I. Public Health GIS (and related) Events:
SPECIAL NCHS/CDC GIS LECTURES

Please join us October 28, at 2:00PM, RM 1404, at NCHS! "Introducing the Health Resources and Services Administration (HRSA) Geospatial Data Warehouse," Terri Cohen and Julie Baitty, GIS Coordinator, HRSA. The NCHS GIS Guest Lecture Series has been presented continuously at NCHS since 1988. For your information, we are in the process of bringing archived presentations to you through web-enabled video streaming technology. As with all live lectures, Envision will be available to offsite CDC locations and Web access will be available to our outside public health audience (please request URL for viewing from the Editor). Cosponsors to the NCHS Cartography and GIS Guest Lecture Series include CDC's Behavioral and Social Science Working Group (BSSWG) and Statistical Advisory Group (SAG). Note: NCHS Cartography and GIS lectures are open to all. [Contact: Editor, *Public Health GIS News and Information* at cmc2@cdc.gov]

[Note: Calendar events are posted as received; for a more complete listing see NCHS GIS website and calendar]

* Third Global Conference on the Promotion of Mental Health and Prevention of Mental and Behavioral Disorders, September 15-17, 2004, Auckland, New Zealand [http://www.wfmh.org/PandPConference.htm]

* Statistics Canada: Health Statistics Data Users Conference 2004, September 26-28, 2004, Ottawa [http://www.statcan.ca/english/conferences/health2003/registration.htm]

* Community Health Assessment: Current Issues and Future Directions conference, CDC and the National Association for Public Health Statistics and Information Systems (NAPHSIS) Leadership Institute, September 28-30, 2004, Atlanta GA [See the following website: http://www.signup4.net/public/ap.aspx?EID=COMM11E&OID=50]

* XXIV Annual Meeting of the North American Cartographic Information Society, October 6-9, 2004, Portland ME [http://www.nacis.org]

* 2004 Syndromic Surveillance Conference, November 3-4, 2004, Boston MA [http://www.syndromic.org]

* 53rd Annual Meeting of the American Society of Tropical Medicine and Hygiene, November 7-11, 2004, Miami, FL [http://www.astmh.org/meetings/meeting2004.html]

* 12th ACM International Symposium on Advances in Geographic Information Systems (in conjunction with the 13th International Conference on Information and Knowledge Management) from November 12-13, 2004, Washington D.C. [http://acmgis2004.cti.gr]

National Association of Health Data Organizations (NAHDO) 19th Annual Meeting, December 6-7, 2004, Washington D.C. [http://www.nahdo.org/meetings.asp]

2005

* Tenth Biennial CDC/ATSDR Symposium on Statistical Methods: "Statistics and Public Health Policy," February 27th through March 3rd, 2005, Bethesda MD [See website: http://www.cdc.gov/od/ads/sag]

* 2005 Annual Meeting of the Association of American Geographers, April 5-9, 2005, Denver CO [See website: http://www.aag.org]

* 2005 EPA Science Forum: Collaborative Science for Environmental Solutions, May 16-18, 2005, Washington D.C. [See: http://www.epa.gov/ord/scienceforum]

* 23rd National DHPE/CDC Conference on Health Education and Health Promotion, "Health Promotion and Education at the Crossroads: New Public Health Directions," May 25-27, 2005 Hilton Hotel Minneapolis, MN [See: http://www.dhpe.org/nationalconference]

II. GIS News

A. General News and Training Opportunities

1. Imperial College London, Faculty of Medicine, Division of Primary Care and Population Health Sciences: **Disease Mapping Using GeoBUGS**, October 1, 2004. This course is designed to be of interest to researchers in areas such as epidemiology, medical geography and environmental science, together with public health specialists, regulators and other health-care professionals with an interest in understanding and applying advanced quantitative methods to the analysis of geographical variations in disease and other outcomes. The course is intended as an applied introduction to Bayesian methods in this field, and includes a large practical component with time for hands-on data analysis. The course assumes a good grasp of basic statistics, including linear and generalised linear regression analysis, but previous experience of Bayesian methods is not essential. [Training coordinator contact: Nicky Best at n.best@imperial.ac.uk]

2. **Hierarchical Modeling and Analysis for Spatial Data**, October 21-22, 2004, George Mason University, Arlington, VA: This course will describe hierarchical modeling methods for an area of application in which they can pay substantial dividends: spatial statistics. The presenter will begin by outlining and providing illustrative examples of the three types of spatial data: point-level (geostatistical), areal (lattice), and spatial point process. The presenter will then describe both exploratory data analysis tools and traditional modeling approaches for point-referenced data. Modeling approaches from traditional geostatistics (variogram fitting, kriging, and so forth) will be covered here. The presenter shall then offer a similar presentation for areal data models, again starting with choropleth maps and other displays and progressing towards more formal statistical concepts, such as Brook's Lemma and the Markov random field topics that underlie the conditional, intrinsic, and simultaneous autoregressive (CAR, IAR, and SAR) models so often used in areal data settings.

The remainder of the presentation will cover hierarchical modeling for both univariate and multivariate spatial response data, including Bayesian kriging and lattice modeling, as well as more advanced issues such as anisotropy and nonstationarity. Bayesian methods will also be suggested for modeling data that are spatially misaligned (say, with one variable measured by census tract but another by zip code), since they are particularly well-suited to sorting out complex interrelationships and constraints. Also included will be a discussion of spatially varying coefficient, spatio-temporal, and spatial survival models. [For additional information and to register for this course, visit the Education section of the ASA (American Statistical Association) site at www.amstat.org/education and click on the link for this course]

B. Department of Health and Human Services
http://www.hhs.gov

3. The nation's childhood immunization rates are at record high levels, including significant increases in rates of immunization for chickenpox and pneumococcal pneumonia, the two most recent additions to the childhood immunization schedule. National coverage with chickenpox vaccine increased from 80.6 percent in 2002 to 84.8 percent in 2003. Coverage for three or more doses of pneumococcal conjugate vaccine increased from 40.9 percent in 2002 to 68.1 percent in 2003. Coverage for four or more doses of pneumococcal conjugate vaccine, reported for the first time this year, was 36.7 percent. Coverage for all other childhood vaccines and series, increased significantly in 2003 compared with 2002.

In 2003, as in previous years, **urban areas** reported lower immunization rates than states mostly due to **large concentrations of lower socio-economically displaced persons**. Among the 28 urban areas, the highest estimated coverage for the 4:3:1:3:3 series was 88.8 percent in Boston, Massachusetts, and the lowest was 69.2 percent in Houston, Texas. The estimated coverage with the 4:3:1:3:3 series ranged from 94.0 percent in Connecticut to 67.5 percent in Colorado.

Administration for Children and Families
http://www.acf.dhhs.gov

4. A new report, titled **"What Works Best for Whom: Effects of Welfare and Work Policies by Subgroup"**, examines an array of welfare policies to help states determine which programs and policies best help single parents transition from **welfare to work**. Some of the key findings of the study include: earnings and employment

increased the most in programs where job search was stressed more than education and programs that used earnings supplements to encourage employment; the most effective programs across a range of subgroups were employment-focused mixed-activity programs; and earnings supplement programs alone, which allowed people to combine welfare with work, consistently increased income.

Administration on Aging
http://www.aoa.gov

5. The first White House Conference on Aging of the 21st Century will be held October 23-26, 2005 in Washington, D.C. In addition to addressing the issues of today's elders, the 2005 Conference will, for the first time, have a mandated focus on the 76 million baby boomers whose aging will change the face of America.

Agency for Healthcare Research and Quality
http://www.ahrq.gov

6. In 2000, approximately 49 million people lived in nonmetropolitan counties in the United States, about 3 million of whom lived in rural counties (nonmetropolitan counties with no town or city with a population of 2,500 or more). **Chartbook #13: Health Care in Urban and Rural Areas, Combined Years 1998-2000** examines the differences in health care access, use, and expenses between urban and rural areas. Counties are classified along the urban-rural continuum according to whether they are metropolitan statistical areas (MSAs) and, if not, their proximity to an MSA. An MSA is a large population nucleus with a high degree of economic and social interaction.

The chartbook is organized into three sections. The first compares people in four categories along the urban-rural spectrum (metro, near-metro, near-rural, and rural) by selected characteristics, including age, race/ethnicity, sex, income, health status, and activity limitations. The second section provides information on insurance status and access to care. The third section focuses on variations in use and expenses for ambulatory care, prescription medicines, and dental care. Comparisons across urban-rural categories are presented for either the population under 65 years of age (also referred to as non-elderly), the population 65 years of age and over (also referred to as elderly), or both.

Centers for Disease Control and Prevention
[Includes the Agency for Toxic Substances and Disease Registry (ATSDR), in CDC's National Center for Environmental Health]
http://www.cdc.gov

7. The Division of Adult and Community Health, National Center for Chronic Disease Prevention and Health Promotion, is pleased to announce the availability of **"BRFSS Maps"** on the Behavioral Risk Factor Surveillance System (BRFSS) website. This is an exciting and interactive mapping application that graphically displays the prevalence of behavioral risk factors at the state and metropolitan/micropolitan statistical area (MMSA) level. Using GIS mapping technology and BRFSS data, the new web site allows users to visually compare prevalence data for states, territories, and local areas.

Beginning with the 2002 BRFSS data, visitors to the BRFSS Web site will be able to create, save, and print state and MMSA level maps detailing a variety of health-related risk factors. State and MMSA data layers can be displayed independently or in combination, to identify regional patterns. This tool will play a vital role in the dissemination of data for policymakers and state and local public health officials. [See following website : http://apps.nccd.cdc.gov/gisbrfss; For inquiries, contact: Michele Walsh at zzk7@cdc.gov]

Also, the 2003 Behavioral Risk Factor Surveillance System (BRFSS) state prevalence tables have been released representing 266,346 interviews completed in all 50 states, the District of Columbia, Puerto Rico, the Virgin Islands, and Guam. Although the data files were first available in June 2004, the state prevalence tables that are available today are in a format that is easy to read and understand to better inform program and policy development. The 2003 BRFSS data and prevalence tables currently are located at http://www.cdc.gov/brfss. [Contact: Lina Balluz at lib7@cdc.gov; see also special report this edition on the BRFSS mapping system]

Centers for Medicare and Medicaid Services
http://cms.hhs.gov

8. The Centers for Medicare & Medicaid Services (CMS) today announced that **payments to rural hospices** are projected to increase $23 million in 2005, a 2.9 percent increase over 2004. For 2005 there is an overall projected increase of $60 million dollars to hospice providers, an increase of 1 percent for all hospices.

Food and Drug Administration
http://www.fda.gov

9. FDA will create a new oncology office, called the **Office of Oncology Drug Products** (ODP), to be housed in the Center for Drug Evaluation and Research (CDER). This new office will be a consolidation of three existing areas within CDER responsible for the review of drugs and therapeutic biologics used to diagnose, treat, and prevent cancer. This new office will also include drugs and certain therapeutic biologics used in medical imaging, many of which are used to detect, treat, or monitor cancer. The creation of this new office will improve consistency of review and policy toward oncology drugs, and bring together a critical mass of oncologists who will help develop new therapies.

Health Resources and Services Administration
http://www.hrsa.gov

10. United States-Mexico Border Binational Health Week, "Families in Action for Health," October 11-17, 2004. Goal: To advance implementation of **Healthy Border 2010**, by encouraging and creating sustainable behavioral practices, organizational relationships and community structures to improve health status and eliminate disparities. Events will take place along the U.S.-Mexico border in all 14 sister cities pairs. Primary topics and potential activities will include: Improve Access to Services, Immunizations, Health Issues Awareness, Enhance Access to Prevention, Care and Treatment Services, Prenatal Care, Policy Forums on Border Health, Health Fairs (Fiestas de Salud), and Jornadas Informativas de Salud.

The US-Mexico border region should be viewed as one epidemiological unit, despite the fact that it lies in two countries. The fourteen pairs of "sister cities" that straddle the border reflect similar epidemiological issues whether the people live on the US-side or the Mexican side of the border. To address priority health issues in a joint, binational effort, the US-Mexico Border Health Commission (USMBHC) has established the Healthy Border 2010 Program, an agenda of goals and objectives that are mutually accepted by the federal governments of the US and Mexico, and by the four US border states and the six Mexican border states. This program addresses more than 12 focus areas, with more than 20 measurable health objectives for health improvement.

The USMBHC was established in July 2000 through a Memorandum of Agreement between the US DHHS and the Mexican Ministry of Health. The establishment of the Commission was directed under Public Law 103-400 (October 1994). The HRSA Geospatial Data Warehouse (HGDW) team is working closely with the USMBHC in support of their goal to institutionalize a domestic focus on border health, which can transcend political changes and create an effective venue for bi-national discussions to address public health issues and problems which affect the US-Mexico border populations (http://www.borderhealth.org). The initiative area and the counties/municipios within it are viewed as one epidemiological unit. [Special Note: Also, please see announcement of October 28, 2004 presentation of the HRSA Geospatial Data Warehouse, at NCHS, in this edition]

Indian Health Service
http://www.ihs.gov

11. The IHS is sponsoring a health summit, "Healthier Indian Communities through Partnership and Prevention," on September 22-24, 2004, in Washington, D.C. The upcoming health summit will address chronic diseases and conditions such as substance abuse, accidental injury, diabetes, cardiovascular disease, cancer, obesity, and others. CDC's Chuck Croner will address a joint meeting of the IHS Planners and Statisticians on the topic "Visualizing Health Inequalities with Geographic Information Systems: Exploring Geospatial Issues."

National Institutes of Health
http://www.nih.gov

12. **"Inside the NIH Grant Review Process"**, is a 39-minute video developed by the NIH Center for Scientific Review. The video includes excerpts from the reviews of 3 types of NIH applications: R01- Research project grant, K08- Mentored clinical scientist career development grant and R03 Small research grant. You may download copies of the mock proposals at the NIH website: http://www.drg.nih.gov/Video/video.asp#docs. [Contact: Ron Abeles, Office of Behavioral and Social Research, at abelesr@od.nih.gov]

Substance Abuse and Mental Health Services Administration
http://www.samhsa.gov

13. SAMHSA's National Survey on Drug Use and Health: **Underage Drinking in Rural Areas**, found that

in 2002 the rate of current underage drinking among youth aged 12 to 17 was higher in rural than nonrural areas. Current underage drinking among those aged 18 to 20, however, was higher in nonrural areas. Rural youth aged 12 to 17 reported lower levels of perceived risk from alcohol use, less disapproval of alcohol use, and less perceived parental disapproval of underage drinking than those in nonrural areas. Binge drinking (defined as 5 or more drinks on the same occasion at least one day in the past month) was also higher among rural youth age 12 to 17 (4.1%) than nonrural (1.6%) but did not differ by rural status for those aged 18 to 20.

C. Historically Black Colleges and Universities (HBCUs) and Other Minority Health Activities

[A listing of HBCUs may be found at the website:
http://www.smart.net/~pope/hbcu/hbculist.htm]

14. **Lead exposure** adversely affects intellectual development in young children and might increase the risk for hypertension in adults (1). In the District of Columbia (DC), of an estimated 130,000 residences, approximately 23,000 (18%) have lead service pipes. The Environmental Protection Agency (EPA) requires water authorities to test tap water in 10-100 residences annually for lead. In March 2003, DC Water and Sewer Authority (WASA) expanded its lead-in-water testing program to homes with lead service pipes extending from the water main to the house. By late January 2004, results of the expanded water testing indicated that the majority of homes tested had water lead levels above EPA's action level of 15 parts per billion (ppb). On February 16, DCDOH requested CDC assistance to assess health effects of elevated lead levels in residential tap water. DCDOH also requested deployment of officers of the United States Public Health Service (USPHS) to assist in the investigations.

This report summarizes the results of the preliminary investigations, which indicated that the elevated water lead levels might have contributed to a small increase in blood lead levels (BLLs). The investigation of elevated water lead levels is ongoing. In the interim, DCDOH has recommended that young children and pregnant and breast-feeding women refrain from drinking unfiltered tap water (2). [Note: CDC's BLL of concern for children, 10 µg/dL, was adopted in 1991 in response to evidence associating BLLs >10 µg/dL with adverse health effects (3). Adverse health effects have been reported recently at BLLs <10 µg/dL, particularly in vulnerable populations (e.g., infants and children) (4,5); no safe BLL has been identified (6). [See MMWR report: http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5312a6.htm]

15. **Racial/Ethnic Disparities in Neonatal Mortality, United States, 1989-2001**. Neonatal mortality (i.e., death at age <28 days) accounts for approximately two thirds of infant deaths in the United States. During 1989-2001, neonatal mortality rates (NMRs) declined; however, 2002 preliminary data indicated an increase. This report [see summarizes the results of that analysis, which indicated that 1) extremely preterm infants (i.e., born at <28 weeks' gestation) accounted for 49%-58% of neonatal deaths during 1989-2001 and 2) racial/ethnic disparities persisted despite NMR declines among infants of all gestational ages. During 1989-2001, neonatal mortality in the United States declined 25%, from 6.0 deaths per 1,000 live births to 4.5. In 1989 and 2001, NMRs were highest for blacks (11.5 and 8.9, respectively) and lowest for A/PIs (4.3 and 3.1, respectively).

In 1989 and 2001, preterm infants accounted for approximately 70% of all neonatal deaths. In 2001, preterm infants accounted for 84% of black neonatal deaths and 72%-75% of deaths among infants of other races/ethnicities. In addition, in 2001, extremely preterm infants accounted for 50%-54% of neonatal deaths among all racial/ethnic populations, except blacks, for whom they comprised 70% of neonatal deaths.[See MMWR Vol. 53(29) now online at the CDC website: http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5329a2.htm]

16. **National, State, and Urban Area Vaccination Coverage Among Children Aged 19-35 Months United States, 2003**. The National Immunization Survey (NIS) provides estimates of vaccination coverage among children aged 19-35 months for each of the 50 states and 28 selected urban areas. This report summarizes NIS results for 2003, which indicated substantial increases nationwide in coverage with ≥1 dose of varicella vaccine (VAR) and ≥3 doses of pneumococcal conjugate vaccine (PCV) and the highest coverage ever for all vaccines; **however, wide variability in coverage continues among states and urban areas. Continued vigilance is needed to maintain high levels of coverage, and sustained efforts will be required to reduce geographic disparities in coverage** [Editor's bold; See: MMWR Vol. 53(29) now online at the CDC website: http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5329a3.htm]

17. By 2020, Hispanics are expected to represent 17% of the U.S. population and to surpass all other racial/ethnic minority populations in size. In 1996, the U.S. Department of Health and Human Services established the **Hispanic Agenda for Action initiative**; a major goal of this initiative is to identify health problems that affect Hispanics. In 2001, although the overall age-adjusted suicide rate per 100,000 population among Hispanics (5.6) was lower than the U.S. national rate (10.7), suicide was the third leading cause of death among young (i.e., aged 10-24 years) Hispanics and the seventh leading cause of years of potential life lost before age 75 years. To identify demographic groups at risk for suicide and to help guide prevention efforts, CDC analyzed mortality data for 1997-2001. [See: *MMWR* Vol. 53(22) now at http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5322a1.htm]

18. **Millions of American Indians and Alaska Natives at Increased Risk for Type 2 Diabetes** About 40 percent of adults ages 40 to 74 -or 41 million people- have pre-diabetes, a condition that raises a person's risk of developing type 2 diabetes, heart disease, and stroke. American Indians and Alaska Natives are 2.3 times as likely to have diabetes as non-Hispanic whites of similar age. To respond to this rapidly growing problem, the U.S. Department of Health and Human Services' (HHS) National Diabetes Education Program (NDEP) launched a public awareness campaign "We Have the Power to Prevent Diabetes." The campaign promotes the message that American Indians and Alaska Natives can fight the high incidence of type 2 diabetes in their communities if they take steps to lose a modest amount of weight by moving more, eating less, and making healthy food choices. [For more information about the diabetes prevention campaign and free materials, including tip sheets and the GAMEPLAN for Preventing type 2 Diabetes- tools to help people lose weight, get active, and track their progress- visit the NDEP website at www.ndep.nih.gov]

D. Other Related Agency or GIS News

19. From Mark Reichardt, Open Geospatial Consortium, Inc: When shopping for software, buyers look at features, price and other factors. For those looking to add spatial software to the mix, one key factor is whether or not the product supports standards from the Open Geospatial Consortium, Inc. (formerly Open GIS Consortium, Inc.) or OGC. The Consortium offers a website where products that implement any of its **14 implementation specifications** can be listed by their developers [Contact: Mark at mreichardt@opengeospatial.org]

20. From Russell Kirby, School of Public Health, University of Alabama at Birmingham: The School of Public Health cordially invites you to attend the third lecture in their GIS series on September 17, 9AM-12:30PM. Sara McLafferty, Professor of Geography, University of Illinois, will speak on the topic **"Exploring Geographical Influences on Health and Access to Healthcare"**. Sara is coauthor of the recent book GIS and Public Health. [Contact and inquiries: Russ Kirby at RKirby@ms.soph.uab.edu]

III. GIS Outreach

[Editor: All requests for Public Health GIS User Group assistance are welcomed; readers are encouraged to respond directly to colleagues]
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From Ava-Gay Blagrove, EPA Region III, Office of Environmental Justice: I am an intern in the Office of Enforcement, Compliance and Environmental Justice at the EPA Region III. I am currently working on developing a set of public health indicators to characterize Environmental Justice communities much like the recent map appendices you have published (May and July, 2004 editions, *Public Health GIS News and Information*). As I have been conducting my research I have noted the lack of data which actually integrates public health and environmental issues, because as we know many of these minority and low income communities are equally faced with disproportionate exposure to environmental hazards, as you illustrated with the map locating old housing units and childhood lead poisoning levels in the Cleveland area. I believe that many other possible correlations exist between public health and exposure to environmental hazards that could also possibly be visualized.

I would like your assistance or advice on locating public health data that I may use to create maps in ArcGIS. I have environmental data in abundance but I have found it very difficult to locate public health data, that I can convert to shapefiles.I am seeking information which would help to create maps displaying the specific indicators that I have been researching: age-adjusted cancer incidence and mortality rates, infant mortality rates and low birthweights, not just on a state level but by ZIP code if possible. I am not so much concerned about proving causal relationships as I am about identifying

and assessing these vulnerable communities. I would really appreciate any assistance from interested persons. [Contact: Ava at Blagrove.Ava-Gay@epamail.epa.gov or (215) 814 2959]

IV. Public Health GIS Presentations and Literature
NCHS/CDC Cartography and
GIS Guest Lecture Series

Special: **"Introducing the Health Resources and Services Administration (HRSA) Geospatial Data Warehouse,"** by Terry Cohen and Julie Baitty, GIS Coordinator, HRSA. **October 28, 2004, at 2:00PM, RM 1404, at NCHS! Abstract**: The HRSA Geospatial Data Warehouse (HGDW) provides a single point of access to HRSA programmatic information, related health resources, and demographic data for reporting on HRSA activities. The HGDW is available on the Internet at http://datawarehouse.hrsa.gov and can be found in the Human Health and Disease channel on the Geospatial One-Stop portal. Spatial metadata is registered with the Federal Geographic Data Committee Clearinghouse.

The HGDW provides access to the awarded grants information for reporting and mapping. HRSA grants provide funds for the expansion and improvement of primary health care for medically underserved people; health services for people with HIV/AIDS; maternal and child health services; health professions training and education; health care system emergency preparedness; awareness of organ and tissue donation; and rural health and telemedicine resources.

Additional HRSA specific data includes: **Health Professional Shortage Areas** which are geographic or population based areas that can be medical or other public facilities determined to have a shortage of primary, dental, or mental health care professionals; **Medically Underserved Areas and Population** groups which are also geographic or population based areas which are determined to have a shortage of health services; and **National Health Service Corps and Health Center Cluster sites**.

The HRSA specific information is supplemented with health related data such as: Health workforce data that focuses on the distribution of health professionals and is used to make future projections on workforce needs. Health care facilities which includes information on hospitals, local health departments, rural health clinics, and nursing facilities. The HGDW enables

geographic display of this information across the US and its Territories and will be part of the demonstration at this presentation. [Contact : Julie Baitty at jbaitty@hrsa.gov]
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### CDC's *Emerging Infectious Diseases* and *MMWR Emerging Infectious Diseases*

Emerging Infectious Diseases (EID) is indexed in Index Medicus/Medline, Current Contents, Exerpta Medica, and other databases. Emerging Infectious Diseases is part of CDC's plan for combating emerging infectious diseases; one of the main goals of CDC's plan is to enhance communication of public health information about emerging diseases so that prevention measures can be implemented without delay [The September 2004 10(9) edition is available for download at the CDC EID website at URL http://www.cdc.gov/ncidod/EID/index.htm]
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Morbidity and Mortality Weekly Report

Selected articles from CDC's ***Morbidity and Mortality Weekly Report*** (MMWR): [Readers may subscribe to MMWR and other CDC reports, without cost, at site http://www.cdc.gov/subscribe.html as well as access the MMWR online at website http://www.cdc.gov/mmwr]. Note: Efforts are made to include themes which may lend themselves to spatial distribution. Surveillance Summaries (SS), **Vol 53, No. SS-7**- Surveillance for Fatal and Nonfatal Injuries, United States, 2001; **Vol. 53(34)**- 150th Anniversary of John Snow and the Pump Handle; West Nile Virus Activity- United States, August 25-31, 2004; **Vol. 53(33)**- Health Disparities Experienced by Racial/Ethnic Minority Populations; 53(34)- 150th Anniversary of John Snow and the Pump Handle; **Vol. 53(30)**- Nonfatal Motor-Vehicle Animal Crash-Related Injuries, United States, 2001-2002; Final 2003 Reports of Notifiable Diseases; **Vol. 53, No. SS-5**- Surveillance for Certain Health Behaviors Among Selected Local Areas; **Vol. 53-SS-4**-Surveillance for Disparities in Maternal Health-Related Behaviors- Selected States, Pregnancy Risk Assessment Monitoring System (PRAMS), 2000-2001; **Vol. 53(29)**- Racial/Ethnic Disparities in Neonatal Mortality, United States, 1989-2001; National, State, and Urban Area Vaccination Coverage Among Children Aged 19-35 Months, United States, 2003; **Vol. 53(28)**-Changing Patterns of Pneumoconiosis Mortality, United States, 1968-2000; Progress Toward Poliomyelitis Eradication, Afghanistan and Pakistan, January 2003-May 2004; **Vol. 53(26)**-Adult Blood Lead Epidemiology

and Surveillance United States, 2002; Investigation of Rabies Infections in Organ Donor and Transplant

FIGURE 1. Rate* of adult blood lead levels ≥25 μg/dL, by state — Adult Blood Lead Epidemiology and Surveillance program†, United States, 2002

Not an ABLES state
<10
10–19
≥20
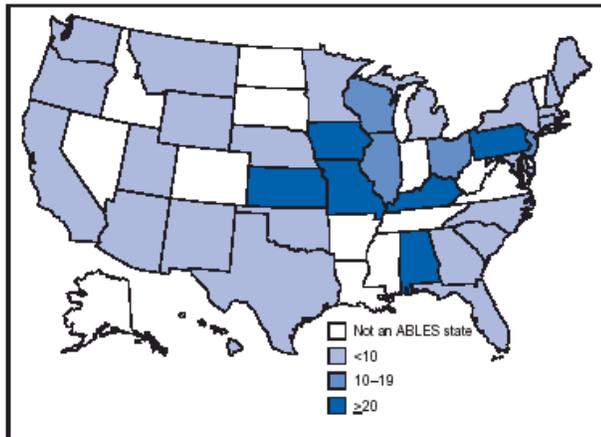
* Per 100,000 employed persons aged ≥16 years, according to the Bureau of Labor Statistics' Current Population Survey.
† Alabama, Arizona, California, Connecticut, Florida, Georgia, Hawaii, Illinois, Iowa, Kansas, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, New Hampshire, New Jersey, New Mexico, New York, North Carolina, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, Texas, Utah, Washington, Wisconsin, and Wyoming.

Recipients Alabama, Arkansas, Oklahoma, and Texas, 2004; **Vol. 53(25)**- Racial Disparities in Tuberculosis, Selected Southeastern States, 1991-2002; **Vol. 53, No. SS-3**- Cancer Mortality Surveillance, United States, 1990-2000; Vo. 53(22)- Suicide and Attempted Suicide; **Vol. 53(21)**- Nonfatal and Fatal Drownings in Recreational Water Settings, United States, 2001-2002; Breast Cancer-Screening Data for Assessing Quality of Services, New York, 2000-2003; **Vol. 51(53)**- Summary of Notifiable Diseases, 2002.

Titles

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Exploratory disease mapping: kriging the spatial risk function from regional count data, Berke O,

Int J Health Geog 3:18 AUG 2004;

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Breast Cancer Incidence by Census Tract
Significantly High Areas
Significantly Low Areas
Not Significant
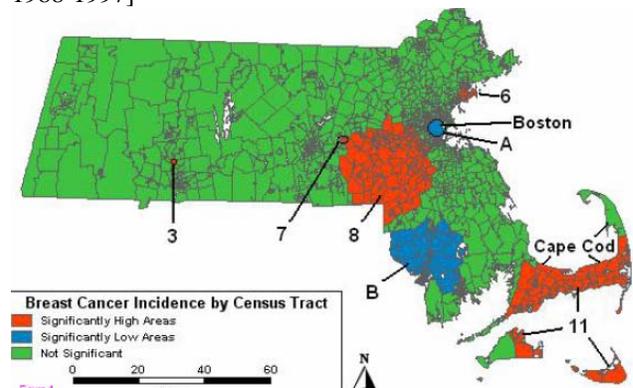
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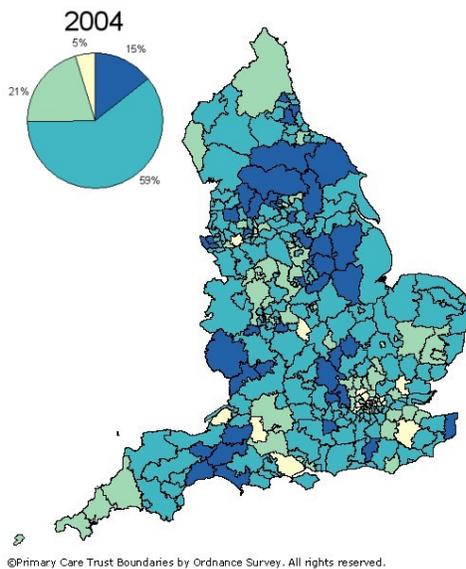
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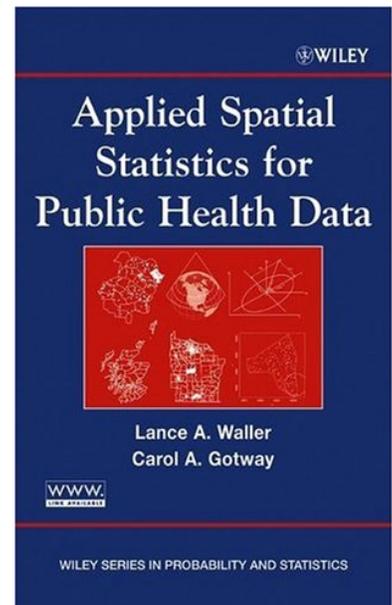[June 2004 28(3) and August 2004 28(4)]
(June) Introduction: **Geographic Information Systems in Public Health and Medicine**, Mullner RM, Chung K, Croke KG, Mensah EK; **Analyzing Geographic Patterns of Disease Incidence: Rates of Late-Stage Colorectal Cancer in Iowa**, Rushton G, Peleg I, Banerjee A, Smith G, West M; **Spatial Clusters of Cancers in Illinois 1986-2000**, Wang F; **Using GIS in Government: An Overview of the VHA's Healthcare Atlas**, FY-2000, Cowper D, Yu W, Kuebeler M, Kubal JD, Manheim LM, Ripley BA; **Using GIS to Profile Health-Care Costs of VA Quality-Enhancement Research Initiative Diseases**, Yu W, Cowper D, Berger M, Kuebeler M, Kubal J, Manheim L; **Temporal Changes of Access to Primary Health Care in Illinois (1990–2000) and Policy Implications**, Luo W, Wang F, Douglass C; **Access to Community Pharmacies by the Elderly in Illinois: A Geographic Information Systems Analysis**, Lin S-J; **Using GIS to Monitor Emergency Room Use in a Large Urban Hospital in Chicago**, Rafalski E, Zun L; **Prenatal Care Need and Access: A GIS Analysis**, McLafferty S, Grady S; (August) **Geostatistics and GIS: Tools for Characterizing Environmental Contamination**, Henshaw SL, Curriero FC, Shields TM, Glass GE, Strickland PT, Breysse PN;

Health and GIS: Toward Spatial Statistical Analyses, Chung K, Yang D-H, Bell R; **Improving Geocoding Practices: Evaluation of Geocoding Tools**, Yang D-H, Bilaver LM, Hayes O, Goerge R; **The Moving Target: A Geographic Index of Relative Wellbeing**, Albrecht J, Ramasubramanian L; **A Local Department of Public Health and the Geospatial Data Infrastructure**, Ruiz MO, Remmert D; **Diversity and Disparity: GIS and Small-Area Analysis in Six Chicago Neighborhoods**, Whitman S, Silva A, Shah A, Ansell D. [See website at: http://www.kluweronline.com/issn/0148-5598/current]

NewBook
Applied Spatial Statistics for Public Health Data
Lance A. Waller (Emory University) and Carol A. Gotway (CDC), Co-Authors, Wiley Series in Probability and Statistics, print 2004. Sparked by the growing interest in statistical methods for trained analysis of spatially referenced data in the field of public health, *Applied Spatial Statistics for Public Health Data* fills the need for an introductory, and an application-oriented text on this timely subject. Written most for practicing public health researchers as well as graduate students in related fields, the text provides a thorough introduction to basic concepts and methods in applied spatial statistics as well as a detailed treatment of some of the more recent methods in spatial statistics useful for public health studies that have not been previously covered elsewhere.

Assuming minimal knowledge of spatial statistics, the authors provide important statistical approaches for assessing such questions as: Are newly occurring cases of a disease "clustered" in space? Do the cases cluster around suspected sources of increased risk, such as toxic waste sites or other environmental hazards? How do we take monitored pollution concentrations

measured at specific locations and interpolate them to locations where no measurements were taken? How do we quantify associations between local disease rates and local exposures?

After reviewing traditional statistical methods used in public health research, the text provides an overview of the basic features of spatial data, illustrates various geographic mapping and visualization tools, and describes the sources of publicly available spatial data that might be useful in public health applications. 1. Introduction; 2. Analyzing Public Health Data; 3. Spatial Data; 4. Visualizing Spatial Data; 5. Analysis of Spatial Point Patterns; 6. Spatial Clusters of Health Events: Point Data for Cases and Controls; 7. Spatial Clustering of Health Events: Regional Count Data; 8. Spatial Exposure Data; 9. Linking Spatial Exposure Data to Health Events.

[Editor: Public health colleagues Lance Waller and Carol Gotway deserve our collective thanks for a job well done. This book reflects a truly conscientious effort to keep us reminded of the basics as well as the current trends in applied spatial statistics and analysis. I especially appreciate the fact it was designed with a wide interdisciplinary audience in mind. Data sets and computer code (some in R, some in SAS), for implementing many of the analyses in the book, will be posted at http://www.sph.emory.edu/~lwaller/WGindex.htm. I believe the book accomplishes its purpose to "consolidate spatial statistical ideas developed in a broad variety of areas and discuss them in the context of routinely occurring spatial questions in public health."]

### *New Book*
GIS in Public Health Practice

Ravi Maheswaran, Massimo Craglia, University of Sheffield, Sheffield, UK, June 2004. GIS in Public Health Practice includes contributions from the leading researchers in the field who participated in the First European Conference on Geographic Information Sciences and Public Health. This event promoted the use of GIS within the realm of public health. Specifically selected and expanded contributions illustrate particular areas of application and address issues of major importance.

Many of the chapters have a UK or European focus, but examine issues, principles, and methods that are relevant worldwide: Examines GIS as a science applied to the study of health issues such as communicable disease control, environmental health protection, and public health planning and policy; Explores disease mapping and spatial analysis; Analyzes

geographic clustering of disease; Investigates the use of GIS in the assessment of the accessibility of health care services; and explains data protection and e-governance issues in the field of public health. [See website at: http://www.crcpress.com/shopping_cart/products/product_detail.asp?sku=TF1643&parent_id=&pc=]

New Journal

The "charter issue" of the *J Map & Geography Libraries: advances in geospatial information, collections & archives*, 1(Issue 1) JUL 2004, is now available: Mary Lynette Larsgaard (Map and Imagery Laboratory, Davidson Library, University of California, Santa Barbara) and Paige G. Andrew (Pennsylvania State University Libraries, University Park), Co-Editors, The Haworth Press, Inc. Articles include: **Advances and Trends in Geospatial Information Accessibility-Part I**, J Boxall, Map Curator and Head, Map and Geospatial
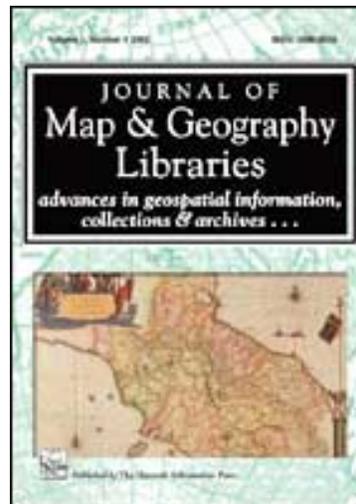
Information Collection (MAGIC), Killam Library, Dalhousie University, Halifax, NS; also, **Information Literacy for GIS Curricula: An Instructional Model for Faculty**, author J Jablonski, Reference Librarian, University of Oregon; **Landsat Yesterday and Today: An American Vision and an Old Challenge**, author JL Faundeen, U.S. Geological Survey, EROS Data Center, Sioux Falls, SD; DL Williams, National Aeronautics and Space Administration, Earth Sciences Directorate, Goddard Space Flight Center, Greenbelt, MD; and CA Greenhagen, SAIC Corporation, Sioux Falls, SD, **Library-Based GIS Labs: A Case Study- Syracuse University**, JA Olson, Maps/GIS Librarian, Bird Library, Syracuse University, Syracuse, NY; **Retrospective Cataloging of Maps in a Small Liberal Arts College: A Case Study**, F Walsh, Catalog/ Serials Librarian, Southern Polytechnic State University, Marietta, GA; **Public Health GIS and the Internet,** CM Croner, Office of Research and Methodology, National Center for Health Statistics, Centers for Disease Control and

Prevention, Hyattsville, MD; **All Things Digital!**, JA Olson; **Issues & Trends: Cartographic Cataloging**, LM Hall, Geography and GIS Bibliographer, Evans Map Room, Dartmouth College, Hanover, NH. [The *Journal of Map & Geography Libraries: advances in geospatial information, collections & archives*, is a new resource for the latest advances in, and practical aspects of, geospatial data and geography collections, information, and archives; see website: http://www.haworthpressinc.com/web/JMGL].

New Monograph
Mini-Monographs on Information Systems
Environmental Health Perspectives 112:995-1037 (2004)
Health and Environment Information Systems for Exposure and Disease Mapping, and Risk Assessment, Lars Jarup; **Spatial Epidemiology: Current Approaches and Future Challenges**, Paul Elliott and Daniel Wartenberg; **Using Geographic Information Systems for Exposure Assessment in Environmental Epidemiology Studies**, John Nuckols, Mary Ward, and Lars Jarup; **Interpreting Posterior Relative Risk Estimates in Disease-Mapping Studies**, Sylvia Richardson, Andrew Thomson, Nicky Best, and Paul Elliott; **Cancer Risk Near a Polluted River in Finland**, Pia Verkasalo,Esa Kokki, Eero Pukkala, Terttu Vartiainen, Hannu Kiviranta et al; **Use of GIS and Exposure Modeling as Tools in a Study of Cancer Incidence in a Population Exposed to Airborne Dioxin**, A. Poulstrup and H.L. Hansen; and, **Spatial Analysis of the Relationship between Mortality from Cardiovascular and Cerebrovascular Disease and Drinking Water Hardness**, Juan Ferrándiz, Juan Abellán,Virgilio G-Rubio, Antonio L-Quílez, et al.

Special Institutional Thematic Issue
Environmental and Ecological Statistics 11(2) JUN 2004: Center for Statistical Ecology and Environmental Statistics (CSEES), Penn State University, Guest Editor: G.P. Patil, Director, CSEES. Kluwer Academic Publishers. Paper topics: 1. **Multiscale advanced raster map analysis system: Definition, design and development**, 2. **Detection and delineation of critical areas using echelons and spatial scan statistics with synoptic cellular data**, 3. **Statistical selection of parameter-area models for patch mosaics in multiscale landscape analysis**, 4. **Upper level set scan statistic for detecting arbitrarily shaped hotspots**, and 5. **Multiple indicators, partially ordered sets, and**

linear extensions: Multi-criterion ranking and prioritization. [Contact: G.P., Distinguished Professor of Mathematical Statistics and Environmental Statistics, at gpp@stat.psu.edu]

Special Report
BRFSS Maps
James B. Holt, MPA, PhD, CDC[1]

[1]Emerging Investigations and Analytic Methods Branch, Division of Adult and Community Health, National Center for Chronic Disease Prevention and Health Promotion, Coordinating Center for Health Promotion. BRFSS Maps is an interactive mapping tool for visualizing data from the Behavioral Risk Factor Surveillance System (BRFSS). This new mapping application is housed within the existing BRFSS website at the URL http://www.cdc.gov. Established in 1984 by the Centers for Disease Control and Prevention (CDC), the BRFSS is a state-based surveillance system that collects data on health risk behaviors, preventive health practices, and health care access primarily related to chronic disease and injury. Data are collected monthly in all states, the District of Columbia, Puerto Rico, the U.S. Virgin Islands, and Guam. Over 200,000 individuals are surveyed each year, making the BRFSS the world's largest telephone health interview survey.

The CDC provides technical assistance to the states and territories on the administration of the survey. CDC also assists in processing the BRFSS data and in producing prevalence estimates at the state and local levels. In November 2002 CDC released SMART (Selected Metropolitan/Micropolitan Area Risk Trends) BRFSS, a set of data estimates for selected Metropolitan and Micropolitan Statistical Areas (MMSAs). SMART BRFSS was produced in response to the growing demand for local-area data. As early analyses indicate that the prevalence of certain health-related behaviors vary widely across MMSAs and counties, SMART BRFSS will help health officials plan, implement, and evaluate public health interventions.

The release of BRFSS Maps in August 2004 is the next enhancement to the usefulness of the extremely rich BRFSS database. Until now, it was only possible to produce maps of state-level risk factor prevalences on a case-by-case basis, usually by manually creating maps in a graphics software package or with the use of a geographic information system (GIS). Many existing and potential users of BRFSS data do not have access to

either of these two options. Furthermore, static maps are not optimized for interactive exploratory spatial data analysis. To address these issues, the Division of Adult and Community Health (DACH), which oversees program operations for the BRFSS, initiated a project to design an interactive Internet-based BRFSS mapping application. This project began in October 2003 and was completed for public release of BRFSS Maps in August 2004.

BRFSS Maps is designed to facilitate visualization and exploratory data analysis of BRFSS data. By doing so, BRFSS Maps enables users to examine regional patterns and intrastate variations in the data, thus prompting interesting research questions. BRFSS Maps also provides a useful mapping tool for graphics production, as well as facilitating access to BRFSS data in a downloadable GIS-friendly format. It is hoped that BRFSS Maps will further encourage the use of geographically-referenced risk factor data.

BRFSS Maps has a variety of capabilities that are designed to enhance the user's interaction with BRFSS data. These include the ability to view state and MMSA data layers together or separately, to select the number of class breaks and their method of classification (natural breaks, quantiles, standard deviations, and equal intervals), to use standard GIS interface tools (zoom, pan, rate retrieval), to select labeling options, to download GIS data, and to access mapping guidance.

BRFSS Maps is accessible in two ways: directly from the BRFSS Home Page: http://www.cdc.gov/brfss, and through a direct URL also online at the CDC at http://apps.nccd.cdc.gov/gisbrfss. Once in BRFSS Maps, users can navigate back-and-forth to the main BRFSS site, which contains risk factor prevalence data in tabular format, as well as details about the questionnaire and survey methodology. The initial screen in BRFSS Maps prompts the user to select a question category from a pick list. Specific questions within each question category are then presented for the user to select for mapping. For example, the percentage of respondents who reported having five or more alcoholic drinks on one occasion (the definition of binge drinking) is depicted in Figure 1.

Each initial map for a question/response combination is a five-class map in which the data are classified by natural breaks. The state and MMSA data layers and their labels are on by default. MMSA labeling is scale dependent in order to avoid label overlap. State

and MMSA legends are on the left side of the map frame, while map interaction tools are to the right. The state and MMSA data layers can be deselected by un-checking the

Figure 1. Percentage of respondents who have ever had five or more alcoholic drinks on one occasion (data classified by natural breaks)
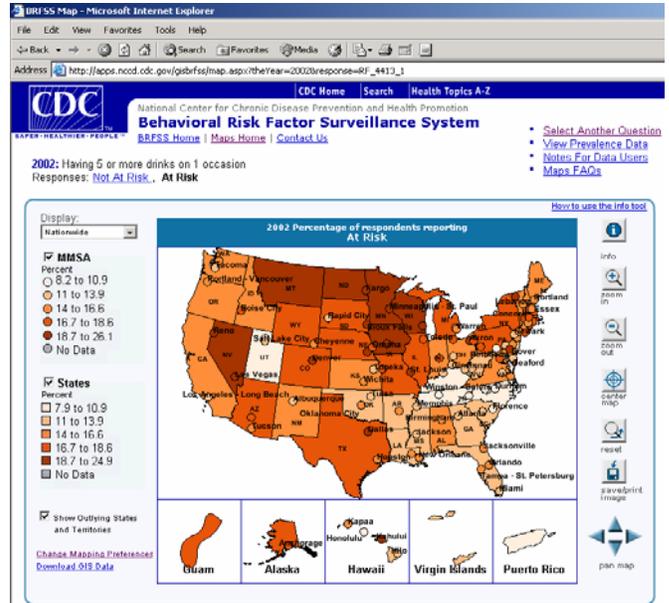
box to the left of each data layer's name. Five insets for the outlying states and territories are positioned below the main map frame of the contiguous states. The outlying states and territories insets can also be deselected if desired.

By selecting the Mapping Preferences link, a new dialog box opens, in which users can specify the number of data classes and the data classification method. Users can also toggle state and MMSA labels. A hyperlink is provided to information on the various methods for determining class breaks for users who desire additional guidance.

Figure 2, a quintile map, depicts the percentage of female respondents who reported ever having had a mammography. Figure 2 was constructed by first selecting the Women's Health category, then the mammography questions, and finally by changing the data classification method to "Quantile" in the Mapping Preferences dialog. The resulting map is a quintile (5-class quantile) map, based on the selection of "5" for the number of classes. Similarly, 2-class, 3-class, 4-class, and 6-class quantile maps are also available by selecting the appropriate number of classes in combination with
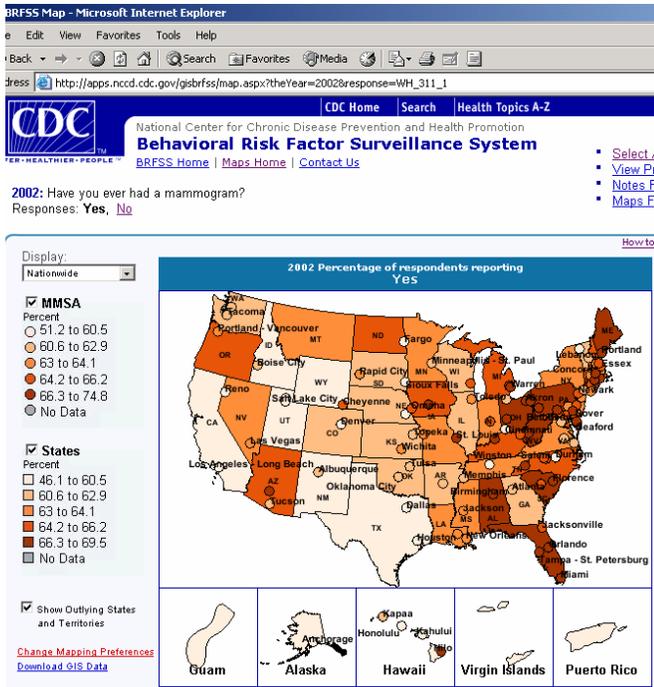
the quantile option.

Figure 2. Percentage of female respondents who have ever had a mammogram (data classified by quintiles)

Similarly, a standard deviation map for self-rated health status shown in Figure 3. A diverging color scheme is used to highlight the high and low extremes of the data, while minimizing the visual impact of the midpoint of the data range. The classification method and color scheme facilitate investigation of potential outliers (either high or low) in a dataset.

Users can save their maps in two ways: either by saving the map as an image file, or by sending the map directly to a printer. Users can download the entire BRFSS data for a specific year by clicking on "Download GIS Data". If this option is chosen, a zipped file is downloaded, which contains two GIS shapefiles, one for states and territories and one for MMSAs. A data dictionary is also downloaded, to aid in data variable identification. By providing the BRFSS data in GIS-friendly format, it is hoped that users will be encouraged to conduct further analyses with additional user-supplied data in a GIS.

Color schemes for BRFSS Maps were chosen based upon the number of data classes, the types of data being mapped (e.g., sequential or diverging data), consideration of the display devices to be used for the

resulting maps (e.g., computer CRT monitor, computer LCD monitor, LCD projector, and print copy), and the need to avoid colors that are undifferentiable by individuals with impaired color-vision (e.g., red-green
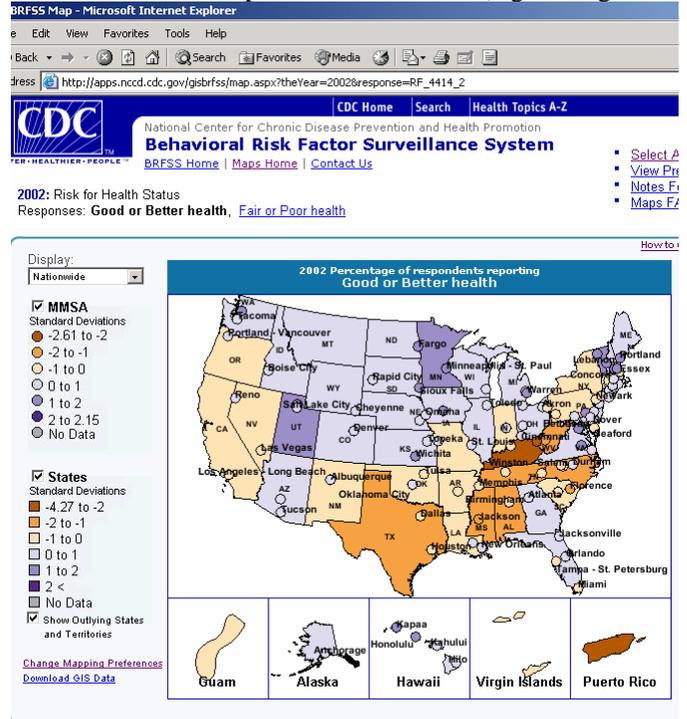

Figure 3. Percentage of respondents with good or better self-reported health (data classified by standard deviations)

color combinations). To facilitate this process, the two color schemes for the BRFSS Maps were selected by consulting ColorBrewer, an online tool for selecting color schemes. ColorBrewer, located to the website http://www.colorbrewer.org, was developed by Cynthia Brewer and Mark Harrower at The Pennsylvania State University, and is based on Brewer's extensive experience in providing cartographic assistance to federal agencies such as the U.S. Census Bureau, the Centers for Disease Control and Prevention, and the National Cancer Institute. Details on ColorBrewer can be found on the ColorBrewer Web site as well as in the journal article: Harrower M., and C. A. Brewer, 2003. ColorBrewer.org: An Online Tool for Selecting Colour Schemes for Maps, *The Cartogr J* 40(1):27-37. The color scheme chosen for natural breaks, quantile, and equal interval maps is the Sequential Oranges scheme. This scheme works well with ordinal, interval, and ratio data, such as the prevalence data in the BRFSS. The color scheme chosen for the standard deviation maps is the Diverging Purple-

Orange scheme. This scheme emphasizes the natural midpoint of a diverging dataset (e.g., the mean) and the diverging values from the mean (e.g., positive and negative standard deviations). The color schemes are automatically selected based upon the user's selection of the statistical classification method for categorizing the data.

The initial release of BRFSS Maps is intended to be the first of at least three versions. The next version, due out near the end of 2004, will include additional enhancements such as data histograms, manually defined class breaks (by direct entry of class break numeric values), the ability to classify data with or without territories' data included in the dataset, and the ability to map combined category responses. The third version, due out in 2005, will include trend maps, enhanced exploratory data analysis tools, county-level maps, and bivariate maps.

BRFSS Maps represents the initial foray into on-line mapping of BRFSS data. The focus of this application is on visualization and exploratory spatial data analysis. The BRFSS database includes a wealth of data, going back to 1984. By providing an additional method with which to explore BRFSS data, it is hoped that even more utility can be derived from an already highly acclaimed data source. BRFSS Maps was designed with user-friendliness as a primary goal. [Users are encouraged to explore the functionality of BRFSS Maps and to submit comments and suggestions for improvements and enhancements to Jim Holt at jgh4@cdc.gov. The author wishes to thank several users who provided feedback during the development of BRFSS Maps, and in particular Linda Pickle, National Cancer Institute, and Sue Bell, Food and Drug Administration, for their helpful guidance and thoughtful feedback. The author would like to acknowledge the outstanding work of the GIS development team from Northrop Grumman, who translated the author's specifications into a finished product: David Ray, Daniel Shorter, Krishen Kota, Toni Pashley, and Kathryn O'Neill. Lastly, the author acknowledges the support and vision of the leadership and staff of the Division of Adult and Community Health and the Behavioral Surveillance Branch for their willingness to be innovative and to continue to provide the very highest quality of technical assistance to our state and local public health partners: Virginia (Ginny) Harris, Ali Mokdad, Wayne Giles, Lina Balluz, Bill Garvin, and Herbert Stackhouse]

V. Related Census, HHS, FGDC and Other Federal/State Developments

Federal Geographic Data Committee (FGDC)

[The Federal Geographic Data Committee (FGDC) is an interagency committee, organized in 1990 under OMB Circular A-16, which promotes the coordinated use, sharing, and dissemination of geospatial data on a national basis. The FGDC is composed of representatives from seventeen Cabinet level and independent federal agencies. The FGDC coordinates the development of the National Spatial Data Infrastructure (NSDI). The NSDI encompasses policies, standards, and procedures for organizations to cooperatively produce and share geographic data. The 19 federal agencies that make up the FGDC, including HHS, are developing the NSDI in cooperation with organizations from state, local and tribal governments, the academic community, and the private sector. See http://www.fgdc.gov]

Framework Standards Review Invited!

The Federal Geographic Data Committee (FGDC) invites comments from our Public Health GIS Users and all interested parties on draft framework data standards. The public review period begins July 30, 2004 and ends October 30, 2004. These standards were developed through the Geospatial One-Stop e-Government initiative. The standards establish common requirements to facilitate data exchange for seven themes of geospatial data fundamental to many different Geographic Information Systems (GIS) applications. The seven geospatial data themes are: geodetic control, elevation, orthoimagery, hydrography, transportation, cadastral, and governmental unit boundaries. [To participate in the FGDC public review, please register at the official Framework Standard Registered Review site, located at URL http://www.fgdc.gov/RReview/RRlogin.php. Registration data will provide demographic statistics needed to assure broad participation in public review and ensure that reviewers are aware of copyright requirements. The confidentiality of reviewers' personal information will be maintained]

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The NSDI Communications Toolkit. The toolkit consists of a set of three interrelated briefing materials that describe the power of geospatial information and technology (see www.fgdc.gov). These communication tools have been developed through a cooperative partnership between the National States Geographic Information Council (NSGIC) and the FGDC. These materials are intended to assist you in educating managers and policy officials about the widespread potential of spatial data and geospatial technology to assist their decision-making processes. The tools are designed to help you familiarize officials with a more

effective way of addressing real world problem solving in the day-to-day business of government through the power of geographic information [Web Version- 2 tools available; Hard Copy Version- 3 tools available].

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Recent Government Accountability Office (GAO) Reports, 2004

[http://www.gao.gov/docsearch/repandtest.html]

* **Homeland Security: Communication Protocols and Rick Communication Principles Can Assist in Refining the Advisory System**. GAO-04-682, June 25;
* Status of Key Recommendations GAO Has Made to DHS and Its Legacy Agencies. GAO-04-865R, July 2;
* Drinking Water: Safeguarding the District of Columbia's Supplies and Applying Lessons Learned to Other Systems. GAO-04-974T, July 22;
* Homeland Security: Efforts Under Way to Develop Enterprise Architecture, but Much Work Remains. GAO-04-777, August 6.

Web Site(s) of Interest for this Edition

http://www.epa.gov/ord/scienceforum/2004/presentations.htm
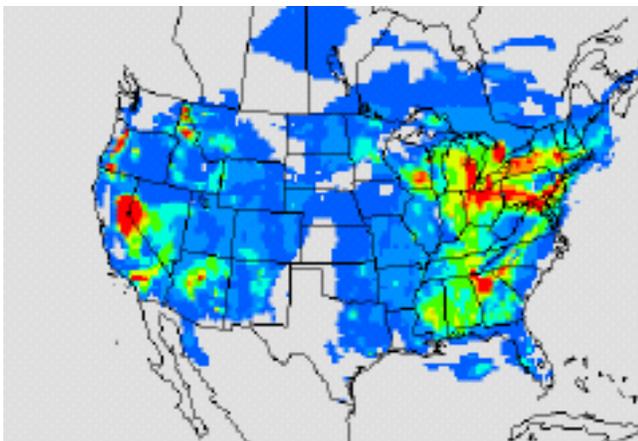
EPA is pleased to announce that the materials from the EPA Science Forum 2004: Healthy Communities and Ecosystems, held June 1-3, 2004, in Washington, DC are available on the Science Forum web site. Next year's Forum will focus on collaboration among public and private partners, Federal Agencies and International partners. Topics will include technology for sustainability, information and data systems and measuring and quantifying environmental benefits. [Map: PM2.5 layer, July 3, 1999- from "Delivering Science-Based Information to Decision-makers," Kim Nelson, Assistant Administrator for Environmental Information]

http://www.med.ic.ac.uk/divisions/template_divisions_departments.asp?id=62 **A Geographical Analysis of Populations Living Around Landfill Sites**, Small Area Health Statistics Unit Imperial College of Science, Technology and Medicine London, UK, July 2001. The
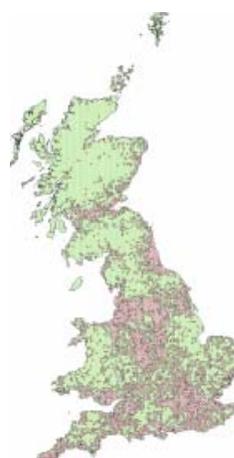
aims of the study are defined as: to perform a spatial analysis of health outcomes (birth anomalies, stillbirths, low birthweight, and the incidence of certain cancers) in the vicinity of landfills in Great Britain. The secondary objective is to test the hypothesis that living near a landfill site (regardless of waste type deposited) operating at some time during the study period is associated with an excess risk of certain cancers. This report describes the GIS-based methods used to classify populations in GB in terms of their potential exposures and presents data on the characteristics of 'exposed' and 'unexposed' populations in Great Britain.

http://www.mla.org/census_main **The Modern Language Association Language Map: A Map of Languages in the United States**. The MLA Language Map is intended for use by students, teachers, and anyone interested in learning about the linguistic and cultural composition of the United States. The MLA Language Map uses data from the 2000 United States census to display the locations and numbers of speakers of thirty languages and seven groups of less commonly spoken languages in the United States. The census data were based on responses to the question, "Does this person speak a language other than English at home?" The Language Map illustrates the concentration of language speakers in zip codes and counties. The Data Center provides actual numbers and percentages of speakers.

http://epa.gov/etv EPA's Environmental Technology Verification (ETV) Program develops testing protocols and verifies the performance of innovative technologies that have the potential to improve protection of human health and the environment. Testing is underway for three rapid polymerase chain reaction (PCR) technologies to evaluate their ability to **detect specific biological**

agents and pathogens in water, which are particularly toxic to humans and also can be susceptible to interferents in some drinking water systems. Polymerases are enzymes that are present in all living things and whose roles are to copy genetic material.

http://qfaults.cr.usgs.gov This new USGS website summarizes geologic, geomorphic, and geographic information on about 2000 Quaternary faults and fold-related faults in the U.S. This online database contains new information on **faults and associated folds** in the United States that are believed to be sources of M>6 earthquakes during the Quaternary time period. The Quaternary period encompasses the past 1.6 million years, and is the period of geologic time that is most relevant to many earthquake studies. The fault database includes information such as geologic setting, fault orientation, fault type, sense of movement, slip (activity) rate, recurrence (repeat) interval, and the time of the most recent surface faulting event. Ten years in the making, this massive collection of data, which is estimated to contain about 10,000 pages of content, was accomplished with the cooperation and assistance of state geological surveys as well as individuals in the academic and engineering communities. Although still under development, it will serve the needs of a wide variety of users in the lower 48 states. [Photo: San Andreas fault zone, Carrizo Plains, central California]

http://www.ornl.gov/sci/gist The **Geographic Information Science and Technology (GIST) Group** is part of the Oak Ridge National Laboratory, a U.S. Department of Energy facility at Oak Ridge, Tennessee. Typical applications for GIST's sponsors have included the assessment of air training routes, three-dimensional terrain visualization, the siting of weapons facilities, transportation routing, hazardous waste and hydrogeologic studies, terrain and landform analysis, military base comprehensive planning and facilities management, natural resource management, population-at-risk studies around hazardous sites, studies of coastal habitat change from satellite imagery, land use

Two Plumes Adjacent K–1420 Waste Pipes
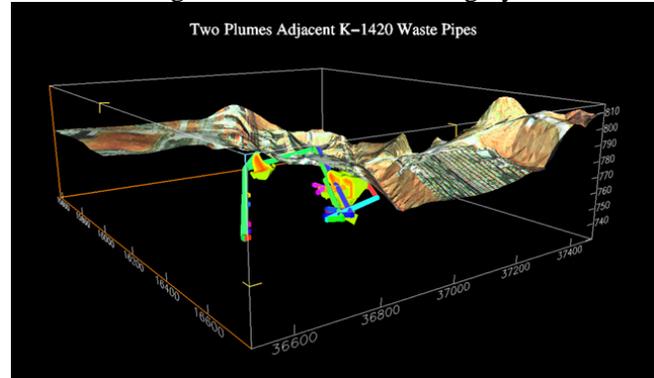
modeling, environment impact analysis, natural hazard prediction and modeling, and emergency management. [Map: subsurface plume modeling of adjacent waste pipes]

http://www.nap.edu/catalog/11079.html The new National Research Council report on **Licensing Geographic Data and Services** can be viewed in prepublication form online. It discusses the many issues that have evolved with the licensing of geographic data.

http://www.marchofdimes.com/peristats/whatsnew.aspx?id=6 The new PeriStats Web site, developed by the March of Dimes Perinatal Data Center, with grant funding from the National Library of Medicine, National Institutes of Health. PeriStats provides free access **to maternal & infant health-related data** at the U.S., state, county, and city level, now with more than 60,000 graphs, maps, and tables. Aggregating data from 11 government agencies and organizations, PeriStats provides access to the most current maternal and infant health statistics on topics such as preterm birth, infant mortality, tobacco use, cesarean section rates, and health insurance coverage. Detailed information by race, ethnicity, and maternal age for many indicators is also available. New features include detailed data for 214 of the largest cities and counties in the United States.and detailed data for the following U.S. regions: Midwest, Northeast, South, and West.

Final Thoughts

Bringing Spatial Science to Bear on Health Inequalities

Inequalities in public health pose one of the most serious challenges to the wellbeing of our nation. "In the United States, blacks, Hispanics, American Indians/Alaska Natives, Asians, and Native Hawaiian or Other Pacific Islanders (NHOPIs) bear a disproportionate burden of disease, injury, premature death, and disability. For persons of these racial/ethnic minority populations, health disparities can mean lower life expectancy, decreased quality of life, loss of economic opportunities, and perceptions of injustice. For society, these disparities translate into decreased productivity, increased health-care costs, and social inequity. By 2050, racial/ethnic minorities will account for nearly 50% of the total U.S. population. If these populations continue to experience poor health status, the expected demographic changes will magnify the adverse impact of such disparities on public health in the United States." [Source: Health Disparities Experienced by Racial/Ethnic Minority Populations, MMWR Weekly, Volume 53, No. 33 August 27, 2004; see http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5333a1.htm]

In keeping with our current theme of bringing spatial science to bear on inequalities in public health, I am pleased to share with you information from a very timely research conference that incorporates this very theme. The latest research on the connections of race/ethnicity and place will be presented in an interdisciplinary setting at the 2004 Conference on Race/Ethnicity and Place. Topics range from changing cultural landscapes, spatial immigration patterns, diversity in employment, disparities in health and housing, to race/ethnicity and place in educational curricula. Due to space limitations, I have selected those paper and poster titles that appear to most align with the spatial perspective of public health but I assure you this conference has a robust and focused approach on the inequalities continuum. [For the full program please see: http://www.aag.org/Meetings/place.html]

Conference on Race/Ethnicity and Place

September 16-18, 2004, Howard University Campus, Washington D.C.
Organized by Binghamton University, Howard University, and the Association of
American Geographers**:** Selected Papers and Posters (sessions in **bold**)

Racial/Ethnic Identity and Place I (see program for all papers)**; Across the Continuum from City to Suburbia to Rural and Back.** "Race and Ethnicity in Megalopolis, 1960-2000," JR Short, Depart of Geography and Environmental Systems, U MD Baltimore County; "Melting into Suburban Pot: Asian and Latino Immigrants' Emerging Suburban Identities in the DC Area"; Shanglin Chang, Depart of Natural Resource Sciences and Landscape Architecture, U MD College Park; "Fifty Years After Brown v. Board: The impact of suburban housing patterns on the desegregation of urban schools in America," AC Stevenson, Rowan U Depart of Geography; "New Destinations for Hispanic Migrants: An Analysis of Eastern Kentucky"; HR. Barcus, Morehead State University Institute for Regional Analysis and Public Policy. **Land and Heritage: Tourism and Development Issues in Ethnic Communities** (see program)**; Racial Spaces and Places in the United States** (see program)**; PANEL: Federal Perspectives on Geographic Research Needs** (see program)**; Racial/Ethnic Identity and Place II.** "Racial Identity and Assessment of Place in a College Town," C Adom, Clark U and JW Frazier, Binghamton U Depart of Geog; "A Patchwork Quilt: Perceptions of Neighborhoods Among African American and Latino Children in Buffalo, NY," M Cope, SUNY-Buffalo; **The Roles, Relationships and Responses of Public and Private Institutions** (see program)**; Race, Ethnicity and Community: Conflict and Change in Evolving Multiethnic Communities.** "Little Tokyo: Creating a 'Place' Under Harsh Realities" JM Smith, Towson U Depart of Geog; "Collectivity, Cooperation and Conflict in America's Multiethnic Suburbs," E Skop, U TX at Austin, Depart of Geog. **Keynote Address**: "Narratives of Change in Neighborhoods of Philadelphia," R Sanders, Temple U, Depart of Geog/Urban Studies. **Plenary Panel: Research Perspectives on Race/Ethnicity and Place.** "HOPE VI in Washington, D.C.: People versus Places and Community Development*."* RD Green, Howard U Center for Urban Progress; "Ethnicity and Place: The Role of Geographic Information Analysis;*"* Todd Rogers, Environmental Research Systems Institute; "Geographies of Race and Poverty in the American Northwest,*"* V Lawson, U WA Depart of Geog. **Mapping the Census: Presentations and Forum.** "Race and Space: Using Census Bureau Data to Visualize Race in Geographic Context,*"* D Cohen and N Jones, U.S. Depart of Commerce, Bureau of Census; "Mapping

Racial/Ethnic Data on the Internet.*"* K Heard, Binghamton U Depart of Geog. **The Roles of Institutions in Persistent and Emerging Racial/Ethnic Equity Problems.** "The Racial Geography of Predatory and Subprime Lending in Akron, Ohio,*"* D Kaplan, Kent State U Depart of Geog; "Concentrated Poverty, Race, and Mortgage Lending: Implications for Anti-Predatory Lending Legislation,*"* JT Darden, Michigan State U Depart of Geog; "Race, Location and Access to Employment in Buffalo, NY," IJ-Anumonwo, SUNYCortland Depart of Geog; "Credit Outcomes: The Importance of Race, Family Background and Urban Location,*"* C L Betsey, Howard U Depart of Econ. **Methodological Considerations in Racial/Ethnic Geographic Research.** "Cartographic and Methodological Challenges in Mapping Changing Urban "Ethnic Geologies," LS Willis, Binghamton U Depart of Geog and S Brunn, U of KY Depart of Geography; "Measuring the Spatial Extent of Local Segregation: Exploring Local Variability,*"* D Wong, George Mason U Depart of Geog & Cartog Sciences; "Geographic Information Systems: Revealing Public Health Inequalities in African American Communities;*"* C Croner, NCHS/Centers for Disease Control and Prevention; "GIS and Service Learning in Assessing the Impacts of Rapid Urban Growth Upon Nashville's African American Communities,*"* D Padgett, TN State U Depart of History, Geog and Political Science. **Intersections of Race, Ethnicity and Class in Employment, the Workplace, and the Economy.** "Public Housing to Public Art: Reassessing Lexington Kentucky's Dynamic Doors project," ME Crutcher Jr., U KY Depart of Geog; "Effects of Residential Locations on Ethnic Labor Market Concentration: A Case Study of the San Francisco CMSA," Q Wang, U GA Department of Geog; "Racial Discrimination in Mortgage Lending." EC Blank, Howard U (HU) Depart of Econ; P Venkatachalam, HU Center for Urban Progress; L McNeil, HU; and R Green, HU Depart of Econ; "Redlining Black Neighborhoods in Milwaukee: Evidence Using Spatial Statistical Modeling," K Park, U Wisconsin-Milwaukee Depart of Geog. **International Dimensions of Racial/Ethnic Identities** (see papers)**. The Impact of Emerging U. S. Latino Settlements in Places Outside of Megalopolis.** "Changing Spatial Patterns of Ethnic and Immigrant Groups in San Antonio, 1990-2000," RC Jones and S Crum, U TX at San Antonio Depart of Political Sci and Geog; "Black, White and Hispanic: Transitioning Ethnic Geographies in a New South City," HA Smith, UNC-Charlotte Depart of Geog; "Place Utility in the Texas Great Plains: Anglo and Latino Discordance, 1970-2004," L Estaville, E Montalvo, and B Brown, TX State U San Marcos Depart of Geog; "Latino Settlement and Resettlement Down the U.S. Urban Hierarchy: An Examination of Southeastern Pennsylvania," M Reisinger, ET-Fio, and JW Frazier, Binghamton U Depart of Geog. **Race, the Digital Divide and Geospatial Technologies.** "Revisiting the Digital Divide: Race, Region and the Everyday Uses of Internet Technologies," J Chakraborty and M Bosman U South FL Depart of Geog; "Universities/Community Partnerships, Regional Development, Neighborhood Change and Race," H Etienne, Cornell U Depart of City and Regional Planning. **Race and the Legal and Criminal Justice Systems.** "Placing Police: Spatial Strategies of African Americans in Buffalo, New York," J Housel, SUNY at Buffalo Depart of Geog; "Preventing Homicide In North Lawndale, Chicago," B Weisberg, U ILL at Chicago Depart of Criminal Justice; "Murder, Race, and Place: The Racialization of Space in Athens, GA," R Yarbrough, CM Smith, and JF Inwood, U GA Depart of Geog; "Scale and Racial Segregation in Affirmative Action Law," B Forrest, Dartmouth College Depart of Geog. **Visualizing and Characterizing Race/Ethnicity and Place: Illustrated Papers.** "The Effect of Immigration on Residential Segregation in U.S. Metropolitan Areas, 2000," J Iceland, U MD Depart of Soc; "Tracking Race, Ethnicity and Social Economic Status Using Web-based GIS Maps," R Wilson, Norfolk State U Depart of Polit Sci. **Creating Racial/Ethnic Places: The Roles of Identity and Community** (see papers). **Big City Revitalization/Gentrification: Cases from New York, Chicago, Philadelphia, Washington DC, and Seattle Neighborhoods** (see papers). **Health Disparities: The Significance of Race, Class and Environmental Pollution.** "Racial Disparities in Low Birth Weight and Other Reproductive Health Outcomes," SC Grady, U Albany Depart of Epi; "Racial Disparities in Health Outcomes in Texas: HIV-AIDS and Tuberculosis Vulnerability," J Oppong, U North TX Depart of Geog; "The Geographic Distribution of HIV/AIDS in the District of Columbia," P Venkatachalam, Howard U Center for Urban Progress; "Variations in Neighborhood Exposure to Lead and Patterns of Learning Disabilities Among School-Age Children," FM. Margai, Binghamton U Depart of Geog. **MLK Streets: At the Intersection of Race, Place, and Memory** (see papers). **The Changing and Persistent Landscapes of Race and Ethnicity in the Nation's Capital Region.** "A Spatial Analysis of Crime in Washington, D.C.: 1990 and 2000," D Davis, U District of Columbia Depart of Urban Affairs; "The Economic

Status of Immigrant Ethnic Enclaves," JP Allen, Cal State U at Northridge Depart of Geog and E Turner, Cal State U at Northridge Depart of Geog, Social & Behavioral Sci. **Changing Race/Ethnicity and the Nature of New American Places.** "Racial/Ethnic Clustering at an Intra-Urban Scale: Columbus Ohio, SMA, 1990 and 2000," LA Brown, Ohio State U Depart of Geog and S-Y Chung, Ohio State U Depart of Psychiatry; "Public Housing and the Geography of Race: A Spatial Analysis of Section 8 Housing in Grand Rapids, MI," JJ Biles and L Fishell, Western Mich U Depart of Geog. **Symbolic and Spatial Representations of Race and 'Whiteness' .** "Racialized Landscapes, RH Schein, U KY Depart of Geog; "Latino Migration to the US South and the Changing Politics of Race and Region," J Winders, Syracuse U Depart of Geog. **Environmental Justice: Discourse and Practice.** "The Chicken or Egg: An Empirical Analysis of Environmentally Noxious Facilities and Racial/Ethnic Neighborhood Characteristics," BE. Montz, Binghamton U Depart of Environ Studies; "Environmental Health and Justice Implications of Industrial Zoning Changes in New York City: A Case Study in 'Expulsive Zoning'," JA Maantay, Lehman College/CUNY Depart of Environ, Geog, and Geologic Sciences. **Plenary Panel and Closing Discussion Race/Ethnicity and Place: Applications and Programs** (see program).

Selected Posters: "Black Women Come to Binghamton, New York: A Case Study in Poor Female Migration," K Legette, Binghamton U McNair Program; "Geographical and Racial and Ethnic Variations in Breast Cancer Incidence in New York State," A Fodor, Binghamton U Depart of Geog; "Racial and Ethnic Variations in Infant Mortality Rates for New York Counties," S Davanzo, Binghamton U Depart of Geog; "Comparison of the Intake of Cruciferous and Dark Green Leafy Vegetables and Specified Socio-demographics among African American Adult Females with and without Breast Cancer," LM Goodson, Howard U Depart of Nutritional Sci; "Reflections of Residential Choice by Factorial Ecology and Cluster Analysis of Asian Americans in Washington D.C," J Pomeroy, U MD Depart of Geog; "Racial/Ethnic Disparities in Health Status: An Examination of Low Birth Weight in Suffolk and Monroe Counties, New York," H Aikens, Binghamton U; "Analysis and Detection of Health Disparities using Geostatistics and a Space-Time Information System," P Goovaerts, Biomedware, Inc.; "Uncovering Segregation using Spatial Data Analysis and the Resulting Complications, " RE Wilson, National Institute of Justice, Mapping & Analysis for Public Safety Program; "Demographics and Waste Transfer Stations in South Bronx, New York," ZS Naphtali, CE Restrepo, and R Zimmerman, NY U, Wagner Graduate School of Public Service; "The Segregation of Chicago," C Patton, DePaul University.

Charles M. Croner, PhD, Geographer and Survey Statistician, and Editor, *Public Health GIS News and Information*, Office of Research and Methodology, National Center for Health Statistics, and DHHS Representative, Federal Geographic Data Committee, at cmc2@cdc.gov. Celebrating our **60**[th] edition with continuous reporting since **1994.**

The NCHS GIS home page contains current GIS events, archived GIS reports and other GIS links
http://www.cdc.gov/nchs/gis.htm

APPENDIX: MAPPING HEALTH INEQUALITIES
[Third in Series: See also May and July 2004 editions]
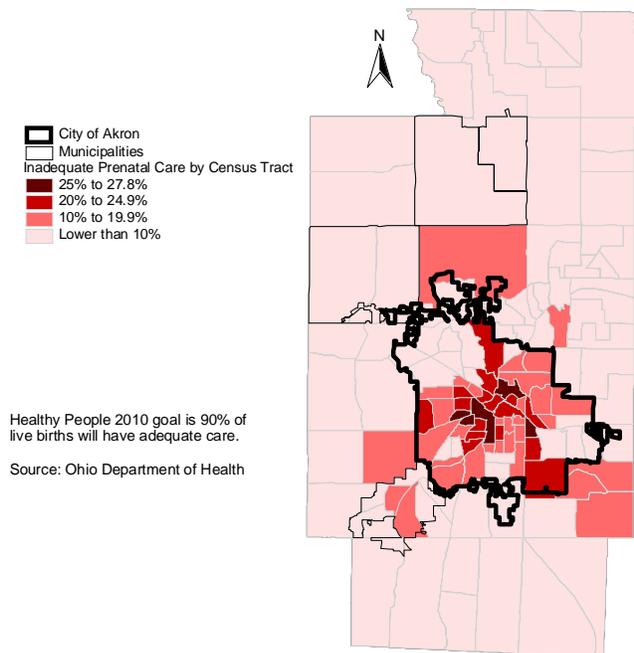
Inadequate Prenatal Care
Summit County, Ohio, 1996 to 2001
Mark J. Salling, Ph.D. and Terry Lenahan, The Center for Community Solutions, Cleveland, Ohio

The benefits of early prenatal care are undisputed but prenatal care must be consistent throughout pregnancy to maximize its effectiveness. Regular prenatal care can manage or prevent the consequences of maternal health problems including gestational diabetes and high blood pressure. During prenatal visits, a woman may be given advice about her pregnancy and a plan for care that may recommend things such as exercise, healthy diet, and regular medical check-ups. A major objective of the visits is to have the mother recognize the importance of her health behaviors while pregnant. One goal of *Healthy People 2010* is to increase adequate prenatal care to 90 percent of live births.

Inadequate Prenatal Care as a Percent of Total Births, Summit County, 1996 to 2001 Average
(map to right)

Inadequate Prenatal Care by Census Tract
- 25% to 27.8%
- 20% to 24.9%
- 10% to 19.9%
- Lower than 10%

Healthy People 2010 goal is 90% of live births will have adequate care.

Source: Ohio Department of Health

Ideally, prenatal care begins in the first trimester of pregnancy, and if the pregnancy goes to term the mother will have had 10 to 12 prenatal visits. There is a well-established link between the use of prenatal care services and birth outcomes. Late initiation of prenatal care has been associated with low-weight births and premature births, as well as infant and maternal mortality. The benefits of early prenatal care are often the strongest among economically disadvantaged women who may be the least likely to receive timely care.

The Adequacy of Prenatal Care Utilization Index, developed by Milton Kotelchuck, classifies prenatal care received into one of four categories (inadequate, intermediate, adequate, and adequate plus) by combining information about the timing of prenatal care, the number of visits, and the infant's gestational age.[1] Specifically, inadequate prenatal care is defined as no prenatal care, or care that began in the fourth month of pregnancy, or fewer than five prenatal visits for an infant born at less than 37 weeks gestation, or fewer than 8 prenatal visits with a gestational age greater than or equal to 37 weeks.

An average of 11.7 percent of U.S. women received inadequate prenatal care from 1999 to 2001. One in 10 White mothers (10.2 percent) received inadequate care during their pregnancies, but among African-American mothers the problem was much more prevalent- almost one in five mothers (19 percent) received inadequate prenatal care.

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[1] M. Kotelchuck, "An Evaluation of the Kessner Adequacy of Prenatal Care Index and a Proposed Adequacy of Prenatal Care Utilization Index", *Amer J Pub Health* 84: 1414-1420.

Similar to the national rate, the Summit County, Ohio rate is higher among African-American mothers where more than one in five (21.9 percent) had inadequate care compared to fewer than one in ten of White mothers (8.1 percent). Since 1996, the percent of mothers receiving inadequate care in Summit County has decreased 4 to 5 percent per year.

**Low-Weight Birth Rate
Summit County, 1996 to 2001 Average**

City of Akron
Municipalities
Low-Weight Births per 1,000 Births by Census Tract
150 or more
100 to 149.9
Less than 100

N
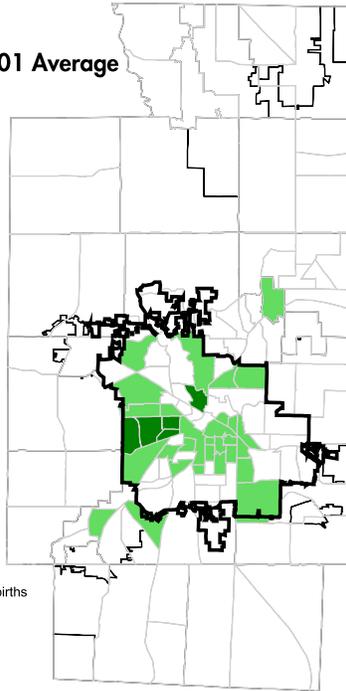
Healthy People 2010 goal is 50 low-weight births per 1,000 births.
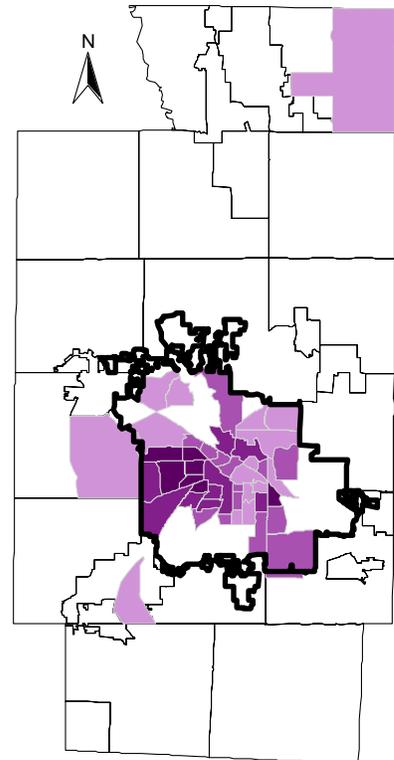
Source: Ohio Department of Health

The African American population Akron, Ohio nearly quadrupled from 37,600 in 1960 to 145,900 in 2000. As the White population migrated to the suburbs, the percentage of the population that was African American more than doubled in this period, from 13 percent to 28 percent. The percentage that was White declined from 87 percent to 67 percent.

Note: A study of first trimester prenatal care was one of the health, social, and economic indicators developed for the Summit County Quality of Life Project, initiated by the Summit County Executive and conducted by The Center for Community Solutions in Cleveland, Ohio, under the oversight of the Summit County Social Services Advisory Board. The project's intent is to strengthen collaboration between the major public systems and the effectiveness of services they finance or deliver. A variety of GIS applications were required, including deriving a "composite index of need" based on a selection of indicators. [The demographic map gallery for this project can be seen at: www.healthysummit.org/QofLmapalbum/index.htm]

Maps created by Mark Salling, Research Director at The Center for Community Solutions (formerly, Federation for Community Planning) and Director of Research at Maxine Goodman Levin College of Urban Affairs, Cleveland State University, and Terry Lenahan of Community Solutions. Maps and data are from *Summit County 2010 Project* (www.healthysummit.org/quality.asp) and *Social Indicators 2003: Community Health* report (www.communitysolutions.com), jointly published by Community Solutions and United Way Services of Greater Cleveland.

City of Akron
Municipalities
Percent of total population by census tract
75% or higher
50% to 74.9%
25% to 49.9%
12.5% to 24.9%
None or less than 12.5%

N

**Percent African American
Summit County, 2000** (map to right)

Source: U.S. Census Bureau