Series 20
No. 31

nchs

Vital and Health Statistics

From the CENTERS FOR DISEASE CONTROL AND PREVENTION / National Center for Health Statistics

Medical and Life-style Risk Factors Affecting Fetal Mortality, 1989–90

August 1996

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Centers for Disease Control and Prevention
National Center for Health Statistics

CDC
CENTERS FOR DISEASE CONTROL AND PREVENTION

Suggested citation

Hoyert DL. Medical and life-style risk factors affecting fetal mortality, 1989–90. National Center for Health Statistics. Vital Health Stat 20(31). 1996.

Library of Congress Cataloging-in-Publication Data

Hoyert, Donna L.
Medical and life-style risk factors affecting fetal mortality, 1989–1990 / (by D.L. Hoyert)
p. cm. — (Vital and health statistics. Series 20, Data from the national vital statistics system ; no. 31) (DHHS publication ; no. (PHS) 96-1859)
Includes bibliographical references.
ISBN 0-8406-0517-X
1. Infants—United States—Mortality. 2. Infants—Health risk assessment—United States. I. Title. II. Series. III. Series: DHHS publication ; no. (PHS) 96-1859.
RJ60.U5H69 1996 96-30479
614.5'992—dc20 CIP

For sale by the U.S. Government Printing Office
Superintendent of Documents
Mail Stop: SSOP
Washington, DC 20402-9328

Vital and Health Statistics

Medical and Life-style Risk Factors Affecting Fetal Mortality, 1989–90

Series 20
Data on Mortality
No. 31

This report presents data on the occurrence of medical and life-style risk factors among fetal deaths and live births. Fetal mortality rates are also shown for those live births and fetal deaths with specified medical and life-style risks.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Centers for Disease Control and Prevention
National Center for Health Statistics

Hyattsville, Maryland
August 1996
DHHS Publication No. (PHS) 96-1859

National Center for Health Statistics

Edward J. Sondik, Ph.D., *Director*

Jack R. Anderson, *Deputy Director*

Jacob J. Feldman, Ph.D., *Associate Director for Analysis, Epidemiology, and Health Promotion*

Gail F. Fisher, Ph.D., *Associate Director for Planning and Extramural Programs*

Jack R. Anderson, *Acting Associate Director for International Statistics*

Stephen E. Nieberding, *Associate Director for Management*

Charles J. Rothwell, *Associate Director for Data Processing and Services*

Monroe G. Sirken, Ph.D., *Associate Director for Research and Methodology*

Division of Vital Statistics

Mary Anne Freedman, M.A., *Director*

James A. Weed, Ph.D., *Deputy Director*

Harry M. Rosenberg, Ph.D., *Chief, Mortality Statistics Branch*

Robert Armstrong, *Acting Chief, Statistical Resources Branch*

Nicholas F. Pace, *Acting Chief, Systems and Programming Branch*

Abstract

Objectives—This report presents fetal mortality data by medical and life-style risk factors of the mother and the fetus.

Methods—Deaths and fetal mortality rates are presented in this descriptive report. Data sources used are vital statistics data for fetal deaths and live births.

Results—The data that became available with the revision of the U.S. Standard Report of Fetal Death in 1989 expanded the medical and health data available on mothers and fetuses. Reporting of medical conditions is probably incomplete for fetal deaths as well as for live births. Therefore, caution should be exercised in using this data. Reported occurrences of medical and life-style risk factors of mother and fetus for fetal deaths and live births and fetal mortality rates are presented. Maternal medical conditions most often associated with having a fetal death were problems with amniotic fluid levels and blood disorders. Fetal mortality was 35 percent greater when tobacco was used during pregnancy and 77 percent higher when alcohol was consumed during pregnancy. The complication of labor most often associated with fetal mortality was abruptio placenta. Although a very small proportion of all deliveries have specific congenital anomalies reported, fetal mortality was close to 50 percent for anencephalus, about 25 percent for renal agenesis, and slightly more than 20 percent for hydrocephalus.

Contents

Text tables

Figures

Appendix

Keywords: fetal death data file • vital statistics • complications of labor and delivery • congenital anomalies

Medical and life-style risk factors affecting fetal mortality, 1989–90

Donna L. Hoyert, Ph.D., Division of Vital Statistics

Introduction

As a result of the revision of the U.S. Standard Report of Fetal Death, beginning with the 1989 data year, the National Center for Health Statistics (NCHS) has compiled fetal death data on medical and life-style risk factors of pregnancy and delivery and on congenital anomalies of the fetus. The new medical and health data available for mothers and fetuses greatly expand the information available on pregnancy outcomes in the United States. Previous reports from NCHS presented data on medical and life-style risk factors for pregnancies that resulted in a live birth (1,2). This report presents corresponding data on pregnancies that resulted in a spontaneous fetal death after 20 weeks of gestation.

Because fetal deaths account for a large proportion of pregnancy losses (3,4), health promotion and interventions intended to improve pregnancy outcomes must consider the problem of fetal death. There are inherent difficulties in collecting data on fetal deaths that have contributed to less emphasis on research, understanding, and development of prevention efforts (4). This report adds to the literature by providing data on a variety of medical and life-style risk factors for fetal deaths. As noted in the literature for similar live birth data, there are limitations in the data that should be taken into account (5,6). Nevertheless, as with live birth data, these data are a source of information for deriving prevalence measures. Although they tend to be underestimates, the data add to the body of literature, encourage comparisons between methodologies for collecting this type of data, and provide insight into differences within the population (5,6). In many cases, similar data are neither widely nor routinely available for fetal deaths.

This report was prepared in the Division of Vital Statistics under the general direction of Harry M. Rosenberg, Ph.D., Chief of the Mortality Statistics Branch. Staff of the Mortality Statistics Branch and the Office of Analysis and Epidemiology provided peer review for this report. Betty L. Smith provided content review. The Registration Methods Branch and the Technical Services Branch provided consultation to State vital statistics offices regarding collection of the vital statistics data on which this report is based. This report was edited by Klaudia M. Cox and typeset by Zung T. N. Le of the Publications Branch, Division of Data Services.

Methods

Fetal death reporting system

NCHS adopted the World Health Organization (WHO) definition of ''fetal death'' as the recommended standard for use in the early 1950's. The following inclusive definition was developed by the WHO in 1950 to end confusion arising from the use of such terms as stillbirth, spontaneous abortion, and miscarriage:

> Death prior to the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of pregnancy; the death is indicated by the fact that after such separation, the fetus does not breathe or show any other evidence of life such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles (7).

The States use a consistent definition, but the registration of a fetal death is only required for those occurring after 20 weeks of gestation in most States. National fetal-death statistics are compiled from State fetal death reports received by NCHS every year. They are usually tabulated for deaths of 20 or more weeks of gestation. Statistics on induced terminations of pregnancy (abortions) are excluded in national fetal-death statistics and are not included in this report.

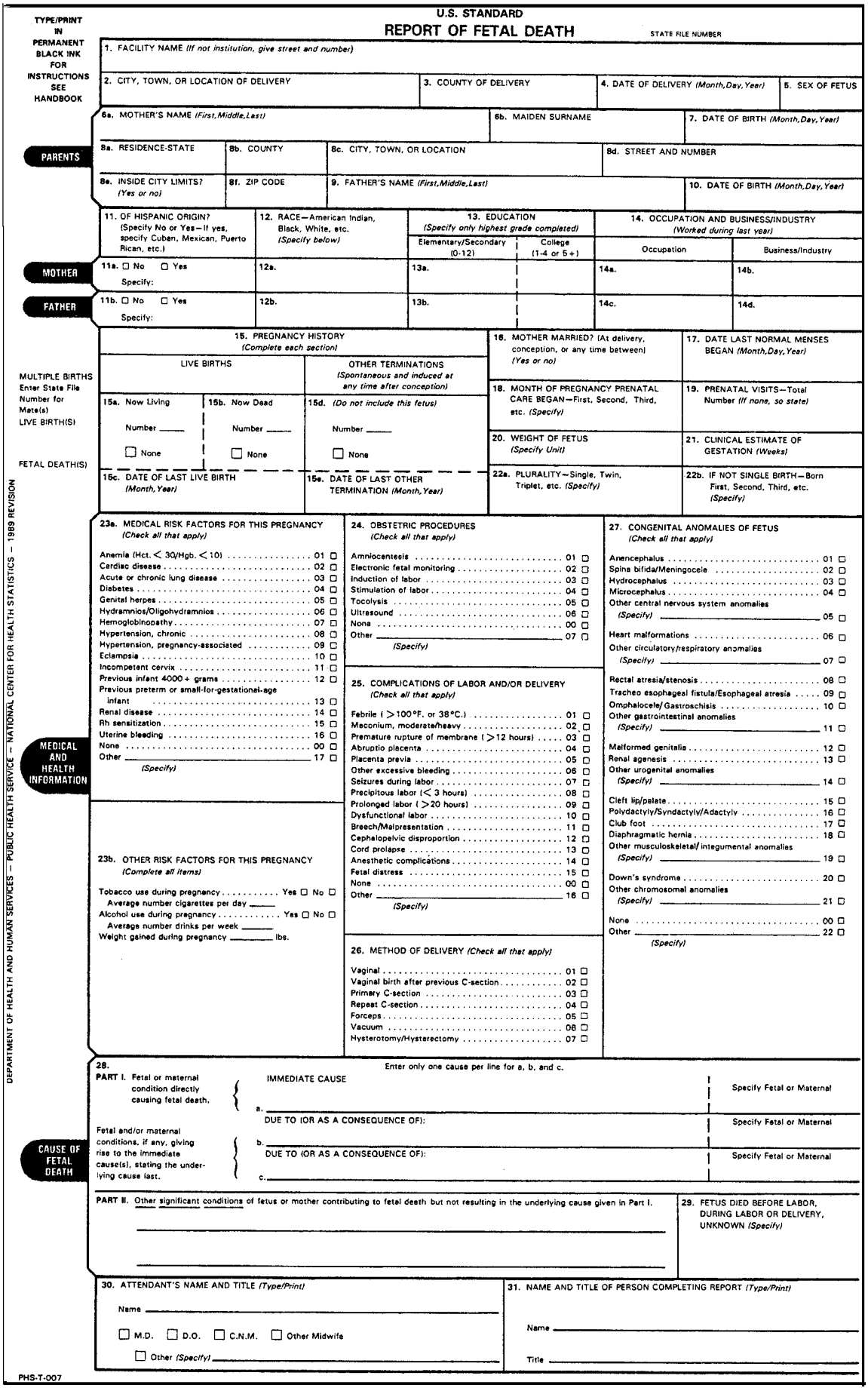
The fetal death reports or certificates of most States conform closely in content and arrangement with the U.S. Standard Report of Fetal Death (figure 1), although States may make modifications. The number of items on medical and life-style risk factors was increased on the 1989 revision of the fetal death report. Because many of these items appear for the first time on the 1989 revision, reporting completeness is still improving and is not yet comparable, in some instances, to items retained from previous revisions. Reporting completeness in the data is discussed in the text and shown in each table.

In the 1989 revision of the standard fetal death report, checkboxes replace previously used, open-ended items regarding medical and health characteristics of the mother and the fetus. Evidence from evaluation studies of questionnaire design indicate that the use of checkboxes improves reporting of chronic conditions (8–10). It was anticipated that use of checkboxes on vital statistics records would encourage better reporting of specific risks and conditions listed. Initially, individual States experienced resistance from their State medical community and some procedural difficulties (6,11); yet, the levels of reporting have improved to varying degrees (12,13).

Nevertheless, research has found that medical and life-style risk factors continue to be underreported on the revised live birth certificate (5,13–16). Validation studies of live birth records find that reporting for each of the medical and life-style risk factor sections differs from that in medical records. The results of selected studies show that there is underreporting on the birth certificate. For example, medical risk factors reported on the birth certificate agree with medical records between 86 and 93 percent of the time; obstetric procedures between 70 and 73 percent; and complications of labor and delivery between 66 and 81 percent (14,15). Congenital anomalies such as rectal atresia or stenosis are only reported on birth certificates for 10 percent of cases reported to a birth registry while anencephaly is reported 86 percent of the time (5). The disparity largely reflects underreporting (13,14). However, studies comparing data collected on birth certificates with other records found both underreporting and reports on the birth certificate that could not be validated against other records (5,13).

Reporting of medical conditions for the fetus is probably also incomplete, in part, because of difficulties in recognizing the conditions (1,5,17), particularly for fetal deaths occurring earlier in pregnancy. However, it is possible that there could be less underreporting for fetal deaths than for live births because the condition is more severe in the fetal death (18) or because the person filling out the fetal death report is motivated to account for the fetal death (19). When records are linked to reimbursement, conditions that are reimbursable are better reported than those that are not reimbursable (16). Consequently, if there is relatively less underreporting for fetal deaths than live births, then the effect would be to overestimate the risk of having a fetal death given the existence of a specific risk factor.

Estimates of the prevalence of various conditions and medical risks published in the literature provide further data by which to judge the quality of vital statistics estimates (18,20–27). The estimates in the literature are based on several sources, including hospital discharge data (20) and birth defects registries (21–23,25–27). They are usually based on multiple sources including vital statistics records. In general, the prevalence of medical and life-style risk factors among live births and fetal deaths is understated in vital statistics records. For example, in the case of alcohol use, the special studies found that around 20 percent of pregnant women in 1988 were estimated to drink during pregnancy (28) compared with merely 3 percent in the vital statistics data in this report.



TYPE/PRINT IN PERMANENT BLACK INK FOR INSTRUCTIONS SEE HANDBOOK

U.S. STANDARD
REPORT OF FETAL DEATH

STATE FILE NUMBER

1. FACILITY NAME (If not institution, give street and number)

2. CITY, TOWN, OR LOCATION OF DELIVERY | 3. COUNTY OF DELIVERY | 4. DATE OF DELIVERY (Month,Day,Year) | 5. SEX OF FETUS

PARENTS

6a. MOTHER'S NAME (First,Middle,Last) | 6b. MAIDEN SURNAME | 7. DATE OF BIRTH (Month,Day,Year)

8a. RESIDENCE-STATE | 8b. COUNTY | 8c. CITY, TOWN, OR LOCATION | 8d. STREET AND NUMBER

8e. INSIDE CITY LIMITS? (Yes or no) | 8f. ZIP CODE | 9. FATHER'S NAME (First,Middle,Last) | 10. DATE OF BIRTH (Month,Day,Year)

	11. OF HISPANIC ORIGIN? (Specify No or Yes—If yes, specify Cuban, Mexican, Puerto Rican, etc.)	12. RACE—American Indian, Black, White, etc. (Specify below)	13. EDUCATION (Specify only highest grade completed)		14. OCCUPATION AND BUSINESS/INDUSTRY (Worked during last year)	
			Elementary/Secondary (0-12)	College (1-4 or 5+)	Occupation	Business/Industry
MOTHER	11a. ☐ No ☐ Yes Specify:	12a.	13a.		14a.	14b.
FATHER	11b. ☐ No ☐ Yes Specify:	12b.	13b.		14c.	14d.

MULTIPLE BIRTHS Enter State File Number for Mate(s)
LIVE BIRTH(S)
FETAL DEATH(S)

15. PREGNANCY HISTORY (Complete each section)

LIVE BIRTHS		OTHER TERMINATIONS (Spontaneous and induced at any time after conception)
15a. Now Living Number ____ ☐ None	15b. Now Dead Number ____ ☐ None	15d. (Do not include this fetus) Number ____ ☐ None
15c. DATE OF LAST LIVE BIRTH (Month,Year)		15e. DATE OF LAST OTHER TERMINATION (Month,Year)

16. MOTHER MARRIED? (At delivery, conception, or any time between) (Yes or no)

17. DATE LAST NORMAL MENSES BEGAN (Month,Day,Year)

18. MONTH OF PREGNANCY PRENATAL CARE BEGAN—First, Second, Third, etc. (Specify)

19. PRENATAL VISITS—Total Number (If none, so state)

20. WEIGHT OF FETUS (Specify Unit)

21. CLINICAL ESTIMATE OF GESTATION (Weeks)

22a. PLURALITY—Single, Twin, Triplet, etc. (Specify)

22b. IF NOT SINGLE BIRTH—Born First, Second, Third, etc. (Specify)

MEDICAL AND HEALTH INFORMATION

23a. MEDICAL RISK FACTORS FOR THIS PREGNANCY (Check all that apply)

Anemia (Hct. < 30/Hgb. < 10) ... 01 ☐
Cardiac disease ... 02 ☐
Acute or chronic lung disease ... 03 ☐
Diabetes ... 04 ☐
Genital herpes ... 05 ☐
Hydramnios/Oligohydramnios ... 06 ☐
Hemoglobinopathy ... 07 ☐
Hypertension, chronic ... 08 ☐
Hypertension, pregnancy-associated ... 09 ☐
Eclampsia ... 10 ☐
Incompetent cervix ... 11 ☐
Previous infant 4000+ grams ... 12 ☐
Previous preterm or small-for-gestational-age infant ... 13 ☐
Renal disease ... 14 ☐
Rh sensitization ... 15 ☐
Uterine bleeding ... 16 ☐
None ... 00 ☐
Other _____ (Specify) ... 17 ☐

23b. OTHER RISK FACTORS FOR THIS PREGNANCY (Complete all items)

Tobacco use during pregnancy ... Yes ☐ No ☐
Average number cigarettes per day ____
Alcohol use during pregnancy ... Yes ☐ No ☐
Average number drinks per week ____
Weight gained during pregnancy ____ lbs.

24. OBSTETRIC PROCEDURES (Check all that apply)

Amniocentesis ... 01 ☐
Electronic fetal monitoring ... 02 ☐
Induction of labor ... 03 ☐
Stimulation of labor ... 04 ☐
Tocolysis ... 05 ☐
Ultrasound ... 06 ☐
None ... 00 ☐
Other _____ (Specify) ... 07 ☐

25. COMPLICATIONS OF LABOR AND/OR DELIVERY (Check all that apply)

Febrile (>100°F. or 38°C.) ... 01 ☐
Meconium, moderate/heavy ... 02 ☐
Premature rupture of membrane (>12 hours) ... 03 ☐
Abruptio placenta ... 04 ☐
Placenta previa ... 05 ☐
Other excessive bleeding ... 06 ☐
Seizures during labor ... 07 ☐
Precipitous labor (< 3 hours) ... 08 ☐
Prolonged labor (>20 hours) ... 09 ☐
Dysfunctional labor ... 10 ☐
Breech/Malpresentation ... 11 ☐
Cephalopelvic disproportion ... 12 ☐
Cord prolapse ... 13 ☐
Anesthetic complications ... 14 ☐
Fetal distress ... 15 ☐
None ... 00 ☐
Other _____ (Specify) ... 16 ☐

26. METHOD OF DELIVERY (Check all that apply)

Vaginal ... 01 ☐
Vaginal birth after previous C-section ... 02 ☐
Primary C-section ... 03 ☐
Repeat C-section ... 04 ☐
Forceps ... 05 ☐
Vacuum ... 06 ☐
Hysterotomy/Hysterectomy ... 07 ☐

27. CONGENITAL ANOMALIES OF FETUS (Check all that apply)

Anencephalus ... 01 ☐
Spina bifida/Meningocele ... 02 ☐
Hydrocephalus ... 03 ☐
Microcephalus ... 04 ☐
Other central nervous system anomalies (Specify) _____ ... 05 ☐
Heart malformations ... 06 ☐
Other circulatory/respiratory anomalies (Specify) _____ ... 07 ☐
Rectal atresia/stenosis ... 08 ☐
Tracheo esophageal fistula/Esophageal atresia ... 09 ☐
Omphalocele/Gastroschisis ... 10 ☐
Other gastrointestinal anomalies (Specify) _____ ... 11 ☐
Malformed genitalia ... 12 ☐
Renal agenesis ... 13 ☐
Other urogenital anomalies (Specify) _____ ... 14 ☐
Cleft lip/palate ... 15 ☐
Polydactyly/Syndactyly/Adactyly ... 16 ☐
Club foot ... 17 ☐
Diaphragmatic hernia ... 18 ☐
Other musculoskeletal/integumental anomalies (Specify) _____ ... 19 ☐
Down's syndrome ... 20 ☐
Other chromosomal anomalies (Specify) _____ ... 21 ☐
None ... 00 ☐
Other _____ (Specify) ... 22 ☐

CAUSE OF FETAL DEATH

28. Enter only one cause per line for a, b, and c.

PART I. Fetal or maternal condition directly causing fetal death.
a. IMMEDIATE CAUSE — Specify Fetal or Maternal

Fetal and/or maternal conditions, if any, giving rise to the immediate cause(s), stating the underlying cause last.
b. DUE TO (OR AS A CONSEQUENCE OF): — Specify Fetal or Maternal
c. DUE TO (OR AS A CONSEQUENCE OF): — Specify Fetal or Maternal

PART II. Other significant conditions of fetus or mother contributing to fetal death but not resulting in the underlying cause given in Part I.

29. FETUS DIED BEFORE LABOR, DURING LABOR OR DELIVERY, UNKNOWN (Specify)

30. ATTENDANT'S NAME AND TITLE (Type/Print)
Name _____
☐ M.D. ☐ D.O. ☐ C.N.M. ☐ Other Midwife
☐ Other (Specify) _____

31. NAME AND TITLE OF PERSON COMPLETING REPORT (Type/Print)
Name _____
Title _____

DEPARTMENT OF HEALTH AND HUMAN SERVICES — PUBLIC HEALTH SERVICE — NATIONAL CENTER FOR HEALTH STATISTICS — 1989 REVISION

PHS-T-007

Figure 1. U.S. Standard Report of Fetal Death form

Tobacco use estimates of 23 percent in 1990 (29) were similar to estimates of 20 percent in vital statistics data in this report. Abruptio placenta is estimated to occur in 4.9–12.9 per 1,000 deliveries (30) compared with 6.8 per 1,000 in vital statistics. This provides an example in which vital statistics data are within the range reported in the literature.

Items described in report

This report presents data for the combined years 1989–90 on new items on the 1989 revision of the fetal death report. Two years of data (1989 and 1990) are combined to promote statistical reliability and stability in estimates. Four specific items on the fetal death report that provide detailed medical and health information on the woman and child, in the form of checkbox entries, are examined in this report: medical risk factors for this pregnancy, other risk factors, complications of labor and/or delivery, and congenital anomalies of the fetus. (For brief medical definitions, see Technical notes.)

Two types of rates are shown in the tables. The first type shows rates of occurrence and provides a measure of the risk of having a delivery with the specified characteristic for all reported deliveries (i.e., pregnancies ending in a spontaneous fetal death of 20 weeks or more gestation or a live birth). This is expressed as the combined number of live births and fetal deaths with the specified characteristic per 1,000 total live births and fetal deaths of 20 or more weeks of gestation to women in the specified age group. In the sections on tobacco and alcohol use, the rate of occurrence is expressed per 100 total live births and fetal deaths of 20 or more weeks of gestation. The rate of occurrence for congenital anomalies is expressed per 100,000 total live births and fetal deaths of 20 or more weeks gestation because of the rarity of these conditions.

The second type shows fetal mortality rates and provides a measure of the risk of having a spontaneous fetal death among those deliveries with specified medical risk, complication of labor, or congenital anomaly. For each section, this is expressed as the number of fetal deaths of 20 or more weeks gestation per 1,000 live births and fetal deaths of 20 or more weeks of gestation in the specified group.

Both of these measures exclude pregnancies that end with an induced abortion; the values shown in this report might have been considerably different had induced abortions been included (25).

Fetal deaths with unknown characteristics were subtracted from the number of total fetal deaths used as denominators before rates were computed, except for tables presenting data on tobacco and alcohol use. In the tobacco and alcohol use tables, ''not stated'' responses to tobacco and alcohol items were distributed proportionately. An asterisk is shown in place of any derived statistic based on fewer than 20 cases in the numerator or denominator.

Each of the tables shows the data for all maternal races, separately for the white and black populations and for all maternal ages, and separately for women under 30 years of age and 30 years of age or older. In part, these variables are shown to provide similar information for fetal deaths as previously shown in reports on live births (1,2). The information on age is more limited in this report because there were not enough events to show the data by 5-year age groups. Age was separated into two groups—under 30 years of age and 30–49 years of age. In cases in which the relationship is positive or inverse by age, this categorization is adequate. In more detailed studies, investigators may need to use more years of data to analyze maternal age in smaller categories. Differences by race are often due to socioeconomic differences, limitations in access to health care and insurance, and other factors not shown in this report.

Geographic area

The basic group of 29 States included in this report represents 61 percent of all fetal deaths of 20 weeks gestation or more in the United States. The 29 States included in the tables were selected on the basis of reporting completeness. States were included only if reporting was at least 80 percent complete for each of the following variables: prenatal care, birthweight, and method of delivery. These three variables were selected because each is a basic data item that should be easy to complete, but for which there is a moderate degree of incomplete reporting. Using this criterion substantially reduced the level of incomplete reporting for each of the medical and life-style risk factors. For further details, see the Technical notes. Individual tables note which of the 29 States are excluded because items are missing from State reports or certificates.

Results

Medical risk factors

Occurrence of medical risk factors

Table 1 presents data on the occurrence of 16 selected medical risk factors by race of mother for 1989 and 1990, which were combined for 28 States. The presence or absence of medical risk factors was not reported for 58,875 (1 percent) of the 4,931,210 women delivering a live infant or dead fetus.

Among the selected maternal medical risk factors (table A), pregnancy-associated hypertension was the most frequently reported factor with a rate of 26.3 occurrences per 1,000 total live births and fetal deaths. This was followed by diabetes (19.2 occurrences). Hemoglobinopathy was the least frequently reported among deliveries with a rate of 0.4 percent.

By age, 11 of the 16 medical conditions occurred more frequently for women 30–49 years than for women under 30 years of age (table A); differences were statistically significant. For chronic hypertension, the rate of occurrence for those aged 30–49 years was 2.4 times that of women under 30 years of age; for diabetes (2.2 times), and previous infant 4,000 grams or more (2.2 times). In contrast, rates were not as great among older women for anemia (0.7 or 32 percent lower), renal disease (0.7), or eclampsia (0.8).

For seven of these medical risk factors (table A), the medical conditions occurred relatively more frequently among black than among white women delivering a live infant or dead fetus. In the case of hemoglobinopathy, the ratio of black-to-white rates was 6.5 times greater for black women than for white women delivering a live infant or dead fetus. In contrast, six of the medical risk factors had substantially smaller rates for black than for white women, including previous infant 4,000 grams or more (ratio of 0.4), Rh sensitization (0.4), and diabetes (0.8).

Fetal mortality rates for selected medical risk factors

The risks of experiencing a fetal loss increase for women with certain medical risks (32,34). Among these women, the

Table A. Rate and confidence intervals of medical risk occurrences by selected medical risk factors, age and race of mother, and ratio of occurrence rates: Total of 28 States, 1989–90

[Rates are number of deliveries with specified medical risk factor per 1,000 live births and fetal deaths to mothers of specified age]

Selected medical risk factor	Maternal age						Race				Ratio of occurrence rates	
	All ages		Under 30 years		30–49 years		White		Black			
	Rate	95-percent confidence interval	Rate	95-percent confidence interval	Rate	95-percent confidence interval	Rate	95-percent confidence interval	Rate	95-percent confidence interval	Older-to-younger[1]	Black-to-white
Anemia	15.5	(15.4,15.6)	17.1	(16.9,17.2)	11.7	(11.5,11.9)	12.5	(12.4,12.6)	30.1	(29.7,30.4)	0.7	2.4
Cardiac disease	2.9	(2.8,2.9)	2.5	(2.4,2.6)	3.8	(3.7,3.9)	3.0	(3.0,3.1)	2.5	(2.4,2.6)	1.5	0.8
Acute or chronic lung disease	2.7	(2.7,2.8)	2.7	(2.6,2.7)	2.9	(2.8,3.0)	2.6	(2.5,2.6)	3.7	(3.6,3.9)	1.1	1.4
Diabetes	19.2	(19.1,19.3)	14.2	(14.1,14.3)	31.5	(31.2,31.8)	19.6	(19.4,19.7)	16.0	(15.7,16.3)	2.2	0.8
Genital herpes	7.7	(7.6,7.8)	6.9	(6.8,7.0)	9.8	(9.6,10.0)	8.0	(7.9,8.1)	7.6	(7.4,7.8)	1.4	1.0
Hydramnios/oligohydramnios	5.6	(5.5,5.6)	5.4	(5.3,5.5)	6.0	(5.9,6.2)	5.5	(5.4,5.5)	6.3	(6.2,6.5)	1.1	1.1
Hemoglobinopathy	0.4	(0.4,0.4)	0.4	(0.4,0.5)	0.4	(0.4,0.4)	0.2	(0.2,0.2)	1.3	(1.3,1.4)	1.0	6.5
Hypertension, chronic	6.4	(6.3,6.4)	4.5	(4.4,4.6)	11.0	(10.8,11.1)	5.6	(5.5,5.6)	10.7	(10.4,10.9)	2.4	1.9
Hypertension, pregnancy-associated	26.3	(26.1,26.4)	26.4	(26.2,26.6)	25.9	(25.7,26.2)	26.5	(26.3,26.7)	27.0	(26.7,27.4)	1.0	1.0
Eclampsia	4.1	(4.0,4.1)	4.3	(4.2,4.3)	3.6	(3.5,3.7)	3.7	(3.6,3.7)	6.4	(6.2,6.5)	0.8	1.7
Incompetent cervix	3.4	(3.3,3.4)	2.8	(2.8,2.9)	4.7	(4.6,4.8)	3.4	(3.3,3.5)	3.4	(3.3,3.5)	1.7	1.0
Previous infant 4,000 grams or more	11.3	(11.2,11.4)	8.4	(8.3,8.5)	18.4	(18.1,18.6)	12.9	(12.8,13.0)	4.6	(4.5,4.7)	2.2	0.4
Previous preterm or small-for-gestational-age infant	13.9	(13.8,14.0)	12.5	(12.4,12.7)	17.4	(17.2,17.6)	13.3	(13.2,13.4)	17.2	(17.0,17.5)	1.4	1.3
Renal disease	2.6	(2.6,2.7)	2.9	(2.8,2.9)	2.1	(2.0,2.2)	2.7	(2.6,2.7)	2.5	(2.4,2.6)	0.7	0.9
Rh sensitization	6.4	(6.3,6.5)	6.2	(6.1,6.2)	7.0	(6.9,7.2)	7.3	(7.3,7.4)	3.0	(2.9,3.1)	1.1	0.4
Uterine bleeding	8.4	(8.3,8.5)	7.8	(7.7,7.9)	9.9	(9.8,10.1)	8.8	(8.7,8.9)	7.2	(7.1,7.4)	1.3	0.8

[1]Older refers to mothers 30–49 years of age. Younger refers to mothers under 30 years.

Table B. Rate and confidence intervals of fetal mortality by selected medical risk factors, age and race of mother, and ratio of fetal mortality rates: Total of 28 States, 1989–90

[Rates are number of fetal deaths with specified medical risk factor per 1,000 live births and fetal deaths with specified medical risk factor]

Selected medical risk factor	Maternal age						Race				Ratio of occurrence rates	
	All ages		Under 30 years		30–49 years		White		Black			
	Rate	95-percent confidence interval	Rate	95-percent confidence interval	Rate	95-percent confidence interval	Rate	95-percent confidence interval	Rate	95-percent confidence interval	Older-to-younger[1]	Black-to-white
All fetal deaths	7.4	(7.4,7.5)	7.3	(7.2,7.3)	7.9	(7.8,8.1)	6.3	(6.3,6.5)	13.2	(13.1,13.6)	0.9	2.1
No medical risks	5.0	(4.9,5.1)	4.9	(4.9,5.0)	5.2	(5.0,5.3)	4.3	(4.3,4.4)	8.7	(8.5,9.0)	1.1	2.0
Anemia	14.8	(13.9,15.6)	14.0	(13.1,14.9)	17.6	(15.6,19.6)	10.6	(9.7,11.5)	24.0	(22.1,25.9)	1.3	2.3
Cardiac disease	8.7	(7.2,10.2)	9.2	(7.2,11.2)	7.8	(5.4,10.2)	6.8	(5.3,8.3)	18.7	(12.7,24.6)	0.8	2.8
Acute or chronic lung disease	15.3	(13.2,17.4)	13.2	(10.9,15.5)	20.2	(15.9,24.5)	15.1	(12.7,17.5)	16.4	(11.8,20.9)	1.5	1.1
Diabetes	9.9	(9.2,10.5)	9.7	(8.8,10.6)	10.0	(9.1,10.9)	8.4	(7.7,9.0)	19.6	(17.2,22.0)	1.0	2.3
Genital herpes	5.3	(4.6,6.0)	5.5	(4.6,6.4)	5.0	(3.8,6.2)	4.4	(3.7,5.2)	9.7	(7.2,12.1)	0.9	2.2
Hydramnios/oligohydramnios	48.5	(45.9,51.1)	47.9	(44.8,51.0)	49.8	(45.1,54.5)	49.4	(46.4,52.4)	46.6	(40.7,52.5)	1.0	0.9
Hemoglobinopathy	48.4	(39.0,57.9)	44.8	(34.2,55.4)	58.3	(38.4,78.2)	78.8	(59.8,97.8)	32.2	(21.5,42.8)	1.3	0.4
Hypertension, chronic	25.6	(23.8,27.4)	22.4	(20.1,24.7)	28.9	(26.2,31.6)	19.7	(17.8,21.5)	40.5	(36.3,44.7)	1.3	2.1
Hypertension, pregnancy-associated	11.2	(10.6,11.8)	10.4	(9.7,11.1)	13.3	(12.1,14.5)	8.9	(8.3,9.4)	22.0	(20.0,23.9)	1.3	2.5
Eclampsia	11.5	(10.0,13.0)	10.5	(8.9,12.1)	14.4	(11.1,17.7)	9.5	(7.9,11.0)	17.5	(13.9,21.1)	1.4	1.8
Incompetent cervix	46.1	(42.8,49.3)	50.9	(46.5,55.3)	38.9	(34.2,43.6)	36.1	(32.9,39.4)	97.8	(86.2,109.5)	0.8	2.7
Previous infant 4,000 grams or more	6.1	(5.5,6.8)	5.6	(4.7,6.5)	6.7	(5.7,7.7)	5.3	(4.6,5.9)	13.6	(9.8,17.3)	1.2	2.6
Previous preterm or small-for-gestational-age infant	16.4	(15.5,17.4)	16.0	(14.8,17.2)	17.2	(15.6,18.8)	13.7	(12.7,14.8)	27.1	(24.3,29.8)	1.1	2.0
Renal disease	17.5	(15.2,19.7)	16.2	(13.7,18.7)	21.8	(16.5,27.1)	14.2	(11.9,16.4)	33.6	(25.6,41.5)	1.3	2.4
Rh sensitization	6.3	(5.4,7.2)	5.9	(4.9,6.9)	7.0	(5.3,8.7)	6.0	(5.1,6.9)	10.0	(6.0,13.9)	1.2	1.7
Uterine bleeding	38.2	(36.3,40.1)	41.2	(38.8,43.6)	32.3	(29.3,35.3)	31.9	(30.0,33.8)	76.3	(69.3,83.3)	0.8	2.4

[1]Older refers to mothers 30–49 years of age. Younger refers to mothers under 30 years.

risk of having a fetal death per 1,000 live births and fetal deaths in a specified group is shown in table 2. Medical risk factors were not stated for about 9 percent (e.g., 3,373 divided by 36,729) of the 36,729 women delivering a dead fetus.

The variation in fetal mortality by specific medical conditions is shown in table B. Fetal mortality rates were highest for hemoglobinopathy (48.4 per 1,000 live births and fetal deaths in which the risk was present) and hydramnios/oligohydramnios (48.5) (figure 2). Thus, hydramnios/oligohydramnios and hemoglobinopathy were the reported maternal conditions most lethal to the fetus; even so, only a small proportion (less than 5 percent) of deliveries to women reported with these conditions experienced a fetal loss.

By age, the risk of the pregnancy resulting in a fetal death was greater for older women with four specific medical conditions (table B). The largest difference was for acute and chronic lung disease, with a mortality rate 53 percent greater for women aged 30–49 years than for women under 30 years old. In contrast, fetal mortality rates were around 20 percent lower for women aged 30–49 years who had incompetent cervix and uterine bleeding.

For 12 of the 16 medical conditions (table B), the risk of experiencing a fetal loss was greater for black women than for white women. The greatest differentials included cardiac disease (2.8), incompetent cervix (2.7), previous infant 4,000 grams or more (2.6), and pregnancy-associated hypertension (2.5). In contrast, the risk of women with hemoglobinopathy (0.4) having a dead fetus was less for black women than for white women.

Tobacco use during pregnancy

Table 3 presents data on smoking among women delivering a live infant or dead fetus. The rate of smokers was 20.2 per 100 deliveries, or about 20 percent. Smoking was more common among younger women than among older women. The percent was 21.8 for women under 30 years and 15.9 for those 30–49, a 27 percent differential with increasing age. Smoking was also more common among white women than among black women. The percent was 21.3, 1.3 times higher than for black women, who had a percent of 16.9.

Among women who smoked, smoking 11 cigarettes or more per day was 2.2 times more common than smoking 1–5 cigarettes per day (42.5 vs. 19.4 percent). Younger smokers consumed smaller quantities of cigarettes per day than older smokers. Close to half of white smokers (46.3 percent among smoking women) smoked half a pack or more of cigarettes daily. Only about a quarter of black smokers (24.5) consumed that large a quantity of tobacco.

Fetal mortality by tobacco use

Research on smoking indicates that smoking is associated with both higher levels of fetal mortality (31) and increased risk of having a small infant (32), and that the effect of smoking is greater for older women than for younger women (31,33). Smoking is also associated with other pregnancy problems including complications of labor (34).

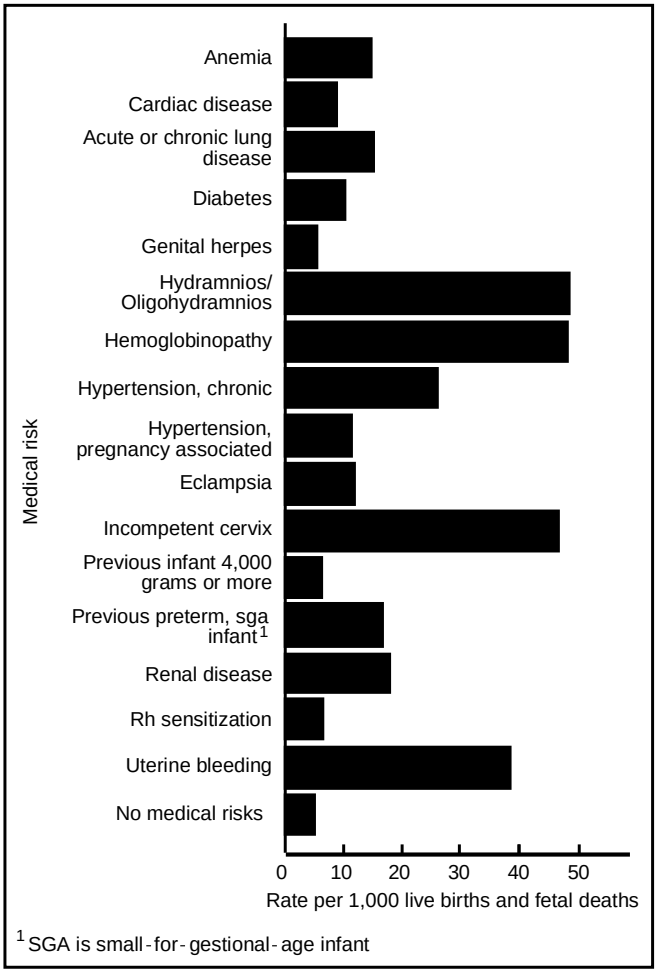


Figure 2. Fetal mortality by selected maternal medical risks: Total of 28 States, 1989–90

Data on the risk of having a fetal death among women who smoke is shown for 25 States (table 4). For women who smoked, the fetal mortality rate was 9.7, or 35 percent, higher than for women who did not smoke (7.2) (figure 3). Among smokers, rates were 29 percent greater for women aged 30–49 years than for women under age 30. The risk of having a fetal death was greater for black than for white smokers (ratio of rates of 2.0); the ratio of the rates, mortality race ratio, for nonsmokers was 2.1 in these States.

Among women of all races combined who smoked, fetal mortality rates tended to be somewhat greater for those who smoked greater quantities of cigarettes, but differences were not statistically significant. However, for white and black women separately, differences were significant. For the white population, rates for those smoking 11 cigarettes or more were 22 percent higher than for those smoking 1–5 cigarettes. For the black population, rates were 25 percent higher for those smoking 11 cigarettes or more than for those smoking 1–5 cigarettes. For each quantity of cigarettes, rates were greater for black than for white women, and rates were greater for those aged 30–49 years than for those under age 30.

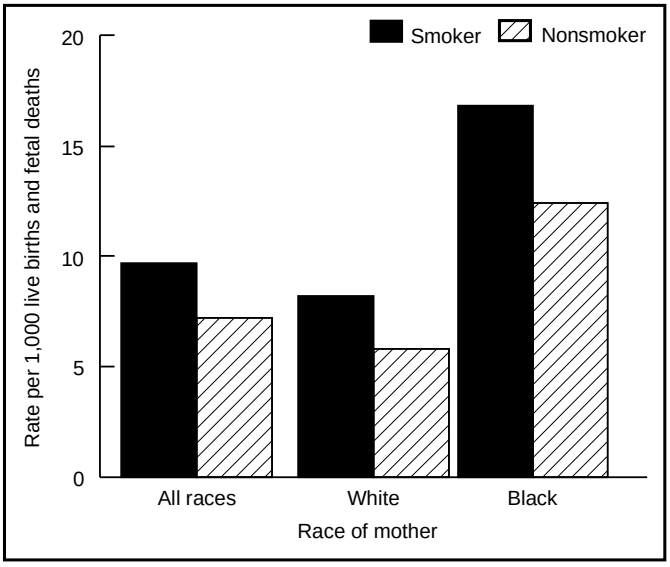


Figure 3. Fetal mortality by tobacco use of mother: Total of 25 States, 1989–90

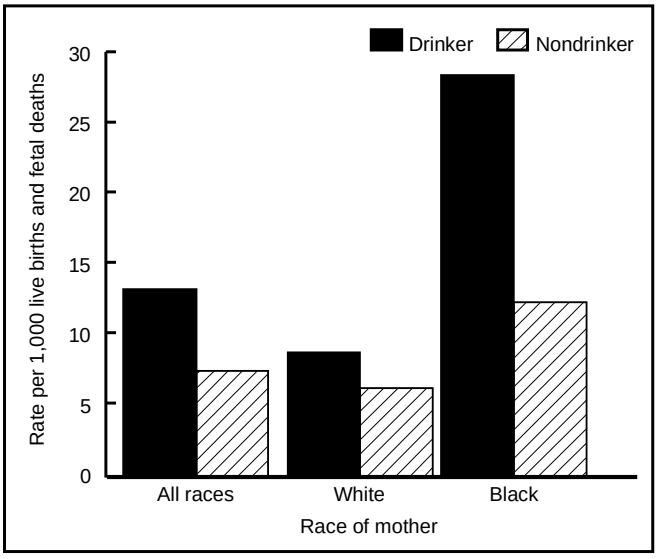


Figure 4. Fetal mortality by alcohol use of mother: Total of 26 States, 1989–90

Alcohol use during pregnancy

Table 5 presents data on alcohol use among women delivering either a live birth or a fetal death in 26 States. The reported rate of alcohol use was 3.4 per 100 deliveries, or about 3 percent. Alcohol use was 50 percent more common among women aged 30–49 years (4.5) than among women under 30 years (3.0). For white women, the percent of use was 3.3 and for black women, it was 3.9. Other studies (28,35) with higher estimates of alcohol use during pregnancy also find that use increases with age.

Among women who drank, consuming 1 drink a week (60.9 per 100 live births and fetal deaths to drinking women) was more common than consuming 5 or more per week (11.4).

Table C. Rate and confidence intervals of delivery complication occurrences by selected complications of labor and/or delivery, age and race of mother, and ratio of occurrence rates: Total of 29 States, 1989–90

[Rates are number of deliveries with specified complication per 1,000 live births and fetal deaths to mothers of specified age]

Selected complication	Maternal age						Race				Ratio of occurrence rates	
	All ages		Under 30 years		30–49 years		White		Black			
	Rate	95-percent confidence interval	Rate	95-percent confidence interval	Rate	95-percent confidence interval	Rate	95-percent confidence interval	Rate	95-percent confidence interval	Older-to-younger[1]	Black-to-white
Febrile	10.5	(10.5,10.6)	11.1	(11.0,11.2)	9.2	(9.1,9.4)	9.6	(9.5,9.7)	14.8	(14.5,15.0)	0.8	1.5
Meconium, moderate/heavy	57.4	(57.2,57.6)	58.2	(57.9,58.4)	55.4	(55.0,55.8)	52.5	(52.2,52.7)	83.0	(82.4,83.6)	1.0	1.6
Premature rupture of membrane	31.6	(31.5,31.8)	31.0	(30.8,31.2)	33.1	(32.9,33.4)	30.4	(30.2,30.6)	38.7	(38.3,39.1)	1.1	1.3
Abruptio placenta	6.8	(6.7,6.9)	6.6	(6.5,6.6)	7.4	(7.2,7.5)	6.5	(6.4,6.6)	8.7	(8.5,8.9)	1.1	1.3
Placenta previa	3.5	(3.4,3.5)	2.6	(2.6,2.7)	5.6	(5.4,5.7)	3.4	(3.3,3.5)	3.6	(3.4,3.7)	2.2	1.1
Other excessive bleeding	5.2	(5.1,5.3)	5.0	(5.0,5.1)	5.6	(5.5,5.7)	5.3	(5.2,5.4)	3.8	(3.6,3.9)	1.1	0.7
Seizures during labor	0.4	(0.4,0.5)	0.5	(0.5,0.5)	0.3	(0.3,0.4)	0.4	(0.4,0.4)	0.6	(0.6,0.7)	0.6	1.5
Precipitous labor	18.6	(18.5,18.7)	17.4	(17.3,17.5)	21.5	(21.3,21.8)	17.7	(17.6,17.8)	22.1	(21.7,22.4)	1.2	1.2
Prolonged labor	10.5	(10.4,10.6)	10.9	(10.8,11.0)	9.6	(9.4,9.8)	10.9	(10.8,11.0)	8.0	(7.8,8.2)	0.9	0.7
Dysfunctional labor	23.6	(23.5,23.8)	23.7	(23.6,23.9)	23.3	(23.1,23.6)	24.5	(24.3,24.7)	20.1	(19.8,20.4)	1.0	0.8
Breech/malpresentation	38.6	(38.5,38.8)	35.9	(35.7,36.0)	45.6	(45.3,46.0)	40.7	(40.5,40.9)	30.0	(29.6,30.4)	1.3	0.7
Cephalopelvic disproportion	37.4	(37.3,37.6)	38.1	(37.9,38.3)	35.7	(35.4,36.0)	39.0	(38.8,39.2)	30.1	(29.7,30.4)	0.9	0.8
Cord prolapse	2.6	(2.6,2.7)	2.5	(2.5,2.6)	3.0	(2.9,3.1)	2.6	(2.6,2.7)	3.0	(2.8,3.1)	1.2	1.2
Anesthetic complication	0.5	(0.5,0.5)	0.5	(0.5,0.5)	0.6	(0.6,0.6)	0.5	(0.5,0.6)	0.4	(0.4,0.5)	1.2	0.8
Fetal distress	43.7	(43.5,43.9)	44.1	(43.9,44.4)	42.7	(42.3,43.0)	41.8	(41.6,42.0)	54.1	(53.6,54.6)	1.0	1.3

[1]Older refers to mothers 30–49 years of age. Younger refers to mothers under 30 years.

Table D. Rate and confidence intervals of fetal mortality by complications of labor and/or delivery, age and race of mother, and ratio of fetal mortality rates: Total of 29 States, 1989–90

[Rates are number of fetal deaths with specified complication per 1,000 live births and fetal deaths in specified group]

Selected complication	Maternal age						Race				Ratio of fetal mortality rate	
	All ages		Under 30 years		30–49 years		White		Black			
	Rate	95-percent confidence interval	Rate	95-percent confidence interval	Rate	95-percent confidence interval	Rate	95-percent confidence interval	Rate	95-percent confidence interval	Older-to-younger[1]	Black-to-white
All fetal deaths	7.4	(7.3,7.5)	7.2	(7.1,7.3)	7.9	(7.7,8.0)	6.3	(6.0,6.1)	13.0	(8.9,9.2)	1.1	2.1
No complication	4.5	(4.4,4.5)	4.3	(4.2,4.4)	4.7	(4.6,4.9)	3.8	(3.7,3.9)	7.9	(7.7,8.2)	1.1	2.1
Febrile	28.4	(26.9,29.8)	25.3	(23.1,27.5)	37.5	(37.0,37.9)	24.5	(23.0,26.1)	42.6	(39.0,46.2)	1.5	1.7
Meconium, moderate/heavy	6.9	(6.6,7.2)	6.6	(6.0,7.1)	7.9	(7.8,8.0)	7.1	(6.7,7.4)	6.7	(6.1,7.3)	1.2	0.9
Premature rupture of membrane	17.5	(16.9,18.2)	17.0	(15.9,18.1)	18.9	(18.7,19.1)	13.3	(12.7,14.0)	34.4	(32.4,36.4)	1.1	2.6
Abruptio placenta	96.9	(93.6,100.2)	102.0	(95.4,108.6)	85.5	(84.5,86.5)	82.8	(79.3,86.3)	149.8	(141.0,158.6)	0.8	1.8
Placenta previa	21.4	(19.2,23.5)	27.8	(22.6,33.0)	13.8	(13.6,13.9)	17.8	(15.5,20.0)	39.8	(32.7,46.9)	0.5	2.2
Other excessive bleeding	23.4	(21.6,25.3)	24.5	(20.8,28.2)	21.0	(20.8,21.2)	19.7	(17.9,21.6)	56.1	(47.9,64.3)	0.9	2.8
Seizures during labor	23.8	(17.4,30.2)	16.1	(9.8,22.4)	50.6	(50.1,51.1)	25.1	(17.4,32.9)	20.6	(8.4,32.8)	3.1	0.8
Precipitous labor	5.6	(5.2,6.1)	5.8	(5.0,6.7)	5.2	(5.2,5.3)	4.8	(4.3,5.3)	9.3	(7.9,10.6)	0.9	1.9
Prolonged labor	4.4	(3.8,4.9)	3.6	(2.9,4.4)	6.5	(6.5,6.6)	4.1	(3.5,4.7)	7.5	(5.4,9.6)	1.8	1.8
Dysfunctional labor	1.9	(1.6,2.1)	1.8	(1.4,2.2)	2.0	(2.0,2.1)	1.8	(1.5,2.0)	2.5	(1.8,3.3)	1.1	1.4
Breech/malpresentation	21.1	(20.4,21.7)	22.2	(20.9,23.4)	18.9	(18.7,19.1)	17.2	(16.5,17.8)	46.3	(43.7,49.0)	0.9	2.7
Cephalopelvic disproportion	1.2	(1.1,1.4)	1.0	(0.8,1.2)	1.9	(1.8,1.9)	1.2	(1.0,1.3)	1.3	(0.8,1.7)	1.9	1.1
Cord prolapse	58.2	(54.0,62.3)	57.6	(50.5,64.8)	59.3	(58.7,60.0)	50.6	(46.3,55.0)	92.2	(79.9,104.5)	1.0	1.8
Anesthetic complication	9.8	(6.0,13.5)	10.0	(3.1,16.9)	9.3	(9.2,9.4)	6.8	(3.4,10.3)	25.4	(8.8,41.9)	0.9	3.7
Fetal distress	4.8	(4.5,5.1)	4.6	(4.1,5.1)	5.3	(5.2,5.3)	4.3	(4.0,4.7)	6.3	(5.5,7.0)	1.2	1.5

[1]Older refers to mothers 30–49 years of age. Younger refers to mothers under 30 years.

Younger women were more likely to consume five or more drinks per week than older women. Somewhat less than a tenth of white drinkers (8.4 percent among drinking women) consumed 5 or more drinks weekly, compared with about a fifth of black drinkers (21.2).

Fetal mortality by alcohol use

Studies have shown that alcohol use during pregnancy appears to be associated with a number of harmful effects, including increased risk of fetal death, reduced birthweight, and congenital anomalies (36). Another effect is fetal alcohol syndrome (36,37).

Data on the risk of having a fetal death among women who drank is shown for 26 States (table 6). For women who drank, the fetal mortality rate was 13.3, or 77 percent higher than the rate of 7.5 for women who did not drink (figure 4). Among women using alcohol during pregnancy, rates were 12 percent less for women aged 30–49 years than for women

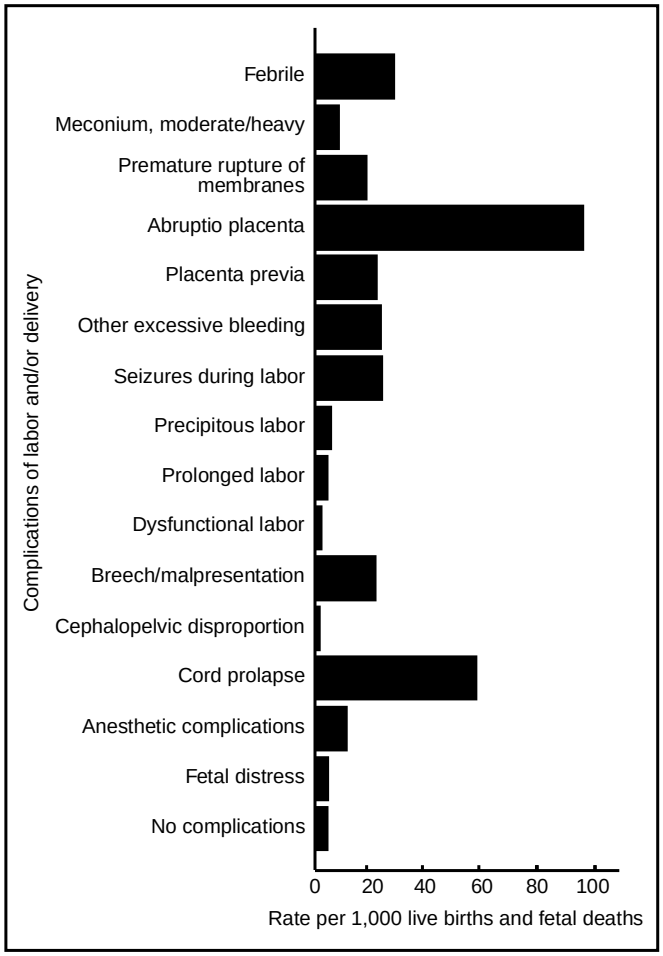


Figure 5. Fetal mortality by complications of labor and/or delivery: Total of 29 States, 1989–90

under 30 years. The risk of having a fetal death was over 3 times greater for black than for white drinkers (ratio of rates of 3.2).

Among women who consumed alcohol, fetal mortality was greater for those drinking greater quantities of alcohol. Rates for those drinking 5 or more drinks weekly were 4 times those consuming 1 drink. The corresponding ratios for the white and black population were 4.6 and 2.0, respectively. For each category of alcohol consumption, fetal mortality rates were higher for black than for white women.

Complications of labor and/or delivery

Occurrence of complications

Data on complications of labor and/or delivery for 29 States are shown in table 7. About 1 percent of the records had missing information on complications (53,104 of the total 5,080,220 fetal deaths and live births).

Rates of complications of labor and/or delivery are shown in table C. Among all deliveries of live births or fetal deaths, the most common complications were meconium (57.4 per 1,000 live births and fetal deaths) and fetal distress (43.7). The least common were seizures during labor (0.4) and anesthetic complication (0.5).

Rates of selected complications varied by maternal age (table C). Rates were higher for older women for eight complications. Placenta previa was the complication for which older women had the highest ratio of rates relative to younger women (2.2). However, rates were lower for older than for younger women for four complications, most notably, seizures during labor (40 percent).

Rates for eight selected complications of labor were greater for black than for white women (table C). The ratio of rates for seizures during labor and febrile was 1.5, and the ratio for meconium was 1.6. In contrast, rates for five complications—including prolonged labor (0.7), other excessive bleeding (0.7), and breech/malpresentation (0.7)— were smaller for black than for white women.

Association of complications with fetal death

Studies have shown that certain complications of labor and/or delivery, including hemorrhaging, abruptio placenta, and placenta previa, may be associated with fetal deaths (20,30,34). Furthermore, complications of labor are more likely to occur among fetal deaths occurring during the labor and delivery process than among live births (19).

Table 8 presents fetal mortality in relation to complications of labor and/or delivery for 29 States. The presence or absence of complications was not reported for 3,681 (10 percent) of the 37,599 women delivering a fetal death.

Fetal mortality rates differ by type of complication (table D and figure 5). The risks were greatest for the complications of abruptio placenta, with a rate of 96.9 fetal deaths per 1,000 live births and fetal deaths (i.e., approximately a tenth of deliveries complicated by abruptio placenta terminated in a fetal death) and cord prolapse (58.2).

For 6 of the 15 complications of labor and/or delivery (table D), fetal mortality rates were greater for women 30–49 than for women under age 30 years. The rates were 3 times greater for older women for seizures during labor, and between 10–90 percent greater for five other complications. In contrast, rates were 50 percent lower for older women for placenta previa, and rates were lower for two other conditions.

For black women (table D), risks of a pregnancy with a complication of labor and/or delivery resulting in a fetal loss were greater than for white women for 10 of the complications. For example, the ratio of black-to-white rates for breech/malpresentation was 2.7. In contrast, the risks were lower for black than for white women for seizures during labor (0.8).

Congenital anomalies of the fetus

Occurrence of congenital anomalies

Table 9 presents data on 21 selected congenital anomalies in 26 States. The presence or absence of congenital anomalies was not reported for 65,025, or 1 percent, of live births and fetal deaths.

Among the selected congenital anomalies (table E), other musculoskeletal/integumental anomalies were most

Table E. Rate and confidence intervals of congenital anomaly occurrences by selected congenital anomalies, age and race of mother, and ratio of occurrence rates: Total of 26 States, 1989–90

[Rates are number of deliveries with specified congenital anomaly per 100,000 live births and fetal deaths to mothers of specified age]

Selected congenital anomaly	Maternal age						Race				Ratio of occurrence rate	
	All ages		Under 30 years		30–49 years		White		Black			
	Rate	95-percent confidence interval	Rate	95-percent confidence interval	Rate	95-percent confidence interval	Rate	95-percent confidence interval	Rate	95-percent confidence interval	Older-to-younger[1]	Black-to-white
Anencephalus	23.4	(22.1,24.8)	25.7	(23.4,28.0)	17.8	(15.0,20.6)	24.5	(22.9,26.0)	18.3	(15.5,21.2)	0.7	0.7
Spina bifida/meningocele	31.4	(29.9,33.0)	32.4	(30.3,34.4)	29.1	(26.0,32.1)	34.4	(32.6,36.2)	20.9	(17.9,24.0)	0.9	0.6
Hydrocephalus	36.0	(34.4,37.7)	36.6	(34.4,38.8)	34.5	(30.9,38.2)	36.4	(34.5,38.3)	37.5	(33.4,41.6)	0.9	1.0
Microcephalus	11.5	(10.6,12.5)	11.5	(10.3,12.7)	11.6	(9.7,13.5)	11.5	(10.4,12.5)	12.0	(9.7,14.3)	1.0	1.0
Other central nervous system anomalies	33.3	(31.7,34.9)	33.2	(31.1,35.3)	33.4	(30.0,36.8)	34.2	(32.4,36.1)	29.9	(26.2,33.5)	1.0	0.9
Heart malformations	130.4	(127.2,133.6)	127.4	(123.6,131.2)	137.8	(131.5,144.1)	131.8	(128.2,135.4)	129.0	(121.4,136.6)	1.1	1.0
Other circulatory/respiratory anomalies	158.8	(155.3,162.3)	155.4	(151.2,159.5)	167.4	(160.6,174.3)	167.3	(163.2,171.3)	122.1	(114.6,129.5)	1.1	0.7
Rectal atresia/stenosis	12.4	(11.4,13.3)	12.4	(11.2,13.6)	12.2	(10.3,14.1)	13.0	(11.9,14.1)	9.6	(7.6,11.7)	1.0	0.7
Tracheo-esophageal fistula/ esophageal atresia	16.0	(14.9,17.1)	14.8	(13.5,16.1)	18.8	(16.5,21.1)	17.4	(16.1,18.7)	9.6	(7.6,11.7)	1.3	0.6
Omphalocele/gastroschisis	28.0	(26.6,29.5)	32.4	(30.4,34.4)	17.2	(14.8,19.7)	28.4	(26.7,30.0)	28.7	(25.1,32.3)	0.5	1.0
Other gastrointestinal anomalies	41.0	(39.2,42.8)	42.2	(40.0,44.4)	38.0	(34.6,41.3)	41.4	(39.3,43.4)	42.1	(37.7,46.5)	0.9	1.0
Malformed genitalia	86.6	(84.0,89.2)	87.0	(83.9,90.1)	85.7	(80.8,90.6)	93.5	(90.5,96.5)	62.0	(56.7,67.3)	1.0	0.7
Renal agenesis	11.6	(10.7,12.6)	11.8	(10.5,13.1)	11.3	(9.3,13.3)	12.7	(11.6,13.8)	8.2	(6.3,10.2)	1.0	0.6
Other urogenital anomalies	124.1	(121.1,127.2)	124.3	(120.6,128.0)	123.7	(117.9,129.6)	137.7	(134.0,141.3)	76.1	(70.2,81.9)	1.0	0.6
Cleft lip/palate	97.5	(94.8,100.3)	96.9	(93.6,100.2)	99.1	(93.7,104.4)	107.5	(104.3,110.8)	47.3	(42.7,51.9)	1.0	0.4
Polydactyly/syndactyly/adactyly	97.5	(94.8,100.3)	103.3	(100.0,106.7)	83.0	(78.2,87.9)	69.8	(67.2,72.4)	232.8	(222.6,243.1)	0.8	3.3
Club foot	63.9	(61.7,66.1)	65.7	(63.0,68.4)	59.5	(55.4,63.6)	70.6	(67.9,73.2)	40.5	(36.2,44.7)	0.9	0.6
Diaphragmatic hernia	14.6	(13.6,15.7)	13.7	(12.5,15.0)	16.9	(14.6,19.1)	16.0	(14.7,17.2)	9.2	(7.1,11.2)	1.2	0.6
Other musculoskeletal/integumental anomalies	225.7	(221.6,229.9)	225.2	(220.2,230.2)	227.1	(219.2,235.1)	231.7	(226.9,236.4)	205.3	(195.7,214.9)	1.0	0.9
Down's syndrome	57.1	(55.0,59.2)	41.1	(38.9,43.2)	97.1	(91.7,102.5)	61.6	(59.2,64.1)	40.6	(36.3,44.8)	2.4	0.7
Other chromosomal anomalies	57.2	(55.1,59.3)	51.1	(48.5,53.6)	72.5	(67.6,77.4)	58.5	(56.1,60.8)	52.7	(47.8,57.6)	1.4	0.9

[1]Older refers to mothers 30–49 years of age. Younger refers to mothers under 30 years.

common, with a reported rate of occurrence of 225.7 cases per 100,000 live births and fetal deaths. Other circulatory/respiratory anomalies were the next most frequently reported condition with a rate of 158.8. The lowest rate was for microcephalus (11.5).

For several anomalies, there were distinctive patterns of occurrence by maternal age (table E). Rates increased with age for five congenital anomalies. In the case of Down's syndrome, rates were 2.4 times greater for women aged 30–49 years than for women under 30 years. In contrast, omphalocele/gastroschisis (about 50 percent), anencephalus (about 30 percent), and polydactyly/syndactyly/adactyly (about 20 percent) were less common for women aged 30–49 years.

Rates of occurrence for the selected congenital anomalies except for polydactyly/syndactyly/adactyly tended to be greater for white than black women (table E). The smallest ratio of black-to-white rates is 0.4 for cleft lip/palate while the largest is 3.3 for polydactyly/syndactyly/adactyly.

Fetal mortality by congenital anomalies

Congenital anomalies are frequently reported as a cause of fetal death and are the leading cause of infant death (18,38). The following section indicates the mortality risk for having a fetal death. Studies of specific anomalies, particularly in the case of anencephaly, provide a more complete picture of the risks for death when the condition is present. Increasingly, women are electing to abort pregnancies in which the fetus is detected as having anencephaly or other serious anomalies (21,25). Fetal mortality remains a risk for those pregnancies that are continued. Even for those infants born alive, risks for death may still be high (18,21). This report does not include data on either induced terminations of pregnancy or infant mortality.

Table 10 shows fetal mortality rates by congenital anomalies for 26 States. Responses to the items on congenital anomalies were missing for 4,241 (11 percent) of the 37,127 women delivering a fetal death.

Among pregnancies of fetuses with certain congenital anomalies, the risk of fetal death was high (figure 6 and table F). The risk was greatest for anencephalus, with a rate of 467.5 fetal deaths per 1,000 live births and fetal deaths with anencephalus, or almost 50 percent. The risks were also substantial for renal agenesis (244.8) and hydrocephalus (215.9). Although a very small proportion of all deliveries have specific congenital anomalies (table E), for those women carrying a fetus with a congenital anomaly, the risks of that fetus dying before birth were high. Based on data from fetal death reports and birth certificates, the greatest risk for fetal loss was for anencephaly for which just under half of anencephalic fetuses terminated as fetal deaths.

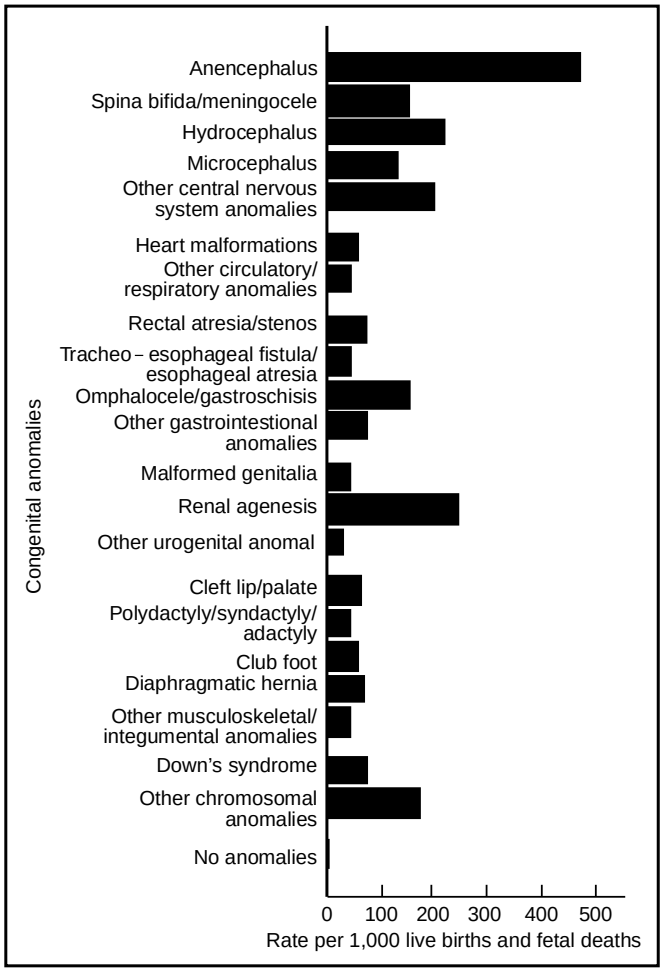


Figure 6. Fetal mortality by selected fetal anomalies: Total of 26 States, 1989–90

For women who were carrying a fetus with a congenital anomaly (table F), the risk of having a fetal loss was greater for those aged 30–49 years than for those under 30 years for 4 of the 21 specific anomalies. In the case of Down's syndrome, the mortality rate was 1.8 times greater for women aged 30–49 years than for those under 30 years. None of the other differences by age are statistically significant. However, when the number of cases is small, as it is with congenital anomalies, statistical tests may not be powerful enough to distinguish true differences.

Fetal mortality rates were greater for black than for white women for cleft lip/palate (2.0) (table F). In contrast, rates were smaller for black women for polydactyly/syndactyly/ adactyly (0.4).

Table F. Rate and confidence intervals of fetal mortality by selected congenital anomalies, age and race of mother, and ratio of fetal mortality rates: Total of 26 States, 1989–90

[Rates are number of fetal deaths with specified congenital anomaly per 1,000 live births and fetal deaths with specified congenital anomaly]

Selected congenital anomaly	Maternal age						Race				Ratio of fetal mortality rate	
	All ages		Under 30 years		30–49 years		White		Black			
	Rate	95-percent confidence interval	Rate	95-percent confidence interval	Rate	95-percent confidence interval	Rate	95-percent confidence interval	Rate	95-percent confidence interval	Older-to-younger[1]	Black-to-white
All fetal deaths	7.4	(7.4,7.5)	7.2	(7.2,7.3)	7.9	(7.8,8.1)	6.3	(6.2,6.4)	13.0	(12.9,13.4)	1.1	2.1
No anomalies	5.0	(4.9,5.1)	4.9	(4.8,5.0)	5.2	(5.2,5.4)	4.1	(4.1,4.2)	9.8	(9.7,10.1)	1.1	2.4
Anencephalus	467.5	(428.3,506.7)	484.7	(439.5,529.8)	405.5	(327.2,483.8)	480.8	(437.1,524.6)	423.1	(321.0,525.1)	0.8	0.9
Spina bifida/meningocele	155.7	(136.2,175.2)	153.6	(131.0,176.3)	161.4	(122.8,200.1)	162.9	(141.4,184.3)	*	*	1.1	*
Hydrocephalus	215.9	(194.4,237.4)	187.1	(163.6,210.6)	292.1	(244.4,339.8)	217.8	(193.7,241.9)	216.3	(165.3,267.3)	1.6	1.0
Microcephalus	132.4	(102.6,162.2)	134.8	(99.2,170.4)	126.5	(72.4,180.6)	126.1	(93.4,158.8)	*	*	0.9	*
Other central nervous system anomalies	197.6	(176.2,219.0)	184.3	(159.8,208.7)	230.6	(187.5,273.7)	193.2	(169.8,216.6)	228.3	(169.6,287.1)	1.3	1.2
Heart malformations	53.4	(47.8,59.0)	46.1	(39.8,52.3)	70.2	(58.5,81.9)	50.9	(44.8,57.1)	60.2	(45.6,74.7)	1.5	1.2
Other circulatory/respiratory anomalies	40.2	(35.7,44.6)	37.8	(32.7,42.9)	45.6	(37.0,54.2)	39.4	(34.6,44.2)	47.2	(34.0,60.4)	1.2	1.2
Rectal atresia/stenosis	71.4	(50.3,92.5)	70.1	(45.4,94.8)	74.7	(34.1,115.3)	64.3	(42.4,86.3)	*	*	1.1	*
Tracheo-esophageal fistula/ esophageal atresia	40.2	(26.3,54.1)	41.7	(24.3,59.1)	37.3	(14.2,60.4)	39.2	(24.4,54.0)	*	*	0.9	*
Omphalocele/gastroschisis	156.7	(135.9,177.4)	142.4	(120.6,164.1)	223.6	(164.5,282.7)	151.9	(129.1,174.8)	176.2	(123.6,228.9)	1.6	1.2
Other gastrointestinal anomalies	73.4	(61.6,85.1)	72.6	(58.9,86.2)	75.6	(52.5,98.8)	78.4	(64.8,92.0)	*	*	1.0	*
Malformed genitalia	36.6	(30.9,42.3)	35.2	(28.6,41.8)	40.1	(28.8,51.3)	34.1	(28.2,40.1)	51.2	(31.9,70.6)	1.1	1.5
Renal agenesis	244.8	(204.6,285.1)	243.4	(196.2,290.7)	248.4	(171.5,325.4)	250.0	(206.2,293.8)	*	*	1.0	*
Other urogenital anomalies	32.0	(27.5,36.4)	31.9	(26.6,37.1)	32.3	(23.9,40.7)	29.4	(24.9,34.0)	49.5	(32.3,66.6)	1.0	1.7
Cleft lip/palate	59.2	(52.4,66.1)	54.5	(46.7,62.3)	70.7	(56.9,84.6)	53.3	(46.3,60.2)	107.0	(75.0,138.9)	1.3	2.0
Polydactyly/syndactyly/adactyly	36.4	(31.0,41.8)	32.9	(27.0,38.8)	47.3	(34.9,59.6)	47.9	(39.7,56.1)	18.2	(12.2,24.1)	1.4	0.4
Club foot	52.1	(44.2,60.0)	51.8	(42.5,61.0)	53.0	(37.5,68.5)	48.5	(40.3,56.7)	75.6	(46.5,104.6)	1.0	1.6
Diaphragmatic hernia	65.8	(47.2,84.4)	49.1	(29.4,68.7)	99.6	(59.7,139.4)	61.8	(42.4,81.2)	*	*	2.0	*
Other musculoskeletal/integumental anomalies	35.8	(32.3,39.3)	35.6	(31.4,39.7)	36.4	(29.8,43.0)	33.4	(29.6,37.1)	47.0	(36.8,57.1)	1.0	1.4
Down's syndrome	72.7	(62.8,82.6)	52.0	(40.3,63.7)	94.5	(78.3,110.7)	69.9	(59.4,80.4)	95.7	(63.0,128.3)	1.8	1.4
Other chromosomal anomalies	165.8	(150.9,180.8)	153.5	(135.5,171.6)	187.4	(161.1,213.8)	164.3	(147.7,180.8)	162.9	(125.6,200.3)	1.2	1.0

* Figure does not meet standard of reliability or precision.

[1]Older refers to mothers 30–49 years of age. Younger refers to mothers under 30 years.

References

1. National Center for Health Statistics. Advance report of new data from the 1989 birth certificate. Monthly vital statistics report; vol 40 no 12, suppl. Hyattsville, Maryland: Public Health Service. 1992.
2. National Center for Health Statistics. Advance report of maternal and infant health data from the birth certificate, 1990. Monthly vital statistics report; vol 42 no 2, suppl. Hyattsville, Maryland: Public Health Service. 1993.
3. Hoyert DL. Perinatal mortality in the United States, 1985–91. National Center for Health Statistics. Vital Health Stat 20(26). 1995.
4. Gaudino JA, Hoyert DL, MacDorman MF, Gazmarian JA, Adams MM, and Kiely JL. Fetal deaths. In: Wilcox LS and Marks JS, eds. From Data to Action: CDC's Public Health Surveillance for Women, Infants, and Children. Atlanta: U.S. Department of Health and Human Services. 163–78. 1995.
5. Watkins ML, Edmonds L, McClearn A, Mullins L, Mulinare J, and Khoury M. The surveillance of birth defects: The usefulness of the revised U.S. Standard Birth Certificate. American Journal of Public Health 86(5): 731–4. 1996.
6. Woolbright LA, Harshbarger DS. The revised standard certificate of live birth: Analysis of medical risk factor data from birth certificates in Alabama, 1988–92. Public Health Reports 110: 59–63. 1995.
7. National Office of Vital Statistics. International Recommendations on Definitions of Live Birth and Fetal Death. Public Health Service. Washington: 1950.
8. Balamuth E. Health interview responses compared with medical records. Vital Health Stat 2(7). 1965.
9. Laurent A, Cannell CF, Marquis KH, and Survey Research Center, Institute for Social Research, The University of Michigan. Reporting health events in household interviews: Effects of an extensive questionnaire and a diary procedure. Vital Health Stat 2(49). 1972.
10. National Center for Health Statistics. Reporting chronic conditions in the National Health Interview Survey: A review of tendencies from evaluation studies and methodological test. Vital Health Stat 2(105). 1987.
11. Holmes AE, Rutenberg GW, and Larimer GC. Quality of new medical data from the revised Texas certificate of Live Birth. Proceedings of the 1991 Public Health Conference on Records and Statistics. Washington, D.C. National Center for Health Statistics, 1991.
12. Hexter AC, Harris JA, Roeper P, Croen LA, Krueger P, Gant D. Evaluation of the hospital discharge diagnoses index and the birth certificate as sources of information on birth defects. Public Health Reports 105: 296–307. 1990.
13. Piper JM, Mitchel EF Jr., Snowden M, Hall C, Adams M, and Taylor P. Validation of 1989 Tennessee birth certificates using maternal and newborn hospital records. American Journal of Epidemiology 137:758–68. 1993.
14. Buescher PA, Taylor KP, Davis MH, and Bowling M. The quality of the new birth certificate data: A validation study in North Carolina. American Journal of Public Health 83:1163–65. 1993.
15. O'Reilly MP. A birth certificate audit program in Pennsylvania. Proceedings of the 1991 Public Health Conference on Records and Statistics. Washington, D.C. National Center for Health Statistics, 1991.
16. Parrish KM, Holt VL, Connell FA, Williams B, and LoGerfo JP. Variations in the accuracy of obstetric procedures and diagnoses on birth records in Washington State, 1989. American Journal of Epidemiology 138(2): 119–27. 1993.
17. Kirby RS. Cesarean section deliveries: Improved data from the 1989 national Standard Certificates of Live Birth and Fetal Death. Proceedings of the 1991 Public Health Conference on Records and Statistics. Washington, D.C.: National Center for Health Statistics, 1991.
18. Kalter H. Five-decade international trends in the relation of perinatal mortality and congenital malformations: stillbirth and neonatal death compared. International Journal of Epidemiology 20: 173–79. 1991.
19. Alessandri LM, Stanley FJ. A case-control study of intrapartum stillbirths. British Journal of Obstetrics and Gynaecology 99:719–23. 1992.
20. Iyasu S, Saftlas AK, Rowley DL, Koonin LM, Lawson HW, Atrash HK. The epidemiology of placenta previa in the United States, 1979 through 1987. American Journal of Obstetrics and Gynecology 168: 1424–9. 1993.
21. Limb CJ, Holmes LB. Anencephaly: Changes in prenatal detection and birth status, 1972 through 1990. American Journal of Obstetrics and Gynecology 170: 1333–8. 1994.
22. Centers for Disease Control and Prevention. Down's syndrome prevalence at birth—United States, 1983–90. Morbidity and mortality weekly report 43(33): 617–22. 1994.
23. Kalucy M, Bower C, Stanley F, and Burton P. Survival of infants with neural tube defects in Western Australia 1966–90. Paediatric and Perinatal Epidemiology 8: 334–51. 1994.
24. Centers for Disease Control and Prevention. Prevention program for reducing risk for neural tube defects—South Carolina, 1992–94. Morbidity and mortality weekly reports 44(8). 1995.
25. EUROCAT Working Group. Prevalence of neural tube defects in 20 regions of Europe and the impact of prenatal diagnosis, 1980–86. Journal of Epidemiology and Community Health 45: 52–8. 1991.
26. Yen IH, Khoury MJ, Erickson D, James LM, Waters GD, and Berry RJ. The changing epidemiology of neural tube defects: United States, 1968–89. American Journal of Diseases of Childhood 146: 857–61. 1992.

27. Schulman J, Edmonds LD, McClearn AB, Jensvold N, Shaw GM. Surveillance for and comparison of birth defect prevalences in two geographic areas—United States, 1983–88. Morbidity and mortality weekly report 42(SS-1). 1993.
28. Serdula M, Williamson DF, Kendrick JS, et al. Trends in alcohol consumption by pregnant women: 1985 through 1988. Journal of the American Medical Association 265(7): 876–9. 1991.
29. National Center for Health Statistics. Health, United States, 1993. Hyattsville, MD. Public Health Service, 1994.
30. Knab DR. Abruptio placentae: An assessment of the time and method of delivery. Obstetrics and gynecology 128: 625–9. 1978.
31. Cnattingius S, Haglund B, and Meirik O. Cigarette smoking as risk factor for late fetal and early neonatal death. BMJ 297: 258–60. 1988.
32. Barros FC, Huttly SRA, Victora CG, Kirkwood BR, and Vaughan JP. Comparison of the causes and consequences of prematurity and intrauterine growth retardation: A longitudinal study in Southern Brazil. Pediatrics 90: 238–44. 1992.
33. Ferraz EM, and Gray EM. A case-control study of stillbirths in Northeast Brazil. International Journal of Gynecological Obstetrics 34: 13–9. 1990.
34. Williams MA, Lieberman E, Mittendorf R, Monson RR, and Schoenbaum SC. Risk factors for abruptio placentae. Am J Epidemiol 134: 965–72. 1991.
35. Chandra A. Health aspects of pregnancy and childbirth: United States, 1982–88. National Center for Health Statistics. Vital Health Stat 23(18). 1995.
36. American Medical Association. Fetal effects of maternal alcohol use. JAMA 249(18): 2517–21. 1983.
37. Centers for Disease Control. Fetal alcohol syndrome—United States, 1979–92. Morbidity and mortality weekly report 42(17). 1993.
38. National Center for Health Statistics. Advance report of final mortality statistics, 1991. Monthly vital statistics report; vol 42 no 2, suppl. Hyattsville, Maryland: Public Health Service. 1993.
39. National Center for Health Statistics. Model State Vital Statistics Act and Model State Vital Statistics Regulations. Washington: Public Health Service. 1978.
40. National Center for Health Statistics. Vital statistics of the United States, 1989, vol II, mortality, part A. Washington: Public Health Service. 1993.
41. Hoyert DL. Effect on mortality rates of the 1989 change in tabulating race. National Center for Health Statistics. Vital Health Stat 20(25). 1994.
42. Brockert JE, Stockbauer JW, Senner JW, et al. Recommended standard medical definitions for the U.S. Standard Certificate of Live Birth, 1989 revision. Paper presented at Annual Meeting of the Association for Vital Records and Health Statistics. 1990.
43. Greb AE, Pauli RM, Kirby RS. Accuracy of fetal death reports: Comparison with data from an independent stillbirth assessment program. Am J Public Health 77:9, 1202–6. 1987.

List of detailed tables

Table 1. Number and rate of deliveries by race of mother, selected medical risk factors, whether risk factor was reported, and age of mother: Total of 28 States, 1989–90

Race of mother and selected medical risk factor	All live births and deaths[1]	Risk factor reported	Age of mother			Risk factor not stated
			All ages	Under 30 years	30–49 years	
All races[3]	Number		Rate[2]			Number
Anemia	4,931,210	76,518	15.5	17.1	11.7	58,875
Cardiac disease	4,931,210	14,148	2.9	2.5	3.8	58,875
Acute or chronic lung disease	4,931,210	13,434	2.7	2.7	2.9	58,875
Diabetes	4,931,210	94,661	19.2	14.2	31.5	58,875
Genital herpes	4,931,210	38,054	7.7	6.9	9.8	63,872
Hydramnios/Oligohydramnios	4,931,210	27,496	5.6	5.4	6.0	60,400
Hemoglobinopathy	4,931,210	2,085	0.4	0.4	0.4	60,400
Hypertension, chronic	4,931,210	31,390	6.4	4.5	11.0	58,875
Hypertension, pregnancy-associated	4,931,210	129,509	26.3	26.4	25.9	58,875
Eclampsia	4,931,210	20,053	4.1	4.3	3.6	58,875
Incompetent cervix	4,931,210	16,633	3.4	2.8	4.7	60,400
Previous infant 4,000 grams or more	4,931,210	55,588	11.3	8.4	18.4	60,400
Previous preterm or small-for-gestational-age infant	4,931,210	68,716	13.9	12.5	17.4	60,400
Renal disease	4,931,210	13,007	2.6	2.9	2.1	58,875
Rh sensitization	4,852,999	31,084	6.4	6.2	7.0	60,351
Uterine bleeding	4,931,210	41,440	8.4	7.8	9.9	62,347
White						
Anemia	3,914,823	48,928	12.5	13.5	10.2	43,419
Cardiac disease	3,914,823	11,771	3.0	2.6	3.9	43,419
Acute or chronic lung disease	3,914,823	9,991	2.6	2.4	2.8	43,419
Diabetes	3,914,823	76,561	19.6	14.8	30.4	43,419
Genital herpes	3,914,823	31,196	8.0	6.8	10.8	47,833
Hydramnios/Oligohydramnios	3,914,823	21,368	5.5	5.3	5.9	44,900
Hemoglobinopathy	3,914,823	838	0.2	0.2	0.2	44,900
Hypertension, chronic	3,914,823	21,764	5.6	4.1	9.0	43,419
Hypertension, pregnancy-associated	3,914,823	103,721	26.5	26.9	25.6	43,419
Eclampsia	3,914,823	14,382	3.7	3.8	3.3	43,419
Incompetent cervix	3,914,823	13,340	3.4	2.9	4.6	44,900
Previous infant 4,000 grams or more	3,914,823	50,402	12.9	9.7	20.3	44,900
Previous preterm or small-for-gestational-age infant	3,914,823	52,075	13.3	11.8	16.8	44,900
Renal disease	3,914,823	10,516	2.7	2.9	2.1	43,419
Rh sensitization	3,845,205	28,261	7.3	7.1	7.9	44,744
Uterine bleeding	3,914,823	34,354	8.8	8.1	10.3	46,352
Black						
Anemia	816,370	24,551	30.1	31.5	24.0	14,049
Cardiac disease	816,370	2,033	2.5	2.3	3.4	14,049
Acute or chronic lung disease	816,370	3,052	3.7	3.7	4.0	14,049
Diabetes	816,370	13,056	16.0	11.3	36.0	14,049
Genital herpes	816,370	6,214	7.6	8.0	6.0	14,572
Hydramnios/Oligohydramnios	816,370	5,173	6.3	6.0	7.6	14,084
Hemoglobinopathy	816,370	1,088	1.3	1.3	1.3	14,084
Hypertension, chronic	816,370	8,712	10.7	6.6	28.1	14,049
Hypertension, pregnancy-associated	816,370	22,077	27.0	25.8	32.2	14,049
Eclampsia	816,370	5,193	6.4	6.3	6.4	14,049
Incompetent cervix	816,370	2,760	3.4	2.8	5.8	14,084
Previous infant 4,000 grams or more	816,370	3,757	4.6	3.6	8.8	14,084
Previous preterm or small-for-gestational-age infant	816,370	14,080	17.2	15.8	23.5	14,084
Renal disease	816,370	2,056	2.5	2.6	2.2	14,049
Rh sensitization	809,712	2,412	3.0	3.0	3.1	14,215
Uterine bleeding	816,370	5,911	7.2	6.9	8.6	14,537

[1]Total number of births and fetal deaths to residents of areas that report specified medical risk factor.

[2]Rates are number of deliveries with specified medical risk factor per 1,000 live births and fetal deaths to mothers of specified age.

[3]Includes races other than white and black.

NOTE: Table excludes data for Tennessee for all items and Kansas for Rh sensitization.

Table 2. Number of fetal deaths and fetal mortality rate by race of mother, selected medical risk factors, whether medical risk factor was reported, and age of mother: Total of 28 States, 1989–90

Race of mother and selected medical risk factor	Medical risk reported in delivery[1]	Medical risk reported in fetal death	Age of mother			Specific risk not present	Risk not stated
			All ages	Under 30 years	30–49 years		
All races[2]	Number		Rate[3]			Number	
All fetal deaths	. . .	. . .	7.4	7.3	7.9	. . .	. . .
No medical risks	–	–	5.0	4.9	5.2	. . .	. . .
Anemia	76,518	1,130	14.8	14.0	17.6	6.7	3,372
Cardiac disease	14,148	123	8.7	9.2	7.8	6.8	3,372
Acute or chronic lung disease	13,434	206	15.3	13.2	20.2	6.8	3,372
Diabetes	94,661	935	9.9	9.7	10.0	6.8	3,372
Genital herpes	38,054	202	5.3	5.5	5.0	6.9	3,402
Hydramnios/Oligohydramnios	27,496	1,333	48.5	47.9	49.8	6.6	3,391
Hemoglobinopathy	2,085	101	48.4	44.8	58.3	6.8	3,391
Hypertension, chronic	31,390	803	25.6	22.4	28.9	6.7	3,372
Hypertension, pregnancy-associated	129,509	1,450	11.2	10.4	13.3	6.7	3,372
Eclampsia	20,053	230	11.5	10.5	14.4	6.8	3,372
Incompetent cervix	16,633	766	46.1	50.9	38.9	6.7	3,391
Previous infant 4,000 grams or more	55,588	340	6.1	5.6	6.7	6.9	3,391
Previous preterm or small-for-gestational-age infant	68,716	1,128	16.4	16.0	17.2	6.7	3,391
Renal disease	13,007	227	17.5	16.2	21.8	6.8	3,372
Rh sensitization	31,084	195	6.3	5.9	7.0	6.9	3,278
Uterine bleeding	41,440	1,583	38.2	41.2	32.3	6.6	3,383
White							
All fetal deaths	. . .	. . .	6.3	6.1	6.9	. . .	. . .
No medical risks	–	–	4.3	4.2	4.6	. . .	. . .
Anemia	48,928	518	10.6	10.1	12.2	5.8	2,209
Cardiac disease	11,771	80	6.8	6.9	6.7	5.8	2,209
Acute or chronic lung disease	9,991	151	15.1	12.9	19.6	5.8	2,209
Diabetes	76,561	640	8.4	8.3	8.5	5.8	2,209
Genital herpes	31,196	138	4.4	4.6	4.2	5.9	2,234
Hydramnios/Oligohydramnios	21,368	1,055	49.4	48.2	51.7	5.6	2,226
Hemoglobinopathy	838	66	78.8	78.0	80.1	5.8	2,226
Hypertension, chronic	21,764	428	19.7	17.7	21.8	5.8	2,209
Hypertension, pregnancy-associated	103,721	920	8.9	8.3	10.2	5.8	2,209
Eclampsia	14,382	136	9.5	9.1	10.5	5.8	2,209
Incompetent cervix	13,340	482	36.1	39.1	31.9	5.7	2,226
Previous infant 4,000 grams or more	50,402	266	5.3	4.8	5.8	5.8	2,226
Previous preterm or small-for-gestational-age infant	52,075	716	13.7	13.2	14.7	5.7	2,226
Renal disease	10,516	149	14.2	13.5	16.5	5.8	2,209
Rh sensitization	28,261	169	6.0	5.7	6.7	5.9	2,123
Uterine bleeding	34,354	1,095	31.9	33.7	28.5	5.6	2,217
Black							
All fetal deaths	. . .	. . .	13.2	12.4	16.6	. . .	. . .
No medical risks	–	–	8.7	8.4	10.3	. . .	. . .
Anemia	24,551	589	24.0	21.7	36.9	11.7	1,044
Cardiac disease	2,033	38	18.7	19.2	*	12.1	1,044
Acute or chronic lung disease	3,052	50	16.4	14.4	*	12.1	1,044
Diabetes	13,056	256	19.6	18.3	21.4	12.0	1,044
Genital herpes	6,214	60	9.7	8.9	*	12.1	1,049
Hydramnios/Oligohydramnios	5,173	241	46.6	46.9	45.5	11.9	1,046
Hemoglobinopathy	1,088	35	32.2	28.4	*	12.1	1,046
Hypertension, chronic	8,712	353	40.5	34.4	46.6	11.8	1,044
Hypertension, pregnancy-associated	22,077	485	22.0	19.1	31.7	11.8	1,044
Eclampsia	5,193	91	17.5	14.6	29.9	12.1	1,044
Incompetent cervix	2,760	270	97.8	102.7	87.7	11.8	1,046
Previous infant 4,000 grams or more	3,757	51	13.6	11.7	16.8	12.1	1,046
Previous preterm or small-for-gestational-age infant	14,080	381	27.1	25.2	32.2	11.8	1,046
Renal disease	2,056	69	33.6	29.1	*	12.1	1,044
Rh sensitization	2,412	24	10.0	*	*	12.1	1,036
Uterine bleeding	5,911	451	76.3	78.3	69.4	11.6	1,047

. . . Category not applicable. – Quantity zero. * Figure does not meet standard of reliability or precision.

[1]Total number of births and fetal deaths with medical risk to residents of areas reporting specified medical risk factor.

[2]Includes races other than white and black.

[3]Rates are number of fetal deaths with specified medical risk factor per 1,000 live births and fetal deaths with specified medical risk factor.

NOTE: Table excludes data for Tennessee for all items and Kansas for Rh sensitization

Table 3. Number and percent distribution of deliveries by race and smoking status of mother, according to age of mother: Total of 25 States, 1989–90

Race and smoking status of mother	Age of mother		
	All ages	Under 30 years	30–49 years
All races[1]		Number[2]	
Total	3,651,470	2,638,477	1,012,993
Smoker	735,843	574,309	161,569
Nonsmoker	2,915,627	2,064,168	851,424
White	2,841,644	1,990,111	851,533
Smoker	604,296	475,601	128,743
Nonsmoker	2,237,348	1,514,510	722,790
Black	732,545	597,367	135,178
Smoker	123,461	92,329	31,147
Nonsmoker	609,084	505,038	104,031
All races			
Smoker	735,843	574,309	161,569
1–5 cigarettes	142,994	114,028	28,970
6–10 cigarettes	279,997	225,106	54,893
11 cigarettes or more	312,852	235,175	77,706
White			
Smoker	604,296	475,601	128,743
1–5 cigarettes	100,985	80,715	20,275
6–10 cigarettes	223,391	182,168	41,222
11 cigarettes or more	279,920	212,718	67,246
Black			
Smoker	123,461	92,329	31,147
1–5 cigarettes	39,702	31,484	8,230
6–10 cigarettes	53,531	40,437	13,101
11 cigarettes or more	30,228	20,408	9,816
All races[1]		Percent distribution[3]	
Total	100.0	100.0	100.0
Smoker	20.2	21.8	15.9
Nonsmoker	79.8	78.2	84.1
White	100.0	100.0	100.0
Smoker	21.3	23.9	15.1
Nonsmoker	78.7	76.1	84.9
Black	100.0	100.0	100.0
Smoker	16.9	15.5	23.0
Nonsmoker	83.1	84.5	77.0
All races			
Smoker	100.0	100.0	100.0
1–5 cigarettes	19.4	19.9	17.9
6–10 cigarettes	38.1	39.2	34.0
11 cigarettes or more	42.5	40.9	48.1
White			
Smoker	100.0	100.0	100.0
1–5 cigarettes	16.7	17.0	15.7
6–10 cigarettes	37.0	38.3	32.0
11 cigarettes or more	46.3	44.7	52.2
Black			
Smoker	100.0	100.0	100.0
1–5 cigarettes	32.2	34.1	26.4
6–10 cigarettes	43.4	43.8	42.1
11 cigarettes or more	24.5	22.1	31.5

[1]Includes races other than white and black.

[2]Not stated tobacco use is distributed.

[3]Percents are number of fetal deaths and live births with specified smoking status per 100 live births and fetal deaths.

NOTE: Table excludes data for California, Indiana, South Dakota, and West Virginia.

Table 4. Number of fetal deaths and fetal mortality rate by race, smoking status, and age of mother: Total of 25 States,1989–90

Race and smoking status of mother	*Age of mother*		
	All ages	*Under 30 years*	*30–49 years*
All races[1]		Number	
Total	27,985	19,751	8,234
Smoker	7,118	5,234	1,883
Nonsmoker	20,867	14,517	6,351
White	17,913	12,109	5,804
Smoker	4,979	3,736	1,239
Nonsmoker	12,934	8,373	4,565
Black	9,599	7,335	2,264
Smoker	2,072	1,444	628
Nonsmoker	7,527	5,891	1,636
All races			
Smoker	7,118	5,234	1,883
1–5 cigarettes	1,347	995	352
6–10 cigarettes	2,674	2,066	604
11 cigarettes or more	3,097	2,174	926
White			
Smoker	4,979	3,736	1,239
1–5 cigarettes	736	547	189
6–10 cigarettes	1,762	1,403	354
11 cigarettes or more	2,481	1,786	696
Black			
Smoker	2,072	1,444	628
1–5 cigarettes	605	441	163
6–10 cigarettes	892	645	246
11 cigarettes or more	576	359	218
All races[1]		Rate[2]	
Total	7.7	7.5	8.1
Smoker	9.7	9.1	11.7
Nonsmoker	7.2	7.0	7.5
White	6.3	6.1	6.8
Smoker	8.2	7.9	9.6
Nonsmoker	5.8	5.5	6.3
Black	13.1	12.3	16.7
Smoker	16.8	15.6	20.2
Nonsmoker	12.4	11.7	15.7
All races			
Smoker	9.7	9.1	11.7
1–5 cigarettes	9.4	8.7	12.2
6–10 cigarettes	9.5	9.2	11.0
11 cigarettes or more	9.9	9.2	11.9
White			
Smoker	8.2	7.9	9.6
1–5 cigarettes	7.3	6.8	9.3
6–10 cigarettes	7.9	7.7	8.6
11 cigarettes or more	8.9	8.4	10.4
Black			
Smoker	16.8	15.6	20.2
1–5 cigarettes	15.2	14.0	19.8
6–10 cigarettes	16.7	15.9	18.8
11 cigarettes or more	19.0	17.6	22.2

[1]Includes races other than white and black.

[2]Rates are number of fetal deaths with specified tobacco use per 1,000 live births and fetal deaths with specified tobacco use.

NOTE: Table excludes data for California, Indiana, South Dakota, and West Virginia.

Table 5. Number and percent distribution of deliveries by race and alcohol use of mother, according to age of mother: Total of 26 States, 1989–90

Race and alcohol use of mother	Age of mother		
	All ages	Under 30 years	30–49 years
All races[1]		Number	
Total	3,850,653	2,792,053	1,058,600
Drinker	131,716	84,428	47,287
Nondrinker	3,718,937	2,707,625	1,011,313
White	3,018,619	2,125,550	893,069
Drinker	99,947	61,751	38,194
Nondrinker	2,918,672	2,063,799	854,875
Black	752,887	614,340	138,547
Drinker	29,738	21,229	8,517
Nondrinker	723,149	593,111	130,030
All races			
Drinker	131,716	84,428	47,287
1 drink	80,192	51,204	28,973
2–4 drinks	36,511	23,392	13,119
5 or more drinks	15,012	9,832	5,196
White			
Drinker	99,947	61,751	38,194
1 drink	66,687	41,426	25,281
2–4 drinks	24,910	15,056	9,824
5 or more drinks	8,349	5,268	3,089
Black			
Drinker	29,738	21,229	8,517
1 drink	12,396	9,088	3,317
2–4 drinks	11,030	7,878	3,155
5 or more drinks	6,312	4,263	2,045
All races[1]		Percent distribution[2]	
Total	100.0	100.0	100.0
Drinker	3.4	3.0	4.5
Nondrinker	96.6	97.0	95.5
White	100.0	100.0	100.0
Drinker	3.3	2.9	4.3
Nondrinker	96.7	97.1	95.7
Black	100.0	100.0	100.0
Drinker	3.9	3.5	6.1
Nondrinker	96.1	96.5	93.9
All races			
Drinker	100.0	100.0	100.0
1 drink	60.9	60.6	61.3
2–4 drinks	27.7	27.7	27.7
5 or more drinks	11.4	11.6	11.0
White			
Drinker	100.0	100.0	100.0
1 drink	66.7	67.1	66.2
2–4 drinks	24.9	24.4	25.7
5 or more drinks	8.4	8.5	8.1
Black			
Drinker	100.0	100.0	100.0
1 drink	41.7	42.8	38.9
2–4 drinks	37.1	37.1	37.0
5 or more drinks	21.2	20.1	24.0

[1]Includes races other than white and black.

[2]Percents are number of fetal deaths and live births with specified alcohol status per 100 live births and fetal deaths.

NOTE: Table excludes data for California, South Dakota, and Vermont.

Table 6. Number of fetal deaths and fetal mortality rate by race, alcohol use, and age of mother: Total of 26 States, 1989–90

Race and alcohol use of mother	Age of mother		
	All ages	Under 30 years	30–49 years
All races[1]		Number	
Total	29,504	20,913	8,591
Drinker	1,754	1,175	579
Nondrinker	27,750	19,738	8,012
White	19,191	13,074	6,117
Drinker	883	583	300
Nondrinker	18,308	12,491	5,817
Black	9,835	7,531	2,304
Drinker	847	578	269
Nondrinker	8,988	6,953	2,035
All races			
Drinker	1,754	1,175	579
1 drink	661	439	222
2–4 drinks	581	388	194
5 or more drinks	511	348	164
White			
Drinker	883	583	300
1 drink	383	252	131
2–4 drinks	280	173	107
5 or more drinks	221	158	63
Black			
Drinker	847	578	269
1 drink	272	187	85
2–4 drinks	292	205	87
5 or more drinks	283	187	96
All races[1]		Rate[2]	
Total	7.7	7.5	8.1
Drinker	13.3	13.9	12.2
Nondrinker	7.5	7.3	7.9
White	6.4	6.2	6.8
Drinker	8.8	9.4	7.9
Nondrinker	6.3	6.1	6.8
Black	13.1	12.3	16.6
Drinker	28.5	27.2	31.6
Nondrinker	12.4	11.7	15.7
All races			
Drinker	13.3	13.9	12.2
1 drink	8.2	8.6	7.7
2–4 drinks	15.9	16.6	14.8
5 or more drinks	34.1	35.4	31.5
White			
Drinker	8.8	9.4	7.9
1 drink	5.7	6.1	5.2
2–4 drinks	11.2	11.5	10.9
5 or more drinks	26.4	30.0	20.4
Black			
Drinker	28.5	27.2	31.6
1 drink	21.9	20.5	25.7
2–4 drinks	26.5	26.0	27.7
5 or more drinks	44.8	43.8	47.1

[1]Includes races other than white and black.

[2]Rates are number of fetal deaths with specified alcohol use per 1,000 live births and fetal deaths with specified alcohol use.

NOTE: Table excludes data for California, South Dakota, and Vermont.

Table 7. Number and rate of deliveries by race of mother, selected medical complications, whether complications were reported, and age of mother: Total of 29 States, 1989–90

Race of mother and selected complication	All live births and fetal deaths[1]	Complication reported[2]	Age of mother			Complication not stated
			All ages	Under 30 years	30–49 years	
All races[4]	Number		Rate[3]			Number
Febrile	5,080,220	53,567	10.5	11.1	9.2	53,104
Meconium, moderate/heavy	5,080,220	291,620	57.4	58.2	55.4	53,447
Premature rupture of membrane	5,080,220	160,689	31.6	31.0	33.1	53,104
Abruptio placenta	5,080,220	34,528	6.8	6.6	7.4	53,104
Placenta previa	5,080,220	17,601	3.5	2.6	5.6	53,104
Other excessive bleeding	5,080,220	26,411	5.2	5.0	5.6	53,104
Seizures during labor	5,080,220	2,231	0.4	0.5	0.3	53,104
Precipitous labor	5,080,220	94,369	18.6	17.4	21.5	53,104
Prolonged labor	5,080,220	53,332	10.5	10.9	9.6	53,104
Dysfunctional labor	5,080,220	119,987	23.6	23.7	23.3	53,104
Breech/malpresentation	5,002,009	193,318	38.6	35.9	45.6	52,368
Cephalopelvic disproportion	5,080,220	190,190	37.4	38.1	35.7	58,252
Cord prolapse	4,871,814	12,908	2.6	2.5	3.0	53,972
Anesthetic complication	5,080,220	2,663	0.5	0.5	0.6	56,740
Fetal distress	5,080,220	222,095	43.7	44.1	42.7	57,083
White						
Febrile	4,027,111	38,771	9.6	10.0	8.7	40,375
Meconium, moderate/heavy	4,027,111	211,262	52.5	52.8	51.8	40,677
Premature rupture of membrane	4,027,111	122,377	30.4	29.6	32.1	40,375
Abruptio placenta	4,027,111	26,076	6.5	6.2	7.0	40,375
Placenta previa	4,027,111	13,678	3.4	2.6	5.3	40,375
Other excessive bleeding	4,027,111	21,422	5.3	5.3	5.5	40,375
Seizures during labor	4,027,111	1,591	0.4	0.4	0.3	40,375
Precipitous labor	4,027,111	71,328	17.7	16.2	21.2	40,375
Prolonged labor	4,027,111	44,033	10.9	11.4	9.8	40,375
Dysfunctional labor	4,027,111	98,663	24.5	24.8	23.8	40,375
Breech/malpresentation	3,957,493	161,075	40.7	38.2	46.5	39,702
Cephalopelvic disproportion	4,027,111	156,974	39.0	40.1	36.3	44,900
Cord prolapse	3,885,390	10,132	2.6	2.5	2.9	41,207
Anesthetic complication	4,027,111	2,195	0.5	0.5	0.6	43,431
Fetal distress	4,027,111	168,355	41.8	42.5	40.3	43,733
Black						
Febrile	851,678	12,590	14.8	15.2	13.0	11,424
Meconium, moderate/heavy	851,678	70,657	83.0	82.0	87.2	11,438
Premature rupture of membrane	851,678	32,984	38.7	37.4	44.3	11,424
Abruptio placenta	851,678	7,410	8.7	8.3	10.6	11,424
Placenta previa	851,678	3,037	3.6	2.8	6.9	11,424
Other excessive bleeding	851,678	3,210	3.8	3.5	4.7	11,424
Seizures during labor	851,678	533	0.6	0.7	0.4	11,424
Precipitous labor	851,678	18,782	22.1	21.7	23.7	11,424
Prolonged labor	851,678	6,795	8.0	8.2	7.2	11,424
Dysfunctional labor	851,678	17,108	20.1	19.9	20.8	11,424
Breech/malpresentation	845,020	25,335	30.0	27.1	42.1	11,402
Cephalopelvic disproportion	851,678	25,608	30.1	30.5	28.2	11,987
Cord prolapse	790,149	2,342	3.0	2.7	3.9	11,457
Anesthetic complication	851,678	355	0.4	0.4	0.6	11,951
Fetal distress	851,678	46,081	54.1	52.2	62.2	11,965

[1]Total number of deliveries to residents of areas reporting selected complications of labor and/or delivery.

[2]Total number of deliveries with selected complications reported for residents of areas reporting selected complications of labor and/or delivery.

[3]Rates are number of deliveries with specified complication per 1,000 live births and fetal deaths to mothers of specified age.

[4]Includes races other than white and black.

NOTE: Table excludes data for North Carolina for cord prolapse and Kansas for breech/malpresentation.

Table 8. Number of fetal deaths and fetal mortality rate by race of mother, selected medical complications of labor and/or delivery, whether complication was reported, and age of mother: Total of 29 States, 1989–90

Race of mother and selected complication	Complication reported in delivery	Complication reported in fetal death	Age of mother			Specific complication not present	Complication not stated in fetal death
			All ages	Under 30 years	30–49 years		
All races[2]	Number		Rate[1]			Number	
All fetal deaths	. . .	. . .	7.4	7.2	7.9	. . .	. . .
No complications	–	–	4.5	4.3	4.7	. . .	. . .
Febrile	53,567	1,519	28.4	25.3	37.5	6.5	3,681
Meconium, moderate/heavy	291,620	2,020	6.9	6.6	7.9	6.7	3,681
Premature rupture of membrane	160,689	2,818	17.5	17.0	18.9	6.4	3,681
Abruptio placenta	34,528	3,345	96.9	102.0	85.5	6.1	3,681
Placenta previa	17,601	376	21.4	27.8	13.8	6.7	3,681
Other excessive bleeding	26,411	619	23.4	24.5	21.0	6.7	3,681
Seizures during labor	2,231	53	23.8	16.1	50.6	6.7	3,681
Precipitous labor	94,369	532	5.6	5.8	5.2	6.8	3,681
Prolonged labor	53,332	234	4.4	3.6	6.5	6.8	3,681
Dysfunctional labor	119,987	224	1.9	1.8	2.0	6.9	3,681
Breech/malpresentation	193,318	4,074	21.1	22.2	18.9	6.2	3,574
Cephalopelvic disproportion	190,190	230	1.2	1.0	1.9	7.0	3,712
Cord prolapse	12,908	751	58.2	57.6	59.3	6.5	3,624
Anesthetic complication	2,663	26	9.8	10.0	9.3	6.7	3,697
Fetal distress	222,095	1,060	4.8	4.6	5.3	6.8	3,697
White							
All fetal deaths	. . .	. . .	6.3	6.1	6.9	. . .	. . .
No complications	–	–	3.8	3.6	4.2	. . .	. . .
Febrile	38,771	951	24.5	22.0	31.4	5.6	2,478
Meconium, moderate/heavy	211,262	1,498	7.1	6.8	7.7	5.7	2,478
Premature rupture of membrane	122,377	1,632	13.3	12.7	14.7	5.5	2,478
Abruptio placenta	26,076	2,159	82.8	87.8	72.4	5.2	2,478
Placenta previa	13,678	243	17.8	22.8	11.9	5.7	2,478
Other excessive bleeding	21,422	423	19.7	19.9	19.5	5.7	2,478
Seizures during labor	1,591	40	25.1	17.4	49.7	5.7	2,478
Precipitous labor	71,328	342	4.8	5.2	4.0	5.8	2,478
Prolonged labor	44,033	179	4.1	3.3	6.1	5.8	2,478
Dysfunctional labor	98,663	173	1.8	1.8	1.6	5.9	2,478
Breech/malpresentation	161,075	2,765	17.2	17.5	16.5	5.3	2,387
Cephalopelvic disproportion	156,974	181	1.2	0.9	1.7	5.9	2,504
Cord prolapse	10,132	513	50.6	49.7	52.4	5.6	2,442
Anesthetic complication	2,195	15	6.8	7.4	5.6	5.8	2,489
Fetal distress	168,355	730	4.3	4.3	4.5	5.8	2,489
Black							
All fetal deaths	. . .	. . .	13.0	12.2	16.4	. . .	. . .
No complications	–	–	7.9	7.5	9.7	. . .	. . .
Febrile	12,590	536	42.6	36.1	74.6	11.4	1,061
Meconium, moderate/heavy	70,657	471	6.7	6.0	9.3	12.4	1,061
Premature rupture of membrane	32,984	1,136	34.4	31.8	43.9	11.0	1,061
Abruptio placenta	7,410	1,110	149.8	147.5	157.3	10.7	1,061
Placenta previa	3,037	121	39.8	48.9	24.2	11.8	1,061
Other excessive bleeding	3,210	180	56.1	58.9	47.1	11.7	1,061
Seizures during labor	533	11	20.6	13.0	69.4	11.9	1,061
Precipitous labor	18,782	174	9.3	8.0	14.3	11.9	1,061
Prolonged labor	6,795	51	7.5	6.4	12.8	11.9	1,061
Dysfunctional labor	17,108	43	2.5	1.7	5.6	12.1	1,061
Breech/malpresentation	25,335	1,174	46.3	48.3	41.0	10.8	1,046
Cephalopelvic disproportion	25,608	33	1.3	1.0	2.6	12.2	1,066
Cord prolapse	2,342	216	92.2	91.3	95.1	11.5	1,041
Anesthetic complication	355	9	25.4	27.1	20.6	11.9	1,066
Fetal distress	46,081	289	6.3	5.6	8.5	12.2	1,066

. . . Category not applicable.

– Quantity zero.

[1]Rates are number of fetal deaths with specified complication per 1,000 live births and fetal deaths with specified complication.

[2]Includes races other than white and black.

NOTE: Table exludes data for North Carolina for cord prolapse and data for Kansas for breech/malpresentation.

Table 9. Number and rate of deliveries by race of mother, selected congenital anomalies of child, whether anomalies were reported, and age of mother: Total of 26 States, 1989–90

Race of mother and congenital anomaly of infant	All live births and fetal deaths[1]	Congenital anomaly reported	Age of mother			Not stated
			All ages	Under 30 years	30–49 years	
All races[2]	Number		Rate[3]			Number
Anencephalus	4,986,141	1,168	23.4	25.7	17.8	65,025
Spina bifida/meningocele	4,986,141	1,567	31.4	32.4	29.1	65,025
Hydrocephalus	4,986,141	1,797	36.0	36.6	34.5	65,025
Microcephalus	4,986,141	574	11.5	11.5	11.6	65,025
Other central nervous system anomalies	4,986,141	1,660	33.3	33.2	33.4	65,025
Heart malformations	4,986,141	6,501	130.4	127.4	137.8	65,025
Other circulatory/respiratory anomalies	4,986,141	7,919	158.8	155.4	167.4	65,025
Rectal atresia/stenosis	4,986,141	616	12.4	12.4	12.2	65,025
Tracheo-esophageal fistula/esophageal atresia	4,986,141	796	16.0	14.8	18.8	65,025
Omphalocele/gastroschisis	4,986,141	1,398	28.0	32.4	17.2	65,025
Other gastrointestinal anomalies	4,986,141	2,044	41.0	42.2	38.0	65,025
Malformed genitalia	4,986,141	4,319	86.6	87.0	85.7	65,025
Renal agenesis	4,986,141	580	11.6	11.8	11.3	65,025
Other urogenital anomalies	4,986,141	6,190	124.1	124.3	123.7	65,025
Cleft lip/palate	4,986,141	4,863	97.5	96.9	99.1	65,025
Polydactyly/syndactyly/adactyly	4,986,141	4,863	97.5	103.3	83.0	65,025
Club foot	4,986,141	3,187	63.9	65.7	59.5	65,025
Diaphragmatic hernia	4,986,141	730	14.6	13.7	16.9	65,025
Other musculoskeletal/integumental anomalies	4,986,141	11,256	225.7	225.2	227.1	65,025
Down's syndrome	4,986,141	2,848	57.1	41.1	97.1	65,025
Other chromosomal anomalies	4,986,141	2,852	57.2	51.1	72.5	65,025
White						
Anencephalus	3,946,684	965	24.5	27.1	18.3	46,781
Spina bifida/meningocele	3,946,684	1,357	34.4	35.9	30.9	46,781
Hydrocephalus	3,946,684	1,437	36.4	37.8	33.3	46,781
Microcephalus	3,946,684	452	11.5	11.1	12.4	46,781
Other central nervous system anomalies	3,946,684	1,351	34.2	34.2	34.4	46,781
Heart malformations	3,946,684	5,203	131.8	128.6	139.3	46,781
Other circulatory/respiratory anomalies	3,946,684	6,602	167.3	165.7	170.9	46,781
Rectal atresia/stenosis	3,946,684	513	13.0	13.4	12.0	46,781
Tracheo-esophageal fistula/esophageal atresia	3,946,684	688	17.4	16.3	20.1	46,781
Omphalocele/gastroschisis	3,946,684	1,119	28.4	33.3	16.9	46,781
Other gastrointestinal anomalies	3,946,684	1,632	41.4	42.8	38.0	46,781
Malformed genitalia	3,946,684	3,691	93.5	94.5	91.3	46,781
Renal agenesis	3,946,684	500	12.7	13.2	11.5	46,781
Other urogenital anomalies	3,946,684	5,433	137.7	138.8	135.0	46,781
Cleft lip/palate	3,946,684	4,244	107.5	108.8	104.7	46,781
Polydactyly/syndactyly/adactyly	3,946,684	2,755	69.8	72.1	64.5	46,781
Club foot	3,946,684	2,785	70.6	73.1	64.6	46,781
Diaphragmatic hernia	3,946,684	631	16.0	15.3	17.5	46,781
Other musculoskeletal/Integumental anomalies	3,946,684	9,143	231.7	231.1	232.9	46,781
Down's syndrome	3,946,684	2,432	61.6	44.3	101.9	46,781
Other chromosomal anomalies	3,946,684	2,307	58.5	52.5	72.2	46,781
Black						
Anencephalus	850,411	156	18.3	18.7	16.7	16,607
Spina bifida/meningocele	850,411	178	20.9	20.6	22.2	16,607
Hydrocephalus	850,411	319	37.5	34.6	50.1	16,607
Microcephalus	850,411	102	12.0	13.2	6.8	16,607
Other central nervous system anomalies	850,411	254	29.9	30.1	29.0	16,607
Heart malformations	850,411	1,097	129.0	126.3	140.3	16,607
Other circulatory/respiratory anomalies	850,411	1,038	122.1	115.5	150.2	16,607
Rectal atresia/stenosis	850,411	82	9.6	9.1	11.7	16,607
Tracheo-esophageal fistula/esophageal atresia	850,411	82	9.6	8.9	13.0	16,607
Omphalocele/Gastroschisis	850,411	244	28.7	30.5	21.0	16,607
Other gastrointestinal anomalies	850,411	358	42.1	42.0	42.6	16,607
Malformed genitalia	850,411	527	62.0	63.3	56.2	16,607
Renal agenesis	850,411	70	8.2	7.8	9.9	16,607

See footnotes at end of table.

Table 9. Number and rate of deliveries by race of mother, selected congenital anomalies of child, whether anomalies were reported, and age of mother: Total of 26 States, 1989–90—Con.

Race of mother and congenital anomaly of infant	*All live births and fetal deaths*[1]	*Congenital anomaly reported*	*Age of mother*			
			All ages	*Under 30 years*	*30–49 years*	*Not stated*
Black—Con.	Number		Rate[3]			Number
Other urogenital anomalies	850,411	647	76.1	76.5	74.2	16,607
Cleft lip/palate	850,411	402	47.3	46.8	49.4	16,607
Polydactyly/syndactyly/adactyly	850,411	1,980	232.8	233.8	228.7	16,607
Club foot	850,411	344	40.5	40.8	38.9	16,607
Diaphragmatic hernia	850,411	78	9.2	7.7	15.5	16,607
Other musculoskeletal/Integumental anomalies	850,411	1,746	205.3	205.3	205.2	16,607
Down's syndrome	850,411	345	40.6	30.5	83.4	16,607
Other chromosomal anomalies	850,411	448	52.7	47.6	74.2	16,607

[1]Total number of births and fetal deaths to residents of areas reporting selected congenital anomalies.

[2]Includes races other than white and black.

[3]Rates are number of deliveries with specified congenital anomaly per 100,000 live births and fetal deaths to mothers of specified age.

NOTE: Table excludes data for New Mexico, South Dakota, and Vermont.

Table 10. Number of fetal deaths and fetal mortality rate by race of mother, selected congenital anomalies of child, whether anomalies were reported, and age of mother: Total of 26 States, 1989–90

Race of mother and congenital anomaly of infant	Congenital anomaly reported in delivery[1]	Congenital anomaly reported in fetal death	Age of mother			Specific anomaly not present	Congenital anomaly not stated
			All ages	Under 30 years	30–49 years		
All races[2]	Number		Rate[3]			Number	
All fetal deaths	...	...	7.4	7.2	7.9	...	...
No anomalies	–	–	5.0	4.9	5.2	...	...
Anencephalus	1,168	546	467.5	484.7	405.5	6.6	4,241
Spina bifida/meningocele	1,567	244	155.7	153.6	161.4	6.6	4,241
Hydrocephalus	1,797	388	215.9	187.1	292.1	6.6	4,241
Microcephalus	574	76	132.4	134.8	126.5	6.7	4,241
Other central nervous system anomalies	1,660	328	197.6	184.3	230.6	6.6	4,241
Heart malformations	6,501	347	53.4	46.1	70.2	6.6	4,241
Other circulatory/respiratory anomalies	7,919	318	40.2	37.8	45.6	6.6	4,241
Rectal atresia/stenosis	616	44	71.4	70.1	74.7	6.7	4,241
Tracheo-esophageal fistula/esophageal atresia	796	32	40.2	41.7	37.3	6.7	4,241
Omphalocele/gastroschisis	1,398	219	156.7	142.4	223.6	6.6	4,241
Other gastrointestinal anomalies	2,044	150	73.4	72.6	75.6	6.7	4,241
Malformed genitalia	4,319	158	36.6	35.2	40.1	6.7	4,241
Renal agenesis	580	142	244.8	243.4	248.4	6.7	4,241
Other urogenital anomalies	6,190	198	32.0	31.9	32.3	6.7	4,241
Cleft lip/palate	4,863	288	59.2	54.5	70.7	6.6	4,241
Polydactyly/syndactyly/adactyly	4,863	177	36.4	32.9	47.3	6.7	4,241
Club foot	3,187	166	52.1	51.8	53.0	6.7	4,241
Diaphragmatic hernia	730	48	65.8	49.1	99.6	6.7	4,241
Other musculoskeletal/integumental anomalies	11,256	403	35.8	35.6	36.4	6.6	4,241
Down's syndrome	2,848	207	72.7	52.0	94.5	6.6	4,241
Other chromosomal anomalies	2,852	473	165.8	153.5	187.4	6.6	4,241
White							
All fetal deaths	...	...	6.3	6.1	6.9	...	...
No anomalies	–	–	4.1	4.0	4.5	...	...
Anencephalus	965	464	480.8	501.3	410.1	5.6	2,669
Spina bifida/meningocele	1,357	221	162.9	163.6	160.8	5.7	2,669
Hydrocephalus	1,437	313	217.8	191.0	288.6	5.7	2,669
Microcephalus	452	57	126.1	124.6	129.3	5.7	2,669
Other central nervous system anomalies	1,351	261	193.2	180.3	223.0	5.7	2,669
Heart malformations	5,203	265	50.9	45.4	62.9	5.7	2,669
Other circulatory/respiratory anomalies	6,602	260	39.4	37.6	43.4	5.7	2,669
Rectal atresia/stenosis	513	33	64.3	56.8	83.9	5.7	2,669
Tracheo-esophageal fistula/esophageal atresia	688	27	39.2	42.3	33.5	5.7	2,669
Omphalocele/gastroschisis	1,119	170	151.9	135.1	228.9	5.7	2,669
Other gastrointestinal anomalies	1,632	128	78.4	77.9	79.8	5.7	2,669
Malformed genitalia	3,691	126	34.1	31.5	40.6	5.7	2,669
Renal agenesis	500	125	250.0	247.9	255.5	5.7	2,669
Other urogenital anomalies	5,433	160	29.4	29.0	30.6	5.7	2,669
Cleft lip/palate	4,244	226	53.3	48.3	65.2	5.7	2,669
Polydactyly/syndactyly/adactyly	2,755	132	47.9	41.7	64.0	5.7	2,669
Club foot	2,785	135	48.5	48.6	48.2	5.7	2,669
Diaphragmatic hernia	631	39	61.8	47.3	91.3	5.7	2,669
Other musculoskeletal/integumental anomalies	9,143	305	33.4	34.0	31.8	5.7	2,669
Down's syndrome	2,432	170	69.9	51.6	88.4	5.7	2,669
Other chromosomal anomalies	2,307	379	164.3	153.1	183.2	5.6	2,669
Black							
All fetal deaths	...	...	13.0	12.2	16.4	...	...
No anomalies	–	–	9.8	9.2	12.1	...	...
Anencephalus	156	66	423.1	418.6	444.4	11.4	1,476
Spina bifida/meningocele	178	19	*	*	*	11.4	1,476
Hydrocephalus	319	69	216.3	184.9	308.6	11.4	1,476
Microcephalus	102	16	*	*	*		1,476
Other central nervous system anomalies	254	58	228.3	202.9	340.4	11.4	1,476
Heart malformations	1,097	66	60.2	49.4	101.3	11.4	1,476
Other circulatory/respiratory anomalies	1,038	49	47.2	45.3	53.5	11.4	1,476

See footnotes at end of table.

Table 10. Number of fetal deaths and fetal mortality rate by race of mother, selected congenital anomalies of child, whether anomalies were reported, and age of mother: Total of 26 States, 1989–90—Con.

Race of mother and congenital anomaly of infant	Congenital anomaly reported in delivery[1]	Congenital anomaly reported in fetal death	Age of mother			Specific anomaly not present	Congenital anomaly not stated
			All ages	Under 30 years	30–49 years		
Black—Con.	Number		Rate[3]			Number	
Rectal atresia/stenosis	82	11	*	*	*	11.4	1,476
Tracheo-esophageal fistula/esophageal atresia	82	4	*	*	*	11.5	1,476
Omphalocele/gastroschisis	244	43	176.2	166.7	235.3	11.4	1,476
Other gastrointestinal anomalies	358	19	*	*	*	11.4	1,476
Malformed genitalia	527	27	51.2	52.8	44.0	11.4	1,476
Renal agenesis	70	15	*	*	*	11.4	1,476
Other urogenital anomalies	647	32	49.5	51.2	41.7	11.4	1,476
Cleft lip/palate	402	43	107.0	102.5	125.0	11.4	1,476
Polydactyly/syndactyly/adactyly	1,980	36	18.2	19.3	13.5	11.4	1,476
Club foot	344	26	75.6	74.7	79.4	11.4	1,476
Diaphragmatic hernia	78	6	*	*	*	11.5	1,476
Other musculoskeletal/integumental anomalies	1,746	82	47.0	43.1	63.3	11.4	1,476
Down's syndrome	345	33	95.7	61.9	148.1	11.4	1,476
Other chromosomal anomalies	448	73	162.9	155.5	183.3	11.4	1,476

. . . Category not applicable.

– Quantity zero.

* Figure does not meet standard of reliability or precision.

[1]Total number of births and fetal deaths to residents of areas reporting specified congenital anomaly.

[2]Includes races other than white and black.

[3]Rates are number of fetal deaths with specified congenital anomaly per 1,000 live births and fetal deaths with specified congenital anomaly.

NOTE: Table excludes data for New Mexico, South Dakota, and Vermont.

Appendix

Contents

Appendix table

Technical notes

Source of data

The fetal-death reporting system of the United States encompasses the 50 States, the District of Columbia, Puerto Rico, the Virgin Islands, and Guam. Fetal-death statistics for every year are based on all reports of fetal death received by the National Center for Health Statistics (NCHS). However, a reporting criterion was used to limit the number of States included in the tables of this report to a basic group of States. The 29 States included in this report are Alabama, Arkansas, California, Colorado, Florida, Georgia, Idaho, Illinois, Indiana, Iowa, Kansas, Michigan, Mississippi, Missouri, New Hampshire, New Mexico, North Carolina, North Dakota, Ohio, Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Utah, Vermont, West Virginia, Wisconsin, and Wyoming.

Results for a subset of States are believed to be reasonably representative of all States based on comparison of characteristics for the subset of States to all States (see table I). The largest differences are that the selected States have 12 percent more nonmetropolitan residents than the total United States and less unknown or not stated total birth order and period of gestation.

Tabulations of fetal deaths were based solely on information obtained by NCHS from copies of original reports of fetal deaths from State registration offices. The exception is registration offices in New York State (excluding New York City), which only submitted State-coded data in 1989 and 1990. The information from these copies was edited, coded, and tabulated. All mortality information taken from these records was transferred by NCHS to magnetic tape for computer processing.

Collection of data

The 1977 revision of the *Model State Vital Statistics Act and Model State Vital Statistics Regulations* (39) recommended that spontaneous fetal deaths at a gestation of 20 weeks or more or a weight of 350 grams or more and all induced terminations of pregnancy regardless of gestational age be reported. It was also recommended that they be reported on separate forms. These forms are to be considered legally required statistical reports rather than legal documents. Beginning with 1970 fetal deaths, procedures were implemented to separate reports of spontaneous fetal deaths from those of induced terminations of pregnancy. These procedures are still in use.

For many years, the U.S. Standard Report of Fetal Death, issued by the Public Health Service, has been used as a model to attain uniformity in the contents of documents used to collect fetal mortality information (40). The standard report is revised periodically by the national vital statistics agency through consultation with State health officers and registrars; Federal agencies concerned with vital statistics; national, State, and county medical societies; and others working in such fields as public health, social welfare, demography, and insurance. This revision procedure has ensured careful evaluation of each item in terms of its current and future usefulness for legal, medical and health, demographic, and research purposes. New items have been added when necessary, and old items have been modified to ensure better reporting or have been dropped when their usefulness appeared to be limited.

Revised Report of Fetal Death

Beginning with data for 1989, new items were added to the U.S. Standard Report of Fetal Death. This includes information on Hispanic origin of the mother and father, method of delivery, and other variables discussed in this report. In addition, questions on complications of labor and delivery and congenital anomalies of fetus(es) were changed from an open-ended to a checkbox format to ensure more complete reporting of information. However, because of differences in implementation dates of the new fetal death report among States, and because of inexperience in reporting and processing the new items, reporting of the new items in individual States may not be complete for 1989. Moreover, not all States revised their report in 1989 or added each specific checkbox.

Classification of data

The principal value of vital statistics data is realized through the presentation of rates. Fetal mortality rates are computed by relating the fetal deaths of a class to the live births and fetal deaths of a similarly defined class. Vital statistics of fetal deaths and live births must, therefore, be classified according to similarly defined systems and tabulated in comparable groups. Even when the variables common to both, such as age and race, have been similarly classified and tabulated, inconsistencies in reporting between the fetal death report and birth certificate may result in significant discrepancies. If fetal death data are not as complete as live birth data,

Table I. Number of fetal deaths and percent distribution of fetal deaths by selected characteristics: Total of 29 States and the United States, 1989–90

Selected characteristic	*Selected States*	*United States*
	Number	
Total	37,599.0	61,855.0
	Percent distribution	
Total	100.0	100.0
Maternal age		
Under 20 years	16.0	15.1
20–29 years	53.5	53.2
30 years and over	30.5	31.7
Maternal race		
White	67.6	67.3
Black	29.4	29.3
Other	3.1	3.4
Total birth order		
1	31.1	30.1
2	24.0	23.4
3	16.8	16.7
4	10.2	10.2
5 or more	13.0	13.3
Not stated	4.8	6.4
Metropolitan residence		
Metropolitan	76.2	78.8
Nonmetropolitan	23.8	21.2
Period of gestation		
20–23 weeks	23.1	23.8
24–27 weeks	15.2	15.0
28 weeks and over	56.6	54.2
Unknown	5.1	7.0
Fetal birthweight		
1,499 grams or less	53.2	51.4
1,500–2,499 grams	17.4	16.5
2,500 grams or more	21.90	20.7
Not stated	7.5	11.5
Fetal sex		
Male	52.90	53.3
Female	47.1	46.7

NOTE: Percents may not add to 100.0 because of rounding.

this would tend to underestimate rates. Alternatively, the rates could be overestimated if reporting of risk factors or anomalies is more complete for fetal deaths than for live births. This could be due to the person filling out the form being motivated to explain the poor outcome or having better information on the presence of risk factors.

Race

For vital statistics in the United States for 1989 and 1990, fetal deaths are classified by race—white, black, American Indian, Chinese, Hawaiian, Japanese, Filipino, Other Asian or Pacific Islander, and Other.

The white category includes, in addition to persons reported as white, those reported as Mexican, Puerto Rican, Cuban, and all other Caucasians. The American Indian category includes American, Alaskan, Canadian, Eskimo, and Aleut.

Beginning with the 1989 data year, NCHS changed the method of tabulating live birth and fetal death data by race from race of child to race of mother (40,41).

When the race of the mother is unknown, the mother is assigned to the father's race. When information for both parents is missing, the race of the mother is assigned to the specific race of the mother of the preceding record with known race.

Period of gestation

The period of gestation is the number of completed weeks elapsed between the first day of the last normal menstrual period (LMP) and the date of delivery (see Technical appendix, *VSUS* (40) for further details).

Age of mother

Age of mother is computed from the mother's date of birth and the date of the termination of the pregnancy. For States whose reports do not contain an item on the mother's date of birth, reported age of the mother (in years) is used. The age of the mother is edited in NCHS for upper and lower limits. When mothers are reported to be under 10 years of age or 50 years of age and over, the age of the mother is considered not stated and is assigned as follows: Age on all fetal-death records with age of mother not stated is assigned according to the age appearing on the record previously processed for a mother of identical race and having the same total-birth order (total of live births and other terminations). This is also applicable for live births.

Definitions of medical terms

The following definitions are adapted and abbreviated from a set of definitions compiled by a committee of Federal and State health statistics officials for the Association for Vital Records and Health Statistics (42).

Medical risk factors for this pregnancy

Anemia—Hemoglobin level of less than 10.0 g/dL during pregnancy, or a hematocrit of less than 30 percent during pregnancy.

Cardiac disease—Disease of the heart.

Acute or chronic lung disease—Disease of the lungs during pregnancy.

Diabetes—Metabolic disorder characterized by excessive discharge of urine and persistent thirst; includes juvenile onset, adult onset, and gestational diabetes during pregnancy.

Genital herpes—Infection of the skin of the genital area by herpes simplex virus.

Hydramnios/oligohydramnios—Any noticeable excess (hydramnios) or lack (oligohydramnios) of amniotic fluid.

Hemoglobinopathy—A blood disorder caused by alteration in the genetically determined molecular structure of hemoglobin (for example, sickle-cell anemia).

Hypertension, chronic—Blood pressure persistently greater than 140/90, diagnosed prior to onset of pregnancy or before the 20th week of gestation.

Hypertension, pregnancy-associated—An increase in blood pressure of at least 30 mm hg systolic or 15 mm hg diastolic on two measurements taken 6 hours apart after the 20th week of gestation.

Eclampsia—The occurrence of convulsions and/or coma unrelated to other cerebral conditions in women with signs and symptoms of pre-eclampsia.

Incompetent cervix—Characterized by painless dilation of the cervix in the second trimester or early in the third trimester of pregnancy, with premature expulsion of membranes through the cervix and ballooning of the membranes into the vagina, followed by rupture of the membranes and subsequent expulsion of the fetus.

Previous preterm or small-for-gestational-age infant—Previous birth of an infant prior to term (before 37 completed weeks of gestation), or of an infant weighing less than the 10th percentile for gestational age, using a standard weight for age chart.

Renal disease—Kidney disease.

Rh sensitization—The process or state of becoming sensitized to the Rh factor as when an Rh-negative woman is pregnant with an Rh-positive fetus.

Uterine bleeding—Any clinically significant bleeding during the pregnancy, taking into consideration the state of pregnancy; any second or third trimester bleeding of the uterus prior to the onset of labor.

Complications of labor and/or delivery

Febrile—A fever greater than 100 degrees F. or 38 C. occurring during labor and/or delivery.

Meconium, moderate/heavy—Meconium consists of undigested debris from swallowed amniotic fluid, various products of secretion, and excretion and shedding by the gastrointestinal tract; moderate to heavy amounts of meconium in the amniotic fluid noted during labor and/or delivery.

Premature rupture of membranes (more than 12 hours)—Rupture of the membranes at any time during pregnancy and more than 12 hours before the onset of labor.

Abruptio placenta—Premature separation of a normally implanted placenta from the uterus.

Placenta previa—Implantation of the placenta over or near the internal opening of the cervix.

Other excessive bleeding—The loss of a significant amount of blood from conditions other than abruptio placenta or placenta previa.

Seizures during labor—Maternal seizures occurring during labor from any cause.

Precipitous labor (less than 3 hours)—Extremely rapid labor and delivery lasting less than 3 hours.

Prolonged labor (more than 20 hours)—Abnormally slow progress of labor lasting more than 20 hours.

Dysfunctional labor—Failure to progress in a normal pattern of labor.

Breech/malpresentation—At birth, the presentation of the fetal buttocks rather than the head, or other malpresentation.

Cephalopelvic disproportion—The relationship of the size, presentation, and position of the fetal head to the maternal pelvis, which prevents dilation of the cervix and/or descent of the fetal head.

Cord prolapse—Premature expulsion of the umbilical cord in labor before the fetus is delivered.

Anesthetic complications—Any complication during labor and/or delivery brought on by an anesthetic agent or agents.

Fetal distress—Signs indicating fetal hypoxia (deficiency in amount of oxygen reaching fetal tissues).

Congenital anomalies

Anencephalus—Absence of the cerebral hemispheres.

Spina bifida/meningocele—Developmental anomaly characterized by defective closure of the bony encasement of the spinal cord, through which the cord and meninges may or may not protrude.

Hydrocephalus—Excessive accumulation of cerebrospinal fluid within the ventricles of the brain with consequent enlargement of the cranium.

Microcephalus—A significantly small head.

Other central nervous system anomalies—Other specified anomalies of the brain, spinal cord, and nervous system.

Heart malformations—Congenital anomalies of the heart.

Other circulatory/respiratory anomalies—Other specified anomalies of the circulatory and respiratory systems.

Rectal atresia/stenosis—Congenital absence, closure, or narrowing of the rectum.

Tracheo-esophageal fistula/esophageal atresia—An abnormal passage between the trachea and the esophagus; esophageal atresia is the congenital absence or closure of the esophagus.

Omphalocele/gastroschisis—An omphalocele is a protrusion of variable amounts of abdominal viscera from a midline defect at the base of the umbilicus. In gastroschisis, the abdominal viscera protrude through an abdominal wall defect, usually on the right side of the umbilical cord insertion.

Other gastrointestinal anomalies—Other specified congenital anomalies of the gastrointestinal system.

Malformed genitalia—Congenital anomalies of the reproductive organs.

Renal agenesis—One or both kidneys are completely absent.

Other urogenital anomalies—Other specified congenital anomalies of the organs concerned in the production and excretion of urine, together with organs of reproduction.

Cleft lip/palate—Cleft lip is a fissure or elongated opening of the lip; cleft palate is a fissure in the roof of the mouth. These are failures of embryonic development.

Polydactyly/syndactyly, adactyly—Polydactyly is the presence of more than five digits on either hands and/or feet; syndactyly is having fused or webbed fingers and/or toes; adactyly is the absence of fingers and/or toes.

Club foot—Deformities of the foot, which is twisted out of shape or position.

Diaphragmatic hernia—Herniation of the abdominal contents through the diaphragm into the thoracic cavity, usually resulting in respiratory distress.

Other musculoskeletal/integumental anomalies—Other specified congenital anomalies of the muscles, skeleton, or skin.

Down's syndrome—The most common chromosomal defect with most cases resulting from an extra chromosome (trisomy 21).

Other chromosomal anomalies—All other chromosomal aberrations.

Quality of Data

Completeness of registration

All States have adopted laws requiring the registration of live births and the reporting of fetal deaths. It is believed that more than 99 percent of the live births occurring in this country are registered.

Reporting requirements for fetal deaths vary somewhat from State to State. Most of these areas require reporting of fetal deaths at gestations of 20 weeks or more (see Technical Appendix, *VSUS* (40) for further information). There is substantial evidence that not all fetal deaths for which reporting is required are reported (43). While overall reporting is not as complete for fetal deaths as for births and deaths, it is believed to be relatively complete for fetal deaths at a gestation of 28 weeks or more.

The tables in this report are based on fetal deaths occurring at gestations of 20 weeks or more. These tables also include fetal deaths for which gestation is not stated for those States requiring reporting at 20 weeks or more gestation only. Fetal deaths of ''not stated'' gestation were excluded for Georgia except for those with a stated birth weight of 500 grams or more. Georgia requires the reporting of all products of conception.

Random variation

Although the fetal death data in this report are not subject to sampling error, they may be affected by random variation in the number of fetal deaths involved. In general, vital events may be assumed to follow the binomial distribution. However, many of the checkbox items refer to extremely rare events. Rare events may be assumed to follow a Poisson probability distribution. Additional information on random variation and the calculation of confidence intervals are available in the Technical appendix, *VSUS* (40).

Vital and Health Statistics series descriptions

SERIES 1. **Programs and Collection Procedures**—These reports describe the data collection programs of the National Center for Health Statistics. They include descriptions of the methods used to collect and process the data, definitions, and other material necessary for understanding the data.

SERIES 2. **Data Evaluation and Methods Research**—These reports are studies of new statistical methods and include analytical techniques, objective evaluations of reliability of collected data, and contributions to statistical theory. These studies also include experimental tests of new survey methods and comparisons of U.S. methodology with those of other countries.

SERIES 3. **Analytical and Epidemiological Studies**—These reports present analytical or interpretive studies based on vital and health statistics. These reports carry the analyses further than the expository types of reports in the other series.

SERIES 4. **Documents and Committee Reports**—These are final reports of major committees concerned with vital and health statistics and documents such as recommended model vital registration laws and revised birth and death certificates.

SERIES 5. **International Vital and Health Statistics Reports**—These reports are analytical or descriptive reports that compare U.S. vital and health statistics with those of other countries or present other international data of relevance to the health statistics system of the United States.

SERIES 6. **Cognition and Survey Measurement**—These reports are from the National Laboratory for Collaborative Research in Cognition and Survey Measurement. They use methods of cognitive science to design, evaluate, and test survey instruments.

SERIES 10. **Data From the National Health Interview Survey**—These reports contain statistics on illness; unintentional injuries; disability; use of hospital, medical, and other health services; and a wide range of special current health topics covering many aspects of health behaviors, health status, and health care utilization. They are based on data collected in a continuing national household interview survey.

SERIES 11. **Data From the National Health Examination Survey, the National Health and Nutrition Examination Surveys, and the Hispanic Health and Nutrition Examination Survey**—Data from direct examination, testing, and measurement on representative samples of the civilian noninstitutionalized population provide the basis for (1) medically defined total prevalence of specific diseases or conditions in the United States and the distributions of the population with respect to physical, physiological, and psychological characteristics, and (2) analyses of trends and relationships among various measurements and between survey periods.

SERIES 12. **Data From the Institutionalized Population Surveys**—Discontinued in 1975. Reports from these surveys are included in Series 13.

SERIES 13. **Data From the National Health Care Survey**—These reports contain statistics on health resources and the public's use of health care resources including ambulatory, hospital, and long-term care services based on data collected directly from health care providers and provider records.

SERIES 14. **Data on Health Resources: Manpower and Facilities**—Discontinued in 1990. Reports on the numbers, geographic distribution, and characteristics of health resources are now included in Series 13.

SERIES 15. **Data From Special Surveys**—These reports contain statistics on health and health-related topics collected in special surveys that are not part of the continuing data systems of the National Center for Health Statistics.

SERIES 16. **Compilations of Advance Data From Vital and Health Statistics**—Advance Data Reports provide early release of information from the National Center for Health Statistics' health and demographic surveys. They are compiled in the order in which they are published. Some of these releases may be followed by detailed reports in Series 10–13.

SERIES 20. **Data on Mortality**—These reports contain statistics on mortality that are not included in regular, annual, or monthly reports. Special analyses by cause of death, age, other demographic variables, and geographic and trend analyses are included.

SERIES 21. **Data on Natality, Marriage, and Divorce**—These reports contain statistics on natality, marriage, and divorce that are not included in regular, annual, or monthly reports. Special analyses by health and demographic variables and geographic and trend analyses are included.

SERIES 22. **Data From the National Mortality and Natality Surveys**—Discontinued in 1975. Reports from these sample surveys, based on vital records, are now published in Series 20 or 21.

SERIES 23. **Data From the National Survey of Family Growth**—These reports contain statistics on factors that affect birth rates, including contraception, infertility, cohabitation, marriage, divorce, and remarriage; adoption; use of medical care for family planning and infertility; and related maternal and infant health topics. These statistics are based on national surveys of childbearing age.

SERIES 24. **Compilations of Data on Natality, Mortality, Marriage, Divorce, and Induced Terminations of Pregnancy**—These include advance reports of births, deaths, marriages, and divorces based on final data from the National Vital Statistics System that were published as supplements to the *Monthly Vital Statistics Report* (MVSR). These reports provide highlights and summaries of detailed data subsequently published in *Vital Statistics of the United States*. Other supplements to the MVSR published here provide selected findings based on final data from the National Vital Statistics System and may be followed by detailed reports in Series 20 or 21.

For answers to questions about this report or for a list of reports published in these series, contact:

Data Dissemination Branch
National Center for Health Statistics
Centers for Disease Control and Prevention
Public Health Service
6525 Belcrest Road, Room 1064
Hyattsville, MD 20782

(301) 436–8500
E-mail: nchsquery@nch10a.em.cdc.gov
Internet: http://www.cdc.gov/nchswww/nchshome.htm

DEPARTMENT OF
HEALTH AND HUMAN SERVICES

Public Health Service
Centers for Disease Control and Prevention
National Center for Health Statistics
6525 Belcrest Road
Hyattsville, Maryland 20782

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, $300

BULK RATE
POSTAGE & FEES PAID
PHS/NCHS
PERMIT NO. G-281

DHHS Publication No. (PHS) 96-1859, Series 20, No. 31
6-0485 (8/96)