services from physicians seems to be most similar to those of nurses and psychologists and least similar to those of chiropractors and podiatrists.

Visits to physicians and other practitioners

Substantive findings on the question of substitution or supplementation are presented in table D. In this table, two comparative measures indicate the existence and general character of any patient overlap in terms of services:

- The percent of population seeing a nonphysician practitioner at least once during the year varies according to the number of physician visits they had during the year. Are persons more or less likely to see the other practitioners as their visits to physicians increase? A positive relationship would tend to support the supplementation assumption.
- For persons with one or more visits to another practitioner, the average number of such visits varies according to the number of times they visited physicians. The question is whether, as their visits to physicians increased, the number of their visits to other practitioners also increased, further testing the supplementation assumption.

Data in table D indicate that the likelihood of visiting each type of practitioner increased with increasing use of physicians. The relationship was strongest for utilization of psychologists: Those with four or more physician visits were almost nine times as likely to see a psychologist as those with no physician visits.

Table C. Percent¹ of population receiving services from selected medical practitioners, according to type of practitioner, region, perceived health, and activity limitation: United States, 1980

Region, perceived health, and activity limitation	Population in thousands	Medical practitioner					
		Physician ²	Nurse	Optometrist	Chiropractor	Podiatrist	Psychologist
Total	222,876	70.8	13.1	9.2	4.0	2.0	1.3
Percent of population							
Region							
Northeast	46,902	72.3	10.6	8.9	3.1	3.3	1.8
North Central	59,265	72.6	14.7	11.7	5.3	2.2	1.1
South	69,500	69.0	13.4	6.9	2.5	1.2	0.8
West	47,209	69.5	12.8	9.8	5.6	1.5	1.7
Perceived health ³							
Excellent	110,597	67.2	12.0	9.1	3.8	1.8	1.1
Good	81,873	71.2	13.2	9.6	4.4	2.0	1.3
Fair or poor	28,805	82.2	16.7	8.6	4.1	2.2	3.2
Activity limitation							
Some limitation	20,906	82.3	15.3	9.5	4.5	2.0	3.3
No known limitation	201,970	69.4	12.7	9.3	4.0	1.8	1.2

¹Adjusted for age and sex by the direct method to the 1980 civilian noninstitutionalized population using the age categories shown in table A.

²Includes doctors of medicine and doctors of osteopathy.

³Excludes unknowns.

SOURCE: National Center for Health Statistics: Data from the National Medical Care Utilization and Expenditure Survey.

Table D. Percent¹ of population with at least 1 visit to practitioners other than physicians and average number of visits, according to number of visits to physicians and types of other practitioners: United States, 1980

Other practitioner	Total	Physician visits			
		0	1 or more	1-3	4 or more
Population in thousands	222,876	65,078	157,798	93,084	64,714
		Percent of population with at least 1 visit			
Nurse	13.1	7.7	15.1	13.0	18.6
Optometrist	9.2	7.9	9.8	9.6	10.3
Chiropractor	4.0	2.9	4.5	3.9	5.1
Podiatrist	2.0	0.8	2.3	1.6	3.1
Psychologist	1.3	0.3	1.7	1.2	2.6
		Average number of visits for persons with at least 1 visit			
Nurse	3.6	3.2	3.7	3.1	4.4
Optometrist	1.4	1.5	1.4	1.3	1.4
Chiropractor ²	7.9	8.1	7.8	6.8	8.2
Podiatrist	2.8	1.8	2.9	2.6	3.4
Psychologist	8.9	6.9	9.2	5.9	12.0

¹Adjusted for age and sex by the direct method to the 1980 civilian noninstitutionalized population using the age groups shown in table A.

²Adjustment based on the 1980 population 6 years of age and over.

SOURCE: National Center for Health Statistics: Data from the National Medical Care Utilization and Expenditure Survey.

The use of chiropractors and optometrists showed the weakest relationship to physician visits.¹

There are also substantial differences in the way these practitioners are utilized. People who used psychologists and chiropractors tended to see them frequently, averaging 8.9 and 7.9 visits per year, respectively. Optometrists and podiatrists were on the other end of the scale with averages of 1.4 and 2.8 visits per year, respectively.

Although people who saw physicians more frequently were also more likely to see another of these practitioners, the relationship to volume of services was not consistent. However, those with four or more physician visits had significantly greater numbers of visits to nurses, podiatrists, and psychologists.

Conclusion

The data presented indicate that people who visit physicians are more likely to have visits with selected other practitioners than the people who do not. Furthermore, the more physician visits that people have, the more likely they are to have one or more visits to each of these other practitioners. Also, the number of visits to nurses, podiatrists, and psychologists (for those with any such visits) is greatest for those with four or more physician visits. The reasons for these relationships may be quite complex. In many cases, other practitioners are brought into the treatment programs by the physicians themselves; this is especially true for nurses.

Frequently, positive relationships between physician visits and other practitioner visits may result from the effects of in-

tervening variables in addition to age and sex. A poor state of health may prompt more frequent visits to physicians and also to other practitioners, bringing about a positive relationship between the two types of visit.

The data relating to chiropractic services are of special interest because cooperation between chiropractors and physicians is minimal; only rarely would physicians refer patients to chiropractors (Von Kuster, 1980). Yet people with physician visits are more likely to have chiropractic visits than are those with no physician visits. Stated another way, 80 percent of all persons who saw chiropractors during the year also saw physicians. Apparently, most people who receive treatment from chiropractors do not depend on them entirely for their health care. Rather, they appear to use physician services and chiropractic services in a complementary fashion. Since physicians seldom refer patients to a chiropractor, it may be assumed that most of the people who saw chiropractors in addition to physicians went on their own initiative. Those who had large numbers of physician visits undoubtedly did so in many cases because of concerns over special health problems; the data suggest that a number of them also decided to go to chiropractors for additional treatment. Similarly, many who had been receiving care from chiropractors also sought help from physicians, either for the same or other conditions.

The weakest relationship is between optometric services and physician services, suggesting that optometric visits seldom occur because of physician referrals. It seems that people tend to decide themselves when to see an optometrist. This may indicate that needs for the two types of service are substantially unrelated. The relationship is also complicated because many people use ophthalmologists instead of optometrists.

Can it be said, then, that services from the other practitioners largely supplement physician services rather than substitute for them? The relationships are strongest between physician services and psychological and podiatric services, and they

¹See also: National Center for Health Statistics, Optometric manpower, Characteristics of optometric practice, United States, 1968, by H. K. Koch and H. M. Phillips, *Vital and Health Statistics*, Series 14-No. 13, DHEW Pub. No. (HRA) 74-1808, Health Resources Administration, Washington, U.S. Government Printing Office, June 1974.

are weakest between physician services and optometric and chiropractic services. For whatever reason(s), most people who utilize these other practitioner services also utilize physician services; therefore, people tend to use these practitioners in addition to physicians in order to meet their perceived health needs. Very few use the other practitioners exclusively, that is, as a substitute for using physician services. Of course, the services provided by some of these practitioners are somewhat different from those provided by physicians. Still, any visit to another health care practitioner may in effect substitute for a physician visit and may thus reduce the personal workload of physicians.

References

Bureau of Health Professions: *Third Report to the President and Congress on the Status of Health Professions Personnel in the United States*. DHHS Pub. No. (HRA) 82-2. Health Resources Administration. Washington. U.S. Government Printing Office, Jan. 1982.

Kuby, A. M.: *The Chiropractic Patient*. Unpublished document. The University of Chicago Library. Chicago, 1965.

National Center for Health Statistics: *Persons receiving care from selected health care practitioners, United States, 1980*, by R. H. Muggge. *National Medical Care Utilization and Expenditure Survey*. Series B, Descriptive Report. Public Health Service, DHHS, Hyattsville, Md. To be published.

National Commission on Allied Health Education: *The Future of Allied Health Education*. San Francisco. Jossey-Bass Inc., 1980.

National Institutes of Health: *New Health Practitioners*, by R. L. Kane. DHEW Pub. No. (NIH) 75-875. National Institutes of Health. Washington. U.S. Government Printing Office, 1975.

Rafferty, J.: *Health Manpower and Productivity*. Lexington, Mass. D.C. Heath and Co., 1974.

Von Kuster, T., Jr.: *Chiropractic Health Care, A National Study of Cost of Education, Service Utilization, Number of Practicing Doctors of Chiropractic, and Other Key Policy Issues*. Unpublished document. The Foundation for the Advancement of Chiropractic Tenets and Science. Contract No. HRA 231-77-0126. Prepared for the Health Resources Administration. Hyattsville, Md., 1980.

Trends in Health Personnel

by Gloria Kapantais, National Center for Health Statistics

Introduction

During recent decades, dramatic and significant changes have occurred in the number, composition, and characteristics of the Nation's health personnel. Federal legislation has encouraged and promoted these changes through various means, including programs of educational subsidies to train and place health personnel. These programs have resulted in the growth in the number and supply of health professionals and an increase in the number of minorities and women in formerly white male professions.

It is now largely accepted that the overall supply of health personnel is sufficient, although problems caused by the uneven distribution of some health specialties may still exist. Attention is now focused on the problem of containing escalating health care costs, on which health personnel obviously impact, through private practitioners' fees and through the staff costs of health facilities and institutions.

The information presented in this article provides a brief overview of changes that have occurred in the Nation's health personnel during recent decades. More detailed information is presented in the annual reports which the Secretary of the Department of Health and Human Services submits to the President and the Congress (Bureau of Health Professions, 1982a). The first section deals with selected health practitioners and presents trend data to illustrate the numerical increase that occurred from 1965 through 1980. The supply of these practitioners is also examined in relation to their distribution by geographic region and age. The major changes that occurred among

nursing personnel, which constitute the largest group of health care personnel, are considered in more detail. Selected information on public health and allied health workers is also presented. The final section of this article documents the increasing representation of women and minorities in health occupations.

Private health practitioners

Number of personnel

The supply of health practitioners (physicians, dentists, optometrists, pharmacists, podiatrists, veterinarians, and registered nurses) has increased greatly during the past two decades, both in absolute numbers and in relation to the population. This growth has been particularly striking during the past 15 years, although it has not been uniform among these seven professions (table A). The number of registered nurses per 100,000 population increased by 76 percent, the largest increase. The next largest increases, nearly 40 percent, occurred among physicians and veterinarians. The number of pharmacists per 100,000 increased by 24 percent during this period, while the supply of dentists and optometrists each rose by approximately 15 percent. The number of podiatrists per 100,000 population increased by only 3 percent, the smallest rise. This is largely because in 1965 most podiatrists were in the older age groups. Many of them have since died or retired (Bureau of Health Professions, 1982a). The large influx of foreign medical graduates to the United States during the late 1960's and

Table A. Active health professionals and number per 100,000 population, according to type of profession: United States, selected years 1965-80

Health professional	1965	1970	1975	1980	1965	1970	1975	1980	Percent increase 1965-80
	Number of active professionals				Number per 100,000 population				
Physician.....	288,700	323,200	377,400	449,500	145.5	154.5	176.8	202.3	39.0
Doctor of medicine.....	277,600	311,200	363,300	432,400	139.9	148.7	170.2	194.6	39.1
Doctor of osteopathy.....	11,100	12,000	14,100	17,100	5.7	6.0	6.6	7.7	35.1
Dentist.....	96,000	102,200	112,000	126,200	49.0	49.6	52.2	56.4	15.1
Optometrist.....	17,300	18,400	19,900	22,300	8.8	9.0	9.3	10.0	13.6
Pharmacist.....	104,100	113,700	122,800	144,200	52.5	54.4	57.3	64.9	23.6
Podiatrist.....	7,600	7,100	7,300	8,900	3.9	3.5	3.4	4.0	2.6
Veterinarian.....	23,300	25,900	31,100	36,000	11.9	12.6	14.6	16.2	36.1
Registered nurse.....	621,000	750,000	961,000	1,273,000	319.0	365.6	449.0	560.4	75.7

SOURCES: Bureau of Health Professions: *Third Report to the President and Congress on the Status of Health Professions Personnel in the United States*. DHHS Pub. No. (HRA) 82-2. Health Resources Administration. Washington. U.S. Government Printing Office, Jan. 1982; *Source Book—Nursing Personnel*. DHHS Pub. No. (HRA) 81-21. Health Resources Administration. Washington. U.S. Government Printing Office, Sept. 1981; *The Registered Nurse Population, An Overview*. DHHS Pub. No. (HRSA) 83-1. Health Resources and Services Administration. Washington. U.S. Government Printing Office, Mar. 1983.

1970's was an important factor in the rapid growth in the number of physicians. Immigration of foreign-trained personnel has not been significant in the other professions.

Geographic and age distributions

The distribution of practitioners varied by geographic region, county, and age. (See Detailed Tables 56, 57, and 62.) In 1980, the Northeast had the greatest supply in relation to population for several health professions: doctors of medicine, dentists, podiatrists, and registered nurses. The South, with generally much less favorable ratios, had or shared the lowest regional ratio for six of these health professions—doctors of medicine, doctors of osteopathy, dentists, optometrists, podiatrists, and registered nurses (Bureau of Health Professions, 1981a). Osteopathic physicians and podiatrists are the most unevenly distributed practitioners among the regions. The number of osteopathic physicians ranged from 225 per 100,000 population in the Northeast to 159 per 100,000 population in the South. For podiatrists, the number per 100,000 population in the Northeast was almost triple the number in the South. Only pharmacists were evenly distributed in relation to population among all regions.

Metropolitan areas and nonmetropolitan counties also had uneven distributions of most of these health professions, ranging in 1979 from relatively minor disparities to considerable differences (Bureau of Health Professions, 1981a). The greatest disparity occurred with podiatrists, the occupation with the smallest number of practitioners. Their ratio per 100,000 population was 4.6 for metropolitan areas and only 1.5 for nonmetropolitan. The next greatest disparity occurred with doctors of medicine. Their ratio was 213 per 100,000 population in metropolitan areas, which was more than double the ratio in nonmetropolitan counties. It should be noted, however, that many metropolitan areas contain large medical centers that draw patients from beyond their boundaries. As a result, these physician-population ratios tend to exaggerate the metropolitan-nonmetropolitan disparities. In contrast, pharmacists and optometrists were distributed much more evenly. There were 65 pharmacists per 100,000 population for metropolitan areas and 57 for nonmetropolitan areas and 10 optometrists for both metropolitan and nonmetropolitan areas.

The age distribution of active health practitioners sheds some light on the future supply of these professions (Bureau of Health Professions, 1981a). In 1980, the age levels of these eight professions varied considerably. Registered nurses were the youngest group, with a median age of 38 years. They also had the lowest proportion (13 percent) of active practitioners 55 years of age and over. Pharmacists and veterinarians were the next youngest groups, with median ages just under 40 years. Approximately one-fifth of each of these groups were 55 years of age and over. In 1980, the median age of physicians (doctors of medicine and doctors of osteopathy) and dentists was 42 years and 41 years, respectively. About 26 percent of the physicians and 22 percent of the dentists were 55 years of age and over. The median age of podiatrists in 1980 was 43 years, with almost a third of them 55 years of age and over. Among these eight professions, optometrists constituted the oldest work force;

their median age was 48 years. Nearly 36 percent of the active optometrists in 1980 were 55 years of age and over.

Nursing personnel

Nursing personnel are by far the largest group of health care providers. (The term nursing personnel in this article includes registered nurses, licensed practical nurses, aides, orderlies, and attendants.) They function in all parts of the health delivery system at many different position levels. In 1980, an estimated 1,273,000 registered nurses and 549,000 licensed practical nurses were in active practice.

The number of registered nurses actively engaged in nursing has nearly quadrupled since 1950 (table B). As more nurses have entered or remained in the work force, the number of registered nurses employed part time has increased. In 1950, about 11 percent of all registered nurses worked part time. By 1980, the proportion had increased to nearly one-third. These nurses, who are an integral part of the staffing in most fields of nursing employment, are very frequently married with young children (Bureau of Health Professions, 1983).

Employment

The regional distribution of registered nurses in 1980 followed similar patterns for physicians. The Northeast had the largest number (735 active nurses per 100,000 population), and the South had the lowest (444 nurses per 100,000 population) (Bureau of Health Professions, 1983).

Hospitals, nursing homes, and related health facilities have remained the predominant employers of registered nurses. Since 1962, 2 out of every 3 registered nurses have been employed in such facilities (Bureau of Health Professions, 1981b).

A 1980 study revealed that 24 percent (nearly 400,000) of all nurses licensed in November 1980 were not employed in nursing. Of this group, 8 percent were actually seeking nursing

Table B. Active registered nurses, according to employment status, and number per 100,000 population: United States, selected years 1950-80

Year ¹	Employment status			Number per 100,000 population
	Total	Full time	Part time	
1950	335,000	299,000	36,000	218
1955	430,000	388,000	42,000	257
1960	527,000	424,000	103,000	289
1965	621,000	466,000	155,000	318
1970	750,000	534,000	216,000	364
1975	961,000	682,000	279,000	448
1980	1,273,000	863,800	409,000	560

¹The dates for 1950-75 estimates are actually January of the year following the year listed (rather than January 1 of the year listed) to achieve greatest comparability with December 31 data for other health occupations in this report.

SOURCES: Bureau of Health Professions: *Supply and Characteristics of Selected Health Personnel*. DHHS Pub. No. (HRA) 81-20. Health Resources Administration. Washington. U.S. Government Printing Office, June 1981; *Source Book—Nursing Personnel*. DHHS Pub. No. (HRA) 81-21. Health Resources Administration. Washington. U.S. Government Printing Office, Sept. 1981; *The Registered Nurse Population, An Overview*. DHHS Pub. No. (HRSA) 83-1. Health Resources and Services Administration. Washington. U.S. Government Printing Office, Mar. 1983.

employment. More than two-thirds of those looking for nursing employment were seeking part-time jobs (Bureau of Health Professions, 1983). An estimated 75,700 registered nurses were employed in nonnursing occupations. However, about 32 percent of those in nonnursing occupations were nevertheless in health-related occupations. Apart from those seeking nursing employment or employed in a nonnursing capacity, the study found that 286,600 registered nurses were not working. About 81 percent of these nurses were married, and most of them had children at home.

Education

The nursing educational system consists of several different programs of basic preparation and several levels beyond the education required for registered nurses. During the three decades from 1950 to 1980, a changing pattern has emerged in the various programs providing initial preparation to become a registered nurse. Each year more nursing career programs have been merged into the general higher education system. Thus, college or university programs leading to a baccalaureate degree have shown substantial growth (up from 195 programs in January 1950 to 368 in October 1979). In addition, the number of programs leading to an associate degree has increased from only 18 programs in the 1955–56 academic year to 707 programs in the 1980–81 year. The “traditional” educational method of preparing nurses—a hospital program leading to a diploma—decreased from 967 in the 1955–56 academic year to 311 in the 1980–81 academic year (Bureau of Health Professions, 1981d).

The number of registered nurses who have a baccalaureate or higher academic degree has increased from 8 percent in 1952 to 15 percent in 1970 to 27 percent in 1980. About 5 percent had master’s or doctor’s degrees in 1980 (Bureau of Health Professions, 1981b, 1983).

Public health personnel

In the late 1970’s, interest heightened in disease prevention and health promotion. As a result, the Nation is turning increasing attention to disease prevention rather than just treatment as the most humane and cost-effective strategy (Bureau of Health Professions, 1982b). Public health—the attempt to control or prevent disease and promote health through organized community efforts—contributed significantly to earlier achievements such as the virtual conquest of infectious diseases. It will be no less important in attaining the disease prevention and health promotion goals. Public health personnel contribute to environmental health-hazard detection and control, health education of the public, better nutrition, epidemiologic study of the causes and patterns of disease, management of health resources and services, and the provision of preventive and personal health services to high-risk groups, the needy, and the disadvantaged.

Relatively few individuals are responsible for public health activities in the United States. However, they contribute to the overall health of the American people in far greater measure than their actual numbers would suggest. Only 7 percent (about 500,000 persons) of the health work force perform such func-

tions, and only half this number spend the majority or all of their time working in public health. Although voluntary organizations make significant contributions, public health workers are principally employed by local, State, and Federal governments. The responsibilities of public health personnel are interdisciplinary and multidisciplinary and include detection of health problems, assessment of community health status, health education and promotion, as well as other areas. The work force comprises a great variety of personnel with technical, professional, or specialist backgrounds in public health, personal health, and other occupations not related to health.

Of the 250,000 workers who spend the majority of their time working in public health, about 106,500, or 43 percent, are in public health practice and program management. Nearly 65 percent (69,000) of these are public health nurses. In addition, there are about 82,000 environmental and occupational health personnel. This includes 20,000 sanitarians, 6,000 industrial hygienists, 4,000 teachers and researchers, 26,000 occupational health and safety specialists, 2,000 occupational physicians, and 24,000 occupational health nurses. About 50,000 persons are health services administrators and planners in hospitals, nursing homes, public health agencies, medical group practices, and other settings (Bureau of Health Professions, 1982b).

Allied health personnel

Allied health personnel is another group of health workers encompassing a wide variety of occupations. More than 100 allied health occupations and specialties now exist. They are a cadre of professional and technical workers that complement as well as supplement the services provided by independent practitioners. Many of them perform work that was once the responsibility of longer-established professions. This delegation of responsibility has resulted from increased workloads on practitioners, from attempts to provide additional services in areas thought to be underserved, from attempts to contain costs by using less expensive manpower, and in some cases from the realization that a new type of specialist or technician could provide health care more efficiently. Technological advances such as the heart and lung machine and the computer have also required entirely new health care skills that must be provided by persons trained for new clinical roles (Bureau of Health Manpower, 1979). The number of allied health workers doubled since 1966 to nearly 1 million in 1978.

Minority groups

Minority groups are generally underrepresented among health professionals. For example, black physicians, dentists, and pharmacists comprised only 2–3 percent of the total supply of practitioners in these professions in 1980, when black people comprised 12 percent of the total U.S. population. A desire to increase the number of minorities and women in health has resulted in the enactment by Congress of a variety of Federal programs to provide financial support and other incentives to enroll more minorities and women in health professional schools. Many of these programs were incorporated into the Health

Professions Educational Assistance Act (Public Law 94-484, as amended).

The proportion of minority group members among first-year students in health professions schools increased between the late 1960's and the early 1970's. For example, black students accounted for 2.7 percent of first-year medical students in 1968, compared with 7.5 percent in 1974. However, this proportion declined slightly in the late 1970's; in 1979, 6.5 percent of first-year medical students were black.

By the early 1980's, the racial and Hispanic representation in health professions schools ranged from 5 percent for veterinary medicine to 12 percent for doctors of medicine and to a high of 22 percent for schools of public health (table C). Black people were generally the largest minority group in all health occupations schools (Bureau of Health Professions, 1981c).

Table C. Minority enrollment in selected health professions schools, according to type of profession: United States, selected academic years 1977-81

Health profession	Academic year	Enrollment	
		Number of students	Percent minority
Doctor of medicine	1979-80	63,800	11.6
Doctor of osteopathy	1979-80	4,479	5.4
Dentistry	1980-81	22,842	11.5
Optometry	1979-80	4,500	7.6
Pharmacy	1979-80	22,560	10.8
Podiatry	1980-81	2,577	8.9
Veterinary medicine	1980-81	8,156	4.6
Registered nursing	1977-78	219,582	8.3
Baccalaureate	1977-78	94,610	9.4
Associate	1977-78	80,344	9.0
Diploma	1977-78	44,628	4.9
Practical nursing	1977-78	48,453	14.9
Public health	1979-80	7,276	22.1

SOURCE: Bureau of Health Professions: *Minorities and Women in the Health Fields, 1982 Edition*. DHPA Report No. 7-82. Division of Health Professions Analysis. Health Resources Administration. Hyattsville, Md., Oct. 1981.

Based upon recent projections, the proportions of black and Hispanic people in the total supply of physicians and dentists will increase much less than will their proportions in the population during the next two decades. To achieve representation among these professions equal to their proportion of the total population, minority enrollments in the health professions schools will have to increase substantially. As previously mentioned, black people comprised 12 percent of the total population in 1980. To achieve this same percent of total new entrants to medical or dental schools, the percent of black entrants would have to double (Bureau of Health Professions, 1982c).

Women

Generally, there has been a greater degree of success in increasing the entry of women into health professions schools (table D). The proportion of females among medical school graduates jumped from 5 percent in the 1954-55 academic year to 23 percent in the 1979-80 academic year (American Medical Association, 1981). Similar large increases occurred for several other professional schools. By the 1979-80 academic year, the proportion of female graduates ranged from 14 percent in dentistry to 41 percent in pharmacy (table D).

Changes can be expected in the future composition of health practitioners because of the recent increases in the enrollment of minorities and women. However, these changes will be gradual because new graduates make up a relatively small proportion of the total supply. In addition, changes will be much more evident in the sex composition than in the racial and ethnic composition because of the differences in enrollment growth between women and minorities.

Conclusion

From 1965 through 1980, the supply of selected health practitioners (physicians, dentists, optometrists, pharmacists, podiatrists, veterinarians, and registered nurses) increased

Table D. First professional degrees¹ awarded by major health professions schools to women, according to selected health professions: United States, selected academic years 1949-80

Academic year	Health profession						
	Medicine	Osteopathy	Dentistry	Optometry	Pharmacy	Podiatry	Veterinary medicine
	Percent of degrees						
1949-50	10.4	5.5	0.7	1.1	7.7	---	1.5
1954-55	4.8	1.7	0.9	1.0	9.7	---	1.3
1959-60	5.6	1.9	0.8	1.2	11.9	1.3	2.2
1964-65	6.5	2.5	0.7	2.2	14.2	0.7	3.9
1969-70	8.5	2.8	1.0	5.2	19.0	0.8	7.5
1974-75	13.2	5.3	3.1	5.1	28.1	1.1	15.9
1975-76	16.2	7.2	4.5	7.7	31.0	2.6	18.1
1976-77	19.2	8.8	7.4	11.0	33.1	3.3	22.8
1977-78	21.5	12.5	11.2	13.1	36.3	4.8	24.5
1978-79	23.0	16.2	11.7	15.3	39.9	---	29.3
1979-80	23.1	---	13.6	15.5	40.5	---	33.4

¹First professional degree is the earliest degree that signifies completion of the academic requirements to begin practice in the profession.

SOURCE: Bureau of Health Professions: *Minorities and Women in the Health Fields, 1982 Edition*. DHPA Report No. 7-82. Division of Health Professions Analysis. Health Resources Administration. Hyattsville, Md., Oct. 1981.

greatly, both in absolute numbers and in relation to the Nation's population. The greatest increases have occurred among registered nurses, followed by doctors of medicine, doctors of osteopathy, and veterinarians, all of whom increased by more than 35 percent.

Several significant changes are occurring in the supply and characteristics of the Nation's registered nurses. In addition to the dramatic increase in number, part-time employment has increased sharply to about one-third of all active registered nurses in 1980. The education program for registered nurses is also changing as more students enroll in 4-year or junior college programs leading to a baccalaureate or associate degree rather than in the traditional hospital program leading to a nursing diploma.

The estimated 500,000 persons employed in public health are an increasingly important segment of the Nation's total health personnel, considering the current emphases on disease prevention and health promotion. About half of this number work in public health agencies or spend most of their time carrying out public health functions.

More than 100 allied health occupations and specialties now exist, and about 1 million people are employed in these occupations. These persons constitute a group of professional and technical workers that complements as well as supplements the services provided by independent health practitioners.

The proportion and number of women in health professions has risen substantially in recent years. This is especially evident in the fields of pharmacy and veterinary medicine. Minority representation has also increased among the various health professions, but not to the same degree as for women. Even with these gains women and minorities are still underrepresented in these professions given their representation in the total U.S. population.

References

American Medical Association, Center for Health Services Research and Development: *Physician Characteristics and Distribution in the U.S., 1981 Edition*. Chicago, American Medical Association, 1981.

Bureau of Health Manpower: *A Report on Allied Health Personnel*. DHEW Pub. No. (HRA) 80-28. Health Resources Administration. Washington. U.S. Government Printing Office, Nov. 1979.

Bureau of Health Professions: *Supply and Characteristics of Selected Health Personnel*. DHHS Pub. No. (HRA) 81-20. Health Resources Administration. Washington. U.S. Government Printing Office, June 1981a.

Bureau of Health Professions: *Source Book—Nursing Personnel*. DHHS Pub. No. (HRA) 81-21. Health Resources Administration. Washington. U.S. Government Printing Office, Sept. 1981b.

Bureau of Health Professions: *Minorities and Women in the Health Fields, 1982 Edition*. DHPA Report No. 7-82. Division of Health Professions Analysis. Health Resources Administration. Hyattsville, Md., Oct. 1981c.

Bureau of Health Professions: *Educational Statistics for Selected Health Occupations*. DHPA Report No. 12-82. Division of Health Professions Analysis. Health Resources Administration. Hyattsville, Md., Sept. 1981d.

Bureau of Health Professions: *Third Report to the President and Congress on the Status of Health Professions Personnel in the United States*. DHHS Pub. No. (HRA) 82-2. Health Resources Administration. Washington. U.S. Government Printing Office, Jan. 1982a.

Bureau of Health Professions: *Public Health Personnel in the United States, 1980*. DHHS Pub. No. (HRA) 82-6. Health Resources Administration. Washington. U.S. Government Printing Office, Jan. 1982b.

Bureau of Health Professions: *Estimates and Projections of Black and Hispanic Personnel in Selected Health Occupations*. DHHS Pub. No. (HRA) 82-10. Health Resources Administration. Washington. U.S. Government Printing Office, Sept. 1982c.

Bureau of Health Professions: *The Registered Nurse Population, An Overview*. DHHS Pub. No. (HRSA) 82-1. Health Resources and Services Administration. Washington. U.S. Government Printing Office, Mar. 1983.

Patients in Public General Hospitals

by Rosanna M. Coffey, Ph.D., Division of Intramural Research,
National Center for Health Services Research

Introduction

Public general hospitals are regarded as institutions committed to serving the poor and providing charity care. It is continually claimed that patients in public hospitals generally have more severe health problems than persons using other hospitals. This assertion is used to justify the continued existence of public hospitals and to argue for Federal, State, and local financial support. However, much evidence is only anecdotal. Although some administrators provide supporting statistics from their own hospitals, little national evidence is available to assess the situation for all public hospitals.

In light of current debate over the future of public hospitals, empirical investigation is needed to determine whether public and private hospitals do indeed treat different types of patients. This article compares characteristics of patients admitted to public general hospitals and those admitted to voluntary (private, not-for-profit) hospitals. These data should provide a base from which to evaluate claims that public general hospitals serve poorer and more severely ill patients.

Comparisons between public and voluntary hospitals should consider the hospital's location. Urban and rural public hospitals are characterized as distinct groups with different missions, resources, and financial problems (Brown, 1978, and Ginzberg et al., 1979). Compared with rural public hospitals, the plight of urban public hospitals is generally seen as more serious and has received greater attention in the literature. Sager (1982) shows for 52 large cities that transfers to public hospitals from other hospitals rose from 3 percent of admissions in 1973 to 7 percent in 1981, while transfers to voluntary hospitals remained around 1 percent. Urban public hospitals, which may be in direct competition with private hospitals, complain that private hospitals often transfer Medicaid and uninsured patients to public hospitals. This is possible in urban areas because densely populated areas can support many hospitals within limited distances. Such transfers are less likely among rural hospitals because the public hospital is often the only hospital serving a large area.

Methods

The Hospital Cost and Utilization Project (HCUP) of the National Center for Health Services Research provides a valuable data base of nearly 400 hospitals for studying patient characteristics of public and voluntary hospitals. For this article, 1977 data are compared for 67 public and 247 voluntary, short-term general, non-Federal hospitals. These hospitals provide general medical and surgical services to communities, and the

average length of stay for patients is less than 30 days. Patients in long-term care units of acute care facilities are excluded from these data. More than 355,000 patient records (a 10-percent random sample of records obtained from 12 major discharge abstract services) from the 314 hospitals were combined with institutional characteristics as reported in the American Hospital Association's Annual Survey of Hospitals. Information about counties in which the hospitals are located was obtained from the Area Resource File and combined with hospital and patient data. In addition, a system of rating disease severity was applied to these data (SysteMetrics, 1983). Using this approach, proportions of patients at various stages of disease can be compared across hospital types for specific diagnoses.

Demographic, economic, and medical characteristics form the framework for comparisons of patients across types of hospitals. Demographic characteristics are measured by proportions of patients in age, race, and sex categories. Economic status is reflected by the distribution of patients according to type of payment. Medical descriptors include patient diagnoses and, for selected conditions, proportions of patients in specific stages of severity. Conceptual distinctions between urban and rural hospitals are important, and measures that compare public and voluntary hospitals without accounting for location can be misleading. Therefore, public and voluntary hospitals are compared only within similar locations.

Hospital control refers to the type of organization responsible for setting overall policies of the hospital. Public hospital policies are set mainly by officials of counties, municipalities, and a few States; and voluntary (private, not-for-profit) hospital policies are set by a private board of trustees.

Results

Public general hospitals accounted for 31 percent of the 5,753 short-term general, non-Federal hospitals in the United States in 1977, according to the Annual Survey of Hospitals by the American Hospital Association. In standard metropolitan statistical areas (SMSA's), public hospitals represented 17 percent of the 2,816 short-term general, non-Federal hospitals, while their proportion was 45 percent outside SMSA's. In terms of hospital discharges, public hospitals accounted for 16 percent of discharges inside SMSA's and 37 percent outside SMSA's. Their share of inpatient days was similar to discharges: 16 percent inside SMSA's and 35 percent outside. The average length of stay in public hospitals was 7.5 days compared with 7.8 days in voluntary hospitals. This difference occurs both inside and outside SMSA's. The average occupancy rate of public

hospitals is well below voluntary hospitals, 68 percent compared with 74 percent inside SMSA's and 58 percent versus 63 percent outside SMSA's. For the HCUP sample, patient discharge data are aggregated by hospital type and presented to describe patient characteristics in more detail.

Demographic characteristics

Public general hospitals have about twice the proportion of minority patients as voluntary hospitals (table A). Public hospitals in SMSA's serve a younger population than do voluntary hospitals. This conclusion holds even when obstetrical patients are excluded (not shown). Outside SMSA's, the reverse is true; that is, the elderly account for more patients in public than in voluntary hospitals.

Economic characteristics

The economic status of patients can be inferred from expected source of payment ascertained at time of admission to the hospital. Although the expected payment source may differ from the eventual bill payer, the expectations are relevant to admission decisions. Urban public hospitals have a higher proportion of Medicaid patients. Fifteen percent of public hospital patients were Medicaid reimbursed compared with 8 percent of voluntary hospital patients (table B). Furthermore, self-payers were 12 percent of public hospital admissions and 6 percent of admissions in voluntary hospitals inside SMSA's. In rural areas, the percents of Medicaid and self-pay patients were almost the same. The percent of Medicare patients was lower in public than in voluntary hospitals inside SMSA's and the opposite outside SMSA's, reflecting the patient age distributions.

Table A. Percent distribution of patients in public and voluntary hospitals inside and outside standard metropolitan statistical areas (SMSA), according to race, age, and sex: United States, 1977

Race, age, and sex	Inside SMSA		Outside SMSA	
	Public	Voluntary	Public	Voluntary
Race				
Percent distribution				
Total	100.0	100.0	100.0	100.0
White	80.0	89.2	92.7	96.1
Other than white	20.0	10.8	7.3	3.9
Age				
Total	100.0	100.0	100.0	100.0
Newborn or stillborn	9.9	6.2	9.5	8.9
Under 15 years	9.6	11.0	8.5	10.2
15-44 years	43.3	36.9	35.8	38.1
45-64 years	19.9	24.3	18.9	20.4
65-74 years	9.3	11.4	12.7	12.0
75 years and over	7.9	10.2	14.7	10.5
Sex				
Total	100.0	100.0	100.0	100.0
Male	43.3	42.8	40.4	42.4
Female	56.7	57.2	59.6	57.6

SOURCE: National Center for Health Services Research: Data from the Hospital Cost and Utilization Project.

Table B. Percent distribution of patients in public and voluntary hospitals inside and outside standard metropolitan statistical areas (SMSA), according to expected source of payment: United States, 1977

Payment source	Inside SMSA		Outside SMSA	
	Public	Voluntary	Public	Voluntary
Percent distribution				
Total	100.0	100.0	100.0	100.0
Medicaid	14.6	8.1	7.5	8.8
Medicare	18.9	22.4	28.6	24.1
Blue Cross, Blue Shield	22.1	30.5	19.9	26.5
Other private insurance	22.7	28.3	29.6	25.5
Self	12.0	6.0	11.6	11.9
Other ¹	9.6	4.7	2.8	3.2

¹Includes workman's compensation, government agencies, and other unspecified insurance or program coverage.

SOURCE: National Center for Health Services Research: Data from the Hospital Cost and Utilization Project.

Medical characteristics

Diagnostic categories—Diagnoses differ between public and voluntary hospital groups within SMSA's but are similar outside SMSA's. Compared with voluntary hospitals, public hospitals in SMSA's treat more patients with mental disorders, pneumonia, normal and complicated deliveries, perinatal morbidity and mortality, and injuries (table C). Urban voluntary hospitals more frequently treat neoplasms and diseases of the nervous, circulatory, respiratory, genitourinary, and musculoskeletal systems. Some diagnoses frequently involve discretionary admissions, including enlarged tonsils and adenoids, inguinal hernia, enlarged prostate, and osteoarthritis. A higher percent of patients with these diagnoses are admitted to SMSA voluntary hospitals. Also cancer and heart patients, who may require costly intensive care facilities, are admitted relatively more frequently at voluntary hospitals.

Severity of illness—Major diagnostic categories indicate nothing about the severity of problems treated within specific medical conditions. To indicate this, the Hospital Cost and Utilization Project developed a system to classify stages of severity for 400 diseases. The judgments of a panel of physicians who based their decisions on medical literature and experience were used to develop the system (SysteMetrics, 1983). It describes most medical conditions in four stages, with the higher stages indicating a greater threat to life. Generally, stage 1 is a diagnosed disease without complications; stage 2 is a localized complication; stage 3 affects other body systems; and stage 4 is death (Hornbrook, 1982).

There should be a word of caution. If certain hospitals are less likely to report secondary diagnoses or complications on patient charts, then the staging algorithm will have less information with which to classify patients. This may result in patient allocation by the level of detailed reporting rather than by level of severity. The hospital with more detailed reporting will potentially have more higher staged patients. Until this issue is resolved, comparisons for public and voluntary hospitals must be suspect.

For illustration, three primary staged conditions and a brief

Table C. Percent of patients in public and voluntary hospitals inside and outside standard metropolitan statistical areas (SMSA), according to diagnostic categories: United States, 1977

Diagnostic category	Inside SMSA		Outside SMSA	
	Public	Voluntary	Public	Voluntary
Infective and parasitic diseases	2.6	2.2	3.5	3.2
Neoplasms	5.6	7.0	4.4	5.5
Malignant	4.1	4.9	3.1	3.9
Benign and unspecified	1.5	2.1	1.3	1.7
Endocrine, nutritional, and metabolic diseases	1.6	1.7	1.8	1.4
Diabetes mellitus	1.1	1.1	1.3	0.9
Diseases of blood and blood-forming organs	0.6	0.5	0.4	0.5
Mental disorders	4.8	3.5	2.6	2.5
Diseases of nervous system and sense organs	3.3	5.3	2.0	3.8
Cataract	0.6	0.9	0.2	0.8
Diseases of ear and mastoid process	0.6	2.1	0.7	1.3
Diseases of circulatory system	9.8	13.1	12.8	12.1
Hypertensive disease	0.9	0.7	1.1	0.5
Acute myocardial infarction	0.8	1.4	1.5	1.7
Miscellaneous ischemic heart disease	1.2	2.9	2.1	1.8
Cerebrovascular disease	1.7	1.9	2.4	2.0
Diseases of respiratory system	6.9	9.0	10.7	9.4
Acute upper respiratory infection excluding influenza	1.0	0.9	1.4	1.3
Pneumonia	1.5	1.0	2.0	1.8
Hypertrophy of tonsils and adenoids	0.8	2.3	1.2	1.6
Diseases of digestive system	8.6	9.6	11.2	11.3
Appendicitis	0.6	0.6	1.1	1.0
Inguinal hernia	1.0	1.3	1.3	1.7
Diseases of gallbladder	1.3	1.1	1.3	1.6
Diseases of genitourinary system	7.0	9.0	8.0	8.3
Benign prostatic hypertrophy	0.5	0.7	0.4	0.5
Disorders of menstruation	1.0	1.3	1.2	1.1
Normal delivery and complications of pregnancy, childbirth and the puerperium	11.6	8.1	11.6	10.1
Normal delivery	4.7	3.2	6.8	5.5
Diseases of musculoskeletal system and connective tissue	3.5	5.5	3.0	3.1
Osteoarthritis and allied conditions	0.4	0.8	0.5	0.5
Disorders of intervertebral disc	0.8	1.0	0.6	0.8
Certain causes of perinatal morbidity and mortality	0.4	0.1	0.1	0.0
Symptoms and ill-defined conditions	6.3	4.3	3.1	5.1
Injuries by accidents, poisonings, or violence	12.4	9.3	9.8	9.4
Fractures, all sites	3.8	3.2	3.2	3.4
Intracranial injuries, excluding skull fractures without intracranial injury	1.5	0.9	1.1	0.9
Lacerations and open wounds	1.3	0.6	0.6	0.7

NOTE: Condition categories are based on the *H-ICDA Hospital Adaptation of ICDA, 2d Edition*.

SOURCE: National Center for Health Services Research: Data from the Hospital Cost and Utilization Project.

description of their staging criteria are as follows:¹

- **Diabetes mellitus**
 - Stage 1: Sugar elevation without complications.
 - Stage 2: With infection, acidosis (without coma), retinopathy (without vision loss), glomerulosclerosis, neuropathy, or gangrene.
 - Stage 3: With acidosis and coma, retinopathy and vision loss, necrosis, coma, or shock.
 - Stage 4: Death.
- **Diarrhea, gastroenteritis**
 - Stage 1: Diarrhea without abnormal weight loss.
 - Stage 2: With abnormal weight loss.
 - Stage 3: Disorientation, stupor, coma, or shock.
 - Stage 4: Death.
- **Cholecystitis**
 - Stage 1: Chronic gallbladder disease.
 - Stage 2: Acutely inflamed gallbladder, necrosis, or abscess.

Stage 3: Fistula, bile peritonitis, biliary sepsis, or shock.
Stage 4: Death.

Cases of diabetes mellitus are clearly more severe in public SMSA hospitals (table D). Public urban hospitals have relatively fewer, uncomplicated stage 1 diabetes cases and almost twice the proportion of complicated stage 3 cases as voluntary hospitals. In rural areas, public hospitals have a higher proportion of complicated stage 3 patients, but similar proportions for other stages.

For diarrhea or gastroenteritis, patients at public hospitals in both urban and rural areas are less seriously ill. Public hospitals have significantly higher proportions of stage 1 patients and lower percents of stage 2 cases. For cholecystitis patients, the severity levels appear similar between public and voluntary hospitals. Four additional diseases show few differences in terms of severity between public and voluntary hospital patients (Coffey, 1983).

Newborns—Low-birth-weight ratios and neonatal mortality rates for minorities in the United States are almost twice those for white people (National Center for Health Statistics, 1980).

¹An examination of severity for seven diseases can be found in the full report (Coffey, 1983) from which this paper is drawn.

Table D. Number and percent distribution of patients in public and voluntary hospitals inside and outside standard metropolitan statistical areas (SMSA), according to stage of severity for selected diseases: United States, 1977

Disease and stage of severity	Inside SMSA		Outside SMSA	
	Public	Voluntary	Public	Voluntary
Diabetes				
	Number			
All cases	497	3,561	356	688
	Percent distribution			
Total	100.0	100.0	100.0	100.0
Stage 1: Without complication	44.4	54.8	53.5	54.1
Stage 2: Localized complication	40.0	36.3	36.5	39.7
Stage 3: Affects other body systems	13.8	7.4	8.2	3.6
Stage 4: Death	1.9	1.5	1.8	2.6
Diarrhea, gastroenteritis				
	Number			
All cases	456	2,769	554	1,004
	Percent distribution			
Total	100.0	100.0	100.0	100.0
Stage 1: Without complication	86.1	76.0	82.7	67.9
Stage 2: Localized complication	13.8	23.8	17.2	32.0
Stage 3: Affects other body systems	0.1	0.1	0.2	0.0
Stage 4: Death	0.0	0.1	0.0	0.0
Cholecystitis				
	Number			
All cases	393	3,536	361	774
	Percent distribution			
Total	100.0	100.0	100.0	100.0
Stage 1: Without complication	72.1	69.3	71.3	76.3
Stage 2: Localized complication	22.0	24.2	24.6	21.8
Stage 3: Affects other body systems	5.5	6.0	3.5	1.8
Stage 4: Death	0.4	0.5	0.6	0.1

NOTE: Condition categories are based on the *H-ICDA Hospital Adaptation of ICDA, 2d Edition*.

SOURCE: National Center for Health Services Research: Data from the Hospital Cost and Utilization Project.

Table E. Characteristics of newborns in public and voluntary hospitals inside and outside standard metropolitan statistical areas (SMSA): United States, 1977

Characteristic	Inside SMSA		Outside SMSA	
	Public	Voluntary	Public	Voluntary
Low-birth-weight ¹ ratio per 100 newborns	10.5	6.6	6.4	4.6
Discharged dead per 1,000 newborns	10.9	6.8	6.6	4.4

¹Weighing less than 2,500 grams (5 lb 8 oz).

SOURCE: National Center for Health Services Research: Data from the Hospital Cost and Utilization Project.

Since public hospitals are more likely to serve minorities and economically disadvantaged mothers, the need for more intensive newborn care is greater in public hospitals. For example, low-birth-weight ratios and newborn death rates were about 60 percent higher in public than in voluntary hospitals in SMSA's (table E). However, even outside SMSA's where the two types of hospitals had the same racial mix, public hospitals experienced 40–50 percent more low-birth-weight deliveries and newborn deaths.

Conclusion

In general, differences between public and voluntary hospitals outside metropolitan areas are small. In SMSA's, however, public hospitals treat more patients who are minorities, expect to use Medicaid, and do not have health insurance. Compared with voluntary hospitals, they also treat more patients with mental disorders, pneumonia, and injuries.

Information about the differences in the severity of illnesses between public and voluntary hospitals is somewhat ambiguous. Inside SMSA's, public hospitals have fewer elderly patients than do voluntary hospitals, while the reverse is true outside SMSA's. Both urban and rural public hospitals have higher newborn death rates and a greater incidence of low-birth-weight newborns.

Three illnesses were compared in terms of the severity of cases treated at each type of hospital. Cases of diabetes at public hospitals were clearly more serious than those at voluntary hospitals. On the other hand, hospitalized cases with a diagnosis of diarrhea or gastroenteritis were rated as more severe in the voluntary hospitals. Cholecystitis cases showed no differences between the two. Four additional diseases show few differences between public and voluntary hospitals (Coffey, 1983).

Based on seven diseases, it is difficult to reach general

conclusions about the severity level of patient illnesses seen at the different types of hospitals. Differences may result from the health problems of the community being served and the availability of alternative sources of care. For example, the lower severity of diarrhea cases treated at public hospitals could reflect the fact that the poor are less likely to be treated on an outpatient basis than are more affluent people who have access to private office-based physicians.

In addition, third-party reimbursement policies may make certain diagnoses more profitable to treat and, therefore, motivate voluntary hospitals to retain certain patients but refer other patients to public hospitals. Furthermore, the advantage of specialization in disease treatment may stimulate referrals for medical reasons in both ways among all hospitals. Additional analyses of these data are now being planned to resolve some of the issues.

References

- Brown, M. G.: Public-General Hospitals, Important Factors in the Delivery of Patient Care, in *Readings on Public-General Hospitals*.
- Prepared for the Commission on Public-General Hospitals. Chicago. Hospital Research and Educational Trust, 1978. pp. 1-87.
- Coffey, R. M.: Patients in public general hospitals, Who pays, how sick? *HCUP Research Note*. No. 2. Hospital Cost and Utilization Project, National Center for Health Services Research. In press, 1983.
- Ginzberg, E., Millman, M. L., and Brecher, C.: A review of the recent literature, The problematic future of public general hospitals. *Health and Medical Care Services Review* 2:1-11, Summer 1979.
- Hornbrook, M. C.: Hospital case mix, Its definition, measurement and use, Part II, Review of alternative measures. *Medical Care Review* 39:73-123, Summer 1982.
- National Center for Health Statistics: The recent decline in infant mortality, by J. C. Kleinman and S. S. Kessel. *Health, United States, 1980*. DHHS Pub. No. (PHS) 81-1232. Public Health Service. Washington. U.S. Government Printing Office, Dec. 1980.
- Sager, A.: The Example of the Public Hospitals. Mimeograph. Brandeis University, 1982.
- SysteMetrics, Inc.: Disease Staging, A Clinically Based Approach to Measurement of Disease Severity. Final Report. Forthcoming from NTIS. Contract No. 233-78-3001. Prepared for the National Center for Health Services Research. Rockville, Md., 1983.

Need for Care Among the Noninstitutionalized Elderly

by Barbara A. Feller, National Center for Health Statistics

Introduction

A large proportion of the elderly require a wide range of health care services. Although the elderly comprise about 11 percent of the population living outside of institutions, they account for about one-third of hospital days. They average 6.3 physician visits per person per year, compared with 4.4 among those under 65 years of age. In addition to high use of ambulatory and hospital care, some elderly people require assistance in carrying out everyday activities. This relatively high level of utilization of health care services results from the higher prevalence and severity of illness experienced by the elderly. Furthermore, almost half of the elderly report some degree of limitation of activity resulting from chronic disease or impairment (National Center for Health Statistics, 1981a). Therefore, the elderly are at high risk of institutionalization. In 1977, almost 5 percent of people 65 years of age and over were nursing home residents; the proportion was more than 20 percent for people 85 years of age and over (National Center for Health Statistics, 1981b). It has been estimated that about 1 out of 4 elderly people will be institutionalized at some time during their lives (Palmore, 1976).

Concern about the quality of life among the elderly and the high cost of institutional care has led to the exploration of alternatives to institutionalization. Needs assessment programs and alternative settings for long-term care have been developed in response to the concern over inappropriate placement (Williams et al., 1973; Kleh, 1977; Rossman, 1977; National Center for Health Statistics, 1978). To provide the most appropriate services, it is necessary that information on all aspects of health status be made available. Until now, information about the nonmedical health care needs of the elderly living in communities has been scarce.

The first step in providing necessary services is to estimate the size and characteristics of the target population. The proportion of the population 65 years of age and over is growing at a faster rate than that of other age groups, and the proportion 85 years of age and over is growing most rapidly. The special health care needs of this group will necessitate changes in health care delivery. This article presents data on the need for assistance in everyday activities among the elderly living outside of institutions.

Data source

Data from the 1979 and 1980 National Health Interview Survey (NHIS) are used in this analysis. NHIS is a cross-

sectional, nationwide household interview survey of the civilian noninstitutionalized population. The 1979 and 1980 NHIS included a Home Care Supplement. Through this supplement, information was collected on the need for assistance in selected personal care and home management activities as well as on the condition causing the need for assistance. In addition, for people who needed the help of another person, information was obtained on who provided the help and how often the help was provided.

The focus of this article is on the need for functional assistance. This is defined as needing another person's help to perform selected essential activities when this need results from a chronic condition, disability, or health problem as reported during the household interview. The range of activities covered reflects an individual's ability to live independently.

Two types of functional assistance that measure different severity of need and require different levels of intervention are distinguished: personal care and home management assistance. This distinction reflects the approach of Katz and Akpom (1976) and Densen, Jones, and Katz (1982).

A person is considered in need of personal care if that person either did not do or needed or received help from another person with at least one of the following activities: bathing, dressing, eating, using the toilet, getting in or out of a bed or chair, or taking care of a device to control bowel movement or urination.

A person is considered in need of home management assistance if he or she did not require personal care but did not do or needed or received help from another person with at least one of the following activities: walking or going outside, preparing own meals, shopping for personal items, doing routine chores, or handling money. However, if a person needed help to bathe and shop, that person would be included in personal care.

Through NHIS, information is also collected on living arrangements and household composition. The four categories of living arrangements used in this analysis are living alone, living with spouse, living with other relatives, and living with non-relatives. (The "living with spouse" category can include households that contain other members.)

The living arrangements of the elderly differ from those of younger adults (table A). Moreover, the living arrangements of elderly men differ from those of elderly women. Forty percent of women 65 years of age and over lived alone during the period 1979-80, compared with 15 percent of men. Elderly men were more likely to be living with spouses than were elderly women

Table A. Percent distribution of civilian noninstitutionalized adults, according to living arrangement, sex, and age: United States, average annual 1979 and 1980

Sex and age	Living arrangement				
	Total	Alone	With spouse	With other relatives	With nonrelatives
Both sexes					
All adults	100.0	12.2	64.7	20.0	3.1
18-44 years	100.0	8.4	61.0	26.1	4.5
45-64 years	100.0	10.7	77.9	10.3	1.1
65 years and over	100.0	29.4	54.0	15.2	1.4
65-74 years	100.0	24.4	62.9	11.5	1.2
75-84 years	100.0	38.2	41.7	18.5	1.6
85 years and over	100.0	38.5	22.9	36.2	2.4
Male					
All adults	100.0	10.2	68.8	17.4	3.5
18-44 years	100.0	10.0	59.6	25.1	5.3
45-64 years	100.0	8.5	84.2	6.3	1.1
65 years and over	100.0	14.8	76.2	7.7	1.2
65-74 years	100.0	12.2	80.9	5.9	1.0
75-84 years	100.0	19.1	70.0	9.4	1.5
85 years and over	100.0	25.7	50.6	22.2	*1.3
Female					
All adults	100.0	14.1	61.0	22.3	2.7
18-44 years	100.0	6.9	62.3	27.0	3.8
45-64 years	100.0	12.7	72.2	14.0	1.1
65 years and over	100.0	39.6	38.4	20.5	1.5
65-74 years	100.0	33.7	49.1	15.9	1.2
75-84 years	100.0	49.7	24.7	24.0	1.7
85 years and over	100.0	45.2	8.2	43.7	3.0

SOURCE: National Center for Health Statistics: Data from the National Health Interview Survey.

(76 percent versus 38 percent), and elderly women were more likely than elderly men to be living with other relatives (21 percent versus 8 percent). Because less than 2 percent each of elderly males and females lived with nonrelatives, this category is not discussed here.

Adults needing functional assistance

An estimated 4.7 million adults in the civilian noninstitutionalized population needed functional assistance from another person for selected personal care or home management activities. More than half of these people (2.7 million) were 65 years of age and over, and another 1.3 million were 45-64 years of age. Less than 1 million were 18-44 years of age.

As expected, the percent of the noninstitutionalized population needing another person's help increased with age. For instance, less than 1 percent of young adults needed functional assistance while 12 percent of the elderly needed help (tables B and C). The proportion of the population needing help continued to increase with age among those 65 years of age and over. About 7 percent of those 65-74 years of age needed help, compared with about 16 percent of those 75-84 years of age and 39 percent of those 85 years of age and over. Important variations emerge when the different types of care are considered.

Personal care activities

Altogether, 1.7 million adults needed personal care assistance, increasing from about 1 percent for those under 65 years of age to 4 percent of those 65 years of age and over (table B). Within the elderly population, the proportion was 2 percent among those 65-74 years of age, 6 percent of those 75-84 years of age, and 18 percent of those 85 years of age and over. In general, relative differences between men and women in the need for personal care assistance appeared negligible.

The need for personal care assistance results in a dependency reflected in the living arrangements of these individuals. They have difficulty living alone because they need help from another person for daily personal activities. About 3 percent of those 75-84 years of age and living alone required personal care, while 6 percent of those living with spouse and 11 percent of those living with other relatives required this kind of assistance. Similarly, among those 85 years of age and over, 10 percent of those living alone, 19 percent of those living with spouse, and 25 percent of those living with other relatives required personal care.

Home management activities

About 3.0 million adults needed help in home management activities but not in personal care, which implies a less

Table B. Percent of civilian noninstitutionalized adults needing personal care assistance, according to living arrangement, sex, and age: United States, average annual 1979 and 1980

Sex and age	Living arrangement			
	Total ¹	Alone	With spouse	With other relatives
Both sexes				
Percent of adults				
All adults.....	1.1	1.2	0.9	1.8
18-44 years.....	0.2	*0.1	0.1	0.6
45-64 years.....	1.0	0.9	1.0	1.4
65 years and over.....	4.3	2.5	3.6	10.0
65-74 years.....	2.2	1.3	2.2	4.3
75-84 years.....	5.9	2.6	6.3	11.2
85 years and over.....	17.8	9.6	18.8	25.0
Male				
All adults.....	1.0	0.6	1.0	1.1
18-44 years.....	0.2	*0.1	0.1	0.6
45-64 years.....	1.0	*0.8	1.0	*1.4
65 years and over.....	4.0	2.1	4.0	7.4
65-74 years.....	2.4	*1.5	2.5	*4.4
75-84 years.....	5.5	*2.0	6.3	*6.1
85 years and over.....	15.2	*6.4	18.5	19.8
Female				
All adults.....	1.2	1.5	0.7	2.3
18-44 years.....	0.3	*0.1	0.1	0.6
45-64 years.....	1.0	0.9	0.9	1.4
65 years and over.....	4.6	2.6	3.0	10.7
65-74 years.....	2.0	1.3	1.8	4.1
75-84 years.....	6.1	2.7	6.3	12.4
85 years and over.....	19.1	10.5	*20.2	26.4

¹Includes those living with nonrelatives.

SOURCE: National Center for Health Statistics: Data from the National Health Interview Survey.

severe degree of dependency and a lower likelihood of institutionalization than does the need for personal care. The need for help in home management activities also increased with age among the adult population in general and particularly among those 65 years of age and over. About 5 percent of people 65-74 years of age required assistance with home management activities, while 22 percent of those 85 years of age and over needed this type of assistance (table C). Although sex differences were generally negligible for personal care assistance, elderly women were nearly twice as likely as elderly men to need assistance with home management activities.

The need for assistance with home management activities also varied with living arrangements but in a different direction than that for personal care. In contrast to adults needing personal care, the elderly who lived alone were twice as likely as those living with spouse to need assistance in home management activities. For instance, 11 percent of those 75-84 years of age living alone, compared with almost 7 percent of those living with spouse, needed this type of help (table C). For people 85 years of age and over, the proportions were 24 percent of those living alone and 13 percent of those living with spouse. This difference further suggests that adults are more likely to be able to maintain independent living when home

Table C. Percent of civilian noninstitutionalized adults needing home management assistance, according to living arrangement, sex, and age: United States, average annual 1979 and 1980

Sex and age	Living arrangement			
	Total ¹	Alone	With spouse	With other relatives
Both sexes				
Percent of adults				
All adults.....	1.9	4.8	1.1	2.8
18-44 years.....	0.5	0.5	0.3	1.1
45-64 years.....	1.9	3.9	1.3	3.4
65 years and over.....	7.2	9.9	4.0	13.0
65-74 years.....	4.5	6.8	2.9	8.3
75-84 years.....	9.8	11.1	6.5	14.6
85 years and over.....	21.5	24.1	12.7	23.8
Male				
All adults.....	1.3	2.6	0.9	2.1
18-44 years.....	0.5	*0.4	0.2	1.1
45-64 years.....	1.4	3.5	1.0	3.9
65 years and over.....	4.6	7.9	3.1	12.8
65-74 years.....	3.0	5.0	2.1	9.6
75-84 years.....	6.5	9.2	4.9	12.7
85 years and over.....	15.8	20.0	10.5	23.1
Female				
All adults.....	2.5	6.2	1.3	3.3
18-44 years.....	0.6	0.7	0.4	1.0
45-64 years.....	2.3	4.2	1.8	3.2
65 years and over.....	9.0	10.4	5.2	13.1
65-74 years.....	5.7	7.2	3.8	7.9
75-84 years.....	11.9	11.5	9.3	15.1
85 years and over.....	24.7	25.5	*21.4	23.8

¹Includes those living with nonrelatives.

SOURCE: National Center for Health Statistics: Data from the National Health Interview Survey.

management assistance is involved than they are when personal care is needed.

Conclusion

Data from 1979 and 1980 indicate that an estimated 4.7 million civilian noninstitutionalized adults needed the help of another person. About 1.7 million of these needed help in personal care and 3.0 million in home management activities. The need for functional assistance is primarily a need of the elderly. As the population ages, the need for such assistance will increase even more.

Whether these needs are met is closely tied to the availability of familial sources of aid. The living arrangements observed in this analysis reflect this and emphasize the need to have another person available. For example, people living alone are less likely than those living with others to require assistance with personal care. When functional status declines to a point where personal care assistance is required, living arrangements may change. Unless someone in the household, such as a spouse, can provide the care, individuals who require personal care have difficulty maintaining an independent household. Either they move in with relatives who can provide the necessary care

or they are institutionalized. Thus, a relatively high percent of people who require personal care live with other relatives and a relatively low percent live alone. On the other hand, when assistance in home management activities is involved, adults are more likely to be able to maintain independent living.

The ability to maintain independent living is a function of the complex interrelationships among various factors, including the following:

- Extent of disability and functional impairment.
- Sociodemographic characteristics of the individual, such as age, sex, and living arrangement.
- Availability of another person to provide needed assistance.
- Availability of community services and their accessibility to people who need them.

The health care needs of the elderly are varied. In addition to medical care services, many of the elderly require assistance in carrying out everyday activities. As the population ages, increasing attention will need to be given to alternative methods of providing the wide range of services that meet the needs of the elderly both in the community and in long-term care facilities.

References

Densen, P., Jones, E., and Katz, S.: Data for Long-Term-Care Policy and Planning, An Epidemiological Framework. Paper presented at the 1982 meeting of the American Public Health Association. Montreal, Nov. 1982.

Katz, S., and Akpom, C. A.: A measure of primary sociobiological functions. *Int. J. Health Serv.* 6(3):493-507, 1976.

Kleh, J.: When to institutionalize the elderly. *Hosp. Pract.* 12(2):121-134, Feb. 1977.

National Center for Health Statistics: Long-term care, An overview, by W. Weissert. *Health, United States, 1978*. DHEW Pub. No. (PHS) 78-1232. Public Health Service. Washington. U.S. Government Printing Office, Dec. 1978.

National Center for Health Statistics: Health characteristics of persons with chronic activity limitation, United States, 1979, by B. A. Feller. *Vital and Health Statistics*. Series 10-No. 137. DHHS Pub. No. (PHS) 82-1565. Public Health Service. Washington. U.S. Government Printing Office, Dec. 1981a.

National Center for Health Statistics: Characteristics of nursing home residents, health status, and care received, National Nursing Home Survey, United States, May-December 1977, by E. Hing. *Vital and Health Statistics*. Series 13-No. 51. DHHS Pub. No. (PHS) 81-1712. Public Health Service. Washington. U.S. Government Printing Office, Apr. 1981b.

Palmore, E.: Total chance of institutionalization among the aged. *The Gerontologist* 16(6):504-507, 1976.

Rossmann, I.: Options for care of the aged sick. *Hosp. Pract.* Mar. 1977.

Williams, T. F., Hill, J. G., Fairbank, M. E., and Knox, K. G.: Appropriate placement of the chronically ill and aged, A successful approach by evaluation. *JAMA* 226(11):1332-1335, Dec. 10, 1973.

Use and Costs of Medicare Services in the Last Years of Life

by James Lubitz, Office of Research and Demonstrations,
and Ronald Prihoda, Office of Statistics and Data
Management, Health Care Financing Administration

Introduction

The type and cost of health care services rendered to the dying are causes of growing concern. The concern stems from a belief that care for the dying centers too much around highly technical, cure-oriented services provided in the hospital. Critics hold that insufficient attention is paid to the psychosocial needs of the dying and their families.

Concern also stems from the belief that the cost of care provided in conventional settings may be high, especially when compared with alternatives such as hospice programs¹ (Bloom and Kissick, 1980; Fletcher, 1980; Krant, 1978; Mount, 1976; Ryder and Ross, 1977). Cost concerns are reinforced by studies showing the large proportion of deaths among high-cost hospital patients. Interest has focused on such high-cost users of health care, both because such persons are most in need of protection against catastrophic costs and because their experiences may help to provide an understanding of the nature of the continuing escalation of health costs (Birnbaum, 1978; Cullen et al., 1976; Schroeder, Showstack, and Roberts, 1979; Schroeder, Showstack, and Schwartz, 1981; Zook and Moore, 1980; Zook, Moore, and Zeckhauser, 1981).

Previous studies of the costs of illness in the period before death have differed in methods and populations studied, but they generally have found that expenses are much greater for dying persons than for others and that dying persons under 65 years of age have greater expenses than older ones (Office of Research and Statistics, 1973; National Cancer Institute, 1976; National Center for Health Statistics, 1971). Other studies have examined the relation of age to hospital and nursing home use by dying persons. These studies found that hospital use, as measured by days of care, was highest among persons 45–64 years of age who died and that nursing home use was highest among persons 65 years of age and over who died (National Center for Health Statistics, 1966). The percent of deaths occurring in hospitals was highest among patients who were under 45 years of age; the percent occurring in nursing homes was highest among individuals 65 years of age and over (Na-

tional Center for Health Statistics, 1965). A study of the use of services in the last year by cancer patients covered by Blue Cross and Blue Shield found that hospital expenses made up a high proportion of total expenses and that the use of services was especially intense during the last 2 months of life (Gibbs and Newman, 1982).

An earlier study of the Medicare population found that people who died during 1967 comprised 5 percent of enrollees but accounted for 22 percent of program expenditures (Office of Research and Statistics, 1973). That study examined services only for the calendar year in which the enrollee died. This article differs from earlier works on the use of health care in the period before death because it:

- Traces back the use of services for 2 full years before death.
- Presents population-based data (e.g., rates per 1,000 enrollees) for 2 years for both decedents and survivors.
- Presents data on the use of physician and other types of services in addition to hospital services.

About 70 percent of all persons who died in the United States in 1978 were 65 years of age and over. Most of these were Medicare enrollees. Since July 1966, Medicare has insured about 95 percent of persons 65 years of age and over against the costs of hospital and medical care. The vast majority of them join at age 65 and remain covered until death. In 1978, 24.4 million people 65 years of age and over were enrolled in Medicare. During that same year, 1.9 million people died in the United States and, of these, 1.3 million were Medicare enrollees. The experience of Medicare enrollees thus offers an optimal opportunity to study the costs of care before death.

This article reports on Medicare payments for services on behalf of enrollees in their last and second-to-last years of life, the types of services received, and the cost differences in those years by such characteristics as age and hospital diagnosis. The article focuses on the use and costs of Medicare services for enrollees who died in 1978 (decedents). Their service use is traced back 2 years from the month of death and is compared with service use in 1977 and 1978 by enrollees surviving through 1978 (survivors). Because the experience of decedents and survivors is traced back 2 years from 1978, the study population was confined to persons who were also enrolled in 1977 and 1976. Consequently, no persons 65 or 66 years of age are in the study group. The experience of disabled enrollees under 65 years of age is not covered.

The discussion is limited to the use of Medicare-covered

¹According to the National Hospice Organization, a hospice program of care consists of palliative and supportive services that provide physical, psychological, social, and spiritual care for dying persons and their families. Services are provided by a medically supervised, interdisciplinary team of professionals and volunteers. Hospice services are available in the home or in an inpatient setting.

NOTE: Unless otherwise cited, the data presented in this article are from the Medicare Statistical System of the Health Care Financing Administration.

services and Medicare reimbursements for these services. Medicare covers the following services:

- Hospital inpatient.
- Skilled nursing facility.
- Home health agency.
- Physician and other medical.
- Hospital outpatient.

The enrollee is responsible for deductibles and coinsurance for these services. In 1978, Medicare paid an estimated 44 percent of personal health care expenditures for persons 65 years of age and over, including 75 percent of hospital care (both inpatient and outpatient), 56 percent of physicians' services, and 3 percent of nursing home care (Office of Research, Demonstrations, and Statistics, 1980).

Findings

Overall patterns of use

A large percent of Medicare program funds is devoted to enrollees in their last year of life. In 1978, the 1.3 million Medicare enrollees in their last year of life were 5.2 percent of all enrollees, but they accounted for 28.2 percent of program expenditures. Survivors were 94.7 percent of all enrollees and accounted for 71.8 percent of Medicare expenditures.² Examination of rates of use of services by decedents and survivors illustrates the wide differences in the experience of the two groups (table A). Of decedents, 92 percent used some Medicare-reimbursed service in their last year of life, and 80 percent were users³ in the second-to-last year. Of survivors, 58 percent were users in 1978 and 55 percent were users in 1977. Little is known about the enrollees with no reimbursement in their last year of life. That group might include persons who died suddenly or persons in Federal hospitals, such as Veterans hospitals, which are not eligible for Medicare reimbursement. Medicare users who died in 1978 were reimbursed an average of \$4,909 for services in their last year and \$1,842 for services in their second-to-last year, compared with \$1,253 in 1978 and \$1,147 in 1977 for survivors.

The large differences between decedents and survivors in rates of use of services and in reimbursement per user are reflected in the differences found in reimbursements per enrollee (table A). Reimbursement per enrollee is the product of the rate of persons served and the rate of reimbursement per user. The Medicare program spent an average of \$4,527 on behalf of enrollees in their last year, a figure 6.2 times greater than that of the \$729 spent per enrollee for survivors in 1978. In the decedent's second-to-last year of life, the difference was not as great; but expenditures per enrollee were still 2.3 times greater for decedents than for survivors in 1977 (\$1,481 versus \$635). Thus, the use of greater health services associated with mortality extends back at least into the second-to-last year of life.

²These data reflect the experience of the entire Medicare population 65 years of age and over. Unlike the rest of the data in this article, they are not limited to the study group, which excludes enrollees 65 and 66 years of age.

³"Users" or "persons served" are enrollees with some Medicare reimbursement.

Table A. Selected measures of use of Medicare benefits by decedents in their last and second-to-last years of life and by survivors in 1977 and 1978: United States

Period	Survival status		Decedents-to-survivors ratio
	Decedents	Survivors	
	Persons served ¹ as a percent of enrollees		
Last year (1978)	92	58	1.6
Second-to-last year (1977)	80	55	1.4
	Reimbursement per person served		
Last year (1978)	\$4,909	\$1,253	3.9
Second-to-last year (1977)	1,842	1,147	1.6
	Reimbursement per enrollee		
Last year (1978)	\$4,527	\$729	6.2
Second-to-last year (1977)	1,481	635	2.3

¹Persons served are enrollees with some Medicare reimbursement.

NOTES: Data for the last year of life for decedents in 1978 are compared with the 1978 experience of survivors. Data for the second-to-last year of life are compared to the 1977 experience of survivors. Data are expressed in 1978 dollars.

SOURCE: Health Care Financing Administration: Data from the Medicare Statistical System.

Patterns in the use of Medicare benefits differed by age between decedents in their last year and survivors in 1978 (table B). Persons served as a percent of enrollees varied little by age for decedents and increased moderately with age for survivors. However, the two groups showed opposite patterns in reimbursement per person served by age. For decedents, reimbursement per person served decreased markedly with increasing age. Reimbursement per person served for decedents 85 years of age and over (\$3,598) was only 57 percent of the amount for decedents 67–69 years of age (\$6,354). In contrast, for survivors, reimbursement per person served increased with age, with survivors 85 years of age and over receiving 28 percent more reimbursement per person served than survivors 67–69 years of age (\$1,421 versus \$1,109).

Reimbursement per enrollee followed the same pattern as reimbursement per user, decreasing with age for decedents and increasing with age for survivors (table B). Reimbursement per enrollee for decedents 85 years of age and over (\$3,285) was only 57 percent of the amount for decedents 67–69 years of age (\$5,801). Reimbursement per enrollee for survivors 85 years of age and over (\$889) was 50 percent greater than the amount for survivors 67–69 years of age (\$592).

Distribution of Medicare reimbursements

As expected, a much higher proportion of decedents than survivors had high Medicare reimbursements (table C). Among decedents, 24 percent had from \$2,000 to \$4,999 in Medicare reimbursement in their last year of life and another 31 percent had \$5,000 or more. In contrast, only 7 percent of survivors

Table B. Selected measures of use of Medicare benefits by decedents in their last year of life and by survivors in 1978, according to age: United States

Age	Survival status		Decedents-to-survivors ratio
	Decedents	Survivors	
	Persons served ¹ as a percent of enrollees		
67 years and over.....	92	58	1.6
67-69 years.....	91	53	1.7
70-74 years.....	93	56	1.6
75-79 years.....	93	60	1.5
80-84 years.....	93	62	1.5
85 years and over.....	91	63	1.5
	Reimbursement per person served		
67 years and over.....	\$4,909	\$1,253	3.9
67-69 years.....	6,354	1,109	5.7
70-74 years.....	5,897	1,181	5.0
75-79 years.....	5,433	1,285	4.2
80-84 years.....	4,617	1,391	3.3
85 years and over.....	3,598	1,421	2.5
	Reimbursement per enrollee		
67 years and over.....	\$4,527	\$729	6.2
67-69 years.....	5,801	592	9.8
70-74 years.....	5,466	668	8.2
75-79 years.....	5,056	771	6.5
80-84 years.....	4,274	859	5.0
85 years and over.....	3,285	889	3.7

¹Persons served are enrollees with some Medicare reimbursement.

NOTE: Data are expressed in 1978 dollars.

SOURCE: Health Care Financing Administration: Data from the Medicare Statistical System.

had reimbursements from \$2,000 to \$4,999 and only 4 percent had more than \$5,000.

Also, a much smaller proportion of decedents than survivors had low reimbursements. Among decedents, 8 percent had no reimbursement and another 7 percent had less than \$100. Among survivors, 42 percent had no reimbursement and 20 percent had less than \$100.

These differences are reflected in the proportion of decedents found among high users of Medicare benefits. Decedents made up 34 percent of all enrollees with \$5,000 or more in reimbursements in 1978, but they were only 5.9 percent of the study population. Survivors made up 66 percent of all enrollees with Medicare reimbursements of \$5,000 or more, but they were 94.1 percent of the study population.

Intensity of use of services

The use of Medicare services becomes much more intense as death approaches. Of all expenses in the last year of life, 30 percent are spent in the last 30 days and another 16 percent in the 60th to the 31st day before death (figure 1). To a large extent, this reflects the intense use of expensive hospital care in the final months. For example, hospital reimbursements in the last 60 days of life accounted for about 50 percent of all hospital expenses in the last year.

Data like those in figure 1 also were calculated for patients with hospital stays for cancer because of the interest in hospice care for cancer patients. Hospice care was made a Medicare covered benefit beginning November 1983. An estimated 93 percent of patients in hospices suffer from cancer (Duzor, 1983). It was found that the percent distribution of expenses by month in the last year of life for cancer patients was virtually identical to that for all decedents shown in figure 1.

Table C. Distribution of Medicare enrollees and Medicare reimbursement for decedents in their last year of life and survivors in 1978, according to reimbursement interval: United States

Reimbursement interval	Survival status			
	Decedents		Survivors	
	Enrollees	Reimbursement	Enrollees	Reimbursement
	Number in thousands	Amount in millions	Number in thousands	Amount in millions
Total.....	1,142	\$5,168	18,342	\$13,365
No reimbursement.....	89	-	7,680	-
Less than \$100.....	86	4	3,597	159
\$100-\$999.....	210	96	4,035	1,355
\$1,000-\$1,999.....	126	194	1,076	1,563
\$2,000-\$4,999.....	273	955	1,252	3,984
\$5,000 or more.....	358	3,918	702	6,304
	Percent distribution			
Total.....	100	100	100	100
No reimbursement.....	8	-	42	-
Less than \$100.....	7	0	20	1
\$100-\$999.....	18	2	22	10
\$1,000-\$1,999.....	11	4	6	12
\$2,000-\$4,999.....	24	18	7	30
\$5,000 or more.....	31	76	4	47

NOTES: Data are expressed in 1978 dollars. Parts may not add to totals because of rounding.

SOURCE: Health Care Financing Administration: Data from the Medicare Statistical System.

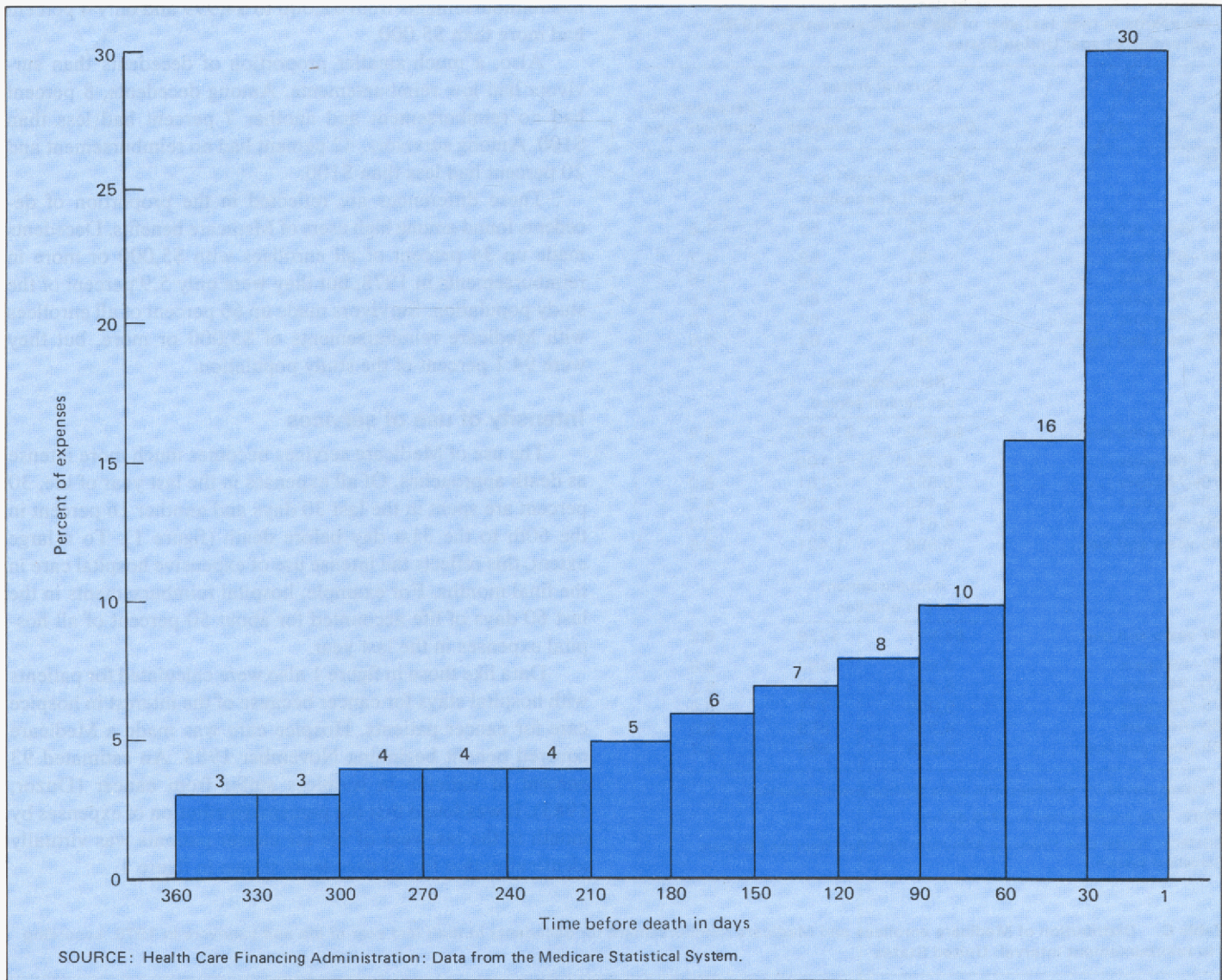


Figure 1. Percent of Medicare expenses in the last year of life, according to selected time intervals before death: United States, 1976

Expenses in the last months of life are a significant part of total Medicare expenses. Reimbursements for the last 180 days of life for decedents equal 21 percent of total Medicare expenses for all persons (decedents and survivors), and reimbursements in just the last 30 days make up 8 percent of total Medicare expenditures.

Use by type of service

For each type of service, average reimbursement per enrollee was higher for decedents in their last and second-to-last years than for the comparison group of survivors (table D). The highest rates of reimbursement for both decedents and survivors were found for hospital and physician services. Average reimbursement per decedent for hospital care was 7.3 times higher in the last year and 2.4 times higher in the second-to-last year than for the comparison group of survivors. Reimbursements for hospital care totaled 77 percent of the total reimbursements for decedents in their last year and 66 percent for

survivors in 1978. Reimbursement per decedent for physician and other medical services was 3.9 times higher in the last year than reimbursement per survivor in 1978 and 1.9 times higher in the second-to-last year than for survivors in 1977.

The largest relative difference in Medicare reimbursement per enrollee between decedents and survivors was found for skilled nursing facility (SNF) care, where decedents had 12.7 times as much reimbursement per enrollee in their last year of life as survivors had in 1978 and 4.1 times as much in their second-to-last year of life as survivors had in 1977. Despite the large relative difference, the absolute level of use of Medicare SNF benefits by decedents was low when compared with hospital or physician services. Reimbursement per decedent for SNF care in the last year of life was only 2 percent of total reimbursements.

The low reimbursements for Medicare SNF care do not necessarily mean that nursing home use, of which SNF care is a part, is low in the last year of life. Rather, these low reimbursements reflect the fact that the Medicare SNF benefit is

Table D. Reimbursement per enrollee and percent distribution of total reimbursements for decedents in the last and second-to-last years of life and for survivors in 1977 and 1978, according to type of service: United States

Year and type of service	Survival status				Ratio of reimbursement per enrollee of decedents to survivors
	Decedents		Survivors		
	Amount	Percent distribution	Amount	Percent distribution	
Last year (1978)					
All services.....	\$4,527	100	\$729	100	6.2
Hospital.....	3,484	77	478	66	7.3
Physician and other medical.....	769	17	198	27	3.9
Skilled nursing facility.....	89	2	7	1	12.7
Hospital outpatient.....	101	2	30	4	3.4
Home health agency.....	83	2	16	2	5.2
Second-to-last year (1977)					
All services.....	\$1,481	100	\$635	100	2.3
Hospital.....	1,008	68	416	65	2.4
Physician and other medical.....	338	23	176	28	1.9
Skilled nursing facility.....	33	2	8	1	4.1
Hospital outpatient.....	59	4	24	4	2.5
Home health agency.....	43	3	12	2	3.6

NOTES: Data are expressed in 1978 dollars. Parts may not add to totals because of rounding.

SOURCE: Health Care Financing Administration: Data from the Medicare Statistical System.

designed to provide short-term, post-hospital skilled nursing or rehabilitative services, not long-term nursing home care. For this reason, the law sets a number of conditions for coverage, such as need for skilled care, and a limit of 100 days in each benefit period. Because of the nature of the benefit, Medicare SNF expenditures for all beneficiaries are 1 percent of all Medicare expenditures. In contrast, studies not confined to covered Medicare services suggest that nursing home care may be used heavily by aged persons in their last years (National Center for Health Statistics, 1966, 1978, and 1979). The low reimbursement level for home health agency services in the last year (2 percent of the total) also might reflect statutory Medicare program requirements, such as the restriction that the enrollee must require skilled nursing care or physical or speech therapy.

Use of hospital care

Decedents greatly exceeded survivors on all measures of hospital use (table E). Among decedents, 739 of every 1,000 were hospitalized in their last year, while only 202 of every 1,000 survivors were hospitalized in 1978. Decedents used 20,607 days of care per 1,000 enrollees, compared with a rate of 3,033 days of care for survivors. The rate of days of care followed the same age pattern noted earlier for total Medicare reimbursements, decreasing with age for decedents and increasing with age for survivors. The decline in the days of care rate by age for decedents reflected a decline with age in the discharge rate; the rate of persons hospitalized and average length of stay changed little with age. The percent of deaths occurring in hospitals also declined with age. Medicare program data indicate that, among enrollees 65-74 years of age, 48 percent of all deaths occurred in short-stay hospitals. Among

Table E. Selected measures of short-stay hospital use by decedents in their last year and by survivors in 1978, according to age: United States

Measure and age	Survival status	
	Decedents	Survivors
Persons hospitalized		
Per 1,000 enrollees		
67 years and over.....	739	202
67-74 years.....	769	179
75 years and over.....	727	226
Discharges		
67 years and over.....	1,537	294
67-74 years.....	1,771	260
75 years and over.....	1,444	330
Days of care		
67 years and over.....	20,607	3,033
67-74 years.....	23,795	2,530
75 years and over.....	19,342	3,566
Average length of stay		
In days		
67 years and over.....	13.4	10.3
67-74 years.....	13.4	9.7
75 years and over.....	13.4	10.8

SOURCE: Health Care Financing Administration: Data from the Medicare Statistical System.

enrollees 75 years of age and over, 39 percent of all deaths occurred in hospitals.

Among the major disease categories of heart disease, cerebrovascular disease (stroke), and cancer, decedents hospitalized for cancer had higher hospital use and higher total Medicare reimbursements than patients in other disease cate-

gories.⁴ Cancer patients used an average of 36 days and had reimbursements of \$8,297 in their last year of life. Decedents hospitalized for diseases of the heart used an average of 28 hospital days and had \$5,878 in Medicare reimbursements. Decedents hospitalized for cerebrovascular disease also used an average of 28 hospital days and had \$5,608 in Medicare reimbursements.

Conclusion

This study found that the rate of use of Medicare benefits by decedents greatly exceeds that of survivors. Fully 28 percent of Medicare reimbursements were for enrollees in their last year of life. The differences were greater than those found in the previous study of Medicare use by decedents (Office of Research and Statistics, 1973) because the experience of decedents was traced back 12 full months rather than being limited to only calendar year data. The amount of Medicare expenditures for persons in the last year of life demonstrates the reality that Medicare, by its nature, is a program involved with the dying. While this article does not analyze options in the way care is provided to the dying, it shows the services used and amount of money expended. Clearly, it is difficult to know the appropriate amount of resources that society should expend for persons in their last year. Any analysis of this question would have to consider not only the amount and type of services devoted to the dying but also the persons with large expenses who might have died but for the care they received.

The large hospital care expenses for decedents reflect the large quantity of hospital care the dying receive. Some have questioned the appropriateness of using hospitals to render care to the dying. These data cannot be used to evaluate whether appropriate care was received. However, the data do show that the vast majority of decedents are hospitalized, suggesting the role hospitals have in the social as well as medical aspects of death and bereavement.

The use of Medicare services, especially hospital care, decreases with age for decedents but increases for survivors. In addition, the percent of enrollee deaths occurring in acute hospitals declines with age. Other studies of the use of services by the dying also found these patterns. Since use of nursing homes increases with age, nursing home care very likely substitutes in part for hospital care for the dying as they advance in age. Medicare pays for only a small part of nursing home care. Thus, while Medicare expenses in the last year decrease with age, the relation of age to total health expenses may be different. Another possible explanation for the decline in Medicare reimbursements with age among decedents may be that very old, frail persons are less able to benefit from large amounts of treatment. Also, the time between onset of illness and death may be shorter for older decedents, resulting in lower hospital use.

Medicare plays a vital role in paying for the health care of the majority of persons who die in the United States. The highly skewed distribution of Medicare payments and the large amount

of payments on behalf of the dying also show that Medicare functions to spread the risk of health care expenses over the total aged population. Decedents account for a high proportion of enrollees with extreme or catastrophic expenses. Much concern exists about the necessity and appropriateness of health services, particularly for the small percent of persons whose high costs account for a large share of total costs. The significant amount of Medicare expenditures for enrollees in their last year of life, and even the last month, means that a large part of Medicare funds is spent for persons who are severely ill.

The high use of hospital care and the relatively low use of the Medicare skilled nursing facility and home health benefits in the last year of life suggest examining the possibility of cost saving through substitution of carefully targeted skilled nursing and home health services for hospital care. Such targeting would require knowledge of the nature of illnesses in the last year of life and the most effective methods of caring for them. Part of the answer to the question of effective care may be provided by demonstration projects, sponsored by the Health Care Financing Administration, to test the hospice concept and by evaluation of the new Medicare hospice benefit (effective November 1983). These studies will measure whether health care costs for the dying are reduced when hospice care is made available. If costs are reduced, it may be possible to adopt measures that make care for the dying less costly and more humane at the same time.

This study found that a high proportion (46 percent) of costs in the last year of life are spent in the last 60 days. Also, costs for hospitalized cancer patients are higher than for patients hospitalized for other major diagnostic categories. Thus, hospice care could potentially impact on a large amount of costs. This is because data from hospice programs show that the average hospice stay is about 45 days and that most hospice patients suffer from cancer (Duzor, 1983).⁵

The amount and kind of resources used at the end of life raise complex ethical, economic, and medical issues that must be considered within the context of the health care system and its financing mechanisms and in the context of societal expectations. These issues clearly indicate the need to consider a variety of feasible alternatives that would provide appropriate and humane care to the dying.

References

- Birnbaum, H.: *The Cost of Catastrophic Illness*. Toronto. Lexington Books, 1978.
- Bloom, B., and Kissick, P.: Home and hospital cost of terminal illness. *Med. Care* 18(5):560-564, May 1980.
- Cullen, D., Ferrara, L., Briggs, B., et al.: Survival, hospitalization charges and followup results in critically ill patients. *N. Engl. J. Med.* 294(18):982-987, 1976.

⁴Decedents were counted in a particular disease category if they had at least one hospital stay in that category in their last year. A person with two or more hospital stays, each in a different category, would be counted more than once.

⁵It is estimated, however, that the new Medicare hospice benefit will result in a net cost to Medicare over the 3 year life of the benefit. (See Impact analysis, *Federal Register*, Vol. 48, 38161, Aug. 22, 1983.)

- Duzor, L., Office of Research and Demonstrations, Health Care Financing Administration: Personal communication. Baltimore, 1983.
- Fletcher, J.: Ethics and the Costs of Dying, in A. Milunsky and G. Annas, eds., *Genetics and the Law II*. New York. Plenum Publishing Corp., 1980. pp. 187-211.
- Gibbs, J., and Newman, J.: *Study of Health Services Used and Costs Incurred During the Last Six Months of a Terminal Illness*. Research and Development Department, Blue Cross and Blue Shield Association. Contract No. HEW-100-79-0110. Prepared for the Department of Health and Human Services. Chicago, Nov. 1982.
- Krant, M.: The hospice movement. *N. Engl. J. Med.* 299(10):546-549, 1978.
- Mount, B.: The problem of caring for the dying in a general hospital, The palliative care unit as a possible solution. *Can. Med. Assoc. J.* 115(2):119-121, July 1976.
- National Cancer Institute: *Third National Cancer Survey, Hospitalization and Payments to Hospitals, Part A, Summary*, by J. Scotto and L. Chiazzo, Jr. DHEW Pub. No. (NIH) 76-1094. National Institutes of Health. Bethesda, Md., Mar. 1976.
- National Center for Health Statistics: Hospitalization in the last year of life, United States, 1961, by G. F. Sutton. *Vital and Health Statistics*. PHS Pub. No. 1000-Series 22-No. 1. Public Health Service. Washington. U.S. Government Printing Office, Sept. 1965.
- National Center for Health Statistics: Episodes and duration of hospitalization in the last year of life, United States, 1961, by G. S. Wunderlich and G. F. Sutton. *Vital and Health Statistics*. PHS Pub. No. 1000-Series 22-No. 2. Public Health Service. Washington. U.S. Government Printing Office, June 1966.
- National Center for Health Statistics: Expenses for hospital and institutional care during the last year of life for adults who died in 1964 or 1965, United States, by E. J. Timmer and M. G. Kovar. *Vital and Health Statistics*. PHS Pub. No. 1000-Series 22-No. 11. Public Health Service. Washington. U.S. Government Printing Office, Mar. 1971.
- National Center for Health Statistics: A comparison of nursing home residents and discharges from the 1977 National Nursing Home Survey, United States, by E. Hing and A. Zappolo. *Advance Data From Vital and Health Statistics*. No. 29. DHEW Pub. No. (PHS) 78-1250. Public Health Service. Hyattsville, Md., May 17, 1978.
- National Center for Health Statistics: The National Nursing Home Survey, 1977 summary for the United States, by J. F. Van Nostrand, A. Zappolo, E. Hing, et al. *Vital and Health Statistics*. Series 13-No. 43. DHEW Pub. No. (PHS) 79-1794. Public Health Service. Washington. U.S. Government Printing Office, July 1979.
- Office of Research, Demonstrations, and Statistics: Differences by age groups in health care spending, by C. R. Fisher. *Health Care Financing Review*. HCFA Pub. No. 03045. Health Care Financing Administration. Washington. U.S. Government Printing Office, Spring 1980.
- Office of Research and Statistics: Utilization and reimbursement under Medicare for persons who died in 1967 and 1968, by P. A. Piro and T. Lutins. *Health Insurance Statistics*, HL.51. Social Security Administration. DHEW Pub. No. (SSA) 74-11702. Washington, D.C., Oct. 1973.
- Ryder, C., and Ross, D.: Terminal care issues and alternatives. *Public Health Rep.* 92(1):20-29, Jan.-Feb. 1977.
- Schroeder, S., Showstack, J., and Roberts, H.: Frequency and clinical description of high-cost patients in 17 acute-care hospitals. *N. Engl. J. Med.* 300(23):1306-1309, June 7, 1979.
- Schroeder, S., Showstack, J., and Schwartz, J.: Survival of adult high-cost patients, Report of a followup study from nine acute-care hospitals. *JAMA* 245(14):1446-1449, Apr. 10, 1981.
- Zook, C., and Moore, F.: High cost users of medical care. *N. Engl. J. Med.* 302(18):996-1002, May 1980.
- Zook, C., Moore, F., and Zeckhauser, R.: Catastrophic health insurance—A misguided prescription? *The Public Interest* 62:66-81, Winter 1981.

Health Care Expenditures for Major Diseases

by Thomas A. Hodgson, Ph.D., and Andrea N. Kopstein,
National Center for Health Statistics

Introduction

Personal health care expenditures have been rising rapidly since 1960. A total of \$255 billion was spent for personal health care in 1981, an increase of 16 percent from 1980. The 1981 figure represented \$1,090 per capita, a 15-percent increase over the \$947 spent per person in 1980 (Office of Research and Demonstrations, 1982).

Expenditures for personal health care measure the value of medical care services delivered to individuals for the prevention, diagnosis, and treatment of illness and disease.

Expenditures may be incurred for a variety of reasons, including the following:

- Hospitalization.
- Outpatient clinical care.
- Nursing home care.
- Home health care.
- Services of primary physicians, specialists, dentists, and other health professionals.
- Drugs and drug sundries.
- Rehabilitation counseling and other rehabilitation costs to prevent or overcome illness-related impairments.

These expenditures are included in the United States National Health Accounts, now published by the Health Care Financing Administration (Cooper, Gibson, and Rice, 1980).

The Health Care Financing Administration (HCFA) annually estimates national health expenditures according to type of service and source of funds. In this article, personal health care expenditures in 1980 are further separated into expenditures by age, sex, and medical condition. In the next section, the methodology for separating HCFA's estimates of personal health care spending is described. The third section presents estimated expenditures by type of care and medical condition for males and females, persons under 65 years of age, and those 65 years of age and over.

Data sources

The definitions, concepts, and sources of data employed by HCFA to estimate personal health care expenditures are discussed by Waldo and Gibson (Office of Research and Demonstrations, 1982). To estimate expenditures by age, sex, and medical condition in this article, HCFA's estimates of personal health care expenditures in 1980 for each type of service were first separated into expenditures for persons under 65 years of age and 65 years of age and over according to HCFA's distributions for 1978 (Office of Research, Demonstrations,

and Statistics, 1980). These totals were distributed by sex and diagnosis according to utilization and costs, using a variety of other data sources. For example, expenditures in community hospitals were allocated to a disease category in proportion to the number of days of care attributable to the diagnosis weighted by the cost per patient day for that diagnosis. Similar procedures were applied where possible to expenditures for other types of medical care to distribute the total by sex and diagnosis. This methodology follows closely that originally devised by Cooper and Rice (1976) to allocate expenditures among diagnoses, amended to include several additional sources of data. (Further details are available from the author upon request.)

Of the \$219 billion spent for personal health care in 1980, \$211 billion could be distributed by age and sex and \$207 billion by age, sex, and diagnosis; \$12 billion (6 percent) could not be allocated by age, sex, and diagnosis because data were unavailable.

Expenditures in 1980

Of this overall \$219 billion total for personal health care in 1980, hospital care accounted for the largest share, \$100 billion (46 percent), followed by physicians' services at \$47 billion (21 percent) (Office of Research and Demonstrations, 1982). Other professional services (such as those of dentists, chiropractors, optometrists, and private duty nurses), nursing home care, and drugs each accounted for about \$20 billion, or 10 percent of spending for personal health care. All other personal health care includes miscellaneous items such as eye-glasses and appliances, ambulance services, industrial onsite health services, and care provided in Federal facilities other than hospitals. This category represented 5 percent of the total.

Expenditures by age and sex

In each age group, females used more medical services and incurred disproportionately higher expenditures relative to their numbers than did males. Females represented 52 percent of the population but accounted for 58 percent of expenditures. The distribution of expenditures among the various health services was the same for males and females under 65 years of age. About half of the total was for hospital care, slightly more than one-third for professional services, 10 percent for drugs, and 3 percent for nursing home care. The elderly, on the other hand, spent much more of their health dollar for nursing home care (18 percent for men and 30 percent for women), less on professional services, and less on hospital care for older

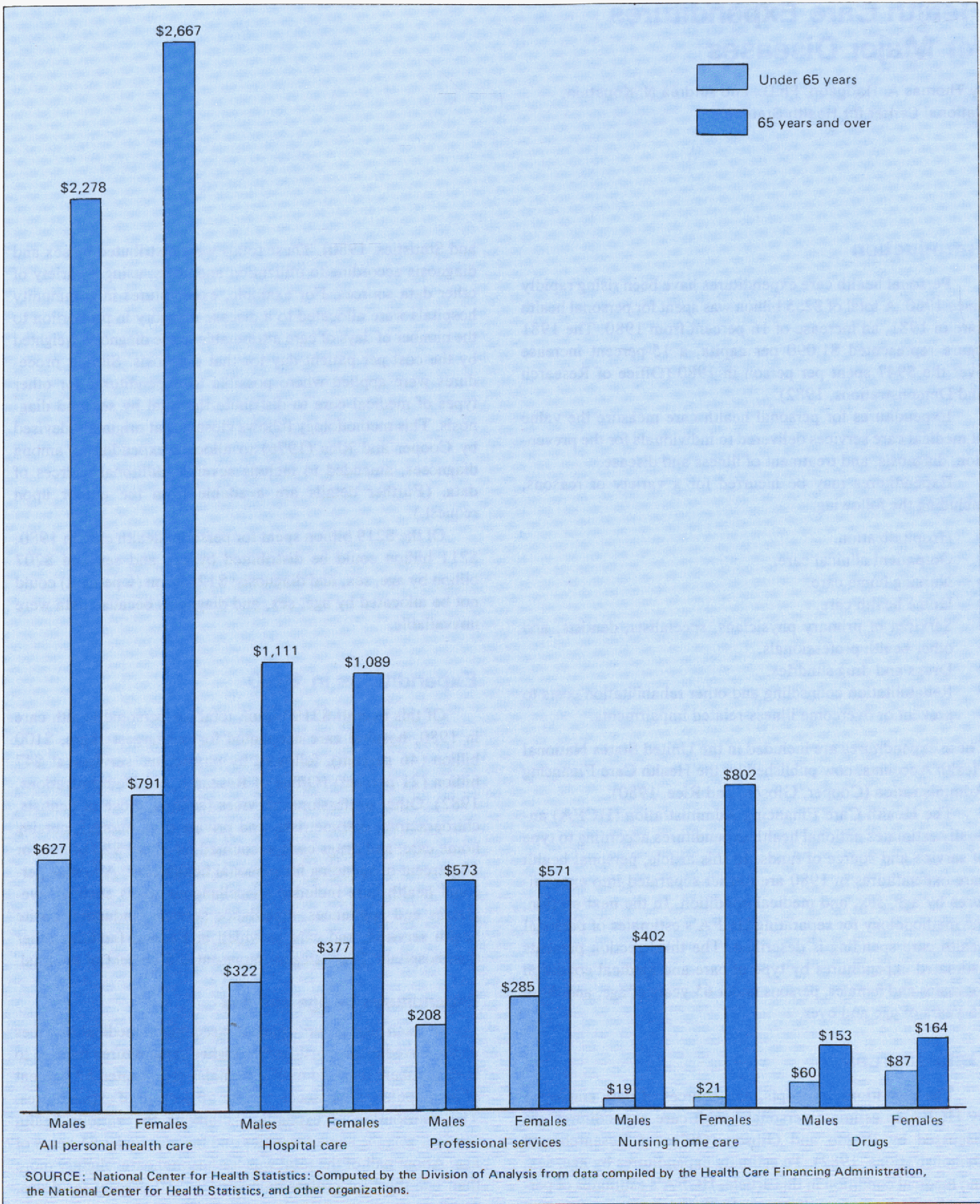


Figure 1. Per capita personal health care expenditures, according to type of care, age, and sex: United States, 1980

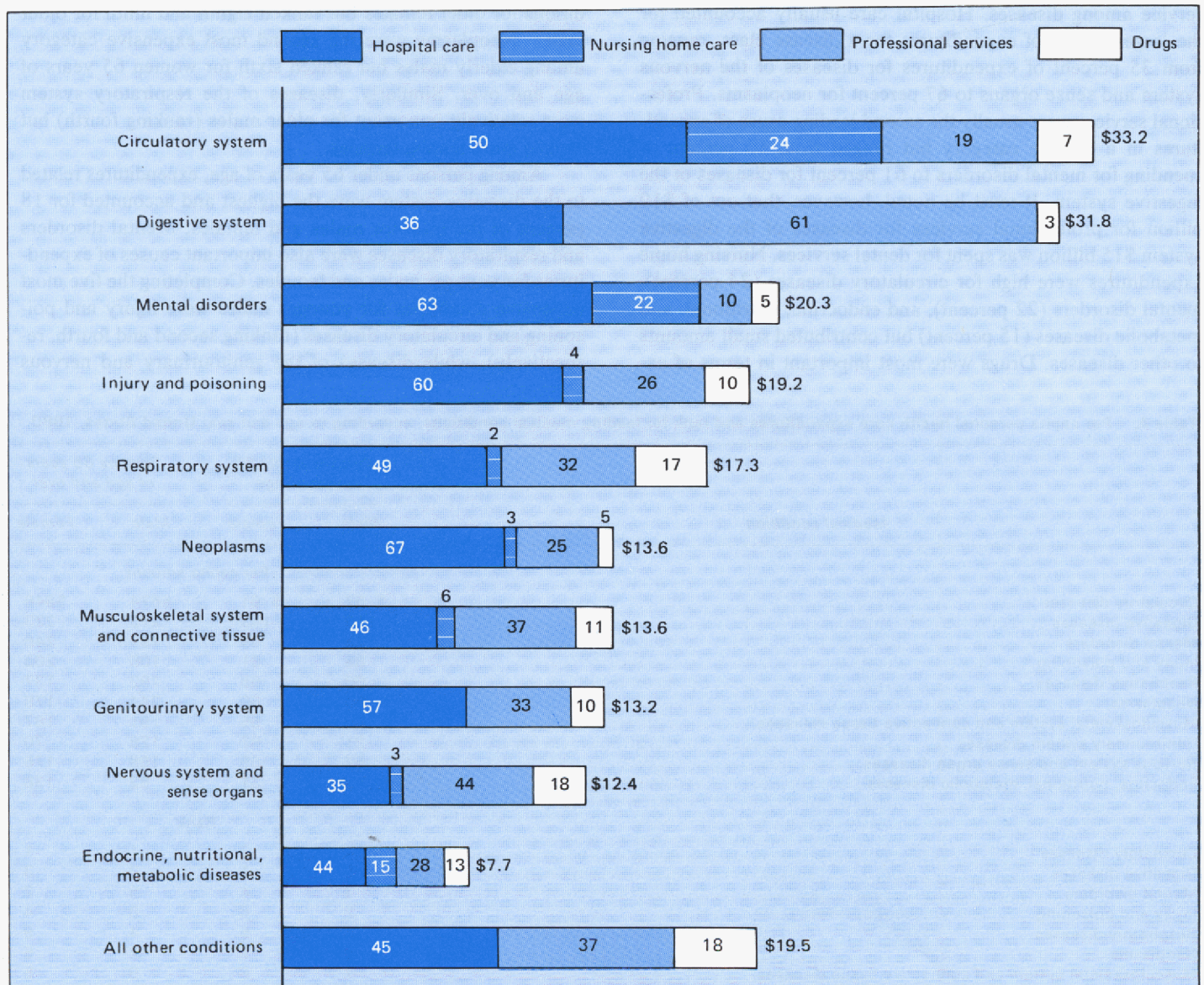
females. Elderly males and females used more health services than did persons under 65 years of age. Although the aged represented only 11 percent of the population, they accounted for 31 percent of expenditures for personal health care.

The influence of age and sex on expenditures is evident from per capita personal health care expenditures. On the average, per capita spending was 3½ times greater for elderly persons than for those under 65 years of age and higher for females than for males (figure 1). Amounts spent varied greatly depending on age, sex, and type of health care. Expenditures ranged from a low of \$19 per person for nursing home care among males under 65 years of age to \$1,111 per individual for hospital care among males 65 years of age and over. For hospital care, professional services, and drugs, the ratio of per capita spending for the elderly to that for the nonelderly ranged

from twice as high among females for drugs and professional services to 3½ times as large for hospital care among males. Nursing home care, an important health service for the elderly, was the second most expensive health service for older women. Except for hospital care and professional services for older males, females required greater expenditures per person. The difference in expenditures between males and females was usually larger for those under 65 years of age but was greatest for nursing home care among older persons (\$402 for males versus \$802 for females).

Expenditures by medical conditions

Expenditures by condition and type of care for the 10 leading disease classes are shown in figure 2 (National Center for



NOTES: Nursing home care expenditures cannot be estimated for diseases of the digestive and genitourinary systems and "all other conditions." Condition categories are based on the *International Classification of Diseases, 9th Revision, Clinical Modification*.

SOURCE: National Center for Health Statistics: Computed by the Division of Analysis from data compiled by the Health Care Financing Administration, the National Center for Health Statistics, and other organizations.

Figure 2. Personal health care expenditures in billions and percent distribution, according to condition and type of care: United States, 1980

Health Statistics, 1980). Diseases of the circulatory system accounted for the highest amount (\$33 billion spent for care), followed closely by diseases of the digestive system (\$32 billion, including \$15 billion spent for dental care). The remaining conditions can be divided into two groups, each one containing several conditions with about the same expenditures. The first group includes mental disorders (\$20 billion), injury and poisoning (\$19 billion), and diseases of the respiratory system (\$17 billion). The other group includes neoplasms (\$14 billion), diseases of the musculoskeletal system and connective tissue (\$14 billion), diseases of the genitourinary system (\$13 billion), and diseases of the nervous system and sense organs (\$12 billion).

The relative amounts spent for each type of health care varied among the disease categories. This reflects the different natures of the diseases and consequent needs for each type of service among diseases. Hospital care usually accounted for the largest share of expenditures for a disease class, ranging from 35 percent of expenditures for diseases of the nervous system and sense organs to 67 percent for neoplasms. Professional services were usually the second leading cause of expenditures in a disease category but ranged from 10 percent of spending for mental disorders to 61 percent for diseases of the digestive system. It must be noted, however, that out of \$19 billion for professional services for diseases of the digestive system \$15 billion was spent for dental services. Nursing home expenditures were high for circulatory diseases (24 percent), mental disorders (22 percent), and endocrine, nutritional, and metabolic diseases (15 percent) but contributed small amounts to other diseases. Drugs were most important in terms of ex-

penditures for diseases of the nervous system (18 percent), those of the respiratory system (17 percent), and endocrine, nutritional, and metabolic diseases (13 percent).

Expenditures by age and sex

The economic burden imposed by a disease category varied with the age and sex of the population (table A). For the elderly, diseases of the circulatory system were far and away the leading cause of health care expenditures, accounting for about 30 percent of the total for older males and females and requiring \$674 and \$848 per capita, respectively. Also among the five most expensive conditions for both groups of elderly were diseases of the digestive system and mental disorders. Injury and poisoning and diseases of the musculoskeletal system and connective tissue completed the top five most expensive conditions for older females but ranked eighth and ninth for older males. Neoplasms were the second most expensive category among elderly males but ranked sixth for women 65 years of age and over. Similarly, diseases of the respiratory system were relatively important for older males (ranking fourth) but ranked ninth among females.

Among persons under 65 years of age, expenditures related to the digestive system were the highest and accounted for 18 percent of the total for males and females. Mental disorders and respiratory diseases were also important causes of expenditures for younger males and females. Completing the five most expensive conditions for younger males were injury and poisoning and circulatory diseases (ranking second and fourth, respectively), while diseases of the genitourinary and nervous

Table A. Per capita personal health care expenditures and rank for leading medical conditions, according to age and sex: United States, 1980

Medical condition	Persons under 65 years of age		Persons 65 years of age and over	
	Male	Female	Male	Female
	Per capita amount			
Circulatory diseases	\$ 67	\$ 61	\$674	\$848
Digestive diseases	110	143	213	223
Mental disorders	73	69	181	246
Injury and poisoning	86	61	105	203
Respiratory diseases	60	68	192	137
Neoplasms	30	50	244	178
Musculoskeletal system and connective tissue diseases	40	55	91	187
Genitourinary system diseases	21	82	128	70
Nervous system and sense organ diseases	57	69	168	176
Endocrine, nutritional, metabolic diseases	15	31	82	138
	Rank			
Circulatory diseases	4	7	1	1
Digestive diseases	1	1	3	3
Mental disorders	3	4	5	2
Injury and poisoning	2	6	8	4
Respiratory diseases	5	5	4	9
Neoplasms	8	9	2	6
Musculoskeletal system and connective tissue diseases	7	8	9	5
Genitourinary system diseases	9	2	7	10
Nervous system and sense organ diseases	6	3	6	7
Endocrine, nutritional, metabolic diseases	10	10	10	8

NOTE: Conditions are based on the *International Classification of Diseases, 9th Revision, Clinical Modification*.

SOURCE: National Center for Health Statistics: Computed by the Division of Analysis from data compiled by the Health Care Financing Administration, the National Center for Health Statistics, and other organizations.

systems were important for females under 65 years of age (ranking second and third, respectively).

For each age group and each sex, diseases of the digestive system and mental disorders were important causes of expenditures. Circulatory diseases ranked high for all but females under 65 years of age, and respiratory diseases were relatively important for all but elderly women. Together, these four categories accounted for almost 50 percent of all expenditures for personal health care.

Diseases of the circulatory system

Even within the broad categories of related diseases, expenditures varied by age, sex, and type of care among the diseases that make up each major class. Expenditures for circulatory system diseases will be broken down as an example. Diseases of the circulatory system are a leading cause of expenditures for medical care and include three well-known diseases that are serious health problems for millions of people in the United States: heart disease, stroke, and hypertension.

Expenditures by type of medical care—The \$33.2 billion spent for diseases of the circulatory system in 1980 is the sum of \$14.6 billion for heart disease, \$5.1 billion for stroke, \$4.5 billion for hypertension, and \$9 billion for other circulatory

diseases (figure 3). The proportions spent for each type of health care differed among the circulatory diseases. Overall, 50 percent of expenditures was for hospital care; but the proportion for hospital services was as high as 69 percent for heart disease and as low as 21 percent for hypertension. Professional services accounted for 19 percent of the total cost of medical care for all circulatory diseases but represented 41 percent of expenditures for hypertension and 18 percent of money spent for care of heart disease.

Nursing home care was an important service for persons with diseases of the circulatory system, accounting for almost one-quarter of all expenditures and ranking second behind hospital care. The bulk of nursing home expenditures was for other circulatory diseases (mainly arteriosclerosis), accounting for almost half the expenditures for that condition. Nursing home care was also an important component of care for victims of stroke, requiring 35 percent of the total spent for stroke. Relatively smaller but significant amounts were spent for nursing home care of persons with hypertension (\$649 million or 14 percent) and heart disease (\$1.1 billion or 8 percent).

Drugs amounted to only 7 percent of total expenditures for all circulatory diseases but were responsible for almost one-quarter of the total spent for hypertension. However, drugs

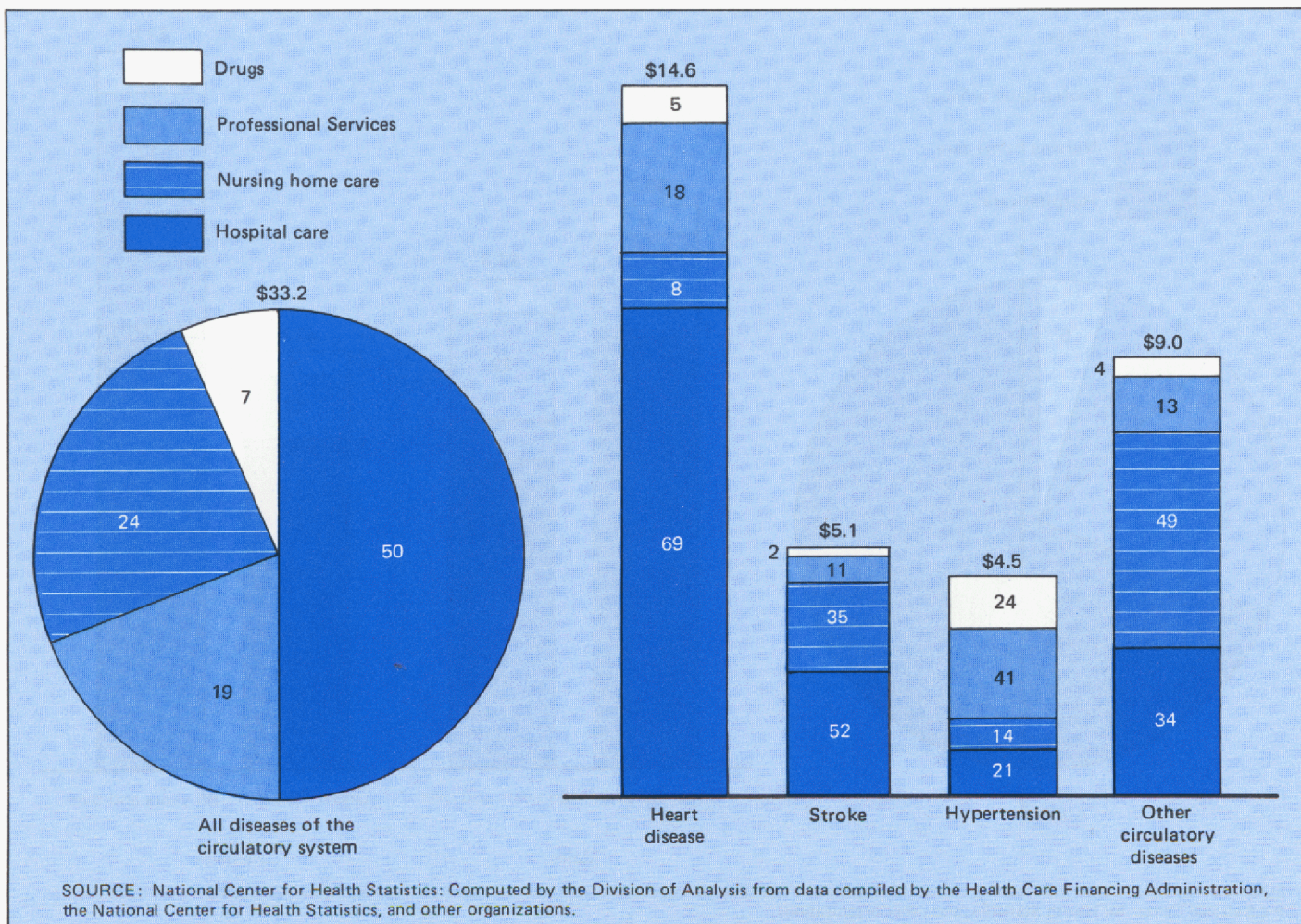


Figure 3. Personal health care expenditures in billions and percent distribution for diseases of the circulatory system, according to type of care: United States, 1980

accounted for 5 percent or less of expenditures for heart disease, stroke, and other circulatory diseases.

Expenditures by age and sex—The relative amount spent for each type of health care for a circulatory disorder varied with the age and sex of the population. In general, expenditures for hospital care were proportionately higher for younger people than for the elderly and expenditures for nursing home care were proportionately greater for the elderly than for the younger population (figure 4). Less than two-thirds of expenditures for heart disease for the elderly were for hospital care, compared with more than three-fourths for persons under 65 years of age. On the other hand, 8 percent of expenditures for elderly males and 16 percent for elderly females were for nursing home care, compared with only 1 percent of expenditures among younger persons. This pattern also occurs for other circulatory diseases such as stroke, hypertension, and the residual category “other circulatory diseases.” No patterns of differential spending by age or sex are discernible for professional services or drugs.

Per capita expenditures—Other things being equal, expenditures will be higher the larger the population in an age-sex group. Therefore, it is important to take into consideration the size of the population when comparing expenditures for differ-

ent ages and between sexes. Although heart disease expenditures for elderly women greatly exceeded the amount for elderly males, per capita expenditures were much closer (\$309 for men versus \$318 for women). The relatively large total expenditures for heart disease among persons under 65 years of age were distributed among many more persons, and per capita spending was much lower, \$36 for males and \$26 for females.

Per capita expenditures adjust for the effect of population size. The level of per capita spending is directly related to the prevalence of disease, the number of services used by each patient, and the average cost of each service. The very large differences in per capita spending between the elderly and younger persons were chiefly the result of the higher prevalence of heart disease among persons 65 years of age and over. In 1979, the prevalence of heart disease was 274 elderly persons per 1,000 population, compared with 52 persons under 65 years of age per 1,000 population (Division of Health Interview Statistics, 1979). Nevertheless, older persons with heart disease used more health services, on the average, than the younger group, which also contributed to higher per capita expenditures.

Prevalence rates were about the same for males and females under 65 years of age, but higher use of health services

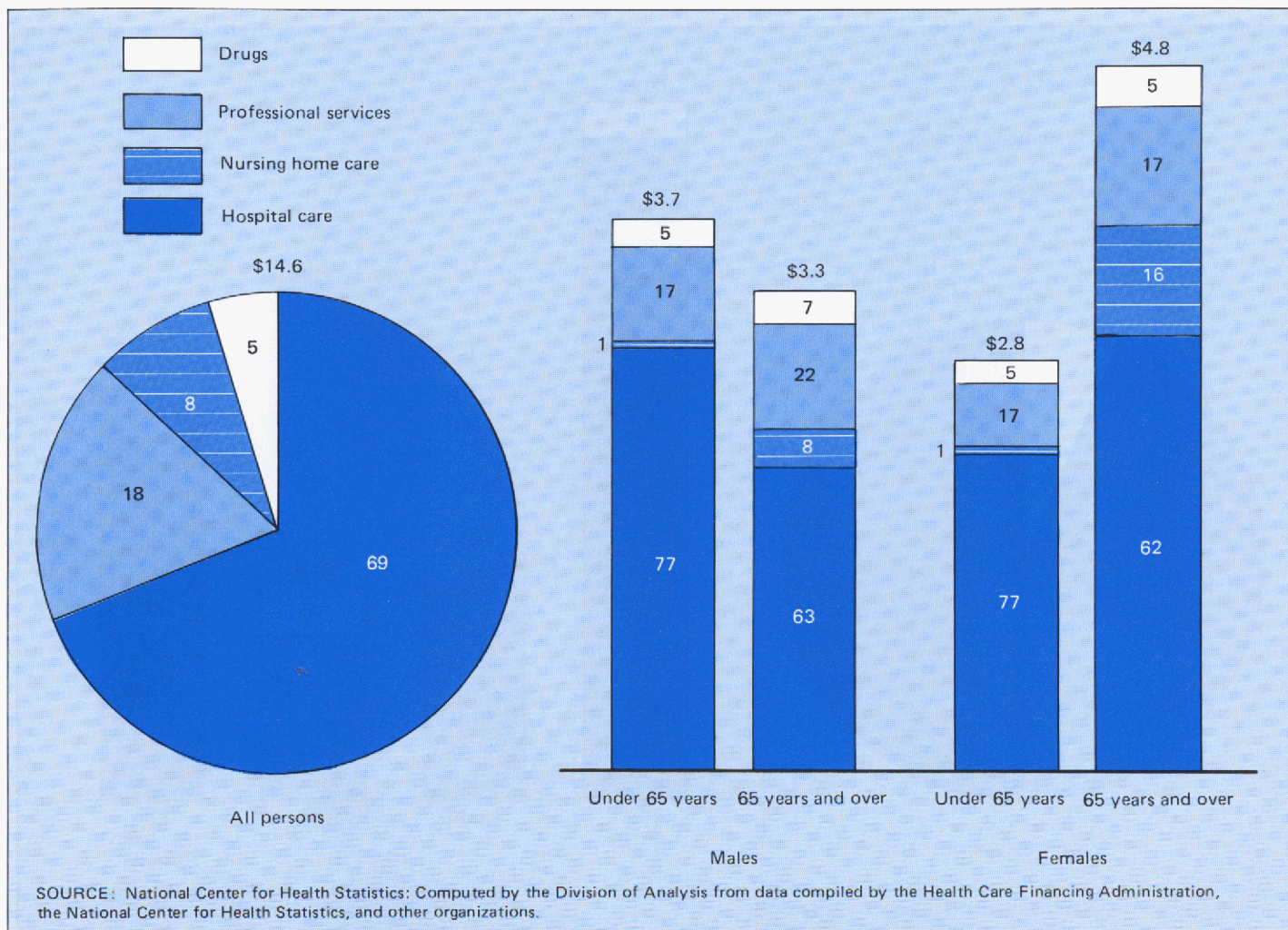


Figure 4. Personal health care expenditures in billions and percent distribution for heart disease, according to type of care, age, and sex: United States, 1980

by males resulted in higher per capita expenditures for them. The prevalence rate of heart disease among elderly females was slightly higher than for males. This and greater use of nursing home care resulted in higher per capita expenditures for heart disease among older females.

Some of these patterns also hold for hypertension and stroke. Prevalence rates were higher for the elderly and for females, and services were used more by older persons with the diseases. As a result, per capita expenditures were higher for persons 65 years of age and older and usually higher for females than for males.

Conclusion

Health care expenditures have taken an increasing share of the gross national product (GNP) for more than two decades, rising from 5.3 percent of GNP in 1960 to 9.8 percent in 1981. If current trends continue, national health expenditures will consume 12 percent of GNP in 1990 (Office of Research and Demonstrations, 1983). The prospect of continuing growth in health care spending that outpaces growth in the rest of the economy makes health care costs an important economic issue, affecting both the public and private sectors.

Potential strategies for reducing health care expenditures include the following: health promotion and disease prevention efforts to reduce prevalence; use of fewer health services per case or the substitution of less expensive for more expensive forms of care such as outpatient for inpatient surgery and home care for hospital care; and lower costs per service through technological advances, competition, and other economic incentives that induce more efficient use of resources. In reality, expenditures are determined by a variety of complex and interrelated factors. For example, price per service may depend on the number of services used, and technological innovation that improves quality of care may raise rather than lower costs. Thus, the relative costs and benefits of different strategies are often unclear. For this discussion, however, it is assumed that per capita expenditures are directly related to the prevalence rate, number of services per case, and the price per service.

Circulatory disorders are used as an illustration of reductions in expenditures that might be achieved through reduced prevalence, utilization, or costs. The potential savings from what appear to be relatively modest changes in the prevalence and resource requirements for heart disease, stroke, and hypertension are large. A 10-percent decrease in the prevalence of these three circulatory diseases means that 4–5 million fewer persons would have these conditions and 10 percent fewer dollars would be spent for personal health care. In 1980, almost

\$2.5 billion would have been saved. Similarly, expenditures in 1980 could have been reduced \$2.5 billion by a 10-percent decrease in expenditures per case, through reductions in the number of services per case, price per service, or some combination of fewer services and lower prices. If the prevalence and resource requirements were simultaneously reduced by 10 percent each, the total savings would have been almost \$5 billion in terms of 1980 expenditures.

This is not to say that these savings can be realized easily. For example, medical advances leading to a decline in the incidence of heart disease may also lengthen the period of survival for those who develop heart disease. The net effect may be an increase in the prevalence and the amount of medical care to be provided for heart disease. Similarly, changes in treatment of heart disease may be beneficial to the patient but may also increase expenditures per case. The interrelationships among these and other factors make cost containment a difficult goal to reach.

References

Cooper, B. S., and Rice, D. P.: The economic cost of illness revisited. *Soc. Secur. Bull.* 39:21–36, Feb. 1976.

Cooper, B. S., Gibson, R. M., and Rice, D. P.: United States National Health Accounts—Historical Perspective, Current Issues, and Future Projections. Paper presented at the European Conference on the Accounts of Health. Paris, France, Mar. 12–14, 1980.

Division of Health Interview Statistics, National Center for Health Statistics: Data from the National Health Interview Survey, 1979.

National Center for Health Statistics: *International Classification of Diseases, 9th Revision, Clinical Modification*. DHHS Pub. No. (PHS) 80–1260. Public Health Service. Washington. U.S. Government Printing Office, Sept. 1980.

Office of Research and Demonstrations: National health expenditures, 1981, by D. R. Waldo and R. M. Gibson. *Health Care Financing Review*. HCFA Pub. No. 03146. Health Care Financing Administration. Washington. U.S. Government Printing Office, Sept. 1982.

Office of Research and Demonstrations: National health expenditure growth in the 1980's, An aging population, new technologies, and increasing competition, by M. S. Freeland and C. E. Schendler. *Health Care Financing Review*. HCFA Pub. No. 03149. Health Care Financing Administration. Washington. U.S. Government Printing Office, Mar. 1983.

Office of Research, Demonstrations, and Statistics: Differences by age groups in health care spending, by C. R. Fisher. *Health Care Financing Review*. HCFA Pub. No. 03045. Health Care Financing Administration. Washington. U.S. Government Printing Office, Spring 1980.



Detailed Tables

Table 1. Resident population, according to age and race: United States, selected years 1950-81 estimates and 2000 projections

(Data are based on decennial census updated by data from multiple sources)

Race and year	Resident population	Age											
		All ages	Under 1 year	1-4 years	5-14 years	15-24 years	25-34 years	35-44 years	45-54 years	55-64 years	65-74 years	75-84 years	85 years and over
Total¹	Number in thousands	Percent distribution											
1950.....	151,235	100.0	10.8		16.2	14.6	15.7	14.2	11.5	8.8	5.6	2.2	0.4
1960.....	179,979	100.0	2.3	9.0	19.9	13.4	12.6	13.4	11.4	8.7	6.1	2.6	0.5
1970.....	203,810	100.0	1.7	6.7	20.0	17.6	12.3	11.3	11.4	9.2	6.1	3.0	0.7
1980.....	227,156	100.0	1.6	5.7	15.3	18.7	16.5	11.4	10.0	9.6	6.9	3.4	1.0
1981.....	229,307	100.0	1.6	5.8	15.0	18.4	16.9	11.5	9.8	9.6	6.9	3.5	1.0
2000 ²	267,990	100.0	1.3	5.3	14.3	13.5	13.6	16.3	13.8	8.9	6.6	4.6	1.9
White													
1950.....	135,400	100.0	10.6		15.8	14.3	15.7	14.3	11.6	9.2	5.8	2.3	0.4
1960.....	159,381	100.0	2.2	8.7	19.4	13.3	12.6	13.5	11.6	8.9	6.4	2.7	0.5
1970.....	178,551	100.0	1.7	6.4	19.4	17.4	12.3	11.4	11.7	9.5	6.4	3.2	0.7
1980.....	195,231	100.0	1.5	5.4	14.7	18.3	16.4	11.5	10.2	10.0	7.2	3.6	1.1
1981.....	196,627	100.0	1.5	5.6	14.3	18.0	16.9	11.7	10.0	10.0	7.3	3.7	1.1
2000 ²	222,801	100.0	1.2	5.0	13.7	13.0	13.3	16.3	14.2	9.3	7.0	4.9	2.1
Black													
1950.....	15,045	100.0	12.5		19.2	16.4	15.7	14.1	10.4	6.0	4.1	1.6	
1960.....	18,960	100.0	3.0	11.5	23.3	14.4	12.7	12.2	9.9	6.8	4.3	1.6	0.4
1970.....	22,673	100.0	2.1	8.6	24.6	18.9	11.9	10.6	9.4	7.1	4.6	1.8	0.5
1980.....	26,731	100.0	2.1	7.2	19.4	21.5	16.0	10.2	8.5	7.2	5.0	2.2	0.6
1981.....	27,170	100.0	2.2	7.4	18.8	21.3	16.6	10.3	8.4	7.1	5.0	2.3	0.6
2000 ²	35,795	100.0	1.7	6.9	17.9	15.9	14.9	16.2	11.5	6.6	4.5	2.7	1.2

¹Includes all other races not shown separately.

²Projections are for the total population including armed forces overseas.

NOTE: Estimates are as of July 1, except for blacks in 1950 which is the census count as of April 1.

SOURCES: U.S. Bureau of the Census: 1950 Nonwhite Population by Race, Special Report P-E, No. 38. Washington. U.S. Government Printing Office, 1951; Population estimates and projections. Current Population Reports, Series P-25, Nos. 310, 519, 917, and 922. Washington. U.S. Government Printing Office, June 1965, April 1974, July 1982, and Oct. 1982.

Table 2. Live births, crude birth rates, and birth rates by age of mother, according to race: United States, selected years 1950-80

(Data are based on the National Vital Statistics System)

Race and year	Live births	Crude birth rate ¹	Age								
			10-14 years	15-17 years	18-19 years	20-24 years	25-29 years	30-34 years	35-39 years	40-44 years	45-49 years
Total ²		Live births per 1,000 women									
1950.....	3,632,000	24.1	1.0	40.7	132.7	196.6	166.1	103.7	52.9	15.1	1.2
1955.....	4,097,000	25.0	0.9	44.5	157.9	241.6	190.2	116.0	58.6	16.1	1.0
1960.....	4,257,850	23.7	0.8	43.9	166.7	258.1	197.4	112.7	56.2	15.5	0.9
1965.....	3,760,358	19.4	0.8	36.6	124.5	195.3	161.6	94.4	46.2	12.8	0.8
1970.....	3,731,386	18.4	1.2	38.8	114.7	167.8	145.1	73.3	31.7	8.1	0.5
1975.....	3,144,198	14.6	1.3	36.1	85.0	113.0	108.2	52.3	19.5	4.6	0.3
1976.....	3,167,788	14.6	1.2	34.1	80.5	110.3	106.2	53.6	19.0	4.3	0.2
1977.....	3,326,632	15.1	1.2	33.9	80.9	112.9	111.0	56.4	19.2	4.2	0.2
1978.....	3,333,279	15.0	1.2	32.2	79.8	109.9	108.5	57.8	19.0	3.9	0.2
1979.....	3,494,398	15.6	1.2	32.3	81.3	112.8	111.4	60.3	19.5	3.9	0.2
1980.....	3,612,258	15.9	1.1	32.5	82.1	115.1	112.9	61.9	19.8	3.9	0.2
White											
1950.....	3,108,000	23.0	0.4	31.3	120.5	190.4	165.1	102.6	51.4	14.5	1.0
1955.....	3,485,000	23.8	0.3	35.4	145.7	235.8	186.6	114.0	56.7	15.4	0.9
1960.....	3,600,744	22.7	0.4	35.5	154.6	252.8	194.9	109.6	54.0	14.7	0.8
1965.....	3,123,860	18.3	0.3	27.8	111.9	189.0	158.4	91.6	44.0	12.0	0.7
1970.....	3,091,264	17.4	0.5	29.2	101.5	163.4	145.9	71.9	30.0	7.5	0.4
1975.....	2,551,996	13.6	0.6	28.0	74.0	108.2	108.1	51.3	18.2	4.2	0.2
1976.....	2,567,614	13.6	0.6	26.3	70.2	105.3	105.9	52.6	17.8	3.9	0.2
1977.....	2,691,070	14.1	0.6	26.1	70.5	107.7	110.9	55.3	18.0	3.8	0.2
1978.....	2,681,116	14.0	0.6	24.9	69.4	104.1	107.9	56.6	17.7	3.5	0.2
1979.....	2,808,420	14.5	0.6	24.7	71.0	107.0	110.8	59.0	18.3	3.5	0.2
1980.....	2,898,732	14.9	0.6	25.2	72.1	109.5	112.4	60.4	18.5	3.4	0.2
Black											
1960.....	602,264	31.9	4.3	---	---	295.4	218.6	137.1	73.9	21.9	1.1
1965.....	581,126	27.7	4.3	99.3	227.6	243.1	180.4	111.3	61.9	18.7	1.4
1970.....	572,362	25.3	5.2	101.4	204.9	202.7	136.3	79.6	41.9	12.5	1.0
1975.....	511,581	20.7	5.1	85.6	152.4	142.8	102.2	53.1	25.6	7.5	0.5
1976.....	514,479	20.5	4.7	80.3	142.5	140.5	101.6	53.6	24.8	6.8	0.5
1977.....	544,221	21.4	4.7	79.6	142.9	144.4	106.4	57.5	25.4	6.6	0.5
1978.....	551,540	21.3	4.4	75.0	139.7	143.8	105.4	58.3	24.3	6.1	0.4
1979.....	577,855	22.0	4.6	75.7	140.4	146.3	108.2	60.7	24.7	6.1	0.4
1980.....	589,616	22.1	4.3	73.6	138.8	146.3	109.1	62.9	24.5	5.8	0.3

¹Live births per 1,000 population.

²Includes all other races not shown separately.

NOTE: Data are based on births adjusted for underregistration for 1950 and 1955 and on registered births for all other years. Figures for 1960, 1965, and 1970 are based on a 50-percent sample of births; for 1975-80, they are based on 100 percent of births in selected States and on a 50-percent sample of births in all other States. Beginning in 1970, births to nonresidents of the United States are excluded.

SOURCE: National Center for Health Statistics: Vital Statistics of the United States, 1980, Vol. I. Public Health Service, DHHS, Hyattsville, Md. To be published.

Table 3. Birth rates for women 15-44 years of age, according to live-birth order and race: United States, selected years 1950-80

(Data are based on the National Vital Statistics System)

Race and year	Total	Live-birth order				
		1	2	3	4	5 or higher
Total ¹		Live births per 1,000 women 15-44 years of age				
1950.....	106.2	33.3	32.1	18.4	9.2	13.2
1955.....	118.3	32.8	31.8	23.1	13.3	17.3
1960.....	118.0	31.1	29.2	22.8	14.6	20.3
1965.....	96.6	29.8	23.4	16.6	10.7	16.1
1970.....	87.9	34.2	24.2	13.6	7.2	8.7
1975.....	66.0	28.1	20.9	9.4	3.9	3.7
1976.....	65.0	27.5	20.8	9.5	3.8	3.4
1977.....	66.8	28.2	21.6	10.0	3.8	3.2
1978.....	65.5	27.8	21.1	9.8	3.8	2.9
1979.....	67.2	28.6	21.6	10.1	3.8	2.9
1980.....	68.4	29.5	21.8	10.3	3.9	2.9
White						
1950.....	102.3	33.3	32.3	17.9	8.4	10.4
1955.....	113.7	32.6	32.0	22.9	12.6	13.6
1960.....	113.2	30.8	29.2	22.7	14.1	16.4
1965.....	91.4	28.9	23.0	16.2	10.2	13.1
1970.....	84.1	32.9	23.7	13.3	6.8	7.4
1975.....	62.5	26.7	20.3	8.8	3.5	3.1
1976.....	61.5	26.3	20.2	8.9	3.4	2.8
1977.....	63.2	26.9	20.9	9.4	3.4	2.7
1978.....	61.7	26.6	20.2	9.2	3.3	2.4
1979.....	63.4	27.4	20.8	9.4	3.4	2.4
1980.....	64.7	28.4	21.0	9.5	3.4	2.4
Black						
1960.....	153.5	33.6	29.3	24.0	18.6	48.0
1965.....	133.9	35.7	26.2	19.4	14.6	38.0
1970.....	115.4	43.3	27.1	16.1	10.0	18.9
1975.....	87.9	36.9	24.2	12.6	6.3	8.0
1976.....	85.8	35.2	24.4	12.9	6.2	7.2
1977.....	88.1	35.6	25.5	13.6	6.4	6.9
1978.....	86.7	34.6	25.4	13.9	6.5	6.4
1979.....	88.3	35.3	25.8	14.4	6.6	6.2
1980.....	88.1	35.2	25.7	14.5	6.7	6.0

¹Includes all other races not shown separately.

NOTE: Data are based on births adjusted for underregistration for 1950 and 1955 and on registered births for all other years. Figures for 1960, 1965, and 1970 are based on a 50-percent sample of births; for 1975-80, they are based on 100 percent of births in selected States and on a 50-percent sample of births in all other States. Beginning in 1970, births to nonresidents of the United States are excluded.

SOURCE: National Center for Health Statistics: Vital Statistics of the United States, 1980, Vol. I. Public Health Service, DHHS, Hyattsville, Md. To be published.

Table 4. Completed fertility rates and parity distribution for women 50-54 years of age at the beginning of selected years 1925-81, according to race and birth cohort: United States, selected birth cohorts 1871-1931

(Data are based on the National Vital Statistics System)

Race and birth cohort	Age 50-54 as of January 1	Completed fertility rate ¹	Total	Parity (number of children born alive)							
				0	1	2	3	4	5	6	7 or more
Total				Distribution of women ²							
1871-75.....	1925	3,773.5	1,000.0	207.2	112.8	124.2	110.0	93.6	75.1	66.4	210.7
1876-80.....	1930	3,531.9	1,000.0	216.8	123.2	132.0	114.0	93.0	72.0	64.5	184.5
1881-85.....	1935	3,321.6	1,000.0	217.4	134.6	142.5	119.3	95.0	72.0	57.9	161.3
1886-90.....	1940	3,136.8	1,000.0	210.4	148.5	153.2	129.7	99.5	68.0	55.4	135.3
1891-95.....	1945	2,932.6	1,000.0	192.7	172.0	177.2	139.3	97.8	61.5	48.3	111.2
1896-1900....	1950	2,675.9	1,000.0	194.6	200.7	195.2	136.6	87.8	53.5	41.5	90.1
1901-05.....	1955	2,441.4	1,000.0	201.9	227.6	206.2	129.3	80.4	48.6	34.7	71.3
1906-10.....	1960	2,285.8	1,000.0	215.6	225.1	218.7	131.4	77.5	44.6	29.2	57.9
1911-15.....	1965	2,354.3	1,000.0	190.1	208.6	238.1	149.8	85.2	46.3	28.8	53.1
1916-20.....	1970	2,574.0	1,000.0	149.0	179.0	251.7	174.6	102.8	55.8	32.0	55.1
1921-25.....	1975	2,856.9	1,000.0	108.5	152.1	248.7	197.0	123.5	68.0	39.5	62.7
1926-30.....	1980	3,079.2	1,000.0	105.5	113.7	226.5	209.6	143.5	81.9	47.6	71.7
1927-31.....	1981	3,118.0	1,000.0	104.1	107.4	222.4	212.0	147.5	84.6	49.2	72.8
White											
1871-75.....	1925	3,663.6	1,000.0	209.7	112.1	127.9	112.9	95.5	77.2	66.7	198.0
1876-80.....	1930	3,444.4	1,000.0	218.2	121.9	136.1	116.9	94.8	74.0	64.2	173.9
1881-85.....	1935	3,253.8	1,000.0	217.6	132.2	147.9	122.4	96.0	74.2	57.8	151.9
1886-90.....	1940	3,092.9	1,000.0	209.1	144.3	160.3	132.4	100.2	70.3	54.8	128.6
1891-95.....	1945	2,890.4	1,000.0	191.7	167.5	184.6	141.4	98.0	64.2	47.8	104.8
1896-1900....	1950	2,631.5	1,000.0	193.1	192.1	205.9	141.4	89.0	55.2	41.1	82.2
1901-05.....	1955	2,399.0	1,000.0	197.9	219.5	218.3	135.8	82.3	49.4	33.7	63.1
1906-10.....	1960	2,248.9	1,000.0	207.9	218.0	233.2	138.8	79.6	44.7	28.0	49.8
1911-15.....	1965	2,313.5	1,000.0	177.4	204.9	254.1	158.9	88.0	46.1	27.4	43.2
1916-20.....	1970	2,526.7	1,000.0	134.6	175.9	268.7	185.1	106.5	55.3	30.3	43.6
1921-25.....	1975	2,793.7	1,000.0	94.2	150.6	264.6	208.8	127.9	67.9	36.9	49.1
1926-30.....	1980	2,986.1	1,000.0	94.1	114.1	240.2	222.3	148.8	81.2	44.5	54.8
1927-31.....	1981	3,023.6	1,000.0	92.5	108.2	235.8	224.9	153.0	83.9	46.0	55.6
All other											
1871-75.....	1925	4,770.8	1,000.0	185.7	118.2	93.6	82.0	76.4	56.1	65.3	322.7
1876-80.....	1930	4,254.7	1,000.0	207.7	134.0	99.5	87.4	79.9	54.7	64.8	272.0
1881-85.....	1935	3,865.0	1,000.0	223.1	151.5	99.8	96.5	85.3	41.5	64.1	238.2
1886-90.....	1940	3,451.4	1,000.0	231.9	175.9	105.9	96.6	93.3	52.4	58.0	186.0
1891-95.....	1945	3,212.5	1,000.0	222.3	206.7	112.4	114.5	92.6	40.4	48.4	162.7
1896-1900....	1950	2,967.7	1,000.0	227.4	255.0	114.1	97.5	74.3	38.8	42.6	150.3
1901-05.....	1955	2,706.7	1,000.0	250.4	275.9	117.8	81.0	62.3	43.0	39.1	130.5
1906-10.....	1960	2,529.1	1,000.0	287.5	266.6	114.5	73.2	60.1	43.5	35.6	119.0
1911-15.....	1965	2,641.2	1,000.0	296.1	232.4	116.3	78.3	64.1	46.1	38.9	127.8
1916-20.....	1970	2,924.2	1,000.0	266.2	202.0	120.9	91.2	72.5	57.8	44.9	144.5
1921-25.....	1975	3,315.9	1,000.0	217.7	163.5	131.7	108.2	89.0	68.7	56.4	164.8
1926-30.....	1980	3,718.9	1,000.0	187.4	110.8	130.2	121.0	106.4	85.7	69.3	189.2
1927-31.....	1981	3,756.1	1,000.0	185.7	102.5	129.1	123.0	109.1	88.1	71.4	191.0

¹Number of children born alive to each 1,000 women who have completed their reproductive histories (women 50-54 years of age).

²Proportional distribution of each 1,000 women in the cohort by the number of children born alive to them.

NOTE: Example of use of table--For every 1,000 women 50-54 years of age in 1981, an average of 3,118.0 children were born alive (about 3 children per woman). About 10 percent of the women in this cohort reached 50-54 years of age having had no children, about 11 percent had 1 child, and about 12 percent had 6 children or more.

SOURCES: National Center for Health Statistics: Fertility Tables for Birth Cohorts by Color, United States, 1917-73 by R. Heuser. DHEW Pub. No. (HRA) 76-1152. Health Resources Administration. Washington, U.S. Government Printing Office, Apr. 1976; Data computed from Vital Statistics of the United States, 1980, Vol. I. Public Health Service, DHHS, Hyattsville, Md. To be published.

Table 5. Legal abortion ratios, according to selected patient characteristics: United States, 1973-80

(Data are based on reporting by State health departments and by facilities)

Selected characteristic	Year							
	1973	1974	1975	1976	1977	1978	1979	1980
	Abortions per 100 live births							
Total.....	19.6	24.2	27.2	31.2	32.4	34.7	35.8	35.9
Age								
Under 15 years.....	74.3	92.4	101.5	111.2	112.1	110.2	121.3	113.7
15-19 years.....	31.7	39.9	46.4	54.4	57.2	61.8	66.0	65.0
20-24 years.....	17.9	21.9	25.0	30.1	32.5	35.6	37.3	37.7
25-29 years.....	12.3	15.0	16.6	19.0	19.9	21.6	22.3	23.2
30-34 years.....	16.5	20.5	22.1	23.5	22.8	23.6	23.3	24.1
35-39 years.....	26.7	34.9	37.5	41.1	42.4	43.7	41.5	40.9
40 years and over.....	40.2	53.8	59.9	68.9	74.2	76.6	74.7	76.5
Race								
White.....	17.5	20.7	22.7	25.6	26.6	28.9	30.7	31.5
All other.....	28.9	39.6	46.5	55.1	57.1	58.6	56.8	55.4
Marital status								
Married.....	6.2	7.6	8.3	9.0	9.3	11.0	10.7	10.1
Unmarried.....	109.8	132.6	141.1	159.2	158.5	156.7	157.8	162.7
Number of previous live births ¹								
0.....	23.0	27.4	30.2	35.2	41.1	46.3	48.8	49.6
1.....	12.1	15.0	17.3	20.2	19.1	20.8	21.3	21.9
2.....	19.6	25.6	29.7	33.0	31.2	32.4	32.7	32.8
3.....	25.8	34.6	39.8	44.6	39.3	35.7	34.3	33.4
4 or more.....	26.4	35.3	41.3	46.7	41.5	31.6	29.1	26.6

¹For 1973-77, data indicate number of living children.SOURCES: Centers for Disease Control: Abortion Surveillance, 1973-78. Public Health Service, DHHS, Atlanta, Ga., May 1975-Nov. 1980; Abortion Surveillance, 1979-80. Public Health Service, DHHS, Atlanta, Ga. To be published; Unpublished data.

Table 6. Legal abortions, according to selected characteristics: United States, 1973-80

(Data are based on reporting by State health departments and by facilities)

Selected characteristic	Year							
	1973	1974	1975	1976	1977	1978	1979	1980
Number of legal abortions reported								
Centers for Disease Control..	615,831	763,476	854,853	988,267	1,079,430	1,157,776	1,251,921	1,297,606
Alan Guttmacher Institute....	744,600	898,600	1,034,200	1,179,300	1,320,000	1,409,600	1,497,670	1,553,900
Percent distribution								
Total.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Period of gestation								
Under 9 weeks.....	36.1	42.6	44.6	47.0	51.2	52.2	52.1	51.7
9-10 weeks.....	29.4	28.7	28.4	28.0	27.2	26.9	27.0	26.2
11-12 weeks.....	17.9	15.4	14.9	14.4	13.1	12.3	12.5	12.2
13-15 weeks.....	6.9	5.5	5.0	4.5	3.4	4.0	4.2	5.2
16-20 weeks.....	8.0	6.5	6.1	5.1	4.3	3.7	3.4	3.9
21 weeks and over.....	1.7	1.2	1.0	0.9	0.9	0.9	0.9	0.9
Type of procedure								
Curettage.....	88.4	89.7	90.9	92.8	93.8	94.6	95.0	95.5
Intrauterine instillation....	10.4	7.8	6.2	6.0	5.4	3.9	3.3	3.1
Hysterotomy or hysterectomy...	0.7	0.6	0.4	0.2	0.2	0.1	0.1	0.1
Other.....	0.6	1.9	2.4	0.9	0.7	1.4	1.6	1.3
Location of facility								
In State of residence.....	74.8	86.6	89.2	90.0	90.0	89.3	90.0	92.6
Out of State of residence.....	25.2	13.4	10.8	10.0	10.0	10.7	10.0	7.4
Previous induced abortions								
0.....	---	86.8	81.9	79.8	76.8	70.7	68.9	67.6
1.....	---	11.3	14.9	16.6	18.3	22.1	23.0	23.5
2.....	---	1.5	2.5	2.7	3.4	5.3	5.9	6.6
3 or more.....	---	0.4	0.7	0.9	1.5	1.8	2.1	2.3

NOTE: For a discussion of the differences in reported legal abortions between the Centers for Disease Control and the Alan Guttmacher Institute, see Appendix I. Percent distributions exclude cases for which selected characteristic was unknown and are based on abortions reported to the Centers for Disease Control.

SOURCES: Centers for Disease Control: Abortion Surveillance, 1979-80. Public Health Service, DHHS, Atlanta, Ga. To be published; Unpublished data; Sullivan, E., Tietze, C., and Dryfoos, J.: Legal abortions in the United States, 1975-1976. Fam. Plann. Perspect. 9(3):116-129, May-June 1977; The Alan Guttmacher Institute: Personal communication, 1983.

Table 7. Legal abortions, abortion-related deaths and death rates, and relative risk of death, according to period of gestation: United States, 1975-77 and 1978-80

(Data are based primarily on reporting by State health departments and by facilities)

Year and period of gestation	Number of legal abortions reported	Abortion-related deaths		Relative risk of death ¹
		Number	Rate per 100,000 abortions	
1975-77				
Total.....	2,922,550	57	2.0	...
Under 9 weeks.....	1,398,252	8	0.6	1.0
9-10 weeks.....	812,549	9	1.1	1.8
11-12 weeks.....	410,999	7	1.7	2.8
13-15 weeks.....	124,354	9	7.2	12.0
16-20 weeks.....	148,036	18	12.2	20.3
21 weeks and over.....	28,360	6	21.2	35.3
1978-80				
Total.....	3,707,303	33	0.9	...
Under 9 weeks.....	1,927,670	7	0.4	1.0
9-10 weeks.....	988,965	8	0.8	2.0
11-12 weeks.....	456,379	5	1.1	2.8
13-15 weeks.....	165,877	1	0.6	1.5
16-20 weeks.....	135,711	10	7.4	18.5
21 weeks and over.....	32,701	2	6.1	15.2

¹Relative risk is the ratio of the death rate in the specified category to the death rate for the gestation period under 9 weeks.

SOURCE: Centers for Disease Control: Abortion Surveillance, 1979-80. Public Health Service, DHHS, Atlanta, Ga. To be published; Unpublished data.

Table 8. Lifetime births expected by currently married women and percent of expected births already born, according to age and race: United States, selected years 1967-80

(Data are based on reporting of birth expectations by currently married women of the civilian noninstitutionalized population)

Race and year	All ages 18-34 years	Age				
		18-19 years	20-21 years	22-24 years	25-29 years	30-34 years
Total ¹		Expected births per currently married woman				
1967.....	3.1	2.7	2.9	2.9	3.0	3.3
1971.....	2.6	2.3	2.4	2.4	2.6	3.0
1975.....	2.3	2.2	2.2	2.2	2.3	2.6
1979.....	2.2	2.1	2.2	2.2	2.2	2.3
1980.....	2.2	2.1	2.2	2.1	2.2	2.2
White						
1967.....	3.0	2.7	3.0	2.8	3.0	3.2
1971.....	2.6	2.3	2.4	2.4	2.6	2.9
1975.....	2.3	2.2	2.1	2.1	2.2	2.6
1979.....	2.2	2.1	2.2	2.1	2.2	2.3
1980.....	2.2	2.1	2.2	2.1	2.1	2.2
Black						
1967.....	3.5	*	2.5	3.0	3.4	4.3
1971.....	3.1	*	2.4	2.8	3.1	3.7
1975.....	2.8	*	2.6	2.5	2.6	3.2
1979.....	2.5	*	2.5	2.4	2.6	2.6
1980.....	2.4	*	2.2	2.1	2.4	2.5
Total ¹		Percent of expected births already born				
1967.....	70.2	26.9	33.2	47.8	76.1	92.7
1971.....	69.4	25.3	32.5	46.7	74.4	93.7
1975.....	68.8	27.5	30.7	43.9	70.9	93.0
1979.....	67.4	30.1	33.4	44.0	65.8	90.2
1980.....	67.0	29.5	32.9	44.9	64.7	89.7
White						
1967.....	68.9	24.2	30.1	46.2	75.1	92.9
1971.....	68.9	23.7	31.4	45.3	74.1	93.8
1975.....	68.2	24.9	29.4	42.3	70.5	93.2
1979.....	66.9	29.7	32.3	42.8	64.9	90.5
1980.....	66.3	28.6	31.8	43.5	64.0	90.0
Black						
1967.....	82.8	*	65.7	67.9	87.9	92.3
1971.....	74.8	*	43.0	57.5	81.0	93.4
1975.....	76.4	*	43.3	61.0	78.2	91.8
1979.....	74.6	*	46.7	56.3	77.7	89.5
1980.....	74.7	*	46.1	58.9	73.8	90.9

¹Includes all other races not shown separately.

SOURCE: U.S. Bureau of the Census: Population characteristics. Current Population Reports. Series P-20, Nos. 301, 358, and 375. Washington. U.S. Government Printing Office, Nov. 1976, Dec. 1980, and Oct. 1982.

Table 9. Death rates for all causes, according to race, sex, and age: United States, selected years 1950-82

(Data are based on the National Vital Statistics System)

Race, sex, and age	Year							
	1950 ¹	1960 ¹	1970	1975	1979	1980	1981 ²	1982 ²
Total ³								
	Number of deaths per 100,000 resident population							
All ages, age adjusted ⁴ ...	841.5	760.9	714.3	630.4	577.0	585.8	571.6	556.4
All ages, crude.....	963.8	954.7	945.3	878.5	852.2	878.3	866.4	857.6
Under 1 year.....	3,299.2	2,696.4	2,142.4	1,603.0	1,332.9	1,288.3	1,190.4	1,143.7
1-4 years.....	139.4	109.1	84.5	69.9	64.2	63.9	60.0	55.5
5-14 years.....	60.1	46.6	41.3	35.2	31.5	30.6	30.6	27.8
15-24 years.....	128.1	106.3	127.7	117.3	114.8	115.4	106.2	104.7
25-34 years.....	178.7	146.4	157.4	140.6	133.0	135.5	135.4	126.9
35-44 years.....	358.7	299.4	314.5	266.7	229.8	227.9	226.4	207.9
45-54 years.....	853.9	756.0	730.0	649.9	589.7	584.0	577.4	556.4
55-64 years.....	1,911.7	1,735.1	1,658.8	1,475.3	1,338.0	1,346.3	1,335.3	1,292.4
65-74 years.....	4,067.7	3,822.1	3,582.7	3,179.5	2,929.0	2,994.9	2,940.0	2,904.5
75-84 years.....	9,331.1	8,745.2	8,004.4	7,034.5	6,496.6	6,692.6	6,431.1	6,350.3
85 years and over.....	20,196.9	19,857.5	17,539.4	15,655.0	14,962.4	15,980.3	15,362.4	15,228.6
White male								
All ages, age adjusted ⁴	963.1	917.7	893.4	804.3	738.4	745.3	730.8	709.7
All ages, crude.....	1,089.5	1,098.5	1,086.7	1,004.1	963.3	983.3	972.8	957.6
Under 1 year.....	3,400.5	2,694.1	2,113.2	1,551.9	1,276.0	1,230.3	1,193.9	1,129.2
1-4 years.....	135.5	104.9	83.6	70.1	64.2	66.1	62.4	55.5
5-14 years.....	67.2	52.7	48.0	40.9	36.6	35.0	37.9	32.1
15-24 years.....	152.4	143.7	170.8	163.6	167.0	167.0	152.4	148.2
25-34 years.....	185.3	163.2	176.6	166.4	166.7	171.3	172.0	156.7
35-44 years.....	380.9	332.6	343.5	295.1	257.5	257.4	260.7	237.7
45-54 years.....	984.5	932.2	882.9	791.0	711.3	698.9	698.9	671.0
55-64 years.....	2,304.4	2,225.2	2,202.6	1,940.9	1,734.5	1,728.5	1,695.1	1,648.6
65-74 years.....	4,864.9	4,848.4	4,810.1	4,343.0	3,991.5	4,035.7	3,953.1	3,893.2
75-84 years.....	10,526.3	10,299.6	10,098.8	9,274.7	8,624.0	8,329.8	8,603.7	8,506.5
85 years and over.....	22,116.3	21,750.0	20,392.6	18,562.2	17,924.0	19,097.3	18,563.7	18,333.3
White female								
All ages, age adjusted ⁴	645.0	555.0	501.7	439.0	402.5	411.1	403.7	395.1
All ages, crude.....	803.3	800.9	812.6	775.1	771.8	806.1	802.0	802.3
Under 1 year.....	2,566.8	2,007.7	1,614.6	1,191.7	936.7	962.5	924.8	906.2
1-4 years.....	112.2	85.2	66.1	56.2	50.4	49.3	48.5	44.3
5-14 years.....	45.1	34.7	29.9	25.5	23.2	22.9	20.7	20.2
15-24 years.....	71.5	54.9	61.6	55.3	55.2	55.5	52.7	52.3
25-34 years.....	112.8	85.0	84.1	72.1	64.7	65.4	65.7	62.8
35-44 years.....	235.8	191.1	193.3	165.3	140.9	138.2	136.4	129.7
45-54 years.....	546.4	458.8	462.9	414.0	374.5	372.7	374.8	357.6
55-64 years.....	1,293.8	1,078.9	1,014.9	928.6	862.8	876.2	884.0	860.9
65-74 years.....	3,242.8	2,779.3	2,470.7	2,142.0	1,997.9	2,066.6	2,048.4	2,029.0
75-84 years.....	8,481.5	7,696.6	6,698.7	5,785.4	5,258.6	5,401.7	5,182.1	5,090.1
85 years and over.....	19,679.5	19,477.7	16,729.5	14,749.7	14,027.9	14,979.6	14,302.2	14,278.0

See footnotes at end of table.

Table 9. Death rates for all causes, according to race, sex, and age: United States, selected years 1950-82--Continued

(Data are based on the National Vital Statistics System)

Race, sex, and age	Year							
	1950 ¹	1960 ¹	1970	1975	1979	1980	1981 ²	1982 ²
Black male								
Number of deaths per 100,000 resident population								
All ages, age adjusted ⁴	1,373.1	1,246.1	1,318.6	1,163.0	1,073.3	1,112.8	---	1,045.5
All ages, crude.....	1,260.3	1,181.7	1,186.6	1,055.4	999.6	1,034.1	---	974.3
Under 1 year.....	1,412.6	5,306.8	4,298.9	3,197.0	2,666.5	2,586.7	---	2,049.5
1-4 years.....		208.5	150.5	115.2	108.1	110.5	---	97.6
5-14 years.....	95.1	75.1	67.1	57.1	49.3	47.4	---	48.1
15-24 years.....	289.7	212.0	320.6	246.2	197.8	209.1	---	197.2
25-34 years.....	503.5	402.5	559.5	484.0	404.4	407.3	---	381.0
35-44 years.....	878.1	762.0	956.6	795.4	699.7	689.8	---	611.1
45-54 years.....	1,905.0	1,624.8	1,777.5	1,584.5	1,479.3	1,479.9	---	1,331.0
55-64 years.....	3,773.2	3,316.4	3,256.9	2,951.1	2,794.6	2,873.0	---	2,708.9
65-74 years.....	5,310.3	5,798.7	5,803.2	5,378.1	4,916.8	5,131.1	---	5,159.9
75-84 years.....	10,101.9	8,605.1	9,454.9	8,034.7	8,165.5	9,231.6	---	8,620.4
85 years and over.....		14,844.8	14,415.4	14,345.7	14,465.4	16,098.8	---	15,732.1
Black female								
All ages, age adjusted ⁴	1,106.7	916.9	814.4	670.6	605.0	631.1	---	570.9
All ages, crude.....	1,002.0	905.0	829.2	726.1	695.3	733.3	---	680.3
Under 1 year.....	1,139.3	4,162.2	3,368.8	2,679.6	2,208.2	2,123.7	---	1,582.5
1-4 years.....		173.3	129.4	97.0	91.9	84.4	---	65.7
5-14 years.....	72.8	53.8	43.8	34.3	30.8	30.5	---	25.6
15-24 years.....	213.1	107.5	111.9	87.0	71.8	70.5	---	62.0
25-34 years.....	393.3	273.2	231.0	167.6	146.0	150.0	---	142.2
35-44 years.....	758.1	568.5	533.0	390.8	321.2	323.9	---	287.3
45-54 years.....	1,576.4	1,177.0	1,043.9	843.5	759.2	768.2	---	705.1
55-64 years.....	3,089.4	2,510.9	1,986.2	1,673.4	1,502.7	1,561.0	---	1,449.2
65-74 years.....	4,000.2	4,064.2	3,860.9	3,341.2	2,914.6	3,057.4	---	2,796.7
75-84 years.....	8,347.0	6,730.0	6,691.5	5,387.5	5,594.4	6,212.1	---	5,578.6
85 years and over.....		13,052.6	12,131.7	11,265.5	10,982.7	12,367.2	---	11,660.9

¹Includes deaths of nonresidents of the United States.

²Provisional data.

³Includes all races and both sexes.

⁴Age adjusted by the direct method to the total population of the United States as enumerated in 1940, using 11 age groups.

SOURCES: National Center for Health Statistics: Vital Statistics of the United States, Vol. II, 1950-80. Public Health Service. Washington. U.S. Government Printing Office; Annual summary of births, deaths, marriages, and divorces, United States, 1982. Monthly Vital Statistics Report. Vol. 31-No. 13. DHHS Pub. No. (PHS) 83-1120. Public Health Service. Hyattsville, Md., Sept. 27, 1983; Data computed by the Division of Analysis from data compiled by the Division of Vital Statistics; U.S. Bureau of the Census: Population estimates and projections. Current Population Reports. Series P-25, No. 310. Washington. U.S. Government Printing Office, June 1965; 1950 Nonwhite Population by Race, Special report P-E No. 3B. Washington. U.S. Government Printing Office, 1951; General population characteristics, United States summary, 1960 and 1970. U.S. Census of Population. Final reports PC(1)-1B and PC(1)-B1. Washington. U.S. Government Printing Office, 1961 and 1972.

Table 10. Life expectancy at birth and at 65 years of age, according to race and sex: United States, selected years 1900-1982

(Data are based on the National Vital Statistics System)

Specified age and year	Total			White			Black		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
At birth									
Remaining life expectancy in years									
1900 ^{1,2}	47.3	46.3	48.3	47.6	46.6	48.7	33.0	32.5	33.5
1950 ²	68.2	65.6	71.1	69.1	66.5	72.2	60.7	58.9	62.7
1960 ²	69.7	66.6	73.1	70.6	67.4	74.1	63.2	60.7	65.9
1970	70.9	67.1	74.8	71.7	68.0	75.6	64.1	60.0	68.3
1971	71.1	67.4	75.0	72.0	68.3	75.8	64.6	60.5	68.9
1972	71.2	67.4	75.1	72.0	68.3	75.9	64.7	60.4	69.1
1973	71.4	67.6	75.3	72.2	68.5	76.1	65.0	60.9	69.3
1974	72.0	68.2	75.9	72.8	69.0	76.7	66.0	61.7	70.3
1975	72.6	68.8	76.6	73.4	69.5	77.3	66.8	62.4	71.3
1976	72.9	69.1	76.8	73.6	69.9	77.5	67.2	62.9	71.6
1977	73.3	69.5	77.2	74.0	70.2	77.9	67.7	63.4	72.0
1978	73.5	69.6	77.3	74.1	70.4	78.0	68.1	63.7	72.4
1979	73.9	70.0	77.8	74.6	70.8	78.4	68.5	64.0	72.9
1980	73.7	70.0	77.5	74.4	70.7	78.1	68.0	63.7	72.3
1981 ³	74.1	70.3	77.9	74.7	71.0	78.5	---	---	---
1982 ³	74.5	70.8	78.2	75.1	71.4	78.7	69.3	64.8	73.8
At 65 years									
1900-1902 ^{1,2}	11.9	11.5	12.2	---	11.5	12.2	---	10.4	11.4
1950 ²	13.9	12.8	15.0	---	12.8	15.1	13.9	12.9	14.9
1960 ²	14.3	12.8	15.8	14.4	12.9	15.9	13.9	12.7	15.1
1970	15.2	13.1	17.0	15.2	13.1	17.1	14.2	12.5	15.7
1971	15.2	13.2	17.1	15.3	13.2	17.2	14.3	12.7	15.8
1972	15.2	13.1	17.1	15.2	13.1	17.2	14.2	12.4	15.8
1973	15.3	13.2	17.2	15.4	13.2	17.3	14.1	12.5	15.7
1974	15.6	13.4	17.5	15.7	13.5	17.7	14.5	12.7	16.2
1975	16.1	13.8	18.1	16.1	13.8	18.2	15.0	13.1	16.7
1976	16.1	13.8	18.1	16.2	13.8	18.2	15.0	13.1	16.7
1977	16.4	14.0	18.4	16.5	14.0	18.5	15.2	13.3	16.9
1978	16.4	14.1	18.4	16.5	14.1	18.5	15.3	13.3	17.1
1979	16.7	14.3	18.7	16.8	14.4	18.8	15.5	13.5	17.3
1980	16.4	14.1	18.3	16.5	14.2	18.5	14.8	12.9	16.5
1981 ³	16.7	14.3	18.7	16.8	14.4	18.8	---	---	---
1982 ³	16.8	14.4	18.8	16.8	14.5	18.8	15.4	13.1	17.4

¹Death registration area only. The death registration area increased from 10 States and the District of Columbia in 1900 to the coterminous United States in 1933.

²Includes deaths of nonresidents of the United States.

³Provisional data.

SOURCES: National Center for Health Statistics: Vital Statistics Rates in the United States, 1940-1960, by R. D. Grove and A. M. Hetzel. DHEW Pub. No. (PHS) 1677. Public Health Service, Washington. U.S. Government Printing Office, 1968; Vital Statistics of the United States, 1970, Vol. II, Part A. DHEW Pub. No. (HRA) 75-1101. Health Resources Administration, Washington. U.S. Government Printing Office, 1974; Annual summary of births, deaths, marriages, and divorces, United States, 1982. Monthly Vital Statistics Report, Vol. 31-No. 13. DHHS Pub. No. (PHS) 83-1120. Public Health Service, Hyattsville, Md., Sept. 27, 1983; Unpublished data from the Division of Vital Statistics; Data computed by the Office of Research and Methodology from data compiled by the Division of Vital Statistics.

Table 11. Infant mortality rates, fetal death rates, and perinatal mortality rates, according to race: United States, selected years 1950-82

(Data are based on the National Vital Statistics System)

Race and year	Infant mortality rate ¹				Fetal death rate ²	Late fetal death rate ³	Perinatal mortality rate ⁴
	Total	Neonatal		Post-neonatal			
		Under 28 days	Under 7 days				
	Total						
	Number of deaths per 1,000 live births						
1950 ⁵	29.2	20.5	17.8	8.7	18.4	14.9	32.5
1960 ⁵	26.0	18.7	16.7	7.3	15.8	12.1	28.6
1965 ⁵	24.7	17.7	15.9	7.0	15.9	11.9	27.6
1970	20.0	15.1	13.6	4.9	14.0	9.5	23.0
1975	16.1	11.6	10.0	4.5	10.6	7.8	17.7
1976	15.2	10.9	9.3	4.3	10.3	7.5	16.7
1977	14.1	9.9	8.4	4.2	9.8	7.1	15.4
1978	13.8	9.5	8.0	4.3	9.6	6.6	14.6
1979	13.1	8.9	7.5	4.2	9.3	6.4	13.8
1980	12.6	8.5	7.1	4.1	9.0	5.8	12.8
1981 ⁶	11.7	7.8	---	3.9	---	---	---
1982 ⁶	11.2	7.6	---	3.6	---	---	---
	White						
1950 ⁵	26.8	19.4	17.1	7.4	16.6	13.3	30.1
1960 ⁵	22.9	17.2	15.6	5.7	13.9	10.8	26.2
1965 ⁵	21.5	16.1	14.6	5.4	13.7	10.5	25.0
1970	17.8	13.8	12.5	4.0	12.3	8.6	21.1
1975	14.2	10.4	9.0	3.8	9.4	7.1	16.0
1976	13.3	9.7	8.2	3.6	9.3	6.9	15.1
1977	12.3	8.7	7.4	3.6	8.7	6.5	13.9
1978	12.0	8.4	7.0	3.6	8.4	6.0	13.0
1979	11.4	7.9	6.6	3.5	8.3	5.9	12.5
1980	11.0	7.5	6.2	3.5	8.0	5.3	11.5
1981 ⁶	---	---	---	---	---	---	---
1982 ⁶	---	---	---	---	---	---	---
	Black						
1950 ⁵	43.9	27.8	23.0	16.1	32.1	---	---
1960 ⁵	44.3	27.8	23.7	16.5	---	---	---
1965 ⁵	41.7	26.5	23.1	15.2	---	---	---
1970	32.6	22.8	20.3	9.9	23.2	---	---
1975	26.2	18.3	15.7	7.9	16.8	11.4	26.9
1976	25.5	17.9	15.3	7.6	16.0	10.7	25.8
1977	23.6	16.1	13.5	7.6	15.6	10.1	23.5
1978	23.1	15.5	13.2	7.6	15.6	9.7	22.7
1979	21.8	14.3	12.1	7.5	14.8	9.0	21.1
1980	21.4	14.1	11.9	7.3	14.3	8.1	19.9
1981 ⁶	---	---	---	---	---	---	---
1982 ⁶	---	---	---	---	---	---	---

¹ Infant mortality rate is the number of deaths of infants under 1 year of age per 1,000 live births. Neonatal deaths are deaths within 28 days of birth; postneonatal deaths are deaths that occur from 28 days to 365 days after birth. Deaths within 7 days are considered early neonatal deaths.

² Fetal deaths are deaths of fetuses of 20 weeks or more gestation. The rate is the number of fetal deaths per 1,000 live births and fetal deaths.

³ Late fetal deaths are fetal deaths of 28 weeks or more gestation. The rate is the number of late fetal deaths per 1,000 live births and late fetal deaths.

⁴ Perinatal deaths are late fetal deaths plus infant deaths within 7 days of birth. The rate is the number of perinatal deaths per 1,000 live births and late fetal deaths.

⁵ Includes births and infant and late fetal deaths occurring to nonresidents of the United States.

⁶ Provisional data.

SOURCES: National Center for Health Statistics: *Vital Statistics of the United States*, Vol. II, 1950-80. Public Health Service. Washington. U.S. Government Printing Office; Annual summary of births, deaths, marriages, and divorces, United States, 1982. *Monthly Vital Statistics Report*, Vol. 31-No. 13. DHHS Pub. No. (PHS) 83-1120. Public Health Service. Hyattsville, Md., Sept. 27, 1983; Data computed by the Division of Analysis from data compiled by the Division of Vital Statistics.

Table 12. Infant mortality rates, according to race, geographic division, and State: United States, average annual 1968-70, 1973-75, and 1978-80

(Data are based on the National Vital Statistics System)

Geographic division and State	1968-70 ¹			1973-75			1978-80		
	Total ²	White	Black	Total ²	White	Black	Total ²	White	Black
Infant deaths per 1,000 live births									
United States.....	20.9	18.4	34.5	16.8	14.9	27.0	13.1	11.5	22.1
New England.....	18.8	18.1	34.4	14.7	14.1	25.9	11.0	10.5	19.9
Maine.....	20.9	20.9	*27.6	15.2	15.3	*5.8	9.8	9.9	*3.9
New Hampshire.....	19.1	19.1	*26.3	14.6	14.6	*28.7	10.3	10.3	*11.3
Vermont.....	19.1	19.1	*14.3	14.5	14.6	*-	10.9	10.9	*28.2
Massachusetts.....	18.3	17.7	33.1	14.2	13.7	24.3	10.8	10.4	17.7
Rhode Island.....	20.3	19.6	*37.7	15.8	15.3	*26.1	12.9	11.9	*29.2
Connecticut.....	18.3	16.8	32.1	15.2	13.7	27.8	11.6	10.3	21.3
Middle Atlantic.....	20.6	18.0	34.9	16.5	14.5	26.5	13.3	11.5	21.6
New York.....	20.5	17.8	33.9	16.4	14.3	25.7	13.4	11.5	20.9
New Jersey.....	20.3	17.2	35.2	15.9	13.5	26.4	12.8	10.4	22.4
Pennsylvania.....	21.0	18.8	37.1	16.8	15.2	28.7	13.4	12.1	22.5
East North Central.....	20.6	18.5	34.0	17.2	15.1	29.2	13.4	11.5	24.1
Ohio.....	19.4	17.9	31.0	16.4	15.0	26.7	13.0	11.6	21.7
Indiana.....	20.6	19.4	33.3	16.5	15.2	27.8	12.7	11.5	23.0
Illinois.....	22.4	19.2	36.7	19.3	16.1	31.8	15.2	12.2	26.6
Michigan.....	20.8	18.7	33.3	17.3	14.9	29.1	13.3	11.3	23.9
Wisconsin.....	17.9	17.1	31.9	14.0	13.6	21.8	10.7	10.3	17.6
West North Central.....	18.9	17.8	34.4	15.6	14.7	27.0	12.0	11.1	23.5
Minnesota.....	17.6	17.4	*28.5	14.4	14.1	*24.7	10.9	10.5	*23.3
Iowa.....	18.9	18.6	*38.0	14.5	14.3	*25.8	11.7	11.3	*24.1
Missouri.....	20.7	18.2	35.0	17.0	15.1	27.9	13.6	11.8	24.3
North Dakota.....	16.0	15.9	*4.4	16.1	15.5	*10.3	12.5	12.1	*13.3
South Dakota.....	19.8	18.1	*36.8	18.1	16.1	*39.2	11.8	10.2	*14.6
Nebraska.....	18.2	17.1	*36.7	15.1	14.4	*29.0	12.0	11.3	*25.5
Kansas.....	18.4	17.5	32.5	15.1	14.6	23.6	11.3	10.6	20.6
South Atlantic.....	23.1	18.7	34.8	18.6	15.5	26.8	15.0	12.0	22.5
Delaware.....	20.8	16.8	36.6	15.8	13.7	23.4	14.7	10.9	27.1
Maryland.....	20.1	16.8	31.9	16.0	14.1	22.2	14.4	11.7	21.5
District of Columbia.....	28.3	22.1	29.6	27.0	*22.8	27.9	24.8	*12.2	27.5
Virginia.....	21.8	18.2	35.0	17.5	15.1	26.7	14.0	12.0	20.9
West Virginia.....	23.1	22.6	*38.0	18.8	18.4	*29.7	13.6	13.3	*22.2
North Carolina.....	25.1	20.0	38.0	19.8	16.4	28.3	15.4	12.1	23.0
South Carolina.....	24.6	19.1	34.1	21.1	16.6	28.3	17.1	12.2	24.5
Georgia.....	23.3	18.0	35.0	18.5	14.9	25.5	15.0	11.4	21.5
Florida.....	22.7	18.6	35.5	18.0	14.7	28.1	14.5	12.0	22.0
East South Central.....	24.7	19.9	37.9	19.5	16.0	29.1	14.6	11.8	22.3
Kentucky.....	20.8	20.0	28.8	16.4	15.9	22.4	12.4	11.6	20.6
Tennessee.....	22.1	19.1	33.4	17.9	15.7	26.4	14.0	12.1	20.5
Alabama.....	25.7	20.1	37.3	20.7	16.3	29.2	15.2	11.7	21.7
Mississippi.....	31.9	21.1	43.4	23.8	16.1	32.4	17.7	11.5	24.5

See footnotes at end of table.

Table 12. Infant mortality rates, according to race, geographic division, and State: United States, average annual 1968-70, 1973-75, and 1978-80--Continued

(Data are based on the National Vital Statistics System)

Geographic division and State	1968-70 ¹			1973-75			1978-80		
	Total ²	White	Black	Total ²	White	Black	Total ²	White	Black
Infant deaths per 1,000 live births									
West South Central.....	22.2	19.3	34.3	18.0	16.1	26.1	13.7	11.9	21.3
Arkansas.....	21.9	18.3	32.7	18.3	15.7	26.2	14.1	12.0	20.7
Louisiana.....	24.8	18.7	34.9	19.2	15.5	25.1	15.7	11.7	22.1
Oklahoma.....	20.6	19.8	31.7	16.6	16.2	26.0	13.1	12.4	20.6
Texas.....	21.7	19.5	34.5	17.8	16.3	26.9	13.1	11.8	20.9
Mountain.....	20.2	19.0	33.1	15.6	15.0	25.2	11.7	11.3	19.5
Montana.....	20.7	20.0	*26.9	17.1	16.9	*30.9	11.6	10.9	*-
Idaho.....	18.1	17.9	*25.9	15.1	15.0	*32.5	10.8	10.9	*16.7
Wyoming.....	22.8	21.8	*64.2	17.2	17.5	*8.4	11.9	11.8	*25.7
Colorado.....	20.3	19.9	*29.2	15.5	15.2	22.3	10.6	10.4	17.4
New Mexico.....	22.9	21.0	*35.3	18.4	17.5	*37.3	13.2	12.5	*20.7
Arizona.....	20.6	18.2	*33.0	15.0	13.8	*22.9	13.0	12.2	20.5
Utah.....	16.1	15.6	*35.9	12.7	12.3	*27.9	10.8	10.8	*22.5
Nevada.....	23.0	22.0	*36.3	18.9	18.0	*28.0	11.9	11.0	*21.2
Pacific.....	18.3	17.6	28.3	14.2	13.7	22.1	11.5	11.1	18.3
Washington.....	19.1	18.4	32.8	15.8	15.3	25.4	11.9	11.8	16.6
Oregon.....	17.7	17.5	*29.1	15.0	14.9	*25.5	11.9	11.9	*15.0
California.....	18.1	17.5	28.1	13.9	13.3	22.0	11.3	10.9	18.5
Alaska.....	21.0	17.0	*26.7	17.3	15.1	*26.5	14.2	12.0	*17.4
Hawaii.....	18.6	18.2	*21.6	14.0	13.7	*12.8	10.5	10.7	*12.4

¹Includes births and infant deaths occurring to nonresidents of the United States.

²Includes all other races not shown separately.

SOURCE: National Center for Health Statistics: Data computed by the Division of Analysis from data compiled by the Division of Vital Statistics.

Table 13. Infant mortality rates and average annual percent change: Selected countries, 1975 and 1980

(Data are based on National Vital Statistics Systems)

Country	Infant mortality rate		Average annual percent change 1975-80
	1975	1980 ¹	
	Infant deaths per 1,000 live births		
Sweden.....	8.6	6.7	-4.9
Japan.....	10.0	7.4	-5.8
Finland.....	9.6	7.7	-5.4
Switzerland.....	10.7	8.5	-5.6
Netherlands.....	10.6	8.6	-4.1
Denmark.....	10.3	8.8	-3.9
Norway.....	11.1	8.8	-5.6
France.....	13.8	9.9	-6.4
Australia.....	14.3	11.0	-5.1
Spain.....	18.9	11.1	-10.1
Belgium.....	16.1	11.2	-8.7
Singapore.....	13.9	11.7	-3.4
Canada.....	14.3	11.9	-5.9
England and Wales.....	15.7	11.9	-5.4
German Democratic Republic.....	15.9	12.1	-5.3
United States.....	16.1	12.6	-4.8
New Zealand.....	16.0	12.6	-5.8
German Federal Republic.....	19.8	13.5	-9.1
Austria.....	20.5	14.1	-7.2
Israel.....	23.0	14.1	-9.3
Italy.....	21.2	14.3	-7.6
Jamaica.....	23.2	16.2	-11.3
Czechoslovakia.....	20.8	16.6	-4.4
Greece.....	24.0	18.7	-6.0
Cuba.....	27.3	19.1	-8.5

¹Data for Canada and Jamaica refer to 1978. Data for Finland, Switzerland, Denmark, Norway, Belgium, New Zealand, Federal Republic of Germany, Greece, and Cuba refer to 1979. Data for all other countries refer to 1980; of these, the U.S. figure is final and all others are provisional.

NOTE: Countries are ranked from the lowest to highest infant mortality rate based on the latest data available.

SOURCE: United Nations: Demographic Yearbook 1980. Pub. No. ST/ESA/STAT/SER.R/10. New York. United Nations, 1980.

Table 14. Life expectancy at birth, according to sex: Selected countries, selected periods

(Data are based on reporting by countries)

Country	Male				Country	Female			
	Period	Life expectancy in years	Period	Life expectancy in years		Period	Life expectancy in years	Period	Life expectancy in years
Japan.....	1974	71.2	1979	73.5	Netherlands.....	1973	77.2	1979	78.9
Sweden.....	1970-74	72.1	1979	72.5	Japan.....	1974	76.3	1979	78.9
Netherlands.....	1973	71.2	1979	72.4	Norway.....	1972-73	77.6	1978-79	78.7
Norway.....	1972-73	71.3	1978-79	72.3	Sweden.....	1970-74	77.5	1979	78.7
Israel.....	1974	70.1	1978	71.5	France.....	1972	76.4	1977-79	78.0
Denmark.....	1972-73	70.8	1978-79	71.3	Australia.....	1965-67	74.2	1979	77.8
Greece.....	1960-62	67.5	1975-80	70.8	United States.....	1974	75.9	1979	77.6
Australia.....	1965-67	67.6	1979	70.8	Canada.....	1970-72	76.4	1975-77	77.5
Spain.....	1970	69.7	1975	70.4	Denmark.....	1972-73	76.3	1978-79	77.4
Switzerland.....	1968-73	70.3	1968-73	70.3	Finland.....	1972	74.9	1979	77.2
Cuba.....	1970	68.5	1975-80	70.2	England and Wales.....	1970-72	75.1	1976-78	76.2
Canada.....	1970-72	69.3	1975-77	70.2	Spain.....	1970	75.0	1975	76.2
England and Wales.....	1970-72	68.9	1976-78	70.0	Switzerland.....	1968-73	76.2	1968-73	76.2
France.....	1972	68.6	1977-79	69.9	Austria.....	1974	74.7	1979	76.1
United States.....	1974	68.2	1979	69.9	Italy.....	1970-72	74.9	1974-77	75.9
Ireland.....	1965-67	68.6	1975-80	69.8	German Federal Republic.....	1971-73	74.1	1976-78	75.6
Italy.....	1970-72	69.9	1974-77	69.7	New Zealand.....	1970-72	74.6	1975-77	75.5
Bulgaria.....	1969-71	68.6	1975-80	69.3	Belgium.....	1968-72	74.2	1972-76	75.1
New Zealand.....	1970-72	68.6	1975-77	69.0	Poland.....	1970-72	73.8	1975-76	75.0
German Federal Republic.....	1971-73	67.6	1976-78	69.0	Greece.....	1960-62	70.7	1975-80	75.0
Finland.....	1972	66.6	1979	68.9	Israel.....	1974	73.3	1978	75.0
Austria.....	1974	67.4	1979	68.9	Bulgaria.....	1969-71	73.9	1975-80	74.9
German Democratic Republic.....	1969-70	68.9	1978	68.8	Ireland.....	1965-67	72.9	1975-80	74.8
Belgium.....	1968-72	67.8	1972-76	68.6	German Democratic Republic....	1969-70	74.2	1978	74.7
Albania.....	1965-66	65.9	1975-80	68.0	Czechoslovakia.....	1973	73.5	1978	74.1

NOTE: Countries are ranked from the highest to lowest life expectancy based on the latest available data.

SOURCES: United Nations: Demographic Yearbook, 1975 and 1980. Pub. Nos. ST/ESA/STAT/SER.R/4 and ST/ESA/STAT/SER.R/10. New York. United Nations, 1976 and 1980.

Table 15. Age-adjusted death rates for selected causes of death, according to race and sex: United States, selected years 1950-82

(Data are based on the National Vital Statistics System)

Race, sex, and cause of death	Year							
	1950 ¹	1960 ¹	1970	1975	1979	1980	1981 ²	1982 ²
Total ³								
Deaths per 100,000 resident population								
All causes.....	841.5	760.9	714.3	630.4	577.0	585.8	571.6	556.4
Diseases of heart.....	307.6	286.2	253.6	217.8	199.5	202.0	196.3	190.8
Cerebrovascular diseases.....	88.8	79.7	66.3	53.7	41.6	40.8	38.3	36.1
Malignant neoplasms.....	125.4	125.8	129.9	129.4	130.8	132.8	131.6	133.3
Respiratory system.....	12.8	19.2	28.4	32.1	35.2	36.4	37.0	37.7
Digestive system.....	47.7	41.1	35.2	33.2	33.1	33.0	32.2	32.1
Breast ⁴	22.2	22.3	23.1	22.6	22.3	22.7	---	---
Pneumonia and influenza.....	26.2	28.0	22.1	16.4	11.2	12.9	12.8	11.3
Chronic liver disease and cirrhosis.....	8.5	10.5	14.7	13.7	12.0	12.2	11.5	10.4
Diabetes mellitus.....	14.3	13.6	14.1	11.4	9.8	10.1	9.9	9.2
Accidents and adverse effects.....	57.5	49.9	53.7	44.2	42.9	42.3	40.2	37.1
Motor vehicle accidents.....	23.3	22.5	27.4	21.0	23.2	22.9	21.9	19.5
Suicide.....	11.0	10.6	11.8	12.5	11.7	11.4	11.3	11.5
Homicide and legal intervention.....	5.4	5.2	9.1	10.4	10.2	10.8	10.3	9.7
White male								
All causes.....	963.1	917.7	893.4	804.3	738.4	745.3	730.8	709.7
Diseases of heart.....	381.1	375.4	347.6	305.1	276.8	277.5	---	---
Cerebrovascular diseases.....	87.0	80.3	68.8	56.7	42.9	41.9	---	---
Malignant neoplasms.....	130.9	141.6	154.3	155.8	158.7	160.5	---	---
Respiratory system.....	21.6	34.6	49.9	54.1	57.0	58.0	---	---
Digestive system.....	54.0	47.5	41.9	39.8	40.0	39.8	---	---
Pneumonia and influenza.....	27.1	31.0	26.0	20.8	14.4	16.2	---	---
Chronic liver disease and cirrhosis.....	11.6	14.4	18.8	17.8	15.6	15.7	---	---
Diabetes mellitus.....	11.3	11.6	12.7	10.6	9.3	9.5	---	---
Accidents and adverse effects.....	80.9	70.5	76.2	64.1	63.3	62.3	---	---
Motor vehicle accidents.....	35.9	34.0	40.1	31.4	35.5	34.8	---	---
Suicide.....	18.1	17.5	18.2	19.6	18.6	18.9	---	---
Homicide and legal intervention.....	3.9	3.9	7.3	9.3	9.9	10.9	---	---
White female								
All causes.....	645.0	555.0	501.7	439.0	402.5	411.1	403.7	395.1
Diseases of heart.....	223.6	197.1	167.8	141.9	131.3	134.6	---	---
Cerebrovascular diseases.....	79.7	68.7	56.2	46.1	35.9	35.2	---	---
Malignant neoplasms.....	119.4	109.5	107.6	105.6	105.7	107.7	---	---
Respiratory system.....	4.6	5.1	10.1	13.7	17.0	18.2	---	---
Digestive system.....	41.1	33.9	28.1	26.1	25.5	25.4	---	---
Breast ⁴	22.5	22.4	23.4	22.8	22.4	22.8	---	---
Pneumonia and influenza.....	18.9	19.0	15.0	11.5	7.8	9.4	---	---
Chronic liver disease and cirrhosis.....	5.8	6.6	8.7	7.9	7.0	7.0	---	---
Diabetes mellitus.....	16.4	13.7	12.8	10.0	8.3	8.7	---	---
Accidents and adverse effects.....	30.6	25.5	27.2	22.1	21.6	21.4	---	---
Motor vehicle accidents.....	10.6	11.1	14.4	10.8	12.3	12.3	---	---
Suicide.....	5.3	5.3	7.2	7.3	6.3	5.7	---	---
Homicide and legal intervention.....	1.4	1.5	2.2	2.9	2.9	3.2	---	---

See footnotes at end of table.

Table 15. Age-adjusted death rates for selected causes of death, according to race and sex: United States, selected years 1950-82--Continued

(Data are based on the National Vital Statistics System)

Race, sex, and cause of death	Year							1981 ²	1982 ²
	1950 ¹	1960 ¹	1970	1975	1979	1980			
Black male									
Deaths per 100,000 resident population									
All causes.....	1,373.1	1,246.1	1,318.6	1,163.0	1,073.3	1,112.8	---	1,045.5	
Diseases of heart.....	415.5	381.2	375.9	325.6	314.1	327.3	---	---	
Cerebrovascular diseases.....	146.2	141.2	124.2	95.0	77.9	77.5	---	---	
Malignant neoplasms.....	126.1	158.5	198.0	212.8	221.8	229.9	---	---	
Respiratory system.....	16.9	36.6	60.8	72.5	78.7	82.0	---	---	
Digestive system.....	59.4	60.4	58.9	60.0	60.7	62.1	---	---	
Pneumonia and influenza.....	63.8	70.2	53.8	35.2	24.2	28.0	---	---	
Chronic liver disease and cirrhosis.....	8.8	14.8	33.1	33.8	30.3	30.6	---	---	
Diabetes mellitus.....	11.5	16.2	21.2	18.5	17.0	17.7	---	---	
Accidents and adverse effects.....	105.7	100.0	119.5	91.7	81.3	82.0	---	---	
Motor vehicle accidents.....	39.8	38.2	50.1	35.5	33.7	32.9	---	---	
Suicide.....	7.0	7.8	9.9	11.4	12.5	11.4	---	---	
Homicide and legal intervention.....	51.1	44.9	82.1	79.8	70.1	71.9	---	---	
Black female									
All causes.....	1,106.7	916.9	814.4	670.6	605.0	631.1	---	570.9	
Diseases of heart.....	349.5	292.6	251.7	203.1	190.9	201.1	---	---	
Cerebrovascular diseases.....	155.6	139.5	107.9	78.6	60.9	61.7	---	---	
Malignant neoplasms.....	131.9	127.8	123.5	121.7	125.1	129.7	---	---	
Respiratory system.....	4.1	5.5	10.9	13.9	17.4	19.5	---	---	
Digestive system.....	40.2	37.5	34.1	32.8	35.0	35.4	---	---	
Breast ⁴	19.3	21.3	21.5	22.1	22.7	23.3	---	---	
Pneumonia and influenza.....	50.4	43.9	29.2	16.2	10.9	12.7	---	---	
Chronic liver disease and cirrhosis.....	5.7	8.9	17.8	15.7	13.3	14.4	---	---	
Diabetes mellitus.....	22.7	27.3	30.9	25.2	20.8	22.1	---	---	
Accidents and adverse effects.....	38.5	35.9	35.3	27.2	23.9	25.1	---	---	
Motor vehicle accidents.....	10.3	10.0	13.8	9.3	8.7	8.4	---	---	
Suicide.....	1.7	1.9	2.9	2.9	2.9	2.4	---	---	
Homicide and legal intervention.....	11.7	11.8	15.0	16.1	13.9	13.7	---	---	

¹Includes deaths of nonresidents of the United States.

²Provisional data.

³Includes all other races not shown separately.

⁴Female only.

NOTES: Age-adjusted rates are computed by the direct method to the total population of the United States as enumerated in 1940, using 11 age groups. Because of decennial revisions to the International List of Causes of Death and changes in rules for cause-of-death selection, there is lack of comparability to a varying degree for some causes from one revision to the next. The beginning dates of the revisions are 1949, 1958, 1968, and 1979; and the cause-of-death titles are based on the International Classification of Diseases, Ninth Revision. For a listing of the code numbers, see Appendix II.

SOURCES: National Center for Health Statistics: Vital Statistics Rates in the United States, 1940-1960, by R. D. Grove and A. M. Hetzel. DHEW Pub. No. (PHS) 1677. Public Health Service. Washington. U.S. Government Printing Office, 1968; Unpublished data from the Division of Vital Statistics; Vital Statistics of the United States, Vol. II, 1950-80. Public Health Service. Washington. U.S. Government Printing Office; Annual summary of births, deaths, marriages, and divorces, United States, 1982. Monthly Vital Statistics Report. Vol. 31-No. 13. DHHS Pub. No. (PHS) 83-1120. Public Health Service. Hyattsville, Md., Sept. 27, 1983; Data computed by the Division of Analysis from data compiled by the Division of Vital Statistics; U.S. Bureau of the Census: Population estimates and projections. Current Population Reports, Series P-25, No. 310. Washington. U.S. Government Printing Office, June 1965; General population characteristics, United States summary, 1960 and 1970. U.S. Census of Population. Final reports PC(1)-1B and PC(1)-B1. Washington. U.S. Government Printing Office, 1961 and 1972.

Table 16. Death rates for diseases of heart, according to race, sex, and age: United States, selected years 1950-82

(Data are based on the National Vital Statistics System)

Race, sex, and age	Year							
	1950 ¹	1960 ¹	1970	1975	1979	1980	1981 ²	1982 ²
Total ³ Number of deaths per 100,000 resident population								
All ages, age adjusted ⁴ ...	307.6	286.2	253.6	217.8	199.5	202.0	196.3	190.8
All ages, crude.....	355.5	369.0	362.0	332.4	326.5	336.0	330.5	327.8
Under 1 year.....	3.5	6.6	13.1	19.9	20.2	22.8	18.7	19.8
1-4 years.....	1.3	1.3	1.7	1.8	2.1	2.6	1.4	1.2
5-14 years.....	2.1	1.3	0.8	0.9	0.8	0.9		
15-24 years.....	6.8	4.0	3.0	2.6	2.6	2.9	2.5	2.9
25-34 years.....	19.4	15.6	11.4	8.5	8.4	8.3	8.0	7.7
35-44 years.....	86.4	74.6	66.7	53.9	45.3	44.6	43.3	41.7
45-54 years.....	308.6	271.8	238.4	205.2	184.6	180.2	179.0	169.3
55-64 years.....	808.1	737.9	652.3	557.0	499.0	494.1	487.2	463.4
65-74 years.....	1,839.8	1,740.5	1,558.2	1,319.7	1,199.8	1,218.6	1,187.8	1,160.1
75-84 years.....	4,310.1	4,089.4	3,683.8	3,136.0	2,925.2	2,993.1	2,871.0	2,808.3
85 years and over.....	9,150.6	9,317.8	8,468.0	7,505.9	7,310.9	7,777.1	7,417.0	7,473.2
White male								
All ages, age adjusted ⁴	381.1	375.4	347.6	305.1	276.8	277.5	---	---
All ages, crude.....	433.0	454.6	438.3	396.7	378.2	384.0	---	---
Under 1 year.....	4.1	6.9	12.0	18.8	19.2	22.5	---	---
1-4 years.....	1.1	1.0	1.5	1.6	1.7	2.1	---	---
5-14 years.....	1.7	1.1	0.8	0.9	0.8	0.9	---	---
15-24 years.....	5.8	3.6	3.0	2.6	2.8	2.9	---	---
25-34 years.....	20.1	17.6	12.3	9.7	9.8	9.1	---	---
35-44 years.....	110.6	107.5	94.6	76.8	63.2	61.8	---	---
45-54 years.....	423.6	413.2	365.7	318.3	279.5	269.8	---	---
55-64 years.....	1,081.7	1,056.0	979.3	847.0	746.1	730.6	---	---
65-74 years.....	2,308.3	2,297.9	2,177.2	1,889.1	1,718.0	1,729.7	---	---
75-84 years.....	4,907.3	4,839.9	4,617.6	4,090.1	3,808.9	3,883.2	---	---
85 years and over.....	9,950.5	10,135.8	9,693.0	8,692.8	8,458.5	8,958.0	---	---
White female								
All ages, age adjusted ⁴	223.6	197.1	167.8	141.9	131.3	134.6	---	---
All ages, crude.....	289.4	306.5	313.8	297.9	305.1	319.2	---	---
Under 1 year.....	2.7	4.3	7.0	15.6	13.2	15.7	---	---
1-4 years.....	1.1	0.9	1.2	1.4	1.7	2.1	---	---
5-14 years.....	1.9	0.9	0.7	0.7	0.7	0.8	---	---
15-24 years.....	5.3	2.8	1.7	1.6	1.6	1.7	---	---
25-34 years.....	12.2	8.2	5.5	4.1	3.9	3.9	---	---
35-44 years.....	40.5	28.6	23.9	19.9	17.1	16.4	---	---
45-54 years.....	141.9	103.4	91.4	78.0	71.5	71.2	---	---
55-64 years.....	460.2	383.0	317.7	267.7	246.1	248.1	---	---
65-74 years.....	1,400.9	1,229.3	1,044.0	850.6	775.0	796.7	---	---
75-84 years.....	3,925.2	3,629.7	3,143.5	2,648.9	2,447.1	2,493.6	---	---
85 years and over.....	9,084.7	9,280.8	8,207.5	7,230.6	7,053.7	7,501.6	---	---

See footnotes at end of table.

Table 16. Death rates for diseases of heart, according to race, sex, and age: United States, selected years 1950-82--Continued

(Data are based on the National Vital Statistics System)

Race, sex, and age	Year							
	1950 ¹	1960 ¹	1970	1975	1979	1980	1981 ²	1982 ²
Black male								
Number of deaths per 100,000 resident population								
All ages, age adjusted ⁴	415.5	381.2	375.9	325.6	314.1	327.3	---	---
All ages, crude.....	348.4	330.6	330.3	293.7	290.2	301.0	---	---
Under 1 year.....	4.8	13.9	33.5	36.5	42.7	42.8	---	---
1-4 years.....	4.8	3.8	3.9	3.6	4.3	6.3	---	---
5-14 years.....	6.4	3.0	1.4	1.5	1.0	1.3	---	---
15-24 years.....	18.0	8.7	8.3	6.8	6.1	8.3	---	---
25-34 years.....	51.9	43.1	41.6	32.0	26.8	30.3	---	---
35-44 years.....	198.1	168.1	189.2	148.4	132.5	136.6	---	---
45-54 years.....	624.1	514.0	512.8	448.5	438.4	433.4	---	---
55-64 years.....	1,434.0	1,236.8	1,135.4	975.9	969.3	987.2	---	---
65-74 years.....	2,140.1	2,281.4	2,237.8	1,971.7	1,805.7	1,847.2	---	---
75-84 years.....	4,107.9	3,533.6	3,783.4	3,112.6	3,193.7	3,578.8	---	---
85 years and over.....	4,107.9	6,037.9	6,330.8	6,102.2	6,094.2	6,819.5	---	---
Black female								
All ages, age adjusted ⁴	349.5	292.6	251.7	203.1	190.9	201.1	---	---
All ages, crude.....	289.9	268.5	261.0	232.7	234.1	249.7	---	---
Under 1 year.....	3.9	12.0	31.3	34.1	37.9	43.6	---	---
1-4 years.....	3.9	2.8	4.2	2.7	4.0	4.4	---	---
5-14 years.....	8.8	3.0	1.8	1.4	1.3	1.7	---	---
15-24 years.....	19.8	10.0	6.0	4.8	4.3	4.6	---	---
25-34 years.....	52.0	35.9	24.7	13.7	15.5	15.7	---	---
35-44 years.....	185.0	125.3	99.8	69.9	61.1	61.7	---	---
45-54 years.....	526.8	360.7	290.9	216.0	204.1	202.4	---	---
55-64 years.....	1,210.7	952.3	710.5	575.5	513.5	530.1	---	---
65-74 years.....	1,659.4	1,680.5	1,553.2	1,323.1	1,158.9	1,210.3	---	---
75-84 years.....	3,499.3	2,926.9	2,964.1	2,266.8	2,461.4	2,707.2	---	---
85 years and over.....	3,499.3	5,650.0	5,669.8	5,183.3	5,060.6	5,796.5	---	---

¹Includes deaths of nonresidents of the United States.

²Provisional data.

³Includes all races and both sexes.

⁴Age adjusted by the direct method to the total population of the United States as enumerated in 1940, using 11 age groups.

NOTE: For the data years shown, the code numbers for diseases of heart are based on the then current International Classification of Diseases: for 1950, the Sixth Revision, Nos. 400-402, 410-443; for 1960, the Seventh Revision, Nos. 400-402, 410-443; for 1970-78, the Eighth Revision, Adapted for Use in the United States, Nos. 390-398, 402, 404, 410-414, 420-429; and for 1979-82, the Ninth Revision, Nos. 390-398, 402, 404-429.

SOURCES: National Center for Health Statistics: Vital Statistics of the United States, Vol. II, 1950-80. Public Health Service. Washington. U.S. Government Printing Office; Annual summary of births, deaths, marriages, and divorces, United States, 1982. Monthly Vital Statistics Report. Vol. 31-No. 13. DHHS Pub. No. (PHS) 83-1120. Public Health Service. Hyattsville, Md., Sept. 27, 1983; Data computed by the Division of Analysis from data compiled by the Division of Vital Statistics; U.S. Bureau of the Census: Population estimates and projections. Current Population Reports. Series P-25, No. 310. Washington. U.S. Government Printing Office, June 1965; 1950 Nonwhite Population by Race, Special report P-E No. 38. Washington. U.S. Government Printing Office, 1951; General population characteristics, United States summary, 1960 and 1970. U.S. Census of Population. Final reports PC(1)-1B and PC(1)-B1. Washington. U.S. Government Printing Office, 1961 and 1972.

Table 17. Death rates for malignant neoplasms, according to race, sex, and age: United States, selected years 1950-82

(Data are based on the National Vital Statistics System)

Race, sex, and age	Year							
	1950 ¹	1960 ¹	1970	1975	1979	1980	1981 ²	1982 ²
Total ³	Number of deaths per 100,000 resident population							
All ages, age adjusted ⁴ ...	125.4	125.8	129.9	129.4	130.8	132.8	131.6	133.3
All ages, crude.....	139.8	149.2	162.8	169.7	179.6	183.9	183.8	188.1
Under 1 year.....	8.7	7.2	4.7	4.1	3.4	3.2	1.7	2.2
1-4 years.....	11.7	10.9	7.5	5.5	4.6	4.5		
5-14 years.....	6.7	6.8	6.0	4.7	4.4	4.3	4.4	3.7
15-24 years.....	8.6	8.3	8.3	6.7	6.1	6.3	5.0	6.5
25-34 years.....	20.0	19.5	16.5	14.6	13.3	13.7	13.9	12.8
35-44 years.....	62.7	59.7	59.5	53.0	48.3	48.6	48.9	45.7
45-54 years.....	175.1	177.0	182.5	181.9	181.4	180.0	179.7	179.0
55-64 years.....	392.9	396.8	423.0	424.9	429.4	436.1	438.5	443.2
65-74 years.....	692.5	713.9	754.2	773.2	800.0	817.9	802.8	834.5
75-84 years.....	1,153.3	1,127.4	1,169.2	1,168.0	1,207.6	1,232.3	1,202.3	1,230.6
85 years and over.....	1,451.0	1,450.0	1,417.3	1,452.1	1,522.9	1,594.6	1,627.4	1,598.0
White male								
All ages, age adjusted ⁴	130.9	141.6	154.3	155.8	158.7	160.5	---	---
All ages, crude.....	147.2	166.1	185.1	192.7	204.7	208.7	---	---
Under 1 year.....	9.6	7.9	4.3	4.4	3.8	3.5	---	---
1-4 years.....	13.1	13.1	8.5	6.3	5.1	5.4	---	---
5-14 years.....	7.6	8.0	7.0	5.4	5.2	5.2	---	---
15-24 years.....	9.9	10.3	10.6	8.1	7.5	7.8	---	---
25-34 years.....	17.7	18.8	16.2	14.8	13.2	13.6	---	---
35-44 years.....	44.5	46.3	50.1	44.1	40.3	41.1	---	---
45-54 years.....	150.8	164.1	172.0	175.2	177.4	175.4	---	---
55-64 years.....	409.4	450.9	498.1	486.4	491.8	497.4	---	---
65-74 years.....	798.7	887.3	997.0	1,032.0	1,061.2	1,070.7	---	---
75-84 years.....	1,367.6	1,413.7	1,592.7	1,672.7	1,747.3	1,779.7	---	---
85 years and over.....	1,732.7	1,791.4	1,948.1	2,080.7	2,285.1	2,375.6	---	---
White female								
All ages, age adjusted ⁴	119.4	109.5	107.6	105.6	105.7	107.7	---	---
All ages, crude.....	139.9	139.8	149.4	155.9	165.1	170.3	---	---
Under 1 year.....	7.8	6.8	5.4	4.1	2.9	2.7	---	---
1-4 years.....	11.3	9.7	6.9	4.9	4.2	3.6	---	---
5-14 years.....	6.3	6.2	5.4	4.2	3.8	3.7	---	---
15-24 years.....	7.5	6.5	6.2	5.4	4.7	4.7	---	---
25-34 years.....	20.9	18.8	16.3	14.2	12.9	13.5	---	---
35-44 years.....	74.5	66.6	62.4	56.2	50.8	50.9	---	---
45-54 years.....	185.8	175.7	177.3	171.6	167.3	166.4	---	---
55-64 years.....	362.5	329.0	338.6	345.9	348.9	355.5	---	---
65-74 years.....	616.5	562.1	554.7	556.3	583.1	605.2	---	---
75-84 years.....	1,026.6	939.3	903.5	877.0	889.7	905.4	---	---
85 years and over.....	1,348.3	1,304.9	1,179.4	1,186.4	1,207.5	1,266.8	---	---

See footnotes at end of table.

Table 17. Death rates for malignant neoplasms, according to race, sex, and age: United States, selected years 1950-82--Continued

(Data are based on the National Vital Statistics System)

Race, sex, and age	Year							
	1950 ¹	1960 ¹	1970	1975	1979	1980	1981 ²	1982 ²
Black male								
Number of deaths per 100,000 resident population								
All ages, age adjusted ⁴	126.1	158.5	198.0	212.8	221.8	229.9	---	---
All ages, crude.....	106.6	136.7	171.6	187.0	199.5	205.5	---	---
Under 1 year.....	8.2	6.8	5.3	3.0	4.2	4.5	---	---
1-4 years.....	5.8	7.9	7.6	5.1	4.1	5.1	---	---
5-14 years.....	7.9	4.4	4.8	4.5	4.4	3.7	---	---
15-24 years.....	18.0	9.7	9.4	7.5	7.1	8.1	---	---
25-34 years.....	55.7	18.4	18.8	15.3	13.3	14.1	---	---
35-44 years.....	211.7	72.9	81.3	78.6	76.4	73.8	---	---
45-54 years.....	490.8	244.7	311.2	329.5	335.0	333.0	---	---
55-64 years.....	636.4	579.7	689.2	771.5	790.8	812.5	---	---
65-74 years.....	853.5	938.5	1,168.9	1,316.5	1,360.3	1,417.2	---	---
75-84 years.....	1,053.3	1,053.3	1,624.8	1,582.4	1,833.2	2,029.6	---	---
85 years and over.....	1,155.2	1,155.2	1,635.9	1,813.0	2,186.5	2,393.9	---	---
Black female								
All ages, age adjusted ⁴	131.9	127.8	123.5	121.7	125.1	129.7	---	---
All ages, crude.....	111.8	113.8	117.3	121.7	130.9	136.5	---	---
Under 1 year.....	7.0	6.7	3.3	2.7	3.1	3.0	---	---
1-4 years.....	3.9	6.9	5.7	5.3	4.5	3.9	---	---
5-14 years.....	8.8	4.8	4.0	4.2	3.4	3.4	---	---
15-24 years.....	34.3	6.9	6.4	5.1	5.3	5.7	---	---
25-34 years.....	119.8	31.0	20.9	17.3	17.6	18.3	---	---
35-44 years.....	277.0	102.4	94.6	77.8	71.9	73.5	---	---
45-54 years.....	484.6	254.8	228.6	228.3	229.2	230.2	---	---
55-64 years.....	477.3	442.7	404.8	415.6	431.8	450.4	---	---
65-74 years.....	605.3	541.6	615.8	624.8	638.9	662.4	---	---
75-84 years.....	728.9	696.3	763.3	757.6	863.1	923.9	---	---
85 years and over.....	896.8	728.9	896.8	864.3	1,005.8	1,159.9	---	---

¹Includes deaths of nonresidents of the United States.

²Provisional data.

³Includes all races and both sexes.

⁴Age adjusted by the direct method to the total population of the United States as enumerated in 1940, using 11 age groups.

NOTE: For the data years shown, the code numbers for malignant neoplasms are based on the then current International Classification of Diseases: for 1950, the Sixth Revision, Nos. 140-205; for 1960, the Seventh Revision, Nos. 140-205; for 1970-78, the Eighth Revision, Adapted for Use in the United States, Nos. 140-209; and for 1979-82, the Ninth Revision, Nos. 140-208.

SOURCES: National Center for Health Statistics: Vital Statistics of the United States, Vol. II, 1950-80. Public Health Service. Washington. U.S. Government Printing Office; Annual summary of births, deaths, marriages, and divorces, United States, 1982. Monthly Vital Statistics Report. Vol. 31-No. 13. DHHS Pub. No. (PHS) 83-1120. Public Health Service. Hyattsville, Md., Sept. 27, 1983; Data computed by the Division of Analysis from data compiled by the Division of Vital Statistics; U.S. Bureau of the Census: Population estimates and projections. Current Population Reports. Series P-25, No. 310. Washington. U.S. Government Printing Office, June 1965; 1950 Nonwhite Population by Race, Special report P-E No. 3B. Washington. U.S. Government Printing Office, 1951; General population characteristics, United States summary, 1960 and 1970. U.S. Census of Population. Final reports PC(1)-1B and PC(1)-1B1. Washington. U.S. Government Printing Office, 1961 and 1972.

Table 18. Death rates for malignant neoplasms of respiratory system, according to race, sex, and age: United States, selected years 1950-82--Continued

(Data are based on the National Vital Statistics System)

Race, sex, and age	Year							
	1950 ¹	1960 ¹	1970	1975	1979	1980	1981 ²	1982 ²
Black male								
Number of deaths per 100,000 resident population								
All ages, age adjusted ⁴	16.9	36.6	60.8	72.5	78.7	82.0	---	---
All ages, crude.....	14.3	31.1	51.2	61.3	68.1	70.8	---	---
Under 1 year.....	-	0.4	0.4	0.4	0.4	0.4	---	---
1-4 years.....	-	0.1	0.1	-	-	0.2	---	---
5-14 years.....	0.1	0.0	0.1	-	0.1	0.0	---	---
15-24 years.....	0.4	0.2	0.3	0.1	0.1	0.3	---	---
25-34 years.....	2.1	2.6	2.9	1.5	1.5	1.9	---	---
35-44 years.....	9.4	20.7	32.6	30.7	26.9	26.9	---	---
45-54 years.....	41.1	75.0	123.5	141.1	143.1	142.8	---	---
55-64 years.....	78.8	161.8	250.3	310.5	338.1	340.3	---	---
65-74 years.....	65.2	184.6	322.2	415.9	466.0	499.4	---	---
75-84 years.....	42.4	126.3	290.6	318.9	421.8	499.6	---	---
85 years and over.....	-	110.3	182.1	254.3	303.8	337.7	---	---
Black female								
All ages, age adjusted ⁴	4.1	5.5	10.9	13.9	17.4	19.5	---	---
All ages, crude.....	3.4	4.9	10.1	13.3	17.1	19.3	---	---
Under 1 year.....	-	-	-	-	-	0.4	---	---
1-4 years.....	-	0.1	0.1	0.1	-	-	---	---
5-14 years.....	-	0.1	-	-	0.0	0.0	---	---
15-24 years.....	0.3	-	0.1	0.0	0.2	0.1	---	---
25-34 years.....	1.2	0.8	0.5	0.7	0.6	0.8	---	---
35-44 years.....	2.7	3.4	10.5	9.6	8.8	7.9	---	---
45-54 years.....	8.8	12.8	25.3	33.4	43.5	46.4	---	---
55-64 years.....	15.3	20.7	36.4	53.4	72.4	83.8	---	---
65-74 years.....	16.4	20.7	49.3	64.4	73.6	91.7	---	---
75-84 years.....	19.2	33.1	52.6	54.9	79.2	81.1	---	---
85 years and over.....	-	44.7	54.0	63.1	68.3	90.5	---	---

¹Includes deaths of nonresidents of the United States.

²Provisional data.

³Includes all races and both sexes.

⁴Age adjusted by the direct method to the total population of the United States as enumerated in 1940, using 11 age groups.

NOTE: For the data years shown, the code numbers for malignant neoplasms of respiratory system are based on the then current International Classification of Diseases: for 1950, the Sixth Revision, Nos. 160-164; for 1960, the Seventh Revision, Nos. 160-164; for 1970-78, the Eighth Revision, Adapted for Use in the United States, Nos. 160-163; and for 1979-82, the Ninth Revision, Nos. 160-165.

SOURCES: National Center for Health Statistics: Vital Statistics of the United States, Vol. II, 1950-80. Public Health Service. Washington. U.S. Government Printing Office; Annual summary of births, deaths, marriages, and divorces, United States, 1982. Monthly Vital Statistics Report. Vol. 31-No. 13. DHHS Pub. No. (PHS) 83-1120. Public Health Service. Hyattsville, Md., Sept. 27, 1983; Data computed by the Division of Analysis from data compiled by the Division of Vital Statistics; U.S. Bureau of the Census: Population estimates and projections. Current Population Reports. Series P-25, No. 310. Washington. U.S. Government Printing Office, June 1965; 1950 Nonwhite Population by Race, Special report P-E No. 38. Washington. U.S. Government Printing Office, 1951; General population characteristics, United States summary, 1960 and 1970. U.S. Census of Population. Final reports PC(1)-1B and PC(1)-B1. Washington. U.S. Government Printing Office, 1961 and 1972.

Table 19. Death rates for cerebrovascular diseases, according to race, sex, and age: United States, selected years 1950-82

(Data are based on the National Vital Statistics System)

Race, sex, and age	Year							
	1950 ¹	1960 ¹	1970	1975	1979	1980	1981 ²	1982 ²
Total ³								
Number of deaths per 100,000 resident population								
All ages, age adjusted ⁴	88.8	79.7	66.3	53.7	41.6	40.8	38.3	36.1
All ages, crude.....	104.0	108.0	101.9	90.1	75.5	75.1	71.3	68.9
Under 1 year.....	5.1	4.1	5.0	5.0	4.6	4.4	3.6	3.8
1-4 years.....	0.9	0.8	1.0	0.8	0.3	0.5	0.2	0.2
5-14 years.....	0.5	0.7	0.7	0.5	0.3	0.3	0.2	0.2
15-24 years.....	1.6	1.8	1.6	1.4	0.9	1.0	0.9	1.0
25-34 years.....	4.2	4.7	4.5	3.4	2.6	2.6	2.6	2.3
35-44 years.....	18.7	14.7	15.6	11.7	9.1	8.5	8.1	7.9
45-54 years.....	70.4	49.2	41.6	32.3	26.4	25.2	26.3	24.2
55-64 years.....	195.3	147.3	115.8	90.4	68.1	65.2	64.5	57.2
65-74 years.....	549.7	469.2	384.1	302.2	226.9	219.5	209.8	195.3
75-84 years.....	1,499.6	1,491.3	1,254.2	1,028.8	793.8	788.6	702.6	678.6
85 years and over.....	2,990.1	3,680.5	3,234.6	2,736.4	2,264.9	2,288.9	2,119.8	2,056.4
White male								
All ages, age adjusted ⁴	87.0	80.3	68.8	56.7	42.9	41.9	---	---
All ages, crude.....	100.5	102.7	93.5	80.2	64.2	63.3	---	---
Under 1 year.....	5.9	4.3	4.5	4.6	3.6	3.8	---	---
1-4 years.....	1.1	0.8	1.2	0.9	0.3	0.4	---	---
5-14 years.....	0.5	0.7	0.8	0.5	0.3	0.2	---	---
15-24 years.....	1.6	1.7	1.6	1.4	0.9	1.0	---	---
25-34 years.....	3.4	3.5	3.2	2.6	2.2	2.0	---	---
35-44 years.....	13.1	11.3	11.8	8.7	6.8	6.5	---	---
45-54 years.....	53.7	40.9	35.6	27.6	22.2	21.7	---	---
55-64 years.....	182.2	139.0	119.9	93.8	68.0	64.2	---	---
65-74 years.....	569.7	501.0	420.0	339.4	249.5	240.4	---	---
75-84 years.....	1,556.3	1,564.8	1,361.6	1,134.9	867.0	854.8	---	---
85 years and over.....	3,127.1	3,734.8	3,317.6	2,807.4	2,224.5	2,236.9	---	---
White female								
All ages, age adjusted ⁴	79.7	68.7	56.2	46.1	35.9	35.2	---	---
All ages, crude.....	103.3	110.1	109.8	101.6	88.5	88.8	---	---
Under 1 year.....	2.9	2.6	3.2	3.9	3.3	3.3	---	---
1-4 years.....	0.6	0.5	0.6	0.7	0.3	0.4	---	---
5-14 years.....	0.4	0.6	0.6	0.5	0.3	0.3	---	---
15-24 years.....	1.2	1.4	1.1	1.1	0.7	0.7	---	---
25-34 years.....	2.9	3.4	3.4	3.0	2.0	2.0	---	---
35-44 years.....	13.6	10.1	11.5	9.3	7.0	6.7	---	---
45-54 years.....	55.0	33.8	30.5	25.0	20.1	18.7	---	---
55-64 years.....	156.9	103.0	78.1	64.5	50.6	48.7	---	---
65-74 years.....	498.1	383.3	303.2	233.6	179.2	172.8	---	---
75-84 years.....	1,471.3	1,444.7	1,176.8	966.2	739.3	730.3	---	---
85 years and over.....	3,017.9	3,795.7	3,316.1	2,794.9	2,335.7	2,367.8	---	---

See footnotes at end of table.

Table 19. Death rates for cerebrovascular diseases, according to race, sex, and age: United States, selected years 1950-82--Continued

(Data are based on the National Vital Statistics System)

Race, sex, and age	Year								
	1950 ¹	1960 ¹	1970	1975	1979	1980	1981 ²	1982 ²	
Black male		Number of deaths per 100,000 resident population							
All ages, age adjusted ⁴	146.2	141.2	124.2	95.0	77.9	77.5	---	---	
All ages, crude.....	122.0	122.9	108.7	87.8	73.8	73.1	---	---	
Under 1 year.....	2.5	8.5	12.2	9.1	12.7	11.2	---	---	
1-4 years.....	0.7	1.9	*1.4	1.1	0.5	0.6	---	---	
5-14 years.....	0.7	*0.9	0.8	0.7	0.3	0.5	---	---	
15-24 years.....	3.3	3.7	3.0	2.5	1.4	2.1	---	---	
25-34 years.....	12.0	12.8	14.6	9.4	7.3	7.7	---	---	
35-44 years.....	59.3	47.4	52.7	36.9	34.4	29.2	---	---	
45-54 years.....	211.9	166.1	136.2	98.0	88.8	82.1	---	---	
55-64 years.....	522.8	439.9	343.4	253.7	204.0	189.8	---	---	
65-74 years.....	783.6	899.2	780.0	626.9	470.9	472.8	---	---	
75-84 years.....	1,504.9	1,475.2	1,442.6	1,123.0	963.9	1,067.6	---	---	
85 years and over.....	2,700.0	2,315.4	2,115.2	1,840.4	1,873.2	---	---	---	
Black female									
All ages, age adjusted ⁴	155.6	139.5	107.9	78.6	60.9	61.7	---	---	
All ages, crude.....	128.3	127.7	112.1	91.4	76.8	77.9	---	---	
Under 1 year.....	2.8	*6.7	9.1	8.8	9.0	6.4	---	---	
1-4 years.....	0.6	*1.3	*1.4	0.8	0.4	0.5	---	---	
5-14 years.....	4.2	1.0	0.8	0.7	0.4	0.3	---	---	
15-24 years.....	15.9	3.4	3.0	1.9	1.5	1.7	---	---	
25-34 years.....	75.0	17.4	14.3	8.5	6.6	7.0	---	---	
35-44 years.....	248.9	57.4	49.1	31.3	21.6	21.6	---	---	
45-54 years.....	567.7	166.2	119.4	81.9	62.1	61.9	---	---	
55-64 years.....	754.4	452.0	272.5	187.3	133.9	138.7	---	---	
65-74 years.....	1,496.7	830.5	673.4	502.6	373.8	362.2	---	---	
75-84 years.....	2,578.9	1,413.1	1,337.8	998.2	865.3	918.6	---	---	
85 years and over.....	2,504.8	2,126.2	1,881.7	1,896.3	---	---	---	---	

¹Includes deaths of nonresidents of the United States.

²Provisional data.

³Includes all races and both sexes.

⁴Age adjusted by the direct method to the total population of the United States as enumerated in 1940, using 11 age groups.

NOTE: For the data years shown, the code numbers for cerebrovascular diseases are based on the then current International Classification of Diseases: for 1950, the Sixth Revision, Nos. 330-334; for 1960, the Seventh Revision, Nos. 330-334; for 1970-78, the Eighth Revision, Adapted for Use in the United States, Nos. 430-438; and for 1979-82, the Ninth Revision, Nos. 430-438.

SOURCES: National Center for Health Statistics: Vital Statistics of the United States, Vol. II, 1950-80. Public Health Service. Washington. U.S. Government Printing Office; Annual summary of births, deaths, marriages, and divorces, United States, 1982. Monthly Vital Statistics Report. Vol. 31-No. 13. DHHS Pub. No. (PHS) 83-1120. Public Health Service. Hyattsville, Md., Sept. 27, 1983; Data computed by the Division of Analysis from data compiled by the Division of Vital Statistics; U.S. Bureau of the Census: Population estimates and projections. Current Population Reports. Series P-25, No. 310. Washington. U.S. Government Printing Office, June 1965; 1950 Nonwhite Population by Race, Special Report P-E, No. 3B. Washington. U.S. Government Printing Office, 1951; General population characteristics, United States summary, 1960 and 1970. U.S. Census of Population. Final reports PC(1)-1B and PC(1)-B1. Washington. U.S. Government Printing Office, 1961 and 1972.

Table 20. Death rates for motor vehicle accidents, according to race, sex, and age: United States, selected years 1950-82

(Data are based on the National Vital Statistics System)

Race, sex, and age	Year							
	1950 ¹	1960 ¹	1970	1975	1979	1980	1981 ²	1982 ²
Total³	Number of deaths per 100,000 resident population							
All ages, age adjusted ⁴	23.3	22.5	27.4	21.0	23.2	22.9	21.9	19.5
All ages, crude.....	23.1	21.3	26.9	21.3	23.8	23.5	22.5	20.1
Under 1 year.....	8.4	8.1	9.8	8.1	6.5	7.0	5.3	6.6
1-4 years.....	11.5	10.0	11.5	10.2	9.8	9.2	8.0	7.7
5-14 years.....	8.8	7.9	10.2	8.6	8.3	7.9		
15-24 years.....	34.4	38.0	47.2	38.7	45.6	44.8	40.1	36.5
25-34 years.....	24.6	24.3	30.9	24.5	28.8	29.1	28.5	25.1
35-44 years.....	20.3	19.3	24.9	18.8	21.0	20.9	21.9	17.2
45-54 years.....	22.2	21.4	25.5	17.2	18.6	18.6	17.7	15.5
55-64 years.....	29.2	25.1	27.9	17.8	18.2	17.4	17.4	15.3
65-74 years.....	38.8	31.4	32.8	21.9	20.7	19.2	19.4	18.5
75-84 years.....	52.7	41.8	43.5	31.1	28.7	28.1	28.3	27.4
85 years and over.....	45.1	37.9	36.6	24.9	24.4	27.6	32.2	31.5
White male								
All ages, age adjusted ⁴	35.9	34.0	40.1	31.4	35.5	34.8	---	---
All ages, crude.....	35.1	31.5	39.1	31.8	36.6	35.9	---	---
Under 1 year.....	9.1	8.8	9.1	7.8	7.4	7.0	---	---
1-4 years.....	13.2	11.3	12.2	10.8	9.7	9.5	---	---
5-14 years.....	12.0	10.3	12.6	10.7	10.6	9.8	---	---
15-24 years.....	58.3	62.7	75.2	63.7	75.4	73.8	---	---
25-34 years.....	39.1	38.6	47.0	37.6	46.0	46.6	---	---
35-44 years.....	30.9	28.4	35.2	27.6	30.7	30.7	---	---
45-54 years.....	31.6	29.7	34.6	24.0	26.5	26.3	---	---
55-64 years.....	41.9	34.4	39.0	24.2	25.5	23.9	---	---
65-74 years.....	59.1	45.5	46.2	30.2	29.0	25.8	---	---
75-84 years.....	86.4	66.8	69.2	50.5	46.4	43.6	---	---
85 years and over.....	79.3	61.9	72.0	49.6	48.5	57.3	---	---
White female								
All ages, age adjusted ⁴	10.6	11.1	14.4	10.8	12.3	12.3	---	---
All ages, crude.....	10.9	11.2	14.8	11.3	12.8	12.8	---	---
Under 1 year.....	7.8	7.5	10.2	8.2	6.2	7.1	---	---
1-4 years.....	10.1	8.3	9.6	8.0	8.9	7.7	---	---
5-14 years.....	5.6	5.3	6.9	6.0	6.1	5.7	---	---
15-24 years.....	12.6	15.6	22.7	18.2	22.8	23.0	---	---
25-34 years.....	9.0	9.0	12.7	10.3	12.1	12.2	---	---
35-44 years.....	8.1	8.9	12.3	8.7	10.6	10.6	---	---
45-54 years.....	10.8	11.4	14.3	8.8	9.8	10.2	---	---
55-64 years.....	15.0	15.3	16.1	10.3	10.3	10.5	---	---
65-74 years.....	20.9	19.3	22.1	14.3	13.7	13.4	---	---
75-84 years.....	25.4	23.8	28.1	20.0	18.9	19.0	---	---
85 years and over.....	22.3	22.2	18.9	13.2	14.0	15.3	---	---

See footnotes at end of table.

Table 20. Death rates for motor vehicle accidents, according to race, sex, and age: United States, selected years 1950-82--Continued

(Data are based on the National Vital Statistics System)

Race, sex, and age	Year							
	1950 ¹	1960 ¹	1970	1975	1979	1980	1981 ²	1982 ²
Black male								
Number of deaths per 100,000 resident population								
All ages, age adjusted ⁴	39.8	38.2	50.1	35.5	33.7	32.9	---	---
All ages, crude.....	37.2	33.1	44.2	32.4	31.6	31.1	---	---
Under 1 year.....	9.0	*6.8	10.6	8.7	3.8	7.8	---	---
1-4 years.....	9.0	12.7	16.9	16.4	13.1	13.7	---	---
5-14 years.....	9.7	10.4	16.1	12.9	11.2	10.5	---	---
15-24 years.....	41.6	46.4	58.1	33.4	34.5	34.9	---	---
25-34 years.....	57.4	51.0	70.4	49.7	46.8	44.9	---	---
35-44 years.....	45.9	43.6	59.5	43.2	42.1	41.2	---	---
45-54 years.....	49.9	48.1	61.4	43.2	42.6	39.1	---	---
55-64 years.....	58.8	47.3	62.1	44.7	42.0	40.3	---	---
65-74 years.....	48.5	46.1	54.9	50.4	41.5	41.8	---	---
75-84 years.....	61.8	51.8	51.5	42.8	38.2	46.5	---	---
85 years and over.....	61.8	*58.6	53.8	43.5	55.8	34.0	---	---
Black female								
All ages, age adjusted ⁴	10.3	10.0	13.8	9.3	8.7	8.4	---	---
All ages, crude.....	10.2	9.7	13.4	9.1	8.7	8.3	---	---
Under 1 year.....	7.0	8.1	11.9	8.0	5.9	5.3	---	---
1-4 years.....	7.0	8.8	12.6	11.2	9.5	9.5	---	---
5-14 years.....	6.2	5.9	9.3	5.9	5.2	5.2	---	---
15-24 years.....	11.5	9.9	13.4	8.6	9.3	8.0	---	---
25-34 years.....	10.7	9.8	13.3	8.6	9.4	10.6	---	---
35-44 years.....	11.1	11.0	16.1	9.6	8.3	8.3	---	---
45-54 years.....	10.6	11.8	16.4	12.0	8.9	9.1	---	---
55-64 years.....	14.0	14.0	17.1	11.6	11.2	9.3	---	---
65-74 years.....	12.7	14.2	16.3	11.5	10.7	8.5	---	---
75-84 years.....	17.6	8.8	14.3	13.4	13.3	11.1	---	---
85 years and over.....	17.6	*21.1	17.5	9.5	7.7	12.3	---	---

¹Includes deaths of nonresidents of the United States.

²Provisional data.

³Includes all races and both sexes.

⁴Age adjusted by the direct method to the total population of the United States as enumerated in 1940, using 11 age groups.

NOTE: For the data years shown, the code numbers for motor vehicle accidents are based on the then current International Classification of Diseases: for 1950, the Sixth Revision, Nos. E810-E835; for 1960, the Seventh Revision, Nos. E810-E835; for 1970-78, the Eighth Revision, Adapted for Use in the United States, Nos. E810-E823; and for 1979-82, the Ninth Revision, Nos. E810-E825.

SOURCES: National Center for Health Statistics: Vital Statistics of the United States, Vol. II, 1950-80. Public Health Service, Washington. U.S. Government Printing Office; Annual summary of births, deaths, marriages, and divorces, United States, 1982. Monthly Vital Statistics Report. Vol. 31-No. 13. DHHS Pub. No. (PHS) 83-1120. Public Health Service, Hyattsville, Md., Sept. 27, 1983; Data computed by the Division of Analysis from data compiled by the Division of Vital Statistics; U.S. Bureau of the Census: Population estimates and projections. Current Population Reports. Series P-25, No. 310. Washington. U.S. Government Printing Office, June 1965; 1950 Nonwhite Population by Race, Special Report P-E, No. 3B. Washington. U.S. Government Printing Office, 1951; General population characteristics, United States summary, 1960 and 1970. U.S. Census of Population. Final reports PC(1)-1B and PC(1)-81. Washington. U.S. Government Printing Office, 1961 and 1972.

Table 21. Death rates for homicide and legal intervention, according to race, sex, and age: United States, selected years 1950-82

(Data are based on the National Vital Statistics System)

Race, sex, and age	Year							
	1950 ¹	1960 ¹	1970	1975	1979	1980	1981 ²	1982 ²
Total ³								
Number of deaths per 100,000 resident population								
All ages, age adjusted ⁴	5.4	5.2	9.1	10.4	10.2	10.8	10.3	9.7
All ages, crude.....	5.3	4.7	8.3	9.9	10.0	10.7	10.2	9.6
Under 1 year.....	4.4	4.8	4.3	5.6	5.0	5.9	4.5	2.7
1-4 years.....	0.6	0.7	1.9	2.4	2.5	2.5	1.4	1.4
5-14 years.....	0.5	0.5	0.9	1.0	1.1	1.2		
15-24 years.....	6.3	5.9	11.7	13.5	14.5	15.6	14.7	13.9
25-34 years.....	9.9	9.7	16.6	18.1	18.2	19.6	18.8	17.5
35-44 years.....	8.8	8.1	13.7	15.8	14.3	15.1	14.8	12.8
45-54 years.....	6.1	6.2	10.1	11.6	10.8	11.1	11.0	10.8
55-64 years.....	4.0	4.2	7.1	7.9	7.0	7.0	6.4	7.0
65-74 years.....	3.2	2.8	5.0	6.0	5.4	5.7	5.5	4.8
75-84 years.....	2.6	2.4	4.0	5.4	4.8	5.2	4.3	4.2
85 years and over.....	2.3	2.4	4.5	4.8	5.0	5.3	5.9	6.1
White male								
All ages, age adjusted ⁴	3.9	3.9	7.3	9.3	9.9	10.9	---	---
All ages, crude.....	3.9	3.6	6.8	9.0	9.9	10.9	---	---
Under 1 year.....	4.3	3.8	2.9	4.9	4.0	4.3	---	---
1-4 years.....	0.4	0.6	1.4	1.9	1.7	2.0	---	---
5-14 years.....	0.4	0.4	0.5	0.8	1.0	0.9	---	---
15-24 years.....	3.7	4.4	7.9	11.0	14.4	15.5	---	---
25-34 years.....	5.4	6.2	13.0	15.3	16.8	18.9	---	---
35-44 years.....	6.4	5.5	11.0	14.4	13.9	15.5	---	---
45-54 years.....	5.5	5.0	9.0	11.3	11.2	11.9	---	---
55-64 years.....	4.4	4.3	7.7	8.8	7.4	7.8	---	---
65-74 years.....	4.1	3.4	5.6	7.0	6.0	6.9	---	---
75-84 years.....	3.5	2.7	5.1	6.4	5.4	6.3	---	---
85 years and over.....	1.8	*2.7	7.0	5.7	6.0	6.4	---	---
White female								
All ages, age adjusted ⁴	1.4	1.5	2.2	2.9	2.9	3.2	---	---
All ages, crude.....	1.4	1.4	2.1	2.9	3.0	3.2	---	---
Under 1 year.....	3.9	3.5	2.9	3.4	2.8	4.3	---	---
1-4 years.....	0.6	0.5	1.2	1.2	1.7	1.5	---	---
5-14 years.....	0.4	0.3	0.5	0.8	0.7	1.0	---	---
15-24 years.....	1.3	1.5	2.7	4.0	4.3	4.7	---	---
25-34 years.....	1.9	2.0	3.4	4.0	4.0	4.3	---	---
35-44 years.....	2.2	2.2	3.2	4.0	3.6	4.1	---	---
45-54 years.....	1.6	1.9	2.2	3.0	2.9	3.0	---	---
55-64 years.....	1.3	1.5	2.0	2.3	2.1	2.1	---	---
65-74 years.....	1.1	1.1	1.7	2.3	2.6	2.5	---	---
75-84 years.....	1.2	1.2	2.5	3.6	2.9	3.3	---	---
85 years and over.....	1.9	*1.5	2.0	3.2	4.1	4.0	---	---

See footnotes at end of table.

Table 21. Death rates for homicide and legal intervention, according to race, sex, and age: United States, selected years 1950-82--Continued

(Data are based on the National Vital Statistics System)

Race, sex, and age	Year							
	1950 ¹	1960 ¹	1970	1975	1979	1980	1981 ²	1982 ²
Black male								
Number of deaths per 100,000 resident population								
All ages, age adjusted ⁴	51.1	44.9	82.1	79.8	70.1	71.9	---	---
All ages, crude.....	47.3	36.6	67.5	69.0	63.8	66.6	---	---
Under 1 year.....	1.8	10.3	14.3	14.8	16.5	18.6	---	---
1-4 years.....		*1.7	5.1	7.9	6.3	7.2	---	---
5-14 years.....	1.8	1.4	4.2	2.7	3.2	2.9	---	---
15-24 years.....	58.9	46.4	102.5	89.0	76.5	84.3	---	---
25-34 years.....	110.5	92.0	158.5	156.9	140.7	145.1	---	---
35-44 years.....	83.7	77.5	126.2	125.5	111.1	110.3	---	---
45-54 years.....	54.6	54.8	100.6	102.0	84.8	83.8	---	---
55-64 years.....	35.7	31.8	59.8	62.3	57.8	55.6	---	---
65-74 years.....	18.7	19.1	40.6	41.2	32.6	33.9	---	---
75-84 years.....		16.1	18.9	23.0	24.8	27.6	---	---
85 years and over.....	11.5	*10.3	23.1	26.1	17.3	17.0	---	---
Black female								
All ages, age adjusted ⁴	11.7	11.8	15.0	16.1	13.9	13.7	---	---
All ages, crude.....	11.5	10.4	13.2	14.9	13.5	13.5	---	---
Under 1 year.....	2.6	13.8	10.7	13.7	10.5	12.8	---	---
1-4 years.....		*1.7	6.3	6.6	7.7	6.4	---	---
5-14 years.....	1.2	1.0	2.0	2.0	2.1	2.2	---	---
15-24 years.....	16.5	11.9	17.7	20.3	18.2	18.4	---	---
25-34 years.....	26.6	24.9	25.6	27.6	23.7	25.8	---	---
35-44 years.....	17.8	20.5	25.1	24.6	18.6	17.7	---	---
45-54 years.....	8.5	12.7	17.5	17.8	14.1	12.5	---	---
55-64 years.....	3.6	6.8	8.1	10.4	10.3	8.9	---	---
65-74 years.....	3.4	*3.3	7.7	9.1	9.7	8.6	---	---
75-84 years.....		*2.5	*5.7	7.0	10.0	6.7	---	---
85 years and over.....	4.0	*2.6	11.1	8.3	5.8	8.5	---	---

¹Includes deaths of nonresidents of the United States.

²Provisional data.

³Includes all races and both sexes.

⁴Age adjusted by the direct method to the total population of the United States as enumerated in 1940, using 11 age groups.

NOTE: For the data years shown, the code numbers for homicide and legal intervention are based on the then current International Classification of Diseases: for 1950, the Sixth Revision, Nos. E964, E980-E985; for 1960, the Seventh Revision, Nos. E964, E980-E985; for 1970-78, the Eighth Revision, Adapted for Use in the United States, Nos. E960-E978; and for 1979-82, the Ninth Revision, Nos. E960-E978.

SOURCES: National Center for Health Statistics: Vital Statistics of the United States, Vol. II, 1950-80. Public Health Service. Washington. U.S. Government Printing Office; Annual summary of births, deaths, marriages, and divorces, United States, 1982. Monthly Vital Statistics Report. Vol. 31-No. 13. DHHS Pub. No. (PHS) 83-1120. Public Health Service. Hyattsville, Md., Sept. 27, 1983; Data computed by the Division of Analysis from data compiled by the Division of Vital Statistics; U.S. Bureau of the Census: Population estimates and projections. Current Population Reports. Series P-25, No. 310. Washington. U.S. Government Printing Office, June 1965; 1950 Nonwhite Population by Race, Special Report P-E, No. 3B. Washington. U.S. Government Printing Office, 1951; General population characteristics, United States summary, 1960 and 1970. U.S. Census of Population. Final reports PC(1)-1B and PC(1)-B1. Washington. U.S. Government Printing Office, 1961 and 1972.

Table 22. Death rates for suicide, according to race, sex, and age: United States, selected years 1950-82

(Data are based on the National Vital Statistics System)

Race, sex, and age	Year							
	1950 ¹	1960 ¹	1970	1975	1979	1980	1981 ²	1982 ²
Total ³								
Number of deaths per 100,000 resident population								
All ages, age adjusted ⁴	11.0	10.6	11.8	12.5	11.7	11.4	11.3	11.5
All ages, crude.....	11.4	10.6	11.6	12.6	12.1	11.9	11.8	12.0
Under 1 year.....	-	...	...	...	...	...	...	...
1-4 years.....	-	...	...	...	...	...	...	...
5-14 years.....	0.2	0.3	0.3	0.4	0.4	0.4	0.4	0.3
15-24 years.....	4.5	5.2	8.8	11.7	12.4	12.3	12.5	12.5
25-34 years.....	9.1	10.0	14.1	16.1	16.3	16.0	16.2	15.5
35-44 years.....	14.3	14.2	16.9	17.4	15.4	15.4	14.7	16.5
45-54 years.....	20.9	20.7	20.0	20.1	16.5	15.9	15.9	15.9
55-64 years.....	27.0	23.7	21.4	19.8	16.6	15.9	14.6	15.9
65-74 years.....	29.3	23.0	20.8	19.6	17.8	16.9	16.9	16.7
75-84 years.....	31.1	27.9	21.2	19.7	20.8	19.1	18.8	19.7
85 years and over.....	28.8	26.0	20.4	18.6	17.9	19.2	20.7	17.2
White male								
All ages, age adjusted ⁴	18.1	17.5	18.2	19.6	18.6	18.9	---	---
All ages, crude.....	19.0	17.6	18.0	19.9	19.6	19.9	---	---
Under 1 year.....	-	...	...	...	...	...	---	---
1-4 years.....	-	...	...	...	...	...	---	---
5-14 years.....	0.3	0.5	0.5	0.8	0.6	0.7	---	---
15-24 years.....	6.6	8.6	13.9	19.3	20.5	21.4	---	---
25-34 years.....	13.8	14.9	19.9	24.0	25.4	25.6	---	---
35-44 years.....	22.4	21.9	23.3	24.4	22.4	23.5	---	---
45-54 years.....	34.1	33.7	29.5	29.7	24.0	24.2	---	---
55-64 years.....	45.9	40.2	35.0	31.9	26.3	25.8	---	---
65-74 years.....	53.2	42.0	38.7	36.0	33.4	32.5	---	---
75-84 years.....	61.9	55.7	45.5	43.2	48.0	45.5	---	---
85 years and over.....	61.9	61.3	50.3	51.1	50.2	52.8	---	---
White female								
All ages, age adjusted ⁴	5.3	5.3	7.2	7.3	6.3	5.7	---	---
All ages, crude.....	5.5	5.3	7.1	7.3	6.5	5.9	---	---
Under 1 year.....	-	...	...	...	...	...	---	---
1-4 years.....	-	...	...	...	...	...	---	---
5-14 years.....	0.1	*0.1	0.1	0.2	0.3	0.2	---	---
15-24 years.....	2.7	2.3	4.2	4.9	4.9	4.6	---	---
25-34 years.....	5.2	5.8	9.0	8.8	7.8	7.5	---	---
35-44 years.....	8.2	8.1	13.0	12.6	10.1	9.1	---	---
45-54 years.....	10.5	10.9	13.5	13.8	11.6	10.2	---	---
55-64 years.....	10.7	10.9	12.3	11.5	9.9	9.1	---	---
65-74 years.....	10.6	8.8	9.6	9.4	7.8	7.0	---	---
75-84 years.....	8.4	9.2	7.2	7.5	6.7	5.7	---	---
85 years and over.....	8.9	6.1	6.1	4.8	5.0	5.8	---	---

See footnotes at end of table.

Table 22. Death rates for suicide, according to race, sex, and age: United States, selected years 1950-82--Continued

(Data are based on the National Vital Statistics System)

Race, sex, and age	Year							1981 ²	1982 ²
	1950 ¹	1960 ¹	1970	1975	1979	1980			
Black male									
Number of deaths per 100,000 resident population									
All ages, age adjusted ⁴	7.0	7.8	9.9	11.4	12.5	11.4	---	---	
All ages, crude.....	6.3	6.4	8.0	9.9	11.5	10.3	---	---	
Under 1 year.....	-	...	...	...	...	...	---	---
1-4 years.....	-	...	...	...	...	...	---	---
5-14 years.....	-	*0.1	*0.1	0.1	0.2	0.3	---	---	
15-24 years.....	4.9	4.1	10.5	12.7	14.0	12.3	---	---	
25-34 years.....	9.3	12.4	19.2	23.4	24.9	21.8	---	---	
35-44 years.....	10.4	12.8	12.6	16.0	16.9	15.6	---	---	
45-54 years.....	10.4	10.8	13.8	12.4	13.8	12.0	---	---	
55-64 years.....	16.5	16.2	10.6	10.7	12.8	11.7	---	---	
65-74 years.....	10.0	11.3	8.7	11.6	13.5	11.1	---	---	
75-84 years.....	6.2	*6.6	*8.9	11.7	10.5	10.5	---	---	
85 years and over.....	6.2	*6.9	10.3	4.3	15.4	18.9	---	---	
Black female									
All ages, age adjusted ⁴	1.7	1.9	2.9	2.9	2.9	2.4	---	---	
All ages, crude.....	1.5	1.6	2.6	2.7	2.8	2.2	---	---	
Under 1 year.....	-	...	...	...	...	...	---	---
1-4 years.....	-	...	...	...	...	...	---	---
5-14 years.....	-	*0.0	*0.2	0.1	0.1	0.1	---	---	
15-24 years.....	1.8	1.3	3.8	3.2	3.3	2.3	---	---	
25-34 years.....	2.6	3.0	5.7	5.4	5.4	4.1	---	---	
35-44 years.....	2.0	3.0	3.7	4.0	4.1	4.6	---	---	
45-54 years.....	3.5	3.1	3.7	4.0	2.9	2.8	---	---	
55-64 years.....	1.1	*3.0	*2.0	3.4	3.8	2.3	---	---	
65-74 years.....	1.9	*2.3	*2.9	3.0	2.6	1.7	---	---	
75-84 years.....	2.4	*1.3	*1.7	1.2	2.5	1.4	---	---	
85 years and over.....	2.4	-	3.2	-	1.0	-	---	---	

¹Includes deaths of nonresidents of the United States.²Provisional data.³Includes all races and both sexes.⁴Age adjusted by the direct method to the total population of the United States as enumerated in 1940, using 11 age groups.

NOTE: For the data years shown, the code numbers for suicide are based on the then current International Classification of Diseases: for 1950, the Sixth Revision, Nos. E963, E970-E979; for 1960, the Seventh Revision, Nos. E963, E970-E979; for 1970-78, the Eighth Revision, Adapted for Use in the United States, Nos. E950-E959; and for 1979-82, the Ninth Revision, Nos. E950-E959.

SOURCES: National Center for Health Statistics: *Vital Statistics of the United States*, Vol. II, 1950-80. Public Health Service. Washington. U.S. Government Printing Office; *Annual summary of births, deaths, marriages, and divorces, United States, 1982*. *Monthly Vital Statistics Report*. Vol. 31-No. 13. DHHS Pub. No. (PHS) 83-1120. Public Health Service. Hyattsville, Md., Sept. 27, 1983; Data computed by the Division of Analysis from data compiled by the Division of Vital Statistics; U.S. Bureau of the Census: *Population estimates and projections. Current Population Reports*. Series P-25, No. 310. Washington. U.S. Government Printing Office, June 1965; *1950 Nonwhite Population by Race*, Special Report P-E, No. 3B. Washington. U.S. Government Printing Office, 1951; *General population characteristics, United States summary, 1960 and 1970*. U.S. Census of Population. Final reports PC(1)-1B and PC(1)-B1. Washington. U.S. Government Printing Office, 1961 and 1972.

Table 23. Infants weighing 2,500 grams or less at birth, according to race, geographic division, and State: United States, average annual 1968-70, 1973-75, and 1978-80

(Data are based on the National Vital Statistics System)

Geographic division and State	1968-70			1973-75			1978-80 ³		
	Total	White	All other ¹	Total ²	White	Black	Total ²	White	Black
Infants weighing 2,500 grams or less at birth per 100 total live births									
United States.....	8.1	7.0	13.5	7.5	6.3	13.2	7.0	5.8	12.6
New England.....	7.7	7.3	13.8	6.8	6.5	12.2	6.3	5.9	11.9
Maine.....	7.3	7.3	*10.2	6.3	6.3	*6.5	5.7	5.7	*6.3
New Hampshire.....	6.9	6.9	*8.3	6.6	6.6	*8.0	5.6	5.6	*6.1
Vermont.....	7.6	7.6	*4.5	6.7	6.7	*8.0	6.1	6.1	*11.4
Massachusetts.....	7.6	7.3	13.0	6.9	6.6	11.6	6.2	5.8	11.2
Rhode Island.....	7.9	7.4	*16.7	6.8	6.5	*12.2	6.4	6.0	*12.1
Connecticut.....	8.0	7.2	14.4	7.0	6.3	13.0	6.9	6.0	12.8
Middle Atlantic.....	8.5	7.3	14.7	7.8	6.5	13.7	7.3	6.0	13.0
New York.....	8.8	7.5	14.4	8.0	6.7	13.4	7.6	6.2	12.8
New Jersey.....	8.4	7.1	14.8	7.9	6.5	14.1	7.3	5.8	13.2
Pennsylvania.....	8.0	7.0	15.6	7.4	6.4	14.2	6.7	5.7	13.4
East North Central.....	7.7	6.7	14.0	7.3	6.1	13.5	6.8	5.6	13.3
Ohio.....	7.7	6.8	14.1	7.3	6.4	13.3	6.8	5.8	13.1
Indiana.....	7.2	6.7	12.7	6.6	6.0	11.9	6.4	5.7	12.3
Illinois.....	8.3	6.8	14.3	7.8	6.2	14.0	7.3	5.6	13.7
Michigan.....	7.9	6.7	14.4	7.5	6.2	13.8	7.0	5.8	13.3
Wisconsin.....	6.6	6.3	11.9	6.0	5.6	12.6	5.5	5.0	12.6
West North Central.....	6.8	6.3	12.6	6.3	5.8	13.3	5.8	5.2	12.6
Minnesota.....	6.3	6.2	11.4	5.6	5.4	*13.0	5.2	5.0	*11.5
Iowa.....	6.0	5.9	*10.6	5.8	5.6	*12.7	5.1	4.9	*12.1
Missouri.....	7.7	6.6	13.7	7.3	6.1	13.6	6.8	5.6	13.0
North Dakota.....	5.9	5.9	*6.4	5.6	5.4	*7.9	5.1	4.9	*9.6
South Dakota.....	6.1	6.0	*7.5	6.3	6.0	*13.1	5.1	4.9	*13.2
Nebraska.....	6.7	6.4	*13.3	6.1	5.8	*12.4	5.7	5.3	*12.8
Kansas.....	7.1	6.6	13.0	6.4	5.9	12.7	6.2	5.6	12.1
South Atlantic.....	9.1	7.3	13.9	8.4	6.6	13.1	8.0	6.1	12.6
Delaware.....	8.6	6.8	15.3	7.7	6.2	13.3	7.5	5.6	13.9
Maryland.....	8.8	7.1	14.2	7.9	6.2	12.9	7.9	5.9	12.5
District of Columbia.....	13.4	8.4	14.3	13.1	*7.2	14.1	12.8	6.3	14.1
Virginia.....	8.6	7.1	13.7	7.7	6.3	12.5	7.4	5.9	12.0
West Virginia.....	8.2	7.9	*14.5	7.3	7.1	*11.9	6.8	6.5	*12.4
North Carolina.....	9.4	7.4	14.2	8.7	6.8	13.3	8.0	6.2	12.3
South Carolina.....	9.9	7.6	13.8	9.0	6.6	12.9	8.8	6.0	12.8
Georgia.....	9.3	7.2	13.9	9.1	6.8	13.4	8.6	6.3	12.7
Florida.....	8.7	7.1	13.3	8.1	6.5	13.0	7.7	6.1	12.3
East South Central.....	8.7	7.2	13.0	8.2	6.5	12.6	7.9	6.2	12.3
Kentucky.....	8.0	7.5	13.4	7.3	6.8	12.3	7.0	6.4	12.4
Tennessee.....	8.6	7.1	14.3	8.0	6.6	13.2	8.0	6.5	13.2
Alabama.....	9.0	7.2	12.7	8.5	6.4	12.5	8.1	5.9	12.1
Mississippi.....	9.5	6.8	12.3	9.1	6.2	12.4	8.7	5.9	11.9

See footnotes at end of table.

Table 23. Infants weighing 2,500 grams or less at birth, according to race, geographic division, and State: United States, average annual 1968-70, 1973-75, and 1978-80--Continued

(Data are based on the National Vital Statistics System)

Geographic division and State	1968-70			1973-75			1978-80 ³		
	Total	White	All other ¹	Total ²	White	Black	Total ²	White	Black
Infants weighing 2,500 grams or less at birth per 100 total live births									
West South Central.....	8.5	7.1	13.8	8.0	6.7	13.3	7.4	6.1	12.6
Arkansas.....	8.4	7.0	12.4	8.1	6.6	12.7	7.5	5.9	12.3
Louisiana.....	9.6	6.8	14.2	9.2	6.6	13.0	8.7	6.1	12.7
Oklahoma.....	7.9	7.3	11.5	7.5	7.0	14.0	6.8	6.2	12.4
Texas.....	8.2	7.1	14.3	7.7	6.6	13.5	7.1	6.1	12.7
Mountain.....	8.4	8.1	10.7	7.4	7.2	13.4	6.7	6.5	12.8
Montana.....	7.6	7.5	*8.6	7.0	6.9	*12.9	5.7	5.6	*9.5
Idaho.....	6.6	6.6	*7.6	6.0	5.9	*4.0	5.4	5.3	*9.2
Wyoming.....	9.2	9.0	*14.4	8.7	8.7	*15.5	7.5	7.4	*16.1
Colorado.....	9.9	9.6	15.0	9.1	8.8	15.2	8.2	7.9	14.7
New Mexico.....	9.4	9.4	9.5	8.8	8.8	*13.0	8.2	8.1	*13.6
Arizona.....	7.6	7.3	9.4	6.6	6.4	*11.4	6.1	5.9	11.3
Utah.....	6.7	6.6	*9.8	5.5	5.4	*20.3	5.4	5.4	*9.3
Nevada.....	9.7	9.1	*13.8	8.0	7.4	*13.3	7.1	6.4	*12.3
Pacific.....	7.0	6.4	10.8	6.3	5.6	11.9	5.9	5.3	11.3
Washington.....	6.7	6.4	10.9	6.0	5.7	10.8	5.3	5.0	10.1
Oregon.....	6.4	6.2	*10.7	5.7	5.5	*11.8	5.1	5.0	*10.8
California.....	7.1	6.4	11.3	6.3	5.6	12.0	6.1	5.4	11.5
Alaska.....	6.7	6.5	7.1	5.7	5.2	*10.5	5.5	5.0	*7.2
Hawaii.....	8.9	7.3	9.5	7.8	5.9	*7.5	7.1	5.8	*9.3

¹Data by birth weight for the black population not available for these years. In the Middle Atlantic, East North Central, South Atlantic, East South Central, and West South Central Divisions, more than 95 percent of the births in the "all other" racial category were black. However, in the Mountain and Pacific States, most of the births in the "all other" racial category were not black. Overall, 91 percent of the births in the "all other" racial category were black for the 3-year period. Based on more recent data, other than black infants of the "all other" racial category have a much lower low-birth-weight ratio than black infants. In fact, this other group's ratio is similar to the white ratio. Therefore, combining the black and other groups distorts the picture, making a trend difficult to interpret.

²Includes all other races not shown separately.

³For 1979 and later, data are for infants weighing less than 2,500 grams at birth.

SOURCE: National Center for Health Statistics: Data computed by the Division of Analysis from data compiled by the Division of Vital Statistics.

Table 24. Live births, according to race and selected characteristics: United States, selected years 1970-80

(Data are based on the National Vital Statistics System)

Race and selected characteristic	Year						
	1970	1975	1976	1977	1978	1979	1980
TOTAL¹							
Birth weight ²							
Percent of live births							
2,500 grams or less.....	7.94	7.39	7.26	7.07	7.11	6.94	6.84
1,500 grams or less.....	1.17	1.16	1.15	1.13	1.17	1.15	1.15
Education of mother							
Less than 12 years.....	30.8	28.6	27.4	26.2	26.1	24.4	23.7
16 years or more.....	8.6	11.4	12.1	12.6	13.1	13.7	14.0
Prenatal care began							
1st trimester.....	68.0	72.4	73.5	74.1	74.9	75.9	76.3
3rd trimester or no prenatal care.....	7.9	6.0	5.7	5.6	5.4	5.1	5.1
WHITE							
Birth weight ²							
2,500 grams or less.....	6.84	6.26	6.13	5.93	5.94	5.80	5.70
1,500 grams or less.....	0.95	0.92	0.91	0.89	0.91	0.90	0.90
Education of mother							
Less than 12 years.....	27.0	25.0	23.9	22.9	23.4	21.3	20.7
16 years or more.....	9.5	12.7	13.5	14.0	14.4	15.2	15.6
Prenatal care began							
1st trimester.....	72.4	75.9	76.8	77.3	78.2	79.1	79.3
3rd trimester or no prenatal care.....	6.2	5.0	4.8	4.7	4.5	4.3	4.3
BLACK							
Birth weight ²							
2,500 grams or less.....	13.86	13.09	12.97	12.79	12.85	12.55	12.49
1,500 grams or less.....	2.40	2.37	2.40	2.38	2.43	2.37	2.44
Education of mother							
Less than 12 years.....	51.0	45.1	43.3	41.0	38.5	37.7	36.2
16 years or more.....	2.8	4.4	4.8	5.2	5.7	5.9	6.3
Prenatal care began							
1st trimester.....	44.4	55.8	57.7	59.0	60.2	61.6	62.7
3rd trimester or no prenatal care.....	16.6	10.5	9.9	9.6	9.3	8.9	8.8

¹Includes all other races not shown separately.²Since some of the birth-weight figures are less than 1 percent, all figures for this category were carried to 2 decimal places. For 1979 and later, data are for infants weighing less than 2,500 grams at birth.

NOTE: Figures for 1970 are based on a 50-percent sample; for 1975-80, they are based on 100 percent of births in selected States and on a 50-percent sample of births in all other States. Percents are based only on records for which characteristic is stated.

SOURCE: National Center for Health Statistics: Vital Statistics of the United States, Vol. 1, for data years 1970-1977, Public Health Service, Washington, U.S. Government Printing Office; for 1978-1980, Public Health Service, To be published.

Table 25. Vaccination status of children 1-4 years of age, according to race and standard metropolitan statistical area (SMSA) component: United States, 1976 and 1981

(Data are based on household interviews of a sample of the civilian noninstitutionalized population)

Year, race, and SMSA component	Vaccination				
	Measles	Rubella	DTP ^{1,2}	Polio ²	Mumps
1976					
Total.....	65.9	61.7	71.4	61.6	48.3
Race					
White.....	68.3	63.8	75.3	66.2	50.3
All other.....	54.8	51.5	53.2	39.9	38.7
SMSA component					
Central city.....	62.5	59.5	64.1	53.8	45.6
Remaining areas in SMSA.....	67.2	63.5	75.7	65.3	50.7
Not SMSA.....	67.3	61.5	72.9	63.9	47.9
1981					
Total.....	63.8	64.5	67.5	60.0	58.4
Race					
White.....	65.7	66.6	71.0	63.8	60.5
All other.....	55.3	55.2	52.0	42.7	49.1
SMSA component					
Central city.....	60.0	59.9	58.7	52.6	52.8
Remaining areas in SMSA.....	64.3	64.6	68.8	62.0	58.6
Not SMSA.....	65.9	67.5	72.2	63.0	61.9

¹Diphtheria-tetanus-pertussis.
²Three doses or more.

SOURCE: Centers for Disease Control: United States Immunization Survey, 1981. Public Health Service, DHHS, Atlanta, Ga. To be published.

Table 26. Selected notifiable disease rates, according to disease: United States, selected years 1950-81

(Data are based on reporting by State health departments)

Disease	Year							
	1950	1960	1970	1975	1978	1979	1980	1981
	Number of cases per 100,000 population							
Chickenpox.....	(¹)	(¹)	(¹)	78.11	80.42	102.93	96.69	100.48
Diphtheria.....	3.83	0.51	0.21	0.14	0.03	0.03	0.00	0.00
Hepatitis A.....	(¹)	23.15	27.87	16.82	13.53	13.82	12.84	11.25
Hepatitis B.....			4.08	6.30	6.89	7.02	8.39	9.22
Measles (rubeola).....	211.01	245.42	23.23	11.44	12.32	6.18	5.96	1.36
Mumps.....	(¹)	(¹)	55.55	27.99	7.81	6.55	3.86	2.20
Pertussis (whooping cough).....	79.82	8.23	2.08	0.82	0.95	0.74	0.76	0.54
Poliomyelitis, total.....	22.02	1.77	0.02	0.00	0.01	0.02	0.00	0.00
Paralytic.....		1.40	0.02	0.00	0.00	0.01	0.00	0.00
Rubella (German measles).....	(¹)	(¹)	27.75	7.81	8.38	5.36	1.72	0.91
Salmonellosis, excluding typhoid fever.....	(¹)	3.85	10.84	10.61	13.49	15.06	14.88	17.44
Shigellosis.....	15.45	6.94	6.79	7.78	8.95	9.15	8.41	8.66
Tuberculosis ²	80.50	30.83	18.22	15.95	13.08	12.57	12.25	11.94
Venereal diseases: ³								
Syphilis ⁴	146.02	68.78	45.46	38.00	30.00	30.68	30.38	31.98
Primary and secondary.....	16.73	9.06	10.94	12.09	10.00	11.38	12.01	13.73
Early latent.....	39.71	10.11	8.11	12.57	9.07	9.40	8.96	9.24
Late and late latent.....	76.22	45.91	25.05	12.81	10.64	9.70	9.26	8.86
Congenital.....	8.97	2.48	0.97	0.43	0.20	0.20	0.12	0.13
Gonorrhea.....	192.45	145.33	298.52	472.91	468.30	459.44	443.27	435.24
Chancroid.....	3.34	0.94	0.70	0.33	0.24	0.38	0.35	0.37
Granuloma inguinale.....	1.19	0.17	0.06	0.03	0.03	0.03	0.02	0.03
Lymphogranuloma venereum.....	0.95	0.47	0.30	0.17	0.13	0.11	0.09	0.12

¹Not reported nationally.²Data subsequent to 1974 are not comparable to prior years because of changes in reporting criteria that became effective in 1975.³Newly reported civilian cases.⁴Includes stage of syphilis not stated.

NOTE: Rates greater than 0 but less than 0.005 are shown as 0.00. The total resident population was used to calculate all rates except venereal diseases, for which the civilian resident population was used.

SOURCES: Centers for Disease Control: Reported morbidity and mortality in the United States, 1981, *Morbidity and Mortality Weekly Report* 30(54). Public Health Service, Atlanta, Ga., Oct. 1982; Venereal Disease Control Division, Center for Prevention Services, Centers for Disease Control: Selected data.

Table 27. Self-assessment of health and limitation of activity, according to selected characteristics: United States, 1976 and 1981

(Data are based on household interviews of a sample of the civilian noninstitutionalized population)

Selected characteristic	Self-assessment of health as fair or poor		With limitation of activity							
			Total		Limited but not in major activity		Limited in amount or kind of major activity		Unable to carry on major activity	
	1976	1981	1976	1981	1976	1981	1976	1981	1976	1981
	Percent of population									
Total ^{1,2,3}	12.1	11.8	13.9	13.7	3.5	3.3	7.0	6.8	3.4	3.6
Age										
Under 17 years.....	4.3	4.0	3.7	3.8	1.8	1.8	1.7	1.8	0.2	0.2
Under 6 years.....	4.5	4.2	2.5	2.2	---	---	2.1	1.8	0.5	0.4
6-16 years.....	4.2	3.8	4.3	4.6	2.6	2.7	1.6	1.8	0.1	0.1
17-44 years.....	8.3	8.3	8.9	8.4	3.4	3.0	4.4	4.2	1.1	1.2
45-64 years.....	22.2	22.0	24.3	23.9	5.2	4.8	13.1	12.4	5.9	6.8
65 years and over.....	31.3	30.1	45.4	45.7	6.0	6.6	21.8	21.7	17.6	17.5
Sex ¹										
Male.....	11.4	11.4	14.6	14.6	3.5	3.3	5.5	5.4	5.6	6.1
Female.....	12.8	12.1	13.3	12.9	3.5	3.4	8.2	7.9	1.6	1.6
Race ^{1,4}										
White.....	11.1	10.8	13.6	13.4	3.6	3.4	6.9	6.6	3.2	3.4
Black.....	19.9	19.7	16.9	16.7	2.8	2.7	8.5	8.1	5.5	5.9
Family income ^{1,5}										
Less than \$7,000.....	22.2	22.5	22.5	22.7	4.0	4.0	11.5	11.5	6.9	7.3
\$7,000-\$9,999.....	17.2	18.3	17.0	18.4	3.4	3.4	8.5	8.7	5.2	6.2
\$10,000-\$14,999.....	13.8	12.4	15.0	14.9	3.5	3.4	7.4	7.5	4.0	4.0
\$15,000-\$24,999.....	10.5	9.6	12.8	12.0	3.3	3.4	6.8	5.9	2.7	2.7
\$25,000 or more.....	7.3	6.5	10.4	9.8	3.5	3.1	5.0	4.7	2.0	2.0
Geographic region ¹										
Northeast.....	10.4	10.3	12.9	12.8	3.3	3.2	6.4	6.4	3.1	3.1
North Central.....	11.0	10.9	13.5	13.1	3.7	3.4	7.1	6.5	2.8	3.2
South.....	14.9	14.3	14.3	14.4	3.0	3.1	7.3	7.1	4.1	4.3
West.....	11.0	10.5	15.0	14.3	4.2	3.9	7.2	7.1	3.6	3.4
Location of residence ¹										
Within SMSA.....	11.1	11.0	13.2	13.2	3.4	3.4	6.7	6.6	3.2	3.3
Outside SMSA.....	14.2	13.5	15.3	14.6	3.7	3.3	7.7	7.2	3.9	4.1

¹Age adjusted by the direct method to the 1970 civilian noninstitutionalized population, using 4 age intervals.

²Includes all other races not shown separately.

³Includes unknown family income.

⁴In 1976, the racial classification of persons in the National Health Interview Survey was determined by interviewer observation. In 1981, race was determined by asking the household respondent.

⁵Family income categories for 1981. Adjusting for inflation, corresponding income categories in 1976 were: less than \$5,000; \$5,000-\$6,999; \$7,000-\$9,999; \$10,000-\$14,999; and \$15,000 or more.

SOURCE: Division of Health Interview Statistics, National Center for Health Statistics: Data from the National Health Interview Survey.

Table 28. Restricted-activity and bed-disability days, according to selected characteristics: United States, 1976 and 1981

(Data are based on household interviews of a sample of the civilian noninstitutionalized population)

Selected characteristic	Restricted-activity days		Bed-disability days	
	1976	1981	1976	1981
	Number per person per year			
Total ^{1,2,3}	17.9	18.5	7.0	6.8
Age				
Under 17 years.....	11.0	10.5	5.1	4.8
Under 6 years.....	12.5	11.5	5.3	5.4
6-16 years.....	10.3	10.1	5.0	4.5
17-44 years.....	14.2	15.1	5.6	5.4
45-64 years.....	25.4	27.5	8.9	9.0
65 years and over.....	40.0	39.9	15.1	14.0
Sex ¹				
Male.....	16.6	17.5	6.2	6.0
Female.....	19.1	19.6	7.8	7.6
Race ^{1,4}				
White.....	17.5	18.0	6.7	6.4
Black.....	22.6	23.6	9.7	10.3
Family income ^{1,5}				
Less than \$7,000.....	27.9	32.1	10.8	11.9
\$7,000-\$9,999.....	21.1	23.5	8.8	8.5
\$10,000-\$14,999.....	18.2	18.1	7.2	6.3
\$15,000-\$24,999.....	16.6	16.2	6.2	5.8
\$25,000 or more.....	13.7	13.6	5.6	5.0
Geographic region ¹				
Northeast.....	15.9	17.3	6.6	6.5
North Central.....	16.8	16.9	6.1	6.1
South.....	18.3	19.4	7.5	7.7
West.....	21.6	21.1	8.2	6.7
Location of residence ¹				
Within SMSA.....	18.0	18.4	7.2	6.7
Outside SMSA.....	17.7	19.0	6.7	6.9

¹Age adjusted by the direct method to the 1970 civilian noninstitutionalized population, using 4 age intervals.

²Includes all other races not shown separately.

³Includes unknown family income.

⁴In 1976, the racial classification of persons in the National Health Interview Survey was determined by interviewer observation. In 1981, race was determined by asking the household respondent.

⁵Family income categories for 1981. Adjusting for inflation, corresponding income categories in 1976 were: less than \$5,000; \$5,000-\$6,999; \$7,000-\$9,999; \$10,000-\$14,999; and \$15,000 or more.

SOURCE: Division of Health Interview Statistics, National Center for Health Statistics: Data from the National Health Interview Survey.

Table 29. Disability days associated with acute conditions and incidence of acute conditions, according to age: United States, selected years 1970-81

(Data are based on household interviews of a sample of the civilian noninstitutionalized population)

Disability days, incidence of acute conditions, and age	Year ¹										
	1970	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
Restricted-activity days	Number per person										
All ages ²	8.5	9.3	9.2	9.3	9.7	9.4	9.4	9.8	9.5	9.8	9.9
Under 17 years.....	8.6	9.4	9.3	9.9	9.4	9.7	10.0	10.0	9.8	10.1	9.8
Under 6 years.....	9.8	11.3	10.8	11.0	10.9	11.2	12.2	11.7	12.1	11.7	11.1
6-16 years.....	8.0	8.5	8.6	9.3	8.7	9.0	9.1	9.3	8.7	9.4	9.1
17-44 years.....	8.0	8.8	8.9	8.9	9.4	8.8	9.1	9.5	9.4	9.9	9.9
45-64 years.....	8.7	9.3	8.6	8.2	9.8	9.1	8.6	8.8	8.2	8.7	9.2
65 years and over.....	9.8	10.9	10.8	10.7	12.1	11.6	10.1	12.1	11.6	10.7	11.4
Bed-disability days ³	Number per person										
All ages ²	3.8	4.1	4.0	4.0	4.2	4.2	4.2	4.5	4.2	4.3	4.4
Under 17 years.....	4.0	4.3	4.1	4.5	4.0	4.6	4.8	5.0	4.7	4.9	4.7
Under 6 years.....	4.2	4.7	4.3	5.0	4.3	5.0	5.2	5.7	5.8	5.6	5.3
6-16 years.....	3.9	4.1	4.0	4.3	3.9	4.5	4.6	4.7	4.1	4.5	4.4
17-44 years.....	3.5	3.9	4.0	3.8	4.2	4.0	3.9	4.3	4.0	4.2	4.2
45-64 years.....	3.8	3.6	3.6	3.5	4.0	3.8	3.7	3.6	3.5	3.4	3.9
65 years and over.....	4.0	4.7	4.3	4.1	5.3	4.7	4.5	5.1	5.0	4.5	4.9
Incidence of acute conditions	Number per 100 persons										
All ages ²	204.1	220.9	⁴ 199.6	⁴ 174.2	⁴ 199.1	218.4	222.6	224.2	222.4	226.2	226.6
Under 17 years.....	290.3	307.9	280.1	254.8	282.6	305.7	315.0	310.6	311.4	317.3	321.9
Under 6 years.....	346.6	366.1	343.1	303.4	346.9	381.2	388.3	381.6	397.3	383.4	396.3
6-16 years.....	263.1	280.4	250.8	232.2	253.1	271.2	282.4	278.7	271.7	285.4	284.2
17-44 years.....	193.2	215.1	196.0	170.2	194.7	215.3	216.1	222.3	221.8	224.0	221.7
45-64 years.....	132.8	144.0	124.6	98.3	123.4	136.7	142.2	143.0	131.9	139.0	135.3
65 years and over.....	103.0	109.2	98.1	75.7	91.3	105.5	102.4	111.0	115.5	111.6	116.5

¹Fiscal year ending June 30.²Age adjusted by the direct method to the 1970 civilian noninstitutionalized population, using 4 age intervals.³A subset of restricted-activity days.⁴The 1974 estimates are artificially low because of modifications in the questionnaire design for the 1973 and 1974 surveys. Since the data are collected on a calendar year basis, the 1973 and 1975 estimates are also partially affected.

SOURCE: Division of Health Interview Statistics, National Center for Health Statistics: Data from the National Health Interview Survey.

Table 30. Cigarette smoking status of persons 20 years of age and over, according to sex, race, and age:
United States, 1965, 1976, and 1980

(Data are based on household interviews of a sample of the civilian noninstitutionalized population)

Sex, race, and age	Smoking status					
	Current smoker ¹			Former smoker		
	1965	1976	1980 ²	1965	1976	1980 ²
MALE						
Total ^{3,4}						
Percent of persons						
All ages, 20 years and over ⁵	52.1	41.6	37.9	20.3	29.6	30.5
20-24 years.....	59.2	45.9	39.7	9.0	12.2	12.1
25-34 years.....	60.7	48.5	43.1	14.7	18.3	20.6
35-44 years.....	58.2	47.6	42.6	20.6	27.3	27.6
45-64 years.....	51.9	41.3	40.8	24.1	37.1	36.9
65 years and over.....	28.5	23.0	17.9	28.1	44.4	47.4
White						
All ages, 20 years and over ⁵	51.3	41.0	37.1	21.2	30.7	31.9
20-24 years.....	58.1	45.3	39.0	9.6	13.3	12.2
25-34 years.....	60.1	47.7	42.0	15.5	18.9	21.9
35-44 years.....	57.3	46.8	42.4	21.5	28.9	28.8
45-64 years.....	51.3	40.6	40.0	25.1	38.1	38.4
65 years and over.....	27.7	22.8	16.6	28.7	45.6	50.1
Black						
All ages, 20 years and over ⁵	59.6	50.1	44.9	12.6	20.2	20.6
20-24 years.....	67.4	52.8	45.5	3.8	4.1	10.6
25-34 years.....	68.4	59.4	52.0	6.7	11.8	11.9
35-44 years.....	67.3	58.8	44.2	12.3	13.8	21.2
45-64 years.....	57.9	49.7	48.8	15.3	28.6	26.3
65 years and over.....	36.4	26.4	27.9	21.5	33.0	26.6
FEMALE						
Total ^{3,4}						
All ages, 20 years and over ⁵	34.2	32.5	29.8	8.2	13.9	15.7
20-24 years.....	41.9	34.2	32.7	7.3	10.4	11.0
25-34 years.....	43.7	37.5	31.6	9.9	12.9	14.4
35-44 years.....	43.7	38.2	34.9	9.6	15.8	18.9
45-64 years.....	32.0	34.8	30.8	3.6	15.9	17.1
65 years and over.....	9.6	12.3	16.8	4.5	11.7	14.2
White						
All ages, 20 years and over ⁵	34.5	32.4	30.0	8.5	14.6	16.3
20-24 years.....	41.9	34.4	33.3	8.0	11.4	12.5
25-34 years.....	43.4	37.1	31.6	10.3	13.7	14.7
35-44 years.....	43.9	38.1	35.6	9.9	17.0	20.2
45-64 years.....	32.7	34.7	30.6	8.8	16.4	17.4
65 years and over.....	9.8	13.2	17.4	4.5	11.5	14.3

See footnotes at end of table.

Table 30. Cigarette smoking status of persons 20 years of age and over, according to sex, race, and age: United States, 1965, 1976, and 1980--Continued

(Data are based on household interviews of a sample of the civilian noninstitutionalized population)

Sex, race, and age	Smoking status					
	Current smoker ¹			Former smoker		
	1965	1976	1980 ²	1965	1976	1980 ²
FEMALE--Continued						
Black						
Percent of persons						
All ages, 20 years and over ⁵	32.7	34.7	30.6	5.9	10.2	11.8
20-24 years.....	44.2	34.9	32.3	2.5	5.0	2.2
25-34 years.....	47.8	42.5	34.2	6.7	8.9	11.6
35-44 years.....	42.8	41.3	36.5	7.0	9.6	12.5
45-64 years.....	25.7	38.1	34.3	6.6	11.9	14.1
65 years and over.....	7.1	9.2	9.4	4.5	13.3	14.1

¹A current smoker is a person who has smoked at least 100 cigarettes and who now smokes; includes occasional smokers.

²Final estimates. Based on data for the last 6 months of 1980.

³Base of percent excludes persons with unknown smoking status.

⁴Includes all other races not shown separately.

⁵Age adjusted by the direct method to the 1970 civilian noninstitutionalized population using 5 age groups.

NOTE: Data in this table should not be compared with data in Health, United States, 1981 or Health, United States, 1982. The 1980 data in the 1981 edition were preliminary estimates, and the data in the 1982 edition were final estimates but did not include age-adjusted data.

SOURCE: Division of Health Interview Statistics, National Center for Health Statistics: Data from the National Health Interview Survey.

Table 31. Cigarettes smoked per day by persons 20 years of age and over, according to sex, race, and age: United States, 1965, 1976, and 1980

(Data are based on household interviews of a sample of the civilian noninstitutionalized population)

Sex, race, and age	Cigarettes smoked per day								
	Less than 15			15-24			25 or more		
	1965	1976	1980 ¹	1965	1976	1980 ¹	1965	1976	1980 ¹
MALE									
Total ^{2,3}									
Percent of current smokers ⁴									
All ages, 20 years and over ⁵ ..	30.1	24.9	24.2	45.7	44.4	41.7	24.1	30.7	34.2
20-24 years.....	34.9	31.6	32.6	49.7	49.9	47.6	15.4	18.5	19.8
25-34 years.....	25.7	25.5	23.1	50.0	45.8	46.8	24.3	28.7	30.1
35-44 years.....	23.7	19.6	17.5	44.8	41.2	41.9	31.5	39.2	40.7
45-64 years.....	26.7	18.5	21.5	45.3	44.1	35.9	28.0	37.4	42.6
65 years and over.....	47.1	39.1	32.4	39.0	42.7	42.5	13.8	18.2	25.2
White									
All ages, 20 years and over ⁵	27.7	22.3	20.0	46.3	44.4	42.7	26.0	33.3	37.3
20-24 years.....	32.3	27.5	27.5	50.8	52.8	50.5	16.9	19.7	22.1
25-34 years.....	22.8	22.1	18.9	51.1	46.5	47.6	26.1	31.4	33.6
35-44 years.....	21.3	17.2	13.4	44.8	40.4	41.9	33.9	42.5	44.8
45-64 years.....	24.6	16.2	17.3	45.4	43.3	36.9	30.0	40.4	45.8
65 years and over.....	44.6	37.5	29.0	40.3	42.2	44.0	15.1	20.4	27.0
Black									
All ages, 20 years and over ⁵	49.8	43.7	48.4	41.6	45.6	37.9	8.6	10.8	13.8
20-24 years.....	52.7	56.9	58.6	41.9	34.2	34.5	*5.3	*8.9	6.9
25-34 years.....	47.8	46.0	42.0	41.7	43.5	47.6	10.5	10.5	10.4
35-44 years.....	42.5	38.5	50.1	45.5	44.8	36.4	12.0	16.7	13.7
45-64 years.....	46.9	35.9	50.4	43.7	50.8	34.4	9.4	13.3	15.2
65 years and over.....	64.9	53.0	42.1	31.9	47.0	37.4	*3.2	*-	20.9
FEMALE									
Total ^{2,5}									
All ages, 20 years and over ⁵ ..	46.2	37.6	34.7	40.8	43.4	42.0	13.0	19.0	23.2
20-24 years.....	48.4	43.1	43.5	41.9	42.4	40.6	9.7	14.5	15.9
25-34 years.....	41.4	34.3	33.7	43.1	45.2	42.1	15.5	20.5	24.2
35-44 years.....	39.1	33.8	27.6	43.7	44.4	39.7	17.1	21.8	32.7
45-64 years.....	44.4	34.3	29.6	42.0	44.2	45.5	13.6	21.5	24.9
65 years and over.....	62.6	49.3	48.7	31.0	38.9	38.2	6.4	11.8	13.1
White									
All ages, 20 years and over ⁵	43.7	34.3	30.7	42.4	44.9	44.1	13.9	20.9	25.2
20-24 years.....	45.3	39.3	37.3	44.4	44.3	44.0	10.4	16.4	18.7
25-34 years.....	37.9	30.6	28.3	45.4	46.8	45.7	16.7	22.6	26.0
35-44 years.....	36.2	29.5	24.1	45.3	45.4	40.5	18.4	25.1	35.5
45-64 years.....	42.4	32.0	25.4	43.2	45.1	47.9	14.5	23.0	26.7
65 years and over.....	61.5	45.7	47.6	31.8	41.7	38.4	6.8	12.6	14.0

See footnotes at end of table.

Table 31. Cigarettes smoked per day by persons 20 years of age and over, according to sex, race, and age: United States, 1965, 1976, and 1980--Continued

(Data are based on household interviews of a sample of the civilian noninstitutionalized population)

Sex, race, and age	Cigarettes smoked per day								
	Less than 15			15-24			25 or more		
	1965	1976	1980 ¹	1965	1976	1980 ¹	1965	1976	1980 ¹
FEMALE--Continued									
Black									
Percent of current smokers ⁴									
All ages, 20 years and over ⁵	70.3	64.5	61.1	25.0	30.0	30.4	4.6	5.6	8.6
20-24 years.....	73.4	65.7	80.0	22.1	31.3	20.0	*4.5	*3.0	*-
25-34 years.....	66.2	58.8	59.9	25.1	33.6	22.9	8.7	*7.7	17.4
35-44 years.....	63.4	60.4	57.2	30.4	38.1	34.3	*6.2	*1.4	8.5
45-64 years.....	69.4	53.2	56.1	26.9	36.7	33.3	*3.6	10.1	10.7
65 years and over.....	83.2	100.0	62.7	*16.8	*-	37.3	*-	*-	*-

¹Final estimates. Based on data for the last 6 months of 1980.

²Base of percent excludes unknown amount smoked.

³Includes all other races not shown separately.

⁴A current smoker is a person who has smoked at least 100 cigarettes and who now smokes; includes occasional smokers.

⁵Age adjusted by the direct method to the 1970 civilian noninstitutionalized population using 5 age groups.

NOTE: Data in this table should not be compared with data in Health, United States, 1981 or Health, United States, 1982. The 1980 data in the 1981 edition were preliminary estimates, and the data in the 1982 edition were final estimates but did not include age-adjusted data.

SOURCE: Division of Health Interview Statistics, National Center for Health Statistics: Data from the National Health Interview Survey.

Table 32. Frequent use of marijuana, alcohol, and cigarettes by high school seniors, according to sex: United States, 1975-82

(Data are based on interviews of samples of high school seniors)

Sex and year	Marijuana	Alcohol	Cigarettes
Male			
Percent of high school seniors			
1975.....	8.1	8.6	19.6
1976.....	10.8	8.1	19.9
1977.....	12.4	8.6	19.7
1978.....	14.2	8.3	18.9
1979.....	12.7	9.6	15.4
1980.....	11.9	8.6	13.5
1981.....	9.6	3.5	12.8
1982.....	8.2	7.7	13.1
Female			
1975.....	4.0	3.0	16.1
1976.....	5.0	2.7	18.0
1977.....	5.6	3.6	18.9
1978.....	7.1	3.2	18.0
1979.....	7.3	4.0	17.1
1980.....	6.0	3.5	14.7
1981.....	4.2	3.3	13.8
1982.....	3.9	3.4	14.7

NOTE: For alcohol and marijuana, frequent use is defined as use on 20 or more occasions during the past 30 days; for cigarettes, it is smoking a half-pack or more per day during the past 30 days.

SOURCE: Johnston, L. D., Bachman, J. G., and O'Malley, P. M.: Student Drug Use, Attitudes and Beliefs. The University of Michigan Institute for Social Research. Research Grant No. 3 R01 DA 01411. Prepared for the National Institute on Drug Abuse, U.S. Department of Health and Human Services. Alcohol, Drug Abuse, and Mental Health Administration. Washington. U.S. Government Printing Office. To be published.

Table 33. Alcohol consumption status of persons 18 years of age and over, according to sex: United States, selected years 1971-79

(Data are based on interviews of samples of the noninstitutionalized population)

Sex and alcohol consumption	Year						
	1971	1972	1973	1974	1975	1976	1979
Total		Percent of persons					
Abstain.....	36	36	34	36	36	33	33
Light.....	34	32	29	28	31	38	34
Moderate.....	20	23	23	28	21	19	24
Heavy.....	10	10	14	11	12	10	9
Male							
Abstain.....	30	28	25	24	27	26	25
Light.....	29	29	24	24	27	33	29
Moderate.....	26	28	29	34	26	24	31
Heavy.....	15	15	22	18	20	18	14
Female							
Abstain.....	42	44	42	42	45	39	40
Light.....	40	34	35	32	35	44	38
Moderate.....	13	18	17	21	15	15	18
Heavy.....	5	4	6	5	4	3	4

NOTE: Alcohol consumption status is defined in ounces of absolute alcohol (ethanol) consumed per day as follows: abstain, 0; light, .01-.21; moderate, .22-.99; and heavy, 1.00 or more.

SOURCE: Clark, W. B., Midanik, L., and Knupfer, G.: Report on the 1979 National Survey. University of California. Contract No. ADM 281-77-0021. Prepared for the National Institute of Alcohol Abuse and Alcoholism. Rockville, Md., Dec. 1981.

Table 34. Persons 25-74 years of age with elevated blood pressure, according to race, sex, and age: United States, 1971-75 and 1976-80

(Data are based on physical examinations of a sample of the civilian noninstitutionalized population)

Sex and age	1971-1975			1976-1980		
	Total ¹	White	Black	Total ¹	White	Black
Both sexes						
Percent of population						
All ages, 25-74 years ²	18.2	16.4	33.6	14.8	13.8	24.6
25-34 years.....	5.7	4.8	*14.1	5.5	5.3	7.6
35-44 years.....	12.5	10.2	*29.1	9.9	8.5	19.6
45-54 years.....	20.1	18.1	38.3	17.8	16.5	30.7
55-64 years.....	28.6	26.4	51.5	21.7	20.2	37.6
65-74 years.....	34.2	33.1	45.0	26.6	25.5	36.5
Male						
All ages, 25-74 years ²	20.1	18.5	36.5	16.9	16.3	23.6
25-34 years.....	8.2	7.5	*16.4	8.7	8.4	11.7
35-44 years.....	16.3	14.0	*36.3	11.8	10.6	22.3
45-54 years.....	23.9	22.6	*36.7	20.9	21.2	23.0
55-64 years.....	28.0	25.2	58.6	23.7	22.3	39.2
65-74 years.....	31.8	30.8	*43.3	24.9	24.5	27.5
Female						
All ages, 25-74 years ²	16.4	14.5	31.4	12.9	11.3	25.5
25-34 years.....	*3.4	2.2	*12.4	2.6	2.3	4.3
35-44 years.....	9.0	*6.6	*23.8	8.2	6.5	17.6
45-54 years.....	16.6	13.9	39.7	14.9	12.1	37.3
55-64 years.....	29.2	27.6	45.6	20.0	18.3	36.4
65-74 years.....	36.0	34.9	46.3	27.9	26.3	43.4

¹Includes all other races not shown separately.

²Age adjusted by the direct method to the 1970 civilian noninstitutionalized population aged 25-74 years, using 5 age intervals.

NOTE: Elevated blood pressure includes readings of either systolic pressure of 160 mmHg or diastolic blood pressure of at least 95 mmHg or both. All blood pressures are the average of 3 measurements.

SOURCES: National Center for Health Statistics: Hypertension in adults 25-74 years of age, United States, 1971-1975, by J. Roberts and M. Rowland. *Vital and Health Statistics*. Series 11-No. 221. DHHS Pub. No. (PHS) 81-1671. Public Health Service. Washington. U.S. Government Printing Office, Apr. 1981; Blood pressure levels and hypertension in persons ages 6-74 years, United States, 1976-80, by M. Rowland and J. Roberts. *Advance Data From Vital and Health Statistics*, No. 84. DHHS Pub. No. (PHS) 82-1250. Public Health Service. Hyattsville, Md. Oct. 8, 1982.

Table 35. Air pollution, according to source and type of pollutant: United States, selected years 1970-81

(Data are calculated emissions estimates)

Type of pollutant and year	Source					
	All sources	Transportation	Stationary fuel combustion	Industrial processes	Solid waste	Other
Emissions in 10 ⁶ metric tons per year						
Particulate matter						
1970.....	17.9	1.2	4.4	10.1	1.1	1.1
1975.....	10.6	1.3	2.5	5.5	0.6	0.7
1976.....	10.0	1.4	2.3	4.9	0.4	1.0
1977.....	9.2	1.4	2.2	4.4	0.4	0.8
1978.....	9.3	1.5	2.2	4.4	0.4	0.8
1979.....	9.1	1.4	2.2	4.2	0.4	0.9
1980.....	8.7	1.4	2.1	3.7	0.4	1.1
1981.....	8.5	1.4	2.1	3.7	0.4	0.9
Sulfur oxides						
1970.....	28.4	0.6	21.3	6.4	(1)	0.1
1975.....	25.6	0.6	20.2	4.8	(1)	(1)
1976.....	26.4	0.8	20.9	4.7	(1)	(1)
1977.....	26.0	0.8	20.8	4.4	(1)	(1)
1978.....	24.7	0.8	19.7	4.2	(1)	(1)
1979.....	24.5	0.9	19.3	4.3	(1)	(1)
1980.....	23.4	0.9	18.8	3.7	(1)	(1)
1981.....	22.5	0.8	17.8	3.9	(1)	(1)
Nitrogen oxides						
1970.....	17.6	7.1	9.1	0.7	0.4	0.3
1975.....	18.6	8.4	9.3	0.7	0.1	0.1
1976.....	19.8	8.8	10.0	0.7	0.1	0.2
1977.....	20.3	8.9	10.4	0.7	0.1	0.2
1978.....	20.5	9.2	10.3	0.7	0.1	0.2
1979.....	20.5	9.0	10.5	0.7	0.1	0.2
1980.....	19.8	8.7	10.1	0.7	0.1	0.2
1981.....	19.5	8.5	10.1	0.6	0.1	0.2
Hydrocarbons						
1970.....	27.2	11.8	0.6	9.8	1.8	3.2
1975.....	23.2	10.1	0.6	9.3	0.9	2.3
1976.....	24.2	10.2	0.6	10.0	0.8	2.6
1977.....	24.4	9.9	0.7	10.5	0.8	2.5
1978.....	25.0	9.7	0.7	11.4	0.8	2.4
1979.....	24.4	8.9	0.8	11.4	0.7	2.6
1980.....	23.0	8.2	0.9	10.7	0.6	2.6
1981.....	21.3	7.7	0.9	9.8	0.6	2.3
Carbon monoxide						
1970.....	112.8	86.4	4.0	9.0	6.4	7.0
1975.....	100.2	81.7	3.8	6.8	3.1	4.8
1976.....	104.8	83.7	4.3	7.0	2.7	7.1
1977.....	102.5	82.4	4.6	7.1	2.6	5.8
1978.....	101.7	81.4	5.1	7.0	2.5	5.7
1979.....	98.2	76.8	5.8	6.8	2.3	6.5
1980.....	95.0	72.8	6.2	6.2	2.2	7.6
1981.....	90.5	69.5	6.3	6.2	2.1	6.4

¹Emissions of less than 50,000 metric tons per year.NOTE: Because of modifications in methodology and use of more refined emission factors, data from this table should not be compared with data in Health, United States, 1982.SOURCE: Monitoring and Data Analysis Division: National Air Pollutant Emission Estimates, 1970-1981. EPA-450/4-82-012. U.S. Environmental Protection Agency. Research Triangle Park, N.C., Sept. 1982.

Table 36. Physician visits, according to source or place of care and selected patient characteristics:
United States, 1964, 1976, and 1981

(Data are based on household interviews of a sample of the civilian noninstitutionalized population)

Selected characteristic	Physician visits											
	All sources or places ¹			Doctor's office or clinic or group practice			Hospital outpatient department ²			Telephone		
	1964	1976	1981	1964	1976	1981	1964	1976	1981	1964	1976	1981
	Number per person						Percent of visits					
Total ^{3,4,5}	4.6	4.9	4.6	69.7	67.3	68.6	12.2	13.2	13.3	11.0	12.6	12.2
Age												
Under 17 years.....	3.7	4.0	4.1	62.2	64.5	64.4	13.7	13.3	13.3	18.3	17.0	16.8
Under 6 years.....	5.3	6.3	6.4	59.4	61.0	61.6	14.1	12.8	12.5	20.9	20.5	20.0
6-16 years.....	2.7	3.0	3.0	65.6	67.7	67.5	13.2	13.7	14.2	15.2	13.8	13.2
17-44 years.....	4.6	4.7	4.2	73.8	67.7	69.5	13.0	13.1	13.6	8.1	11.0	10.7
45-64 years.....	5.0	5.7	5.1	76.8	68.5	71.3	10.0	15.0	14.1	6.1	9.9	8.9
65 years and over.....	6.7	6.9	6.3	64.2	72.9	73.8	8.5	9.5	10.6	8.2	9.9	9.6
Sex ³												
Male.....	4.0	4.3	4.1	69.9	66.4	67.5	13.2	15.2	15.7	9.3	10.6	10.3
Female.....	5.1	5.4	5.1	69.5	67.8	69.3	11.4	11.9	11.7	12.2	13.9	13.4
Race ^{3,6}												
White.....	4.7	4.9	4.6	71.0	68.6	70.2	10.2	11.3	11.1	11.7	13.6	13.3
Black ⁷	3.6	4.8	4.7	56.2	56.7	57.3	32.7	27.9	27.6	4.2	5.8	5.4
Family income ^{3,8}												
Less than \$7,000.....	3.9	5.6	5.6	62.0	58.5	59.1	25.9	20.1	21.7	4.8	10.3	10.9
\$7,000-\$9,999.....	4.2	4.8	4.9	65.2	62.4	66.0	22.3	19.3	15.6	6.6	8.4	12.1
\$10,000-\$14,999.....	4.7	4.8	4.5	69.5	67.6	67.2	11.1	14.9	14.4	11.7	10.8	12.5
\$15,000-\$24,999.....	4.8	4.9	4.5	71.5	68.4	69.5	7.4	13.4	10.8	13.8	13.1	13.9
\$25,000 or more.....	5.2	4.9	4.4	72.9	70.4	73.0	6.7	8.9	10.3	12.9	14.6	12.2
Geographic region ³												
Northeast.....	4.5	4.9	4.6	67.2	62.5	65.7	10.1	15.8	14.7	11.5	13.0	12.7
North Central.....	4.4	4.7	4.5	72.2	69.5	70.2	10.6	11.4	12.2	11.7	14.3	13.5
South.....	4.3	4.7	4.5	68.9	68.1	67.4	14.0	13.3	13.1	11.0	10.9	11.9
West.....	5.5	5.4	4.8	70.9	68.7	71.6	14.3	12.7	13.8	9.5	12.7	10.4
Location of residence ³												
Within SMSA.....	4.8	5.1	4.7	68.2	65.8	67.5	12.3	13.8	13.6	12.1	13.4	12.8
Outside SMSA.....	4.1	4.5	4.4	72.9	70.9	71.0	11.9	11.8	12.7	8.8	10.8	10.8

¹Includes all other sources or places of care not shown separately.

²Includes hospital outpatient clinic or emergency room.

³Age adjusted by the direct method to the 1970 civilian noninstitutionalized population, using 4 age intervals.

⁴Includes all other races not shown separately.

⁵Includes unknown family income.

⁶In 1964 and 1976, the racial classification of persons in the National Health Interview Survey was determined by interviewer observation. In 1981, race was determined by asking the household respondent.

⁷1964 data are for all other races.

⁸Family income categories for 1981. Adjusting for inflation, corresponding income categories in 1964 were: less than \$2,000; \$2,000-\$3,999; \$4,000-\$6,999; \$7,000-\$9,999; and \$10,000 or more; and, in 1976 were: less than \$5,000; \$5,000-\$6,999; \$7,000-\$9,999; \$10,000-\$14,999; and \$15,000 or more.

SOURCE: Division of Health Interview Statistics, National Center for Health Statistics: Data from the National Health Interview Survey.

Table 37. Interval since last physician visit, according to selected patient characteristics: United States, 1964, 1976, and 1981

(Data are based on household interviews of a sample of the civilian noninstitutionalized population)

Selected characteristic	Interval since last physician visit								
	Less than 1 year			1 year-less than 2 years			2 years or more		
	1964	1976	1981	1964	1976	1981	1964	1976	1981
	Percent of population								
Total ^{1,2,3}	66.0	75.4	74.5	13.8	10.8	11.2	17.6	12.8	13.2
Age									
Under 17 years.....	67.0	74.2	76.2	14.8	13.7	13.2	14.7	10.8	9.4
Under 6 years.....	79.1	88.9	89.1	11.4	7.1	7.0	6.4	2.6	2.4
6-16 years.....	59.6	67.6	69.4	16.9	16.8	16.5	19.7	14.5	13.1
17-44 years.....	65.9	75.4	72.1	14.7	10.9	11.9	17.2	12.8	14.9
45-64 years.....	63.5	75.2	73.5	12.8	8.4	9.4	21.8	15.5	16.2
65 years and over.....	68.8	80.0	80.2	9.2	5.9	6.0	20.3	13.6	13.3
Sex ¹									
Male.....	62.4	71.2	70.4	14.7	11.9	12.1	19.7	15.6	16.2
Female.....	69.3	79.2	78.3	13.0	9.8	10.4	15.8	10.1	10.4
Race ^{1,4}									
White.....	67.3	75.7	74.6	13.7	10.7	11.1	17.0	12.6	13.4
Black ⁵	57.0	73.9	75.0	14.6	11.2	12.0	21.8	13.3	11.4
Family income ^{1,6}									
Less than \$7,000.....	57.5	75.7	76.3	12.9	9.6	9.8	23.3	13.4	12.6
\$7,000-\$9,999.....	61.6	72.5	73.4	14.0	11.4	10.8	20.8	15.1	14.5
\$10,000-\$14,999.....	66.3	73.9	73.5	14.3	10.8	10.7	17.6	14.5	15.0
\$15,000-\$24,999.....	69.7	75.3	74.4	13.9	10.7	11.5	15.2	13.0	13.5
\$25,000 or more.....	73.0	77.7	76.1	12.8	10.9	11.1	13.2	10.8	11.9
Geographic region ¹									
Northeast.....	67.5	76.5	75.9	14.0	10.8	10.8	17.3	11.7	12.4
North Central.....	65.9	75.7	75.0	14.0	10.6	11.0	18.4	12.9	13.0
South.....	64.0	73.9	73.5	13.6	11.4	11.8	17.9	13.5	13.5
West.....	68.4	76.4	73.7	13.5	10.2	11.1	16.2	12.4	14.0
Location of residence ¹									
Within SMSA.....	67.5	76.4	75.2	13.7	10.5	11.1	16.9	12.1	12.7
Outside SMSA.....	63.5	73.4	72.9	14.0	11.6	11.6	18.9	14.2	14.4

¹Age adjusted by the direct method to the 1970 civilian noninstitutionalized population, using 4 age intervals.

²Includes all other races not shown separately.

³Includes unknown family income.

⁴In 1964 and 1976, the racial classification of persons in the National Health Interview Survey was determined by interviewer observation. In 1981, race was determined by asking the household respondent.

⁵1964 data are for all other races.

⁶Family income categories for 1981. Adjusting for inflation, corresponding income categories in 1964 were: less than \$2,000; \$2,000-\$3,999; \$4,000-\$6,999; \$7,000-\$9,999; and \$10,000 or more; and, in 1976 were: less than \$5,000; \$5,000-\$6,999; \$7,000-\$9,999; \$10,000-\$14,999; and \$15,000 or more.

SOURCE: Division of Health Interview Statistics, National Center for Health Statistics: Data from the National Health Interview Survey.

Table 38. Office visits to physicians, according to physician specialty and selected patient characteristics: United States, 1976 and 1981

(Data are based on reporting by a sample of office-based physicians)

Selected characteristic	Specialty											
	All specialties ¹		General and family practice		Internal medicine		Obstetrics and gynecology		Pediatrics		General surgery	
	1976	1981	1976	1981	1976	1981	1976	1981	1976	1981	1976	1981
	Visits per person											
Total ²	2.78	2.59	1.06	0.83	0.31	0.32	0.22	0.22	0.33	0.36	0.17	0.14
Age												
Under 15 years.....	2.11	2.10	0.62	0.52	0.03	0.03	0.02	0.01	1.06	1.16	0.06	0.04
15-44 years.....	2.59	2.26	1.01	0.75	0.22	0.19	0.44	0.45	0.05	0.05	0.16	0.14
45-64 years.....	3.36	3.10	1.41	1.11	0.60	0.64	0.13	0.12	0.01	0.01	0.26	0.23
65 years and over.....	4.33	4.34	1.84	1.48	0.96	1.04	0.07	0.06	0.01	0.01	0.31	0.27
Sex ²												
Male.....	2.34	2.19	0.90	0.71	0.28	0.28	0.01	0.00	0.34	0.36	0.16	0.13
Female.....	3.18	2.95	1.20	0.93	0.34	0.35	0.42	0.42	0.32	0.35	0.18	0.15
Race ²												
White.....	2.87	2.67	1.07	0.84	0.32	0.32	0.22	0.22	0.35	0.37	0.17	0.14
All other.....	2.19	2.12	0.95	0.79	0.24	0.32	0.19	0.17	0.23	0.33	0.15	0.15

¹Includes other specialties not shown separately.²Age adjusted by the direct method to the 1970 civilian noninstitutionalized population, using 4 age intervals.

NOTE: Rates are based on the civilian noninstitutionalized population, excluding Alaska and Hawaii.

SOURCE: Division of Health Care Statistics, National Center for Health Statistics: Data from the National Ambulatory Medical Care Survey.

Table 39. Office visits to physicians, according to selected characteristics: United States, 1976 and 1981

(Data are based on reporting by a sample of office-based physicians)

Selected characteristic	Office visit					
	Patient's first visit		Visit lasted 10 minutes or less ¹		Return visit scheduled	
	1976	1981	1976	1981	1976	1981
	Percent of visits					
Total ²	14.6	14.3	49.9	47.1	59.3	58.7
Age						
Under 15 years.....	13.2	13.8	58.4	55.4	49.7	49.5
15-44 years.....	18.7	17.7	50.3	47.5	60.1	58.8
45-64 years.....	11.8	11.2	41.7	39.2	65.2	65.3
65 years and over.....	7.5	8.6	40.3	37.0	72.1	72.1
Sex ²						
Male.....	16.8	15.7	49.8	46.6	56.9	56.1
Female.....	13.5	13.8	49.9	47.3	60.4	60.2
Race ²						
White.....	14.2	14.1	49.4	46.7	59.3	58.4
All other.....	17.6	15.8	54.3	49.4	59.2	61.4
Location of physician's office ²						
Within SMSA.....	15.0	14.9	47.1	45.4	61.3	60.4
Outside SMSA.....	13.4	12.8	58.1	52.1	53.9	53.6

¹Time spent in face-to-face contact between physician and patient.²Age adjusted by the direct method to the 1970 civilian noninstitutionalized population, using 4 age intervals.

NOTE: Rates are based on the civilian noninstitutionalized population, excluding Alaska and Hawaii.

SOURCE: Division of Health Care Statistics, National Center for Health Statistics: Data from the National Ambulatory Medical Care Survey.

Table 40. Dental visits and interval since last visit, according to selected patient characteristics: United States, 1964, 1976, and 1981

Selected characteristic	Interval since last dental visit																	
	Dental visits			Interval since last dental visit									Never visited dentist					
	1964	1976	1981	Less than 1 year			1 year-less than 2 years			2 years or more			1964	1976	1981			
	Number per person						Percent of population											
Total ^{1,2,3}	1.6	1.6	1.7	42.0	48.7	50.0	12.8	13.0	13.3	28.1	26.4	24.8	15.6	10.8	10.9			
Age																		
Under 17 years.....	1.4	1.5	1.6	41.6	50.1	50.0	9.1	10.8	10.8	6.3	8.3	8.0	42.6	29.9	30.4			
Under 6 years.....	0.5	0.5	0.6	16.5	21.2	21.7	2.3	3.5	3.5	0.6	0.7	1.0	80.4	74.2	73.4			
6-16 years.....	2.0	1.9	2.2	56.9	63.2	64.7	13.2	14.1	14.5	9.8	11.7	11.6	19.6	10.0	8.1			
17-44 years.....	1.9	1.7	1.7	50.0	53.7	54.2	17.2	16.8	17.3	27.8	26.2	25.1	3.2	2.1	1.9			
45-64 years.....	1.7	1.8	1.8	38.4	46.5	49.6	13.1	12.3	12.5	45.5	39.3	36.2	1.3	0.8	0.6			
65 years and over.....	0.8	1.2	1.5	20.8	29.7	34.6	7.7	8.0	8.0	66.8	60.9	56.1	1.5	0.7	0.5			
Sex ¹																		
Male.....	1.4	1.5	1.6	40.0	46.7	47.9	13.0	13.2	13.6	28.8	27.8	26.1	16.1	11.2	11.2			
Female.....	1.7	1.7	1.8	43.9	50.6	52.0	12.5	12.9	12.9	27.6	25.1	23.5	15.1	10.6	10.6			
Race ^{1,4}																		
White.....	1.7	1.7	1.8	44.7	51.0	52.2	12.9	12.7	12.9	27.3	25.4	23.7	13.8	9.9	10.2			
Black ⁵	0.9	0.9	1.1	22.8	32.8	35.5	11.7	15.3	15.0	35.3	34.4	33.1	27.1	16.0	14.3			
Family income ^{1,6}																		
Less than \$7,000.....	0.9	1.1	1.1	25.8	36.1	37.0	10.7	12.8	13.5	34.6	33.6	33.3	27.0	16.7	15.5			
\$7,000-\$9,999.....	0.9	1.2	1.3	29.2	36.6	37.3	12.5	14.3	14.5	34.3	33.2	32.8	22.0	15.1	14.3			
\$10,000-\$14,999.....	1.4	1.3	1.4	39.1	40.6	42.3	13.7	13.0	14.0	30.0	31.6	30.0	16.1	13.9	12.9			
\$15,000-\$24,999.....	1.9	1.4	1.7	49.6	46.5	50.1	13.4	14.2	14.0	24.9	27.3	24.4	11.0	11.2	10.7			
\$25,000 or more.....	2.8	2.1	2.2	63.3	60.8	63.5	12.2	12.4	12.0	16.6	18.9	16.2	7.0	6.8	7.3			
Geographic region ¹																		
Northeast.....	2.1	1.8	2.0	47.9	54.0	55.2	12.7	12.0	12.7	25.7	24.4	22.4	12.7	8.6	8.7			
North Central.....	1.6	1.6	1.7	44.0	51.0	52.2	13.0	12.8	12.7	28.8	26.0	24.6	13.0	9.6	9.6			
South.....	1.2	1.3	1.5	35.0	42.6	44.7	12.0	13.3	13.3	30.0	29.5	28.1	20.8	13.5	12.7			
West.....	1.8	1.8	1.7	43.3	50.0	50.3	13.8	14.2	14.7	27.5	23.9	22.0	14.5	10.7	11.8			

See footnotes at end of table.

Table 40. Dental visits and interval since last visit, according to selected patient characteristics: United States, 1964, 1976, and 1981--Continued

(Data are based on household interviews of a sample of the civilian noninstitutionalized population)

Selected characteristic	Dental visits			Interval since last dental visit									Never visited dentist		
				Less than 1 year			1 year-less than 2 years			2 years or more					
	1964	1976	1981	1964	1976	1981	1964	1976	1981	1964	1976	1981	1964	1976	1981
Location of residence ¹	Number per person						Percent of population								
Within SMSA.....	1.8	1.7	1.8	44.5	51.0	52.0	13.1	13.0	13.3	26.8	24.6	23.0	14.3	10.3	10.5
Outside SMSA.....	1.2	1.3	1.4	37.8	43.7	45.9	12.1	13.0	13.0	30.5	30.3	28.5	17.9	12.1	11.6

¹Age adjusted by the direct method to the 1970 civilian noninstitutionalized population, using 4 age intervals.

²Includes all other races not shown separately.

³Includes unknown family income.

⁴In 1964 and 1976, the racial classification of persons in the National Health Interview Survey was determined by interviewer observation. In 1981, race was determined by asking the household respondent.

⁵1964 data are for all other races.

⁶Family income categories for 1981. Adjusting for inflation, corresponding income categories in 1964 were: less than \$2,000; \$2,000-\$3,999; \$4,000-\$6,999; \$7,000-\$9,999; and \$10,000 or more; and, in 1976 were: less than \$5,000; \$5,000-\$6,999; \$7,000-\$9,999; \$10,000-\$14,999; and \$15,000 or more.

SOURCE: Division of Health Interview Statistics, National Center for Health Statistics: Data from the National Health Interview Survey.

Table 41. Admissions, average length of stay, and outpatient visits in short-stay hospitals,¹ according to type of ownership: United States, selected years 1960-81

(Data are based on reporting by a census of hospitals)

Type of ownership	Year								
	1960	1970	1975	1976	1977	1978	1979	1980	1981
Admissions									
	Number in thousands								
All ownerships.....	24,324	30,706	35,270	35,901	36,227	36,433	37,034	38,140	38,417
Federal.....	1,354	1,454	1,751	1,832	1,874	1,858	1,874	1,942	1,923
Non-Federal.....	22,970	29,252	33,519	34,068	34,353	34,575	35,160	36,198	36,494
Nonprofit.....	16,788	20,948	23,735	24,098	24,284	24,443	24,885	25,576	25,955
Proprietary.....	1,550	2,031	2,646	2,734	2,849	2,880	2,963	3,165	3,239
State-local government.....	4,632	6,273	7,138	7,237	7,220	7,253	7,312	7,458	7,299
Average length of stay									
	Number of days								
All ownerships.....	8.4	8.7	8.0	8.0	7.9	7.9	7.8	7.8	7.9
Federal.....	21.4	17.0	14.4	13.2	12.9	13.2	12.8	12.9	12.5
Non-Federal.....	7.6	8.2	7.7	7.7	7.6	7.6	7.6	7.6	7.6
Nonprofit.....	7.4	8.2	7.8	7.9	7.8	7.8	7.7	7.7	7.8
Proprietary.....	5.7	6.8	6.6	6.6	6.6	6.5	6.6	6.5	6.6
State-local government.....	8.8	8.7	7.6	7.5	7.4	7.4	7.4	7.4	7.6
Outpatient visits									
	Number in thousands								
All ownerships.....	---	173,058	245,938	261,278	254,483	253,896	252,461	255,320	257,254
Federal.....	---	39,514	49,627	53,553	50,245	47,434	48,587	48,568	50,524
Non-Federal.....	---	133,545	196,311	207,725	204,238	206,461	203,873	206,752	206,729
Nonprofit.....	---	90,992	132,368	141,781	139,045	142,617	140,525	142,864	143,953
Proprietary.....	---	4,698	7,713	8,048	8,355	8,911	9,289	9,696	9,961
State-local government.....	---	37,854	56,230	57,896	56,838	54,933	54,060	54,192	52,816

¹Excludes psychiatric and tuberculosis and other respiratory disease hospitals.

SOURCES: American Hospital Association: Hospitals. JAHA 35(15):396-401 and 45(15):463-467, Aug. 1961 and Aug. 1971; Hospital Statistics, 1976-82 Editions. Chicago, 1976-82. (Copyrights 1961, 1971, 1976-82: Used with the permission of the American Hospital Association.)

Table 42. Discharges from and days of care in non-Federal short-stay hospitals, according to sex, age, and selected first-listed diagnosis: United States, 1979 and 1981

(Data are based on a sample of hospital records)

Sex, age, and first-listed diagnosis	Discharges		Days of care	
	1979	1981	1979	1981
Both sexes ¹				
Number per 1,000 population				
Total ²	156.9	160.2	1,111.0	1,134.0
Females with delivery.....	14.6	15.1	54.6	55.9
Diseases of heart.....	12.8	13.5	121.2	123.5
Malignant neoplasms.....	7.3	8.0	89.5	92.1
Fracture, all sites.....	5.0	4.7	51.1	48.4
Cerebrovascular diseases.....	3.0	3.1	36.9	38.7
Pneumonia, all forms.....	3.5	3.4	26.5	27.9
Male ¹				
All ages ²	137.6	141.0	1,050.6	1,075.4
Diseases of heart.....	15.6	16.5	144.0	145.4
Malignant neoplasms.....	8.0	8.3	98.5	99.0
Fracture, all sites.....	5.5	5.1	48.7	44.5
Inguinal hernia.....	4.0	4.0	19.6	18.1
Pneumonia, all forms.....	4.0	3.8	30.5	31.1
Cerebrovascular diseases.....	3.2	3.4	38.6	40.3
Under 15 years ²	78.1	80.2	342.6	366.9
Acute respiratory infection.....	6.4	5.6	24.2	21.2
Chronic disease of tonsils and adenoids.....	6.0	5.4	10.1	9.1
Otitis media and eustachian tube disorders.....	4.0	4.0	9.1	9.4
Congenital anomalies.....	3.7	4.5	21.4	27.3
Fracture, all sites.....	3.9	3.8	21.3	21.3
15-44 years ²	93.4	89.8	592.8	570.3
Fracture, all sites.....	6.3	5.8	48.7	45.9
Alcohol dependence syndrome.....	3.5	3.7	34.6	36.1
Lacerations and open wounds.....	3.7	3.2	16.9	16.5
Psychoses.....	3.3	3.4	44.1	48.7
Diseases of heart.....	3.0	2.9	22.2	18.9
45-64 years ²	190.6	194.1	1,541.2	1,526.0
Diseases of heart.....	33.4	34.9	285.4	280.4
Malignant neoplasms.....	13.8	14.3	158.8	153.2
Inguinal hernia.....	6.3	6.3	33.9	29.7
Alcohol dependence syndrome.....	6.6	6.0	57.6	61.1
Diabetes.....	4.0	4.7	38.6	44.4
65 years and over ²	389.5	426.8	4,067.9	4,382.2
Diseases of heart.....	75.7	82.2	774.0	813.0
Malignant neoplasms.....	45.6	47.5	586.6	609.8
Cerebrovascular diseases.....	23.2	23.8	291.8	293.0
Hyperplasia of prostate.....	15.7	17.1	163.5	160.1
Pneumonia, all forms.....	12.8	13.4	138.5	156.6

See footnotes at end of table.

Table 42. Discharges from and days of care in non-Federal short-stay hospitals, according to sex, age, and selected first-listed diagnosis: United States, 1979 and 1981--Continued

(Data are based on a sample of hospital records)

Sex, age, and first-listed diagnosis	Discharges		Days of care	
	1979	1981	1979	1981
Female ¹				
Number per 1,000 population				
All ages ²	176.1	179.5	1,173.0	1,196.1
Delivery.....	28.6	29.7	107.4	110.2
Diseases of heart.....	10.4	10.9	101.9	105.1
Malignant neoplasms.....	6.9	7.9	83.9	88.8
Fracture, all sites.....	4.4	4.2	50.3	48.8
Pregnancy with abortive outcome.....	4.2	3.9	9.2	8.6
Benign neoplasms.....	4.1	3.7	25.3	22.8
Under 15 years ²	63.1	65.2	268.5	306.0
Chronic disease of tonsils and adenoids.....	6.5	6.0	12.4	10.5
Acute respiratory infection.....	5.1	4.4	18.7	16.3
Pneumonia, all forms.....	4.2	4.0	21.4	20.1
Otitis media and eustachian tube disorders.....	3.0	2.8	6.5	6.9
Congenital anomalies.....	2.4	2.9	12.8	14.3
15-44 years ²	208.2	205.8	986.4	962.7
Delivery.....	69.5	72.5	260.3	269.0
Pregnancy with abortive outcome.....	10.2	9.5	22.3	20.5
Disorders of menstruation.....	6.8	6.0	21.9	20.2
Inflammatory disease of female pelvic organs.....	5.2	5.1	27.0	26.5
Benign neoplasms.....	5.2	4.5	27.6	24.0
Persons admitted for sterilization.....	4.9	4.1	10.9	8.5
45-64 years ²	194.0	196.4	1,601.4	1,598.5
Diseases of heart.....	17.6	18.0	155.4	157.8
Malignant neoplasms.....	15.5	18.0	179.9	191.2
Benign neoplasms.....	6.9	6.3	46.3	41.6
Disorders of menstruation.....	4.0	3.6	15.4	12.9
Diabetes.....	5.7	6.0	55.8	59.0
65 years and over ²	342.5	376.0	3,767.6	4,002.5
Diseases of heart.....	61.1	66.8	661.5	695.8
Malignant neoplasms.....	28.1	30.6	390.0	395.6
Cerebrovascular diseases.....	21.3	21.8	274.3	291.5
Diabetes.....	10.6	10.4	135.0	119.5
Pneumonia, all forms.....	8.4	10.3	91.4	116.5

¹Age adjusted by the direct method to the 1970 civilian noninstitutionalized population, using 4 age intervals.

²Includes all diagnoses.

NOTES: Rates are based on the civilian population. Diagnostic categories are based on the International Classification of Diseases, 9th Revision, Clinical Modification. For a listing of the code numbers, see Appendix II.

SOURCE: Division of Health Care Statistics, National Center for Health Statistics: Data from the National Hospital Discharge Survey.

Table 43. Discharges from, days of care, and average length of stay in non-Federal short-stay hospitals, according to sex, age, and selected first-listed diagnosis: United States, 1979 and 1981

(Data are based on a sample of hospital records)

Sex, age, and first-listed diagnosis	Discharges		Days of care		Average length of stay		
	1979	1981	1979	1981	1979	1981	
Both sexes ¹		Number in thousands				Number of days	
Total ²	36,747	38,544	264,173	277,230	7.2	7.2	
Females with delivery.....	3,646	3,913	13,665	14,515	3.7	3.7	
Diseases of heart.....	3,065	3,339	29,378	30,926	9.6	9.3	
Malignant neoplasms.....	1,745	1,949	21,496	22,765	12.3	11.7	
Fracture, all sites.....	1,180	1,138	12,366	12,082	10.5	10.6	
Cerebrovascular diseases.....	747	806	9,226	10,014	12.4	12.4	
Pneumonia, all forms.....	756	769	6,021	6,597	8.0	8.6	
Male ¹							
All ages ²	14,705	15,379	112,504	117,789	7.7	7.7	
Diseases of heart.....	1,640	1,773	15,112	15,619	9.2	8.8	
Malignant neoplasms.....	846	901	10,385	10,741	12.3	11.9	
Fracture, all sites.....	609	574	5,359	5,043	8.8	8.8	
Inguinal hernia.....	427	430	2,089	1,962	4.9	4.6	
Pneumonia, all forms.....	403	384	3,130	3,284	7.8	8.6	
Cerebrovascular diseases.....	335	368	4,060	4,376	12.1	11.9	
Under 15 years ²	2,053	2,101	9,008	9,611	4.4	4.6	
Acute respiratory infection.....	169	148	637	557	3.8	3.8	
Chronic disease of tonsils and adenoids.....	158	141	265	239	1.7	1.7	
Otitis media and eustachian tube disorders.....	106	106	239	246	2.3	2.3	
Congenital anomalies.....	98	118	564	716	5.7	6.1	
Fracture, all sites.....	103	101	559	557	5.4	5.5	
15-44 years ²	4,680	4,672	29,713	29,685	6.3	6.4	
Fracture, all sites.....	315	304	2,439	2,389	7.8	7.9	
Alcohol dependence syndrome.....	177	190	1,736	1,878	9.8	9.9	
Lacerations and open wounds.....	184	167	847	859	4.6	5.1	
Psychoses.....	165	175	2,212	2,533	13.4	14.5	
Diseases of heart.....	153	153	1,112	984	7.3	6.4	
45-64 years ²	4,017	4,098	32,482	32,216	8.1	7.9	
Diseases of heart.....	704	737	6,015	5,920	8.5	8.0	
Malignant neoplasms.....	291	302	3,347	3,235	11.5	10.7	
Inguinal hernia.....	132	133	714	627	5.4	4.7	
Alcohol dependence syndrome.....	139	127	1,213	1,291	8.7	10.2	
Diabetes.....	85	100	813	937	9.6	9.4	
65 years and over ²	3,955	4,507	41,302	46,276	10.4	10.3	
Diseases of heart.....	769	868	7,858	8,586	10.2	9.9	
Malignant neoplasms.....	463	502	5,955	6,440	12.9	12.8	
Cerebrovascular diseases.....	235	252	2,963	3,094	12.6	12.3	
Hyperplasia of prostate.....	159	181	1,660	1,691	10.4	9.3	
Pneumonia, all forms.....	130	141	1,407	1,654	10.8	11.7	

See footnotes at end of table.

Table 43. Discharges from, days of care, and average length of stay in non-Federal short-stay hospitals, according to sex, age, and selected first-listed diagnosis: United States, 1979 and 1981--Continued

(Data are based on a sample of hospital records)

Sex, age, and first-listed diagnosis	Discharges		Days of care		Average length of stay	
	1979	1981	1979	1981	1979	1981
Female ¹		Number in thousands		Number of days		
All ages ²	22,042	23,165	151,669	159,441	6.9	6.9
Delivery.....	3,646	3,913	13,665	14,515	3.7	3.7
Diseases of heart.....	1,425	1,566	14,266	15,307	10.0	9.8
Malignant neoplasms.....	899	1,047	11,111	12,024	12.4	11.5
Fracture, all sites.....	571	564	7,007	7,039	12.3	12.5
Pregnancy with abortive outcome.....	536	516	1,172	1,122	2.2	2.2
Benign neoplasms.....	509	475	3,146	2,927	6.2	6.2
Under 15 years ²	1,588	1,632	6,757	7,659	4.3	4.7
Chronic disease of tonsils and adenoids.....	162	151	312	264	1.9	1.8
Acute respiratory infection.....	128	110	471	409	3.7	3.7
Pneumonia, all forms.....	105	99	539	504	5.1	5.1
Otitis media and eustachian tube disorders.....	75	69	165	172	2.2	2.5
Congenital anomalies.....	62	72	322	358	5.2	5.0
15-44 years ²	10,808	11,053	51,200	51,694	4.7	4.7
Delivery.....	3,607	3,894	13,514	14,445	3.7	3.7
Pregnancy with abortive outcome.....	528	509	1,158	1,099	2.2	2.2
Disorders of menstruation.....	350	320	1,138	1,087	3.2	3.4
Inflammatory disease of female pelvic organs...	272	274	1,403	1,424	5.2	5.2
Benign neoplasms.....	270	243	1,432	1,287	5.3	5.3
Persons admitted for sterilization.....	254	222	566	454	2.2	2.0
45-64 years ²	4,515	4,579	37,273	37,276	8.3	8.1
Diseases of heart.....	410	420	3,617	3,680	8.8	8.8
Malignant neoplasms.....	360	420	4,188	4,458	11.6	10.6
Benign neoplasms.....	161	147	1,078	970	6.7	6.6
Disorders of menstruation.....	94	84	359	300	3.8	3.6
Diabetes.....	132	139	1,299	1,377	9.9	9.9
65 years and over ²	5,131	5,901	56,438	62,812	11.0	10.6
Diseases of heart.....	916	1,048	9,910	10,920	10.8	10.4
Malignant neoplasms.....	421	479	5,842	6,208	13.9	12.9
Cerebrovascular diseases.....	319	342	4,109	4,574	12.9	13.4
Diabetes.....	159	164	2,022	1,875	12.8	11.4
Pneumonia, all forms.....	126	161	1,370	1,828	10.9	11.3

¹Age adjusted by the direct method to the 1970 civilian population, using 4 age intervals.

²Includes all diagnoses.

NOTE: Diagnostic categories are based on the International Classification of Diseases, 9th Revision, Clinical Modification. For a listing of the code numbers, see Appendix II.

SOURCE: Division of Health Care Statistics, National Center for Health Statistics: Data from the National Hospital Discharge Survey.

Table 44. Discharges from, days of care, and average length of stay in non-Federal short-stay hospitals for all patients and for patients with surgery, according to selected characteristics: United States, 1979 and 1981

(Data are based on a sample of hospital records)

Selected characteristic	Discharges				Days of care				Average length of stay			
	All patients		Patients with surgery		All patients		Patients with surgery		All patients		Patients with surgery	
	1979	1981	1979	1981	1979	1981	1979	1981	1979	1981	1979	1981
	Number per 1,000 population								Number of days			
Total ^{1,2}	156.9	160.2	64.0	66.1	1,111.0	1,134.0	471.6	484.2	7.1	7.1	7.4	7.3
Age												
Under 15 years.....	70.8	72.9	27.0	27.1	306.4	337.1	112.2	124.2	4.3	4.6	4.2	4.6
15-44 years.....	151.8	148.7	70.6	69.8	793.0	769.6	375.2	362.0	5.2	5.2	5.3	5.2
45-64 years.....	192.4	195.3	78.5	82.2	1,572.8	1,564.0	691.9	700.8	8.2	8.0	8.8	8.5
65 years and over.....	361.5	396.5	116.6	132.7	3,888.8	4,155.3	1,487.7	1,620.6	10.8	10.5	12.8	12.2
Bed size ²												
6-99 beds.....	29.9	28.6	8.0	8.0	174.1	165.2	44.9	45.0	5.8	5.8	5.6	5.6
100-199 beds.....	27.0	29.4	10.6	11.6	174.2	191.1	68.1	74.1	6.5	6.5	6.4	6.4
200-299 beds.....	27.7	25.2	12.0	10.6	196.8	178.8	87.2	77.9	7.1	7.1	7.3	7.3
300-499 beds.....	36.9	39.0	16.4	17.4	280.2	293.9	127.7	130.0	7.6	7.5	7.8	7.5
500 beds or more.....	35.5	37.9	17.1	18.5	285.7	305.0	143.7	157.3	8.0	8.0	8.4	8.5
Ownership ²												
State and local government..	32.9	34.5	11.3	12.5	214.7	224.9	84.7	90.3	6.5	6.5	7.5	7.2
Proprietary.....	12.5	12.5	4.5	4.7	89.2	90.5	28.7	32.8	7.1	7.2	6.4	7.0
Nonprofit.....	111.5	113.2	48.2	48.8	807.1	818.6	358.2	361.1	7.2	7.2	7.4	7.4
Geographic region ²												
Northeast.....	33.2	32.5	14.1	13.8	275.6	269.3	116.9	112.6	8.3	8.3	8.3	8.2
North Central.....	45.6	46.4	19.3	19.5	329.7	336.9	143.0	145.4	7.2	7.3	7.4	7.5
South.....	53.0	55.1	19.6	21.1	356.6	370.3	141.6	152.6	6.7	6.7	7.2	7.2
West.....	25.0	26.3	11.1	11.7	149.1	157.6	70.1	73.6	6.0	6.0	6.3	6.3

¹Includes age not stated.²Age adjusted by the direct method to the 1970 civilian noninstitutionalized population, using 4 age intervals.

NOTES: Excludes newborn infants. Rates are based on the civilian noninstitutionalized population.

SOURCE: Division of Health Care Statistics, National Center for Health Statistics: Data from the National Hospital Discharge Survey.

Table 45. Discharges from, days of care, and average length of stay in short-stay hospitals, according to selected characteristics: United States, 1976 and 1981

(Data are based on household interviews of a sample of the civilian noninstitutionalized population)

Selected characteristic	Discharges ¹			Days of care ¹			Average length of stay ¹		
	1964	1976	1981	1964	1976	1981	1964	1976	1981
	Number per 1,000 population						Number of days		
Total ^{2,3,4}	130.6	124.7	121.2	1,062.0	1,029.0	949.3	8.1	8.3	7.8
Age									
Under 17 years.....	67.7	69.6	63.6	400.6	379.0	344.7	5.9	5.4	5.4
Under 6 years.....	91.9	104.5	99.2	651.6	584.7	578.5	7.1	5.6	5.8
6-16 years.....	53.0	53.9	45.1	247.5	286.3	223.5	4.7	5.3	5.0
17-44 years.....	162.4	108.5	100.0	1,050.8	702.7	647.7	6.5	6.5	6.5
45-64 years.....	146.4	170.5	175.1	1,560.5	1,623.7	1,565.5	10.7	9.5	8.9
65 years and over.....	190.1	277.0	283.6	2,292.9	3,220.4	2,843.3	12.1	11.6	10.0
Sex ²									
Male.....	104.0	119.7	119.3	1,012.4	1,046.8	1,008.4	9.7	8.7	8.5
Female.....	154.3	129.8	123.8	1,104.5	1,022.0	903.1	7.2	7.9	7.3
Race ^{2,5}									
White.....	133.8	124.5	120.0	1,053.4	980.3	912.5	7.9	7.9	7.6
Black.....	106.3	130.9	137.7	1,141.2	1,427.2	1,302.4	10.7	10.9	9.5
Family income ^{2,6}									
Less than \$7,000.....	126.9	158.4	165.1	1,140.0	1,445.9	1,318.5	9.0	9.1	8.0
\$7,000-\$9,999.....	146.8	135.3	137.5	1,337.8	1,132.6	1,158.0	9.1	8.4	8.4
\$10,000-\$14,999.....	135.4	134.9	124.5	1,042.3	1,067.9	1,056.0	7.7	7.9	8.5
\$15,000-\$24,999.....	128.0	131.0	119.8	968.6	1,060.0	841.7	7.6	8.1	7.0
\$25,000 or more.....	121.8	111.9	104.6	971.0	869.5	773.8	8.0	7.8	7.4
Geographic region ²									
Northeast.....	119.6	115.4	106.0	1,094.5	1,071.3	944.9	9.2	9.3	8.9
North Central.....	130.7	128.1	129.1	1,041.2	1,067.9	1,006.0	8.0	8.3	7.8
South.....	136.7	136.4	140.1	1,051.2	1,083.3	1,076.2	7.6	7.9	7.7
West.....	133.5	112.5	95.8	1,066.2	815.3	649.1	8.0	7.2	6.8
Location of residence ²									
Within SMSA.....	124.9	119.3	110.3	1,097.4	1,038.7	926.9	8.8	8.7	8.4
Outside SMSA.....	140.7	136.6	144.0	1,001.2	1,012.7	997.3	7.1	7.4	6.9

¹Excluding deliveries.

²Age adjusted by the direct method to the 1970 civilian noninstitutionalized population, using 4 age intervals.

³includes all other races not shown separately.

⁴includes unknown family income.

⁵In 1964 and 1976, the racial classification of persons in the National Health Interview Survey was determined by interviewer observation. In 1981, race was determined by asking the household respondent.

⁶Family income categories for 1981. Adjusting for inflation, corresponding income categories in 1964 were: less than \$2,000; \$2,000-\$3,999; \$4,000-\$6,999; \$7,000-\$9,999; and \$10,000 or more; and, in 1976 were: less than \$5,000; \$5,000-\$6,999; \$7,000-\$9,999; \$10,000-\$14,999; and \$15,000 or more.

SOURCE: Division of Health Interview Statistics, National Center for Health Statistics: Data from the National Health Interview Survey.

Table 46. Operations for inpatients discharged from non-Federal short-stay hospitals, according to sex, age, and surgical category: United States, 1979 and 1981

(Data are based on a sample of hospital records)

Sex, age, and surgical category	Operations			
	1979	1981	1979	1981
	Number in thousands		Number per 1,000 population	
Both sexes ¹				
Total ²	23,858	25,624	101.1	105.6
Procedures to assist delivery.....	2,331	2,501	9.3	9.6
Diagnostic dilation and curettage of uterus.....	935	833	3.9	3.4
Cesarean section.....	599	702	2.4	2.7
Hysterectomy.....	639	673	2.7	2.7
Bilateral destruction or occlusion of fallopian tubes.....	610	647	2.4	2.5
Extraction of lens.....	418	540	1.7	2.1
With insertion of prosthetic lens (pseudophakos).....	130	292	0.5	1.1
Repair of inguinal hernia.....	500	517	2.2	2.3
Male ¹				
All ages ^{1,2}	8,179	8,772	76.0	80.1
Repair of inguinal hernia.....	449	461	4.2	4.3
Prostatectomy.....	293	348	2.8	3.2
Reduction of fracture (excluding skull, nose, and jaw).....	344	299	3.1	2.6
Cardiac catheterization.....	195	272	1.9	2.6
Operations on muscles, tendons, fascia, and bursa.....	222	215	2.0	1.9
Extraction of lens.....	169	210	1.6	1.9
With insertion of prosthetic lens (pseudophakos).....	51	111	0.5	1.0
Under 15 years ²	1,092	1,097	41.5	41.9
Tonsillectomy, with or without adenoidectomy.....	152	139	5.8	5.3
Myringotomy.....	115	103	4.4	3.9
Repair of inguinal hernia.....	76	86	2.9	3.3
Reduction of fracture (excluding skull, nose, and jaw).....	65	57	2.5	2.2
Appendectomy, excluding incidental ³	43	47	1.6	1.8
Circumcision.....	45	44	1.7	1.7
15-44 years ²	2,902	2,837	57.9	54.5
Reduction of fracture (excluding skull, nose, and jaw).....	183	164	3.6	3.1
Operations on muscles, tendons, fascia, and bursa.....	123	116	2.5	2.2
Repair of inguinal hernia.....	122	112	2.4	2.2
Appendectomy, excluding incidental ³	97	100	1.9	1.9
Rhinoplasty and repair of nose.....	81	91	1.6	1.7
Excision of semilunar cartilage of knee.....	91	85	1.8	1.6
Suture of skin and subcutaneous tissue.....	89	81	1.8	1.6
Debridement of wound, infection, or burn.....	61	77	1.2	1.5
45-64 years ²	2,186	2,392	103.7	113.3
Cardiac catheterization.....	118	158	5.6	7.5
Repair of inguinal hernia.....	138	141	6.6	6.7
Prostatectomy.....	71	83	3.4	3.9
Direct heart revascularization (coronary bypass).....	63	81	3.0	3.8
Operations on muscles, tendons, fascia, and bursa.....	51	58	2.4	2.8
65 years and over ²	2,000	2,447	197.0	231.7
Prostatectomy.....	218	263	21.5	24.9
Extraction of lens.....	108	147	10.6	13.9
With insertion of prosthetic lens (pseudophakos).....	40	84	3.9	8.0
Repair of inguinal hernia.....	112	122	11.0	11.5
Pacemaker insertion, replacement, removal, and repair.....	62	69	6.1	6.5
Cardiac catheterization.....	29	60	2.9	5.7

See footnotes at end of table.

Table 46. Operations for inpatients discharged from non-Federal short-stay hospitals, according to sex, age, and surgical category: United States, 1979 and 1981--Continued

(Data are based on a sample of hospital records)

Sex, age, and surgical category	Operations			
	1979	1981	1979	1981
		Number in thousands	Number per 1,000 population	
Female ¹				
All ages ^{1,2}	15,679	16,852	125.8	130.8
Procedures to assist delivery.....	2,331	2,501	18.3	19.0
Diagnostic dilation and curettage of uterus.....	935	833	7.6	6.5
Cesarean section.....	599	702	4.7	5.3
Hysterectomy.....	639	673	5.1	5.3
Bilateral destruction or occlusion of fallopian tubes.....	610	647	4.8	4.9
Repair of current obstetrical laceration.....	341	439	2.7	3.3
Under 15 years ²	772	741	30.7	29.6
Tonsillectomy, with or without adenoidectomy.....	161	150	6.4	6.0
Myringotomy.....	87	68	3.5	2.7
Reduction of fracture (excluding skull, nose, and jaw).....	29	31	1.1	1.2
Appendectomy, excluding incidental ³	36	30	1.4	1.2
Adenoidectomy without tonsillectomy.....	31	23	1.2	0.9
Resection and recession of ocular muscle.....	23	21	0.9	0.8
15-44 years ²	9,532	10,070	183.6	187.5
Procedures to assist delivery.....	2,308	2,489	44.5	46.3
Cesarean section.....	592	699	11.4	13.0
Bilateral destruction or occlusion of fallopian tubes.....	599	639	11.5	11.9
Diagnostic dilation and curettage of uterus.....	646	577	12.4	10.7
Repair of current obstetrical laceration.....	337	437	6.5	8.1
Hysterectomy.....	407	423	7.8	7.9
45-64 years ²	3,088	3,228	132.7	138.4
Diagnostic dilation and curettage of uterus.....	246	210	10.6	9.0
Hysterectomy.....	187	192	8.0	8.2
Oophorectomy and salpingo-oophorectomy.....	149	153	6.4	6.6
Cholecystectomy.....	109	122	4.7	5.2
Biopsies on the integumentary system (breast, skin, and subcutaneous tissue).....	79	76	3.4	3.2
65 years and over ²	2,286	2,814	152.6	179.3
Extraction of lens.....	198	268	13.2	17.1
With insertion of prosthetic lens (pseudophakos).....	69	155	4.6	9.9
Reduction of fracture (excluding skull, nose, and jaw).....	133	134	8.9	8.5
Cholecystectomy.....	77	86	5.1	5.5
Arthroplasty and replacement of hip.....	73	82	4.9	5.2

¹Age adjusted by the direct method to the 1970 civilian noninstitutionalized population, using 4 age intervals.

²Includes operations not listed in table.

³Limited to estimated number of appendectomies, excluding those performed incidental to other abdominal surgery.

NOTES: Excludes newborn infants. Rates are based on the civilian noninstitutionalized population. Surgical categories are based on the International Classification of Diseases, 9th Revision, Clinical Modification. For a listing of the code numbers, see Appendix II.

SOURCE: Division of Health Care Statistics, National Center for Health Statistics: Data from the National Hospital Discharge Survey.

Table 47. Diagnostic and other nonsurgical procedures for inpatients discharged from non-Federal short-stay hospitals, according to sex, age, and procedure category: United States, 1979 and 1981

(Data are based on a sample of hospital records)

Sex, age, and procedure category	Procedures			
	1979	1981	1979	1981
Both sexes ¹				
Total ²	5,744	8,011	25.39	33.14
Cystoscopy.....	866	827	3.7	3.4
Radioisotope scan.....	531	587	2.2	2.4
Endoscopy of large intestine.....	485	577	2.0	2.3
Diagnostic ultrasound.....	222	426	0.9	1.7
Computerized axial tomography (CAT scan).....	194	424	0.8	1.8
Arteriography using contrast material.....	300	343	1.3	1.4
Endoscopy of small intestine.....	233	334	1.0	1.4
Contrast myelogram.....	290	328	1.2	1.4
Angiocardiology using contrast material.....	226	326	1.0	1.4
Male ¹				
All ages ^{1,2}	2,828	3,886	26.57	35.60
Cystoscopy.....	517	535	4.9	4.9
Radioisotope scan.....	242	268	2.3	2.5
Endoscopy of large intestine.....	215	253	2.0	2.3
Angiocardiology using contrast material.....	155	226	1.5	2.2
Computerized axial tomography (CAT scan).....	93	205	0.9	1.9
Arteriography using contrast material.....	167	187	1.6	1.8
Under 15 years ²	193	272	7.4	10.4
Spinal tap.....	45	56	1.7	2.1
Application of cast or splint.....	18	23	0.7	0.9
Cystoscopy.....	29	21	1.1	0.8
Computerized axial tomography (CAT scan).....	9	17	0.3	0.7
15-44 years ²	745	948	14.7	18.2
Arthroscopy of knee.....	67	106	1.3	2.0
Contrast myelogram.....	85	98	1.7	1.9
Cystoscopy.....	78	64	1.6	1.2
Computerized axial tomography (CAT scan).....	28	56	0.6	1.1
Endoscopy of large intestine.....	52	54	1.0	1.0
45-64 years ²	951	1,287	45.4	61.0
Cystoscopy.....	151	153	7.2	7.3
Angiocardiology using contrast material.....	103	143	4.9	6.8
Arteriography using contrast material.....	75	87	3.5	4.1
Endoscopy of large intestine.....	76	86	3.6	4.1
Radioisotope scan.....	88	86	4.2	4.1
65 years and over ²	938	1,379	93.9	130.6
Cystoscopy.....	259	296	25.5	28.0
Radioisotope scan.....	105	127	10.3	12.0
Endoscopy of large intestine.....	83	108	8.2	10.2
Computerized axial tomography (CAT scan).....	33	80	3.2	7.6
Arteriography using contrast material.....	59	74	5.8	7.0

See footnotes at end of table.

Table 47. Diagnostic and other nonsurgical procedures for inpatients discharged from non-Federal short-stay hospitals, according to sex, age, and procedure category: United States, 1979 and 1981--Continued

(Data are based on a sample of hospital records)

Sex, age, and procedure category	Procedures			
	1979	1981	1979	1981
Female ¹	Number in thousands		Number per 1,000 population	
All ages ^{1,2}	2,917	4,125	23.4	31.9
Endoscopy of large intestine.....	270	323	2.1	2.4
Radioisotope scan.....	289	319	2.2	2.4
Cystoscopy.....	350	292	2.9	2.3
Diagnostic ultrasound.....	139	276	1.1	2.1
Laparoscopy (excluding that for ligation and division of fallopian tubes).....	203	267	1.6	2.0
Computerized axial tomography (CAT scan).....	101	219	0.8	1.7
Under 15 years ²	176	239	7.0	9.5
Spinal tap.....	29	41	1.2	1.6
Cystoscopy.....	43	28	1.7	1.1
Computerized axial tomography (CAT scan).....	9	16	0.4	0.6
Electroencephalogram.....	0	15	0.0	0.6
15-44 years ²	1,054	1,362	20.0	25.4
Laparoscopy (excluding that for ligation and division of fallopian tubes).....	167	249	3.6	4.6
Diagnostic ultrasound.....	63	126	1.2	2.3
Cystoscopy.....	111	87	2.1	1.6
Endoscopy of large intestine.....	70	76	1.4	1.4
Contrast myelogram.....	67	69	1.3	1.3
Biliary tract x-ray.....	62	68	1.2	1.3
45-64 years ²	874	1,205	37.6	51.7
Radioisotope scan.....	96	108	4.1	4.6
Endoscopy of large intestine.....	83	96	3.6	4.1
Cystoscopy.....	99	83	4.3	3.6
Computerized axial tomography (CAT scan).....	32	62	1.4	2.7
Diagnostic ultrasound.....	38	62	1.6	2.7
65 years and over ²	813	1,319	56.6	84.1
Endoscopy of large intestine.....	112	146	7.5	9.3
Radioisotope scan.....	127	143	8.5	9.1
Cystoscopy.....	96	94	6.4	6.0
Computerized axial tomography (CAT scan).....	34	93	2.3	5.9
Diagnostic ultrasound.....	35	81	2.3	5.2

¹Age adjusted by the direct method to the 1970 civilian noninstitutionalized population, using 4 age intervals.

²Includes nonsurgical procedures not shown.

NOTES: Rates are based on the civilian noninstitutionalized population. Procedure categories are based on the International Classification of Diseases, 9th Revision, Clinical Modification. For a listing of the code numbers, see Appendix II.

SOURCE: Division of Health Care Statistics, National Center for Health Statistics: Data from the National Hospital Discharge Survey.

Table 48. Nursing home residents, according to selected functional status and age: United States, 1973-74 and 1977

(Data are based on a sample of nursing homes)

Functional status	1973-74 ¹					1977				
	All ages	Under 65 years	65-74 years	75-84 years	85 years and over	All ages	Under 65 years	65-74 years	75-84 years	85 years and over
Number of residents										
All residents.....	1,075,800	114,300	163,100	384,900	413,600	1,303,100	177,100	211,400	464,700	449,900
Percent distribution										
Total.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Dressing										
Independent.....	29.3	34.8	34.4	30.2	25.0	30.6	44.8	38.8	27.5	24.2
Requires assistance, includes those who do not dress.....	70.8	65.2	65.6	69.9	75.1	69.4	55.2	61.2	72.5	75.8
Using toilet room										
Independent.....	47.5	56.4	53.6	48.0	42.2	47.5	61.8	53.1	45.7	41.0
Requires assistance.....	30.8	21.6	27.3	31.5	34.1	42.5	28.1	37.8	44.7	48.0
Does not use toilet room.....	21.7	22.0	19.1	20.5	23.7	10.1	10.1	9.1	9.6	11.0
Mobility										
Walks independently.....	48.6	58.2	55.4	49.6	42.2	33.9	53.6	43.2	33.2	22.5
Walks with assistance.....	20.2	11.1	15.5	20.4	24.4	28.8	15.7	21.4	30.5	35.6
Chairfast.....	26.5	24.8	24.9	25.9	28.2	32.0	25.5	30.5	31.5	35.9
Bedfast.....	4.7	5.9	4.1	4.1	5.2	5.3	5.2	5.0	4.9	6.1
Continence										
No difficulty controlling bowel or bladder.....	66.2	72.6	70.9	66.8	61.9	54.7	68.0	62.4	52.9	47.8
Difficulty controlling bowel.....	1.1	*0.8	*1.2	1.1	1.2	3.7	3.0	3.7	4.0	3.8
Difficulty controlling bladder.....	4.2	2.4	4.4	4.2	4.7	9.0	5.8	6.5	9.4	11.1
Difficulty controlling both bowel and bladder.....	28.1	23.4	23.0	27.5	31.9	25.9	16.8	20.6	26.9	30.8
Ostomy in either bowel or bladder.....	0.4	*0.8	*0.4	*0.4	*0.3	6.7	6.4	6.8	6.9	6.5

See footnote at end of table.

Table 48. Nursing home residents, according to selected functional status and age: United States, 1973-74 and 1977--Continued

(Data are based on a sample of nursing homes)

Functional status	1973-74 ¹					1977				
	All ages	Under 65 years	65-74 years	75-84 years	85 years and over	All ages	Under 65 years	65-74 years	75-84 years	85 years and over
	Percent distribution									
Eating										
Independent.....	65.2	67.0	68.1	66.0	62.8	67.4	73.8	72.9	66.2	63.5
Requires assistance, includes those who are tube or intravenously fed.....	34.8	33.0	31.9	34.0	37.2	32.6	26.2	27.1	33.8	36.5
Vision										
Not impaired.....	53.5	70.6	62.3	53.8	45.0	67.2	81.0	75.4	67.9	57.2
Partially impaired.....	33.7	21.7	28.8	35.0	37.6	19.0	11.0	13.4	19.6	24.1
Severely impaired.....	10.0	5.0	6.3	8.9	14.0	6.6	2.2	3.3	6.1	10.4
Completely lost.....	2.8	2.7	2.6	2.3	3.5	3.0	2.2	2.6	2.6	3.8
Unknown.....	...	...	...	...	...	4.3	3.8	5.3	3.9	4.5
Hearing										
Not impaired.....	67.8	88.4	80.3	70.0	55.2	69.5	87.6	81.0	71.6	54.9
Partially impaired.....	26.1	9.2	17.0	25.5	34.8	21.7	6.6	11.4	21.2	33.1
Severely impaired.....	5.1	1.6	1.9	3.8	8.7	4.3	*0.4	1.9	3.0	8.4
Completely lost.....	1.0	*0.8	*0.8	0.7	1.4	0.7	*1.1	*0.7	*0.6	*0.7
Unknown.....	...	...	...	...	...	3.7	4.4	5.0	3.6	3.0

¹Excludes residents in personal care or domiciliary care homes.

SOURCE: Division of Health Care Statistics, National Center for Health Statistics: Unpublished data from the National Nursing Home Survey.

Table 49. Nursing home and personal care home residents 65 years of age and over and number per 1,000 population, according to sex and race: United States, 1963, 1969, 1973-74, and 1977

(Data are based on a sample of nursing homes)

Year and age	Total	Sex		Race		Total	Sex		Race						
		Male	Female	White	All other		Male	Female	White	All other					
1963						Number of residents					Number per 1,000 population				
65 years and over...	445,600	141,000	304,500	431,700	13,800	25.4	18.1	31.1	26.6	10.3					
65-74 years.....	89,600	35,100	54,500	84,400	5,200	7.9	6.8	8.8	8.1	5.9					
75-84 years.....	207,200	65,200	142,000	202,000	5,300	39.6	29.1	47.5	41.7	13.8					
85 years and over.....	148,700	40,700	108,000	145,400	3,300	148.4	105.6	175.1	157.7	41.8					
1969															
65 years and over...	722,200	207,100	515,200	695,000	27,300	37.1	25.0	46.1	38.8	17.6					
65-74 years.....	138,500	52,200	86,300	129,500	9,000	11.6	9.9	12.9	11.7	9.6					
75-84 years.....	321,800	90,800	231,100	310,900	10,900	51.7	36.0	62.3	54.1	22.9					
85 years and over.....	261,900	64,100	197,800	254,500	7,400	203.2	130.8	247.6	221.9	52.4					
1973-74 ¹															
65 years and over...	961,500	265,700	695,800	920,600	40,900	45.1	30.2	55.5	47.3	21.9					
65-74 years.....	163,100	65,100	98,100	150,100	13,000	12.3	11.3	13.1	12.5	10.6					
75-84 years.....	384,900	102,300	282,600	369,700	15,200	59.4	40.8	71.1	61.9	30.1					
85 years and over.....	413,600	98,300	315,300	400,800	12,800	253.7	180.4	290.6	269.0	91.4					
1977 ²															
65 years and over...	1,126,000	294,000	832,000	1,059,900	66,100	47.9	30.7	59.7	49.7	30.4					
65-74 years.....	211,400	80,200	131,200	187,500	23,800	14.5	12.7	15.9	14.2	16.8					
75-84 years.....	464,700	122,100	342,600	443,200	21,500	68.0	47.4	80.6	70.6	38.6					
85 years and over.....	449,900	91,700	358,200	429,100	20,800	216.4	140.0	251.5	229.0	102.0					

¹Excludes residents in personal care or domiciliary care homes.

²Includes residents in domiciliary care homes.

NOTE: For data years 1963 and 1969, Hispanic origin was not designated; therefore, Hispanics may be included in either the white or all other category. For data years 1973-74 and 1977, Hispanics were included in the white category.

SOURCES: National Center for Health Statistics: Characteristics of residents in institutions for the aged and chronically ill, United States, April-June 1963, by G. S. Wunderlich. *Vital and Health Statistics*. Series 12-No. 2. DHEW Pub. No. (PHS) 1000. Public Health Service, Washington, U.S. Government Printing Office, Sept. 1965; Measures of chronic illness among residents of nursing and personal care homes, United States, by D. K. Ingram. *Vital and Health Statistics*. Series 12-No. 24. DHEW Pub. No. (HRA) 74-1709. Health Resources Administration, Washington, U.S. Government Printing Office, Mar. 1974; Characteristics of nursing home residents, health status, and care received: National Nursing Home Survey, United States, May-December 1977, by E. Hing. *Vital and Health Statistics*. Series 13-No. 51. DHHS Pub. No. (PHS) 81-1712. Public Health Service, Washington, U.S. Government Printing Office, April 1981.

Table 50. Additions to mental health facilities and average annual percent change, according to service setting and type of facility:
United States, 1971 and 1979

(Data are based on reporting by facilities)

Type of facility	Service setting								
	Inpatient			Outpatient			Day treatment		
	1971	1979 ¹	Average annual percent change 1971-79	1971	1979 ¹	Average annual percent change 1971-79	1971	1979 ¹	Average annual percent change 1971-79
	Number of additions			Number of additions			Number of additions		
All facilities.....	1,336,312	1,589,026	2.2	1,378,822	2,399,932	7.2	75,545	187,404	12.0
Non-Federal psychiatric hospitals.....	561,923	527,612	-0.8	147,383	111,923	-3.4	18,448	13,275	-4.0
State and county hospitals.....	474,923	383,323	-2.6	129,133	81,919	-5.5	16,554	9,808	-6.3
Private hospitals.....	87,000	144,289	6.5	18,250	30,004	6.4	1,894	3,467	7.9
Veterans Administration hospitals ²	134,065	183,461	5.4	51,645	120,940	15.2	4,023	6,978	9.6
Non-Federal general hospital psychiatric units.....	519,926	552,437	1.0	282,677	230,412	-3.3	11,563	12,724	1.6
Government.....	215,158	135,460	-7.4	139,077	107,186	-4.2	4,291	3,480	-3.4
Private.....	304,768	416,977	5.4	143,600	123,226	-2.5	7,272	9,244	4.1
Residential treatment centers for emotionally disturbed children.....	11,148	15,453	4.2	10,156	19,653	8.6	994	2,519	12.3
Federally-funded community mental health centers.....	75,900	286,026	20.9	335,648	980,685	16.6	21,092	113,405	27.2
Freestanding psychiatric outpatient clinics.....	-	-	-	484,677	825,046	6.9	10,642	29,587	13.6
Government.....	-	-	-	273,358	324,174	2.2	7,737	15,046	8.7
Private.....	-	-	-	211,319	500,872	11.4	2,905	14,541	22.3
Other mental health facilities.....	33,350	24,037	-4.0	66,636	111,273	6.6	8,783	8,916	0.2

¹Provisional data. 1979 data are not yet available for Veterans Administration neuropsychiatric hospitals, general hospital psychiatric services (Veterans Administration and non-Federal) and federally funded community mental health centers (CMHC's); 1978 data are used for CMHC's, and 1977 data are used for Veterans Administration psychiatric services and non-Federal general hospital psychiatric services.

²Includes Veterans Administration neuropsychiatric hospitals and Veterans Administration general hospitals with separate psychiatric modalities.

SOURCE: National Institute of Mental Health: Unpublished data from the Division of Biometry and Epidemiology.

Table 51. Inpatient and outpatient care episodes in selected mental health facilities and number per 1,000 population, according to type of facility: United States, selected years 1955-79

(Data are based on reporting by facilities)

Type of facility	Year									
	1955	1965	1975	1977	1979 ¹	1955	1965	1975	1977	1979 ¹
	Number of episodes in thousands					Number per 1,000 population				
All facilities.....	1,675	2,637	6,409	6,393	6,404	10.3	13.8	30.3	29.6	28.6
Inpatient services.....	1,296	1,566	1,791	1,817	1,802	8.0	8.2	8.5	8.4	8.1
General hospital psychiatric service.....	266	519	566	572	---	1.6	2.7	2.7	2.7	---
State and county hospitals.....	819	805	599	574	529	5.0	4.2	2.8	2.7	2.4
Private hospitals ²	123	125	165	184	185	0.8	0.7	0.8	0.9	0.8
Veterans Administration psychiatric service ³ ...	88	116	214	218	---	0.5	0.6	1.0	1.0	---
Federally-funded community mental health centers.....	---	---	247	269	299	---	---	1.2	1.3	1.3
Outpatient services ⁴	379	1,071	4,618	4,576	4,602	2.3	5.6	21.9	21.2	20.6
Federally-funded community mental health centers.....	---	---	1,585	1,742	1,950	---	---	7.5	8.1	8.7
Other mental health facilities.....	379	1,071	3,033	2,835	2,653	2.3	5.6	14.4	13.1	11.9

¹Provisional data. 1979 data are not yet available for Veterans Administration neuropsychiatric hospital inpatient units, general hospital inpatient psychiatric units (Veterans Administration and non-Federal), and federally funded community mental health centers (CMHC's) inpatient and outpatient services; 1978 data are used for CMHC's, and 1977 data are used for Veterans Administration psychiatric inpatient settings and for separate psychiatric inpatient and outpatient services of non-Federal general hospitals.

²Includes estimates of episodes of care in residential treatment centers for emotionally disturbed children.

³Includes Veterans Administration neuropsychiatric hospitals and Veterans Administration general hospitals with separate psychiatric inpatient settings.

⁴Excludes partial care episodes and outpatient episodes of Veterans Administration hospitals and clinics.

SOURCE: National Institute of Mental Health: Trends in patient care episodes in mental health facilities, 1955-1977. Statistical Note 154. Public Health Service, Rockville, Md., Sept. 1980; Unpublished data from the Division of Biometry and Epidemiology.

Table 52. Inpatient days of care in mental health facilities and average annual percent change, according to type of facility: United States, 1971, 1975, and 1979

(Data are based on reporting by facilities)

Type of facility	Year			Average annual percent change 1971-79
	1971	1975	1979 ¹	
	Number of inpatient days in thousands			
All facilities ²	153,104	104,907	83,491	-7.3
Non-Federal psychiatric hospitals.....	123,420	74,985	55,184	-9.6
State and county hospitals.....	119,200	70,584	50,110	-10.3
Private hospitals.....	4,220	4,401	5,074	2.3
Veterans Administration psychiatric services ³	14,277	11,725	10,628	-4.8
Non-Federal general hospital psychiatric units.....	6,826	8,349	7,085	0.6
Residential treatment centers for emotionally disturbed children.....	6,356	5,900	6,531	0.3
Federally-funded community mental health centers.....	2,225	3,948	4,063	7.8

¹1979 data are not yet available for Veterans Administration neuropsychiatric hospitals, general hospital inpatient psychiatric units (Veterans Administration and non-Federal), and federally funded community mental health centers (CMHC's); 1978 data are used for CMHC's, and 1977 data are used for Veterans Administration psychiatric services and non-Federal general hospital psychiatric inpatient units.

²Excludes inpatient days for multiservice mental health facilities not elsewhere classified which represent less than 1 percent of all inpatient days in each year.

³Includes Veterans Administration neuropsychiatric hospitals and Veterans Administration general hospitals with separate psychiatric inpatient settings.

SOURCE: National Institute of Mental Health: Unpublished data from the Division of Biometry and Epidemiology.

Table 53. Persons employed in the health service industry, according to place of employment:
United States, selected years 1970-82

(Data are based on household interviews of a sample of the civilian noninstitutionalized population)

Place of employment	Year							
	1970 ¹	1975	1976	1978	1979	1980	1981	1982
	Number of persons in thousands							
Total.....	4,246	5,945	6,217	6,831	7,026	7,379	7,663	7,863
Offices of physicians.....	477	618	654	771	775	777	811	898
Offices of dentists.....	222	331	330	366	392	415	423	415
Offices of chiropractors ²	19	30	27	33	36	40	46	53
Hospitals.....	2,690	3,441	3,623	3,854	3,925	4,036	4,186	4,341
Convalescent institutions.....	509	891	954	1,020	1,048	1,199	1,230	1,217
Offices of other health practitioners...	42	61	69	84	85	86	83	84
Other health service sites.....	288	573	560	703	765	826	884	855

¹April 1, derived from decennial census; all other data years are annual averages from the Current Population Survey.
²Data for 1978-82 are from the American Chiropractic Association; data for the preceding years are from the U.S. Bureau of Labor Statistics.

NOTE: Totals exclude persons in health-related occupations who are working in nonhealth industries, as classified by the U.S. Bureau of the Census, such as pharmacists employed in drugstores, school nurses, and nurses working in private households.

SOURCES: U.S. Bureau of the Census: 1970 Census of Population, occupation by industry. Subject Reports. Final Report PC(2)-7C. Washington. U.S. Government Printing Office, Oct. 1972; U.S. Bureau of Labor Statistics: Labor Force Statistics Derived from the Current Population Survey: A Databook, Vol. I. Washington. U.S. Government Printing Office, Sept. 1982; Employment and Earnings, January 1983. Vol. 30, No. 1. Washington. U.S. Government Printing Office, Jan. 1983; American Chiropractic Association: Unpublished data.

Table 54. Active physicians (M.D.'s and D.O.'s), according to type of physician, and number per 10,000 population: United States and outlying U.S. areas, selected 1950-80 estimates and 1985, 1990, and 2000 projections

(Data are based on reporting by physicians and medical schools)

Year	Type of physician			Active physicians per 10,000 population
	Total	Doctors of medicine (M.D.)	Doctors of osteopathy (D.O.)	
Number of physicians				
1950.....	219,900	209,000	10,900	14.1
1960.....	251,900	239,700	12,200	13.6
1970.....	326,500	314,200	12,300	15.6
1971.....	337,400	325,000	12,400	16.1
1972.....	348,300	335,500	12,800	16.4
1973.....	355,700	342,500	13,200	16.4
1974.....	370,000	356,400	13,600	16.9
1975.....	384,500	370,400	14,100	17.4
1976.....	399,500	385,000	14,500	17.9
1977.....	405,900	390,800	15,100	18.0
1978.....	424,000	408,300	15,700	18.6
1979.....	440,400	424,000	16,400	19.1
1980.....	457,500	440,400	17,100	19.7
1985.....	523,900	502,000	21,900	22.5
1990.....	591,200	563,300	27,900	24.3
2000.....	704,700	665,700	39,000	27.1

NOTES: The population for selected years 1950-80 includes residents in the 50 States, District of Columbia, and civilians in Puerto Rico and other U.S. outlying areas; U.S. citizens in foreign countries; and the Armed Forces in the United States and abroad. For 1985 and 1990, the Series II projections of the total population from the U.S. Bureau of the Census are used. Estimation and projection methods used are from the Bureau of Health Professions. The numbers of M.D.'s differ from American Medical Association figures because a variant proportion of the physicians not classified by activity status and whose addresses are unknown is allocated into the totals.

SOURCES: Bureau of Health Professions: Third Report to the President and Congress on the Status of Health Professions Personnel in the United States. DHHS Pub. No. (HRA) 82-2. Health Resources Administration. Hyattsville, Md., Jan. 1982; Unpublished data.

Table 55. Physicians (M.D.'s), according to activity: United States, selected years 1970-81

(Data are based on reporting by physicians)

Activity	Year					
	1970	1975	1976	1978	1980	1981
	Number of physicians					
Doctors of medicine.....	328,020	388,626	404,338	432,434	462,276	479,379
Professionally active physicians.....	304,926	335,608	343,876	371,343	409,992	425,568
Non-Federal.....	278,855	309,410	318,089	352,390	393,407	407,125
Patient care.....	252,778	285,345	292,152	322,835	358,470	370,096
Office-based practice.....	187,637	211,776	213,117	237,071	269,001	284,313
General practice ¹	50,415	45,863	45,503	44,649	47,265	48,883
Internal medicine.....	22,841	28,070	27,829	33,485	40,276	43,629
Pediatrics.....	10,203	12,559	12,655	14,602	17,204	18,258
General surgery.....	17,975	19,613	19,714	20,279	22,262	22,513
Obstetrics and gynecology.....	13,732	15,469	15,789	17,325	19,306	20,640
Other specialty.....	72,471	90,202	91,627	106,731	122,688	130,390
Hospital-based practice.....	65,141	73,569	79,035	85,764	89,469	85,783
Residents ²	45,514	53,150	58,482	56,866	59,127	59,873
Full-time hospital staff.....	19,627	20,419	20,553	28,898	30,342	25,910
Other professional activity ³	26,077	24,065	25,937	29,555	34,937	37,029
Federal.....	26,071	26,198	25,787	18,953	16,585	18,443
Patient care.....	20,566	22,325	22,086	15,777	13,513	14,543
Office-based practice.....	2,819	1,841	1,652	865	679	1,375
Hospital-based practice.....	17,747	20,484	20,434	14,912	12,834	13,168
Residents ²	5,173	4,089	3,934	3,297	2,323	2,664
Full-time hospital staff.....	12,574	16,395	16,500	11,615	10,511	10,504
Other professional activity ³	5,505	3,873	3,701	3,176	3,072	3,900
Inactive physicians.....	19,533	21,360	22,024	26,698	25,609	34,833
Not classified ⁴	357	25,790	29,681	25,102	20,285	13,765
Unknown ⁵	3,204	5,868	8,757	9,291	6,390	5,213

¹Includes general practice and family practice.²Includes interns and residents, all years.³Includes medical teaching, administration, research, and other.⁴Information not available.⁵Physicians with unknown address.

NOTE: Federal and non-Federal doctors of medicine (M.D.'s) in the 50 States and the District of Columbia are included.

SOURCES: Haug, J. N., Roback, G. A., and Martin, B. C.: Distribution of Physicians in the United States, 1970. Chicago. American Medical Association, 1971. (Copyright 1971: Used with the permission of the American Medical Association.); Goodman, L. J., and Mason, H. R.: Physician Distribution and Medical Licensure in the U.S., 1975. Chicago. American Medical Association, 1976. (Copyright 1976: Used with the permission of the American Medical Association.); Goodman, L. J.: Physician Distribution and Medical Licensure in the U.S., 1976. Chicago. American Medical Association, 1977. (Copyright 1977: Used with the permission of the American Medical Association.); Department of Statistical Analysis: Physician Distribution and Medical Licensure in the U.S., 1978. Chicago. American Medical Association, 1980. (Copyright 1980: Used with the permission of the American Medical Association.); Bidese, C. M., and Danais, D. G.: Physician Characteristics and Distribution in the U.S. Chicago. American Medical Association, 1982. (Copyright 1982: Used with the permission of the American Medical Association.); Roback, G. A. and Eiler, M. A.: Physician Characteristics and Distribution in the U.S. Chicago. American Medical Association, 1983. (Copyright 1983: Used with the permission of the American Medical Association.)

Table 56. Active health personnel and number per 100,000 population, according to occupation and geographic region: United States, 1970 and 1980

(Data are based on reporting by health personnel)

Year and occupation	Number of active health personnel	United States	Geographic region			
			North-east	North Central	South	West
1970		Number per 100,000 population ¹				
Physicians ²	290,862	142.7	185.0	127.5	114.8	158.2
M.D.'s ³	279,212	137.0	178.7	118.2	111.5	154.8
D.O.'s.....	11,650	5.7	6.3	9.3	3.3	3.4
Dentists ²	95,680	47.4	58.9	46.3	35.3	54.9
Optometrists.....	18,400	9.0	9.7	10.3	6.6	10.5
Pharmacists ³	112,570	55.4	60.1	57.5	50.6	52.9
Podiatrists.....	7,110	3.5	6.0	3.6	1.6	3.0
Registered nurses ⁴	750,000	368.9	491.2	367.5	281.8	355.9
Veterinarians.....	25,900	12.7	8.3	16.1	11.8	15.0
1980						
Physicians ²	422,310	191.4	233.6	175.0	163.7	212.3
M.D.'s ^{3,5}	405,800	183.9	224.9	162.5	159.4	208.0
D.O.'s.....	16,510	7.5	8.7	12.5	4.3	4.3
Dentists ²	121,240	54.9	65.2	53.1	44.4	63.7
Optometrists.....	22,330	10.1	10.2	11.2	8.0	12.3
Pharmacists ³	142,780	64.7	60.8	67.7	65.0	64.6
Podiatrists.....	8,880	4.0	6.3	3.9	2.5	4.1
Registered nurses ⁴	1,164,000	520.1	620.3	547.4	423.8	529.7
Veterinarians.....	36,000	16.3	10.8	19.9	16.0	18.5

¹Ratios for physicians (M.D.'s and D.O.'s) and dentists are based on civilian population; ratios for all other health occupations are based on resident population.

²Excludes physicians (M.D.'s and D.O.'s) in Federal service; excludes dentists in military service.

³Excludes physicians (M.D.'s) and pharmacists in United States Possessions.

⁴Data for registered nurses are as of January 1 for 1971 and 1981.

⁵Data for physicians (M.D.'s) are based on Bureau of Health Professions estimates and differ from the data in Table 55.

SOURCE: Division of Health Professions Analysis, Bureau of Health Professions: Supply and Characteristics of Selected Health Personnel. DHHS Pub. No. (HRA) 81-20. Health Resources Administration. Hyattsville, Md., June 1981.

Table 57. Active non-Federal physicians (M.D.'s) per 10,000 civilian population, according to geographic region, primary specialty, and activity: United States, 1976 and 1981

(Data are based on reporting by physicians)

Year, specialty, and activity	United States	Geographic region			
		North-east	North Central	South	West
1976		Number of physicians per 10,000 civilian population			
Total ¹	16.0	20.6	14.1	13.4	17.5
Patient care.....	13.4	16.9	12.0	11.3	14.9
Office based.....	9.8	11.1	8.7	8.6	12.0
Primary care ²	4.0	4.4	3.7	3.4	4.7
Medical specialties ³	0.6	0.8	0.5	0.5	0.7
Surgical specialties ⁴	3.1	3.5	2.7	2.9	3.7
Hospital based.....	3.6	5.8	3.3	2.7	2.9
Other professional activities ⁵	1.2	1.8	0.9	0.9	1.3
1981					
Total ¹	18.5	23.2	16.3	16.1	20.3
Patient care.....	16.3	19.9	14.5	14.2	18.0
Office based.....	12.5	13.9	11.1	11.2	15.0
Primary care ²	4.9	5.4	4.6	4.3	5.7
Medical specialties ³	0.8	1.0	0.7	0.8	1.0
Surgical specialties ⁴	3.7	4.2	3.2	3.6	4.3
Hospital based.....	3.8	5.9	3.5	3.0	3.1
Other professional activities ⁵	1.6	2.5	1.3	1.3	1.6

¹Includes active non-Federal doctors of medicine (M.D.'s) in all other specialties not shown separately and those not classified.

²Includes general practice, internal medicine, and pediatrics.

³Includes dermatology, pediatric allergy, pediatric cardiology, gastroenterology, pulmonary diseases, allergy, and cardiovascular diseases.

⁴Includes general and neurological surgery, obstetrics and gynecology, ophthalmology, orthopedic surgery, otolaryngology, plastic surgery, colon and rectal surgery, thoracic surgery, and urology.

⁵Includes medical teaching, administration, research, and other professional activities.

SOURCES: Goodman, L. J.: Physician Distribution and Medical Licensure in the U.S., 1976. Chicago. American Medical Association, 1977. (Copyright 1977: Used with the permission of the American Medical Association.); Roback, G. A. and Eiler, M. A.: Physician Characteristics and Distribution in the U.S. Chicago. American Medical Association, 1983. (Copyright 1983: Used with the permission of the American Medical Association.); U.S. Bureau of the Census: Unpublished data.

Table 58. Graduates of health professions schools and number of schools, according to profession: United States, selected 1950-80 estimates and 1990 and 2000 projections

(Data are based on reporting by health professions schools)

Year	Profession					
	Medicine	Osteopathy	Chiropractic	Dentistry	Optometry	Pharmacy
Number of graduates						
1950.....	5,553	373	---	2,565	961	---
1960.....	7,081	427	660	3,253	364	3,497
1970.....	8,367	432	642	3,749	445	4,758
1975.....	12,714	702	1,093	4,969	806	6,712
1978.....	14,393	963	1,544	5,324	980	7,785
1979.....	14,966	1,004	1,559	5,424	1,051	6,856
1980.....	15,135	1,033	2,049	5,256	955	7,070
1990.....	16,695	1,502	2,860	4,493	1,049	5,249
2000.....	16,523	1,486	2,950	4,358	1,049	5,123
Number of schools						
1950.....	79	6	20	42	10	---
1960.....	86	6	12	47	10	76
1970.....	103	7	11	53	11	74
1975.....	114	9	12	59	12	73
1978.....	122	12	14	59	12	72
1979.....	125	14	14	60	13	72
1980.....	126	14	14	60	15	72
1990.....	126	14	15	60	16	72
2000.....	126	14	15	60	16	72

SOURCES: Bureau of Health Professions: Third Report to the President and Congress on the Status of Health Professions Personnel in the United States. DHHS Pub. No. (HRA) 82-2. Health Resources Administration. Hyattsville, Md., Jan. 1982; Unpublished data; American Chiropractic Association: Unpublished data.

Table 59. Short-stay hospitals,¹ beds, and occupancy rates, according to type of ownership: United States, selected years 1960-81

(Data are based on reporting by a census of hospitals)

Type of ownership	Year								
	1960	1970	1975	1976	1977	1978	1979	1980	1981
Hospitals									
	Number								
All ownerships.....	5,768	6,193	6,310	6,288	6,307	6,266	6,247	6,229	6,190
Federal.....	361	334	331	332	334	331	324	325	311
Non-Federal.....	5,407	5,859	5,979	5,956	5,973	5,935	5,923	5,904	5,879
Nonprofit.....	3,291	3,386	3,364	3,368	3,371	3,360	3,350	3,339	3,356
Proprietary.....	856	769	775	752	751	732	727	730	729
State-local government..	1,260	1,704	1,840	1,836	1,851	1,843	1,846	1,835	1,794
Beds									
All ownerships.....	735,451	935,724	1,036,025	1,047,912	1,059,903	1,067,566	1,073,671	1,080,164	1,093,370
Federal.....	96,394	87,492	89,049	86,737	86,037	87,907	85,984	88,144	86,596
Non-Federal.....	639,057	848,232	946,976	961,175	973,866	979,659	987,687	992,020	1,006,774
Nonprofit.....	445,753	591,937	658,948	670,939	679,501	683,856	690,278	692,929	706,331
Proprietary.....	37,029	52,739	73,495	76,416	80,322	81,046	83,338	87,033	87,743
State-local government..	156,275	203,556	214,533	213,820	214,043	214,757	214,071	212,058	212,700
Occupancy rate									
	Percent of beds occupied								
All ownerships.....	75.7	77.9	75.0	74.5	73.9	73.7	74.0	75.6	76.0
Federal.....	82.5	77.5	77.6	76.4	77.3	76.3	76.3	77.8	76.2
Non-Federal.....	74.7	78.0	74.8	74.4	73.6	73.5	73.8	75.4	75.9
Nonprofit.....	76.6	80.1	77.4	77.1	76.3	76.1	76.5	78.2	78.5
Proprietary.....	65.4	72.2	65.9	64.8	64.6	63.8	63.9	65.2	66.4
State-local government..	71.6	73.2	69.7	69.2	68.3	68.7	69.1	70.7	71.2

¹Excludes psychiatric and tuberculosis and other respiratory disease hospitals.

SOURCES: American Hospital Association: Hospitals. *JAHA* 35(15):396-401 and 45(15):463-467, Aug. 1961 and Aug. 1971; *Hospital Statistics, 1976-82 Editions*. Chicago, 1976-82. (Copyrights 1961, 1971, 1976-82: Used with the permission of the American Hospital Association.)

Table 60. Community hospital beds per 1,000 population and average annual percent change, according to geographic division and State: United States, selected years 1940-81

(Data are based on reporting by facilities)

Geographic division and State	Year							Period			
	1940 ¹	1950 ¹	1960 ²	1970	1975	1980	1981	1940-60 ^{1,2}	1960-70 ²	1970-75	1975-81
	Community hospital beds per 1,000 population ³							Average annual percent change			
United States.....	3.2	3.3	3.6	4.3	4.6	4.5	4.4	0.6	1.8	1.4	-0.7
New England.....	4.4	4.2	3.9	4.1	4.2	4.1	4.1	-0.6	0.5	0.5	-0.4
Maine.....	3.0	3.2	3.4	4.7	4.7	4.7	4.7	0.6	3.3	-	-
New Hampshire.....	4.2	4.2	4.4	4.0	4.2	3.9	3.7	0.2	-0.9	1.0	-2.1
Vermont.....	3.3	4.0	4.5	4.5	4.8	4.4	4.3	1.6	-	1.3	-1.8
Massachusetts.....	5.1	4.8	4.2	4.4	4.6	4.4	4.5	-1.0	0.5	0.9	-0.4
Rhode Island.....	3.9	3.8	3.7	4.0	3.8	3.8	3.7	-0.3	0.8	-1.0	-0.4
Connecticut.....	3.7	3.6	3.4	3.4	3.5	3.5	3.5	-0.4	-	0.6	-
Middle Atlantic.....	3.9	3.8	4.0	4.4	4.6	4.6	4.6	0.1	1.0	0.9	-
New York.....	4.3	4.1	4.3	4.6	4.7	4.5	4.6	-	0.7	0.4	-0.4
New Jersey.....	3.5	3.2	3.1	3.6	4.0	4.2	4.1	-0.6	1.5	2.1	0.4
Pennsylvania.....	3.5	3.8	4.1	4.7	4.7	4.8	4.8	0.8	1.4	-	0.4
East North Central....	3.2	3.2	3.6	4.4	4.7	4.7	4.7	0.6	2.0	1.3	-
Ohio.....	2.7	2.9	3.4	4.2	4.6	4.7	4.7	1.2	2.1	1.8	0.4
Indiana.....	2.3	2.6	3.1	4.0	4.4	4.5	4.4	1.5	2.6	1.9	-
Illinois.....	3.4	3.6	4.0	4.7	4.9	5.1	5.1	0.8	1.6	0.8	0.7
Michigan.....	4.0	3.3	3.3	4.3	4.5	4.4	4.4	-1.0	2.7	0.9	-0.4
Wisconsin.....	3.4	3.7	4.3	5.2	5.1	4.9	5.1	1.2	1.9	-0.4	-
West North Central....	3.1	3.7	4.3	5.7	5.8	5.8	5.8	1.6	2.9	0.3	-
Minnesota.....	3.9	4.4	4.8	6.1	6.0	5.7	5.7	1.0	2.4	-0.3	-0.9
Iowa.....	2.7	3.2	3.9	5.6	6.0	5.7	5.7	1.9	3.7	1.4	-0.9
Missouri.....	2.9	3.3	3.9	5.1	5.5	5.7	5.5	1.5	2.7	1.5	-
North Dakota.....	3.5	4.3	5.2	6.8	6.7	7.4	7.4	2.0	2.7	-0.3	1.7
South Dakota.....	2.8	4.4	4.5	5.6	5.5	5.5	6.0	2.4	2.2	-0.4	1.5
Nebraska.....	3.4	4.2	4.4	6.2	6.1	6.0	6.5	1.3	3.5	-0.3	1.1
Kansas.....	2.8	3.4	4.2	5.4	5.7	5.8	5.8	2.0	2.5	1.1	0.3
South Atlantic.....	2.5	2.8	3.3	4.0	4.3	4.5	4.4	1.4	1.9	1.5	0.4
Delaware.....	4.4	3.9	3.7	3.7	3.5	3.6	3.5	-0.9	-	-1.1	-
Maryland.....	3.9	3.6	3.3	3.1	3.2	3.6	3.6	-0.8	-0.6	0.6	2.0
District of Columbia....	5.5	5.5	5.9	7.4	7.1	7.3	7.4	0.4	2.3	-0.8	0.7
Virginia.....	2.2	2.5	3.0	3.7	4.1	4.1	4.0	1.6	2.1	2.1	-0.4
West Virginia.....	2.7	3.1	4.1	5.4	5.8	5.5	5.4	2.1	2.8	1.4	-1.2
North Carolina.....	2.2	2.6	3.4	3.8	4.0	4.2	4.1	2.2	1.1	1.0	0.4
South Carolina.....	1.8	2.4	2.9	3.7	3.9	3.9	3.8	2.4	2.5	1.1	-0.4
Georgia.....	1.7	2.0	2.8	3.8	4.4	4.6	4.5	2.5	3.1	3.0	0.4
Florida.....	2.8	2.9	3.1	4.4	4.9	5.1	4.8	0.5	3.6	2.2	-0.3
East South Central....	1.7	2.1	3.0	4.4	4.9	5.1	5.1	2.9	3.9	2.2	0.7
Kentucky.....	1.8	2.2	3.0	4.0	4.3	4.5	4.3	2.6	2.9	1.5	-
Tennessee.....	1.9	2.3	3.4	4.7	5.4	5.5	5.5	3.0	3.3	2.8	0.3
Alabama.....	1.5	2.0	2.8	4.3	4.9	5.1	5.2	3.2	4.4	2.6	1.0
Mississippi.....	1.4	1.7	2.9	4.4	4.9	5.3	5.3	3.7	4.3	2.2	1.3

See footnotes at end of table.

Table 60. Community hospital beds per 1,000 population and average annual percent change, according to geographic division and State: United States, selected years 1940-81--Continued

(Data are based on reporting by facilities)

Geographic division and State	Year							Period			
	1940 ¹	1950 ¹	1960 ²	1970	1975	1980	1981	1940-60 ^{1,2}	1960-70 ²	1970-75	1975-81
	Community hospital beds per 1,000 population ³							Average annual percent change			
West South Central....	2.1	2.7	3.3	4.3	4.7	4.7	4.5	2.3	2.7	1.8	-0.7
Arkansas.....	1.4	1.6	2.9	4.2	4.6	5.0	5.0	3.7	3.8	1.8	1.4
Louisiana.....	3.1	3.8	3.9	4.2	4.7	4.8	4.6	1.2	0.7	2.3	-0.4
Oklahoma.....	1.9	2.5	3.2	4.5	4.6	4.6	4.5	2.6	3.5	0.4	-0.4
Texas.....	2.0	2.7	3.3	4.3	4.7	4.7	4.4	2.5	2.7	1.8	-1.1
Mountain.....	3.6	3.8	3.5	4.3	4.0	3.8	3.7	-0.1	2.1	-1.4	-1.3
Montana.....	4.9	5.3	5.1	5.8	5.2	5.9	5.6	0.2	1.3	-2.2	1.2
Idaho.....	2.6	3.4	3.2	4.0	3.9	3.7	3.6	1.0	2.3	-0.5	-1.3
Wyoming.....	3.5	3.9	4.6	5.5	4.5	3.6	3.9	1.4	1.8	-3.9	-2.4
Colorado.....	3.9	4.2	3.8	4.6	4.4	4.2	4.0	-0.1	1.9	-0.9	-1.6
New Mexico.....	2.7	2.2	2.9	3.5	3.4	3.1	3.1	0.4	1.9	-0.6	-1.5
Arizona.....	3.4	4.0	3.0	4.1	3.8	3.6	3.4	-0.6	3.2	-1.5	-1.8
Utah.....	3.2	2.9	2.8	3.6	3.2	3.1	2.9	-0.7	2.5	-2.3	-1.6
Nevada.....	5.0	4.4	3.9	4.2	4.3	4.2	3.8	-1.2	0.7	0.5	-2.0
Pacific.....	4.1	3.2	3.1	3.7	3.9	3.5	3.4	-1.4	1.8	1.1	-2.3
Washington.....	3.4	3.6	3.3	3.5	3.4	3.1	2.9	-0.1	0.6	-0.6	-2.6
Oregon.....	3.5	3.1	3.5	4.0	3.9	3.5	3.4	-	1.3	-0.5	-2.3
California.....	4.4	3.3	3.0	3.8	4.0	3.6	3.5	-1.9	2.4	1.0	-2.2
Alaska.....	...	...	2.4	2.3	2.2	2.7	2.7	...	-0.4	-0.9	3.5
Hawaii.....	...	...	3.7	3.4	3.3	3.1	3.0	...	-0.8	-0.6	-1.6

¹1940 and 1950 data are estimated based on published figures.

²1960 includes hospital units of institutions.

³Civilian population.

NOTE: Community hospitals include all non-Federal short-stay hospitals classified by the American Hospital Association according to one of the following services: general medical and surgical; obstetrics and gynecology; eye, ear, nose, and throat; rehabilitation; orthopedic; other specialty; children's general; children's eye, ear, nose, and throat; children's rehabilitation; children's orthopedic; and children's other specialty.

SOURCES: American Medical Association: Hospital service in the United States. *JAMA* 116(11): 1055-1144, 1941, and 146(2): 109-184, 1951. (Copyright 1941 and 1951: Used with the permission of the American Medical Association.); American Hospital Association: Hospitals. *JAHA* 35(15): 383-430, Aug. 1, 1961. (Copyright 1961: Used with the permission of the American Hospital Association.); Division of Health Care Statistics, National Center for Health Statistics: Data from the National Master Facility Inventory; U.S. Bureau of the Census: Current Population Reports. Series P-25, Nos. 72, 304, 460, 640, 642, 868, and 876. Washington. U.S. Government Printing Office, 1953, 1965, 1971, 1976, 1979, and 1980; Unpublished data.

Table 61. Occupancy rate in community hospitals and average annual percent change, according to geographic division and State: United States, selected years 1940-81

(Data are based on reporting by facilities)

Geographic division and State	Year						Period			
	1940 ¹	1960 ²	1970	1975	1980	1981	1940-60 ^{1,2}	1960-70 ²	1970-75	1975-81
	Percent of beds occupied						Average annual percent change			
United States.....	69.9	74.7	77.3	74.2	75.2	75.7	0.3	0.3	-0.8	0.3
New England.....	72.5	75.2	79.7	77.6	80.1	80.2	0.2	0.6	-0.5	0.6
Maine.....	72.4	73.2	73.0	71.1	74.5	74.1	0.1	-0.0	-0.5	0.7
New Hampshire.....	65.3	66.5	73.4	71.4	73.2	71.8	0.1	1.0	-0.6	0.1
Vermont.....	68.8	68.5	76.3	70.7	73.7	74.6	-0.0	1.1	-1.5	0.9
Massachusetts.....	71.8	75.8	80.3	79.1	81.7	82.1	0.3	0.6	-0.3	0.6
Rhode Island.....	77.7	75.7	82.9	82.2	85.9	85.5	-0.1	0.9	-0.2	0.7
Connecticut.....	75.9	78.2	82.6	78.6	80.4	80.7	0.1	0.5	-1.0	0.4
Middle Atlantic.....	75.5	78.1	82.4	81.4	83.2	84.1	0.2	0.5	-0.2	0.5
New York.....	78.9	79.4	82.9	84.2	85.9	87.7	0.0	0.4	0.3	0.7
New Jersey.....	72.4	78.4	82.5	81.1	82.8	83.1	0.4	0.5	-0.3	0.4
Pennsylvania.....	71.3	76.0	81.5	77.2	79.5	79.6	0.3	0.7	-1.1	0.5
East North Central.....	71.0	78.4	79.5	77.2	76.9	76.9	0.5	0.1	-0.6	-0.1
Ohio.....	72.1	81.3	81.8	80.6	79.2	78.8	0.6	0.1	-0.3	-0.4
Indiana.....	68.5	79.6	80.3	76.4	77.6	78.1	0.8	0.1	-1.0	0.4
Illinois.....	73.1	76.0	79.3	75.7	74.9	75.4	0.2	0.4	-0.9	-0.1
Michigan.....	71.5	80.5	80.6	78.8	78.2	78.0	0.6	0.0	-0.5	-0.2
Wisconsin.....	65.2	73.9	73.2	71.5	73.6	73.3	0.6	-0.1	-0.5	0.4
West North Central.....	65.7	71.8	73.6	70.6	71.2	71.5	0.4	0.2	-0.8	0.2
Minnesota.....	71.0	72.3	73.9	70.7	73.7	73.3	0.1	0.2	-0.9	0.6
Iowa.....	63.6	72.6	71.9	67.4	68.7	69.4	0.7	-0.1	-1.3	0.5
Missouri.....	68.6	75.8	79.3	75.9	75.1	75.4	0.5	0.5	-0.9	-0.1
North Dakota.....	61.9	71.3	67.1	69.1	68.6	68.3	0.7	-0.6	0.6	-0.2
South Dakota.....	59.1	66.0	66.3	63.8	60.6	65.6	0.6	0.0	-0.8	0.5
Nebraska.....	59.0	65.6	69.9	65.8	67.4	68.6	0.5	0.6	-1.2	0.7
Kansas.....	60.4	69.1	71.4	69.9	68.8	68.3	0.7	0.3	-0.4	-0.4
South Atlantic.....	66.7	74.8	77.9	73.9	75.5	76.1	0.6	0.4	-1.0	0.5
Delaware.....	59.2	70.2	78.8	81.0	81.8	84.3	0.9	1.2	0.6	0.7
Maryland.....	74.6	73.9	79.3	79.3	84.0	82.8	-0.0	0.7	-	0.7
District of Columbia.....	76.2	80.8	77.7	78.9	83.0	79.6	0.3	-0.4	0.3	0.1
Virginia.....	70.0	78.0	81.1	77.4	77.8	78.8	0.5	0.4	-0.9	0.3
West Virginia.....	62.1	74.5	79.3	75.3	75.6	76.9	0.9	0.6	-1.0	0.4
North Carolina.....	64.6	73.9	78.5	77.4	77.8	78.0	0.7	0.6	-0.3	0.1
South Carolina.....	69.1	76.9	76.4	74.2	77.0	78.4	0.5	-0.1	-0.6	0.9
Georgia.....	62.7	71.7	76.5	68.2	70.4	71.4	0.7	0.7	-2.3	0.8
Florida.....	57.5	73.9	76.2	70.2	71.7	72.9	1.3	0.3	-1.6	0.6
East South Central.....	62.6	71.8	78.2	74.0	74.6	74.4	0.7	0.9	-1.1	0.1
Kentucky.....	61.6	73.4	79.6	77.3	77.4	78.1	0.9	0.8	-0.6	0.2
Tennessee.....	65.5	75.9	78.2	74.4	75.9	75.6	0.7	0.3	-1.0	0.3
Alabama.....	59.0	70.8	80.0	72.6	73.3	73.6	0.9	1.2	-1.9	0.2
Mississippi.....	63.8	62.8	73.6	71.4	70.5	69.0	-0.1	1.6	-0.6	-0.6

See footnotes at end of table.

Table 61. Occupancy rate in community hospitals and average annual percent change, according to geographic division and State: United States, selected years 1940-81--Continued

(Data are based on reporting by facilities)

Geographic division and State	Year						Period			
	1940 ¹	1960 ²	1970	1975	1980	1981	1940-60 ^{1,2}	1960-70 ²	1970-75	1975-81
	Percent of beds occupied						Average annual percent change			
West South Central.....	62.5	68.7	73.2	69.1	69.7	70.6	0.5	0.6	-1.1	0.4
Arkansas.....	55.6	70.0	74.4	70.3	69.6	70.9	1.2	0.6	-1.1	0.1
Louisiana.....	75.0	67.9	73.6	68.8	69.7	69.6	-0.5	0.8	-1.3	0.2
Oklahoma.....	54.5	71.0	72.5	69.3	68.1	69.7	1.3	0.2	-0.9	0.1
Texas.....	59.6	68.2	73.0	69.0	70.1	71.1	0.7	0.7	-1.1	0.5
Mountain.....	60.9	69.9	71.2	68.4	69.6	69.9	0.7	0.2	-0.8	0.4
Montana.....	62.8	60.3	65.9	61.4	66.1	65.3	-0.2	0.9	-1.4	1.0
Idaho.....	65.4	55.9	66.1	68.2	65.2	66.0	-0.8	1.7	0.6	-0.5
Wyoming.....	47.5	61.1	63.1	55.9	57.2	61.9	1.3	0.3	-2.4	1.7
Colorado.....	62.1	80.6	74.0	69.1	71.6	71.3	1.3	-0.9	-1.4	0.5
New Mexico.....	47.8	65.1	69.8	63.6	66.2	69.8	1.6	0.7	-1.8	1.6
Arizona.....	61.2	74.2	73.3	73.5	74.2	73.6	1.0	-0.1	0.1	0.0
Utah.....	65.8	70.0	73.7	73.6	70.0	70.9	0.3	0.5	-0.0	-0.6
Nevada.....	67.9	70.7	72.7	67.2	68.8	68.7	0.2	0.3	-1.6	0.4
Pacific.....	69.7	71.4	71.0	66.2	69.0	69.9	0.1	-0.1	-1.4	0.9
Washington.....	67.5	63.4	69.7	67.7	71.7	73.0	-0.3	1.0	-0.6	1.3
Oregon.....	71.2	65.8	69.3	66.6	69.3	68.0	-0.4	0.5	-0.8	0.3
California.....	69.9	74.3	71.3	66.0	68.5	69.5	0.3	-0.4	-1.5	0.9
Alaska.....	...	53.8	59.1	63.3	58.3	62.1	...	0.9	1.4	-0.3
Hawaii.....	...	61.5	75.7	68.1	74.7	77.1	...	2.1	-2.1	2.1

¹1940 data are estimated based on published figures.

²1960 includes hospital units of institutions.

NOTE: Community hospitals include all non-Federal short-stay hospitals classified by the American Hospital Association according to one of the following services: general medical and surgical; obstetrics and gynecology; eye, ear, nose, and throat; rehabilitation; orthopedic; other specialty; children's general; children's eye, ear, nose, and throat; children's rehabilitation; children's orthopedic; and children's other specialty.

SOURCES: American Medical Association: Hospital service in the United States. *JAMA* 116(11): 1055-1144, 1941. (Copyright 1941: Used with the permission of the American Medical Association.); American Hospital Association: Hospitals. *JAHA* 35(15): 383-430, Aug. 1, 1961. (Copyright 1961: Used with the permission of the American Hospital Association.); Division of Health Care Statistics, National Center for Health Statistics: Data from the National Master Facility Inventory.

Table 62. Full-time equivalent employees per 100 average daily patients in community hospitals and average annual percent change, according to geographic division and State: United States, selected years 1960-81

(Data are based on reporting by facilities)

Geographic division and State	Year					Period		
	1960 ¹	1970	1975	1980	1981	1960-70 ¹	1970-75	1975-81
	Number of employees per 100 average daily patients					Average annual percent change		
United States.....	226	302	349	394	402	2.9	2.9	2.4
New England.....	249	351	412	456	471	3.5	3.3	2.3
Maine.....	227	289	359	409	433	2.4	4.4	3.2
New Hampshire.....	240	310	347	400	420	2.6	2.3	3.2
Vermont.....	227	318	346	348	371	3.4	1.7	1.2
Massachusetts.....	252	365	436	488	500	3.8	3.6	2.3
Rhode Island.....	270	383	433	454	466	3.6	2.5	1.2
Connecticut.....	247	347	397	440	453	3.5	2.7	2.2
Middle Atlantic.....	225	311	352	383	388	3.3	2.5	1.6
New York.....	233	336	375	396	395	3.7	2.2	0.9
New Jersey.....	225	278	308	332	343	2.1	2.1	1.8
Pennsylvania.....	214	287	340	390	401	3.0	3.4	2.8
East North Central.....	226	299	343	396	406	2.8	2.8	2.9
Ohio.....	232	302	334	392	408	2.7	2.0	3.4
Indiana.....	216	280	320	374	380	2.6	2.7	2.9
Illinois.....	226	301	357	407	421	2.9	3.5	2.8
Michigan.....	239	313	364	417	430	2.7	3.1	2.8
Wisconsin.....	199	277	315	367	353	3.4	2.6	1.9
West North Central.....	212	273	305	357	362	2.6	2.2	2.9
Minnesota.....	220	273	296	347	328	2.2	1.6	1.7
Iowa.....	208	258	293	349	351	2.2	2.6	3.1
Missouri.....	217	289	326	385	402	2.9	2.4	3.6
North Dakota.....	177	254	273	295	301	3.7	1.5	1.6
South Dakota.....	188	247	294	352	314	2.8	3.5	1.1
Nebraska.....	220	276	298	326	322	2.3	1.5	1.3
Kansas.....	210	270	313	368	411	2.5	3.0	4.6
South Atlantic.....	217	295	343	379	389	3.1	3.1	2.1
Delaware.....	243	328	390	405	414	3.0	3.5	1.0
Maryland.....	237	354	391	403	419	4.1	2.0	1.2
District of Columbia.....	240	363	443	483	561	4.2	4.1	4.0
Virginia.....	193	289	323	369	357	4.1	2.2	1.7
West Virginia.....	198	255	298	351	351	2.6	3.2	2.8
North Carolina.....	196	277	319	363	391	3.5	2.9	3.5
South Carolina.....	185	257	302	356	350	3.3	3.3	2.5
Georgia.....	233	294	364	396	399	2.4	4.4	1.5
Florida.....	245	295	346	375	386	1.9	3.2	1.8
East South Central.....	227	275	306	348	354	1.9	2.2	2.5
Kentucky.....	229	276	292	332	345	1.9	1.1	2.8
Tennessee.....	231	284	315	359	363	2.1	2.1	2.4
Alabama.....	233	266	308	357	359	1.3	3.0	2.6
Mississippi.....	207	270	300	334	337	2.7	2.1	2.0

See notes at end of table.

Table 62. Full-time equivalent employees per 100 average daily patients in community hospitals and average annual percent change, according to geographic division and State: United States, selected years 1960-81--Continued

(Data are based on reporting by facilities¹)

Geographic division and State	Year					Period		
	1960 ¹	1970	1975	1980	1981	1960-70 ¹	1970-75	1975-81
	Number of employees per 100 average daily patients					Average annual percent change		
West South Central.....	225	297	346	384	398	2.8	3.1	2.4
Arkansas.....	209	274	318	355	346	2.7	3.0	1.4
Louisiana.....	218	292	354	392	415	3.0	3.9	2.7
Oklahoma.....	218	296	359	404	420	3.1	3.9	2.7
Texas.....	232	304	346	383	398	2.7	2.6	2.4
Mountain.....	226	299	364	413	411	2.8	4.0	2.0
Montana.....	216	247	301	302	287	1.4	4.0	-0.8
Idaho.....	255	281	321	374	360	1.0	2.7	1.9
Wyoming.....	217	251	344	445	388	1.5	6.5	2.0
Colorado.....	221	306	373	398	404	3.3	4.0	1.3
New Mexico.....	228	314	389	430	426	3.3	4.4	1.5
Arizona.....	222	327	381	455	454	3.9	3.1	3.0
Utah.....	243	304	388	460	463	2.3	5.0	3.0
Nevada.....	224	284	344	427	445	2.4	3.9	4.4
Pacific.....	243	327	401	467	479	3.0	4.2	3.0
Washington.....	263	313	382	428	449	1.8	4.1	2.7
Oregon.....	232	303	387	417	452	2.7	5.0	2.6
California.....	241	334	407	481	490	3.3	4.0	3.1
Alaska.....	220	301	385	454	453	3.2	5.0	2.7
Hawaii.....	226	278	357	401	397	2.1	5.1	1.8

¹1960 includes hospital units of institutions, but excludes students, interns, and residents.

NOTE: Community hospitals include all non-Federal short-stay hospitals classified by the American Hospital Association according to one of the following services: general medical and surgical; obstetrics and gynecology; eye, ear, nose, and throat; rehabilitation; orthopedic; other specialty; children's general; children's eye, ear, nose, and throat; children's rehabilitation; children's orthopedic; and children's other specialty.

SOURCES: American Hospital Association: Hospitals. *JAHA* 35(15): 383-430, Aug. 1, 1961. (Copyright 1961: Used with the permission of the American Hospital Association.); Division of Health Care Statistics, National Center for Health Statistics: Data from the National Master Facility Inventory.

Table 63. Long-term hospitals, beds, and occupancy rates, according to type of hospital and ownership:
United States, selected years 1970-81

(Data are based on reporting by a census of hospitals)

Type of hospital and ownership	Year						
	1970	1975	1976	1978	1979	1980	1981
Hospitals							
	Number						
General.....	75	44	37	24	22	17	20
Federal.....	38	23	21	12	11	9	12
Non-Federal.....	37	21	16	12	11	8	8
Psychiatric.....	459	419	394	375	380	381	394
Federal.....	33	26	25	24	24	23	22
Nonprofit.....	56	45	43	47	46	47	52
Proprietary.....	39	51	50	54	57	57	65
State-local government.....	331	297	276	250	253	254	255
Tuberculosis and other respiratory diseases.....	103	34	19	13	11	10	10
All other.....	200	196	183	160	156	150	139
Federal.....	1	2	2	3	2	1	1
Nonprofit.....	110	94	84	73	68	66	67
Proprietary.....	2	9	9	9	10	11	10
State-local government.....	87	91	88	75	76	72	61
Beds							
General.....	42,569	17,329	18,664	11,465	9,710	8,253	9,925
Federal.....	31,403	14,406	16,146	9,305	8,050	7,205	8,823
Non-Federal.....	11,166	2,923	2,518	2,160	1,660	1,048	1,102
Psychiatric.....	551,847	344,257	301,374	237,234	232,344	218,400	205,003
Federal.....	41,500	27,523	25,069	23,158	22,290	20,871	19,051
Nonprofit.....	8,892	5,366	5,291	6,274	6,951	6,645	6,944
Proprietary.....	3,399	4,821	4,725	5,162	5,837	5,877	6,834
State-local government.....	498,056	306,547	266,289	202,640	197,266	185,007	172,174
Tuberculosis and other respiratory diseases.....	19,937	5,699	3,447	2,641	2,084	1,500	1,492
All other.....	49,152	49,268	47,469	40,763	39,702	37,911	34,472
Federal.....	357	968	1,022	1,489	1,024	357	357
Nonprofit.....	12,638	12,733	11,807	10,120	9,864	10,038	10,328
Proprietary.....	101	879	1,023	986	1,185	1,356	1,259
State-local government.....	36,056	34,688	33,617	28,168	27,629	26,160	22,528
Occupancy rate							
	Percent of beds occupied						
General.....	79.2	84.4	83.8	83.1	81.7	83.9	86.4
Federal.....	80.4	85.2	83.8	82.8	82.0	84.6	87.6
Non-Federal.....	75.8	80.4	84.0	84.4	80.5	79.0	77.1
Psychiatric.....	84.9	81.3	80.1	81.7	83.7	85.9	86.7
Federal.....	83.4	88.3	86.2	85.7	84.8	87.9	87.7
Nonprofit.....	85.2	84.8	83.5	93.7	86.7	87.2	88.6
Proprietary.....	78.4	74.1	74.6	75.8	76.8	76.3	80.1
State-local government.....	85.0	80.8	79.5	81.0	83.7	86.0	86.8
Tuberculosis and other respiratory diseases.....	61.9	57.6	57.8	59.8	61.9	66.4	67.0
All other.....	83.3	82.3	82.5	83.3	85.8	85.9	86.3
Federal.....	73.4	86.3	77.9	65.0	65.2	65.3	65.0
Nonprofit.....	82.8	83.3	83.1	86.4	87.7	87.3	86.6
Proprietary.....	87.1	86.0	78.6	80.8	80.8	86.5	87.8
State-local government.....	83.6	81.7	82.6	83.2	86.1	85.6	86.4

SOURCES: American Hospital Association: Hospitals. JAHA 45(15):463-467, Aug. 1971; Hospital Statistics, 1976-81 Editions. Chicago, 1976-81. (Copyrights 1971, 1976-81: Used with the permission of the American Hospital Association.)

Table 64. Nursing homes with 25 or more beds, beds, and bed rates, according to geographic division and State:
United States, 1976 and 1980

(Data are based on reporting by facilities)

Geographic division and State	Nursing homes					
	Number		Beds		Bed rate ²	
	1976 ¹	1980	1976 ¹	1980	1976 ¹	1980
United States.....	14,129	14,316	1,295,067	1,416,757	56.4	57.5
New England.....	1,213	1,182	92,189	95,841	66.0	64.8
Maine.....	121	139	7,027	8,586	54.9	63.6
New Hampshire.....	68	70	5,633	6,225	61.9	63.5
Vermont.....	53	55	3,477	3,603	65.6	64.3
Massachusetts.....	645	620	47,169	51,335	69.5	72.2
Rhode Island.....	85	93	6,766	8,360	58.3	68.0
Connecticut.....	241	205	22,117	17,732	66.8	49.8
Middle Atlantic.....	1,567	1,519	187,435	210,463	44.1	47.3
New York.....	708	669	97,489	101,007	47.3	47.8
New Jersey.....	313	320	31,147	34,763	39.5	41.2
Pennsylvania.....	546	530	58,799	74,693	41.8	50.1
East North Central.....	2,899	2,871	284,035	310,149	68.2	70.9
Ohio.....	750	831	60,680	73,837	55.7	64.7
Indiana.....	420	421	35,799	43,832	65.9	76.9
Illinois.....	808	729	84,343	84,598	71.8	69.3
Michigan.....	505	495	54,442	59,686	65.3	67.3
Wisconsin.....	416	395	48,771	48,196	93.1	86.7
West North Central.....	1,964	2,086	156,992	171,532	75.7	79.3
Minnesota.....	385	377	38,177	40,249	85.4	85.6
Iowa.....	440	431	31,785	32,931	86.1	86.4
Missouri.....	408	509	32,539	41,027	53.3	64.6
North Dakota.....	81	81	6,357	6,253	84.8	78.2
South Dakota.....	117	117	8,047	8,479	93.6	94.2
Nebraska.....	210	223	18,399	18,069	93.4	88.6
Kansas.....	323	348	21,688	24,524	75.0	81.5
South Atlantic.....	1,475	1,631	142,383	158,888	38.4	38.3
Delaware.....	22	24	2,123	2,415	40.8	42.4
Maryland.....	165	170	18,559	19,874	53.0	52.3
District of Columbia.....	17	15	2,742	2,578	38.6	35.3
Virginia.....	208	223	23,816	23,868	54.1	49.4
West Virginia.....	73	79	4,858	5,881	22.6	26.0
North Carolina.....	276	354	20,903	28,225	40.8	49.4
South Carolina.....	102	131	8,311	11,132	34.8	41.4
Georgia.....	304	297	28,732	29,575	64.9	60.6
Florida.....	308	338	32,339	35,340	23.3	22.0
East South Central.....	856	859	66,994	78,684	45.5	49.7
Kentucky.....	267	277	19,929	24,847	53.3	63.2
Tennessee.....	258	228	19,448	21,339	42.9	43.4
Alabama.....	209	209	19,207	20,392	49.6	48.4
Mississippi.....	122	145	8,410	12,106	32.5	43.9

See footnotes at end of table.

Table 64. Nursing homes with 25 or more beds, beds, and bed rates, according to geographic division and State: United States, 1976 and 1980--Continued

(Data are based on reporting by facilities)

Geographic division and State	Nursing homes					
	Number		Beds		Bed rate ²	
	1976 ¹	1980	1976 ¹	1980	1976 ¹	1980
West South Central.....	1,742	1,720	157,347	164,596	72.6	70.3
Arkansas.....	208	195	19,322	18,935	69.5	63.1
Louisiana.....	200	199	18,969	21,553	53.4	56.9
Oklahoma.....	341	340	25,990	26,318	76.2	72.5
Texas.....	993	986	93,066	97,790	78.0	75.1
Mountain.....	493	511	41,874	45,509	47.4	44.9
Montana.....	69	68	4,725	5,319	61.4	64.1
Idaho.....	53	51	4,215	4,213	52.0	46.3
Wyoming.....	22	19	1,753	1,742	51.6	48.4
Colorado.....	173	159	17,833	16,575	81.8	69.4
New Mexico.....	30	33	2,489	2,572	26.5	23.6
Arizona.....	67	95	5,832	8,591	24.6	29.7
Utah.....	63	68	3,707	4,729	39.0	44.6
Nevada.....	16	18	1,320	1,768	28.1	29.0
Pacific.....	1,920	1,937	165,818	181,095	58.5	58.3
Washington.....	318	374	29,415	34,562	78.4	83.3
Oregon.....	202	178	15,758	16,960	59.0	57.7
California.....	1,369	1,356	118,144	126,719	55.7	54.7
Alaska.....	8	9	738	1,029	82.0	102.9
Hawaii.....	23	20	1,763	1,825	29.4	26.1

¹The 1980 National Master Facility Inventory (NMFI) excluded certain types of nursing homes that the 1976 NMFI included (nursing home units of hospitals, nursing homes for the blind, etc.). To make the data comparable, these types of homes and their beds were subtracted from the 1976 figures.

²Number of beds per 1,000 population 65 years of age and over.

³Excluded most homes for the aged.

SOURCE: Division of Health Care Statistics, National Center for Health Statistics: Data from the National Master Facility Inventory.

Table 65. Beds and bed rates in psychiatric facilities, according to type of facility: United States, 1972, 1976, and 1980

(Data are based on reporting by facilities)

Type of facility	Year					
	1972	1976	1980 ¹	1972	1976	1980 ¹
	Number of beds			Beds per 100,000 population		
All facilities ²	471,800	331,134	273,825	225.7	156.0	123.2
Non-Federal psychiatric hospitals.....	375,990	238,293	174,028	179.8	112.3	77.5
State and county hospitals.....	361,578	222,202	156,396	172.9	104.7	69.7
Private hospitals.....	14,412	16,091	17,632	6.9	7.6	7.8
Veterans Administration psychiatric services ³	42,545	35,913	33,796	20.3	16.9	15.7
Non-Federal general hospital psychiatric units.....	23,308	28,706	29,384	11.2	13.5	13.6
Residential treatment centers for emotionally disturbed children.....	19,348	18,029	20,197	9.3	8.5	9.0
Federally-funded community mental health centers.....	10,609	10,193	16,420	5.1	4.8	7.4

¹Provisional data. 1980 data are not yet available for Veterans Administration neuropsychiatric hospitals, general hospital inpatient psychiatric units (Veterans Administration and non-Federal), and federally funded community mental health centers (CMHC's); 1979 data are used for CMHC's, and 1978 data are used for Veterans Administration psychiatric services and non-Federal general hospital psychiatric inpatient units.

²Excludes total inpatient days for multiservice mental health facilities not elsewhere classified which represent less than 1 percent of all inpatient days in each year.

³Includes Veterans Administration neuropsychiatric hospitals and Veterans Administration general hospitals with separate psychiatric inpatient settings.

SOURCE: National Institute of Mental Health: State and regional distribution of psychiatric beds in 1972. Statistical Note 98. Public Health Service, Rockville, Md., Nov. 1973; State and regional distribution of psychiatric beds in 1976. Statistical Note 144. Public Health Service, Rockville, Md., Feb. 1978; State and regional distribution of psychiatric beds in 1978. Statistical Note 155. Public Health Service, Rockville, Md., Jan. 1981.

Table 66. Gross national product and national health expenditures: United States, selected years 1929-82

(Data are compiled by the Health Care Financing Administration)

Year	Gross national product in billions	National health expenditures		
		Amount in billions	Percent of gross national product	Amount per capita
1929.....	\$ 103.4	\$ 3.6	3.5	\$ 29
1935.....	72.2	2.9	4.0	23
1940.....	100.0	4.0	4.0	30
1950.....	286.5	12.7	4.4	82
1955.....	400.0	17.7	4.4	105
1960.....	506.5	26.9	5.3	146
1965.....	691.0	41.7	6.0	211
1970.....	992.7	74.7	7.5	358
1971.....	1,077.6	83.3	7.7	394
1972.....	1,185.9	93.5	7.9	438
1973.....	1,326.4	103.2	7.8	478
1974.....	1,434.2	116.4	8.1	535
1975.....	1,549.2	132.7	8.6	604
1976.....	1,718.0	149.7	8.7	674
1977.....	1,918.3	169.2	8.8	755
1978.....	2,163.9	189.3	8.8	836
1979.....	2,417.8	215.0	8.9	938
1980.....	2,633.1	249.0	9.5	1,075
1981.....	2,937.7	286.6	9.8	1,225
1982.....	3,059.3	322.4	10.5	1,365

SOURCE: Bureau of Data Management and Strategy: National health expenditures, 1982, by R. M. Gibson, D. R. Waldo, and K. R. Levit. Health Care Financing Review. HCFA Pub. No. 03154. Health Care Financing Administration. Washington. U.S. Government Printing Office, Fall 1983.

Table 67. Average annual percent change in personal health care expenditures and percent distribution of factors affecting growth: United States, 1965-82

(Data are compiled by the Health Care Financing Administration)

Period	Average annual percent change ¹	Factors affecting growth				
		All factors	Prices	Population	Intensity ²	
			Percent distribution			
1965-82.....	13.0	100	60	8	32	
1965-66.....	10.6	100	46	11	43	
1966-67.....	12.2	100	54	9	37	
1967-68.....	13.1	100	43	8	49	
1968-69.....	13.4	100	41	8	51	
1969-70.....	14.5	100	48	8	44	
1970-71.....	10.5	100	58	12	30	
1971-72.....	11.5	100	40	10	50	
1972-73.....	10.6	100	41	10	49	
1973-74.....	13.9	100	66	7	27	
1974-75.....	15.6	100	70	7	23	
1975-76.....	12.9	100	69	8	23	
1976-77.....	12.8	100	64	8	28	
1977-78.....	12.1	100	69	9	22	
1978-79.....	13.3	100	72	8	20	
1979-80.....	16.1	100	72	7	21	
1980-81.....	16.0	100	72	6	22	
1981-82.....	12.7	100	78	8	14	

¹Refers to 1-year periods unless otherwise noted.

²Represents changes in use and/or kinds of services and supplies.

SOURCE: Bureau of Data Management and Strategy, Health Care Financing Administration: Unpublished data.

Table 68. Personal health care per capita expenditures and average annual percent change, according to geographic division and State: United States, selected years 1966-78

(Data are compiled by the Health Care Financing Administration)

Geographic division and State	Year						Average annual percent change 1966-78
	1966	1969	1972	1976	1977	1978	
	Per capita amount						
United States.....	\$200	\$280	\$380	\$ 601	\$ 672	\$ 745	11.6
New England.....	234	329	438	681	757	838	11.2
Maine.....	171	240	328	539	603	662	11.9
New Hampshire.....	189	246	326	502	544	605	10.2
Vermont.....	193	270	349	531	573	630	10.3
Massachusetts.....	254	362	485	755	842	935	11.5
Rhode Island.....	231	314	408	666	735	822	11.2
Connecticut.....	237	331	436	671	749	827	11.0
Middle Atlantic.....	225	316	416	657	722	794	11.1
New York.....	254	360	470	738	793	858	10.7
New Jersey.....	193	265	355	576	644	699	11.3
Pennsylvania.....	200	278	370	585	663	756	11.7
East North Central.....	203	278	380	604	678	758	11.6
Ohio.....	194	263	360	589	659	738	11.8
Indiana.....	180	249	336	536	607	671	11.6
Illinois.....	219	299	405	627	702	792	11.3
Michigan.....	212	289	394	630	713	802	11.7
Wisconsin.....	196	275	384	607	675	742	11.7
West North Central.....	200	272	368	594	671	753	11.7
Minnesota.....	217	289	386	606	674	738	10.7
Iowa.....	196	264	351	556	639	724	11.5
Missouri.....	198	274	365	611	696	790	12.2
North Dakota.....	193	269	367	624	711	788	12.4
South Dakota.....	178	238	328	516	587	667	11.6
Nebraska.....	194	267	371	590	653	737	11.8
Kansas.....	191	265	376	601	679	766	12.3
South Atlantic.....	169	242	342	550	617	682	12.3
Delaware.....	210	289	380	592	655	722	10.8
Maryland.....	189	271	386	602	663	744	12.1
District of Columbia.....	435	672	945	1,352	1,526	1,695	12.0
Virginia.....	150	211	299	494	562	628	12.7
West Virginia.....	160	226	316	502	555	611	11.8
North Carolina.....	144	204	282	458	514	576	12.2
South Carolina.....	123	180	247	421	474	521	12.8
Georgia.....	151	219	324	512	582	645	12.8
Florida.....	186	266	376	627	701	766	12.5
East South Central.....	148	210	294	483	548	610	12.5
Kentucky.....	155	218	287	440	490	542	11.0
Tennessee.....	165	231	323	531	608	675	12.4
Alabama.....	145	210	302	503	570	633	13.1
Mississippi.....	115	163	244	428	490	556	14.0

See note at end of table.

Table 68. Personal health care per capita expenditures and average annual percent change, according to geographic division and State: United States, selected years 1966-78--Continued

(Data are compiled by the Health Care Financing Administration)

Geographic division and State	Year						Average annual percent change 1966-78
	1966	1969	1972	1976	1977	1978	
	Per capita amount						
West South Central.....	\$170	\$240	\$332	\$ 532	\$ 596	\$ 660	12.0
Arkansas.....	140	196	284	474	529	585	12.7
Louisiana.....	156	224	321	508	573	641	12.5
Oklahoma.....	183	263	350	536	599	664	11.3
Texas.....	176	247	339	549	613	678	11.9
Mountain.....	190	260	346	539	596	658	10.9
Montana.....	173	233	324	503	580	645	11.6
Idaho.....	153	209	292	451	512	554	11.3
Wyoming.....	197	263	329	450	505	551	8.9
Colorado.....	236	313	395	602	659	725	9.8
New Mexico.....	156	213	281	457	505	567	11.3
Arizona.....	192	271	375	582	630	698	11.4
Utah.....	161	215	286	455	503	556	10.9
Nevada.....	196	280	390	657	746	828	12.8
Pacific.....	234	327	443	687	776	858	11.5
Washington.....	218	294	389	575	648	710	10.4
Oregon.....	196	272	363	584	663	728	11.6
California.....	241	339	465	723	816	904	11.6
Alaska.....	226	283	335	587	669	735	10.3
Hawaii.....	210	300	394	595	676	744	11.1

SOURCE: Bureau of Data Management and Strategy, Health Care Financing Administration: Unpublished data.

Table 69. Consumer Price Index (1967=100) and average annual percent change for all items and selected items:
United States, selected years 1950-82

(Data are based on reporting by samples of providers and other retail outlets)

Year	All items	Item					
		Medical care	Food	Apparel and upkeep	Housing	Energy	Personal care
Consumer Price Index							
1950.....	72.1	53.7	74.5	79.0	72.8	---	68.3
1955.....	80.2	64.8	81.6	84.1	82.3	---	77.9
1960.....	88.7	79.1	88.0	89.6	90.2	94.2	90.1
1965.....	94.5	89.5	94.4	93.7	94.9	96.3	95.2
1970.....	116.3	120.6	114.9	116.1	118.2	107.0	113.2
1975.....	161.2	168.6	175.4	142.3	164.5	176.6	150.7
1976.....	170.5	184.7	180.8	147.6	174.6	189.3	160.5
1977.....	181.5	202.4	192.2	154.2	186.5	207.3	170.9
1978.....	195.4	219.4	211.4	159.6	202.8	220.4	182.0
1979.....	217.4	239.7	234.5	166.6	227.6	275.9	195.8
1980.....	246.8	265.9	254.6	178.4	263.3	361.1	213.1
1981.....	272.4	294.5	274.6	186.9	293.5	410.0	232.0
1982.....	289.1	328.7	285.7	191.8	314.7	416.1	248.1
Average annual percent change							
1950-55.....	2.2	3.8	1.8	1.3	2.5	---	2.7
1955-60.....	2.0	4.1	1.5	1.3	1.9	---	3.0
1960-65.....	1.3	2.5	1.4	0.9	1.0	0.4	1.1
1965-70.....	4.2	6.1	4.0	4.4	4.5	2.1	3.5
1970-75.....	6.7	6.9	8.8	4.2	6.8	10.5	5.9
1975-76.....	5.8	9.5	3.1	3.7	6.1	7.2	6.5
1976-77.....	6.5	9.6	6.3	4.5	6.8	9.5	6.5
1977-78.....	7.7	8.4	10.0	3.5	8.7	6.3	6.5
1978-79.....	11.3	9.3	10.9	4.4	12.2	25.2	7.6
1979-80.....	13.5	10.9	8.6	7.1	15.7	30.9	8.8
1980-81.....	10.4	10.8	7.9	4.8	11.5	13.5	8.9
1981-82.....	6.1	11.6	4.0	2.6	7.2	1.5	6.9

SOURCE: Bureau of Labor Statistics, U.S. Department of Labor: Consumer Price Index. Various releases.

Table 70. Consumer Price Index (1967=100) for all items and medical care components: United States, selected years 1950-82

(Data are based on reporting by samples of providers and other retail outlets)

Item and medical care component	Year								
	1950	1955	1960	1965	1970	1975	1980	1981	1982
	Consumer Price Index								
CPI, all items.....	72.1	80.2	88.7	94.5	116.3	161.2	246.8	272.4	289.1
Less medical care.....	---	---	89.4	94.9	116.1	160.9	245.5	270.9	286.8
CPI, all services.....	58.7	70.9	83.5	92.2	121.6	166.6	270.3	305.7	333.3
All medical care.....	53.7	64.8	79.1	89.5	120.6	168.6	265.9	294.5	328.7
Medical care services.....	49.2	60.4	74.9	87.3	124.2	179.1	287.4	318.2	356.0
Professional services.....	---	---	---	---	119.7	164.5	252.0	277.9	301.5
Physician services.....	55.2	65.4	77.0	88.3	121.4	169.4	269.3	299.0	327.1
Dental services.....	63.9	73.0	82.1	92.2	119.4	161.9	240.2	263.3	283.6
Other professional services ¹	---	---	---	---	---	---	123.6	135.2	144.3
Other medical care services.....	---	---	---	---	129.7	196.9	330.1	366.9	421.9
Hospital and other medical services ¹	---	---	---	---	---	---	133.5	152.5	174.1
Hospital room.....	30.3	42.3	57.3	75.9	145.4	236.1	418.9	481.1	556.7
Other hospital and medical care services ¹	---	---	---	---	---	---	132.8	151.2	170.5
Medical care commodities.....	88.5	94.7	104.5	100.2	103.6	118.8	168.1	186.5	205.7
Prescription drugs.....	92.6	101.6	115.3	102.0	101.2	109.3	154.8	172.5	192.7
Nonprescription drugs and medical supplies ¹	---	---	---	---	---	---	120.9	133.6	145.8
Eyeglasses ¹	---	---	---	---	---	---	117.5	125.6	131.1
Internal and respiratory over-the-counter drugs.....	---	---	---	98.0	106.2	130.1	188.1	211.4	234.2
Nonprescription medical ¹ equipment and supplies ¹	---	---	---	---	---	---	118.2	129.1	141.1

¹Dec. 1977=100.

SOURCE: Bureau of Labor Statistics, U.S. Department of Labor: Consumer Price Index. Various releases.

Table 71. Consumer Price Index (1967=100) average annual percent change for all items and medical care components:
United States, selected years 1950-82

(Data are based on reporting by samples of providers and other retail outlets)

Item and medical care component	Period						
	1950-55	1955-60	1960-65	1965-70	1970-75	1975-81	1981-82
	Average annual percent change						
CPI, all items.....	2.2	2.0	1.3	4.2	6.7	9.1	6.1
Less medical care.....	---	---	1.2	4.1	6.7	9.1	5.9
CPI, all services.....	3.8	3.3	2.0	5.7	6.5	10.6	9.0
All medical care.....	3.8	4.1	2.5	6.1	6.9	9.7	11.6
Medical care services.....	4.2	4.4	3.1	7.3	7.6	10.1	11.9
Professional services.....	---	---	---	---	6.6	9.1	8.5
Physician services.....	3.4	3.3	2.8	6.6	6.9	9.9	9.4
Dental services.....	2.7	2.4	2.3	5.3	6.3	8.4	7.7
Other professional services ¹	---	---	---	---	---	---	6.7
Other medical care services.....	---	---	---	---	8.7	10.9	15.0
Hospital and other medical services ¹	---	---	---	---	---	---	14.2
Hospital room.....	6.9	6.3	5.8	13.9	10.2	12.6	15.7
Other hospital and medical care services ¹	---	---	---	---	---	---	12.8
Medical care commodities.....	1.4	2.0	-0.8	0.7	2.8	7.8	10.3
Prescription drugs.....	1.9	2.6	-2.4	-0.2	1.6	7.9	11.7
Nonprescription drugs and medical supplies ¹	---	---	---	---	---	---	9.1
Eyeglasses ¹	---	---	---	---	---	---	4.4
Internal and respiratory over-the-counter drugs.....	---	---	---	1.6	4.1	8.4	10.8
Nonprescription medical equipment and supplies ¹	---	---	---	---	---	---	9.3

¹Dec. 1977=100.

SOURCE: Bureau of Labor Statistics, U.S. Department of Labor: Consumer Price Index. Various releases.

Table 72. National health expenditures, according to source of funds: United States, selected years 1929-82

(Data are compiled by the Health Care Financing Administration)

Year	All health expenditures in billions	Source of funds					
		Private			Public		
		Amount in billions	Amount per capita	Percent of total	Amount in billions	Amount per capita	Percent of total
1929.....	\$ 3.6	\$ 3.2	\$ 25	86.4	\$ 0.5	\$ 4	13.6
1935.....	2.9	2.4	18	80.8	0.6	4	19.2
1940.....	4.0	3.2	24	79.7	0.8	6	20.3
1950.....	12.7	9.2	60	72.8	3.4	22	27.2
1955.....	17.7	13.2	78	74.3	4.6	27	25.7
1960.....	26.9	20.3	110	75.3	6.6	36	24.7
1965.....	41.7	31.0	156	74.1	10.8	55	25.9
1970.....	74.7	46.9	225	62.8	27.8	133	37.2
1971.....	83.3	51.6	244	62.0	31.7	150	38.0
1972.....	93.5	58.1	272	62.1	35.4	166	37.9
1973.....	103.2	63.9	296	61.9	39.3	182	38.1
1974.....	116.4	69.3	318	59.5	47.1	216	40.5
1975.....	132.7	76.5	348	57.7	56.2	255	42.3
1976.....	149.7	86.7	391	57.9	62.9	284	42.1
1977.....	169.2	99.1	442	58.6	70.1	313	41.4
1978.....	189.3	109.8	485	58.0	79.5	351	42.0
1979.....	215.0	124.4	543	57.9	90.6	395	42.1
1980.....	249.0	143.6	620	57.7	105.4	455	42.3
1981.....	286.6	164.4	703	57.4	122.2	522	42.6
1982.....	322.4	185.6	786	57.6	136.8	579	42.4

SOURCE: Bureau of Data Management and Strategy: National health expenditures, 1982, by R. M. Gibson, D. R. Waldo, and K. R. Levit. *Health Care Financing Review*. HCFA Pub. No. 03154. Health Care Financing Administration. Washington. U.S. Government Printing Office, Fall 1983.

Table 73. National health expenditures average annual percent change, according to source of funds: United States, 1929-82

(Data are compiled by the Health Care Financing Administration)

Period	All health expenditures	Source of funds	
		Private	Public
Average annual percent change			
1929-82.....	8.9	8.0	11.2
1929-35.....	-3.5	-4.7	3.1
1935-40.....	6.6	5.9	5.9
1940-50.....	12.2	11.1	15.6
1950-55.....	6.9	7.5	6.2
1955-60.....	8.7	9.0	7.5
1960-65.....	9.2	8.8	10.4
1965-70.....	12.4	8.7	20.8
1970-75.....	12.2	10.3	15.1
1975-80.....	13.2	13.3	13.1
1970-71.....	11.5	10.0	14.0
1971-72.....	12.2	12.6	11.7
1972-73.....	10.4	10.0	11.0
1973-74.....	12.8	8.5	19.8
1974-75.....	14.0	10.4	19.3
1975-76.....	12.8	13.3	11.9
1976-77.....	13.0	14.3	11.4
1977-78.....	11.9	10.8	13.4
1978-79.....	13.6	13.3	14.0
1979-80.....	15.8	15.4	16.3
1980-81.....	15.1	14.5	15.9
1981-82.....	12.5	12.9	11.9

SOURCE: Bureau of Data Management and Strategy: National health expenditures, 1982, by R. M. Gibson, D. R. Waldo, and K. R. Levit. Health Care Financing Review. HCFA Pub. No. 03154. Health Care Financing Administration. Washington. U.S. Government Printing Office, Fall 1983.

Table 74. Personal health care expenditures and percent distribution, according to source of payment:
United States, selected years 1929-82

(Data are compiled by the Health Care Financing Administration)

Year	All personal health care expenditures in billions ¹	Per capita	Source of payment							
			All sources	Direct payment	Third-party payment					
					Total	Private health insurance	Philanthropy and industry	Government		
								Total	Federal	State and local
Percent distribution										
1929.....	\$ 3.2	\$ 26	100.0	288.4	11.6	---	2.6	9.0	2.7	6.3
1935.....	2.7	21	100.0	282.4	17.6	---	2.8	14.7	3.4	11.3
1940.....	3.5	26	100.0	281.3	18.7	---	2.6	16.1	4.1	12.0
1950.....	10.9	70	100.0	65.5	34.5	9.1	2.9	22.4	10.4	12.0
1955.....	15.7	93	100.0	58.1	41.9	16.1	2.8	23.0	10.5	12.5
1960.....	23.7	129	100.0	54.9	45.1	21.1	2.3	21.8	9.3	12.5
1965.....	35.8	181	100.0	51.8	48.2	24.4	2.2	21.6	10.1	11.4
1970.....	65.1	312	100.0	39.9	60.1	24.0	1.6	34.5	22.3	12.2
1971.....	72.0	341	100.0	38.6	61.4	24.1	1.7	35.6	23.3	12.3
1972.....	80.2	376	100.0	38.6	61.4	23.8	1.6	36.0	23.6	12.4
1973.....	88.7	411	100.0	38.6	61.4	23.8	1.5	36.1	23.8	12.4
1974.....	101.0	464	100.0	36.1	63.9	24.2	1.5	38.2	25.5	12.7
1975.....	116.8	531	100.0	33.4	66.6	25.8	1.4	39.5	26.9	12.6
1976.....	131.8	594	100.0	32.6	67.4	26.9	1.4	39.1	27.4	11.7
1977.....	148.7	663	100.0	32.8	67.2	26.9	1.4	38.9	27.6	11.4
1978.....	166.7	736	100.0	32.5	67.5	27.0	1.3	39.2	27.8	11.4
1979.....	188.9	825	100.0	32.7	67.3	26.6	1.4	39.3	28.2	11.1
1980.....	219.4	947	100.0	32.9	67.1	26.0	1.4	39.7	28.6	11.2
1981.....	254.6	1,088	100.0	32.2	67.8	26.2	1.4	40.2	29.2	10.9
1982.....	286.9	1,215	100.0	31.5	68.5	26.7	1.5	40.3	29.2	11.1

¹Includes all expenditures for health services and supplies other than expenses for prepayment and administration and government public health activities.

²Includes any insurance benefits and expenses for prepayment (insurance premiums less insurance benefits).

SOURCE: Bureau of Data Management and Strategy: National health expenditures, 1982, by R. M. Gibson, D. R. Waldo, and K. R. Levit. *Health Care Financing Review*. HCFA Pub. No. 03154. Health Care Financing Administration. Washington. U.S. Government Printing Office, Fall 1983.

Table 75. National health expenditures and percent distribution, according to type of expenditure: United States, selected years 1950-82

(Data are compiled by the Health Care Financing Administration)

Type of expenditure	Year							
	1950	1960	1965	1970	1975	1980	1981	1982
	Amount in billions							
Total.....	\$12.7	\$26.9	\$41.7	\$74.7	\$132.7	\$249.0	\$286.6	\$322.4
	Percent distribution							
All expenditures.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Health services and supplies.....	92.4	93.6	91.6	92.8	93.7	95.2	95.4	95.6
Personal health care.....	86.0	88.0	85.7	87.3	88.0	88.1	88.8	89.0
Hospital care.....	30.4	33.8	33.3	37.2	39.3	40.3	41.2	42.0
Physician services.....	21.7	21.1	20.3	19.2	18.8	18.8	19.1	19.2
Dentist services.....	7.6	7.4	6.7	6.4	6.2	6.2	6.0	6.0
Nursing home care.....	1.5	2.0	5.0	6.3	7.6	8.3	8.4	8.5
Other professional services.....	3.1	3.2	2.5	2.1	2.0	2.3	2.2	2.2
Drugs and drug sundries.....	13.6	13.7	12.4	10.7	9.0	7.8	7.4	6.9
Eyeglasses and appliances.....	3.9	2.9	2.8	2.6	2.4	2.1	2.0	1.8
Other health services.....	4.2	4.0	2.7	2.8	2.8	2.4	2.4	2.4
Expenses for prepayment.....	3.6	4.1	4.0	3.6	3.3	4.3	3.9	4.0
Government public health activities.....	2.9	1.5	1.9	1.9	2.4	2.8	2.7	2.7
Research and construction.....	7.6	6.4	8.4	7.2	6.3	4.8	4.6	4.4
Research.....	0.9	2.5	3.6	2.6	2.5	2.1	2.0	1.8
Construction.....	6.7	3.9	4.8	4.6	3.8	2.6	2.6	2.6

SOURCE: Bureau of Data Management and Strategy: National health expenditures, 1982, by R. M. Gibson, D. R. Waldo, and K. R. Levit. Health Care Financing Review. HCFA Pub. No. 03154. Health Care Financing Administration. Washington. U.S. Government Printing Office, Fall 1983.

Table 76. National health expenditures average annual percent change, according to type of expenditure: United States, selected years 1950-82

(Data are compiled by the Health Care Financing Administration)

Type of expenditure	Period						
	1950-82	1950-60	1960-65	1965-70	1970-75	1975-80	1980-82
	Average annual percent change						
All expenditures.....	10.6	7.8	9.2	12.4	12.2	13.4	13.8
Health services and supplies.....	10.8	8.0	8.7	12.7	12.4	13.8	14.0
Personal health care.....	10.8	8.1	8.6	12.7	12.4	13.4	14.4
Hospital care.....	11.7	9.0	8.8	14.9	13.4	14.0	16.2
Physician services.....	10.3	7.5	8.3	11.0	11.7	13.5	14.9
Dentist services.....	9.7	7.5	7.0	10.9	11.8	13.4	12.5
Nursing home care.....	16.6	10.9	33.2	17.5	16.5	15.3	15.1
Other professional services.....	9.4	8.1	2.1	9.9	10.2	16.6	12.6
Drugs and drug sundries.....	8.4	7.8	7.0	9.0	8.3	10.2	7.7
Eyeglasses and appliances.....	7.9	4.7	8.4	9.6	11.0	9.8	5.7
Other health services.....	8.9	7.7	-	13.8	12.4	10.2	12.5
Expenses for prepayment.....	10.6	9.1	7.8	11.0	10.3	19.5	8.9
Government public health activities.....	10.1	1.4	14.9	11.8	18.0	16.9	10.8
Research and construction.....	8.6	5.9	15.5	9.1	9.2	7.0	9.3
Research.....	13.6	18.9	16.5	5.9	10.5	9.9	5.5
Construction.....	7.5	2.2	14.9	11.2	8.4	5.0	12.3

SOURCE: Bureau of Data Management and Strategy: National health expenditures, 1982, by R. M. Gibson, D. R. Waldo, and K. R. Levit. Health Care Financing Review. HCFA Pub. No. 03154. Health Care Financing Administration. Washington. U.S. Government Printing Office, Fall 1983.

Table 77. Hospital care per capita expenditures and average annual percent change, according to geographic division and State: United States, selected years 1966-78

(Data are compiled by the Health Care Financing Administration)

Geographic division and State	Year						Average annual percent change 1966-78
	1966	1969	1972	1976	1977	1978	
	Per capita amount						
United States.....	\$ 79	\$118	\$165	\$272	\$ 305	\$ 337	12.8
New England.....	100	150	205	328	370	403	12.3
Maine.....	73	106	137	241	275	296	12.3
New Hampshire.....	73	97	130	208	234	255	11.0
Vermont.....	85	125	160	238	254	271	10.2
Massachusetts.....	115	176	244	392	447	490	12.9
Rhode Island.....	100	147	195	321	355	390	12.0
Connecticut.....	90	132	184	290	321	351	12.0
Middle Atlantic.....	93	143	199	322	351	382	12.5
New York.....	109	170	234	369	394	416	11.8
New Jersey.....	70	102	144	249	276	294	12.7
Pennsylvania.....	81	126	177	295	334	386	13.9
East North Central.....	80	116	166	281	315	352	13.1
Ohio.....	73	107	153	268	298	334	13.5
Indiana.....	63	94	133	231	262	289	13.5
Illinois.....	89	131	193	317	359	402	13.4
Michigan.....	89	122	168	290	325	368	12.6
Wisconsin.....	76	116	161	263	287	314	12.6
West North Central.....	79	116	156	267	305	342	13.1
Minnesota.....	88	121	166	266	302	324	11.4
Iowa.....	68	102	137	232	273	307	13.4
Missouri.....	80	122	162	297	339	391	14.1
North Dakota.....	82	120	155	280	327	354	13.0
South Dakota.....	75	99	132	235	260	295	12.1
Nebraska.....	74	114	156	255	282	324	13.0
Kansas.....	75	115	159	261	301	340	13.4
South Atlantic.....	67	101	151	249	281	310	13.6
Delaware.....	91	130	173	285	313	342	11.7
Maryland.....	84	120	184	282	315	355	12.8
District of Columbia.....	189	326	554	899	1,007	1,115	16.0
Virginia.....	63	91	132	221	250	281	13.3
West Virginia.....	70	106	152	258	289	318	13.5
North Carolina.....	57	84	120	198	224	249	13.1
South Carolina.....	51	78	105	184	208	226	13.3
Georgia.....	56	86	135	224	254	283	14.4
Florida.....	66	102	151	263	301	326	14.3
East South Central.....	60	91	131	223	255	285	13.9
Kentucky.....	60	90	121	199	219	242	12.4
Tennessee.....	67	102	148	249	289	320	13.9
Alabama.....	60	91	134	234	272	305	14.5
Mississippi.....	48	72	110	194	222	252	14.9

See note at end of table.

Table 77. Hospital care per capita expenditures and average annual percent change, according to geographic division and State: United States, selected years 1966-78--Continued

(Data are compiled by the Health Care Financing Administration)

Geographic division and State	Year						Average annual percent change 1966-78
	1966	1969	1972	1976	1977	1978	
	Per capita amount						
West South Central.....	\$ 65	\$ 96	\$136	\$226	\$ 257	\$ 286	13.1
Arkansas.....	55	76	113	194	218	240	13.0
Louisiana.....	62	93	144	234	264	299	14.0
Oklahoma.....	62	100	132	221	254	283	13.5
Texas.....	68	100	138	230	262	291	12.8
Mountain.....	75	108	145	231	257	283	11.7
Montana.....	67	94	122	190	232	256	11.9
Idaho.....	50	75	103	159	183	197	12.1
Wyoming.....	84	115	123	185	204	225	8.5
Colorado.....	99	135	172	270	289	310	10.0
New Mexico.....	68	94	121	222	247	280	12.5
Arizona.....	77	117	168	255	284	317	12.5
Utah.....	58	81	113	185	210	226	12.0
Nevada.....	68	107	152	272	304	348	14.7
Pacific.....	84	122	169	275	311	346	12.5
Washington.....	71	101	133	213	239	260	11.4
Oregon.....	66	96	126	215	245	268	12.4
California.....	87	128	181	294	332	371	12.8
Alaska.....	145	164	165	274	318	367	8.0
Hawaii.....	79	114	148	219	249	278	11.1

SOURCE: Bureau of Data Management and Strategy, Health Care Financing Administration: Unpublished data.

Table 78. Nursing home care per capita expenditures and average annual percent change, according to geographic division and State: United States, selected years 1966-78

(Data are compiled by the Health Care Financing Administration)

Geographic division and State	Year						Average annual percent change 1966-78
	1966	1969	1972	1976	1977	1978	
	Per capita amount						
United States.....	\$12	\$19	\$31	\$52	\$60	\$ 68	15.6
New England.....	20	28	47	86	97	110	15.4
Maine.....	15	23	40	70	81	97	17.0
New Hampshire.....	16	20	35	43	46	59	11.8
Vermont.....	19	27	39	76	83	97	14.4
Massachusetts.....	22	32	52	95	106	117	14.8
Rhode Island.....	15	21	33	80	99	121	18.9
Connecticut.....	19	29	49	90	103	115	16.4
Middle Atlantic.....	11	18	28	66	74	82	17.9
New York.....	12	19	31	87	92	101	19.5
New Jersey.....	10	15	24	45	51	56	15.8
Pennsylvania.....	12	18	28	48	60	71	16.2
East North Central.....	13	20	34	54	63	74	15.5
Ohio.....	12	18	27	51	60	69	15.7
Indiana.....	12	20	33	58	66	76	16.6
Illinois.....	13	20	33	52	60	77	16.3
Michigan.....	13	21	35	49	57	64	14.4
Wisconsin.....	19	29	52	73	84	92	14.2
West North Central.....	18	28	43	70	83	95	15.0
Minnesota.....	22	33	55	94	112	126	15.6
Iowa.....	22	36	51	81	97	112	14.4
Missouri.....	12	19	29	48	57	66	15.3
North Dakota.....	19	33	47	60	71	82	13.1
South Dakota.....	18	30	49	69	81	97	14.8
Nebraska.....	17	27	42	68	77	86	14.6
Kansas.....	18	26	41	66	78	92	14.6
South Atlantic.....	8	12	21	33	39	44	15.7
Delaware.....	8	12	20	42	52	60	18.8
Maryland.....	9	17	24	46	51	56	16.2
District of Columbia.....	6	10	16	23	31	27	13.1
Virginia.....	6	9	16	31	38	44	17.9
West Virginia.....	3	5	12	20	20	25	18.1
North Carolina.....	7	11	16	29	36	44	17.3
South Carolina.....	6	9	16	28	34	42	17.8
Georgia.....	8	13	28	37	46	52	17.2
Florida.....	11	15	25	33	36	39	11.2
East South Central.....	7	11	19	35	40	48	17.7
Kentucky.....	9	14	23	40	45	54	16.0
Tennessee.....	6	10	16	29	34	40	17.8
Alabama.....	8	14	22	41	44	50	16.7
Mississippi.....	4	7	15	29	36	49	23.4

See note at end of table.

Table 78. Nursing home care per capita expenditures and average annual percent change, according to geographic division and State: United States, selected years 1966-78--Continued

(Data are compiled by the Health Care Financing Administration)

Geographic division and State	Year						Average annual percent change 1966-78
	1966	1969	1972	1976	1977	1978	
	Per capita amount						
West South Central.....	\$12	\$19	\$31	\$49	\$55	\$ 62	15.0
Arkansas.....	13	21	34	56	64	74	15.4
Louisiana.....	8	13	22	39	45	51	16.7
Oklahoma.....	19	31	46	59	67	74	11.9
Texas.....	11	18	30	49	54	61	15.6
Mountain.....	10	15	23	35	40	47	13.7
Montana.....	12	17	32	41	50	59	14.3
Idaho.....	12	17	25	46	52	58	14.1
Wyoming.....	6	12	23	24	28	30	13.6
Colorado.....	15	21	33	54	62	71	14.0
New Mexico.....	5	9	15	17	20	23	13.0
Arizona.....	8	13	17	22	25	28	10.8
Utah.....	9	12	17	30	36	48	15.6
Nevada.....	7	10	20	29	37	45	17.4
Pacific.....	13	20	35	49	57	64	14.2
Washington.....	16	21	43	61	69	78	14.2
Oregon.....	17	24	37	58	69	77	13.6
California.....	13	21	34	47	55	63	14.3
Alaska.....	1	2	9	19	16	12	20.4
Hawaii.....	6	10	18	28	32	31	14.8

SOURCE: Bureau of Data Management and Strategy, Health Care Financing Administration: Unpublished data.

Table 79. Hospital expenses per inpatient day, personnel and number per 100 patients, and average annual percent change: United States, 1971-81

(Data are based on reporting by a census of hospitals)

Year and period	Adjusted expenses per inpatient day ¹			Labor costs as percent of total	Personnel ³	
	Total	Labor ²	Non-labor		Number in thousands	Number per 100 patients
1971.....	83	53	30	63.6	1,999	272
1972.....	95	59	35	62.6	2,056	278
1973.....	102	63	39	61.8	2,149	280
1974.....	113	69	44	60.7	2,289	289
1975.....	133	79	54	59.4	2,399	298
1976.....	152	88	64	57.9	2,483	304
1977.....	173	100	74	57.5	2,581	315
1978.....	194	111	83	57.2	2,662	323
1979.....	216	123	93	57.0	2,762	328
1980.....	244	138	107	56.4	2,879	334
1981.....	284	161	123	56.7	3,039	347
Average annual percent change						
1971-81.....	13.1	11.8	15.2	...	4.3	2.5
1971-72.....	13.4	11.6	16.6	...	2.9	2.2
1972-73.....	7.6	6.1	10.0	...	4.5	0.7
1973-74.....	11.2	9.4	14.2	...	6.5	3.2
1974-75.....	17.6	14.9	21.7	...	4.8	3.1
1975-76.....	14.4	11.5	18.6	...	3.5	2.0
1976-77.....	13.8	13.1	14.7	...	3.9	3.6
1977-78.....	11.9	11.2	12.7	...	3.1	2.5
1978-79.....	11.3	10.9	11.8	...	3.8	1.5
1979-80.....	13.3	12.0	15.0	...	4.2	1.8
1980-81.....	16.4	16.7	15.0	...	5.6	3.9

¹Refers exclusively to expenses incurred for inpatient care.

²Labor expenses include employee benefits.

³Full-time equivalent personnel.

NOTE: Data refer to non-Federal short-term general and other specialty hospitals.

SOURCE: American Hospital Association: Hospital Statistics, 1982 Edition. Chicago, 1982. (Copyright 1982: Used with the permission of the American Hospital Association.)

Table 80. Average annual percent change in hospital inpatient expenses per patient day and percent distribution of factors affecting growth: United States, selected years 1960-81

(Data are based on a number of government and private sources)

Period	Average annual percent change	Factors affecting growth				
		All factors	Wage	Price	Employees	Other ¹
		Percent distribution				
1960-65 ²	6.7	100	43	7	16	34
1965-68.....	11.2	100	35	12	18	35
1968-71.....	14.3	100	41	15	13	31
1971-74.....	10.7	100	36	28	11	25
1974-77.....	15.2	100	39	19	11	31
1977-81.....	13.1	100	43	35	11	11

¹Nonlabor expenses such as X-rays and laboratory tests.

²Statistics calculated on a per-patient-day basis; statistics for all other periods are calculated on a per-adjusted-patient-day basis. The latter includes an approximation of equivalent services to outpatients.

NOTE: For 1971-81, employee benefits are included as part of the wage component of total hospital expenses. Previously, they were included in the service component. As these benefits amount to a sizable portion of total hospital expenses (8.0 percent in 1981), this impacts on the distribution among contributing factors to hospital expenses.

SOURCES: American Hospital Association: Hospital Statistics, 1982 Edition. Chicago, 1982; Bureau of Labor Statistics, U.S. Department of Labor: Consumer Price Index. Various releases. Data computed by the Division of Analysis.

Table 81. Nursing home average monthly charges and percent distribution of residents, according to primary source of payments and selected facility characteristics: United States, 1973-74 and 1977

(Data are based on a sample of nursing homes)

Facility characteristic	1973-74 ¹						1977					
	All residents	Primary source of payment					All residents	Primary source of payment				
		Own income	Medi-care	Medi-caid	Public assistance welfare	All other sources		Own income	Medi-care	Medi-caid	Public assistance welfare	All other sources
	Average monthly charge ²											
All facilities.....	\$479	\$491	\$754	\$503	\$381	\$225	\$689	\$690	\$1,167	\$720	\$508	\$440
Ownership												
Proprietary.....	489	525	754	486	373	406	670	686	1,048	677	501	562
Nonprofit and government.....	456	427	*751	556	397	136	732	698	1,325	825	534	324
Certification ³												
Skilled nursing facility.....	566	585	765	567	468	290	880	866	1,136	955	575	606
Skilled nursing and intermediate facility.....	514	521	719	513	482	396	762	800	1,195	739	623	630
Intermediate facility.....	376	388	...	375	333	*389	556	567	...	563	479	*456
Not certified.....	329	377	...	...	330	*89	390	447	...	...	401	*155
Bed size												
Less than 50 beds.....	397	429	*625	431	296	*128	546	516	*869	663	394	*295
50-99 beds.....	448	484	*786	449	356	186	643	686	*1,141	634	493	468
100-199 beds.....	502	523	787	508	414	256	706	721	1,242	691	573	551
200 beds or more.....	576	506	*689	656	496	307	837	823	*1,179	925	602	370
Geographic region												
Northeast.....	651	637	*957	718	538	131	918	909	1,369	975	*511	395
North Central.....	433	449	*738	454	360	252	640	652	*1,160	639	537	524
South.....	410	452	*615	408	306	278	585	585	*1,096	619	452	342
West.....	454	487	*672	442	323	*314	653	663	*868	663	564	*499

See footnotes at end of table.

Table 81. Nursing home average monthly charges and percent distribution of residents, according to primary source of payments and selected facility characteristics: United States, 1973-74 and 1977--Continued

(Data are based on a sample of nursing homes)

Facility characteristic	1973-74 ¹						1977					
	All residents	Primary source of payment					All residents	Primary source of payment				
		Own income	Medi-care	Medi-caid	Public assistance welfare	All other sources		Own income	Medi-care	Medi-caid	Public assistance welfare	All other sources
	Percent distribution of residents											
All facilities.....	100.0	36.7	1.1	47.9	11.4	3.0	100	38.4	2.0	47.8	6.4	5.3
Ownership												
Proprietary.....	100.0	34.5	1.2	52.0	11.0	1.4	100	37.5	1.7	49.6	7.3	3.8
Nonprofit and government.....	100.0	41.9	0.9	38.4	12.2	6.6	100	40.4	2.7	43.8	4.4	8.6
Certification ³												
Skilled nursing facility.....	100.0	36.9	2.0	53.6	5.3	2.2	100	41.5	4.6	41.4	7.7	4.8
Skilled nursing and intermediate facility.....	100.0	29.8	1.1	59.7	7.6	1.8	100	31.6	2.6	58.3	3.2	4.1
Intermediate facility.....	100.0	35.8	...	53.1	9.7	1.4	100	36.3	...	55.3	5.3	3.1
Not certified.....	100.0	50.6	...	...	39.3	10.2	100	64.2	...	...	19.0	16.7
Bed size												
Less than 50 beds.....	100.0	41.5	*0.6	37.1	17.5	3.4	100	49.6	*1.8	32.7	10.5	5.4
50-99 beds.....	100.0	37.8	0.9	47.9	10.9	2.5	100	39.5	*1.2	46.5	8.1	4.7
100-199 beds.....	100.0	36.3	1.3	50.8	8.8	2.8	100	38.4	2.6	50.4	4.6	4.0
200 beds or more.....	100.0	30.7	*1.3	51.6	12.3	4.1	100	28.6	2.3	55.5	4.6	9.1
Geographic region												
Northeast.....	100.0	30.6	1.4	53.2	10.5	4.5	100	34.6	3.3	53.3	3.8	5.1
North Central.....	100.0	44.4	0.8	35.6	16.1	3.0	100	44.5	1.5	42.1	6.5	5.4
South.....	100.0	31.0	1.1	55.2	10.3	2.4	100	32.2	*1.4	52.5	8.2	5.7
West.....	100.0	37.9	*1.2	54.6	4.6	1.9	100	41.3	2.5	44.7	6.7	4.8

¹Excludes residents in personal care or domiciliary care homes. Excludes residents who did not live in the nursing home for at least 1 month.²Includes life-care residents and no-charge residents.³Medicare extended care facilities and Medicaid skilled nursing homes from the 1973-74 survey were considered to be equivalent to Medicare or Medicaid skilled nursing facilities in 1977 for the purposes of this comparison.SOURCES: National Center for Health Statistics: Charges for care and sources of payment for residents in nursing homes, United States, National Nursing Home Survey, August 1973-April 1974, by E. Hing. *Vital and Health Statistics*. Series 13-No. 32. DHEW Pub. No. (PHS) 78-1783. Public Health Service, Washington, U.S. Government Printing Office, Nov. 1977; The National Nursing Home Survey, 1977 summary for the United States, by J. F. VanNostrand, A. Zappolo, and E. Hing, et al. *Vital and Health Statistics*. Series 13-No. 43. DHEW Pub. No. (PHS) 79-1794. Public Health Service, Washington, U.S. Government Printing Office, July 1979.

Table 82. Monthly charge for care in nursing homes and percent distribution of residents, according to selected facility and resident characteristics: United States, 1964, 1973-74, and 1977

(Data are based on reporting by a sample of nursing homes)

Facility and resident characteristic	Year					
	1964		1973-74 ²		1977	
	Average total monthly charge ¹	Percent distribution of residents	Average total monthly charge ¹	Percent distribution of residents	Average total monthly charge ¹	Percent distribution of residents
FACILITY CHARACTERISTIC						
All facilities.....	\$186	100.0	\$479	100.0	\$689	100.0
Type of service provided						
Nursing care.....	212	67.4	495	64.8	719	85.4
Personal care with or without nursing.....	117	32.6	448	35.2	514	14.6
Ownership						
Proprietary.....	205	60.2	489	69.8	670	68.2
Nonprofit and government.....	145	39.8	456	30.2	732	31.8
Size						
Less than 50 beds.....	---	---	397	15.2	546	12.9
50-99 beds.....	---	---	448	34.1	643	30.5
100-199 beds.....	---	---	502	35.6	706	38.8
200 beds or more.....	---	---	576	15.1	837	17.9
Geographic region						
Northeast.....	213	28.6	651	22.0	918	22.4
North Central.....	171	36.6	433	34.6	640	34.5
South.....	161	18.1	410	26.0	585	27.2
West.....	204	16.7	454	17.4	653	15.9
RESIDENT CHARACTERISTIC						
All residents.....	186	100.0	479	100.0	689	100.0
Age						
Under 65 years.....	155	12.0	434	10.6	585	13.6
65-74 years.....	184	18.9	473	15.0	669	16.2
75-84 years.....	191	41.7	488	35.5	710	35.7
85 years and over.....	194	27.5	485	38.8	719	34.5
Sex						
Male.....	171	35.0	466	29.1	652	28.8
Female.....	194	65.0	484	70.9	705	71.2
Level of care received						
Intensive nursing care.....	224	31.0	510	40.6	758	43.8
Other nursing care.....	199	28.7	469	42.1	659	40.7
Personal care.....	164	26.9	435	16.4	586	14.4
No nursing or personal care.....	109	13.5	315	0.9	388	1.1

¹Includes life-care residents and no-charge residents.

²Data exclude residents of personal care homes.

SOURCE: National Center for Health Statistics: Charges for care and sources for payment for residents in nursing homes, United States, National Nursing Home Survey, Aug. 1973-Apr. 1974, by E. Hing. Vital and Health Statistics. Series 13-No. 32. DHEW Pub. No. (PHS) 78-1783. Public Health Service. Washington. U.S. Government Printing Office. Nov. 1977; Unpublished data from the 1977 National Nursing Home Survey.

Table 83. Medicare expenditures and percent distribution, according to type of service: United States, selected years 1967-82

(Data are compiled by the Health Care Financing Administration)

Type of service	Year						
	1967	1970	1975	1979	1980	1981	1982 ¹
	Amount in billions						
Total.....	\$ 4.5	\$ 7.1	\$ 15.6	\$ 29.3	\$ 35.7	\$ 43.5	\$ 50.9
	Percent distribution						
All services.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Hospital care.....	69.0	71.8	74.8	72.1	72.6	72.0	71.3
Physician services.....	24.7	22.5	21.3	22.1	21.8	22.3	22.4
Nursing home care.....	4.6	4.2	1.9	1.4	1.1	0.9	1.0
Other services ²	1.7	1.4	1.9	4.4	4.5	4.6	5.3

¹Preliminary estimates.

²Other services include home health agencies, home health services, eyeglasses and appliances, and other professional services.

SOURCES: Bureau of Data Management and Strategy: National health expenditures, 1982, by R. M. Gibson, D. R. Waldo, and K. R. Levit. *Health Care Financing Review*. HCFA Pub. No. 03154. Health Care Financing Administration. Washington. U.S. Government Printing Office, Fall 1983; Unpublished data.

Table 84. Medicaid expenditures¹ and percent distribution, according to type of service: United States, selected years 1967-82

(Data are compiled from State and Federal Government sources)

Type of service	Year						
	1967	1970	1975	1979	1980	1981	1982 ²
Amount in billions							
Total.....	\$ 2.9	\$ 5.2	\$ 13.5	\$ 21.8	\$ 25.5	\$ 29.0	\$ 32.4
Percent distribution							
All services.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Hospital care.....	42.3	42.9	34.6	37.3	36.7	36.3	36.4
Physician services.....	10.9	13.3	14.0	10.1	9.8	9.9	9.0
Dentist services.....	4.4	3.2	2.9	1.8	2.0	2.1	1.9
Other professional services.....	0.9	1.4	1.5	2.3	2.0	1.7	2.2
Drugs and drug sundries.....	7.2	7.9	6.6	5.5	5.5	5.5	5.2
Nursing home care.....	31.7	27.2	36.0	39.6	39.8	39.7	40.7
Other health services ³	2.6	4.1	4.4	3.2	4.3	4.8	4.6

¹Expenditures from Federal, State, and local funds under Medicaid. Includes per capita payments for Part B of Medicare and excludes administrative costs.

²Preliminary estimates.

³Other services include laboratory and radiological services, home health, and family planning services.

SOURCES: Bureau of Data Management and Strategy: National health expenditures, 1982, by R. M. Gibson, D. R. Waldo, and K. R. Levit. *Health Care Financing Review*. HCFA Pub. No. 03154. Health Care Financing Administration. Washington. U.S. Government Printing Office, Fall 1983; Unpublished data.

Table 85. Veterans' medical care expenditures¹ and percent distribution, according to type of expenditure: United States, selected fiscal years 1965-82

(Data are compiled from Veterans Administration sources)

Type of expenditure	Year									
	1965	1970	1975	1976	1977 ²	1978 ²	1979 ²	1980 ²	1981 ²	1982 ²
	Amount in millions									
Total.....	\$1,150.1	\$1,688.6	\$3,328.2	\$3,838.8	\$4,376.3	\$4,809.3	\$5,159.5	\$5,981.3	\$6,378.2	\$7,155.1
	Percent distribution									
All expenditures.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Inpatient hospital.....	81.9	71.3	66.4	65.6	64.8	64.3	64.4	64.3	63.1	63.0
Outpatient care.....	12.0	14.0	17.8	18.5	18.8	18.9	18.5	19.1	19.5	19.4
VA nursing homes and domiciliaries.....	2.9	4.3	4.8	4.8	4.8	5.1	5.1	5.1	5.1	5.3
Community nursing homes.....	0.0	1.2	1.4	1.5	1.7	1.8	1.9	2.0	2.0	2.3
All others ³	3.2	9.1	9.6	9.7	9.8	10.0	10.1	9.6	10.3	10.0

¹Medical care expenditures exclude construction, medical administration, and miscellaneous operating expenses.

²Data for fiscal year ending September 30; all other data for fiscal year ending June 30.

³Includes miscellaneous benefits and services, contract hospitals, education and training, subsidies to State veterans' hospitals, nursing homes, and domiciliaries, and the Civilian Health and Medical Program of the Veterans Administration.

SOURCE: Budget Office, Veterans Administration: Unpublished data.

Table 86. National funding for health research and development and average annual percent change, according to source of funds: United States, selected years 1960-82

(Data are based on multiple sources)

Year and period	All funding	Source of funds			
		Government		Industry ²	Private nonprofit organizations
		Federal	State and local ¹		
Amount in millions					
1960.....	\$ 886	\$ 448	\$ 46	\$ 253	\$139
1965.....	1,890	1,174	90	450	176
1970.....	2,847	1,667	170	795	215
1971.....	3,168	1,877	198	860	233
1972.....	3,536	2,147	228	934	227
1973.....	3,750	2,225	245	1,048	232
1974.....	4,443	2,754	254	1,183	252
1975.....	4,701	2,832	286	1,319	264
1976.....	5,107	3,059	312	1,469	267
1977.....	5,606	3,396	323	1,614	273
1978.....	6,268	3,811	375	1,800	282
1979.....	7,117	4,321	404	2,093	299
1980.....	7,899	4,723	430	2,433	313
1981 ³	8,529	4,898	492	2,864	325
1982 ³	9,214	4,966	526	3,381	341
Average annual percent change					
1960-82.....	10.7	10.6	11.4	10.5	4.0
1960-71.....	11.2	11.9	13.4	10.7	4.4
1971-82.....	9.3	8.4	8.5	12.1	3.2
1970-71.....	11.3	12.6	17.2	8.2	8.4
1971-72.....	11.6	14.4	15.2	8.6	-2.6
1972-73.....	6.0	3.6	7.5	12.2	2.2
1973-74.....	18.5	23.8	3.7	12.9	8.6
1974-75.....	5.8	2.8	12.6	11.5	4.8
1975-76.....	8.6	8.0	9.1	11.4	1.1
1976-77.....	9.8	11.2	3.5	9.9	2.3
1977-78.....	11.8	12.2	16.1	11.5	3.3
1978-79.....	13.5	13.4	7.7	16.3	6.0
1979-80.....	11.0	9.3	14.0	16.2	4.7
1980-81.....	8.0	3.7	14.4	17.7	5.1
1981-82.....	8.0	1.4	6.9	18.1	4.9

¹Revised figures.

²Includes expenditures for drug research. These expenditures are included in the "drugs and sundries" component of the Health Care Financing Administration's National Health Expenditure Series, not under "research."

³Estimates.

SOURCE: Office of Program Planning and Evaluation, National Institutes of Health, Public Health Service: Selected data.

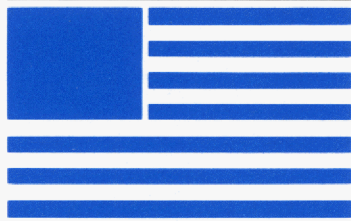
Table 87. Federal obligations for health research and development and percent distribution, according to agency: United States, selected fiscal years 1970-82

(Data are compiled from Federal Government sources)

Agency	Year								
	1970 ¹	1975 ¹	1976 ¹	1977	1978	1979	1980	1981	1982
	Amount in millions								
Total.....	\$1,666.6	\$2,831.7	\$3,058.7	\$3,395.9	\$3,811.2	\$4,321.2	\$4,722.6	\$4,848.4	\$4,965.6
	Percent distribution								
All Federal agencies.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Department of Health and Human Services.....	70.6	77.6	77.9	78.1	79.0	79.9	78.2	78.9	78.3
National Institutes of Health.....	52.4	66.4	67.4	67.1	67.7	68.3	67.4	68.7	69.1
Centers for Disease Control.....	---	1.5	1.6	1.6	1.6	1.8	1.8	1.5	1.5
Other Public Health Service.....	16.2	8.3	7.8	7.5	8.0	7.9	7.9	7.7	6.9
Other Department of Health and Human Services.....	2.0	1.3	1.1	1.9	1.8	1.8	1.1	1.0	0.7
Other agencies.....	29.4	22.4	22.1	21.9	21.0	20.2	21.8	21.1	21.7
Department of Agriculture.....	3.0	2.2	2.0	2.5	2.5	2.6	3.1	3.1	3.3
Department of Defense.....	7.5	4.1	3.9	4.4	4.3	4.3	4.5	5.0	5.6
Department of Education ².....	...	...	...	...	...	...	0.7	0.6	0.6
Department of Energy ³.....	...	...	...	...	5.1	4.4	4.5	3.9	4.0
Department of the Interior.....	0.7	0.3	0.4	0.3	0.4	0.5	0.5	0.4	0.4
Department of State ⁴	0.6	0.2	0.3	0.7	0.5	0.5	...	...	...
Agency for International Development ⁴.....	...	...	...	...	...	...	0.3	0.2	0.5
Atomic Energy Commission ³	6.3	...	...	...	...	...	...	...	...
Energy Research and Development Administration ³.....	...	5.8	5.5	5.3	...	...	...	...	...
Environmental Protection Agency.....	...	1.3	2.1	1.7	1.5	1.6	1.7	1.5	1.0
National Aeronautics and Space Administration.....	5.2	2.6	2.4	1.4	1.5	1.0	1.5	1.4	1.6
National Science Foundation.....	1.7	1.6	1.7	1.6	1.7	1.7	1.6	1.4	1.5
Veterans Administration.....	3.5	3.3	3.2	3.2	3.0	3.0	2.8	3.0	2.8
All other departments and agencies..	0.9	1.0	0.7	0.7	0.5	0.4	0.4	0.5	0.5

¹Data for fiscal year ending June 30; all other data for fiscal year ending September 30.²Formerly a part of the Department of Health, Education, and Welfare.³Data for the Atomic Energy Commission, Energy Research and Development Administration, and Department of Energy form a continuous series.⁴Data for the Department of State and Agency for International Development form a continuous series.

SOURCE: Office of Program Planning and Evaluation, National Institutes of Health, Public Health Service: Selected data.



Appendix I

**Sources and
Limitations of Data**

Contents

Introduction	207
Department of Health and Human Services	
Public Health Service	
Office of the Assistant Secretary for Health	
National Center for Health Statistics	
National Vital Statistics System	207
National Natality Survey	208
National Health Interview Survey	208
National Health Examination Survey	209
National Health and Nutrition Examination Survey	209
National Master Facility Inventory	209
National Hospital Discharge Survey	210
National Nursing Home Survey	210
National Ambulatory Medical Care Survey	211
National Medical Care Utilization and Expenditure Survey	211
National Center for Health Services Research	
Hospital Cost and Utilization Project	212
Health Resources and Services Administration	
Bureau of Health Professions	
Physician Supply Projections	212
Health Manpower Shortage Areas	212
Centers for Disease Control	
Center for Infectious Diseases	
National Morbidity Reporting System	212
Abortion Surveillance	213
Center for Preventive Services	
U.S. Immunization Survey	213
Alcohol, Drug Abuse, and Mental Health Administration	
National Institute on Alcohol Abuse and Alcoholism	
National Surveys of Drinking	213
National Institute of Mental Health	
Surveys of Mental Health Facilities	213
Health Care Financing Administration	
Bureau of Data Management and Strategy	
Estimates of National Health Expenditures	214
Medicare Statistical System	214
Department of Commerce	
Bureau of the Census	
U.S. Census of Population	214
Current Population Survey	214
Population Estimates and Projections	215
Department of Labor	
Bureau of Labor Statistics	
Consumer Price Index	215
Employment and Earnings	215

Environmental Protection Agency	
National Aerometric Surveillance Network.....	215
United Nations	
Demographic Yearbook	216
Alan Guttmacher Institute	
Abortion Survey	216
American Hospital Association	
Annual Survey of Hospitals.....	216
American Medical Association	
Physician Masterfile	216
Annual Census of Hospitals.....	217

Appendix I

Sources and Limitations of Data

Introduction

This report consolidates the most current data on the health of the population of the United States, the availability and use of health resources, and health care expenditures. The information was obtained from the data files and/or published reports of many governmental and nongovernmental agencies and organizations. In each case, the sponsoring agency or organization collected data using its own methods and procedures. Therefore, the data in this report vary considerably with respect to source, method of collection, definitions, and reference period.

Generally, the data presented in the detailed tables are from the ongoing data collection systems of the National Center for Health Statistics (NCHS). However, health care manpower data come primarily from the Bureau of Health Professions, Health Resources and Services Administration, and the American Medical Association. National health expenditures data were compiled by the Bureau of Data Management and Strategy, Health Care Financing Administration.

Although a detailed description and comprehensive evaluation of each data source is beyond the scope of this appendix, users should be aware of the general strengths and weaknesses of the different data collection systems. For example, population-based surveys obtain socioeconomic data, data on family characteristics, and information on the impact of an illness, such as days lost from work or limitation of activity. They are limited by the amount of information a respondent remembers or is willing to report. Detailed medical information, such as precise diagnoses or the types of operations performed, may not be known and so will not be reported. Conversely, health care providers, such as physicians and hospitals, usually have good diagnostic information but little or no information about the socioeconomic characteristics of individuals or the impact of an illness on the individual.

The population covered by different data collection systems may not be the same, and understanding the differences is critical to interpreting the data. Data on vital statistics and national expenditures cover the entire population. Most data on morbidity and utilization of health resources cover only the civilian noninstitutionalized population. Thus, statistics are not included for military personnel, who are usually young; for institutionalized people, who may be any age; or for nursing home residents, who are usually old.

All data collection systems are subject to error, and records may be incomplete or contain inaccurate information. People

may not remember essential information, a question may not mean the same thing to different respondents, and some institutions or individuals may not respond at all. The sponsoring agencies do the best they can, but it is not always possible to measure the magnitude of these errors or their impact on the data. Where possible, the tables have notes describing the universe and the method of data collection to enable the user to place his or her own evaluation on the data. In many instances, data do not add to totals because of rounding.

Statistics based on samples have sampling errors in addition to errors mentioned above. A sampling error is a measure of the variability introduced because only a sample of the universe was taken. The fact that a sample has an additional source of error does not mean that sample data are less reliable than full-count data. Frequently, the money saved by taking only a sample is spent on reducing other forms of error through more pretesting of survey forms, better quality control, and other measures.

The descriptive summaries that follow provide a general overview of study design, methods of data collection, and reliability and validity of the data. More complete and detailed discussions are found in the publications referenced at the end of each summary. The data set or source is listed under the agency or organization that sponsored the data collection.

Department of Health and Human Services

Public Health Service

Office of the Assistant Secretary for Health

National Center for Health Statistics

National Vital Statistics System

Through the National Vital Statistics System, the National Center for Health Statistics (NCHS) collects and publishes data on births, deaths, marriages, and divorces in the United States. Fetal deaths are classified and tabulated separately from other deaths. The Division of Vital Statistics obtains information on births and deaths from the registration offices of all States, New York City, the District of Columbia, Puerto Rico,

the U.S. Virgin Islands, and Guam. Geographic coverage for births and deaths has been complete since 1933.

Until 1972, microfilm copies of all death certificates and a 50-percent sample of birth certificates were received from all registration areas and processed by NCHS. Beginning in 1972, some States began sending their data to NCHS through the Cooperative Health Statistics System (CHSS). States that participated in the CHSS program processed 100 percent of their death and birth records and sent the entire data file to NCHS on computer tape. Currently, the data are sent to NCHS through the Vital Statistics Cooperative Program (VSCP), following the same procedures as the CHSS. The number of participating States has grown from 6 in 1972 to 45 in 1982.

The standard certificates of birth, death, and fetal death recommended by NCHS are modified in each registration area to serve the area's needs. However, most certificates conform closely in content and arrangement to the standard certificate, and all certificates contain a minimum data set specified by NCHS.

In most areas, practically all births and deaths are registered. The most recent test of the completeness of birth registration, conducted on a sample of births from 1964 to 1968, showed that 99.3 percent of all births in the United States during that period were registered. No comparable information is available for deaths, but it is generally believed that death registration in the United States is at least as complete as birth registration.

For more information, see: National Center for Health Statistics, *Vital Statistics of the United States, 1978*, Vol. I, DHHS Pub. No. (PHS) 82-1100 and Vol. II, Part A, DHHS Pub. No. (PHS) 82-1101, Public Health Service, Washington, U.S. Government Printing Office, 1982.

National Natality Survey

The National Natality Survey (NNS) is a periodic data collection based on samples of registered U.S. live births and the mothers, physicians, hospitals, and other medical sources associated with those births. NNS was conducted by the National Center for Health Statistics in 1963, 1964-66, 1967-69, 1972, and 1980. The 1980 survey included an oversampling of low-birth-weight infants (less than 2,500 grams) in order to do special studies on high-risk infants. The 1980 NNS studied a total of 9,941 births sampled from the 52 State and independent registration areas in the United States from January 1980 through December 1980.

Data from the 1980 NNS are based on information obtained from birth certificates and from questionnaires from married mothers, hospitals, attendants at delivery, and other medical providers of radiation examinations and treatments. Unmarried mothers were not sent questionnaires because of confidentiality constraints in certain States. However, medical sources for births to unmarried mothers were included in the survey. The NNS provides national estimates of births by numerous characteristics not available from the vital statistics system. It also serves as a basis for evaluating the quality of information reported on vital records and permits trend studies with the surveys conducted in earlier years.

There were 7,825 married mothers, 9,855 hospitals, 7,939

physicians, and 1,433 radiation medical sources in the 1980 sample. Response rates obtained were 79.5 percent, 76.2 percent, 61.6 percent, and 79.8 percent, respectively. The overall married mothers' response rate of 79.5 percent consists of two groups, mail and telephone respondents. Of the 7,825 married mothers with live births in the sample, 56.3 percent responded to a mail questionnaire. To increase the number of respondents, an additional 23.2 percent received telephone interviews that used shortened versions of the mail questionnaire.

Because different sets of information are available from different questionnaires, the numbers of respondents upon which tabulations are based will vary. For example, since smoking and drinking habits before and during pregnancy are available only on the married mothers' mail questionnaire, this chapter was limited to the 4,405 mothers who returned the mail questionnaire. Type of delivery was asked only on the hospital questionnaire, so the chapter on cesarean section was based on the 7,510 births for which the hospital responded. Thus, estimates of the same characteristic will not necessarily coincide. Furthermore, the data were still being edited as these chapters were written, so estimates must be regarded as provisional.

For further information on the National Natality Survey, write: Natality Statistics Branch, Division of Vital Statistics, National Center for Health Statistics, 3700 East-West Highway, Hyattsville, Md. 20782.

National Health Interview Survey

The National Health Interview Survey (NHIS) is a continuing nationwide sample survey in which data are collected through personal household interviews. Information is obtained on personal and demographic characteristics, illnesses, injuries, impairments, chronic conditions, utilization of health resources, and other health topics. The household questionnaire is reviewed each year, with supplemental topics being added or deleted. For most topics, data are collected over an entire calendar year. The universe for NHIS is the civilian noninstitutionalized population of the United States. Members of the Armed Forces, U.S. nationals living in foreign countries, and persons who died during the reference period are excluded.

The survey is based on a multistage, probability cluster sample of 376 primary sampling units selected from approximately 1,900 geographically defined units in the first stage, and 12,000 segments containing about 42,000 eligible occupied households in the final stage. The usual NHIS sample is about 111,000 persons in 41,000 interviewed households in a year. The response rate is ordinarily about 96 percent of the eligible households. National estimates are based on a four-stage estimation procedure involving inflation by the reciprocal of the probability of selection, a nonresponse adjustment, ratio adjustment, and poststratification.

For more detailed information on NHIS design, limitations of data, and sampling errors of the estimates, see: National Center for Health Statistics, Current estimates from the National Health Interview Survey, United States, 1981, by B. Bloom, *Vital and Health Statistics*, Series 10-No. 141, DHHS Pub. No. (PHS) 82-1569, Public Health Service, Washington, U.S. Government Printing Office, Oct. 1982.

National Health Examination Survey

The National Health Examination Survey (NHES) is a continuing nationwide sample survey conducted by the National Center for Health Statistics in which data for determining the health status of the population are collected through direct standardized physical examinations, clinical and laboratory tests, and measurements. The content of the NHES program is revised periodically, and selected components are added or deleted to meet the current needs for health data of this type.

For the first program or cycle of the National Health Examination Survey (NHES I), 1960–62, data were collected on the total prevalence of certain chronic diseases as well as the distributions of various physical and physiological measures, including blood pressure and serum cholesterol levels. For that program, a highly stratified, multistage probability sample of 7,710 adults, of whom 86.5 percent were examined, was selected to represent the 111 million civilian noninstitutionalized adults 18–79 years of age in the United States at that time. The sample areas consisted of 42 primary sampling units from the 1,900 geographic units.

In 1971, a nutrition surveillance component was added and the survey name was changed to the National Health and Nutrition Examination Survey.

For further information on NHES I, see: National Center for Health Statistics, Cycle I of the National Health Examination Survey, sample and response, United States, 1960–62, T. Gordon and H. W. Miller, *Vital and Health Statistics*, PHS Pub. No. 1000-Series 11-No. 1, Public Health Service, Washington, U.S. Government Printing Office, Apr. 1964.

National Health and Nutrition Examination Survey

Through this survey, health-related data are obtained by means of direct physical examinations, clinical and laboratory tests, and related measurement procedures. In the first National Health and Nutrition Examination Survey (NHANES-I), conducted from 1971 through 1974, a major purpose was to measure and monitor indicators of the nutritional status of the American people through dietary intake data, biochemical tests, physical measurements, and clinical assessments for evidence of nutritional deficiency. Detailed examinations were given by dentists, ophthalmologists, and dermatologists with an assessment of need for treatment. In addition, data were obtained for a subsample of adults on overall health care needs and behavior, and more detailed examination data were collected on cardiovascular, respiratory, arthritic, and hearing conditions.

The NHANES-I target population was the civilian non-institutionalized population 1–74 years of age residing in the coterminous United States, except for people residing on any of the reservation lands set aside for the use of American Indians. The sample design was a multistage, stratified probability sample of clusters of persons in land-based segments. The sample areas consisted of 65 primary sampling units (PSU's) selected from the 1,900 PSU's in the coterminous United States. A subsample of persons 25–74 years of age was selected to receive the more detailed health examination. Groups at high risk of malnutrition were oversampled at known rates throughout the process.

Household interviews were completed for more than 96 percent of the 28,043 persons selected for the NHANES-I sample, and about 75 percent (20,749) were examined.

For NHANES-II, conducted from 1976 through 1980, the nutrition component remained nearly identical to that fielded for NHANES-I. In the medical area, primary emphasis was placed on diabetes, kidney and liver functions, allergy, and speech pathology.

The NHANES-II target population was the civilian non-institutionalized population 6 months–74 years of age residing in the United States, including Alaska and Hawaii. NHANES-II utilized a multistage probability design that involved selection of PSU's, segments (clusters of households) within PSU's, households, eligible persons, and finally sample persons. The sample design provided for oversampling among those persons 6 months–5 years of age, those 60–74 years of age, and those living in poverty areas.

A sample of 27,801 persons was selected for NHANES-II. Of this sample, 20,322 (73.1 percent) were examined.

The estimation procedure used to produce national statistics for NHANES-I and NHANES-II involved inflation by the reciprocal of the probability of selection, adjustment for nonresponse, and poststratified ratio adjustment to population totals. Sampling errors also were estimated to measure the reliability of the statistics.

For more information on NHANES-I, see: National Center for Health Statistics, Plan and operation of the National Health and Nutrition Examination Survey, United States, 1971–1973, by H. W. Miller, *Vital and Health Statistics*, Series 1-Nos. 10a and 10b, DHEW Pub. No. (HSM) 73–1310, Health Services and Mental Health Administration, Washington, U.S. Government Printing Office, Feb. 1973; and National Center for Health Statistics, Plan and operation of the NHANES-I Augmentation Survey of adults 25–74 years, United States, 1974–1975, by A. Engel, R. S. Murphy, K. Maurer, and E. Collins, *Vital and Health Statistics*, Series 1-No. 14, DHEW Pub. No. (PHS) 78–1314, Public Health Service, Washington, U.S. Government Printing Office, June 1978.

For more information on NHANES-II, see: National Center for Health Statistics, Plan and operation of the second National Health and Nutrition Examination Survey, 1976–80, by A. McDowell, A. Engel, J. T. Massey, and K. Maurer, *Vital and Health Statistics*, Series 1-No. 15, DHHS Pub. No. (PHS) 81–1317, Public Health Service, Washington, U.S. Government Printing Office, July 1981.

National Master Facility Inventory

The National Master Facility Inventory (NMFI) is a comprehensive file of inpatient health facilities in the United States. The three broad categories of facilities in NMFI are hospitals, nursing and related care homes, and other custodial or remedial care facilities. To be included in NMFI, hospitals must have at least six inpatient beds, and nursing and related care homes must have at least three inpatient beds.

NMFI is kept current by the periodic addition of names and addresses obtained from State licensing agencies for all newly established inpatient facilities. In addition, annual surveys of hospitals and periodic surveys of nursing homes and

other facilities are conducted to update name and location, type of business, number of beds, and number of residents or patients in the facilities.

From 1968 through 1975, the hospital survey was conducted in conjunction with the American Hospital Association (AHA) Annual Survey of Hospitals. AHA performed the data collection for its member hospitals, while the National Center for Health Statistics (NCHS) collected the data for the approximately 400 non-AHA registered hospitals. Since 1976, however, all of the data collection has been performed by AHA.

Hospitals are requested to report data for the full year ending September 30. More than half of the responding hospitals used this reporting period for the 1981 Survey. The remaining hospitals used various other reporting periods.

The nursing home and other facilities survey was conducted by NCHS in 1963, 1967, 1969, 1971, 1973, 1976, and 1978. In 1978, data for 26 States were collected at least partially through the Cooperative Health Statistics System (CHSS). There may have been changes in data collection procedures, coverage, definitions, and concepts in preliminary data from these 26 States in 1978.

The response rate for the 1981 hospital survey was about 90 percent. Low response rates and other reporting difficulties with the 1978 nursing home and other facilities survey prevented the use of 1978 nursing home data for California, New York, North Carolina, and the District of Columbia; 1976 data have been substituted for these four areas. Also because of low response rates, the 1978 data on other facilities did not meet NCHS standards of reliability and precision and are not available.

Statistics derived from the hospital and nursing home and other facilities surveys were adjusted for both facility and item nonresponse. Missing items on the questionnaire were imputed, when possible, by using information reported by the same facility in a previous survey. When data were not available from a previous census for a responding facility, the data were imputed by using data from similar responding facilities. Similar facilities are defined as those with the same types of business, ownership, service, and approximately the same bed size.

For more detailed information on NMFI, see: National Center for Health Statistics, Design and methodology of the 1967 Master Facility Inventory Survey, by G. G. Hollis, *Vital and Health Statistics*, PHS Pub. No. 1000-Series 1-No. 9, Public Health Service, Washington, U.S. Government Printing Office, Jan. 1971.

National Hospital Discharge Survey

The National Hospital Discharge Survey (NHDS) is a continuing nationwide sample survey of short-stay hospitals in the United States. The scope of NHDS encompasses patients discharged from noninstitutional hospitals, exclusive of military and Veterans Administration hospitals, located in the 50 States and the District of Columbia. Only hospitals having six or more beds for patient use and those in which the average length of stay for all patients is less than 30 days are included in the survey. Although all discharges of patients from these hospitals are within the scope of the survey, discharges of newborn in-

fants from all hospitals are excluded from this report as well as discharges of all patients from Federal hospitals.

The sample was selected from a frame of about 7,500 short-stay hospitals listed in the National Master Facility Inventory. A two-stage stratified sample design was used, and hospitals were stratified according to bed size and geographic region. The largest hospitals were selected with certainty in the sample, and the probability of selection of a hospital decreased as the bed size of the hospital decreased. Within each sample hospital, a systematic random sample of discharges was selected from the daily listing sheet. The within-hospital sampling ratio for selecting discharges varied inversely with the probability of selection of the hospital, so that the overall probability of selecting a discharge was approximately the same in each bed-size class.

Survey hospitals used an abstract form to transcribe data from the face sheet of hospital records. Forms were completed either by hospital staff or representatives of the National Center for Health Statistics.

The basic unit of estimation for NHDS was the sample patient abstract. The estimation procedure involved inflation by the reciprocal of the probability of selection, adjustment for nonresponding hospitals and missing abstracts, and ratio adjustments to fixed totals. Of the 550 hospitals selected for the survey, 499 were within the scope of the survey, and 428 participated in the survey in 1981. Data were abstracted from about 227,000 medical records.

For more detailed information on the design of NHDS and the magnitude of sampling errors associated with NHDS estimates, see: National Center for Health Statistics, Utilization of short-stay hospitals, annual summary for the United States, 1980, by E. J. Graves and B. J. Haupt, *Vital and Health Statistics*, Series 13-No. 72, DHHS Pub. No. (PHS) 83-1733, Public Health Service, Washington, U.S. Government Printing Office, Sept. 1983.

National Nursing Home Survey

Two sample surveys were conducted by the National Center for Health Statistics to obtain information on nursing homes, their expenditures, residents, staff, and, in the most recent survey, discharged patients. The first survey was conducted from August 1973 through April 1974. The most recent National Nursing Home Survey (NNHS) was conducted from May through December 1977.

Data on facilities were collected by personal interviews with administrators; facility accountants completed questionnaires on expenditures. Resident data were collected by a nurse familiar with the care provided to the resident. The nurse relied on the medical record and personal knowledge of the residents. Employees completed a self-administered questionnaire. Discharge data, collected only in the most recent NNHS, were based on information recorded in the medical record.

For the initial survey conducted in 1973-74, the universe included only those nursing homes that provided some level of nursing care. Thus, homes providing only personal or domiciliary care were excluded. The sample of 2,118 homes was selected from the 17,685 homes that provided some level of nursing

care and were listed in the 1971 National Master Facility Inventory (NMFI) or those that opened for business in 1972. Data were obtained from about 20,600 staff and 19,000 residents. Response rates were 97 percent for facilities, 88 percent for expenditures, 98 percent for residents, and 82 percent for staff.

The scope of the 1977 NNHS encompassed all types of nursing homes, including personal care and domiciliary care homes. The sample of about 1,700 facilities was selected from 23,105 nursing homes in the sampling frame, which consisted of all homes listed in the 1973 NMFI and those opening for business between 1973 and December 1976. Data were obtained from about 13,600 staff, 7,000 residents, and 5,100 discharged residents. Response rates were 95 percent for facilities, 85 percent for expenses, 81 percent for staff, 99 percent for residents, and 97 percent for discharges.

Statistics from NNHS were derived by a ratio-estimating procedure. Statistics were adjusted for failure of a home to respond, failure to fill out one of the questionnaires, and failure to complete an item on a questionnaire.

For more information on the 1973-74 NNHS, see: National Center for Health Statistics, Selected operating and financial characteristics of nursing homes, United States, 1973-74 National Nursing Home Survey, by M. R. Meiners, *Vital and Health Statistics*, Series 13-No. 22, DHEW Pub. No. (HRA) 76-1773, Health Resources Administration, Washington, U.S. Government Printing Office, Dec. 1975. For more information on the 1977 NNHS, see: National Center for Health Statistics, The National Nursing Home Survey, 1977 summary for the United States, by J. F. Van Nostrand, A. Zappolo, E. Hing, et al., *Vital and Health Statistics*, Series 13-No. 43, DHHS Pub. No. (PHS) 79-1794, Public Health Service, Washington, U.S. Government Printing Office, July 1979.

National Ambulatory Medical Care Survey

The National Ambulatory Medical Care Survey (NAMCS) is a continuing national probability sample of ambulatory medical encounters. The scope of the survey covers physician-patient encounters in the offices of nonfederally employed physicians classified by the American Medical Association or American Osteopathic Association as "office-based, patient care" physicians. Excluded are visits to hospital-based physicians, visits to specialists in anesthesiology, pathology, and radiology, and visits to physicians who are principally engaged in teaching, research, or administration. Telephone contacts and nonoffice visits are also excluded.

A multistage probability design is employed. The first-stage sample consists of 87 primary sampling units (PSU's) selected from about 1,900 such units into which the United States has been divided. In each sample PSU, a sample of practicing physicians is selected. The final stage involves selection within a randomly assigned 7-day reporting period, and the selection of samples of patient visits during that period.

For the 1981 survey, a sample of 2,846 non-Federal, office-based physicians was selected from master files maintained by the American Medical Association and the American Osteopathic Association. The physician response rate for 1981

was 77.5 percent, providing data concerning a random sample of about 43,366 patient visits.

The estimation procedure used in NAMCS basically has three components: inflation by the reciprocal of the probability of selection, adjustment for nonresponse, and ratio adjustment to fixed totals.

For more detailed information on the design of NAMCS and the magnitude of sampling errors associated with NAMCS estimates, see: National Center for Health Statistics, 1981 Summary, National Ambulatory Medical Care Survey, by L. Lawrence and T. McLemore, *Advance Data From Vital and Health Statistics*, No. 88, DHHS Pub. No. (PHS) 83-1250, Public Health Service, Hyattsville, Md., Mar. 16, 1983.

National Medical Care Utilization and Expenditure Survey

The National Medical Care Utilization and Expenditure Survey is a national sample survey of health expenditures for and use of personal health services and individual and family insurance coverage during 1980. The data were collected in several related surveys.

The household portion of the survey consisted of a national survey of the civilian noninstitutionalized population and a separate survey of the Medicaid-eligible populations of the States of New York, California, Texas, and Michigan. These two surveys each consisted of five interviews over a period of about 15 months to obtain information on medical care utilization, expenditures, and other health-related information. A third survey, an administrative records survey, was designed to verify the eligibility status of the household survey respondents for the Medicare and Medicaid programs. It also checked insurance claims filed with the national Medicare program and Medicaid programs in each of the four States for persons in the sample of Medicaid eligibles.

The national household survey comprised persons residing in about 6,000 households. The sample for this survey was a multistage area probability sample drawn from 106 primary sampling units representing the 50 States and the District of Columbia. The State Medicaid household survey sample consisted of about 1,000 families in each of the four States; these families were selected with a known probability of selection from the State Medicaid enrollment lists. Thus, the total sample for the survey was about 10,000 households.

Interviews were conducted with each household at approximately 3-month intervals, with interviewing beginning in February 1980 and ending in March 1981. The first two interviews were conducted by personal visit of the interviewer to the household, the next two were conducted by telephone (if a telephone was available and acceptable to the household), and the final interview was conducted in person. Each round of interviewing asked about the period following the preceding interview except the first round, which asked about the period of time following January 1, 1980.

An overall response rate of 89.4 percent was achieved in the first interview for both household surveys: for the national survey the response rate was 91.4 percent, and for the State Medicaid survey the rate was 86.7 percent. Attrition over the course of interviewing resulted in final response rates of 84.9

percent for the national household survey and 76.1 percent for the State Medicaid household survey.

For more detailed information on the NMCUES design, limitations of the data, sampling errors of the estimates, and the questionnaires used, see: National Center for Health Statistics, Procedures and questionnaires of the National Medical Care Utilization and Expenditure Survey, by G. S. Bonham, *National Medical Care Utilization and Expenditure Survey, Series A, Methodological Report No. 1*, DHHS Pub. No. 83-20001, Public Health Service, Washington, U.S. Government Printing Office, Mar. 1983.

National Center for Health Services Research

Hospital Cost and Utilization Project

The Hospital Cost and Utilization Project involves nearly 400 of the approximately 5,500 short-term, general non-Federal hospitals in the United States. The sample was stratified to contain hospitals at all ranges of bed size, control, teaching status, prospective or retrospective reimbursement, region, within or outside standard metropolitan statistical areas, occupancy rate, average length of stay, number of personnel per bed, and assets per bed. Participation in the study was strictly voluntary, but hospitals with incomplete discharge abstract data files were not included in the sample. Data files were found incomplete in terms either of information or period of coverage.

Data were acquired from a number of published and unpublished sources. Information on patient clinical status and use of inpatient services was obtained from hospital discharge abstracts provided by 12 major discharge abstract services and the Maryland Health Services Cost Review Commission. Patient data for sample hospitals cover more than 23 million discharges from 1970 through 1981.

For further information on the Hospital Cost and Utilization Project, write: Division of Intramural Research, National Center for Health Services Research, Park Building, Stop 3-50, 5600 Fishers Lane, Rockville, Md. 20857.

Health Resources and Services Administration

Bureau of Health Professions

Physician Supply Projections

In an ongoing effort, the Bureau of Health Professions (formerly the Bureau of Health Manpower) evaluates both the current and future supply of health manpower in the various occupations.

The 1976 supply of active physicians (M.D.'s) was used as the starting point for the projections of active physicians published in 1982. The major source of data used to obtain 1976 figures was the American Medical Association (AMA) Physician Masterfile.

In the first stage of the projections, graduates from U.S. schools of allopathic (M.D.) and osteopathic (D.O.) medicine and foreign- and Canadian-trained additions were estimated on

a year-by-year basis. Estimates of first-year enrollments, student attrition, other medical school-related trends, and a model of foreign and Canadian medical graduate immigration were used in deriving these annual additions. These year-by-year additions were then combined with the already existing active supply in a given year to produce a preliminary estimate of the active work force in each succeeding year. These estimates were then reduced using estimates of mortality and retirement. Mortality and retirement losses were computed by 5-year age cohorts on an annual basis, using age distributions and mortality and retirement rates from AMA data.

For more information, see: Bureau of Health Professions, *Third Report to the President and Congress on the Status of Health Professions Personnel in the United States*, DHHS Pub. No. (HRA) 82-2, Health Resources Administration, Hyattsville, Md., 1982.

Health Manpower Shortage Areas

Designation of Health Manpower Shortage Areas is an ongoing activity of the Office of Data Analysis and Management, Bureau of Health Professions.

Shortage areas are designated for seven professional categories in connection with three Federal programs: the National Health Service Corps and the Loan Repayment and Scholarship programs. The designations are also used to determine funding priorities for other programs.

Areas may be considered for shortage area designation by submitting an application with supporting documentation to the Bureau of Health Professions. Criteria for designation are defined in Department of Health and Human Services regulations. Interim final regulations were published in the *Federal Register* on Jan. 10, 1978. Final regulations are currently being developed.

For more information, write: Distribution and Shortage Analysis Branch, Office of Data Analysis and Management, Bureau of Health Professions, Health Resources and Services Administration, 5600 Fishers Lane, Rockville, Md. 20857.

Centers for Disease Control

Center for Infectious Diseases

National Morbidity Reporting System

This is a system for collecting demographic, clinical, and laboratory data primarily from State and territorial health agencies to provide national surveillance for conditions such as rabies, aseptic meningitis, diphtheria, tetanus, encephalitis, foodborne outbreaks, and others. Completeness of reporting varies greatly, since not all cases receive medical care and not all treated conditions are reported. Although State laws and regulations mandate disease reporting, reporting to the Centers for Disease Control (CDC) by States and territories is voluntary.

Estimates of underreporting have been made for two diseases—measles and viral hepatitis. Prior to the institution of the Measles Elimination Program in 1978, it was generally accepted that about 10-15 percent of all cases of measles that occurred in the United States were reported to CDC. However,

uncommon and serious conditions such as rabies are nearly always reported to CDC.

Depending on the disease, data are collected weekly or monthly and are analyzed to detect epidemiologic trends or to locate cases requiring control efforts. Data are published weekly and summarized annually.

For more information, see: Centers for Disease Control, Reported morbidity and mortality in the United States, 1982, *Morbidity and Mortality Weekly Report*, 31(54), in press, or write to Centers for Disease Control, Director, Division of Surveillance and Epidemiologic Studies, Epidemiology Program Office, Atlanta, Ga. 30333.

Abortion Surveillance

The Centers for Disease Control (CDC) acquires abortion service statistics by State of occurrence from two sources—central health agencies and hospitals and facilities. Since the initiation of epidemiologic surveillance of abortion in 8 States in 1969, the number of States from which statewide abortion data are reported increased to 48 in 1978. Most of the 45 central health agencies have established direct reporting systems, although a few collected data by surveying abortion facilities. Inquiries by CDC to hospitals and facilities provided information for four States that did not collect statewide abortion data.

The total number of abortions reported to CDC is about 16 percent less than the total estimated independently by the Alan Guttmacher Institute, the research and development division of the Planned Parenthood Federation of America, Inc.

For more information, see: Centers for Disease Control, *Abortion Surveillance, 1979–80*, Public Health Service, DHHS, Atlanta, Ga., to be published, or write to Centers for Disease Control, Director, Division of Reproductive Health, Center for Health Promotion and Education, Atlanta, Ga. 30333.

Center for Preventive Services

U.S. Immunization Survey

This system is the result of a contractual agreement between the Centers for Disease Control and the U.S. Bureau of the Census. Estimates from the Immunization Survey are based on data obtained during the third week of each September for a subsample of households interviewed for the Current Population Survey, which is described separately in this appendix.

The reporting system contains demographic variables and vaccine history along with disease history when relevant to vaccine history. The system is used to estimate the immunization level of the Nation's child population against the vaccine preventable diseases; from time to time, immunization level data on the adult population are collected.

The scope of the U.S. Immunization Survey covers the 50 States and the District of Columbia. In the 1981 sample, approximately 45,000 household units were included in the survey sample. Six thousand sample units were found to be vacant or otherwise not to be interviewed. Of the approximately 39,000 occupied households eligible for interview, about 1,500 were not interviewed because the occupants either were not at home

after repeated calls or were unavailable for some other reason.

The estimating procedure that was used involves the inflation of weighted sample results to independent estimates of the civilian noninstitutionalized population of the United States by age and race.

For more information, see: Centers for Disease Control, *United States Immunization Survey, 1981*, Public Health Service, DHHS, Atlanta, Ga., To be published.

Alcohol, Drug Abuse, and Mental Health Administration

National Institute on Alcohol Abuse and Alcoholism

National Surveys of Drinking

Data on trends in alcohol consumption were drawn from national surveys funded by the National Institute on Alcohol Abuse and Alcoholism and the National Institute of Drug Abuse. The 1979 survey was based on self-reported consumption and was designed to represent adults 18 years of age and over living in households in the coterminous United States. A total of 1,772 interviews were conducted, representing a response rate of 66 percent.

For more information, write: Laboratory for Epidemiology and Population Studies, National Institute on Alcohol Abuse and Alcoholism, 5600 Fishers Lane, Rockville, Md. 20857.

National Institute of Mental Health

Surveys of Mental Health Facilities

The Survey and Reports Branch of the Division of Biometry and Epidemiology conducts several surveys of mental health facilities. Some of the data in this report are derived from more than one of these surveys. The response rate to most of the items on these surveys is relatively high (90 percent or better) as is the rate for data presented in this report. However, for some survey items, the response rate may be somewhat lower.

The Inventories of Mental Health Facilities are the primary source for National Institute of Mental Health data used in this report. This data system is based on questionnaires mailed by January of each year to mental health facilities in the United States, including psychiatric hospitals, non-Federal general hospitals with psychiatric services, residential treatment centers for emotionally disturbed children, federally funded community mental health centers, freestanding outpatient psychiatric clinics, and other types of multiservice or day-night facilities.

Other surveys conducted by the Survey and Reports Branch encompass sample surveys of patients coming under care in State, county, and private mental hospitals, outpatient psychiatric services, and general hospital inpatient psychiatric units. The purpose of these surveys is to determine the characteristics of patients served by these facilities.

For more information, write: Survey and Reports Branch, Division of Biometry and Epidemiology, National Institute of Mental Health, 5600 Fishers Lane, Rockville, Md. 20857.

Health Care Financing Administration

Bureau of Data Management and Strategy

Estimates of National Health Expenditures

Estimates of public and private expenditures for health are compiled annually by type of expenditure and source of funds. The data for several Federal health programs are taken from the Office of Management and Budget's special analysis of health programs, and data for the remaining Federal health programs are supplied directly by the various agencies.

Estimates for non-Federal expenditures come from an array of sources. American Hospital Association data on hospital finances, increased slightly to allow for osteopathic hospitals, are the primary source for estimates relating to hospital care. Estimated expenditures for the services of dentists and physicians in private practice are based on the gross income from self-employed practice reported to the Internal Revenue Service. The salaries of dentists and physicians on the staffs of hospitals and hospital outpatient facilities are considered a component of hospital care. Expenditures for the education and training of medical personnel are considered to be expenditures for education, and where they can be separated, they are excluded from health expenditures. Expenditures for drugs, drug sundries, eyeglasses, and appliances exclude those provided to inpatients and are estimated principally from the report of personal consumption expenditures in the U.S. Department of Commerce's national income accounts in the *Survey of Current Business*. Nursing home care expenditures by both public and private sources are based on data from the National Nursing Home Survey conducted by the National Center for Health Statistics. Data on the financial expenditures of health insurance organizations come from special Social Security Administration analyses of private health insurers. Expenditures for construction represent "value put in place" for hospitals, nursing homes, medical clinics, and medical research facilities but not for private office buildings providing office space for private practitioners.

For more specific information on items included and excluded and on general methodology used, see: National health expenditures, 1982, by R. M. Gibson and D. R. Waldo, and K. R. Levit, *Health Care Financing Review*, HCFA Pub. No. 03154, Health Care Financing Administration, Washington, U.S. Government Printing Office, Fall 1983.

Medicare Statistical System

The Medicare Statistical System (MSS) is a byproduct of the administrative recordkeeping system of the Medicare program. This program tracks the eligibility of enrollees and the benefits they use, the certification status of institutional providers, and the payments made for covered services. Currently, records are maintained on about 29 million active enrollees and 20,300 participating institutional providers, and about 193 million bills for services are processed annually.

The basic data files of MSS parallel the major files of Medicare's administrative system. There is an enrollment file

containing demographic data including age, sex, race, State, county, and ZIP code of residence, and eligibility information for all enrollees. The institutional provider file contains information on hospitals, skilled nursing facilities, home health agencies, and independent laboratories certified for Medicare participation. The information in this file includes the institution's size, location, and type of control. The third major type of file contains records of services used under Part A of Medicare—hospital, skilled nursing facility, or home health agency services. The last major type of file in MSS provides information on the use of Medicare Part B services, the most important of which is use of physician services. These files include data on the physician's submitted charge, the amount Medicare allowed, Medicare reimbursements, and the number and type of services received.

For further information on MSS and its derivative files, see: Health Care Financing Administration, *Medical Data System*, by Irving Goldstein, HCFA Pub. No. 093111, Baltimore, Md., July 1981.

Department of Commerce

Bureau of the Census

U.S. Census of Population

The census of population has been taken in the United States every 10 years since 1790. In the 1980 census, data were collected on sex, race, age, and marital status from 100 percent of the enumerated population. More detailed information such as income, education, housing, occupation, and industry were collected from a 20-percent sample. The 20-percent sample was dichotomized by size of place of residence with 50 percent of households in places of less than 2,500 population and 1 out of 6 households in places of 2,500 or more population receiving the more detailed questionnaire.

For more information on the 1980 census, see: U.S. Bureau of the Census, *1980 Census of Population and Housing, Users Guide*, Part A Text, PHC 80-R1-A.

Current Population Survey

The Current Population Survey (CPS) is a household sample survey of the civilian noninstitutionalized population conducted monthly by the U.S. Bureau of the Census to provide estimates of employment, unemployment, and other characteristics of the general labor force, the population as a whole, and various other subgroups of the population.

A list of housing units from the 1970 census, supplemented by newly constructed units and households known to be missed in the 1970 census, provides the sampling frame in most areas for the present CPS. In some rural locations, current household listings of selected land areas serve as the frame.

The present CPS sample is located in 461 areas comprising 923 counties and independent cities with coverage in every State and the District of Columbia. In an average month during 1975, the number of housing units or living quarters designated for the national sample was about 58,000, of which about 3,000 were found to be nonexistent, demolished, or no longer used as

living quarters. Of the remaining 55,000 units assigned for interview, about 45,000 were interviewed households, 2,000 were households at which the members were not available for interview, and 8,000 were found to be vacant, occupied by persons with usual residence elsewhere, or otherwise not eligible for interview.

The estimation procedure used involves inflation by the reciprocal of the probability of selection, adjustment for non-response, and ratio adjustment.

For more information, see: U.S. Bureau of the Census, *The Current Population Survey, Design and Methodology*, Technical Paper 40, Washington, U.S. Government Printing Office, Jan. 1978.

Population Estimates and Projections

National estimates are derived by use of decennial census data as benchmarks and of data available from various agencies as follows: births and deaths (Public Health Service); immigrants (Immigration and Naturalization Service); the Armed Forces (Department of Defense); net movement between Puerto Rico and the U.S. mainland (Puerto Rico Planning Board); and Federal employees abroad (Civil Service Commission and Department of Defense). State estimates are based on similar data and also on a variety of data series, including school statistics from State departments of education and parochial school systems.

National population projections indicate the approximate future level and characteristics of the population under given assumptions as to future fertility, mortality, and net immigration. The method used to develop the projections involved preparation of projections of each of the components of population change—births, deaths, and net immigration—and the combination of these with July 1 estimates of the current population. Projections for States and metropolitan areas incorporate further assumptions about population redistribution through interarea migration.

Current estimates and projections are generally consistent with official decennial census figures and do not reflect the amount of estimated decennial census underenumeration.

For more information, see: U.S. Bureau of the Census, *Projections of the population of the United States, 1977 to 2050, Current Population Reports, Series P-25, No. 704*, Washington, U.S. Government Printing Office, 1977.

Department of Labor

Bureau of Labor Statistics

Consumer Price Index

The Consumer Price Index (CPI) is a monthly measure of price change for a fixed “market basket” of goods and services. It is revised periodically to take into account changes in what Americans buy and in the way they live. The latest revision included (1) a new CPI for all urban consumers, (2) a revision of the CPI for urban wage earners and clerical workers, and (3) a modification of some categories within the medical care com-

ponent. The new indexes were introduced with the release of January 1978 data.

In this report, all CPI data shown are for all urban consumers. Prices are collected in 85 urban areas across the country. They were collected from about 18,000 tenants, 18,000 housing units for property taxes, and 24,000 establishments—grocery and department stores, hospitals, filling stations, and other types of stores and service establishments. All taxes directly associated with the purchase and use of items are included in the index.

Prices of food, fuels, and a few other items were obtained every month in all 85 locations. Prices of most other commodities and services were collected every month in the five largest areas and every other month in other areas. Prices of most goods and services were obtained by personal visits of the Bureau’s trained representatives. Mail questionnaires were used to obtain local transit fares, public utility rates, newspaper prices, fuel prices, and certain other items.

In calculating the index, price changes for the various items in each location were averaged together with weights that represent their importance in the spending of all urban consumers. Local data were then combined to obtain a U.S. city average.

The index measures price changes from a designated reference date—1967—which equals 100. An increase of 22 percent, for example, is shown as 122. This change can also be expressed in dollars as follows: The price of a base period “market basket” of goods and services bought by all urban consumers has risen from \$10 in 1967 to \$12.20.

For more information, see: Bureau of Labor Statistics, *Consumer Price Index, Concepts and Content over the Years*, BLS Report 517, Washington, U.S. Government Printing Office, May 1978.

Employment and Earnings

The Division of Industry Employment Statistics and the Division of Employment and Unemployment Analysis of the Bureau of Labor Statistics (BLS) publish data on employment and earnings. The data are collected by the Bureau of the Census, State Employment Security Agencies, and State Departments of Labor in cooperation with BLS.

The major data source is the Current Population Survey (CPS), a household interview survey conducted monthly by the Bureau of the Census to collect labor force data for BLS. CPS is described separately in this appendix. Data based on establishment records are also compiled each month from mail questionnaires by BLS, in cooperation with State agencies.

For more information, see: U.S. Department of Labor, Bureau of Labor Statistics, *Employment and Earnings, January 1983*, Vol. 30, No. 1, Washington, U.S. Government Printing Office, Jan. 1983.

Environmental Protection Agency

National Aerometric Surveillance Network

The Environmental Protection Agency (EPA), through extensive monitoring of activities conducted by Federal, State,

and local air pollution control agencies, collects data on the five pollutants for which National Ambient Air Quality Standards have been set. These pollution control agencies submit data quarterly to EPA's National Aerometric Data Bank (NADB). There are about 3,400 total stations reporting. Data from some short-term or sporadic monitoring for such purposes as special studies and complaint investigations are usually not included in NADB because the data are not extensive enough to provide equitable comparisons with routine data from permanent monitoring sites.

For more information, see: Environmental Protection Agency, *National Air Pollutant Emission Estimates, 1970-81*, EPA-450/4-82-002, Research Triangle Park, N.C., Sept. 1982, or write to Office of Air Quality Planning and Standards, Environmental Protection Agency, Research Triangle Park, N.C. 27711.

United Nations

Demographic Yearbook

The Statistical Office of the United Nations prepares the *Demographic Yearbook*, a comprehensive collection of international demographic statistics.

Questionnaires are sent annually and monthly to more than 220 national statistical services and other appropriate government offices. Data forwarded on these questionnaires are supplemented, to the extent possible, by data taken from official national publications and by correspondence with the national statistical services. To insure comparability, rates, ratios, and percentages have been calculated in the Statistical Office of the United Nations.

Lack of international comparability between estimates arises from differences in concepts, definitions, and time of data collection. The comparability of population data is affected by several factors, including (1) the definitions of the total population, (2) the definitions used to classify the population into its urban and rural components, (3) difficulties relating to age reporting, (4) the extent of over- or under-enumeration, and (5) the quality of population estimates. The completeness and accuracy of vital statistics data also vary from one country to another. Differences in statistical definitions of vital events may also influence comparability.

For more information, see: United Nations, *Demographic Yearbook 1980*, Pub. No. ST/ESA/STAT/SER.R/10, United Nations, New York, N.Y., 1980.

Alan Guttmacher Institute

Abortion Survey

The Alan Guttmacher Institute (AGI) conducts an annual survey of abortion providers. Data are collected from hospitals, nonhospital clinics, and physicians identified as providers of abortion services. A survey universe of 3,092 hospitals, nonhospital clinics, and individual physicians was compiled. To assess the completeness of the provider and abortion counts, supplemental surveys were conducted of a sample of obstre-

trician-gynecologists and a sample of hospitals (not in original universe) that were identified as providing abortion services through the American Hospital Association survey.

The number of abortions estimated by AGI is about 20 percent more than the number reported to the Centers for Disease Control.

For more information, write to: The Alan Guttmacher Institute, 515 Madison Avenue, New York, N.Y. 10022.

American Hospital Association

Annual Survey of Hospitals

Data from this survey are based on questionnaires that are sent to all hospitals in the United States and its associated areas accepted for registration by the American Hospital Association (AHA). In 1981, questionnaires were mailed to all hospitals on AHA files. Overall, 6,420 hospitals reported data, a response rate of 89.6 percent. For nonreporting hospitals and for the survey questionnaires of reporting hospitals on which some information was missing, estimates were made for all data except those on bassinets and facilities. The estimates of the missing data were based on data furnished by reporting hospitals that were similar in terms of bed-size category, type of control, major type of service provided, and type of stay in the hospitals for which data were not reported.

Hospitals are requested to report data for the full year ending September 30. More than half of the responding hospitals used this reporting period in the 1981 survey. The remaining hospitals used various reporting periods.

For more information on the AHA Annual Survey of Hospitals, see: American Hospital Association, *Hospital Statistics, 1982 Edition, Data from the American Hospital Association 1981 Annual Survey*, Chicago, 1982.

American Medical Association

Physician Masterfile

A masterfile of physicians has been maintained by the American Medical Association (AMA) since 1906. Today, the Physician Masterfile contains data on almost every physician in the United States, both members and nonmembers of AMA, and on those graduates of American medical schools temporarily practicing overseas. The file also includes graduates of foreign medical schools who are in the United States.

A file is initiated on each individual upon entry into medical school or, in the case of foreign graduates, upon entry into the United States. A census of physicians is conducted every 3 years to update the file information on professional activities, specialization, and present employment status. The last census from which data are available was completed in 1982, with a response rate of 90 percent. Between censuses, AMA keeps the file current by continuous checks of professional publications and State licensure notices for changes in any physician's activities. When a change is noted, the physician may be sent a questionnaire to verify the change.

For more information on the AMA Physician Masterfile,

see: Division of Survey and Data Resources, American Medical Association, *Physician Characteristics and Distribution in the U.S.*, 1983 edition, Chicago, 1983.

Annual Census of Hospitals

From 1920 to 1953, the Council on Medical Education and Hospitals of the American Medical Association (AMA) conducted annual censuses of all hospitals registered by AMA.

In each annual census, questionnaires were sent to hospitals asking for the number of beds, bassinets, births, patients admitted, average census of patients, lists of staff doctors and interns, and other information of importance at the particular time. Response rates were always nearly 100 percent.

The community hospital data from 1940 and 1950 presented in this report were calculated using published figures from the AMA Annual Census of Hospitals. Although the hospital classification scheme used by AMA in published reports is not strictly comparable with the definition of community hospitals, methods were employed to achieve the greatest comparability possible.

For more information on the AMA Annual Census of Hospitals, see: American Medical Association, Hospital Service in the United States, *Journal of the American Medical Association*, 11(116):1055–1144, 1940.



Appendix II

Glossary of Terms

Contents

General terms	
Social and demographic terms	223
Geographic terms	224
Health status and determinants	
Fertility	224
Mortality	225
Determinants and measures of health	225
Utilization and resources	
Ambulatory care	227
Inpatient care	228
Psychiatric care	230
Manpower	230
Health expenditures	231

Appendix II

Glossary of Terms

General terms

Social and demographic terms

Age—Age is reported as age at last birthday, i.e., age in completed years, often calculated by subtracting date of birth from the reference data, with the reference data being the date of the examination, interview, or other contact with an individual.

Age adjustment of death rates—Age adjustment, using the direct method, is the application of the age-specific death rates in a population of interest to a standardized age distribution in order to eliminate the differences in observed rates that result from age differences in population composition. This is usually done when comparing two or more populations at one point in time, or one population at two or more points in time.

In this report, the mortality rates are age adjusted to the U.S. population enumerated in 1940. Adjustment is based on 11 age intervals as follows: under 1 year, 1–4 years, 5–14 years, 15–24 years, 25–34 years, 35–44 years, 45–54 years, 55–64 years, 65–74 years, 75–84 years, and 85 years and over. The data from the National Health Interview Survey, National Ambulatory Medical Care Survey, and the National Hospital Discharge Survey are age adjusted to the 1970 civilian noninstitutionalized population. In these cases, adjustment is based on four age intervals. For the National Health Interview Survey, those intervals are: under 17 years, 17–44 years, 45–64 years, and 65 years and over. For the National Ambulatory Medical Care Survey and National Hospital Discharge Survey, they are: under 15 years, 15–44 years, 45–64 years, and 65 years and over.

Average annual rate of change (percent change)—In this report, average annual rates of change or growth rates are calculated as follows:

$$\left(\sqrt[N]{\frac{P_n}{P_o}} - 1 \right) \times 100$$

where P_n = later time period

P_o = earlier time period

N = number of years in interval

This geometric rate of change assumes that a variable increases or decreases at the same rate during each year between the two time periods.

Race—Beginning in 1976, the Federal Government's data systems classified individuals into the following racial groups: American Indian or Alaskan Native, Asian or Pacific Islander, black, and white. In this report, three racial categories are generally used: "white," "black," and "all other." The "all other" category includes all races other than white.

Depending on the data source, the classification by race may be based on self-classification or on observation by an interviewer or other persons filling out the questionnaire. In the National Vital Statistics System, newborn infants are assigned the race of their parents. If the parents are of different races and one is white, the child is assigned the other parent's race. If either parent is Hawaiian, the child is classified as Hawaiian. In all other cases, the child is assigned the father's race. Prior to 1964, the National Vital Statistics System classified all births for which race was unknown as "white." The National Health Interview Survey assigns children whose parents are of different races to the race of the father.

Family income—For purposes of the National Health Interview Survey and National Health and Nutrition Examination Survey, all people within a household related to each other by blood, marriage, or adoption constitute a family. Each member of a family is classified according to the total income of the family of which he is a member. Unrelated individuals are classified according to their own income. Family income, then, is the total income received by the members of a family (or by an unrelated individual) in the 12 months prior to interview, including wages, salaries, rents from property, interest, dividends, profits, and fees from their own business, pensions, and help from relatives.

Marital status—The population is classified through self-reporting into the categories married and unmarried. Married includes all married people including those separated from their spouses. Unmarried includes those who are single (never married), divorced, or widowed. The Abortion Surveillance reports of the Centers for Disease Control classify separated people as unmarried for all States except Rhode Island.

Population—The U.S. Bureau of the Census collects and publishes data on several different types of population in the United States. Various statistical systems then use the appropriate population in calculating rates.

Total population is the population of the United States, including all members of the Armed Forces living in foreign countries, Puerto Rico, Guam, and the U.S. Virgin Islands. Other Americans abroad (e.g., civilian Federal employees

and dependents of members of the Armed Forces or other Federal employees) are not included.

Resident population is the population living in the United States. This includes members of the Armed Forces stationed in the United States and their families as well as foreigners working or studying here; it excludes foreign military, naval, and diplomatic personnel and their families located here and residing in embassies or similar quarters as well as Americans living abroad. The resident population is often the denominator when calculating birth and death rates and incidence of disease.

Civilian population is the resident population excluding members of the Armed Forces. Families of members of the Armed Forces are included, however.

Civilian noninstitutionalized population is the civilian population not residing in institutions. Institutions include correctional institutions, detention homes, and training schools for juvenile delinquents; homes for the aged and dependent (e.g., nursing homes and convalescent homes); homes for dependent and neglected children; homes and schools for the mentally or physically handicapped; homes for unwed mothers; psychiatric, tuberculosis, and chronic disease hospitals and residential treatment centers. This population is the denominator in rates calculated for the National Center for Health Statistics' National Health Interview Survey, National Health and Nutrition Examination Survey, and National Ambulatory Medical Care Survey.

Geographic terms

Division and region—The 50 States and the District of Columbia are grouped for statistical purposes by the U.S. Bureau of the Census into nine divisions within four regions. The groupings are as follows:

- Northeast
 - New England
 - Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut
 - Middle Atlantic
 - New York, New Jersey, Pennsylvania
- North Central
 - East North Central
 - Michigan, Wisconsin, Ohio, Indiana, Illinois
 - West North Central
 - Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, Kansas
- South
 - South Atlantic
 - Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida
 - East South Central
 - Kentucky, Tennessee, Alabama, Mississippi
 - West South Central
 - Arkansas, Louisiana, Oklahoma, Texas

- West
 - Mountain
 - Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada
 - Pacific
 - Washington, Oregon, California, Alaska, Hawaii

Registration area—The United States has separate registration areas for birth, death, marriage, and divorce statistics, which collect data annually from States whose registration data are at least 90-percent complete.

The *death registration area* was established in 1900 with 10 States and the District of Columbia, while the *birth registration area* was established in 1915, also with 10 States and the District of Columbia. Both areas have covered the entire United States since 1933. Currently, Puerto Rico, the U.S. Virgin Islands, and Guam are also included, although in statistical tabulations they are not part of the "United States" total.

Reporting area—In the National Vital Statistics System, reporting requirements on birth certificates vary according to State. Thus, different numbers of States report various characteristics. For example, in 1979, births to unmarried women are reported on the birth certificate only in 39 States and the District of Columbia, and the month during which prenatal care began is reported in 44 States and the District of Columbia.

Standard metropolitan statistical area (SMSA)—This is a concept developed for use in statistical reporting and analysis. Except in the New England States, an SMSA is a county or a group of contiguous counties containing at least one city of 50,000 inhabitants or more or "twin cities" with a combined population of at least 50,000. In addition, contiguous counties are included in an SMSA if they are essentially metropolitan in character (based on criteria of labor force characteristics and population density) and are socially and economically integrated with the central city or cities.

In New England, towns and cities rather than counties are the geographic components of the SMSA. Since National Center for Health Statistics (NCHS) data are not coded to identify all towns, NCHS uses the metropolitan State economic area (MSEA), which is made up of county units, for reporting data in New England.

Health status and determinants

Fertility

Abortion—The Centers for Disease Control's surveillance program counts *legal abortions* only. What constitutes a legal abortion varies, depending on a State's regulations about when one may be performed.

Birth rate—This measure divides the number of live births in a population in a given period by the resident population at the middle of that period. The rate may be restricted to births to women of specific age, race, marital status, or geographic location, or it may be related to the entire population.

Gestation—For both the National Vital Statistics System and the Centers for Disease Control's Abortion Surveillance,

the period of gestation is defined as beginning with the first day of the last normal menstrual period and ending with the day of birth.

Live birth—In the World Health Organization's definition, also adopted by the United Nations and the National Center for Health Statistics, a live birth is the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of the pregnancy, which, after such separation, breathes or shows any other evidence of life such as heartbeat, umbilical cord pulsation, or definite movement of voluntary muscles, whether or not the umbilical cord has been cut or the placenta is attached. Each product of such a birth is considered live born.

Live-birth order—In the National Vital Statistics System, this item from the birth certificate indicates the number of live births a woman has had, counting the birth being recorded.

Mortality

Cause of death—For the purpose of national mortality statistics, every death is attributed to one underlying condition, based on information reported on the death certificate and utilizing the international rules for selecting the underlying cause of death from the reported conditions. For data years 1979–80, the *International Classification of Diseases, Ninth Revision* is used for coding. Earlier data used the then current revision of the *International Classification of Diseases* (table I).

Use of successive revisions for classification of diseases may introduce discontinuities in the comparability of cause-of-death statistics over time. For further discussion, see the technical appendices of the annual volumes of *Vital Statistics of the United States, Volume II, Mortality*, produced by the National Center for Health Statistics. The most recent published volume is: *Vital Statistics of the United States, 1978, Volume II, Mortality, Part A*, DHHS Pub. No. (PHS) 83–1101, Public Health Service, Washington, U.S. Government Printing Office, 1982.

Death rate—This measure divides the number of deaths in a population in a given period by the resident population at the middle of that period. It may be restricted to deaths in specific age, race, sex, or geographic groups, or it may be related to the entire population.

Infant mortality—Infant mortality is the death of live-born children who have not reached their first birthday and is usually expressed as a rate (i.e., the number of infant deaths during a year per 1,000 live births reported in the year).

International Classification of Diseases, Ninth Revision—The *International Classification of Diseases* (ICD) classifies mortality information for statistical purposes. ICD was first used in 1900 and has been revised about every 10 years since then. The *Ninth Revision*, published in 1977, is used to code U.S. mortality data beginning with data for 1979. The clinical modification of the *Ninth Revision* is used to code U.S. morbidity data.

Both are arranged in 17 main chapters. Most of the diseases are arranged according to their principal anatomical site, with special chapters for infective and parasitic diseases; neoplasms; endocrine, metabolic, and nutritional diseases; mental diseases; complications of pregnancy and childbirth; certain diseases peculiar to the perinatal period; and ill-defined conditions. In addition, two supplemental classifications are provided: the classification of factors influencing health status and contact with health service and the classification of external causes of injury and poisoning.

The ICD codes used in this volume for cause of death are indicated on each detailed mortality table. Cause-of-death codes for table 15, Part B, are shown in table II.

Neonatal mortality—The neonatal mortality rate is the number of deaths under 28 days of age per 1,000 live birth.

Postneonatal mortality—The postneonatal mortality rate is the number of deaths that occur from 28 days to 365 days after birth per 1,000 live births.

Fetal death—The fetal death rate is the number of fetal deaths with stated or presumed gestation of 20 weeks or more per 1,000 total births (i.e., live births plus fetal deaths).

Life expectancy—Life expectancy is the average number of years of life remaining to a person at a particular age and is based on a given set of age-specific death rates, generally the mortality conditions existing in the period mentioned. Life expectancy may be determined by race, sex, or other characteristics using age-specific death rates for the population with that characteristic.

Table I. Revision of the *International Classification of Diseases*, according to year of conference by which adopted and years in use in United States

Revision of the International Classification of Diseases	Year of conference by which adopted	Years in use in United States
First	1900	1900–1909
Second	1909	1910–1920
Third	1920	1921–1929
Fourth	1929	1930–1938
Fifth	1938	1939–1948
Sixth	1948	1949–1957
Seventh	1955	1958–1967
Eighth	1965	1968–1978
Ninth	1975	1979–present

Determinants and measures of health

Condition—A health condition is a departure from a state of physical or mental well-being. Conditions, except impairments, are coded according to the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD–9–CM).

Based on duration, there are two categories of conditions, acute and chronic. In the National Health Interview Survey, an *acute condition* is a condition that has lasted less than 3 months and has involved either a physician visit (medical attention) or restricted activity, and a *chronic condition* is any condition lasting 3 months or more or is one of certain conditions classified as chronic regardless of their time of onset. The National Nursing Home Survey uses a specific list of conditions classified as chronic, also disregarding time of onset.

Table II. Cause-of-death codes for categories in Part B table 15, according to applicable revision of *International Classification of Diseases*

Cause of death	International Classification of Diseases			
	Sixth Revision	Seventh Revision	Eighth Revision	Ninth Revision
	Code numbers			
Diseases of heart	400–402, 410–443	400–402, 410–443	390–398, 402, 404, 410–414, 420–429	390–398, 402, 404–429
Cerebrovascular diseases	330–334	330–334	430–438	430–438
Malignant neoplasms	140–205	140–205	140–209	140–208
Respiratory system	160–164	160–164	160–163	160–165
Digestive system	150–156A, 157–159	150–156A, 157–159	150–159	150–159
Breast	170	170	174	174–175
Pneumonia and influenza	480–483, 490–493	480–483, 490–493	470–474, 480–486	480–487
Tuberculosis	001–019	001–019	010–019	010–018
Chronic liver diseases and cirrhosis	581	581	571	571
Diabetes mellitus	260	260	250	250
All accidents and adverse effects	E800–E962	E800–E962	E800–E949	E800–E949
Motor vehicle accidents	E810–E835	E810–E835	E810–E823	E810–E825
Suicide	E963, E970–E979	E963, E970–E979	E950–E959	E950–E959
Homicide and legal intervention	E964, E980–E985	E964, E980–E985	E960–E978	E960–E978

Disability—Disability is any temporary or long-term reduction of a person’s activity as a result of an acute or chronic condition. It is often measured in terms of the number of days that a person’s activity has been reduced.

Disability day—The National Health Interview Survey identifies several types of days on which a person’s usual activity is reduced because of illness or injury (reported for the 2-week period preceding the week of the interview). These short-term disability days are not mutually exclusive categories but are defined as follows:

A restricted-activity day is any day on which a person cuts down on his or her usual activities for all or most of that day because of an illness or an injury. Restricted-activity days are unduplicated counts of bed-disability, work-loss, and school-loss days as well as other days during which a person cuts down on his or her usual activities.

A bed-disability day is a day on which a person stays in bed for more than half of the daylight hours (or normal waking hours) because of a specific illness or injury. All *hospital days* are bed-disability days. Bed-disability days may also be work-loss or school-loss days.

A work-loss day is a day on which a person did not work at his or her job or business for at least half of his or her normal workday because of a specific illness or injury. The number of work-loss days is determined only for currently employed persons.

A school-loss day is a day on which a child did not attend school for at least half of his or her normal schoolday because of a specific illness or injury. School-loss days are determined only for children 6–16 years of age.

Former smoker—Any person who has smoked at least 100 cigarettes during his or her entire life but who reports smoking no cigarettes at the present time is a former smoker.

Incidence—Incidence is the number of cases of disease having their onset during a prescribed period of time and is often expressed as a rate (e.g., the incidence of measles per 1,000 children 5–15 years of age during a year). Incidence is a

measure of morbidity or other events that occur within a specified period of time.

Limitation of activity—Each person identified by the National Health Interview Survey as having a chronic condition is classified according to the extent to which his or her activities are limited because of the condition as follows:

- Persons unable to carry on *major activity*.
- Persons limited in the amount or kind of major activity performed.
- Persons not limited in major activity but otherwise limited.
- Persons not limited in activity.

Major activity (or usual activity)—This is the principal activity of a person or of his or her age-sex group. For 1–5 years of age, it refers to ordinary play with other children; for 6–16 years of age, it refers to school attendance; for 17 years of age and over, it usually refers to a job, housework, or school attendance.

Notifiable disease—A notifiable disease is one that health providers are required, usually by law, to report to Federal, State, or local public health officials when diagnosed. Notifiable diseases are those of public interest by reason of their contagiousness, severity, or frequency.

Particulate matter—Particulate matter is defined as particles of solid or liquid matter in the air, including both non-toxic materials (soot, dust, and dirt) and toxic materials (lead, asbestos, suspended sulfates and nitrates, etc.).

Pollutant—A pollutant is any substance that renders the atmosphere or water foul or noxious to health.

Prevalence—Prevalence is the number of cases of a disease, infected persons, or persons with some other attribute present during a particular interval of time. It is often expressed as a rate (e.g., the prevalence of diabetes per 1,000 persons during a year).

Self-assessment of health—In the National Health Interview Survey, the respondents are asked to evaluate the health of everyone in their household compared with other people of the same age.

Utilization and resources

Ambulatory care

Dental visit—The National Health Interview Survey counts visits to a dentist's office for treatment or advice, including services by a technician or hygienist acting under the dentist's supervision, as dental visits. Services provided to hospital inpatients are not included.

Disposition of visit—As used by the National Ambulatory Medical Care Survey, this term describes the variety of followup procedures that a physician may plan for the patient, ranging from no followup to specific return contacts to referral to other providers of care.

International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM)—The ICD-9-CM is based on and is completely compatible with the *International Classification of Diseases, Ninth Revision*. While the *Ninth Revision* is used to code mortality data ("Mortality" section), ICD-9-CM is used to code morbidity data.

Diagnostic groupings and code number inclusions for tables 41 and 42 are shown in table III; surgical groupings and code number inclusions for table 46 are shown in table IV; and diagnostic and other nonsurgical procedure groupings and code number inclusions for table 47 are shown in table V.

Office—In the National Health Interview Survey, an office refers to the office of any physician in private practice, including physicians connected with prepaid group practices. In the National Ambulatory Medical Care Survey, an office is any location for a physician's ambulatory practice other than hospitals, nursing homes, other extended care facilities, patients'

Table III. Codes from the *International Classification of Diseases, 9th Revision, Clinical Modification* for diagnostic categories in Part B tables 41 and 42

Diagnostic category	Code numbers
Females with delivery	V27
Diseases of heart	391, 398, 402-404, 410-429
Malignant neoplasms	140-208
Fracture, all sites	800-829
Cerebrovascular diseases	430-438
Pneumonia, all forms	480-486
Inguinal hernia	550
Acute respiratory infection	460-466
Chronic disease of tonsils and adenoids	474
Otitis media and eustachian tube disorders	381-382
Congenital anomalies	740-759
Alcohol dependence syndrome	303
Lacerations and open wounds	870-904
Psychoses	290-299
Diabetes	250
Hyperplasia of prostate	600
Pregnancy with abortive outcome	630-639
Benign neoplasms	210-239
Disorders of menstruation	626
Inflammatory disease of female pelvic organs	614-616
Persons admitted for sterilization	V25.2

homes, and industrial clinics. However, private offices in hospitals are included.

Physician visit—The National Health Interview Survey counts as a physician visit a visit in person or by telephone to a doctor of medicine or doctor of osteopathy for the purpose of examination, diagnosis, treatment, or advice. The service may be provided directly by the physician or by a nurse or other

Table IV. Codes from the *International Classification of Diseases, 9th Revision, Clinical Modification* for surgical categories in Part B table 46

Surgical category	Code numbers
Procedures to assist delivery	72-73
Diagnostic dilation and curettage of uterus	69.09
Cesarean section	74.0-74.2, 74.4, 74.99
Hysterectomy	68.3-68.7
Bilateral destruction or occlusion of fallopian tubes	66.2-66.3
Extraction of lens	13.1-13.6
Repair of inguinal hernia	53.0-53.1
Prostatectomy	60.2-60.6
Reduction of fracture (excluding skull, nose, and jaw)	76.70, 76.78-76.79, 79.0-79.6
Cardiac catheterization	37.21-37.23
Operations on muscles, tendons, fascia, and bursa	82-83.1, 83.3-83.9
Tonsillectomy, with or without adenoidectomy	28.2-28.3
Myringotomy	20.0
Appendectomy, excluding incidental	47.0
Circumcision	64.0
Rhinoplasty and repair of nose	28.1
Excision of semilunar cartilage of knee	80.6
Suture of skin and subcutaneous tissue	86.5
Debridement of wound, infection, or burn	86.22
Direct heart revascularization (coronary bypass)	36.1
Insertion of prosthetic lens (pseudophakos)	13.7
Pacemaker insertion, replacement, removal, and repair	37.7-37.8
Repair of current obstetrical laceration	75.5-75.6
Adenoidectomy without tonsillectomy	28.6
Resection and recession of ocular muscle	15.1-15.6
Oophorectomy and salpingo-oophorectomy	65.3-65.6
Cholecystectomy	51.2
Biopsies on the integumentary system (breast, skin, and subcutaneous tissue)	85.11-85.12, 86.11
Arthroplasty and replacement of hip	81.5-81.6

Table V. Codes from the *International Classification of Diseases, 9th Revision, Clinical Modification* for diagnostic and other nonsurgical procedure categories in Part B table 47

<i>Procedure category</i>	<i>Code numbers</i>
Cystoscopy	57.31–57.32
Radioisotope scan	92.0–92.1
Endoscopy of large intestine	45.21–45.24
Diagnostic ultrasound	88.7
Computerized axial tomography (CAT scan)	87.03, 87.41, 87.71, 88.01, 88.38
Arteriography using contrast material	88.4
Endoscopy of small intestine	45.11–45.13
Contrast myelogram	87.21
Angiocardiology using contrast material	88.5
Spinal tap	03.31
Application of cast or splint	93.51, 93.53–93.54
Arthroscopy of knee	80.26
Laparoscopy (excluding that for ligation and division of fallopian tubes)	54.21
Electroencephalogram	89.14
Biliary tract X-ray	87.5

person acting under the physician's supervision. Contacts involving services provided on a mass basis are not included nor are contacts for hospital inpatients.

Physician visits are generally classified by the type of place of visit. In the National Health Interview Survey, this includes the *office, hospital outpatient clinic or emergency room, telephone* (advice given by a physician in a telephone call), *company or industrial clinic* (units at a place of business that provide treatment through a physician or trained nurse), *home* (any place in which a person was staying at the time a physician was called there), as well as other places.

In the National Ambulatory Medical Care Survey, an *office visit* is any direct personal exchange between an ambulatory patient and a physician or members of his or her staff for the purposes of seeking care and rendering health services.

Principal diagnosis—In the National Ambulatory Medical Care Survey, this is the physician's diagnosis of the patient's most important problem or complaint as evaluated at the time of the visit.

Seriousness of problem—In the National Ambulatory Medical Care Survey, the physician indicates for each patient visit the seriousness of the problem, condition, or symptom that the patient says caused the visit. Seriousness refers to the physician's clinical judgment as to the extent the patient would be impaired if no care were given. It is expressed as very serious, serious, slightly serious, or not serious.

Inpatient care

Average daily census or average daily patients—This refers to the average number of inpatients receiving care each day during a reporting period, excluding newborns.

Average length of stay—In the National Hospital Discharge Survey, the average length of stay is the total number of patient days accumulated at the time of discharge, counting the date of admission but not the date of discharge by patients discharged during a reporting period, divided by the number of patients discharged.

As measured in the National Nursing Home Survey, *length*

of stay for residents is the time from their admission until the reporting time, while the *length of stay for discharges* is the time between the date of admission and the date of discharge.

Bed—Any bed that is set up and staffed for use for inpatients is counted as a bed in a facility. In the National Master Facility Inventory, the count is of beds at the end of the reporting period; for the American Hospital Association, it is of the average number of beds during the entire period. The World Health Organization defines a hospital bed as one regularly maintained and staffed for the accommodation and full-time care of a succession of inpatients and situated in a part of the hospital where continuous medical care for inpatients is provided.

Day—According to the American Hospital Association and National Master Facility Inventory, days or *inpatient days* are the number of adult and pediatric days of care rendered during a reporting period. Days of care for newborns are excluded.

In the National Health Interview Survey, *hospital days during the year* refer to the total number of hospital days occurring in the 12-month period prior to the interview week. A *hospital day* is a night spent in the hospital for persons admitted as inpatients to a hospital.

In the National Hospital Discharge Survey, *days of care* refer to the total number of patient days accumulated by patients at the time of discharge from non-Federal short-stay hospitals during a reporting period. All days from and including the date of admission to, but not including the date of discharge, are counted. A *patient* is a person who is formally admitted to the inpatient service of the hospital for observation, care, diagnosis, or treatment.

Discharge—The National Health Interview Survey defines a *hospital discharge* as the completion of any continuous period of stay of 1 night or more in a hospital as an inpatient, excepting the period of stay of a well newborn infant.

According to the National Hospital Discharge Survey, American Hospital Association, and National Master Facility Inventory, this is the formal release of an inpatient by a hospital, i.e., the termination of a period of hospitalization (including stays of 0 nights) by death or by disposition to a place of

residence, nursing home, or another hospital. In this report, newborn infants are excluded.

In the National Nursing Home Survey, this is the formal release of a resident by a nursing home.

First-listed diagnosis—In the National Hospital Discharge Survey, this is the diagnosis listed first on the face sheet of the medical record.

Hospital—According to the American Hospital Association (AHA) and National Master Facility Inventory (NMFI), hospitals are institutions licensed as hospitals whose primary function is to provide diagnostic and therapeutic patient services for medical conditions and which have at least six beds, an organized physician staff, and continuous nursing services under the supervision of registered nurses. AHA data differ slightly from those of NMFI, since data from NMFI reflect osteopathic hospitals as well as hospitals not registered with AHA. Non-AHA hospitals comprise 5–10 percent of all hospitals in the country. The World Health Organization considers an establishment a hospital if it is permanently staffed by at least one physician, can offer inpatient accommodation, and can provide active medical and nursing care.

Hospitals may be classified by type of service, ownership, and length of stay.

General hospitals provide both diagnostic and treatment services for patients with a variety of medical conditions, both surgical and nonsurgical. According to the World Health Organization, these are hospitals that provide medical and nursing care for more than one category of medical discipline (e.g., general medicine, specialized medicine, general surgery, specialized surgery, and obstetrics); excluded are hospitals, usually ones in rural areas, that provide a more limited range of care. *Psychiatric hospitals* are ones whose major type of service is psychiatric care. See “Psychiatric Care” section.

Specialty hospitals, such as psychiatric, tuberculosis, chronic disease, rehabilitation, maternity, and alcoholic or narcotic, provide a particular type of service to the majority of their patients.

Federal hospitals are operated by the Federal Government. *Non-Federal government hospitals* are operated by State or local governments.

Voluntary nonprofit hospitals are operated by a church or other nonprofit organization.

Proprietary hospitals are operated for profit by individuals, partnerships, or corporations.

Short-stay hospitals in the National Hospital Discharge Survey are those in which the average length of stay is less than 30 days. The American Hospital Association and National Master Facility Inventory define *short-term hospitals* as hospitals in which more than half the patients are admitted to units with an average length of stay of less than 30 days and *long-term hospitals* as ones in which more than half the patients are admitted to units with an average length of stay of 30 days or more. The National Health Interview Survey defines *short-stay hospitals* as any hospital or hospital department in which the type of service provided is general; maternity; eye, ear, nose, and throat; children’s; or osteopathic.

Nursing care—Nursing care is the provision of any of the following services: application of dressings or bandages; bowel and bladder retraining; catheterization; enema; full bed bath; hypodermic, intramuscular, or intravenous injection; irrigation; nasal feeding; oxygen therapy; and temperature-pulse-respiration or blood pressure measurement.

Nursing home—No uniform definition is possible because the minimum standards and regulations for nursing homes vary among the States. However, the National Master Facility Inventory includes in its count only facilities licensed by the States in which they are located. The homes are then classified according to the level of care they provide, as follows:

Nursing care homes must employ one or more full-time registered or licensed practical nurses and must provide nursing care to at least half the residents.

Personal care homes with nursing have some but fewer than half the residents receiving nursing care. In addition, such homes must employ one or more registered or licensed practical nurses or must provide administration of medications and treatments in accordance with physicians’ orders, supervision of self-administered medications, or three or more personal services.

Personal care homes without nursing have no residents receiving nursing care. These homes provide administration of medications and treatments in accordance with physicians’ orders, supervision of self-administered medications, or three or more personal services.

Domiciliary care homes primarily provide domiciliary care but also provide one or two personal services.

In the 1977 National Nursing Home Survey, all four categories of homes were included. In the 1973–74 survey, only nursing homes providing some level of nursing care were classified as nursing homes.

Skilled nursing facilities provide the most intensive nursing care available outside of a hospital. Facilities certified by Medicare provide posthospital care to eligible Medicare enrollees. Facilities certified by Medicaid as skilled nursing facilities provide skilled nursing services on a daily basis to individuals eligible for Medicaid benefits.

Intermediate care facilities are certified by the Medicaid program to provide health-related services on a regular basis to Medicaid eligibles who do not require hospital or skilled nursing facility care but do require institutional care above the level of room and board.

Occupancy rate—The National Master Facility Inventory and American Hospital Association define *hospital occupancy rate* as the average daily census divided by the number of hospital beds during a reporting period. The *occupancy rate for other facilities* is calculated as the number of residents reported at the time of the interview divided by the number of beds reported.

Outpatient visit—According to the American Hospital Association, these are visits by patients not lodged in the hospital for medical, dental, or other services. See “Ambulatory Care” section.

Primary diagnosis—In the National Nursing Home Survey, this is the primary condition at the last examination as extracted from the resident's medical record.

Resident—In the National Nursing Home Survey, a resident is a person who has been formally admitted to but not discharged from an establishment.

Psychiatric care¹

Addition—An individual is classified as an addition to a psychiatric facility by being a new admission, a readmission, or a return from leave to either an inpatient or an outpatient psychiatric facility.

Mental disorder—A mental disorder is any of several disorders listed in Chapter V of the *International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM)*.

Mental health facility—A mental health facility is an administratively distinct public or private agency or institution whose primary concern is the provision of direct mental health services to the mentally ill or emotionally disturbed. Facilities include public and private psychiatric hospitals, psychiatric units of general hospitals, residential treatment centers for emotionally disturbed children, federally funded community mental health centers, freestanding outpatient psychiatric clinics, multiservice mental health facilities, and halfway houses.

Psychiatric hospitals are hospitals primarily concerned with providing inpatient care and treatment for the mentally ill. *Psychiatric inpatient units of Veterans Administration general hospitals* and *Veterans Administration neuropsychiatric hospitals* are often combined into the category *Veterans Administration psychiatric hospitals* because of their similarity in size, operation, and length of stay. Other psychiatric hospitals include State and county mental hospitals and private mental hospitals.

General hospitals providing psychiatric services are hospitals that knowingly and routinely admit patients to a separate psychiatric unit for the purpose of diagnosing and treating psychiatric illness.

Residential treatment centers for emotionally disturbed children are residential institutions primarily serving emotionally disturbed children and providing treatment services, usually under the supervision of a psychiatrist.

Federally funded community mental health centers are legal entities through which comprehensive mental health services are provided to a delineated catchment area. This mental health delivery system may be implemented by a single facility (with or without subunits) or by a group of affiliated facilities that make available at least the following essential mental health services: inpatient, day treatment, outpatient, emergency care, and community consultation and education.

Freestanding outpatient psychiatric clinics are administratively distinct facilities, the primary purpose of which is to provide nonresidential mental health service and where

a psychiatrist assumes medical responsibility for all patients and/or directs the mental health program.

Service mode—Service mode and *treatment modality* refer generally to the kinds of mental health service available: inpatient care, outpatient care, day treatment, etc.

Inpatient care is the provision of mental health treatment to people requiring 24-hour supervision.

Outpatient care is the provision of mental health treatment on an outpatient basis and does not involve any overnight stay in an inpatient facility.

Day treatment is the provision of a planned therapeutic program during most or all of the day for people needing broader programs than are possible through outpatient visits but who do not require full-time hospitalization.

Manpower

Full-time equivalent employee (FTE)—The American Hospital Association and National Master Facility Inventory use an estimate of full-time equivalent employees that counts two part-time employees as one full-time employee, a *full-time employee* being someone working 35 hours or more a week. The National Nursing Home Survey uses an estimate of full-time employees that counts 35 hours of part-time employees' work per week as equivalent to one full-time employee.

Physician—Physicians are licensed doctors of medicine or osteopathy classified by the American Medical Association and others through self-reporting, as follows:

Active physicians or *professionally active physicians* are ones currently practicing, regardless of the number of hours worked per week.

Federal physicians are employed by the Federal Government; *non-Federal* or *civilian physicians* are not.

Office-based physicians are physicians who spend the plurality of their time working in practices based in private offices; *hospital-based physicians* spend the plurality of their time as salaried physicians in hospitals.

Physician specialty—A physician specialty is any specific branch of medicine in which a physician may concentrate. The specialty classification used by the Bureau of Health Professions and National Ambulatory Medical Care Survey (NAMCS) follow these American Medical Association categories:

Primary care specialties include general practice (or family practice), internal medicine, and pediatrics.

Medical specialties include, along with internal medicine and pediatrics, the areas of allergy, cardiovascular disease, dermatology, gastroenterology, pediatric allergy and cardiology, and pulmonary diseases.

Surgical specialties include general surgery, neurological surgery, obstetrics and gynecology, ophthalmology, orthopedic surgery, otolaryngology, plastic surgery, colon and rectal surgery, thoracic surgery, and urology.

Other specialties covered by NAMCS are geriatrics, neurology, preventive medicine, psychiatry, and public health. Other specialties covered by the Bureau of Health Professions are aerospace medicine, anesthesiology, child

¹The definitions for psychiatric care are those used by the National Institute of Mental Health.

psychiatry, neurology, occupational medicine, pathology, physical medicine and rehabilitation, psychiatry, public health, and radiology.

Place of employment—The classification of people employed in the health service industry by place of employment is a U.S. Bureau of the Census adaptation of the U.S. Office of Management and Budget's *Standard Industrial Classification Manual, 1967*, which classified people according to health service industry codes 801–809.

Professional manpower—Professional manpower includes chiropractors, dentists, dental hygienists, licensed practical nurses, pharmacists, physical therapists, physicians, podiatrists, and registered nurses as well as other occupations not covered in this report.

In the United States, counts of these professionals include only those licensed in the State where they practice, with licensure usually requiring the completion of an appropriate degree or certificate program for that profession. In international counts prepared by the World Health Organization, only those professionals active in their profession are counted.

Professionals may be classified according to specialty, place of practice, or other criteria. See "Physician."

Health expenditures

Consumer Price Index (CPI)—The CPI is prepared by the U.S. Bureau of Labor Statistics. It is a measure of the changes in average prices of the goods and services purchased by urban wage earners and by clerical workers and their families. The medical care component of the CPI shows trends in medical care prices based on specific indicators of hospital, medical, dental, and drug prices.

A recent revision of the CPI has been in use since January 1978, and changes are noted where applicable in this report.

Gross national product (GNP)—This is the most comprehensive measure of a nation's total output of goods and services. In the United States, the GNP represents the dollar value in current prices of all goods and services produced for sale plus the estimated value of certain imputed outputs (i.e., goods and services that are neither bought nor sold). The GNP is the sum of: (1) consumption expenditures by both individuals and nonprofit organizations plus certain imputed values; (2) business investment in equipment, inventories, and new construction; (3) Federal, State, and local government purchases of goods and services; and (4) the sale of goods and services abroad minus purchases from abroad.

Medicaid—This program is federally aided but State operated and administered. It provides medical benefits for certain

low-income persons in need of medical care. The program, authorized in 1965 by Title XIX of the Social Security Act, categorically covers participants in the Aid to Families with Dependent Children program as well as some participants in the Supplemental Security Income program and other people deemed medically needy in a participating State. States also determine the benefits covered, rates of payment for providers, and methods of administering the program.

Medicare—This is a nationwide health insurance program providing health insurance protection to people 65 years of age and over, people eligible for social security disability payments for more than 2 years, and people with end-stage renal disease, regardless of income. The program was enacted July 30, 1965, as Title XVIII, *Health Insurance for the Aged*, of the Social Security Act, and became effective on July 1, 1966. It consists of two separate but coordinated programs: hospital insurance (Part A) and supplementary medical insurance (Part B).

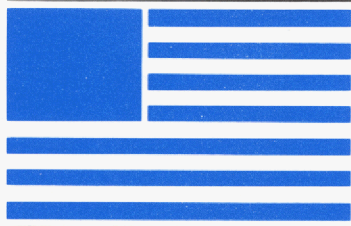
National health expenditures—This measure estimates the amount spent for all health services and supplies and health-related research and construction activities consumed in the United States during a specified time period. Detailed estimates are available by source of expenditure (e.g., consumer out-of-pocket, private health insurance, and government programs) and by type of expenditure (e.g., hospitals, physicians, and drugs). Data are compiled from a variety of sources that collect data from the providers of care.

Health services and supplies expenditures are outlays for goods and services relating directly to patient care plus expenses for administering health insurance programs and for government public health activities. This category is equivalent to total national health expenditures minus expenditures for research and construction.

Private expenditures are outlays for services provided or paid for by nongovernmental sources—consumers, insurance companies, private industry, and philanthropic organizations.

Public expenditures are outlays for services provided or paid for by Federal, State, and local government agencies or expenditures required by governmental action (such as workmen's compensation insurance payments).

Personal health care expenditures—These are outlays for goods and services relating directly to patient care. The expenditures in this category are total national health expenditures minus expenditures for research and construction, expenses for administering health insurance programs, and government public health activities.



Guide to Tables

GUIDE TO TABLES

I. HEALTH STATUS AND DETERMINANTS	Age	Sex	Race	Family income	Location of residence	Other variables	Geographic area		
							Region	Division, State	International
Population									
Resident.....	1		1						
Fertility									
General.....	2-4		2-4			3, 4			
Abortion.....	5		5			5, 6, 7			
Expected births.....	8		8						
Mortality									
General.....	9	9	9						
Infant.....			11, 12				12	13	
Fetal, perinatal.....			11						
Life expectancy.....	10	10, 14	10						14
Heart disease.....	16	15, 16	15, 16						
Cancer.....	17	15, 17	15, 17						
Respiratory cancer.....	18	15, 18	15, 18						
Cerebrovascular disease.....	19	15, 19	15, 19						
Motor vehicle accident.....	20	15, 20	15, 20						
Homicide.....	21	15, 21	15, 21						
Suicide.....	22	15, 22	15, 22						
Other causes of death.....		15	15						
Determinants and measures of health									
Prenatal care.....			24						
Immunization.....	25		25			25			
Cigarette smoking.....	30-32	30-32	30, 31						
Alcohol consumption.....	32, 33	32, 33							
Marijuana smoking.....	32	32							
Air pollution.....						35			
Elevated blood pressure.....	34	34	34						
Self-assessment of health.....	27	27	27	27	27		27		
Limitation of activity.....	27	27	27	27	27		27		
Disability days.....	29								
Restricted-activity days.....	28, 29	28	28	28	28		28		
Bed-disability days.....	28	28	28	28	28		28		
Acute conditions.....	29								
Diseases, notifiable.....						26			
Birth weight, low.....			23, 24					23	

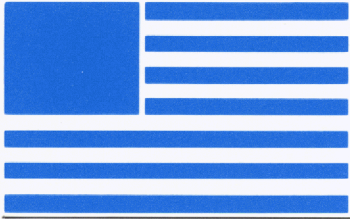
GUIDE TO TABLES--Continued

II. UTILIZATION OF HEALTH RESOURCES	Age	Sex	Race	Family income	Location of residence	Other variables	Geographic region
Ambulatory							
All physician visits							
Source or place.....	36	36	36	36	36		36
Interval since last visit.....	37	37	37	37	37		37
Physician's office							
Physician's specialty.....	38	38	38				
Visit characteristics.....	39	39	39			39	
Dentist visits, interval since last visit.....	40	40	40	40	40		40
Inpatient care							
Short-stay hospitals							
Admissions.....						41	
Average length of stay, general.....	44, 45	44, 45	45	45	45	41, 44	44, 45
Surgery.....	44	44					
Diagnosis.....	43	43					
Discharges, general.....	44, 45	45	45	45	45	44	44, 45
Surgery.....	44, 46	46				44	44
Diagnosis.....	42, 43	42, 43					
Diagnostic and other nonsurgical procedures.....	47	47					
Days of care, general.....	44, 45	45	45	45	45	44	44, 45
Surgery.....	44					44	44
Diagnosis.....	42, 43	42, 43					
Outpatient visits.....						41	
Mental health facilities							
Additions.....						50	
Patient care episodes.....						51	
Days of care.....						52	
Nursing homes							
Residents.....	48, 49	49	49			48	

GUIDE TO TABLES--Continued

III. HEALTH CARE RESOURCES	Occupation or place of employment	Specialty	Type of practice	Other variables	Geographic region		
					Region	Division, State	
Manpower							
Persons active in health field.....	53, 56					56	
Graduates (projections).....		58					
Physicians				54			
Total active.....							
Medical doctors.....			55				
Active non-Federal M.D.'s.....		57	57			57	
		Specialty	Type of ownership	Beds	Employees	Occupancy rates	Geographic division, State
Facilities							
Short-stay hospitals.....			59			59	
Long-stay hospitals.....	63		63			63	
Community hospitals.....			60	62		61	60-62
Nursing homes.....			64				64
Psychiatric facilities.....			65				
IV. HEALTH CARE EXPENDITURES	Age	Type of expenditure	Source of funds or payment	Other variables	Geographic area		
					Region	Division, State	
National health expenditures.....		75, 76	72, 73	66			
Public program expenditures (including Medicare and Medicaid).....		83-85					
Personal health care expenditures.....			74	67		68	
Hospital care expenditures.....						77	
Nursing home care expenditures.....						78	
Consumer Price Index.....		69-71					
Hospital costs and expenses.....				79, 80			
Nursing home charges.....	82		81	81, 82	81, 82		
Health research and development expenditures.....			86	87			

Part 2



Prevention Profile

Contents

Introduction	243
High Blood Pressure Control	246
Family Planning	247
Pregnancy and Infant Health	248
Immunization	250
Sexually Transmitted Diseases	253
Toxic Agent and Radiation Control	253
Occupational Safety and Health	255
Injury Prevention	256
Fluoridation and Dental Health	258
Surveillance and Control of Infectious Diseases	258
Smoking and Health	260
Alcohol and Drug Misuse Prevention	261
Improved Nutrition	263
Physical Fitness and Exercise	265
Control of Stress and Violent Behavior	266

Symbols

O	Objective revised from that previously published
B	Baseline revised from that previously published
---	Data not available
...	Category not applicable

Prevention Profile

by Patricia M. Golden and Ronald W. Wilson, National Center for Health Statistics, and Joel Kavet, Office of Disease Prevention and Health Promotion

Introduction

The promotion of health and prevention of disease gained increased emphasis in the second half of the 1970's. As interest in improving the health of Americans grew so too did recognition of the need to measure the dimensions of the health of the population and to document the effects over time of efforts to alleviate or avoid identified problems. In 1978, legislation was enacted (Public Law 95-626) that called for the triennial preparation of a national disease prevention data profile.

The 1983 edition of the *Prevention Profile* is an extension of the last section of the first profile, which appeared with *Health, United States, 1980*. The inaugural profile reviewed the evidence on the illness and economic burdens that could be reduced through preventive measures and summarized the successes, failures, and gaps recorded by efforts in prevention and disease control. The final section presented the beginnings of a framework for a continuing profile of the Nation's opportunities and accomplishments in enhancing the health of the population. It identified a series of prevention indicators and presented the most current data for each to permit an assessment of where the Nation stood at the time.

By directing attention to the five major goals published in *Healthy People: The Surgeon General's Report on Health Promotion and Disease Prevention* and by reporting on progress toward a substantial number of the measurable objectives formulated in *Promoting Health/Preventing Disease: Objectives for the Nation*, the *Prevention Profile* plays an important part in the oversight of Public Health Service initiatives in prevention and promotion. The kind of measurement provided in the *Prevention Profile* offers a useful form of accountability and a basis for considering the need for program modifications. The availability of baseline data and data reported for subsequent intervals makes possible a more specific and coherent statement of the problems that must be faced in moving toward the goals and objectives in health promotion and disease prevention.

Although preparation of the *Prevention Profile* is required every 3 years, the Public Health Service's initiatives in health promotion and disease prevention need to be monitored and measured on a more frequent basis. Reporting intervals are not uniform for all types of data, and rates of progress are not necessarily even or comparable from area to area. Measurement and examination of progress on a triennial basis does not necessarily offer an adequate basis for responsible and timely program oversight. For that reason, the Public Health Service is also developing an information tracking system, which will permit

closer and more frequent scrutiny of progress toward attainment of the prevention goals and objectives. In time, the tracking system and the *Prevention Profile* will provide a rich data resource and grow to be complementary, mutually supportive activities.

Background

As the legislation that established the requirement for the *Prevention Profile* was making its way through the legislative process, considerable activity was already underway in the area of health promotion and disease prevention under the auspices of the Public Health Service. In large measure, the basis for that activity was the growth in knowledge and awareness of how important health promotion and disease prevention could be in reducing unnecessary death and disability in the United States. Among the more important findings of *Healthy People* was that the impressive health gains of the 20th century have resulted to a large degree from the development and implementation of preventive measures such as improvements in sanitation, housing conditions, nutrition, and immunization, as well as changes in personal lifestyle patterns. Many major health problems confronting Americans today also are rooted in lifestyle or environmental factors that are themselves amenable to change. Health promotion and disease prevention, therefore, appear to hold the key to further improvements in the health status of the American people.

Attention has focused on 15 areas in which health promotion and disease prevention measures might be expected to achieve further gains in health and on a set of broad national goals listed in the Surgeon General's report for improving the health of the American people during the decade of the 1980's. The goals, one for each of the five major stages of life, are

- To continue to improve infant health, and, by 1990, to reduce infant mortality by at least 35 percent, to fewer than 9 deaths per 1,000 live births.
- To improve child health, foster optimal childhood development, and, by 1990, reduce deaths among children ages 1 to 14 years by at least 20 percent, to fewer than 34 per 100,000.
- To improve the health and health habits of adolescents and young adults, and, by 1990, to reduce deaths among people ages 15 to 24 by at least 20 percent, to fewer than 93 per 100,000.

- To improve the health of adults, and, by 1990, to reduce deaths among people ages 25 to 64 by at least 25 percent, to fewer than 400 per 100,000.
- To improve the health and quality of life for older adults and, by 1990, to reduce the average annual number of days of restricted activity due to acute and chronic conditions by 20 percent, to fewer than 30 days per year for people aged 65 and older.

Provisional data for 1982 indicate that significant progress has been made in attaining four of these five goals. Infant mortality declined from 14.1 per 1,000 live births in 1977 to 11.2 in 1982. The death rate for children 1–14 years of age dropped from 43 per 100,000 in 1977 to 36 in 1982. Since 1977, the death rate for adolescents and young adults 15–24 years of age dropped from 117 per 100,000 to 105, and the rate for people 25–64 years of age fell from 540 per 100,000 to 463. The lack of progress toward the goal for the elderly (36.5 restricted-activity days per person per year in 1977 and 39.9 days in 1981) may reflect, in part, some conceptual issues associated with the measurement chosen for tracking, which will be addressed when the goals and objectives are examined in a future review.

Subsequent to the publication of the Surgeon General's report, more than 500 individuals and organizational representatives from the public and private sectors came together to develop specific and measurable objectives for each of the 15 areas: high blood pressure control; family planning; pregnancy and infant health; immunization; sexually transmitted diseases; toxic agent and radiation control; occupational safety and health; injury prevention; fluoridation and dental health; surveillance and control of infectious diseases; smoking and health; alcohol and drug misuse prevention; improved nutrition; physical fitness and exercise; and control of stress and violent behavior.

These deliberations led to the formulation of objectives published in *Objectives for the Nation*. The 15 areas are grouped under three broad headings—preventive health services, health protection, and health promotion—and specific, often quantitative targets were established for the objectives. In describing the breadth of each of the objectives, the emphasis is on achieving the goals and objectives through a commitment truly national and not just Federal in scope. Success depends heavily on a sustained commitment from Americans at every level of society: in Federal, State, and local government agencies; in industry and labor; in voluntary health organizations; in schools and churches; among physicians and other health workers; and among private citizens.

For each of the 15 areas, the Public Health Service outlines the nature and extent of the specific problem area, describes and evaluates available promotion and prevention measures, and identifies national objectives. The objectives are presented under the following headings:

- Improved health status.
- Reduced risk factors.
- Increased public and professional awareness.
- Improved services and protection.
- Improved surveillance and evaluation systems.

Every effort was made to establish realistic objectives, considering limitations in knowledge and resources, that embodied activities of sufficient impact to contribute to achievement of the broader goals set out by the Surgeon General.

More recently, attention shifted to the need to identify and implement measures calculated to attain the specific measurable objectives and, hence, the major goals. In most instances, a great deal of activity was underway in the agencies of the Public Health Service and other parts of the Department of Health and Human Services, elsewhere in the Federal Government, in other levels of government, and in the private sector. As noted earlier, however, recognition of the broad spectrum of activities underway or envisioned was accompanied by acceptance of the view that attaining the goals and objectives was to be more than a Federal effort. Although there is an important role for the Federal Government, a more comprehensive national effort is necessary. A major role needs to be played by authorities at other levels of government and by a wide variety of representatives of the private sector.

Initiative was viewed as a critical ingredient in getting a robust start toward meeting the objectives and in providing a role model for other sectors of the health community. The Public Health Service seized that initiative in spring 1981. In each of the 15 substantive areas, the Assistant Secretary for Health assigned agencies of the Public Health Service principal responsibility for coordinating Public Health Service and related Federal activities. The lead agencies were designated on the basis of their statutory or programmatic responsibilities, experience, and expertise. In collaboration with other agencies with related or complementary interests and responsibilities, the lead agencies undertook the task of formulating the Federal response to the challenge in *Objectives for the Nation*.

Prior to addressing the objectives themselves, however, the agencies were charged with the responsibility for reviewing the objectives within their purview and assigning to each a measure of its priority. Recognizing the differences in the nature and substance of each of the areas, the lead and collaborating agencies were also afforded the latitude to devise and specify the criteria for assigning priority levels. The criteria tended to emphasize the feasibility of attaining the objective by 1990 or the year specified; the availability of resources to support such activity; the state of the science extant and necessary to attain the objectives; and the prospects for progress, Administration policy, and the degree to which Federal intervention (as opposed, for example, to some other level of government) is a critical element in attaining a particular objective.

Once the priorities had been assigned, implementation plans were developed for all of the objectives other than those assigned a low priority. The implementation plans themselves grew out of a collaborative and iterative process among the agencies. Although the scope of the activity described in the plans is confined to the Federal level, many of the actions call for financial support or technical resources or information for State and local agencies. The implementation plans were clearly developed to facilitate joint efforts with agencies and organizations at levels and within sectors other than the Federal Government.

The implementation plans have been published as a supple-

ment to *Public Health Reports*¹ entitled *Promoting Health/Preventing Disease: Public Health Service Implementation Plans for Attaining the Objectives for the Nation* (referred to below as *Implementation Plans*). The plans are presented under the same substantive headings as in *Objectives for the Nation*. Each of the 15 sections contains the following elements:

1. A brief summary of the problem.
2. Priority objectives for the Federal effort to improve health, reduce risk factors, increase public and professional awareness, improve services and protection, and improve surveillance and evaluation systems.
3. The role of the Federal Government in leading, catalyzing, and providing strategic support for prevention efforts, as well as areas in which State, local, or private sector activities can complement or supplement those of the Federal Government toward the achievement of a specific objective.
4. A summary of existing and proposed Federal activities in the particular prevention area.
5. A list of the cooperating agencies within the Department of Health and Human Services and of those other Federal and non-Federal agencies cooperating in the prevention effort.

The specific plans also include detailed individual charts for each objective, showing its priority (high or medium), data sources, the specific implementation steps designed to achieve it, the agencies responsible for those steps, and the year that individual steps will be initiated. The charts list both proposed activities at the time the plans were prepared in late fiscal 1982 and those continued from previous years.

The Assistant Secretary for Health has instituted monthly progress reviews on the status of activities related to the objectives. Each month, 1 of the 15 priority areas is reviewed. The sessions afford the lead agencies and their collaborators an opportunity to report on recent developments in the field and to present information on progress toward attaining the objectives. The sessions also provide a forum for discussion of problems encountered along the way and how they have been or might be overcome. The proceedings of each session are summarized by the lead agency and submitted for publication in *Public Health Reports*.

Since the inception of the health promotion initiative, significant progress has been achieved for certain objectives, as indicated in the following pages. However, many of the important activities in the last few years have been directed at planning, organizing, and coordinating the initiative within the Department of Health and Human Services and Public Health Service as well as with the State, local, and private sectors.

Organization and scope of this profile

Responding to the challenges laid down in *Healthy People* and *Objectives for the Nation* and measuring the progress toward those milestones through the steps outlined in the Im-

plementation Plans are complex undertakings. The objectives and implementation plans are concerned with areas and problems that can hardly be characterized as static, and there needs to exist the capacity to identify in an accurate and timely manner the emergence of unanticipated trends or developments. Along the road to implementation, the availability of useful information to gauge the effects of ongoing efforts and to facilitate the design of appropriate future activities is of paramount importance.

In the pages that follow, under the 15 subject areas is stated each objective of high or medium priority for which an implementation plan has been prepared. At the beginning of each of the 15 areas, there is a general discussion of the problems in need of attention and additional comments about particularly noteworthy developments. Tables displaying data for the baseline and subsequent years accompany objectives for which tracking data are available. The goals for 1990 established in *Objectives for the Nation* are also shown for easier comparison. Source notes for tracking data appear below the tables.

The data in this profile can readily be seen as important tools for those who measure progress and adjust the courses of activities directed at attainment of the objectives. The data are not, however, without limitations and these must be borne in mind as the profile is studied. The data are essentially national in nature and mask any regional differences that may exist. These differences may be important as a basis for altered approaches to particular objectives. Care also needs to be taken in examining the data reported and the objective as stated to assure that they reflect comparable populations. In some cases, the objectives were specified using age or other classifications different from those commonly used in collecting and displaying certain types of data. Because of limitations imposed by the periodicity cycles within which different data are collected, the year for which the most current data are available may vary from objective to objective.

Baseline data for some of the objectives as they appear in *Prevention Profile* have been modified from those in *Objectives for the Nation*. In some instances, population figures from the 1980 decennial census have been used to recompute rates. More appropriate data sources have been found for some areas; and in others, the earlier baseline data have been deleted pending recommendations for modifications.

The profile includes objectives for which no data, baseline or otherwise, are available. This problem confronts those who prepare the profile as well as those who develop the tracking system described earlier. The nature of the problem and possible approaches have been discussed at some length elsewhere.²

All objectives are elements of a dynamic process. The objectives and implementation plans have been and will continue to be the focus of periodic reviews by Federal health program and policy officials at a variety of levels and to varying degrees of detail. One example is the monthly review session conducted by the Assistant Secretary for Health. As mentioned, a summary of the proceedings of the progress review is prepared for publication in *Public Health Reports*.

¹Promoting health/preventing disease: Public Health Service implementation plans for attaining the objectives for the Nation. *Public Health Rep.* 98(5) supp., Sept.-Oct. 1983.

²Green, L. W., Wilson, R. W., and Bauer, K. G.: Data requirements to measure progress on the objectives for the Nation in health promotion and disease prevention. *Am. J. Public Health* 73(1):18-24, Jan. 1983.

A more comprehensive review of the activities of the Department of Health and Human Services in health promotion and disease prevention, including an overview of the resources allocated by various agencies to the several priority areas, is published periodically in the Public Health Service series entitled *Prevention*. (See, for example, *Prevention '82*.)

In addition to the progress review sessions, revisions or modifications will continue to be proposed in other settings in light of documented experience, the development or acquisition of new knowledge, the identification of new problems capable of being addressed through the objectives process, or changes in the character or priorities of affected programs. Continued attention to the objectives and the implementation plans will go a long way toward assuring that they represent the best assessment at a given point of the measures within the grasp of the Federal Government and available to enhance progress toward our national prevention goals.

High blood pressure control

An estimated 60 million Americans have elevated blood pressure that increases their risk of illness and premature death. Of these persons approximately 35 million need some form of continuing treatment. Of the remaining 25 million some may require treatment, but all require, at a minimum, medical surveillance. (These estimates, which are based on multiple sources of data from the early 1970's, are currently under revision using more recent data.) Untreated hypertension is the largest single contributor to stroke and a major contributor to heart disease and kidney failure.

The National High Blood Pressure Education Program, started in 1972, has helped to improve hypertension control in the Nation. With providers and the public better informed about hypertension, patient visits and medication prescriptions for hypertension have increased, as has the number of persons whose hypertension is well controlled. Associated death rates, especially from strokes, have declined rapidly and dramatically.

However, because high blood pressure is asymptomatic, a large number of people are unaware of their condition. Thus, the 1990 objectives for high blood pressure control give priority to the need for increasing professional and public awareness of the possibilities for high blood pressure control and the need for improved surveillance, detection, and control of high blood pressure. Although the data indicate that the percent of the population aware of their condition and successfully controlling it with medication has significantly increased during the past several years, an estimated 27 percent of the adults 25–74 years of age diagnosed as hypertensive in the National Health and Nutrition Examination Survey of 1976–80 had never been told previously by a doctor that they had high blood pressure. (However, 51 percent of those diagnosed in the 1960–62 examination survey had not been previously diagnosed as having hypertension.)

The 1990 high blood pressure control objectives also appropriately stress the need for individuals diagnosed as hypertensive to adhere to regimens of high blood pressure control over their lifetimes. These objectives further emphasize the need for adults to reduce their intake of sodium, to control their

weight, and to know the relationship of other risk factors such as cigarette smoking, elevated blood cholesterol levels, and diabetes to coronary heart disease and stroke.

Improved health status

By 1990, at least 60 percent of the estimated population having definite high blood pressure (160/95 mmHg) should have attained successful long-term blood pressure control, that is, a blood pressure at or below 140/90 mmHg for 2 years or more. (High blood pressure control rates vary among communities and States, with a general range from 25 to 60 percent based on current data. No national baseline is available.)

Reduced risk factors

By 1990, the average daily sodium ingestion (as measured by excretion) for adults should be reduced at least to the 3–6-gram range. (Baseline data unavailable.^B)³

Increased public and professional awareness

By 1990, at least 50 percent of adults should be able to state the principal risk factors for coronary heart disease and stroke, that is, high blood pressure, cigarette smoking, elevated blood cholesterol levels, and diabetes. (Data from the survey *The Public and High Blood Pressure*, conducted in 1979, show that 24 percent of the public knew that high blood pressure is a likely cause of heart trouble, 32 percent reported that cigarette smoking is a cause, and 11 percent cited cholesterol and fatty foods as a cause of heart trouble.^B)

By 1990, at least 90 percent of adults should be able to state whether their current blood pressure is normal (below 140/90 mmHg) or elevated, based on a reading taken at the most recent visit to a medical or dental professional or other trained reader. (Of persons 17 years of age and over interviewed in 1974, 47 percent reported that their blood pressure was normal, high, low, or other based on a reading taken within the past year; 21 percent had not been told; and 32 percent had not had their blood pressure taken.^B)

Improved services and protection

By 1990, no geopolitical area of the United States should be without an effective public program to identify persons with high blood pressure and to follow up on their treatment. (Baseline data unavailable.)

By 1985, at least 50 percent of processed food sold in grocery stores should be labeled to inform the consumer of sodium and caloric content, employing understandable, standardized, quantitative terms. (In 1979, labeling for sodium

³Same objective in Improved Nutrition.

was rare; the extent of calorie labeling was about 50 percent in the marketplace.)

Improved surveillance and evaluation systems

By 1985, a system should be developed to determine the incidence of high blood pressure, coronary heart disease, congestive heart failure, and hemorrhagic and occlusive strokes. After demonstrated feasibility, by 1990, ongoing sets of these data should be developed.

By 1985, a methodology should be developed to assess categories of high blood pressure control, and a national baseline study of this status should be completed. Five categories are suggested: (1) Unaware; (2) aware, not under care; (3) aware, under care, not controlled; (4) aware, under care, controlled; and (5) aware, monitored without therapy.

Family planning

Pregnancies among teenagers, among unmarried women, among women over 34 years of age, and among high-parity women are all associated with higher than average rates of maternal and/or infant morbidity and mortality. They are also more likely than other pregnancies to be unintended. Such pregnancies can impose psychological and social costs that often continue throughout the lifetimes of both the mother and the child.

Family planning increases the ability of individuals to make and implement their own decisions regarding reproduction. Family planning includes measures both to prevent unintended fertility and to overcome infertility. Nevertheless, of the slightly more than 3 million births in 1976, an estimated 1 million were unplanned (mistimed or unwanted).

The 1990 family-planning objectives promote both maternal and infant health as well as the emotional and social health of individuals and the family. These objectives give priority to reducing unintended pregnancies to women at increased risk of maternal and/or infant morbidity and mortality and to reducing unintended pregnancies among certain subgroups of the population that have disproportionately high risks of unintended pregnancy, such as teenagers, poor women, black women, and women living in rural areas or on Indian reservations.

Along with the objectives for pregnancy and infant health, the 1990 family-planning objectives also give priority to reducing the number of deaths still further through the reduction of specific risk factors, the improvement of services, and the promotion of public and professional awareness. For example, in 1978, 23.9 percent of the oral contraceptives sold contained more than 50 micrograms of estrogen; in 1982, this percent went down to 10.6. This current level is already below the 1990 goal of 15 percent.

The first five objectives address reducing unintended pregnancies for women of specific ages or marital status. It is assumed that reductions in overall births or the overall fertility rate for these women reflect reductions in births from unin-

tended pregnancies because only a small proportion of the births to these women, especially those in the younger age groups, are presumed to be intended.

Reduced risk factors

By 1990, there should be virtually no unintended births to girls 14 years of age and under. Fulfilling this objective would probably reduce births to this age group to near zero. (In 1978, there were 10,772 births for this age group.)

Year	Births
1978	10,772
1979	10,699
1980	10,169
1990	0

SOURCE: Data from National Center for Health Statistics, Division of Vital Statistics.

By 1990, the fertility rate⁴ for girls 15 years of age should be reduced to 10 per 1,000. (In 1978, there were 14.0 births per 1,000 for this age group.^B)

Year	Fertility rate
1978	14.0
1979	14.0
1980	14.2
1990	10.0

SOURCE: Data from National Center for Health Statistics, Division of Vital Statistics.

By 1990, the fertility rate⁴ for girls 16 years of age should be reduced to 25 per 1,000. (In 1978, there were 31.0 births per 1,000 for this age group.^B)

Year	Fertility rate
1978	31.0
1979	30.9
1980	30.9
1990	25.0

SOURCE: Data from National Center for Health Statistics, Division of Vital Statistics.

By 1990, the fertility rate⁴ for girls 17 years of age should be reduced to 45 per 1,000. (In 1978, there were 51.0 births per 1,000 for this age group.^B)

Year	Fertility rate
1978	51.0
1979	51.4
1980	51.8
1990	45.0

SOURCE: Data from National Center for Health Statistics, Division of Vital Statistics.

⁴The fertility rate is the number of children born alive to women in an age group expressed as a rate per 1,000 women in the age group.

By 1990, reductions in unintended births among single American women (15–44 years of age) should reduce the fertility rate in this group to 18 per 1,000. (In 1978, there were 25.7 births per 1,000 unmarried women⁵ 15–44 years of age.^B)

Year	Fertility rate
1978	25.7
1979	27.2
1980 ^a	28.4
1980	29.4
1990	18.0

^aThe method of deriving data by marital status of the mother was changed in 1980. The rate of 28.4 represents the rate that would be obtained using the same methodology as 1978 and 1979.

SOURCE: Data from National Center for Health Statistics, Division of Vital Statistics.

By 1990, the proportion of abortions performed in the second trimester of pregnancy should be reduced to 6 percent, thereby reducing the death-to-case rate for legal abortions in the United States to 0.5 per 100,000. (In 1977, 8.6 percent of legal abortions, excluding deaths from ectopic pregnancy, were performed at 13 weeks of gestation or over, and the death-to-case rate was 1.6 per 100,000, excluding deaths from ectopic pregnancy.⁶)

Year	Percent of abortions after 13 weeks	Death rate
1977	8.6	1.6
1978	8.6	0.6
1979	8.5	1.4
1980	10.0	0.6
1990	6.0	0.5

SOURCE: Data from Centers for Disease Control, Center for Health Promotion and Education.

By 1990, the availability of family-planning information and methods (education, counseling, and medical services) to all women and men should have sufficiently increased to reduce by 50 percent the disparity between Americans of different economic levels in their ability to avoid unplanned births. (In 1976, 52 percent of births that occurred during the previous 5 years reported by ever-married women with family incomes below the poverty level were unplanned compared with 29.2 percent for women with family incomes of 150 percent of poverty level or higher.)

Increased public and professional awareness

By 1990, at least 75 percent of men and women over 14 years of age should be able to describe accurately the various contraceptive methods, including the relative safety and effectiveness of one method versus the others. (Baseline data unavailable.)

⁵Unmarried women include the categories single, widowed, and divorced.

⁶Baseline revised because the Centers for Disease Control collect data on abortions by weeks of gestation.

Improved services and protection

By 1985, sales of oral contraceptives containing more than 50 micrograms of estrogen should have been reduced to 15 percent of total sales. (In 1978, 23.9 percent of preparations sold contained this level.^B)

Year	Percent of tablets dispensed
1978	23.9
1979	20.6
1980	17.1
1981	13.6
1982	10.6
1985	15.0

SOURCE: Data from Food and Drug Administration. Based on data from the National Prescription Audit, IMS America, Ambler, Pa.

By 1985, 100 percent of federally funded family-planning programs should have an established routine for providing an initial infertility assessment, either directly or through referral. (Baseline data unavailable.)

Pregnancy and infant health

Among the principal threats to infant health are birth defects that can lead to lifelong handicapping conditions and problems associated with low birth weight, which, in turn, can increase a newborn's risk of illness and death. Today, approximately 7 percent of all babies are of low birth weight (less than 2,500 grams). Unfortunately, many children are born to women with an increased risk of having a low-birth-weight infant, that is, women making no prenatal visit during the first trimester and teenagers. The proportion of women receiving prenatal care during the first 3 months of pregnancy has increased—from 68 to 74 percent during the years 1969–80. However, this means that in 1980 approximately 1 out of 4 women giving birth had made no prenatal visit during the first trimester and 1 out of 20 had made no prenatal visit during the first two trimesters.

Although the infant mortality rate dropped from 20 deaths per 1,000 live births in 1970 to 13 deaths per 1,000 live births in 1979, significant disparities exist in the infant mortality rate of different population groups. These differences are associated with a variety of factors, including those related to the health of the mother before and during pregnancy as well as parental socioeconomic status and lifestyle characteristics.

The factors underlying improvements in infant health are complex but include increased access to high-quality prenatal services, increased availability of regionalized systems of perinatal care, advances in technology, nutrition, and immunization levels. The 1990 pregnancy and infant health objectives appropriately give priority to initiatives in these areas. In addition, these objectives emphasize neonatal care and continued preventive services during the first year of life. In 1980, all States were conducting phenylketonuria (PKU) screening programs, and 48 States were screening for hypothyroidism. Currently, almost all States have had legislation introduced on the use of seatbelts for infants and children. In addition to the objectives for pregnancy and infant health directed at reducing infant

mortality, assuring all infants a healthy start in life, and enhancing the lives of their mothers, the 1990 family-planning objectives address similar issues.

Improved health status

By 1990, the infant mortality rate⁷ should be reduced to no more than 9 deaths per 1,000 live births. (In 1978, the infant mortality rate was 13.8 per 1,000 live births.)

Year	Infant mortality rate
1978	13.8
1979	13.1
1980	12.6
1981 ^a	11.7
1990	9.0

^aProvisional data.

SOURCE: Data from National Center for Health Statistics, Division of Vital Statistics.

By 1990, no county and no racial or ethnic group of the population (for example, white people, black people, American Indians, people of Hispanic origin) should have an infant mortality rate⁷ in excess of 12 deaths per 1,000 live births. (In 1978, the infant mortality rate for white people was 12.0 per 1,000 live births; for black people 23.1 per 1,000 live births; for American Indians 13.7 per 1,000 live births; the rate for people of Hispanic origin was not available separately.)

Year	Infant mortality rate			
	White ^a	Black	American Indian	Hispanic origin
1978.....	12.0	23.1	13.7	---
1979.....	11.4	21.8	15.2	---
1980.....	11.0	21.4	13.2	---
1990.....	...	12.0	12.0	12.0

^aData for white people shown for comparison.

SOURCE: Data from National Center for Health Statistics, Division of Vital Statistics.

By 1990, the neonatal mortality rate⁸ should be reduced to no more than 6.5 deaths per 1,000 live births. (In 1978, the neonatal mortality rate was 9.5 per 1,000 live births.)

Year	Neonatal mortality rate
1978.....	9.5
1979.....	8.9
1980.....	8.5
1981 ^a	7.8
1990.....	6.5

^aProvisional data.

SOURCE: Data from National Center for Health Statistics, Division of Vital Statistics.

⁷The infant mortality rate is the number of deaths of infants under 1 year of age expressed as a rate per 1,000 live births.

⁸The neonatal mortality rate is the number of deaths of infants under 28 days of age expressed as a rate per 1,000 live births.

By 1990, the perinatal mortality rate⁹ should be reduced to no more than 5.5 per 1,000. (In 1977, the perinatal mortality rate was 15.4 per 1,000.)

Year	Perinatal mortality rate
1977	15.4
1978	14.6
1979	13.8
1980	12.8
1990	5.5

SOURCE: Data from National Center for Health Statistics, Division of Vital Statistics.

By 1990, the maternal mortality rate¹⁰ should not exceed 5 per 100,000 live births for any county or for any racial or ethnic group (for example, white people, black people, American Indians, people of Hispanic origin). (In 1978, the overall rate was 9.6—the rate for white people was 6.4, the rate for black people was 25.0, the rate for American Indians was 12.1, the rate for people of Hispanic origin was not available separately.)

Year	Maternal mortality rate				
	Total	White	Black	American Indian	Hispanic origin
1978....	9.6	6.4	25.0	^a 12.1	---
1979....	9.6	6.4	25.1	^a 11.7	---
1980....	9.2	6.7	21.5	^a 8.2	---
1981 ^b	7.7	---	---	---	---
1990....	5.0	5.0	5.0	5.0	5.0

^aBased on very small frequencies and should be interpreted with caution. There were 4 maternal deaths in 1978, 4 in 1979, and 3 in 1980.

^bProvisional data.

SOURCE: Data from National Center for Health Statistics, Division of Vital Statistics.

Reduced risk factors

By 1990, low-birth-weight babies (weighing less than 2,500 grams) should constitute no more than 5 percent of all live births. (In 1978, the proportion was 7.1 percent of all births.)

Year	Percent low birth weight
1978 ^a	7.1
1979	6.9
1980	6.8
1990	5.0

^aIncludes babies weighing 2,500 grams.

SOURCE: Data from National Center for Health Statistics, Division of Vital Statistics.

By 1990, no county and no racial or ethnic group of the population (for example, white people, black people, American

⁹The perinatal mortality rate is the number of fetal deaths at 28-weeks gestation or more (late fetal deaths) plus the number of infant deaths at under 7 days old expressed as a rate per 1,000 live births plus late fetal deaths.

¹⁰The maternal mortality rate is the number of deaths to women from complications of pregnancy, childbirth, and the puerperium expressed as a rate per 100,000 live births.

Indians, people of Hispanic origin) should have a rate of low-birth-weight infants (weighing less than 2,500 grams) that exceeds 9 percent of all live births. (In 1978, the rate for white people was 5.9 percent, for black people 12.9 percent, for American Indians 6.7 percent, and for people of Hispanic origin¹¹ 6.7 percent.)

Percent low birth weight

Year	White	Black	American Indian	Hispanic origin
1978 ^a	5.9	12.9	6.7	6.7
1979	5.8	12.6	6.4	6.1
1980	5.7	12.5	6.5	6.1
1990	9.0	9.0	9.0	9.0

^aIncludes babies weighing 2,500 grams.

SOURCE: Data from National Center for Health Statistics, Division of Vital Statistics.

By 1990, the majority of infants should leave hospitals in car safety carriers. (Baseline data unavailable.)

Increased public and professional awareness

By 1990, 85 percent of women of childbearing age should be able to choose foods wisely (state special nutritional needs of pregnancy) and understand the hazards of smoking, alcohol, pharmaceutical products, and other drugs during pregnancy and lactation. (Baseline data unavailable.)

Improved services and protection

By 1990, virtually all women and infants should be served at levels appropriate to their need by a regionalized system of primary, secondary and tertiary care for prenatal, maternal, and perinatal health services.

By 1990, the proportion of women in any county or racial or ethnic group (for example, white people, black people, American Indians, people of Hispanic origin) who obtain no prenatal care during the first trimester of pregnancy should not exceed 10 percent. (In 1978, 21.8 percent of white mothers, 39.8 percent of black mothers, 43.7 percent of American Indian mothers, and 43.0 percent of Hispanic mothers¹¹ received no prenatal care during the first trimester.)

Percent with no prenatal care during 1st trimester

Year	White	Black	American Indian	Hispanic origin
1978	21.8	39.8	43.7	43.0
1979	20.9	38.4	41.3	39.5
1980	20.7	37.3	41.3	39.8
1990	10.0	10.0	10.0	10.0

SOURCE: Data from National Center for Health Statistics, Division of Vital Statistics.

¹¹Data for people of Hispanic origin available only for States with an Hispanic-origin item on their birth certificates. In 1978, there were 17 States; in 1979, 19 States; and in 1980, 22 States.

By 1990, virtually all newborns should be provided neonatal screening for metabolic disorders for which effective and efficient tests and treatments are available (for example, phenylketonuria (PKU) and congenital hypothyroidism). (In 1978, about 75 percent of newborns were screened for PKU; about 3 percent were screened for hypothyroidism in the early 1970's.)

By 1990, virtually all infants should be able to participate in primary health care that includes well-child care; growth development assessment; immunization; screening, diagnosis, and treatment for conditions requiring special services; appropriate counseling regarding nutrition, automobile safety, and prevention of other accidents such as poisonings. (Baseline data unavailable.)

Immunization

The seven major childhood infectious diseases—measles, mumps, rubella, polio, diphtheria, pertussis, and tetanus—can in some cases cause permanent disability or death. They all can be prevented by immunization. Vaccines are among the safest and most effective measures for the prevention of infectious and communicable diseases. The introduction and widespread use of vaccines have resulted in dramatic declines in the incidence of these seven diseases. For example, the number of reported cases of measles has dropped from 13,597 in 1979 to 1,697 in 1982 and the number of reported cases of rubella has dropped from 11,975 to 2,283. (Since the establishment of the 1990 immunization objectives, the Department of Health and Human Services has proposed a major initiative to eliminate the indigenous occurrence of measles.)

Immunization is required by law for first entry into school in all 50 States and the District of Columbia. Data for the school year 1981–82 suggest that at least 95 percent of the children entering kindergarten or first grade had been immunized against measles, rubella, mumps, polio, and diphtheria, tetanus, and pertussis (DTP). For all these diseases, immunization levels have reached or exceeded the 1990 goal for the Nation.

Although increasingly higher proportions of specific target populations have been vaccinated in recent years, more vigorous efforts in this area are required. The 1990 objectives give priority to establishing an effective nationwide system for assuring that routine immunizations are delivered to targeted susceptible populations and that high-risk patients are protected with the vaccines now available to reduce the risk of influenza, hepatitis B, and pneumococcal pneumonia. Immunization strategies to combat these vaccine-preventable diseases are being reviewed and updated.

The 1990 objectives also emphasize the need for the ongoing education and motivation of the general public and health care providers about the need to continue routine immunizations. In fiscal year 1982, 35 of 52 reporting areas had immunization projects with components to instruct mothers of newborns on the immunization schedules for their babies prior to their leaving the hospital or just after home birth. Such efforts are essential to maintain and extend past successes, because,

with the exception of smallpox, causes have not been eliminated and the risk from infectious diseases continues.

Improved health status

By 1990, reported measles incidence should be reduced to less than 500 cases per year—all imported or within two generations of importation. (In 1979, 13,597 measles cases were reported.)

Year	Cases of measles
1979	13,597
1980	13,506
1981	3,124
1982	1,697
1990	500

SOURCE: Data from Centers for Disease Control, Center for Prevention Services.

By 1990, reported mumps incidence should be reduced to less than 1,000 cases per year. (In 1979, 14,225 mumps cases were reported.)

Year	Cases of mumps
1979	14,225
1980	8,576
1981	4,941
1982	5,196
1990	1,000

SOURCE: Data from Centers for Disease Control, Center for Prevention Services.

By 1990, reported rubella incidence should be reduced to less than 1,000 cases per year. (In 1979, 11,795 rubella cases were reported.)

Year	Cases of rubella
1979	11,795
1980	3,904
1981	2,077
1982	2,283
1990	1,000

SOURCE: Data from Centers for Disease Control, Center for Prevention Services.

By 1990, reported congenital rubella syndrome incidence should be reduced to less than 10 cases per year. (In 1979, 62 new cases of congenital rubella syndrome were reported.)

Year	New cases of congenital rubella syndrome
1979	62
1980	50
1981	19
1982	7
1990	10

SOURCE: Data from Centers for Disease Control, Center for Prevention Services.

By 1990, reported diphtheria incidence should be reduced to less than 50 cases per year. (In 1979, 59 diphtheria cases were reported.)¹²

Year	Cases of diphtheria
1979	59
1980	3
1981	5
1982	3
1990	50

SOURCE: Data from Centers for Disease Control, Center for Prevention Services.

By 1990, reported pertussis incidence should be reduced to less than 1,000 cases per year. (In 1979, 1,623 pertussis cases were reported.)^{B)}

Year	Cases of pertussis
1979	1,623
1980	1,730
1981	1,248
1982	1,784
1990	1,000

SOURCE: Data from Centers for Disease Control, Center for Prevention Services.

By 1990, reported tetanus incidence should be reduced to less than 50 cases per year. (In 1979, 81 tetanus cases were reported.)

Year	Cases of tetanus
1979	81
1980	95
1981	72
1982	81
1990	50

SOURCE: Data from Centers for Disease Control, Center for Prevention Services.

By 1990, reported polio incidence should be less than 10 cases per year. (In 1979, 26 paralytic polio cases were reported.)

Year	Cases of paralytic polio
1979	26
1980	8
1981	6
1982	7
1990	10

SOURCE: Data from Centers for Disease Control, Center for Prevention Services.

¹²The incidence of diphtheria includes cases of cutaneous and noncutaneous diphtheria combined. The inconsistent reporting of cutaneous diphtheria since 1979 probably contributes to the decrease in reported cases of diphtheria after 1979. (See Centers for Disease Control: Annual summary 1981, Reported morbidity and mortality in the United States. *MMWR* 30(54):32, 1982.)

Increased public and professional awareness

By 1990, all mothers of newborns should receive instruction prior to leaving the hospital or after home births on immunization schedules for their babies. (Of 52 reporting areas in fiscal year 1981, 14 had projects with education programs in which mothers receive such instruction. These projects cover mothers receiving services from public programs.)

<i>Fiscal year</i>	<i>Federally funded projects</i>
1981	14
1982	35
1990	52

SOURCE: Data from Centers for Disease Control, Center for Prevention Services.

Improved services and protection

By 1990, at least 90 percent of all children should have completed their basic immunization series by age 2—measles, mumps, rubella, polio, diphtheria, tetanus, and pertussis. (In 1979 over 50 percent of children 2 years of age had received vaccinations for each of the diseases.^{B,13})

<i>Year</i>	<i>Percent vaccinated^a</i>				
	<i>Measles</i>	<i>Rubella</i>	<i>Mumps</i>	<i>Polio^b</i>	<i>DTP^b</i>
1979...	80.8	80.0	70.1	76.3	82.1
1980...	83.0	83.2	80.2	80.7	87.0
1981...	81.5	83.9	79.1	80.9	87.6
1990...	90.0	90.0	90.0	90.0	90.0

^aBased on a subsample of respondents in the U.S. Immunization Survey of 1979–1981. The subsample includes only respondents stating that they used immunization records as a reference. The subsample size is approximately one-third of the total sample size.
^b3 or more vaccinations.

SOURCE: Data from Centers for Disease Control, Center for Prevention Services.

By 1990, at least 95 percent of children attending licensed day care facilities and kindergarten through 12th grade should be fully immunized. (Based on data collected during the 1978–79 school year, the immunization level for measles, rubella, polio and DTP was about 90 percent for first school entrants and lower overall.¹⁴)

<i>School year</i>	<i>Percent of new entrants vaccinated^a</i>				
	<i>Measles</i>	<i>Rubella</i>	<i>Mumps</i>	<i>Polio</i>	<i>DTP</i>
1978–79 ...	93	91	83	92	92
1979–80 ...	94	93	86	93	94
1980–81 ...	96	96	92	95	95
1981–82 ...	97	97	95	96	96
1990–91 ...	95	95	95	95	95

^aKindergarten or first grade.

SOURCE: Data from Centers for Disease Control, Center for Prevention Services.

¹³Data for each disease is collected independently.

¹⁴Data for each disease is collected independently; however, because of current school laws the percents probably reflect the general level of fully immunized students at the kindergarten and first grade levels.

By 1990, at least 60 percent of people in high-risk populations¹⁵ as defined by the Immunization Practices Advisory Committee of the Public Health Service should be receiving annual immunization against influenza. (In 1979, about 18 percent of people in high-risk populations were immunized.^B)

<i>Year</i>	<i>Percent of high-risk population immunized</i>
1979	18
1980	16
1981	16
1990	60

SOURCE: Data from Centers for Disease Control, Center for Prevention Services.

By 1990, at least 60 percent of high-risk populations¹⁶ as defined by the Immunization Practices Advisory Committee of the Public Health Service should have received vaccination against pneumococcal pneumonia. (Baseline data unavailable.)

By 1990, at least 50 percent of people in populations designated as targets by the Immunization Practices Advisory Committee of the Public Health Service should be immunized within 5 years of licensure of new vaccines for routine clinical use.¹⁷

By 1985, the Nation should have a plan in place to mount mass immunization programs in the face of possible epidemics of influenza or other epidemic diseases for which vaccines may exist.

Improved surveillance and evaluation systems

By 1990, at least 95 percent of all children 18 years of age and under should have up-to-date official immunization records in a uniform format using common guidelines for completion of immunization. (Baseline data unavailable.)

By 1990, surveillance systems should be sufficiently improved so that (1) at least 90 percent of those hospitalized and 50 percent of those not hospitalized with vaccine-preventable diseases of childhood are reported, and (2) uniform case definitions are used nationwide. (Baseline data unavailable.)

¹⁵The high-risk population includes older persons, particularly those 65 years of age and over, and others, including children, with certain predisposing chronic conditions.

¹⁶The high-risk population includes children under 2 years of age with splenic dysfunction or anatomic asplenia and adults and children over 2 years of age with certain predisposing chronic conditions.

¹⁷Vaccines may be developed for people at risk of getting hepatitis A; otitis media (*S. pneumoniae* and *H. influenzae*); selected respiratory and enteric viruses; meningitis (group B *N. meningitides*, *S. pneumoniae*, *H. influenzae*). Same objective in Surveillance and Control of Infectious Diseases.

Sexually transmitted diseases

Over 10 million cases of sexually transmitted diseases (STD) occur annually, 86 percent of them in persons 15–29 years of age. Gonorrhea, nongonococcal urethritis, genital herpes, and syphilis are among the most common STD's. In 1950, the reported incidence of all types of syphilis was 146 per 100,000 population; it decreased to 30 per 100,000 by 1978 but increased to 32.9 in 1982. By contrast, during the same period, the reported incidence of gonorrhea increased from 192 to 468 cases per 100,000 in 1978 and then decreased to 418 in 1982. In addition to the large number of syphilis and gonorrhea cases, 2.5 million cases of nongonococcal urethritis and 500,000 cases of genital herpes occur annually. The most serious complications caused by sexually transmitted agents are pelvic inflammatory disease, sterility, infant pneumonia, infant death, birth defects, and mental retardation.

There is clear evidence that both the quality of the services and the attitudes with which they are delivered are important in attracting those who need STD services. Although existing programs are interrupting the transmission of syphilis and gonorrhea, many vulnerable groups are not yet being served. To approach them effectively requires not only the efforts of STD clinics and investigators but also those of family-planning clinics, private physicians, diagnostic and public health laboratories, and schools and other educational institutions. The 1990 objectives give priority to reducing the incidence of gonorrhea, gonococcal pelvic inflammatory disease, primary and secondary syphilis, and other sexually transmitted diseases through education, particularly at the junior and senior high school level, preventive vaccination, and improved diagnosis and treatment. However, this area is one where the measurement of progress toward the objectives could be affected by public and professional knowledge and awareness because the rates of reported STD's might well increase as more affected people are encouraged to seek treatment.

Improved health status

By 1990, reported gonorrhea incidence should be reduced to a rate of 280 cases per 100,000 population. (In 1979, the reported incidence was 459 cases per 100,000 population.^{B)}

Year	Reported incidence of gonorrhea
1979.....	459
1980.....	443
1981.....	435
1982.....	418
1990.....	280

SOURCE: Data from Centers for Disease Control, Center for Prevention Services.

By 1990, reported incidence of gonococcal pelvic inflammatory disease should be reduced to a rate of 60 cases per

100,000 females. (In 1978, the estimated incidence was 133.8 cases per 100,000 females.^{B)}

Year	Estimated incidence of gonococcal pelvic inflammatory disease
1978.....	133.8
1979.....	131.7
1980.....	127.1
1981.....	123.1
1982.....	116.6
1990.....	60.0

SOURCE: Data from Centers for Disease Control, Center for Prevention Services.

By 1990, reported incidence of primary and secondary syphilis should be reduced to a rate of 7 cases per 100,000 population per year, with a reduction in congenital syphilis to 1.5 cases per 100,000 live births. (In 1979, the reported incidence of primary and secondary syphilis was 11 cases per 100,000 population and of congenital syphilis was 3.5 cases per 100,000 live births.^{B)}

Year	Reported incidence of primary and secondary syphilis	Reported incidence of congenital syphilis
1979.....	11	3.5
1980.....	12	3.0
1981.....	14	4.4
1982.....	15	4.3
1990.....	7	1.5

SOURCE: Data from Centers for Disease Control, Center for Prevention Services.

Increased public and professional awareness

By 1990, every junior and senior high school student in the United States should receive accurate, timely education about sexually transmitted diseases. (Currently, 70 percent of school systems provide some information about sexually transmitted diseases, but the quality and timing of the communication varies greatly.)

By 1985, at least 95 percent of health care providers seeing suspected cases of sexually transmitted diseases should be capable of diagnosing and treating all currently recognized sexually transmitted diseases, including: genital herpes diagnosis by culture, therapy (if available), and patient education; hepatitis B diagnosis among homosexual men, prevention through a vaccine, and patient education; and nongonococcal urethritis diagnosis, therapy, and patient education. (Baseline data unavailable.)

Toxic agent and radiation control

Toxic agents include substances or materials that may cause cancer, skin disorders, behavioral and physical abnormalities, growth impairments, or otherwise adversely affect the reproductive system, nervous system, or specific organs such

as the liver or kidney. More than 2,000 chemicals are suspected carcinogens in laboratory animals. More than 20 agents are known to be associated with birth defects in humans; 47 atmospheric contaminants have been identified in animal studies as carcinogens and 128 as mutagens. Of the 765 contaminants identified in drinking water, 12 are recognized carcinogens, 31 suspected carcinogens, and 59 mutagens. Radiation has known carcinogenic and genetic effects at significant levels of exposure. Moreover, new evidence pointing to previously unsuspected associations between specific substances and disease continues to unfold.

The 1990 toxic agent and radiation control objectives take into account the complexities involved in establishing and carrying out measures designed (1) to limit or reduce exposures to toxic substances or materials that are already known to exist and (2) to hasten the detection of currently unknown hazards. Because of uncertainties about the exposure-to-disease relationship of many declared toxic substances as well as uncertainties about other factors, the 1990 toxic agent and radiation control objectives focus on reducing risk factors, increasing public and professional awareness, and improving services and protection, rather than on targeting measures of improved health status. Furthermore, the necessary surveillance and monitoring systems are not in place, although the authority to develop them has been established.

Attaining the 1990 improvements is expected to yield, over the long term, a slowing of the rate of increase or, optimally, a reduction in the incidence of cancer, birth defects, and respiratory and other acute or chronic conditions. However, the success of attaining both the short-term and the implicit long-term toxic control objectives depends upon making complementary the various legislative, regulatory, economic, and technologic measures that must be applied to protecting the public from the hazards of exposure to toxic agents.

Improved health status

By 1990, 80 percent of communities should experience a prevalence rate of lead toxicity of less than 500 per 100,000 among children 1–5 years of age. (In 1976–80, the estimated prevalence of lead toxicity among children 6 months–5 years of age was 4,000 per 100,000 nationally.^{B)}^O

By 1990, significant progress should have been made toward preventing birth defects or miscarriages resulting from exposure to toxic substances through environmental interventions based on current information and expansion of the knowledge base related to hazardous substances and their effects on reproduction. (Baseline data unavailable.)^O

Reduced risk factors

By 1990, the number of medically unnecessary diagnostic X-ray examinations should be reduced by some 50 million examinations annually. (In 1980, the number of diagnostic X-ray examinations performed in the United States was 260 million, of which 80 million were estimated to be medically unnecessary.^{B)}

Increased public and professional awareness

By 1990, at least half of all adults should be able to accurately report an accessible source of information on toxic substances to which they may be exposed, including information on interactions with other factors such as smoking and medications. (Baseline data unavailable.)

By 1990, at least half of all people 15 years of age and over should be able to identify the major categories of environmental threats to health and note some of the health consequences of those threats. (Baseline data unavailable.)

By 1990, at least 70 percent of all primary care physicians should be able to identify the principal health consequences of exposure to each of the major categories of environmental threats to health. (Baseline data unavailable.)

Improved services and protection

By 1990, at least 90 percent of all children 1–5 years of age identified with lead toxicity should have been brought under medical and environmental management. (Baseline data unavailable.^{B)}^O

By 1990, every individual residing in an area of a population density greater than 20 per square mile or in an area of particularly high risk, should be protected by an early warning system designed to detect the most serious environmental hazards posing imminent threats to health. (Baseline data unavailable.)

By 1990, every populated area of the country should be able to be reached within 6 hours by an emergency response team in the event of exposure to an environmental hazard posing acute threats to health from a toxic agent, chemical, and/or radiation. (Baseline data unavailable.)

Improved surveillance and evaluation systems

By 1990, a broad scale surveillance and monitoring system should have been planned to discern and measure known environmental hazards of a continuing nature as well as those resulting from isolated incidents. Such activities should be continuously carried out at both Federal and State levels.

By 1990, a central clearinghouse for observations of agent-disease relationships and host susceptibility factors should be fully operational, as well as a national environmental data registry to collect and catalog information on concentrations of hazardous agents in air, food, and water.

Occupational safety and health

Many of the Nation's approximately 100 million workers are exposed to occupational health hazards. Work conditions can generate serious threats to health through daily exposure to risks such as toxic chemicals, asbestos, coal dust, cotton fiber, ionizing radiation, physical hazards, excessive noise, as well as stress. Exposure to these toxic chemicals or physical hazards can lead to a broad range of health problems, including injuries, loss of hearing and other senses, cancer, degenerative disease in a number of vital organ systems, birth defects, and genetic changes. Many workers are inadequately protected from hazards in the workplace. Thousands of workers die each year from occupation-related illnesses and additional thousands suffer some type of occupation-related disease.

The 1990 occupational safety and health objectives encourage a reduction in deaths and disease from exposure to occupational hazards through health promotion and health protection measures that (1) address the design or alteration of the work environment to prevent exposures and injuries; (2) specify health hazard evaluations and studies for the purpose of surveillance and epidemiologic investigation; and (3) provide employees with stress reduction, health education, and physical fitness activities.

The 1981 lost work days rate of 60.4 per 100 workers continued a downward trend from 66.2 in 1979. The 1981 rate of 8.1 work-related injuries per 100 workers—down from 9.2 in 1978—was already below the 1990 goal of 8.3.

Improved health status

By 1990, workplace accident deaths for firms or employers with 11 or more employees should be reduced to less than 3,750 per year. (In 1978, there were 4,590 work-related deaths for firms or employers with 11 or more employees.^B)

Year	Work-related deaths
1978	4,590
1979	4,950
1980	4,400
1981	4,370
1990	3,750

SOURCE: Data from Bureau of Labor Statistics.

By 1990, the rate of work-related injuries should be reduced to 8.3 cases per 100 full-time workers. (In 1978, there were 9.2 cases per 100 workers.)

Year	Work-related injuries rate
1978	9.2
1979	9.2
1980	8.5
1981	8.1
1990	8.3

SOURCE: Data from Bureau of Labor Statistics.

By 1990, lost workdays from injuries should be reduced to 55 per 100 workers annually. (In 1978, 62.1 days per 100 workers were lost.)

Year	Lost workdays rate
1978	62.1
1979	66.2
1980	63.7
1981	60.4
1990	55.0

SOURCE: Data from Bureau of Labor Statistics.

By 1990, the incidence of compensable occupational dermatitis should be reduced to about 60,000 cases. (In 1978, there were approximately 65,900 cases of occupation-related skin diseases or disorders.¹⁸)

Year	Cases of skin disease
1978	65,900
1979	67,900
1980	56,200
1990	60,000

SOURCE: Data from Bureau of Labor Statistics.

By 1990, among workers newly exposed after 1985, there should be virtually no new cases of four preventable occupational diseases—asbestosis, byssinosis, silicosis, and coal workers' pneumoconiosis. (In 1979, there were an estimated 5,000 cases of asbestosis; in 1977, an estimated 84,000 cases of byssinosis were expected in active workers; in 1979, an estimated 60,000 cases of silicosis were expected among active workers in mining, foundries, stone, clay and glass products, and abrasive blasting; in 1974, there were an estimated 19,400 cases of coal workers' pneumoconiosis. Baseline data on incidence unavailable.)

By 1990, the prevalence of occupational noise-induced hearing loss should be reduced to 415,000 cases. (In 1975, there were an estimated 462,000 cases of work-related hearing loss.)

By 1990, occupational heavy metal poisoning (lead, arsenic, zinc) should be virtually eliminated. (Baseline data unavailable.)

Reduced risk factors

By 1985, 50 percent of all firms with more than 500 employees should have an approved plan of hazard control for all new processes, new equipment, and new installations. (Baseline data unavailable.)

¹⁸Data include all cases of occupation-related skin diseases or disorders, regardless of whether compensation was involved. Baseline revised from that previously published.

By 1990, all firms with more than 500 employees should have an approved plan of hazard control for all new processes, new equipment, and new installations. (Baseline data unavailable.)

Increased public and professional awareness

By 1990, at least 25 percent of workers should be able, prior to employment, to state the nature of their occupational health and safety risks and their potential consequences, as well as be informed of changes in these risks while employed. (In 1979, an estimated 5 percent of workers were fully informed.)

By 1985, workers should be routinely informed of lifestyle behaviors and health factors that interact with factors in the work environment to increase risks of occupational illness and injuries. (Baseline data unavailable.)

By 1990, at least 70 percent of primary health care providers should routinely elicit occupational health exposures as part of patient history and should know how to interpret the information for patients in an understandable manner. (Baseline data unavailable.)

By 1990, at least 70 percent of all graduate engineers should be skilled in the design of plants and processes that incorporate occupational safety and health control technologies. (Baseline data unavailable.)

By 1990, the number of health hazard evaluations being performed annually should increase tenfold; the number of industrywide studies being performed annually should increase threefold. (In 1979, the National Institute for Occupational Safety and Health performed approximately 150 health hazard evaluations.^{B)}

Year	Health hazard evaluations
1979	150
1980	233
1981	413
1982	496
1990	1,500

SOURCE: Data from National Institute for Occupational Safety and Health.

Improved surveillance and evaluation systems

By 1985, an ongoing occupational health hazard-illness-injury coding scheme, survey and surveillance capability should be developed, including identification of workplace hazards and related health effects, including cancer, coronary heart disease and reproductive effects. This system should include adequate measurements of the severity of work-related disabling injuries.

By 1985, at least one question about lifetime work history and known exposures to hazardous substances should be added to all appropriate existing health data reporting systems, for example, cancer registries, hospital discharge abstracts, and death certificates.

Injury prevention

For the past decade, more than 100,000 deaths per year have been reported in the cause-of-death category "accidents and adverse effects." This category includes deaths principally caused by motor vehicles, poisonings, falls, drownings, fires, and burns. In 1981, over half the deaths in this category were attributable to motor vehicle accidents alone. Further, in 1981, an estimated 59 million people incurred nonoccupational injuries associated with motor vehicles, poisonings, falls, drownings, fires, and burns. Of such injuries, approximately 27 million occurred in or around the home (including those who work at home). The lost productivity and other results of nonoccupational injuries from these causes cost the Nation an estimated \$55 billion during 1981.

The death and injury rates associated with motor vehicles, poisonings, falls, drownings, fires, and burns are not distributed evenly among age groups. For example, in 1979 the cause-of-death category "accidents and adverse effects" ranked first for people 1-44 years of age and accounted for approximately 55 percent of deaths for those 15-24 years of age. Teenagers and young adults have the highest motor vehicle death rate. Fatal falls, which occur primarily in the home, disproportionately take place among the population 75 years of age and over. Children 10 years of age and under are high risks for burns.

The 1990 injury prevention objectives give priority to reducing deaths from motor vehicles and home injuries, especially among children, and deaths from falls, residential fires, and drownings. The injury prevention initiative promotes the use of child passenger carriers, smoke alarms, and seatbelts and establishment of rapid response systems for the treatment of injuries. Thus, achievement of the 1990 injury prevention initiative requires a comprehensive approach that encompasses education, legislative and regulatory measures, technologic improvements, and economic incentives.

Improved health status

By 1990, the motor vehicle death rate should be reduced to no greater than 18 per 100,000 population. (In 1978, it was 23.6 per 100,000 population.^{B)}

Year	Death rate
1978	23.6
1979	23.8
1980	23.5
1981 ^a	22.8
1990	18.0

^aProvisional data.

SOURCE: Data from National Center for Health Statistics, Division of Vital Statistics.

By 1990, the motor vehicle death rate for children under 15 years of age should be reduced to no greater than 5.5 per 100,000 children. (In 1978, it was 9.0 per 100,000.^B)

Year	Death rate
1978	9.0
1979	8.6
1980	8.1
1981 ^a	7.6
1990	5.5

^aProvisional data.

SOURCE: Data from National Center for Health Statistics, Division of Vital Statistics.

By 1990, the home accident death rate for children under 15 years of age should be no greater than 5.0 per 100,000 children. (In 1978, it was 6.0 per 100,000.^B)

Year	Death rate
1978	6.0
1979	5.7
1980	5.7
1990	5.0

SOURCE: Data from National Center for Health Statistics, Division of Vital Statistics.

By 1990, the death rate from falls should be reduced to no more than 2 per 100,000 population. (In 1978, it was 6.2 per 100,000 population.^B)

Year	Death rate
1978	6.2
1979	5.9
1980	5.9
1990	2.0

SOURCE: Data from National Center for Health Statistics, Division of Vital Statistics.

By 1990, the death rate from drowning should be reduced to no more than 1.5 per 100,000 population.^O (In 1978, it was 2.6 per 100,000 population.^B)

Year	Death rate
1978	2.6
1979	2.5
1980	2.7
1990	1.5

SOURCE: Data from National Center for Health Statistics, Division of Vital Statistics.

By 1990, the number of tapwater scald injuries requiring hospital care should be reduced to no more than 2,000 per year. (Baseline data unavailable.)

By 1990, residential fire deaths should be reduced to no more than 4,500 per year. (In 1978, there were 5,401 deaths.^B)

Year	Residential fire deaths
1978	5,401
1979	5,299
1980	5,083
1990	4,500

SOURCE: Data from National Center for Health Statistics, Division of Vital Statistics.

Reduced risk factors

By 1990, all birthing centers, physicians, and hospitals should ensure that at least 50 percent of newborns return home in certified child passenger carriers. (Baseline data unavailable.)

By 1990, at least 75 percent of residential units should have a properly placed and functioning smoke detector.^O (In 1979, there were approximately 30 million systems.)

Increased public and professional awareness

By 1990, virtually all primary health care providers should advise patients about the importance of safety belts and should include instruction about use of child restraints to prevent injuries from motor vehicle accidents as part of their routine interaction with parents. (Baseline data unavailable.^B)

Improved services and protection

By 1990, at least 75 percent of communities with a population over 10,000 should have the capability for ambulance response and transport within 20 minutes of a call. (Baseline data unavailable.^B)

By 1990, virtually all injured persons in need should have access to regionalized systems of trauma centers, burn centers, and spinal cord injury centers. (Baseline data unavailable.^B)

By 1990, at least 90 percent of the population should be living in areas with access to regionalized or metropolitan area poison control centers¹⁹ that provide information on the clinical management of toxic substance exposures in the home or work environment. (In 1979, about 30 percent of the population lived in such areas.)

Year	Percent of population
1979	30
1982	40
1990	90

SOURCE: Data from Centers for Disease Control, Center for Environmental Health.

¹⁹Data limited to poison control centers certified by the American Association of Poison Control Centers.

Improved surveillance and evaluation systems

By 1990, at least 75 percent of the States should have developed a detailed plan for the uniform reporting of injuries. (In 1981, there were four States with detailed plans for the uniform reporting of injuries.^B)

Fluoridation and dental health

Dental diseases constitute, in the aggregate, one of the Nation's most prevalent health problems. Two of the most common oral diseases are dental caries (tooth decay) and periodontal disease (of the gums and other tissues supporting the teeth). Tooth decay, which affects 95 percent of Americans, leads to costs of an estimated \$6 billion yearly for treatment. By the time children reach 17 years of age, 94 percent have experienced caries and 36 percent have lost one or more permanent teeth because of caries.

The 1990 fluoridation and dental health objectives focus on fluoridation—particularly of community water systems as a primary instrument of dental health promotion. Current knowledge indicates that fluoridation can reduce the incidence of dental caries by about 65 percent, reduce the need for multiple-surface fillings, crowns, and extractions, and significantly increase the number of children who are completely free of cavities. No other public health measure is as effective in building a decay-resistant tooth while being available to all without regard to education or socioeconomic background. From 1960 to 1980, the percent of the total population receiving the benefits of fluoridated water increased from 23.0 percent to 51.4 percent. Nevertheless, only slightly more than half of all Americans currently have access to fluoridated water despite evidence supporting its efficacy.

One objective in this area stresses the need for school systems in areas where community water supplies are not fluoridated to be served by their own fluoridated systems. The number of schools with their own fluoridated water systems increased from 383 in 1975 to 442 in 1980. However, in measuring progress toward this specific objective, it is important to remember that as more fluoridated community water systems are developed the need for and the number of independent school fluoridated water supplies may actually decrease.

Improved health status

By 1990, the proportion of 9-year-old children who have experienced dental caries in their permanent teeth should decrease to 60 percent. (In 1971-74, 71 percent of 9-year-old children had at least one filled, missing due to caries, or untreated decayed tooth.)

Improved services and protection

By 1990, at least 95 percent of the population on community water systems should be receiving the benefits of op-

timally fluoridated water. (In 1975, the proportion of the population on community water systems who were receiving fluoridated water was 60 percent.)

Year	Percent on fluoridated community water systems
1975	60
1980	61
1990	95

SOURCE: Data from Centers for Disease Control, Center for Prevention Services.

By 1990, at least 50 percent of school children living in fluoride-deficient areas that do not have community water systems should be served by an optimally fluoridated school water supply. (In 1977, it was about 6 percent.)

Surveillance and control of infectious diseases

Although pneumonia and influenza are the only infectious diseases remaining among the 10 leading causes of death in this country, more than 290 million illnesses from infectious diseases occur annually. Infectious diseases, such as tuberculosis, continue to be more prevalent in poverty areas and areas with high immigration rates. New demands for disease control are created with the advent of diseases such as legionellosis and Acquired Immune Deficiency Syndrome.

Infectious diseases have a significant impact on the population when measured by increased social costs, decreased work productivity, and increased health care costs. Each year, infectious diseases result in millions of days spent in bed, millions of days lost from work and school, and millions of patient days of acute hospital care. Antibiotics account for a major portion of prescription drug costs.

Surveillance, including epidemiologic investigations, is the basic and essential element of infectious disease control. Accordingly, the 1990 objectives emphasize the continued development and application of effective surveillance techniques as well as improvements in sanitation, casefinding and control, the rapidity and accuracy of diagnosis and reporting, the appropriateness of therapy, and the development and use of new drugs and vaccines, such as the vaccine for hepatitis B (licensed in 1981). In addition, the 1990 objectives give priority to the surveillance and control of infectious diseases through the increased use of molecular biology to improve the detection of new reservoirs of infection, the definition of populations at risk, the understanding of patterns of contraction of disease, and the evaluation of control measures. In 1983, three demonstration computer-based telecommunications systems were established for routine collection, analysis, and dissemination of surveillance data, rapid communication of messages, and investigation of epidemics.

Improved health status

By 1990, the annual estimated incidence of hepatitis B should be reduced to 20 per 100,000 population. (In 1978, the estimated incidence was 41 cases per 100,000 population.^{B)}

Year	Estimated incidence of hepatitis B
1978	41
1979	42
1980	50
1981	55
1990	20

SOURCE: Data from Centers for Disease Control, Center for Infectious Diseases.

By 1990, the annual reported incidence of tuberculosis should be reduced to 8 per 100,000 population. (In 1978, the reported incidence was 13.1 cases per 100,000 population.)

Year	Reported incidence of tuberculosis
1978	13.1
1979	12.6
1980	12.3
1981	11.9
1982	11.0
1990	8.0

SOURCE: Data from Centers for Disease Control, Center for Prevention Services.

By 1990, the annual estimated incidence of pneumococcal pneumonia should be reduced to 115 per 100,000 population, and the estimated incidence of pneumococcal bacteremia should be reduced to 7 per 100,000. (In 1979, the incidence of pneumococcal bacteremia was estimated to be 9 cases per 100,000 population.)²⁰

Year	Estimated incidence of pneumococcal bacteremia
1979	9
1980	9
1981	9
1982	9
1990	7

SOURCE: Data from Centers for Disease Control, Center for Infectious Diseases.

By 1990, the annual reported incidence of bacterial meningitis should be reduced to 2 per 100,000 population.²¹ (In

1979, the reported incidence was 3 cases per 100,000 population.^{B)}

Year	Reported incidence of bacterial meningitis
1979	3
1980	3
1981	3
1982	3
1990	2

SOURCE: Data from Centers for Disease Control, Center for Infectious Diseases.

By 1990, the incidence of nosocomial infection in acute care hospitals should be reduced by 20 percent of what otherwise would pertain in the absence of hospital control programs. (In 1976, an estimated 6 percent of hospital infections were prevented.^{B)}

Year	Percent reduction
1976	6
1982	9
1990	20

SOURCE: Data from Centers for Disease Control, Center for Infectious Diseases.

By 1990, the annual estimated incidence of legionellosis should be reduced to 17 per 100,000 population. (In 1980, it was estimated to be 20 per 100,000 population.)²²

Year	Estimated incidence of legionellosis
1980	20
1981	20
1982	20
1990	17

SOURCE: Data from Centers for Disease Control, Center for Infectious Diseases.

Improved services and protection

By 1990, 95 percent of licensed patient care facilities should be applying the recommended practices for controlling nosocomial infections. (Baseline data unavailable.)

By 1990, surveillance and control systems should be capable of responding to and containing: (1) newly recognized diseases and unexpected epidemics of public health significance; and (2) infections introduced from foreign countries.

By 1990, at least 50 percent of people in populations designated as targets by the Immunization Practices Advisory Com-

²⁰The incidence of pneumococcal bacteremia is used as an indicator of the incidence of pneumococcal pneumonia. Therefore, the objective and baseline have been revised from those previously published.

²¹Objective revised from that previously published. Reaching the 1990 goal depends on licensure of a vaccine by 1988, with an 80 percent efficacy in children 6 months of age and over.

²²Objective added since publication of *Objectives for the Nation*.

mittee of the Public Health Service should be immunized within 5 years of licensure of new vaccines for routine clinical use.²³

Improved surveillance and evaluation systems

By 1990, data-reporting systems in all States should be able to monitor trends of common infectious agents not now subject to traditional public health surveillance (respiratory illnesses, gastrointestinal illnesses, otitis media).

By 1990, all State health departments and appropriate Federal health agencies should have a computer-based telecommunications capacity for routine collection, analysis, and dissemination of surveillance data; rapid communication of messages; and epidemic aid investigations. (As of June 1983, three demonstration systems had been established.^B)

By 1990, laboratories throughout the country should be linked for monitoring infectious agents and antibiotic resistance patterns and for disseminating information.

Smoking and health

Cigarette smoking is the largest single preventable cause of illness and premature death in the United States. Cigarette smokers have a 70 percent higher overall death rate than non-smokers, and tobacco is associated with an estimate in excess of 300,000 premature deaths per year. The major single cause of cancer mortality in the United States is cigarette smoking, contributing to more than 100,000 cancer deaths annually. Smoking is a causal factor in coronary heart disease and arteriosclerotic peripheral vascular disease and is also the most important cause of chronic obstructive lung disease. Cigarette smoking acts synergistically with alcohol to increase the likelihood of cancer of the larynx, esophagus, and oral cavity, with other coronary risk factors such as hypercholesterolemia to aggravate cardiovascular risk, and with oral contraceptives to increase the risk of coronary heart disease and some forms of cerebrovascular disease. During pregnancy, cigarette smoking can increase the risk of spontaneous abortion, retarded fetal growth, and even fetal or neonatal death.

Cigarette smoking is the major identifiable cause of residential fire deaths and injuries as well as a contributor to accidental injuries. The major focus of the 1990 smoking control objectives is that of reducing the prevalence of smoking. Since the release of the first Surgeon General's report in 1964, more than 30 million smokers have quit smoking cigarettes, and the proportion of adult smokers has declined from about 42 percent in 1965 to approximately 33 percent in 1980. However, curbing the number of new smokers as well as smoking among children, teenagers, and pregnant women remain matters of particular concern.

²³Vaccines may be developed for people at risk of getting hepatitis A; otitis media (*S. pneumoniae* and *H. influenzae*); selected respiratory and enteric viruses; meningitis (group B *N. meningitidis*, *S. pneumoniae*, *H. influenzae*). Same objective in Immunization.

Nevertheless, the 1990 smoking control objectives can only be achieved through a variety of approaches starting with discouraging young people from starting to smoke, to increasing the number of smokers who quit, through reducing the hazards to the maximum extent possible for those who continue to smoke. Therefore, the 1990 smoking control objectives place heavy emphasis on raising the public's awareness of the health risks from smoking and on the need for cooperative and complementary efforts in governmental and private sectors aimed at improving services and protection to the public.

Progress on these measures is taking place. From 1975 to 1981, the proportion of the adult population who knew that smoking is one of the major risk factors for heart disease rose from 53 percent to 74 percent. From 1978 to 1980, the sales-weighted average tar yield of cigarettes declined from 16.07 milligrams to 14.10 milligrams. During the same period, the sales-weighted average nicotine yield also declined. More than half the States have some type of law prohibiting smoking in enclosed public places and establishing separate smoking areas at work and in dining establishments. In spite of such gains, more aggressive efforts are still needed on all fronts to meet the 1990 smoking objectives.

Reduced risk factors

By 1990, the proportion of adults who smoke should be reduced to below 25 percent. (In 1979, 33 percent of the population 17 years of age and over smoked.)

By 1990, the proportion of children and youth 12-18 years of age who smoke should be reduced to below 6 percent. (In 1979, 11.7 percent smoked.)

Increased public and professional awareness

By 1990, the proportion of the adult population aware that smoking is one of the major risk factors for heart disease should be increased to at least 85 percent. (In 1975, the proportion was 53 percent.)

Year	Percent aware of risk factors
1975	53
1977	68
1981	74
1990	85

SOURCE: Data from Federal Trade Commission.

By 1990, at least 90 percent of the adult population should be aware that smoking is a major cause of lung cancer, as well as multiple other cancers including laryngeal, esophageal, and bladder cancer. (Baseline data unavailable.)

By 1990, at least 85 percent of the adult population should be aware of the special risk of developing and worsening chronic obstructive lung disease, including bronchitis and emphysema, among smokers. (Baseline data unavailable.)

By 1990, at least 85 percent of women should be aware of the special health risks for women who smoke, including the effect on outcomes of pregnancy and the excess risk of cardiovascular disease with oral contraceptive use. (Baseline data unavailable.)

Improved services and protection

By 1985, tar, nicotine, and carbon monoxide yields should be prominently displayed on each cigarette package and on promotional material. (Tar and nicotine yields are required in advertising and promotional material as a result of a voluntary agreement between the Federal Trade Commission and the cigarette manufacturing industry; tar, nicotine, and carbon monoxide levels are currently not required on packaging.^{B)}

By 1985, the present cigarette warning should be strengthened to increase its visibility and impact and to give the consumer additional needed information on the specific multiple health risks of smoking. Special consideration should be given to rotational warnings and to identification of especially vulnerable groups.

Improved surveillance and evaluation systems

By 1990, continuing epidemiological research should have delineated the unanswered research questions regarding low-yield cigarettes, and preliminary partial answers to these questions should have been generated by research efforts.

By 1990, in addition to biomedical hazard surveillance, continuing examination of the changing tobacco product and the sociologic phenomena resulting from those changes should have been accomplished.

Alcohol and drug misuse prevention

Currently, average consumption of alcohol for all persons over 14 years of age is 10 percent higher than 10 years ago and is equivalent to about 2.75 gallons of ethanol per person per year. The relationship of drinking and driving, especially among teenagers, has become of increased public concern. Substantial health costs to society result from alcohol misuse. About 10 percent of all deaths in the United States are alcohol related. Cirrhosis of the liver is largely attributable to alcohol consumption. The cause-of-death category "chronic liver disease and cirrhosis" ranks among the 10 leading causes of death. Alcohol use also is associated with cancer of the liver, pancreas, esophagus, and mouth. The misuse of alcohol leads to increased risk of injury and death to self, family members, and others, es-

pecially by fires and motor vehicle and other accidents. Alcohol misuse cost society an estimated \$49.4 billion in 1977.

Drug misuse is also a serious public health problem. Currently, some 20 million people use marijuana. The popularity of cocaine continues with more than 22 million Americans having tried cocaine at least once and an estimated 4 million to 5 million current users. In addition, the abuse of stimulants, sedatives, hallucinogens, inhalants, and other psychoactive drugs remains a problem.

Heroin addiction is still considered by many to be the most serious drug problem in the United States. The toll from heroin includes premature death and severe disability, family disruption, and crime. The increased use of heroin with alcohol and/or cocaine is also of concern. The destructive intensity of cocaine on health is worsening as more and more users experiment with smoking and/or intravenous administration. The widespread prevalence of marijuana use especially among the young has raised concerns about the short- and long-term effects of use on health. The special problem is the relationship of marijuana to automobile accidents and other psychomotor activities, especially when used in combination with alcohol.

The 1990 objectives for alcohol and drug misuse prevention focus on reducing the adverse social and health consequences associated with the use of these substances. These objectives place particular emphasis on the use of alcohol and other drugs by adolescents and young adults. Data from recent studies indicate that the percent of adolescents classified as abstaining (not currently using) from the use of marijuana rose from 83 percent in 1977 to 89 percent in 1982. During the same period, the percent of adolescents classified as abstaining from the use of alcohol rose from 69 percent to 74 percent. Other studies are beginning to suggest that the use of drugs and alcohol among high school seniors may have stabilized and in some cases is declining. It is important to note, however, that although the proportions of new and current drug users are decreasing among youth and adolescents, they remain in an absolute sense the highest in the Western industrialized world. The adverse cost to society, particularly of drug-related crime, corruption, morbidity, and premature mortality, remains unacceptably high. Thus, reducing these consequences, especially the premature mortality associated with the use of alcohol and drugs, remains a major goal.

Improved health status

By 1990, deaths from motor vehicle accidents involving drivers with blood alcohol levels of .10 percent or more should be reduced to less than 3.0 per 100,000 population per year.^O (In 1977, there were 3.7 deaths per 100,000 population.^{B)}

Year	Death rate
1977	3.7
1978	4.1
1979	4.6
1980	4.9
1981	4.7
1990	3.0

SOURCE: Data from National Highway Traffic Safety Administration.

By 1990, the cirrhosis²⁴ death rate should be reduced to 12 per 100,000 population per year. (In 1978, the rate was 13.5 per 100,000 population.^B)

Year	Chronic liver disease and cirrhosis death rate
1978	13.5
1979	13.2
1980	13.5
1981 ^a	12.9
1990	12.0

^aProvisional data.

SOURCE: Data from National Center for Health Statistics, Division of Vital Statistics.

By 1990, the incidence of infants born with the Fetal Alcohol Syndrome should be reduced by 25 percent. (In 1977, the rate was 1 per 2,000 births, or approximately 1,650 cases.)

By 1990, drug-related deaths should be reduced to 2 per 100,000 population per year. (In 1978, the rate was 2.7 per 100,000 population.)²⁵

Year	Death rate
1978	2.7
1979	3.2
1980	3.0
1990	2.0

SOURCE: Data from National Center for Health Statistics, Division of Vital Statistics.

Reduced risk factors

By 1990, per capita consumption of alcohol should not exceed current levels. (In 1978, about 2.71 gallons of absolute alcohol per capita were consumed by persons 14 years of age and over.^B)

Year	Per capita consumption in gallons
1978	2.71
1979	2.75
1980	2.78
1981	2.77
1990	2.71

SOURCE: Data from National Institute on Alcohol Abuse and Alcoholism.

By 1990, the proportion of adolescents 12–17 years of age who abstain from using alcohol or other drugs²⁶ should not fall below 1977 levels. (In 1977, the proportion of abstainers was 69 percent for alcohol; for other drugs, ranging from 83 percent for marijuana to 99.9 percent for heroin.^B)

Year	Percent of abstainers		
	Alcohol	Marijuana	Heroin
1977 ^a	69	83	99.9
1979	63	83	99.9
1982	74	89	99.9
1990	69	83	99.9

^aIn 1979, the design of the questionnaire was changed.

Consequently, 1977 data are not comparable to those of later years.

SOURCE: Data from National Institute on Drug Abuse.

By 1990, the proportion of adolescents 14–17 years of age who report acute drinking-related problems²⁷ during the past year should be reduced to below 17 percent. (In 1978, the estimate was 19 percent based on 1974 survey data.)

By 1990, the proportion of young adults 18–25 years of age reporting frequent use²⁸ of drugs other than alcohol should not exceed 1977 levels. (In 1977, it was less than 1 percent for drugs other than marijuana and 19 percent for marijuana.)

Year	Percent reporting frequent use	
	Marijuana	Other
1977	19	0.8
1979	22	2.4
1982	16	2.3
1990	19	0.8

SOURCE: Data from National Institute on Drug Abuse.

By 1990, the proportion of adolescents 12–17 years of age reporting frequent use of drugs other than alcohol should not exceed 1977 levels. (In 1977, the percentages were less than 1 percent for drugs other than marijuana and 9 percent for marijuana.)

Year	Percent reporting frequent use	
	Marijuana	Other drugs
1977	9	(^a)
1979	8	(^a)
1982	6	0.9
1990	9	(^a)

^aQuantity more than zero but less than 0.5.

SOURCE: Data from National Institute on Drug Abuse.

²⁴Effective in 1979, the cause-of-death category is "chronic liver disease and cirrhosis."

²⁵Drug-related mortality excludes deaths from alcohol. The definition, however, is affected by a revision in the International Classification of Diseases. The 1978 data are defined by categories in the Eighth Revision, Adapted for Use in the United States. The 1979 data are defined by categories in the Ninth Revision. The change in the death rate for these causes between 1978 and 1979 reflects, to a degree, the change in the classification of diseases between these two years. The baseline has also been revised to take into account calculation results from the 1980 census.

²⁶A person is considered as not using alcohol or other drugs if he or she has never used the substance or if the last use of the substance was more than 1 month prior to the survey in which the data were collected.

²⁷Acute drinking-related problems have been defined as problems such as episodes of drunkenness, driving while intoxicated, or drinking-related problems with school authorities.

²⁸Frequent use of other drugs means the nonmedical use of any specific drug on 5 days or more during the previous month.

Increased public and professional awareness

By 1990, the proportion of women of childbearing age aware of risks associated with pregnancy and drinking, in particular, the Fetal Alcohol Syndrome, should be greater than 90 percent. (In 1979, it was 73 percent.)

By 1990, the proportion of adults who are aware of the added risk of head and neck cancers for people with excessive alcohol consumption should exceed 75 percent. (Baseline data unavailable.)

By 1990, 80 percent of high school seniors should state that they perceive great risk associated with frequent regular cigarette smoking, marijuana use, barbiturate use, or alcohol intoxication. (In 1979, 63 percent of high school seniors perceived great risk from one or two packs of cigarettes smoked daily, 42 percent from regular marijuana use, 72 percent from regular barbiturate use, and only 35 percent from having five or more drinks per occasion once or twice each weekend.)

Percent perceiving great risk

Year	Cigarettes	Marijuana	Barbiturates	Alcohol
1979...	63	42	72	35
1980...	64	50	72	36
1981...	63	58	70	36
1982...	60	60	68	36
1990...	80	80	80	80

SOURCE: Data from National Institute on Drug Abuse.

Improved services and protection

By 1990, the proportion of major firms that provide a substance abuse prevention and referral program should be greater than 70 percent.⁹ (In 1976, 50 percent of a sample of the Fortune 500 firms offered some type of employee assistance program.)

Year	Percent of firms
1976.....	50
1979.....	57
1990.....	70

SOURCE: Data from National Institute on Alcohol Abuse and Alcoholism.

Improved surveillance and evaluation systems

By 1990, a comprehensive data capability should be established to monitor and evaluate the status and impact of misuse of alcohol and drugs on health status, motor vehicle accidents, accidental injuries in addition to those from motor vehicles, interpersonal aggression and violence, sexual assault, vandalism and property damage, pregnancy outcomes, and emotional and physical development of infants and children.

Improved nutrition

Appropriate nutrition is necessary for optimal growth and development, physical activity, reproduction, lactation, recovery from illness and injury, and maintenance of health throughout the life cycle. A variety of health problems can occur when persons have deficits of essential nutrients, such as fiber or iron, or have excessive or inappropriate consumption of some nutrients, such as fats. Current data indicate an inappropriate nutritional status for a substantial proportion of the American public. For example, about 14 percent of men and 24 percent of women 20–74 years of age are classified as obese. The rates are significantly higher for women regardless of their economic status. Iron and folic acid deficiencies are common among pregnant or lactating women. It has been estimated that 10–15 percent of infants and children among migratory workers and certain rural poor populations suffer growth retardation because of dietary inadequacies.

Although the role of nutrition in a number of health problems is not fully understood, epidemiologic and laboratory studies offer important insights that may help people in making food choices to enhance their prospects of attaining or maintaining health. The 1990 objectives for improved nutrition build upon the suggestions of such studies. These objectives target an improvement in the nutritional status of children and adults by specifically emphasizing weight control, low sodium intake, breast feeding of infants, and reduction of serum cholesterol levels.

The Food and Drug Administration (FDA) is making significant progress on its efforts to encourage the food industry to voluntarily reduce the amount of sodium added to processed foods and to market a greater variety of foods that are lower in sodium. Because one of the critical factors in reducing sodium consumption is that consumers receive information about the salt content of foods available, FDA is also encouraging industry to declare sodium content on the labels of processed foods. Over the past several years, the amount of labeling available to consumers has increased significantly and is expected to increase even more dramatically in the near future. Canned soups and frozen vegetables, for example, bore no labeling as to sodium content in 1980. In 1983, virtually all canned soups carried sodium labeling. Almost half the frozen vegetables stocked by supermarkets bore such labeling.

A number of recent surveys indicate that more people are interested in nutrition, are more aware of the actions they can take to maintain health through their daily eating patterns, and have initiated changes in their nutritional practices. Several studies have found that people are consuming less salt as well as less total fat, saturated fat, and cholesterol. In each of these cases, however, comparable data must be monitored over time before definite trends can be determined.

On the other hand, trends in the prevalence of breast feeding can be determined from data that have been available for a number of years. From 1972 to 1982, the percent of babies breast fed at 1 week of age increased from about 26 to 61 percent, and infants breast fed at 6 months of age increased from about 5 percent to 27 percent. In fact, the prevalence of breast feeding has increased to a point where it is already approaching the 1990 target.

In addition to targeting the reduction of specific health risks resulting from inadequate dietary practices, the 1990 improved-nutrition objectives heavily underscore the significance of health information and health education programs as important tools in helping the public reach these desired targets. Moreover, other issues of improved health status related to good nutrition are treated in the high blood pressure control, pregnancy and infant health, and fluoridation and dental health priority areas.

Improved health status

By 1990, the proportion of pregnant women with iron deficiency anemia (as estimated by hemoglobin concentrations early in pregnancy) should be reduced to 3.5 percent. (In 1971-74, the proportion of pregnant women with low hemoglobin levels was 31.9; the proportion with low hemoglobin levels and low transferrin saturation was 6.5.^B)

By 1990, growth retardation of infants and children caused by inadequate diets should have been eliminated in the United States as a public health problem. (In 1972-73, an estimated 10-15 percent of infants and children among migratory workers and certain poor rural populations suffered growth retardation from dietary inadequacies.)

Reduced risk factors

By 1990, the prevalence of significant overweight (120 percent of "desired" weight) among the U.S. adult population should be decreased to 10 percent of men and 17 percent of women, without nutritional impairment. (In 1971-74, 14 percent of adult men and 24 percent of women were more than 120 percent of desired weight.)²⁹

By 1990, 50 percent of the overweight population should have adopted weight loss regimens, combining an appropriate balance of diet and physical activity. (Baseline data unavailable.)

By 1990, the mean serum cholesterol level in the adult population 18-74 years of age should be at or below 200 milligrams per deciliter. (In 1971-74, for male and female adults 18-74 years of age, the mean serum cholesterol level was 213.2 milligrams per deciliter.^B)

By 1990, the average daily sodium ingestion (as measured by excretion) for adults should be reduced at least to the 3-6-gram range. (Baseline data unavailable.)^B³⁰

By 1990, the proportion of women who breast feed their babies should be increased to 75 percent at hospital discharge and to 35 percent at 6 months of age. (In 1978, the proportion

of infants breast fed³¹ at 1 week was 45.1; the proportion of infants breast fed at 6 months was 18.9.^B)

Year	Percent of infants	
	1 week	6 months
1978	45.1	18.9
1979	49.7	21.3
1980	54.0	23.2
1981	56.4	25.1
1982	60.5	27.1
1990	75.0	35.0

SOURCE: Data from Ross Laboratories, National Mothers' Surveys. (Copyright; used with permission.)

Increased public and professional awareness

By 1990, the proportion of the population able to identify the principal dietary factors known or strongly suspected to be related to disease should exceed 75 percent for each of the following diseases: heart disease, high blood pressure, dental caries, and cancer. (Baseline data largely unavailable. About 12 percent of adults are aware of the relationship between high blood pressure and sodium intake.)

By 1990, 70 percent of adults should be able to identify the major foods that are: low in fat content, low in sodium content, high in calories, good sources of fiber. (Baseline data unavailable.)

By 1990, 90 percent of adults should understand that to lose weight people must either consume foods that contain fewer calories or increase physical activity or both. (Baseline data unavailable.)

Improved services and protection

By 1990, the labels of all packaged foods should contain useful calorie and nutrient information to enable consumers to select diets that promote and protect good health. Similar information should be displayed where nonpackaged foods are obtained or purchased. (In 1978, 7.5 percent of the national sales from FDA regulated foods bore sodium labeling.^B)

Year	Percent of sales dollars for products ^a with—	
	Sodium labeling	Nutrition labeling
1978	7.5	41.9
1980	13.9	44.3
1982	18.9	54.5
1983	30.1	55.2
1990	100.0	100.0

^aBased on national sales volume of brands in a sample of approximately 1,700 packaged-processed foods regulated by the Food and Drug Administration and sold in grocery stores in the United States. Excludes fresh and processed meat, bread, fluid milk, ice cream, chip-type snacks, cookies, and carbonated soft drinks.

SOURCE: Data from Food and Drug Administration, Division of Consumer Studies.

²⁹Desirable weight estimated from regression equations of weight on height for men and women 20-29 year of age, obtained from the National Health and Nutrition Examination Survey, 1971-74.

³⁰Same objective in High Blood Pressure Control.

³¹Data include infants who may receive formulas in addition to breast feeding.

By 1985, the proportion of employee and school cafeteria managers who are aware of and actively promoting U.S. Department of Agriculture and Department of Health and Human Services dietary guidelines should be greater than 50 percent. (Baseline data unavailable.)

By 1990, all States should include nutrition education as part of required comprehensive school health education at elementary and secondary levels. (In 1979, only 10 States mandated nutrition as a core content area in school health education.)

By 1990, virtually all routine health contacts with health professionals should include some element of nutrition education and nutrition counseling. (Baseline data unavailable.)

Improved surveillance and evaluation systems

Before 1990, a comprehensive national nutrition status monitoring system should have the capability for detecting nutritional problems in special population groups, as well as for obtaining baseline data for decisions on national nutrition policies.

Physical fitness and exercise

Although in the past decade a resurgence of interest in physical fitness and exercise has been exhibited, awareness of the benefits of regular exercise and what is considered to be appropriate physical activity (e.g., aerobics for cardiovascular conditioning) is limited. The American lifestyle is still relatively sedentary. The most recent data available estimate the proportion of adults 18–65 years of age who regularly exercise at more than 35 percent, children participating in daily physical education programs at 33 percent, and adults over 65 years of age taking regular walks at 36 percent. Most people do not exercise in the manner necessary to achieve maximum benefits. Further, exercise as a therapeutic regimen has also been largely ignored by health professionals. Although the health benefits derived from exercise have not been fully defined, continuing research has suggested that appropriate physical activity can enhance approaches to the treatment and prevention of heart disease, obesity, hypertension, diabetes, musculoskeletal problems, stress, anxiety, and depression.

This research guides the 1990 physical fitness and exercise objectives, whose main premise is that an increase in physical activity by the American public will lead to an overall improvement in health and an enhanced sense of well-being and may then lead to positive health behaviors in other areas. Ultimately, an overall reduction in health care costs may ensue. Thus, these objectives stress both the need for personal commitment to participating in regular physical fitness and exercise activities and also the need for cooperative efforts in the public and private sectors to support continued research directed at uncovering and evaluating the short- and long-term health effects of such activities.

It is likely that data from limited sources can be found to address various of the following physical fitness and exercise objectives. However, research in this area has been slow. Thus, the evidence of the comparability and validity of the data is not easily ascertainable and trend data would be questionable. Although a number of data systems are being developed to produce comparable and valid data that will enable the measurement of progress toward meeting the following 11 objectives over time, none of these systems are currently at the stage of development to produce such data. Consequently, this report will not update the baseline data shown for any of the objectives in this priority area.

Reduced risk factors

By 1990, the proportion of children and adolescents 10–17 years of age participating regularly in appropriate physical activities, particularly cardiorespiratory fitness programs that can be carried into adulthood, should be greater than 90 percent. (Baseline data unavailable.)

By 1990, the proportion of children and adolescents 10–17 years of age participating in daily school physical education programs should be greater than 60 percent. (In 1974–75, the proportion was 33 percent.)

By 1990, the proportion of adults 18–65 years of age participating regularly in vigorous physical exercise should be greater than 60 percent. (In 1978, the proportion who regularly exercise was estimated at over 35 percent.)

By 1990, 50 percent of adults 65 years of age and over should be engaging in appropriate physical activity, for example, regular walking, swimming, or other aerobic activity. (In 1975, about 36 percent took regular walks.)

Increased public and professional awareness

By 1990, the proportion of adults who can accurately identify the variety and duration of exercise thought to promote cardiovascular fitness most effectively should be greater than 70 percent. (Baseline data unavailable.)

By 1990, the proportion of primary care physicians who include a careful exercise history as part of their initial examination of new patients should be greater than 50 percent. (Baseline data unavailable.)

Improved services and protection

By 1990, the proportion of employees of companies and institutions with more than 500 employees and offering employer-sponsored fitness programs should be greater than 25 percent. (In 1979, about 2.5 percent of companies had formally organized fitness programs.)

Improved surveillance and evaluation systems

By 1990, a methodology for systematically assessing the physical fitness of children should be established, with at least 70 percent of children and adolescents 10–17 years of age participating in such an assessment.

By 1990, data should be available with which to evaluate the short- and long-term health effects of participation in programs of appropriate physical activity.

By 1990, data should be available to evaluate the effects of participation in programs of physical fitness on job performance and health care costs.

By 1990, data should be available for regular monitoring of national trends and patterns of participation in physical activity, including participation in public recreation programs in community facilities.

Control of stress and violent behavior

Stress is an inevitable part of life in today's society. Some stress may be beneficial and lead to improved productivity. Unless suitably managed, however, stress may contribute to physiological and psychological dysfunctions such as depression, fatigue, obesity, coronary heart disease, suicide, or violence. Suicide and homicide are the causes of more than 50,000 deaths annually. Each year, thousands of deaths and several million injuries to children are inflicted through parental abuses occurring partially as a result of stress.

In recent years, considerable public and professional interest has focused upon the relationship between stress and physical and mental health. Scientific inquiry has demonstrated various associations between stress and health and disease and has provided evidence that stressful factors can be assessed. Much remains, however, to be elucidated about vulnerability to stress and its control. Some groups such as teenagers, the elderly, and the economically disadvantaged appear more vulnerable to stress, and the public in general has limited information about what can be done to reduce stress.

The 1990 objectives for control of stress and violent behavior focus especially on improving the health status of the American public by preventing homicides, suicides, and injuries resulting from stress and also on investigating the psychological, environmental, and biological interactions that link stress to health disorders. Reducing risk factors related to stress and violent behavior, nevertheless, remains a special problem. Many of the risk factors for stress are embedded in socioeconomic issues normally considered outside the domain of health systems. Certain other risk factors for stress are better defined as health related but are not easily controlled or quantifiable. Thus, a limited number of objectives for reducing specific risk factors related to stress and violent behavior can be established

within the framework prescribed by the 1990 promoting health and preventing disease initiative. Measures in which health programs can play a meaningful role in the reduction of certain risk factors related to stress have also been addressed in the objectives for family planning, occupational safety and health, alcohol and drug misuse prevention, and physical fitness and exercise.

Improved health status

By 1990, the death rate from homicide among black males 15–24 years of age should be reduced to below 60 per 100,000. (In 1978, the homicide rate for this group was 70.7 per 100,000.^B)

Year	Homicide rate
1978	70.7
1979	76.5
1980	84.3
1990	60.0

SOURCE: Data from National Center for Health Statistics, Division of Vital Statistics.

By 1990, injuries and deaths to children inflicted by abusing parents should be reduced by at least 25 percent. (Estimates vary from 200,000 to 4 million cases of child abuse each year in this country, however, reliable baseline data are unavailable.)

By 1990, the rate of suicide among people 15–24 years of age should be below 11 per 100,000. (In 1978, the suicide rate for this age group was 12.1 per 100,000.^B)

Year	Suicide rate
1978	12.1
1979	12.4
1980	12.3
1981 ^a	12.5
1990	10.9

^aProvisional data.

SOURCE: Data from National Center for Health Statistics, Division of Vital Statistics.

Increased public and professional awareness

By 1990, the proportion of the population 15 years of age and over that can identify an appropriate community agency to assist in coping with a stressful situation should be greater than 50 percent. (Baseline data unavailable.)

By 1990, the proportion of young people 15–24 years of age who can identify an accessible suicide prevention "hotline" should be greater than 60 percent. (Baseline data unavailable.)

By 1990, the proportion of the primary care physicians who take a careful history related to personal stress and psychological coping skills should be greater than 60 percent. (Baseline data unavailable.)

Improved services and protection

By 1990, to reduce the gap in mental health services, the number of persons reached by mutual support or self-help groups should double from 1978 baseline figures. (In 1978, estimates ranged from 2.5 million to 5 million, depending on the definition of such groups.)

Improved surveillance and evaluation systems

By 1985, surveys should show what percentage of the U.S. population perceives stress as adversely affecting their

health, and what proportion of these are trying to use appropriate stress-control techniques.

By 1990, the existing knowledge base through scientific inquiry about stress effects and stress management should be greatly enlarged.

By 1990, the reliability of data on the incidence and prevalence of child abuse and other forms of family violence should be greatly increased.

- Have you missed past issues of NCHS reports?
- Are your files currently up to date?
- Are you concerned about receiving NCHS reports on a timely basis?

If your answer is yes, then our answer is a GPO standing order account

The U.S. Government Printing Office (GPO) has established a standing order system for NCHS publications. A standing order is similar to a subscription in that you will receive each new report as it is published. There is no delay and no need to order each publication separately. Under a standing order, publications can only be paid for by charges to VISA, MasterCard, or a GPO deposit account. A GPO deposit account can be opened with a minimum \$50.00 deposit.

Check here for those NCHS reports you wish to receive through GPO's standing order system. Your service will begin with the next issue released following acceptance of your order.

Vital and Health Statistics series

Code/Series

- ZHS1 Program and Collection Procedures
- ZHS2 Data Evaluation and Methods Research
- ZHS3 Analytical Studies
- ZHS4 Documents and Committee Reports
- ZHS10 Data From the National Health Interview Survey
- ZHS11 Data From the National Health Examination Survey and National Health and Nutrition Examination Survey
- ZHS13 Data on Health Resources Utilization
- ZHS14 Data on Health Resources
- ZHS15 Data From Special Surveys
- ZHS20 Data on Mortality
- ZHS21 Data on Natality, Marriage and Divorce
- ZHS23 Data From the National Survey of Family Growth
- ZHUS *Health, United States*

Charge:



Credit

Card No.

Expiration Date

Month/Year

GPO Deposit Account:

Deposit Account No.

New Account (\$50.00 minimum) _____

Vital Statistics of the United States

Code/Series

- ZVSN1 Natality
- ZVSM2 Mortality, Parts A&B
- ZVSM3 Marriage and Divorce

Authorizing signature

(Orders not valid unless signed)

Ship to:

Company or personal name

Additional address/attention line

Street address

City

State

ZIP Code

(or Country)

PLEASE PRINT OR TYPE

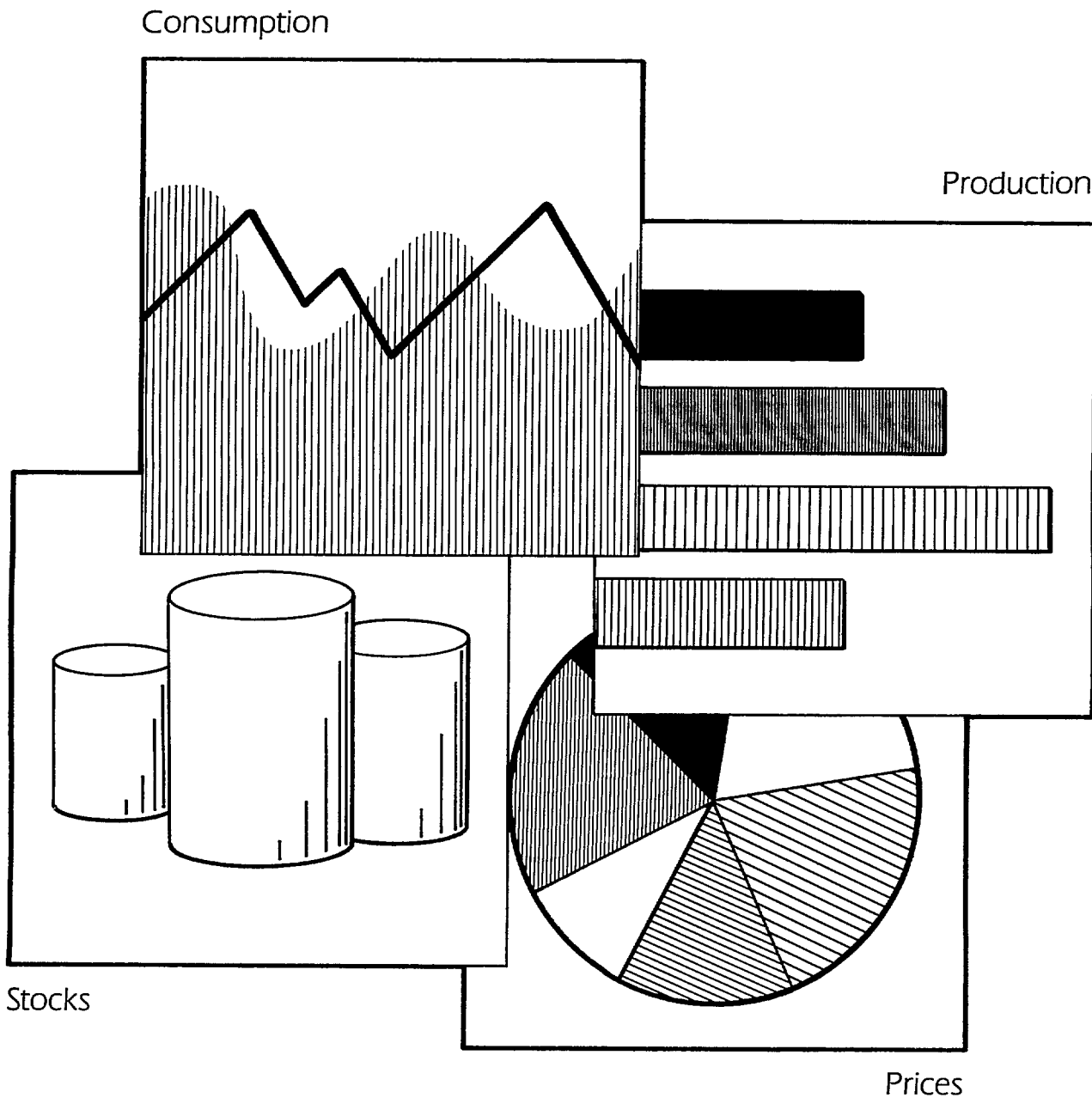
Customer Phone Number	
Home	Office

(Please include Area Code)

Mail ORDER FORM to: Dept. 40A, Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402

Looking for Energy Information?

The Energy Information Administration has Data and Projections on:



Contact:

Energy Information Administration
National Energy Information Center
Forrestal Building, 1F-048
1000 Independence Avenue, S.W.
Washington, D.C. 20585
(202) 252-8800

Our warehouses here at the Government Printing Office contain more than 16,000 different Government publications. Now we've put together a catalog of nearly 1,000 of the most popular books in our inventory. Books like *Infant Care*, *National Park Guide and Map*, *The Space Shuttle at Work*, *Federal Benefits for Veterans and Dependents*, *Merchandising Your Job*

Talents, and *The Back-Yard Mechanic*. Books on subjects ranging from agriculture, business, children, and diet to science, space exploration, transportation, and vacations. Find out what the Government's books are all about. For your **free copy** of our new bestseller catalog, write—

New Catalog

Post Office Box 37000
Washington, D.C. 20013

937 Bestsellers

