

PUBLIC HEALTH GIS NEWS AND INFORMATION

May 2006 (No. 70)

*Dedicated to CDC GIS Scientific Excellence and Advancement in
Disease, Injury and Disability Control and Prevention, and Biologic, Chemical and Occupational Safety*

Selected Contents: Events Calendar (pp.1-2); (pp. 9-10); Public Health and GIS Literature 20); Website(s) of Interest (pp. 20-21); Final



News from GIS Users (pp.2-9); GIS Outreach (pp.10-15); DHHS and Federal Update (pp.15-20); Thoughts (pp.21-22); **MAP** Appendix (23-25)

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

June 15, 2006: "The National Neighborhood Indicators Partnership (NNIP)- Advances in the Development and Use of Neighborhood Level Data,"

by researcher G. Thomas Kingsley, The Urban Institute, Washington, D.C., **2:00-3:00PM** (EST), and live at NCHS. The NCHS GIS Guest Lecture Series has been presented continuously at NCHS since 1988. As with all live lectures, Envision (live interactive) will be available to offsite CDC locations as well as IPTV. Web access will be available to our national and worldwide public health audience. The 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.** We look forward to having you join with us and other colleagues. [Questions: please contact Editor, *Public Health GIS News and Information*, at cmc2@cdc.gov; Subscription to the CDC Public Health GIS Users Group is free- see: <http://www.cdc.gov/subscribe.html>]

[Notes: (1) Calendar events are posted as received; for a more complete listing see NCHS GIS website and calendar; (2) Disclaimer: The findings and conclusions in this report are those of the Editor and do not necessarily represent the views of the Centers for Disease Control and Prevention (CDC)]

* ASPRS (American Society for Photogrammetry and Remote Sensing) 2006 Annual Conference: "Prospecting for Geospatial Information Integration," May 1-5, 2006, Reno NV [See: <http://www.asprs.org>]

* 2nd Annual GIS and Public Health Day: *Methods and Strategies for Enhancing Environmental Health Surveillance*, University at Albany School of Public Health, May 9-10, 2006 [See public health day website at: http://www.ualbanycph.org/Events/GISDay_05_09_06/default.cfm]

* Conference of the National Network of Public Health Institutes, *Shaping the Future: The Roles of Public Health*

Institutes in Public Policy, May 10-12, 2006, New Orleans, LA [See: <http://www.nnphi.org/conf.htm>]

* Cancer in African Americans-Opportunities and Challenges, Cancer Symposium, May 11-13, 2006, Cleveland OH [See symposium site and registration at: <https://www.clevelandclinicmeded.com/summit/afcancer06/description.htm>]

* Overcoming Health Disparities: *The Changing Landscape*, NY Academy of Medicine, May 12-13, 2006, New York, NY [See: <http://www.mecme.org>]

* American Society of Health Economists (ASHE) Conference: *Economics of Population Health*, June 4-7, 2006, Madison, WI [See: <http://healthconomics.us>]

* National Association for Public Health Statistics and Information Systems (NAPHSIS) Annual Meeting, taking place June 4-8, 2006, San Diego, CA [See website: <http://www.naphsis.org/events/index.asp>]

* 6th Annual Summer Evaluation Institute, CDC and co-sponsors, June 12-14, 2006, Atlanta, GA [See website: <http://www.eval.org/SummerInstitute/06SIhome.asp>]

* Second American Congress of Epidemiology, June 21-24, 2006, Seattle WA [See: <http://www.epicongress2006.org>]

* University Consortium for Geographic Information Science (UCGIS) 2006 Summer Assembly, June 28-July 1, 2006 [See: <http://www.ucgis.org>]

* CDC's 2006 Cancer Partners Summit, *Empowering Partners for Effective Integration: Charting a New Generation of Cancer Control Partnerships*, July 8-13, 2006 Washington D.C. [See cancer partners summit website at: <http://www.2006conferences.org/summit.php>]

* 4th (fourth) International Conference on Computing,

PUBLIC HEALTH GIS NEWS AND INFORMATION

May 2006 (No. 70)--12th year of continuous reporting

2

Communications and Control Technologies (CCCT 2006), July 20-23, 2006, Orland FL [See: <http://www.info-cybernetics.org/ccct06/website/default.asp>]

* 15th Summer Institute for Public Health Practice, University of Washington School of Public Health and Community Medicine, August 21-25, 2006 Seattle WA [See: <http://www.nwcp.org/training/summer-institutes/introduction>]

* Critical Issues in eHealth Research: *Toward Quality Patient-Centered Care*, September 11-12, 2006, Bethesda MD [See: <https://www.ehealth-abstracts.com/Scripts/eHealthHome.asp>]

* The International Society for Equity in Health, ISEqH 4th Biennial Conference: *Creating Healthy Societies through Inclusion and Equity*, September 11-13, 2006, Adelaide Australia [See: <http://www.iseqh.org>]

* 2006 National Health Promotion Conference, *Health Promotion: New Avenues for Collaboration*, Centers for Disease Control and Prevention, September 12-14, 2006, Atlanta GA [See: <http://www.cdc.gov/cochp/conference/index.htm>]

* 19th annual GIS in the Rockies conference, September, 13-15, 2006, Denver CO [See conference details, program: <http://www.gisintherockies.org>]

* 4th International Conference on Geographic Information Science, September 20-23, 2006, Muenster, Germany [See: <http://www.giscience.org>]

* 4th Annual Public Health Information Network (PHIN) Conference, PHIN: *Fostering Partnerships for a Healthier Tomorrow*, Sept. 25-27, 2006, Atlanta GA [See website: <http://www.cdc.gov/phin>]

* 29th Annual Applied Geography Conference, October 11-14, 2006, Tampa FL [See: <http://www.appliedgeog.org>]

* MEDNET, 11th World Congress on Internet in Medicine, October 13-20, 2006, Toronto Canada [See site: <http://www.ehealthcongress.org/ocs/callforpapers.php>]

* 7th IUHPE European Conference on Health Promotion and Health Education, *Globalization and Equity: Consequences for Health Promotion Policies and Practices*, October 18-21, 2006, Budapest Hungary [See: <http://www.equityinhealth2006.hu>]

* 5th Annual International Health GIS Conference for Health & Human Service Professionals, October 23-26, 2006, Denver CO [See: <http://www.esri.com/events/hug/index.html>]

* URISA's (The Urban and Regional Information Systems Association) Third Caribbean GIS Conference: *Shattering Barriers...Building Bridges*, October 29-November 2, 2006, Bahamas [See conference website at: <http://www.urisa.org/Caribbean/Program/caribbeanconf.htm>]

* Third International Conference on Race, Ethnicity and Place, November 1-4, 2006, San Marcos TX [See website: <http://rep-conference.binghamton.edu>]

* 9th International Conference for Global Spatial Data Infrastructure (GSDI), *Spatial Information: Tool for Reducing Poverty*, November 6-10, 2006, Santiago Chile [See: <http://www.gsdi9.cl>]

* 53rd North American Regional Science Conference, November 16-18, 2006, Toronto Canada [See: <http://209.200.67.135/narsc/index.html>]

* GeoHealth2006: Methods in Practice, November 28-30, 2006, Nelson, New Zealand [See conference website at: http://www.moh.govt.nz/moh.nsf/wpg_Index/-GeoHealth2006]

* 12th Annual Maternal and Child Health Epidemiology (MCH EPI) Conference, *Making Methods and Practice Matter for Women, Children and Families*, December 6-8, 2006, San Diego, CA [See MCH EPI conference website at: <http://www.cdc.gov/reproductivehealth/MCHepi/2006/AboutConference.htm>]

II. GIS News

[Public Health GIS Users are encouraged to communicate directly with colleagues referenced below on any items; note that the use of trade names and commercial sources that may appear in Public Health GIS News and Information is for identification only and does not imply endorsement by CDC]

A. General News and Training Opportunities

1. **2006 Summer Research Internship on Poverty and Adolescent Risk.** The School of Public Health, University of Alabama at Birmingham, is offering a summer research internship for students interested in studying **neighborhood poverty and its impact on adolescent behavior**. Students who participate in the internship, which is in its 9th year, will conduct a survey of adolescents living in public housing and other very low-income neighborhoods in Mobile and Prichard,

PUBLIC HEALTH GIS NEWS AND INFORMATION

May 2006 (No. 70)--12th year of continuous reporting

3

Alabama. This longitudinal survey, which has been administered annually since 1998 and has been funded by the National Institute for Child Health and Human Development (NICHD), the National Institute for Drug Abuse (NIDA), the Substance Abuse and Mental Health Services Administration (SAMHSA), and the Centers for Disease Control and Prevention (CDC), addresses challenges that young people face as they grow up in impoverished neighborhoods, including violence, alcohol and drug use, sexual behavior, the development of self-esteem and a sense of the future, and family dynamics. Interns will also have an opportunity to participate in other studies involving the same population. [Contact: John Bolland, School of Public Health, at bollandj@uab.edu]

2. GISPopSci workshops at Penn State and Santa Barbara in Summer 2006.

The GIS Population Science program, sponsored by the National Institute of Child Health and Human Development (NICHD), NIH, has a primary mission to significantly promote the mastery and use of spatial methods in population research by the current cohort of young population scientists. In support of this mission, the Population Research Institute (The Pennsylvania State University, June 4-16) and the Center for Spatially Integrated Social Science (University of California, Santa Barbara, July 10-22) have combined their expertise to offer national workshops for Ph.D. students, postdoctorates, and young faculty in demography and in related fields with research interest in population science. In addition, the program is developing a web-based infrastructure for access to learning and research resources by workshop participants and by the broader international community of population scientists. [See workshops information and site: <http://csiss.ncgia.ucsb.edu/GISPopSci>; Workshops contact is: Steven Matthews at matthews@pop.psu.edu]

3. Hopkins Summer Institute Course: Quantitative Methods in Cancer Surveillance.

The Statistical Research & Applications Branch, Division of Cancer Control and Population Sciences, National Cancer Institute (NCI) is coordinating a course entitled "Quantitative Methods in Cancer Surveillance" at the Summer Institute of Epidemiology and Biostatistics offered by the Johns Hopkins Bloomberg School of Public Health. This is a 5-day course that will be conducted June 26-30, 2006, in Baltimore, Maryland. This course is intended to provide students with skills for

understanding and implementing statistical methods used in cancer surveillance. It includes hands-on experience with publicly available data from the NCI's Surveillance Epidemiology, and End Results (SEER) population-based cancer registry program and software applications developed specifically for these data. Course topics include: Incidence, mortality and associated measures; population-based cancer survival; prevalence; and mapping and spatial methods. [See: Twenty-Fourth Annual Graduate Summer Institute of Epidemiology and Biostatistics offered by the Departments of Epidemiology and Biostatistics of the Johns Hopkins Bloomberg School of Public Health at <http://www.jhsph.edu/summerEpi>]

4. SaTScan v6.1 was released on March 13, 2006. This is a minor update on v6.0 (released October 24, 2005). Improvements with SaTscan v6.1 include: 1) Spatial and space-time scan statistics using an elliptic rather than circular spatial cluster shape, with or without a non-compactness penalty. This feature is available when Cartesian but not Latitude/Longitude coordinates are used; 2) Faster computations for purely temporal analyses; 3) Option to specify the maximum size of reported clusters in a different unit than the one used for the maximum size of all clusters evaluated; and 4) The Cluster Information file has been split into two separate output files, to make the size more manageable. [See: <http://www.satscan.org>]

5. WinBUGS users will be interested to know that Norbert Solymosi, Szent István University, Budapest, Hungary, has started to develop a tool for transforming different vector graphical map formats to GeoBUGS. In the present form it can work with ESRI shape file and PostGIS tables. In the future he plans to implement the MapInfo format as well. It is downloadable from <http://sourceforge.net/projects/maps2winbugs>. [Contact: Norbert, Department of Biomathematics and Informatics, Faculty of Veterinary Science, at solymosi.norbert@GMAIL.COM]

B. Department of Health and Human Services

<http://www.hhs.gov>

6. **The Pandemic Influenza Threat.** Influenza A viruses have infected many different animals including ducks, chickens, pigs, whales, horses, and seals. Influenza A viruses normally seen in one species can sometimes cross over and cause illness in another species. This creates the possibility that a new virus will develop, either through

PUBLIC HEALTH GIS NEWS AND INFORMATION

May 2006 (No. 70)--12th year of continuous reporting

4

mutation or mixing of individual viruses, in turn creating the possibility for new viral strains that can be highly infective, readily transmissible, and highly lethal in humans. **When a pandemic virus strain emerges, 25% to 35% of the population could develop clinical disease**, and a substantial fraction of these individuals could die.

The direct and indirect health costs alone (not including disruptions in trade and other costs to business and industry) have been estimated to approach \$181 billion for a moderate pandemic (similar to those in 1957 and 1968) with no interventions. Faced with such a threat, the U.S. and its international partners will need to respond quickly and forcefully to reduce the scope and magnitude of the potentially catastrophic consequences. Such a threat currently exists in the form of the H5N1 virus, which is spreading widely and rapidly in domestic and migratory fowl across Asia and Europe. [See HHS Strategic Plan at <http://www.hhs.gov/pandemicflu/plan>]

Administration for Children and Families

<http://www.acf.dhhs.gov>

7. An estimated 872,000 children across the country were victims of abuse or neglect in 2004 according to national data released today by HHS. This number, which is 34,000 lower than last year's statistic, indicates that about **11.9 out of every 1,000 children were victims of abuse or neglect**, compared to last year's victimization rate of 12.4 per 1,000 children. The data show that child protective service agencies received about three million reports of possible maltreatment in 2004. Of the 872,000 substantiated cases of maltreatment of children, the majority (64.5 percent) involved cases of neglect. For 2004, an estimated 1,490 children died; more than 80 percent of them were under four years. More than one-third of the fatalities were attributed to neglect.

Administration on Aging

<http://www.aoa.gov>

8. Chronic diseases and conditions affect most elderly people at some point in their lives. Four out of five older adults have a chronic condition and many experience limitations in activities due to such conditions. Eighty percent of the "illness burden" in the United States is the result of chronic illness occurring between the age of 55 and death. Among the most common or severe chronic conditions affecting persons aged 65+ are **hypertension**

(37%), **heart disease** (15%), **arthritis** (48%), **diabetes** (10%), **hearing impairments** (32%), and **major depression** (5-10%). Seventy percent of older adults have more than one chronic condition. Co-morbidity puts people at greater risk of functional decline and raises health care utilization and costs.

Agency for Healthcare Research and Quality

<http://www.ahrq.gov>

9. **Nearly two million children live in U.S. public housing communities, and over two-thirds of them are black or Latino.** A study supported in part by AHRQ (HS14022) found that black and Latino children living in such communities are 2 to 4 times more likely than children in the general population to suffer from chronic physical and mental problems. Researchers found that Black and Latino children living in three Los Angeles public housing communities were more likely than U.S. children in general to suffer from asthma (32 percent compared with 8 percent) and attention deficit hyperactivity disorder (ADHD) (17 percent compared with 5 percent).

Nearly one-third of black and Latino households had children with one chronic medical condition, and another third had children with two or more chronic conditions. The top five chronic conditions reported by parents for one or more children in their households were **asthma (32 percent), eye/vision problems (24 percent), ADHD (17 percent), dental problems (16 percent), and depression (8 percent)**. Asthma was the only health condition for which the researchers found a significant difference between Latino (19 percent) and black (44 percent) children.

10. The Agency for Healthcare Research and Quality (AHRQ) has launched a new and exciting pre-competes network of research partners representing all aspects of healthcare delivery systems, called "**Accelerating Change and Transformation in Organizations and Networks**" (ACTION). This program will promote innovation in health care delivery by accelerating the development, implementation, dissemination and uptake of demand-driven and evidence-based products and findings. It is estimated that ACTION partnerships will collectively provide access to, or deliver, healthcare for more than 85 million people, including the uninsured, racial/ethnic minorities, rural residents and other priority

PUBLIC HEALTH GIS NEWS AND INFORMATION

May 2006 (No. 70)--12th year of continuous reporting

5

populations. Each partnership will have available large, robust databases, clinical and research expertise, and the authority to implement health care interventions. CDC's Division of Partnerships and Strategic Alliances has an interagency agreement with AHRQ to utilize this practice-based research network. The deadline to submit work to AHRQ under cost reimbursement task order-type contracts is **May 15, 2006**. If you are interested in submitting a request for task order or would like more information on ACTION, please contact Joseph Bertulfo via email, bwn8@cdc.gov

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>

11. The National Center for Health Statistics (NCHS) announces the **2006 Research Conference on the National Survey of Family Growth (NSFG)**. The Conference will be held October 19-20, 2006, at NCHS in Hyattsville, Maryland. The purpose of the conference is to present and discuss papers presenting original, unpublished analyses of the National Survey of Family Growth. NCHS hopes that this will be an annual event. Presenters and discussants will be reimbursed for travel and lodging expenses. It is expected that 15-20 papers may be accepted for presentation at the conference. Papers are welcome on any topic as long as the principal data source is one or more cycles of the National Survey of Family Growth. Priority will be given to papers using Cycle 6 of the NSFG, conducted in 2002, and based on a 12,571 interviews with men and women 15-44.

Papers or extended abstracts (3-4 pages) should be submitted by **June 20, 2006**. Among the topics that may be studied with the 2002 NSFG are: male or female fertility; contraceptive use; infertility; marriage and cohabitation; attitudes toward family life; reproductive health, including use of health care; sexual behavior and orientation; parenting activities by men (fatherhood roles); and socio-economic, religious, and contextual variations in these behaviors. [Public use files for all 6 cycles of the NSFG are available on CD-ROM, and may be requested free of charge by sending an e-mail to: nsfg@cdc.gov. The public use data for Cycle 6 (only) may be downloaded from the NSFG web site at <http://www.cdc.gov/nchs/nsfg.htm>]

12. New program announcement CDC RFA PS05-650-**"Evaluating Integration of HIV/AIDS Surveillance**

Data with Geographic Information Systems (GIS)."

The purpose of the program is to provide funds to demonstrate and evaluate methods for spatially linking existing HIV/AIDS surveillance data with other datasets to enhance epidemiologic, analytic, and technological capacity at the local, state, and national levels.

The HIV/AIDS sub-epidemics vary, not only by population and risk behavior, but also by community and geography. Currently the smallest geographic area of analysis for national HIV/AIDS surveillance data is the county level; additionally, only limited demographic information is collected in the HIV/AIDS surveillance system. This program will provide grantees with the tools, training, and oversight to link HIV/AIDS surveillance data with appropriate external datasets and conduct small area analyses that can better inform HIV prevention and evaluation efforts.

This program addresses the CDC HIV Prevention Strategic Plan goal of strengthening the capacity nationwide to monitor the epidemic, develop and implement effective HIV prevention interventions, and evaluate prevention programs. Specifically, this support will allow state and local health departments to evaluate: policies, procedures and guidelines for applying GIS techniques to HIV/AIDS surveillance data; preparation of HIV/AIDS surveillance data to allow application of GIS techniques; issues of security and confidentiality related to small-area analysis of HIV/AIDS surveillance data at the local, state, and national levels; and, application of spatially-analyzed HIV/AIDS surveillance data to inform decisions on prevention, treatment and evaluation. [See site: <http://www.cdc.gov/od/pgo/funding/PS06-650.htm>]

Centers for Medicare and Medicaid Services

<http://www.cms.hhs.gov>

13. **CMS Paper on the Medicaid Information Technology Architecture**. Medicaid Information Technology Architecture (MITA) is aligned with the goals of the nationwide Health Information Infrastructure. MITA is intended to foster integrated business and information technology transformation across the Medicaid enterprise to improve the administration of the \$300 billion Medicaid program. Unlike Medicare, a Federal program with a national set of eligibility standards and uniform benefit package, Medicaid varies widely from state to state. As a result, states and the federal government experience considerable difficulty developing comprehensive views

PUBLIC HEALTH GIS NEWS AND INFORMATION

May 2006 (No. 70)--12th year of continuous reporting

6

of Medicaid client needs and services in light of the multiplicity of organizational and technological “silos.” These silos inhibit, rather than enhance, this much desired, but seldom achieved, holistic, client-centric perspective.

MITA establishes national guidelines for technologies and processes and includes an *architecture framework, processes, and planning guidelines*. The MITA approach is designed to enable state Medicaid enterprises to meet objectives within a common framework while still supporting unique local needs. The Medicaid program is one silo, admittedly by far the largest, among many other healthcare silos at State and local levels. Individual applications of the MITA model within given States could depend heavily on these other silos adopting the architecture that enables interoperability. [See 2006 report: *Health IT in Government-Transforming Health Care and Empowering Citizens* at site: http://colab.cim3.net/file/work/hit/resources/Health_ITinGovTransformingHealthCareEmpoweringCitizens.pdf]

Food and Drug Administration

<http://www.fda.gov>

14. **FDA Advances Federal E-Health Effort.** The U.S. Food and Drug Administration (FDA) today advanced the federal effort to create electronic health records for Americans within the next decade by making it easier to share drug information electronically. FDA is moving the effort forward by adopting the **Systematized Nomenclature of Medicine (SNOMED)** as the standard computerized medical vocabulary system to be used to electronically code important terms in the Highlights section of prescription drug labeling. This move will allow healthcare professionals nationwide electronically to access and share critical health and treatment information more easily and efficiently.

Health Resources and Services Administration

<http://www.hrsa.gov>

15. Alaska’s severe climate and vast terrain present a great challenge to medical providers trying to deliver health care to residents of the state’s scattered towns and villages. Efforts by HRSA to improve access to care there involve the creation of more health centers and oversight of a demonstration project to test the value of the **Frontier Extended Stay Clinic, or FESC**. Expansion of the health center system is dramatically increasing access to care. The number of health center grantees in Alaska

grew from six in 2001 to 20 by the end of 2004, and the number of patients served at these centers over the same period rose from 26,000 to almost 69,000. In 2004, health center grantees served about 11 percent of the population of Alaska; health centers’ uninsured patients that year represented 26 percent of the uninsured population in Alaska.

Indian Health Service

<http://www.ihs.gov>

16. The Indian Health Service (IHS) Public Health Professions (PHP) are responsible for addressing the health needs of over **1.6 million American Indians and Alaska Natives** in a network of 48 hospitals, more than 230 clinics, and a system of Tribal and Urban programs.

National Institutes of Health

<http://www.nih.gov>

17. In response to feedback from users, the National Library of Medicine (NLM), a part of the National Institutes of Health, has added new chemical and health-related data to its free, interactive mapping site, TOXMAP (see: <http://toxmap.nlm.nih.gov>). Released in September, 2004, TOXMAP helps users explore the geographic distribution of certain chemical releases, their relative amounts, and their trends over time. This release data comes from industrial facilities around the United States, as reported annually to the Environmental Protection Agency (EPA). Now, users can also use TOXMAP to find information about EPA Superfund sites. The program (see: <http://www.epa.gov/superfund/index.htm>) is part of a federal government effort to clean up land in the United States that has been contaminated by hazardous waste and identified by the EPA as a candidate for cleanup because it poses a risk to human health and/or to the environment.

The substances found at Superfund sites have been designated as causing or contributing to an increase in mortality or in irreversible or incapacitating illness or posing a substantial present or potential hazard to human health or to the environment when improperly treated, stored, transported, disposed of, or otherwise managed. More than 800 substances are currently designated as hazardous under the Superfund Program, and many more as potentially hazardous. As part of the new release, **TOXMAP has also added mortality data from the CDC and NCI.**

TOXMAP continues to provide links to NLM’s

PUBLIC HEALTH GIS NEWS AND INFORMATION

May 2006 (No. 70)--12th year of continuous reporting

7

extensive collection of toxicology and environmental health references, as well as to a rich resource of data on hazardous chemical substances in its TOXNET databases. This online resource also provides fact sheets and summaries about the various chemicals, written by the Agency for Toxic Substances and Disease Registry, and EPA progress reports on the Superfund sites. [Contact: Colette Hochstein at hochstec@mail.nlm.nih.gov]

18. ***Methods for Measuring Cancer Disparities: A Review Using Data Relevant to Healthy People 2010 Cancer-Related Objectives.*** Healthy People 2010 has two overarching goals: to increase the span of healthy life and to eliminate health disparities across the categories of gender, race or ethnicity, education or income, disability, geographic location, and sexual orientation. This report raises some conceptual issues and reviews different methodological approaches germane to measuring progress toward the goal of eliminating cancer-related health disparities. Despite the increased attention to social disparities in health, no clear framework exists to define and measure health disparities. This may create confusion in communicating the extent of cancer-related health disparities and hinder the ability of public health organizations to monitor progress toward the Healthy People 2010 cancer objectives. [See report related website: <http://seer.cancer.gov/publications/disparities>]

19. The Disease Control Priorities Project (DCPP) is an ongoing effort to assess disease control priorities and produce evidence-based analyses and resource materials to inform health policymaking in developing countries. The flagship product of DCPP is the ***Disease Control Priorities in Developing Countries, second edition (DCP-2)***. Slated for publication in early 2006, DCP-2 highlights cost-effective interventions based on careful analysis of health systems, the costs of disease burden, treatment, and prevention for a comprehensive range of diseases and conditions. Selected chapter titles include: Investing in Health; Delivering the Right Interventions Well: Packaging, Policy, and Health Systems Priorities; Research and Development Priorities; Tuberculosis; Sexually Transmitted Infections; HIV/AIDS; Diarrheal Diseases; Vaccine-Preventable Disease; Malaria; Tropical Diseases: Chagas Disease, Leprosy, Filariasis, and Onchocerciasis; Tropical Diseases: African Trypanosomiasis, Dengue, and the Leishmaniases; and Helminthic Infections. The DCPP is a joint project of the

Fogarty International Center (FIC) of the National Institutes of Health (NIH), the World Health Organization (WHO), and The World Bank. [See website: <http://www.fic.nih.gov/dcpp>]

20. The Office of Behavioral and Social Sciences Research (OBSSR) of the National Institutes of Health (NIH) invites you to the ***OBSSR 10th Anniversary: Celebrating a Decade of Progress and Promise.*** Scheduled for June 21-22, 2006 in the Natcher Conference Center on the NIH campus in Bethesda, MD, this event will showcase the last decade's major contributions of behavioral and social sciences research to health promotion and disease reduction. [See event website: <http://obssr.od.nih.gov/OBSSR10th/intro.htm>]

Substance Abuse and Mental Health Services Administration

<http://www.samhsa.gov>

21. The report ***State Estimates of Substance Use*** (released April 6, 2006) from the 2003-2004 National Surveys on Drug Use and Health estimates state rates of use of illegal drugs, binge and underage drinking, serious mental illness and tobacco use. SAMHSA combined two years of data from the annual National Survey on Drug Use and Health to enhance the precision of estimates for the less populous states. The report shows that California increased from 24.7 percent of 12 to 20 year olds using alcohol in the past month to 26.3 percent, while Wisconsin increased from 34.7 percent to 38.3 percent. Michigan and South Carolina, however, showed decreases in underage drinking from 31.8 percent to 30.2 percent for Michigan and from 27.3 percent to 24.1 percent for South Carolina. For illegal drug use, six states registered decreases in current use among youth ages 12-17, Illinois, Nebraska, North Carolina, South Dakota, Vermont and Virginia. There were no statistically significant increases in current drug use among youth in any state, and there were no increases in either the 18-to-25 year old age group or the 26- and -older age group.

C. Historically Black Colleges and Universities (HBCUs), Hispanic Association of Colleges and Universities (HACUs), and Other Minority Health News

[A listing of HBCUs and HACUs may be found at the following websites <http://www.smart.net/~pope/hbcu/hbculist.htm> and <http://www.hnip.net>]

22. The Office of Behavioral and Social Sciences Research (OBSSR), NIH, invites you to explore our website designed to expand the promotion efforts of the NIH research supplement training program. The OBSSR and NIH seek to ensure a concentration of researchers who will address behavioral and social factors that are important in improving the public's health, **especially among minority populations**. This website creates a link between underrepresented minority students and faculty and the research training opportunities available through the NIH Research Supplements for Underrepresented Minorities program. In addition, it establishes a central resource for students and faculty, as well as researchers, seeking information on NIH research training opportunities in the behavioral and social sciences. [See: <http://mentorminorities.od.nih.gov>]

23. Racial and Socioeconomic Disparities in Breastfeeding-United States, 2004, March 31, 2006/55(12);335-339 The findings in this report indicate substantial racial and economic disparities in rates of breastfeeding initiation and breastfeeding continuation to at least age 6 months. The findings also demonstrate that race is associated with breastfeeding status independent of socioeconomic and other demographic factors, but also that socioeconomic and other factors are associated with breastfeeding independent of race. Within each income group, the proportion of black children who were ever breastfed was 10 to 17 percentage points lower than that of white children; within each race, the proportion of children ever breastfed was 23 to 26 percentage points higher among those in the highest income group compared with the lowest. [See CDC report at the following website: http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5512a3.htm?s_cid=mm5512a3_e]

D. Other Related Public Health GIS News

24. The Open Geospatial Consortium, Inc. (OGC) announces the availability of two online multimedia demonstrations documenting the milestones achieved in the OGC Web Services Phase 3 Initiative, (OWS-3). The focus of the presentations is to share the OWS-3 goals and to provide a synopsis of the final demonstration. The presentations are available as interactive Flash and Web-streamed video and illustrate the use of a variety of draft and approved OpenGIS(R) standards in an emergency response to a fictitious wildfire threat in Southern California. The interactive demonstration uses the

Macromedia Flash player to show short movies of client applications that illustrate the use of draft and existing OpenGIS Specifications in a variety of software clients in response to a toxic release caused by a wildfire. Among the topics addressed are catalog services, digital rights management, Web mapping and sensor services. The user can select specific scenes to watch via a menu or use an index to find specific topics. The 14 minute video [see: <http://www.opengeospatial.org/demo/ows3>], introduces the role the OGC and its Web Service Initiatives play in the important goal of geospatial interoperability. It dramatizes the wildfire scenario illustrating how the technology drives the actions of dispatchers and response personnel in an emergency operations center, in vehicles and in the field.

25. Announcement and Invitation. Special Issue of the *Asia-Pacific Journal of Public Health: "Health Security and Disaster Management"* [Guest Editors: A Zwi, D Tarantola, N Grove, A Bunde-Birouste, School of Public Health And Community Medicine, The University of New South Wales] Health Security and Disaster Management have become increasing concerns for both developed and developing nations throughout the Asia-Pacific Region. Natural disasters such as the Indian Ocean Tsunami, the potential of pandemic infectious diseases such as Avian influenza and SARS, as well as the 'man-made' health security threats of on-going conflict and terrorism, challenge the Region as never before. This Special Issue of the *Asia-Pacific Journal of Public Health* aims to draw together a body of work to present a more complete picture of health security and disaster management in the Region.

The issue will contain a number of key papers from the recent APACPH conference held in Taipei on 'Health Security and Emerging Disasters'. It provides a unique opportunity to examine some of the major questions, at a time when governments are under increasing pressure to find ways to protect their citizens and those of the Region. It will also highlight where future research endeavours might be focused. [See site: <http://www.sphcm.med.unsw.edu.au>; Contact: Professor Zwi at a.zwi@unsw.edu.au]

26. **Exploring Links Between Food Insecurity and Obesity**. At a time when overweight and obesity are commanding attention, it is easy to overlook the fact that "food insecurity continues to be a significant (and in

recent years growing) public health problem as well," the Food Research and Action Center (FRAC) reported at its annual conference in Washington, D.C., February 27 [2006]. "**Food insecurity**," defined as "not having enough money to buy food" was first measured nationally in 1995 and showed a downward trend until 2000, when it began to climb again, reaching 11.9 percent of all households in the year 2005, according to the Bureau of the Census Current Population Survey.

In the same period of time, rates of overweight and obesity grew. In a report that looked for possible linkages between those statistics, FRAC found that both food insecurity and overweight/obesity rates were highest for low-income people, particularly women, and a striking finding was that the two conditions -weight gain and food insecurity-"can affect the same individuals and households, as well as communities." **The report points out that low-income families and neighborhoods "face all of these challenges and more."** Low-income neighborhoods lack full-service grocery stores and those stores that do exist are more likely to offer high-calorie foods than fruits, vegetables, or skim milk. There may be few safe or attractive places to be physically active, and under-funded schools may lack suitable cafeterias or physical education facilities.

"It is difficult for people to believe that hunger exists in the United States in the 21st century," the report acknowledges. "Food and images of food are everywhere we look, and obesity is the major nutrition concern being expressed." **Hunger**" was defined as "the uneasy or painful sensation caused by lack of food." What the surveys found was that low income (due to low-wage jobs, involuntary part-time or part-year work, job loss, unemployment, illness, inadequate public income supports, etc.) often leaves households with insufficient money or other resources to obtain enough food. In the United States, according to the latest data available (2004), that's 11.9 percent of households-7.4 million adults and 3.3 million children. [See report: *Health and Health Care in Schools* 7(1) MAR 2006, at following website <http://www.healthinschools.org/ejournal/2006/march1.htm>]

III. GIS Outreach

[Editor: All requests for Public Health GIS User Group assistance are welcomed; readers are encouraged to respond directly to colleagues]

The following responses concerning the use of **kernel density estimation** were from several leading researchers regarding: "We have been using Inverse Distance

Weighting (IDW) to derive density estimates for the spatial trend in selected health outcomes e.g., elevated blood levels, infant mortality, etc. They are based on centroid values at the census tract level. While IDW is probably not the most robust spatial smoother, is it acceptable?"

Respondent 1: In our application we use the IDW method. Values for any one of our census tracts may not fit the general spatial pattern of data. This may be due to random or systematic error, or to a deterministic cause. Random errors are more likely when sample size is small; thus a census tract's high poverty rate may be due to its small population and unrepresentative sample of households included in the survey. While surface interpolation methods are more often used in cases with sample point data, for the surface/pattern generalization we seek, the known ("sample") points are the geographic centroids of the polygons for which we have data. After all, we do not know what the variable rate is at any single place within a census tract- we only know the (or have an) overall rate.

IDW uses multiple known/sample points to estimate values at unknown (unsampled) points. It "assumes that each input point has a local influence that diminishes with distance." Known points that are closer to the estimated point are weighted more heavily. This assumes that the known point's influence decreases with distance from it. Thus the use of a surface modeling method such as IDW lessens the problem of "small numbers or unstable rates" because other, nearby points are also taken into account, thus decreasing the importance of any one "incorrect" data point.

Respondent 2: I think IDW is OK to smooth disease data providing you believe the measures themselves are reasonably robust. Infant mortality for census tracts is usually not robust unless you have quite a few years. With IDW you can essentially choose the size of the filter by selecting the number of nearest neighbors to influence the value at any point of the surface. Be careful to select a reasonable spatial search parameter. I was told that ArcGIS has 12 nearest centroids as the default smoother. I think that can sometimes be too high. When I use IDW on gridded values I choose 8 as the default which gives all touching grid squares; 12 is too many for such gridded data. But, as I say, the real issue is the strength of the value you are estimating at the

centroid. Does it have enough data to support it is the question? For elevated blood levels, the answer may be yes; for infant mortality, the answer may be no. The reasons being that blood level is often available for children of many ages and the value is continuous, whereas the infant mortality rate is based on discrete data-deaths or survivals and the death rate is low and therefore very sensitive to small numbers. Borrow strength from time is usually the answer!

Respondent 3: Some kernel routines (ArcGIS) may not offer much control over the precision of the interpolation. Using a Z score will only provide a single index of goodness of fit, and generally will not be optimal. It's not good for spot detection, for example, because it smoothes the data too much. An alternative is to use the Moran Correlogram which shows the geographic spread of the spatial autocorrelation over the entire study area and the shape of the distribution. It will show how the spatial autocorrelation falls off with distance and, if applied to the kernel function, will produce a better fit. Another alternative is to use the adaptive kernel. This produces constant precision of the estimate over the entire study area. Bandwidth is adjusted according to sample size. Thus, the estimates have an equal amount of precision throughout the study area, whereas the precision for a fixed bandwidth will vary by the number of incidents captured in the search radius.

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

Join us June 15, 2006, NCHS Hyattsville, MD

“The National Neighborhood Indicators Partnership (NNIP)- Advances in the Development and Use of Neighborhood Level Data,” G. Thomas Kingsley, Urban Institute, Washington, D.C. [Abstract](#). The National Neighborhood Indicators Partnership (NNIP) is a collaborative effort by the Urban Institute and local partners, now from 27 cities, established to further the development and use of neighborhood information systems in local policy making and community building. All of NNIP's local partners have built advanced information systems with integrated and recurrently updated information on neighborhood conditions in their cities. Their theme is *democratizing information*.

They concentrate on facilitating the direct practical use of data by city and community leaders, rather than preparing independent research reports on

their own. This presentation will review the progress of NNIP over the past three years, covering: its expansion into new cities; advances in data development and presentation; and work on cross-site initiatives. The data lend itself to GIS application since many of the mix of census and survey information can be analyzed at the census tract level. In several cities, tax parcel data is available (highly accurate cadastral information). In many cases, census tract data can be examined even more locally by combining block groups into subgeographies. NNIP partners maintain a variety of address-based public health data including vital statistics, child abuse, Food Stamps, Medicaid, hospital admissions and immunizations. [Contact: Tom at TKingsle@ui.urban.org]

Lecture Archive

Now Online: NCHS GIS Guest Lecture, April 19, 2006, for **“Health Disparity Zones: A Small Area Analysis of Premature Mortality from Cardiovascular Disease,”** by Gary Puckrein, PhD, Sean Cleary, PhD, MPH, Hala Nsouli, MPH, National Minority Health Month Foundation, George Washington School of Public Health & Health Services, Washington, D.C. at CDC website: <http://video.cdc.gov/ramgen/gis/gis-04-19-2006.rm>.

CDC's *Emerging Infectious Diseases, MMWR and Preventing Chronic Disease*

(1) *Emerging Infectious Diseases*

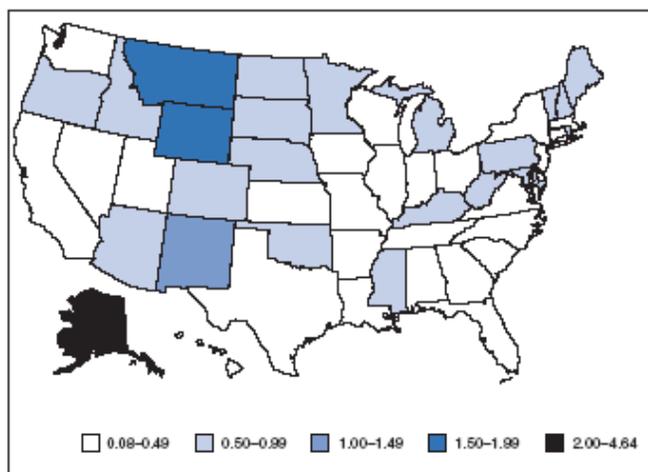
Emerging Infectious Diseases (EID) is indexed in Index Medicus/Medline, Current Contents, Exerpta Medica, and other databases. EID is part of CDC's key plan for combating emerging infectious diseases; one of the main goals of CDC's plan is to enhance communication of public health information about emerging diseases so that prevention measures can be implemented without delay. The **May 2006 12(5)** edition of EID is now online. This edition is devoted to articles on tuberculosis. [See EID website for this and other timely infectious disease reports at: <http://www.cdc.gov/ncidod/EID/index.htm>]

(2) *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 website <http://www.cdc.gov/subscribe.html> as well as access the MMWR online at CDC website <http://www.cdc.gov/mmwr>. Note: Efforts are made to include themes which may lend themselves to spatial distribution] Vol. **55 (Supplement)**:

Global Epidemiology: Proceedings of the Third TEPHINET Conference, Beijing, China, November 8-12, 2004; Vol. **55(RR-6)**- Recommendations to Improve Preconception Health and Health Care: A Report of the CDC/ATSDR Preconception Care Work Group and the Select Panel on Preconception Care United States; Vol. **55(RR-5)**- Compendium of Animal Rabies Prevention

FIGURE 2. Average annual rate* of hypothermia-related deaths, by state — United States, 1999–2002

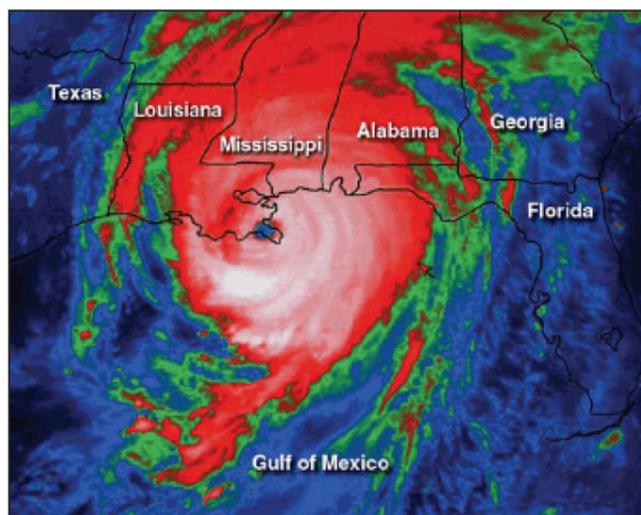


* Per 100,000 population.

and Control, 2006 National Association of State Public Health Veterinarians, Inc. (NASPHV); Vol. **55(12)**- Racial and Socioeconomic Disparities in Breastfeeding, United States, 2004; QuickStats: Percentage of Foreign-Born Hispanic Adults with Selected Health Conditions, by Length of Time Living in the United States, 1998-2003; Vol. **55(11)**- Trends in Tuberculosis, United States, 2005; Increased Use of Colorectal Cancer Tests, United States, 2002 and 2004; QuickStats: Percentage of U.S.-Born and Foreign-Born Adults Aged >18 Years Reporting Selected Health Risk Factors and Conditions, United States, 1998-2003; Vol. 55(10)- Primary and Secondary Syphilis, United States, 2003-2004; **Hypothermia-Related Deaths, United States, 1999-2002 and 2005** [During 1999-2002, among those who died from hypothermia, 49% were aged ≥ 65 years, 67% were male, and 22% were married (compared with 52% of the overall U.S. population). A high proportion (83%) of the hypothermia-related deaths occurred during October-March); these deaths occurred in all 50 states during 1999-2002 (range: four to 288 deaths per state), with the highest average annual rates per 100,000 population in Alaska (4.64), Montana (1.58), Wyoming

(1.57), and New Mexico (1.30). Most deaths were not work related (63%); 23% of affected persons were at home when they became hypothermic]; Vol. **55(9)**- Public Health Response to Hurricanes Katrina and Rita, United States, 2005; Surveillance for Illness and Injury After Hurricane Katrina, Three Counties, Mississippi, September 5-October 11, 2005; Rapid Community Needs Assessment After Hurricane Katrina, Hancock County, Mississippi, September 14-15, 2005; Mortality Associated with Hurricane Katrina, Florida and Alabama, August-October 2005; Rapid Assessment of Health Needs and Resettlement Plans Among Hurricane Katrina

FIGURE 1. Colors of a satellite infrared image indicate varying cloud-top temperatures of Hurricane Katrina at landfall — August 29, 2005



Photo/Associated Press/National Oceanic and Atmospheric Administration

Evacuees, San Antonio, Texas, September 2005; Illness Surveillance and Rapid Needs Assessment Among Hurricane Katrina Evacuees, Colorado, September 1-23, 2005.

(3) Preventing Chronic Disease

The April 2006 3(2) issue of *Preventing Chronic Disease* (PCD) is online and contains selected articles on a variety of chronic, behavioral and prevention disease topics. The theme of this issue is **mental health**. [See site: <http://www.cdc.gov/pcd>]

Titles

Use of the spatial scan statistic to identify geographic variations in late stage colorectal cancer in California (United States), Pollack LA, Gotway CA, Bates JH,

PUBLIC HEALTH GIS NEWS AND INFORMATION

May 2006 (No. 70)--12th year of continuous reporting

12

Parikh-Patel A, Richards TB, Seeff LC, Hodges H, Kassim S, *Cancer Cause Control* 17 (4): 449-457 MAY 2006;

Mosquito habitat and dengue risk potential in Hawaii: A conceptual framework and GIS application, Kolivras KN, *Prof Geogr* 58 (2): 139-154 MAY 2006;

Annual Review of Public Health Vol. 27 (theme-evidence-based public health research) APR 2006 [See: <http://arjournals.annualreviews.org/toc/publhealth/27/1>]

Towards landscape design guidelines for reducing Lyme disease risk, Jackson LE, Hilborn ED, Thomas JC, *Int J Epidemiol* 35 (2): 315-322 APR 2006;

Neural tube defects and maternal residential proximity to agricultural pesticide applications, Rull RP, Ritz B, Shaw GM, *Am J Epidemiol* 163 (8): 743-753 APR 15 2006;

Understanding variation in measles-mumps-rubella immunization coverage-a population-based study, Wright JA, Polack C, *Eur J Public Health* 16 (2): 137-142 APR 2006;

A geographic information systems (GIS) and spatial modeling approach to assessing indoor radon potential at local level, Lacan I, Zhou JY, Liu KS, Waldman J, *Appl Radiat Isotopes* 64 (4): 490-496 APR 2006;

After the Storm- Health Care Infrastructure in Post-Katrina New Orleans, Berggren RE and TJ Curiel, *NEJM* 354(15):1549-1552 APR 2006;

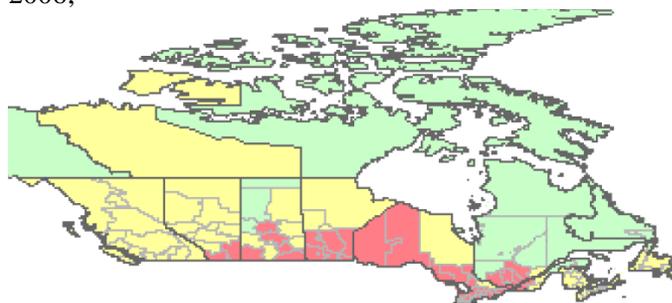
Factors affecting the geographic distribution of West Nile virus in Georgia, USA: 2002-2004, Gibbs SEJ, Wimberly MC, Madden M, Masour J, Yabsley MJ, Stallknecht DE, *Vector-Borne Zoonot* 6 (1): 73-82 APR 2006;

Comparison of perceived and modelled geographical access to accident and emergency departments: a cross-sectional analysis from the Caerphilly Health and Social Needs Study, Fone DL, Christie S and Lester

N, *Int J Health Geogr* 5(16) APR 2006;

Evacuation route selection based on tree-based hazards using light detection and ranging and GIS, Laefer DF, Pradhan AR, *J Transp Eng-Asce* 132 (4): 312-320 APR 2006;

A GIS-driven integrated real-time surveillance pilot system for national West Nile virus dead bird surveillance in Canada, Shuai J, Buck P, Sockett P, Aramini J and Pollari F, *Int J Health Geogr* 5(17) APR 2006;



Using remote sensing and geographic information systems to identify villages at high risk for rhodesiense sleeping sickness in Uganda, Odiit M, Bessell PR, Fevre EM, Robinson T, Kinoti J, Coleman PG, Welburn SC, McDermott J, Woolhouse MEJ, *T Roy Soc Trop Med H* 100 (4): 354-362 APR 2006;

Policy and programmatic importance of spatial alignment of data sources, Ong P, Graham M, Houston D, *Am J Public Health* 96 (3): 499-504 MAR 2006;

Think globally, breathe locally, Delfino RJ, *Thorax* 61 (3):184-185 MAR 2006 [Key Words: Geographic Information-Systems, Air-Pollution, Ultrafine Particles, Particulate Matter, Oxidative Stress, Risk-Assessment, Exposure, Asthma, Children, Health];

A Spatial Temporal Model for Assessing the Effects of Intervillage Connectivity in Schistosomiasis Transmission, Xu B, Gong P, Seto E, Liang S, Yang C, Wen S, Qiu D, Gu X and Spear R, *Annals Assoc Amer Geogr* 96(1) MAR 2006;

Evaluating satellite sensor-derived indices for Lyme disease risk prediction, Rodgers SE, Mather TN, *J Med Entomol* 43 (2): 337-343 MAR 2006;

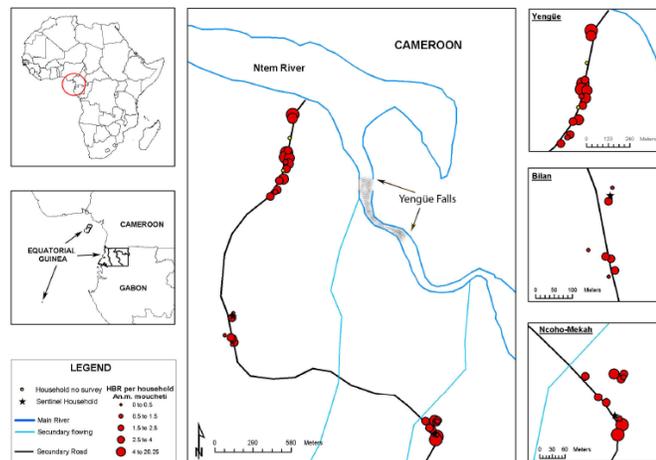
Use of remote sensing and geographic information systems to predict locations of *Anopheles darlingi*-positive breeding sites within the Sibun River in Belize, central America, Achee NL, Grieco JP, Masuoka P, Andre RG, Roberts DR, Thomas J, Briceno I, King R, Rejmankova E, *J Med Entomol* 43 (2):382-392 MAR 2006;

Geography, private costs and uptake of screening for abdominal aortic aneurysm in a remote rural area, Lindsay SM, Duncan JL, Cairns J and DJ Godden, *BMC Pub Health* 6(80) MAR 2006;

Locally generated particulate pollution and respiratory symptoms in young children, Pierse N, Rushton L, Harris RS, Kuehni CE, Silverman M, Grigg J, *Thorax* 61 (3): 216-220 MAR 2006;

Global inequality of life expectancy due to AIDS, Dorling D, Shaw M and Smith GW, *BMJ* 332, MAR 2006;

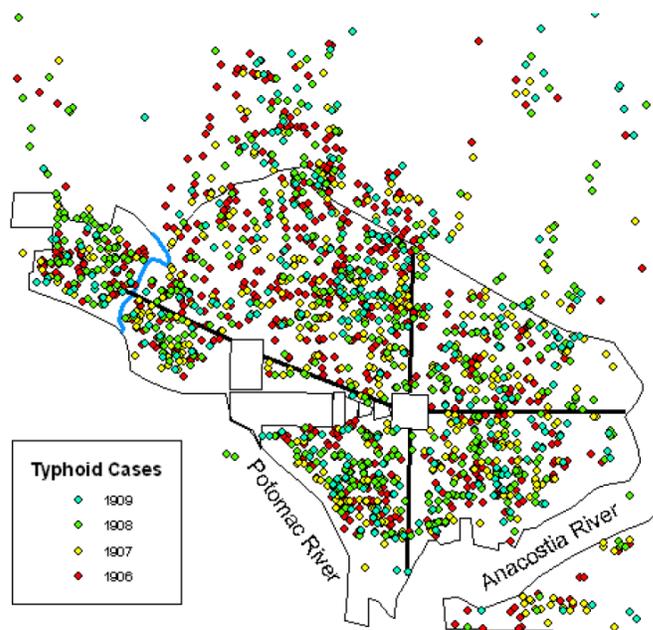
Spatial variability in the density, distribution and vectorial capacity of anopheline species in a high transmission village (Equatorial Guinea), Cano J, Descalzo MA, Moreno M, Chen Z, Nzambo S, Bobuakasi L, Buatiche JN, Ondo M, Micha F and Benito A, *Malaria J* 2006 5(21) MAR 2006;



Inequality in the built environment underlies key health disparities in physical activity and obesity, Gordon-Larsen P, Nelson MC, Page P, Popkin BM, *Pediatrics* 117 (2): 417-424 FEB 2006;

First evidence of West Nile virus amplification and relationship to human infections, C. N. Theophilides, S. C. Ahearn, E. S. Binkowski, W. S. Paul and K. Gibbs, *Int J Geogr Info Sci* 20(1):103-115 JAN 2006;

Spatial and temporal structure of typhoid outbreaks in Washington, D.C., 1906-1909: evaluating local clustering with the Gi* statistic, Hinman SE, Blackburn JK and Curtis A, *Inter J Health Geogr* 5(13) MAR 2006;



Methodology to establish hurricane evacuation zones, Wilmot CG, Meduri N, *Transport Res Rec* (1922): 129-137 2005;

Impact of patient distance to radiation therapy on mastectomy use in early-stage breast cancer patients, Schroen AT, Brenin DR, Kelly MD, Knaus WA, Slingluff CL Jr. *J Clin Oncol* 1;23(28):7074-80 OCT 2005;

Telephonic survey of surveillance and control procedures for the mosquito vectors of West Nile virus near naval installations in the eastern United States, Stein KJ, Claborn DM, *Mil Med* 170 (8): 658-662 AUG 2005.

New Report

Health Inequalities: Europe in Profile

Johan Mackenbach, University Medical Center Rotterdam

(commissioned by the UK Presidency of the EU, February 2006). Inequalities in health between people with higher and lower educational level, occupational class and income level have been found in all European countries. The widening of some of these health inequalities during the last decades of the 20th century has increased the urgency of this public health problem. This independent report, commissioned by the UK Presidency of the European Union, gives a comprehensive overview of patterns and trends.

Mortality. In all countries with available data, rates of premature mortality are higher among those with lower levels of education, occupational class, or income. Inequalities in mortality exist from the youngest to the oldest ages and in both genders, but tend to be smaller among women than among men. Inequalities in mortality can also be found for many specific causes of death, including cardiovascular disease, many cancers, and injury. These inequalities in mortality lead to substantial inequalities in life expectancy at birth (4 to 6 years among men, 2 to 4 years among women).

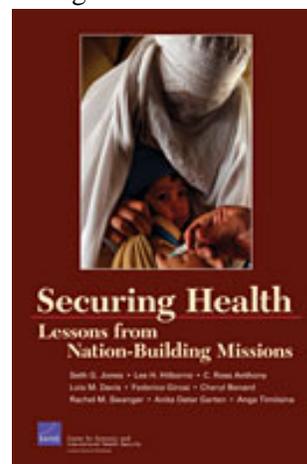
Morbidity. As was the case with mortality, rates of morbidity are usually higher among those with a lower educational level, occupational class or income level. Substantial inequalities are also found in the prevalence of most specific diseases (including mental illness) and most specific forms of disability. Over the past decades, inequalities in morbidity by socio-economic position have been rather stable. Together with inequalities in mortality, inequalities in morbidity contribute to large inequalities in 'healthy life expectancy' (number of years lived in good health).

Determinants of mortality and morbidity. During the past decade, great progress has been made in unravelling the determinants of health inequalities in European countries. Health inequalities are mainly caused by the higher exposure to material, psychosocial and behavioural risk factors in lower socio-economic groups. European data on determinants of health inequalities are limited to a few behavioural risk factors (smoking, alcohol consumption, nutrition..). Reducing the prevalence of smoking in lower socio-economic groups is a key ingredient of any strategy to tackle health inequalities. [<http://www.dh.gov.uk/assetRoot/04/12/15/84/04121584.pdf>]

New Report

Securing Health: Lessons from Nation-Building Missions. The United States missed opportunities to help

win the support of the public in Iraq and Afghanistan by failing to make health a bigger focus of reconstruction efforts after U.S.-led invasions of the nations, according to a RAND Corporation report issued April 19, 2006.



Iraq. RAND researchers say that several measurements show that nation-building efforts in Iraq moved too slowly on many health-related fronts that could have improved the daily lives of the nation's population. In examining the situation in Iraq, the report says: An estimated 40 percent of the water and sanitation network in Baghdad has been damaged during the conflict. Efforts to rebuild the system- aging and in frail condition before fighting began- have moved slowly, hampered by the nation's widespread security problems and looting; A year after the major combat phase of the war in Iraq ended, Baghdad's three sewage treatment plants were still inoperable, forcing sewage to be dumped in the Tigris River and putting the nation's population at risk of communicable disease outbreaks. The sewage plants ultimately were repaired, but surveys of Iraqi citizens show that most have been unhappy with the quality of sanitation services- a sign that an opportunity to foster goodwill was lost; There were notable health successes, including prevention of malnutrition and communicable disease outbreaks immediately after the U.S.-led invasion, and the reopening of Iraq's hospitals in the months after Saddam Hussein was overthrown; Too many of the early efforts in health were focused on issues such as redesigning medical training programs and designing disease-tracking systems- projects that had little immediate and direct impact on the lives of most Iraqis; and, Efforts to address Iraq's health needs have been significantly hurt by the nation's security problems. This has both limited the mobility of workers assigned to health projects and caused policymakers to shift funding from health to security.

Afghanistan. Looking at the challenges facing U.S. planners in Afghanistan, the RAND report says: After 30 years of civil strife, Afghanistan had almost no

national health system in place. This meant that the country faced a serious development challenge, and the international community had to build the public health and health care delivery systems virtually from scratch; and, Most of the health problems in Afghanistan are not amenable to quick fixes, requiring long-term investment in nutrition programs, the creation of sanitation systems, and the development of a new generation of health care professionals.

A Framework. The RAND report outlines a framework for policymakers to consider the role that ensuring the health of the population should play in nation-building efforts, providing recommendations for an approach to organize and evaluate such efforts. [See: <http://www.rand.org/index.html>]

Statistical Methods for Geography: A Student's Guide

Sage Publications, second edition 2006

In this book, author Professor Peter Rogerson provides insight, content and example as to how geography students are instructed in spatial understanding and analysis. Peter serves on the faculty of the Department of Geography and National Center for Geographic Information and Analysis, State University of New York at Buffalo. One of the guiding questions for his updated work is a basic question asked of geographers: **Do geographic data exhibit spatial patterns?**

His book organizes around four important themes of spatial analysis, namely, the modifiable area unit problem; boundary problems, spatial sampling procedures; and, spatial autocorrelation or spatial dependence. These are key concerns for geography and involve as well other disciplines concerned with spatial analysis. In order to arrive at these understandings the reader experiences the journey through a variety of supporting statistical topics (found in introductory statistics texts) such as descriptive and inferential statistics, probability, discrete and continuous distributions, hypothesis testing, ANOVA, and regression analysis (multiple and logistic). He condenses and relates these processes and methods to several spatial data sets used throughout the book. There are a variety of exercises, including hand and computer applications (using *SPSS for Windows 12.0*). This updated resource emphasizes the spatial component of analysis required of students with quantitative interests. Editor [See other work by Peter in the Web Sites section: **GeoSurveillance:**

Monitoring Changes in Spatial Patterns with Cumulative Sum Approaches, User's Manual]

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

Enterprise GIS: CDC Update [Carl Kinkade, MCRP, CDC EGIS Coordinator] The enterprise GIS development at CDC is progressing. I appreciate the opportunity to inform the CDC Public Health GIS Users Group of our work. Let me give some quick background notes for those unaware of our activities up to this point. The National Center for Public Health Informatics (NCPHI) has been asked to coordinate GIS activities for CDC. As part of this coordination, NCPHI has created the **Coordination Committee for GIS (CCGIS)**, which has senior level representatives from each Center, Institute, and Office (CIO). NCPHI and CCGIS work together to insure that the enterprise GIS activities support the mission of each CIO. In addition, the CCGIS representatives assign technical people to work on workgroups such as the inventory workgroup and the services workgroup to address specific technical issues.

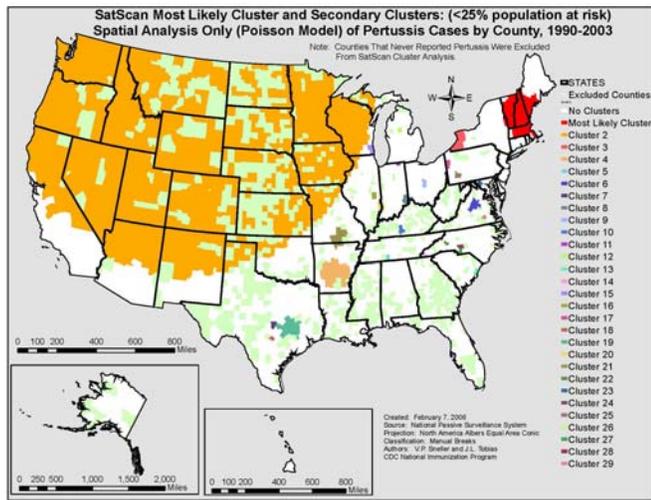
This winter CCGIS inventoried all GIS software in the agency and worked with ESRI to get a current license count for the agency. Currently CDC has 134 ESRI customer numbers and over 1,100 copies of software. To assist the license management oversight and to save money on redundant maintenance costs, CDC is moving towards a consolidated customer number which will be coordinated by NCPHI. NCPHI will then be responsible for coordinated license purchases, distribution, and limited support.

In addition to the licensing consolidation, the CDC GIS community holds monthly brown bags for the exchange of information between CIOs and quarterly GIS Grand Rounds to present work from both within and outside of CDC.

At the last CDC GIS Grand Rounds, the CDC Enterprise GIS Portal was announced. This intranet site was designed to share GIS information about each CIO and to be the first stop for staff looking for GIS information in CDC. The site features, GIS applications, events, resources, training, GIS Kudos (a write up about a GIS person at CDC), and a Map of the Month.

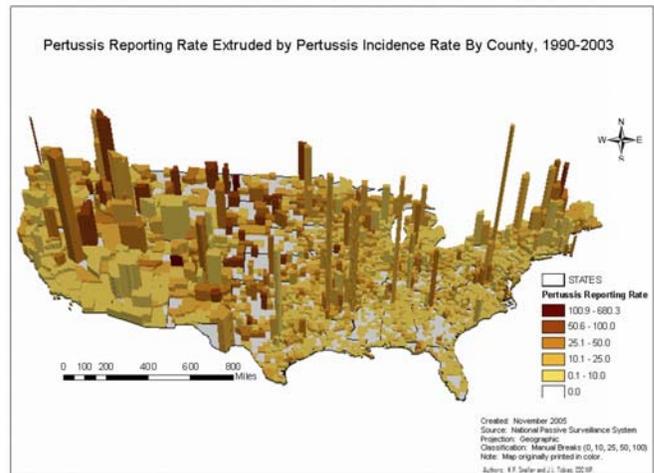
The next step for the enterprise GIS development will be the development of the Enterprise Geodatabase to share data across CIOs, establishing an enterprise geocoding service for the agency, and encouraging CIOs

to publish their data to the Public Health Geography Network (PHGN). As this effort takes shape, GIS will become readily accessible to all CDC scientists and build a true GIS and public health infrastructure in the workplace. Several CDC EGIS map examples are shown.

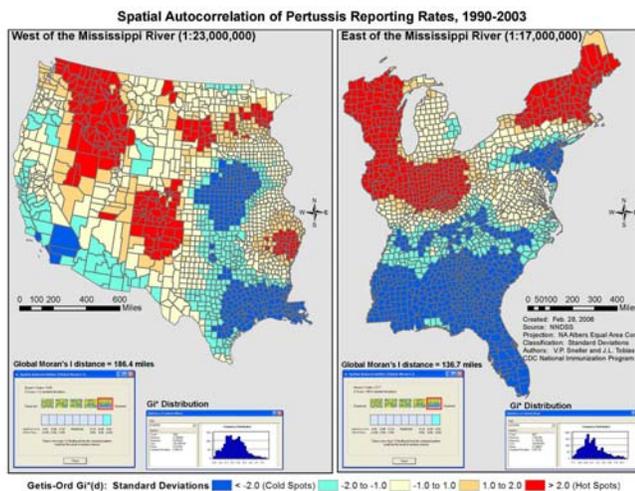


SatScan output (map above): The cases of whooping cough reported by local health departments to the National Notifiable Disease Surveillance Systems from 1990 to 2003 occur in twenty-nine clusters. The local health departments that are excluded from the analysis because they did not report pertussis during this period are included as a separate layer in this map. [Source: National Immunization Program, CDC]

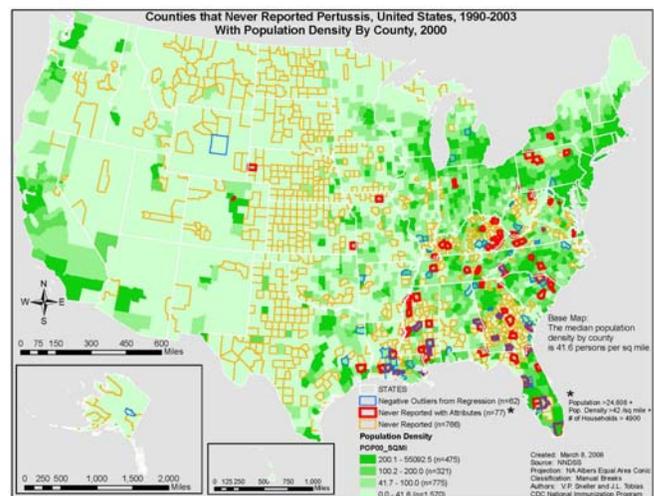
reporting had regional patterns. Global Moran's Index answered our question, "Is there clustering in the data regarding pertussis reporting frequency?" The Getis-Ord's statistic identified clusters of local health departments that reported pertussis cases frequently (red) and clusters of local health departments that seldom reported pertussis cases (blue). [Source: National Immunization Program, CDC]



Reporting pertussis cases and the local pertussis incidence rates (map above): Pertussis is one of the national notifiable diseases that is included in the National Notifiable Disease Surveillance System at CDC. Excluding 767 counties that never reported pertussis between 1990 and 2003, we calculated a 'reporting rate' as the ratio of number of years reporting pertussis per 100,000 population. A separate layer shows the incidence rates of the local health departments, calculated as the number of cases per 100,000 county population, 2000 census. Counties with low reporting rates but high incidence rates are considered counties that underreported pertussis in



Global Moran's Index for spatial association and Getis-Ord's (GI*) Local Indicator of Spatial Association (map above): In describing the pertussis reporting practices of local health departments we explored the possibility that pertussis



PUBLIC HEALTH GIS NEWS AND INFORMATION

May 2006 (No. 70)--12th year of continuous reporting

17

their communities. [Source: National Immunization Program, CDC] **County population is a direct indicator of pertussis reporting** (map above). In this map we show the local health departments that never reported pertussis 1990 to 2003. Large counties that are also densely populated but never reported pertussis during 1990 and 2003 should be investigated for administrative and other barriers affecting pertussis and other disease reporting functions. [Source: National Immunization Program, CDC]

NASA Science Mission Directorate Applied Sciences Program- **Public Health**

(Fiscal Year 2005 Annual Report- excerpts)

Summary. The Public Health program element pursued numerous activities to extend the use of NASA Earth science research results to improve the understanding of and response to factors in the environment that adversely impact the health of the American public. FY05 highlights for the Public Health program included publishing the study *Confidentiality Issues and Policies Related to the Utilization and Dissemination of Geospatial Data for Public Health Applications* with the Socioeconomic Data and Applications Center (SEDAC) of Columbia University, co-sponsoring the Ecological Modeling Conference in Monterey, California, and publishing the article "NASA Space Systems Enhance Public Health Science for Society" in *Earth Observation Magazine*.

In FY05, the Public Health application supported projects to demonstrate the capacity of Earth science research results to enhance **five public health decision support tools**: •ArboNET/Plague Surveillance System (PSS); •National Environmental Public Health Tracking Network (EPHTN)/Health and Environment Linked for Information Exchange (HELIX) Atlanta demonstration project; •Malaria Modeling and Surveillance (MMS)/Global Situational Awareness Tool (GSAT); •The Public Health Applications in Remote Sensing (PHAiRS)/Rapid Syndrome Validation Project (RSVP); and, •The Secretary's Command Center (SCC), Secretary of the Department of Health and Human Services (DHHS). *Major Accomplishments.

ArboNET/Plague Surveillance System (PSS).

Plague prevention and response efforts were underway at regional, state and local levels through the Centers for Disease Control and Prevention (CDC)-sponsored ArboNET/PSS. In FY05 the project team began using a climate-disease link tool developed by NASA-Goddard's

Global Inventory Modeling and Mapping Studies (GIMMS) group to evaluate and measure improvements of the ArboNET/PSS. The GIMMS team extended the new global AVHRR-NDVI vegetation dataset at 8-km resolution and integrated it with TRMM, Landsat, SRTM, and MODIS datasets.

The project team modified this application to report risk plague activity every month and to integrate data at different spatial and temporal resolutions. The project team also began work on a project website and completed an evaluation report on ArboNET/PSS in September 2005. In FY06, the project team will develop a validation and verification report based on the relationship between climate variability and rodent population, which was a specific topic for a planned NASA-CDC partners meeting in October 2005.

EPHTN/HELIX. As a partner with CDC's Environmental Public Health Tracking (EPHT) program in the HELIX-Atlanta project, the NASA Public Health team (especially NASA-Marshall) was active in all the project teams: **Birth Defects, Air and Respiratory Health, Water, and Cancer**. The partnership identified NASA Earth science observations for use in the projects, and NASA expertise in systems analysis led to the development of a quality control procedure for improving measurement of fine particulate matter.

In FY05, the Birth Defects team identified compatibility issues for the Public Health Information Network (PHIN), and it selected and enhanced the classification system for congenital heart defects appropriate for EPHT. The project team evaluated NASA satellite observation data for EPHT utility, completed an individual record review of over 3,000 heart defect cases by physicians, and developed and implemented a method for **validating geocodes from the Metropolitan Atlanta Congenital Defects Program (MACDP) and Georgia's Office of Health Information and Policy (OHIP)**. The Cancer team completed a literature review and incorporated it into the project work plan. The team evaluated data from the Supplementary Guidance for Database Inventory Projects to identify information systems that could be employed. [See: <http://www.cdc.gov/phin>]

Malaria Modeling and Surveillance (MMS)/Global Situational Awareness Tool (GSAT). In FY05, the project continued development of techniques to **predict malaria cases based on meteorological and environmental parameters** extracted from NASA Earth

PUBLIC HEALTH GIS NEWS AND INFORMATION

May 2006 (No. 70)--12th year of continuous reporting

18

science satellite observations and climate time series. The project obtained malaria epidemiological records from the Thai Army's Pramongkul Hospital and the U.S. Armed Forces Research Institute for Medical Sciences in Thailand. The project team will use these data with remotely sensed environmental observations for training a nonparametric model for predicting malaria cases. The team is developing additional techniques to improve prediction accuracy when fewer epidemiological cases are available. In FY05, the Letter of Agreement to acquire the data (established in 2001) was extended four years to April 2009.

A FY05 report evaluating compatibility between the MMS project and the Air Force Special Operation Command's (AFSOC) GSAT concluded that the goals of the two efforts were comparable and complimentary. The report noted that enhancing the AFSOC GSAT with NASA Earth Science satellite observations and **model predictive capabilities** is likely to provide multiple benefits for the U.S. Department of Defense (DoD). The report stated that an enhanced GSAT capability should reduce morbidity and mortality for U.S. forces and populations in host countries, including improved utilization of larvicide, insecticide, and chemoprophylaxis. (**Note: Nearly one-third of U.S. personnel involved in the 2003 Liberia operation contracted malaria**). DoD plans to test the enhanced GSAT in real military exercises in 2006 and 2008, and the Public Health team has and will transmit data sets to AFSOC for use in those exercises.

REASoN Project: Public Health Applications in Remote Sensing (PHAIRS)/Rapid Syndrome Validation Project (RSVP). In FY05, the project team regionalized the Dust Regional Atmospheric Model (DREAM) for applications in the southwestern U.S. by using dust events from 2003. The team identified and tested several remote sensing data sets for the DREAM model: MODIS land cover (MOD12), land surface temperature (MOD11/MYD11), vegetation index (MOD12), and leaf area index (MOD 15). The project team also completed the initial stages of developing GIS layers for the client mapping interface. The project completed an initial benchmark report, which stated that NASA Earth science satellite observations are capable of improving dust episode forecasting significantly in the southwestern U.S. [See: <http://www.phairs.unm.edu>]

Department of Health and Human Services'

Secretary's Command Center (DHHS SCC). The project sought to integrate NASA Earth science research results into the **DHHS SCC**, which is a central node in the operational public health community with federally-mandated responsibility for public health emergency preparedness and response activities. The project expected to complete a Memorandum of Understanding (MOU) with DHHS in FY05, however the MOU was delayed due to reorganization and changes of leadership at DHHS. The Public Health team will assess this activity and possibly seek to pursue the MOU further in FY06 [See <http://aiwg.gsfc.nasa.gov/esappdocs/annualreports/PublicHealthFY05Final.pdf>; Also, Links to the two FY05 NASA benchmark reports in Public Health are as follows and provide important reading: http://aiwg.gsfc.nasa.gov/esappdocs/benchmarks/EPHTN_HELIX_Benchmark.pdf; the companion report in this sequel is at: http://aiwg.gsfc.nasa.gov/esappdocs/benchmarks/PHAIRS_RSVP_Benchmark_Reportv12.pdf]

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>]

Metadata Review

"The production of geospatial metadata is now established as a GIS best practice. However, few organizations utilize metadata to support functions beyond data distribution and archive. Robust, quality metadata can serve a critical role in geospatial data and project management. To realize this potential, metadata must be produced with this end in mind and contain key content for specific elements. Metadata creation and maintenance must also be fully integrated into the geospatial data lifecycle. Organizations willing to incorporate these measures into their geospatial data development practices will realize greater return on their geospatial data investments." Lynda Wayne, GeoMaxim/FGDC

What are Metadata? A metadata record is a file of information, usually presented as an XML document, which captures the basic characteristics of a data or information resource. It represents the who, what, when,

PUBLIC HEALTH GIS NEWS AND INFORMATION

May 2006 (No. 70)--12th year of continuous reporting

19

where, why and how of the resource. Geospatial metadata are used to document geographic digital resources such as Geographic Information System (GIS) files, geospatial databases, and earth imagery. A geospatial metadata record includes core library catalog elements such as Title, Abstract, and Publication Data; geographic elements such as Geographic Extent and Projection Information; and database elements such as Attribute Label Definitions and Attribute Domain Values. The FGDC is tasked by Executive Order 12906 to develop procedures and assist in the implementation of a distributed discovery mechanism for national digital geospatial data. Geospatial metadata are critical to data discovery and serves as the fuel for both the Geospatial One-Stop data portal and the NSDI Clearinghouse.

The Business Case: Why bother with Metadata? Metadata helps people who use geospatial data find the data they need and determine how best to use it. Metadata supports producers in locating and using their own data resources and data consumers in locating and using data resources produced by others. Metadata also supports (1) **Data Management requirements** to: preserve the data history so that it can be re-used or adapted; assess the age and character of data holdings to determine which data should be maintained, updated, or deleted; instill data accountability by requiring you to state what you know about the data and realizing what you don't, but should, know about your data; and limit data liability by explicitly designating the effective and administrative limits of use of the data; and (2) **Project Management requirements** to: plan and document the data types and content needed to support the project; monitor data development by regular review of the process steps completed and recorded within the metadata; provide all project participants a common language of attributes and process methods and a place to record and share their progress; and access the lineage and content of outsourced data production by requiring robust metadata as a contract deliverable.

As personnel change in an organization, institutional knowledge leaves the organization. Undocumented data can lose their value. Subsequent workers may have little understanding of the contents and uses for a digital data base and may find they can't trust results generated from these data. Also, lack of knowledge about other organizations' data can lead to duplication of effort. It may seem burdensome to add the

cost of generating metadata to the cost of data collection, but in the long run metadata are worth it. [You may register now for a special metadata training session focused on implementing proper metadata procedures in state and local public health departments and related agencies, May 15-16, 2006, Denver, CO; contact Mark Becker at mbecker@ciesin.columbia.edu; For further readings on metadata, see: <http://www.fgdc.gov/metadata/metadata-business-case>]

Recent Government Accountability Office (GAO) Reports, 2005

[See: <http://www.gao.gov>]

Health Information Technology: HHS is Continuing Efforts to Define a National Strategy, GAO-06-346T, March 15, 2006 [GAO (1) assessed the progress being made by the Department of Health and Human Services (HHS) since 2005 to develop a national health IT strategy and (2) provided an overview of selected federal agencies' health IT initiatives related to the national health IT strategy.]

September 11: Monitoring of World Trade Center Health Effects Has Progressed, but Program for Federal Responders Lags Behind, GAO-06-481T, February 28, 2006 [After the 2001 attack on the World Trade Center (WTC), nearly 3,000 people died and an estimated 250,000 to 400,000 people in the vicinity were affected. An estimated 40,000 people who responded to the disaster-including New York City Fire Department (FDNY) personnel and other government and private-sector workers and volunteers- were exposed to physical and mental health hazards. Concerns remain about the long-term health effects of the attack and about the nation's capacity to plan for and respond to health effects resulting from future disasters]

Disaster Preparedness: Preliminary Observations on the Evacuation of Hospitals and Nursing Homes Due to Hurricanes, GAO-06-443R, February 16, 2006 [During disasters, administrators of health care facilities are faced with decisions about how to operate and care for patients, including when and how to evacuate patients if the facility becomes unable to support adequate care, treatment, or services. Hospitals and nursing homes are required to have plans in place that describe how they will operate during emergencies. Hurricanes Katrina and Rita were incidents of national significance that highlighted the challenges involved in evacuating

PUBLIC HEALTH GIS NEWS AND INFORMATION

May 2006 (No. 70)--12th year of continuous reporting

20

vulnerable populations, including those in hospitals and nursing homes. Federal officials used the National Disaster Medical System (NDMS) to help evacuate patients due to Hurricane Katrina—the first time the system has been used to evacuate such a large number of patients. Formed in 1984, NDMS is a partnership among the Department of Defense (DOD), the Department of Health and Human Services (HHS), the Department of Homeland Security (DHS), and the Department of Veterans Affairs (VA)]

Web Site(s) of Interest This Edition

<http://www.acsu.buffalo.edu/~rogerson> **GeoSurveillance: Monitoring Changes in Spatial Patterns with Cumulative Sum Approaches, User's Manual-** The basic concept of the cusum methods is to monitor a statistic that accumulates deviations between observed and expected values over time, instead of examining each time period separately. By accumulating the deviations over time, cusum methods are more likely to detect small changes than many other methods. This application provides several types of cusum methods along with global and local measures of spatial autocorrelation. [Note: This manual can be downloaded]

http://www.aflcio.org/issues/safety/memorial/upload/doj_2006.pdf
Death on the Job: The Toll of Neglect. A National and State-By-State Profile of Worker Safety and Health in the United States: AFL-CIO 15th edition, April 25, 2006. Every day in the United States, 15 workers die from occupational injuries. Before this year is over, thousands of workers will be killed on the job and millions will be injured or diseased. This edition of **“Death on the Job: The Toll of Neglect”** marks the 15th year the AFL-CIO has produced a report on the state of safety and health protections for America's workers. The report includes state-by-state profiles of workers' safety and health and features state and national information on workplace fatalities, injuries, illnesses, the number and frequency of workplace inspections, penalties and public-employee coverage under the Occupational Safety and Health Act (OSH Act). It also includes information on the state of mine safety and health.

Progress in protecting workers' safety and health is slowing, and for some groups of workers jobs are becoming more dangerous. The most recent job fatality data (2004) show an increase in fatal workplace injuries

with 5,703 fatal injuries reported in 2004, including significant increases in fatalities among Hispanic and foreign-born workers. As the economy, the workforce and hazards are changing, we are falling further and further behind in our efforts to protect workers from new and existing problems.

<http://www.nytimes.com/2006/04/28/nyregion/28homicide.html?th&emc=th>



At the end of each year, the New York Police Department reports the number of killings- there were 540 in 2005. From 2003 through 2005, 1,662 murders were committed in New York. The maps were made by the NY Times using Google Maps...if you click on the satellite button on the top, you can get a "street view" (orthophoto) of the actual crime locations.

<http://www.familywatchdog.us> Registered sex offender address data. Go to this link and enter your street address. It will show a "house." In the middle of the map, that's your house; all the little colored boxes are registered Sex Offenders. Click on them and you get a name, address and picture of the person along with his crime. It also shows you where they live in proximity to your home and the local schools. [Relatedly, see the National Sex Offender Public Registry of the U.S. Department of Justice at web site <http://www.nsopr.gov>]

<http://here2day.netwiz.net/seyedsite/publicart/flyingcarpet/flyingcarpetframe.html> A Site Specific Public Art Project for the



Sacramento International Airport. This project consists of an **aerial view of the Sacramento River that is woven into a carpet for the floor of a pedestrian bridge connecting the terminal to the parking garage**. This image represents approximately 50 miles of the Sacramento River starting just outside of Colusa, California and ending about 6 miles south of Chico. In addition to recalling the experience of flight and flying, this piece, by depicting the larger geographical area, also helps to reinforce a sense of belonging and/or connection for the traveler. In this way, the carpet can also be read and experienced as a “welcome mat” for visitors arriving in Sacramento. [Editor: Special thanks to Christopher Callahan, Informatics Specialist, Division of Oral Health, National Center for Chronic Disease Prevention and Health Promotion, Coordinating Center for Health Promotion, CDC, for bringing this fascinating geographic creation to our attention; The artist is Seyed Alavi and other views are on his website]

<http://www.eastvalleycompass.org/Radiustest.html> This is the link to an animated study of different selected **search radii** for a single set of regional vehicle theft point data from the East Valley COMPASS Project. The density grids were symbolized with the same value set across the board, using search radii ranging from **5280 ft to 1000ft**. The animation quickly depicts two behaviors: 1. (Obvious) Large, unhelpful blobs occur with a search radius that is too large; and, 2. (A little less obvious) Higher density values occur with smaller search radii at point congregations than the lower density values occurring in big blobs with larger search radii. This was an effort to help clear up the ambiguous nature of kernel densities. [Credit: Coauthors of the paper, Philip Mielke, at pmielke@redlandspolice.org, and Julie Wartell; presented at the 11th International Symposium on Environmental Criminology and Crime Analysis, June 2003]

Final Thoughts

GIS and Public Health: Horizons and Challenges

International Conference in GIS and Health: Geospatial Research and Application Frontiers in Environmental and Public Health Systems (GRAFEPHS 2006)

I am honored to have been invited to speak at the International Conference in GIS and Health (GRAFEPHS 2006): *"Towards the Age of New challenges"*, which convenes next month in Hong Kong. It is sponsored by the Croucher Foundation and organized by the Department of Geography, The University of Hong Kong and the Chinese Academy of Sciences in Beijing. Other keynote speakers include: Tony Gatrell, Professor of the Geography of Health and Director, Institute for Health Research, Lancaster University, UK, who will speak to “Health inequalities and the provision of health services: using GIS to make a difference;” Gerald Rushton, Professor, Department of Geography, The University of Iowa, USA, who will speak to “Exploratory spatial analysis methods in cancer control and prevention”; and, Jinfeng Wang, Research Professor, State Key Laboratory of Resources and Environmental Information System Institute of Geographical Sciences and Natural Resources Research, Chinese Academy of Sciences, China, who will speak to “Risk diagnosis and process modeling for epidemics.”

My topic is “GIS and public health 2006: Horizons and challenges” which I hope will result in a comprehensive and positive message. I thought it useful to share the evolving framework of my vision- contained below- with all of our CDC Public Health GIS Users. In fact, I invite you to offer suggestions to expand or help fill in this framework so that it becomes as inclusive as possible. Your input would be much appreciated and it will make a difference. Here is how I have framed the presentation thus far:

“This is a very exciting time for geospatial and public health science. The horizons and challenges we face are plentiful, planetary and potentially of profound benefit to all inhabitants. Rigorous examination of the role of location or earth space in public health is a key requirement of this combined science (and others) and central to the exploration. Often dynamic, this process incorporates the scientific study of existing and evolving natural and manmade health risks and outcome interdependencies which can occur at any geographic scale. From high above us, there are growing developments in the fusion or integration of large and complex satellite and airborne-derived data, much of which is sub-meter, orthorectified, and geopositioned over extensive portions of the earth. New methods of extracting and processing this abundant imagery intelligence surely will translate many long-standing, pervasive and as yet uncharted environmental and human health relationships into new understandings and rewarding public health response. Similarly,

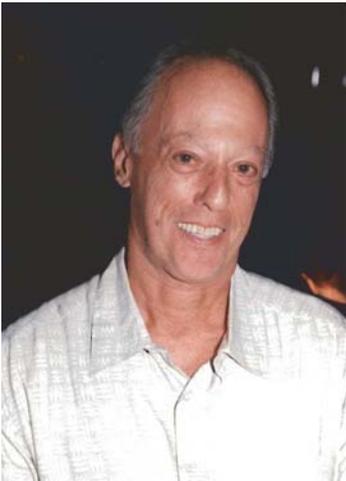
PUBLIC HEALTH GIS NEWS AND INFORMATION

May 2006 (No. 70)—12th year of continuous reporting

22

expanding the tools of space and space-time analysis is essential to continue to cultivate and grow our scientific premises, foundations and knowledge. Predictive modeling routinely can test for spatial construct and structure among covariables for assumptions of spatial autocorrelation and independence. Real-time sensor, syndromic and volumetric space-time signature can translate health-related activity into advance probabilistic signal and visualization of event pathway, and improve preparedness. We enter a time when increased mandates for standardization and efficiencies in public health geospatial data sharing necessitate local, national and global commitment. Moving the geospatial and public health agenda forward requires that timely, coordinated and collaborative disease surveillance, detection, and mitigation efforts become a function of improved modalities of geospatial data communication and exchange. Precedent lessons can be drawn from the increasing interoperability of web-based geospatial data resources, statistical mining and distributed computing, soon to encompass the world community.

Possibly the most pervasive challenge, during our residency and tutelage, is to insure some measure of improved planetary wellbeing for all occupants. We are summoned to harness even greater power from our geospatial resources and technologies because of the transcendent obligation and horizon to better understand and remedy for future generations essential etiologies of harmful but preventable disease and disability resulting from predisposing, episodic and cumulative lifetime exposures. This mission beckons both multilevel and holistic geospatial investigation, one which spans individual, family and neighborhood influences, and encompasses both atomistic and ecologic frameworks. With the inclusion of all -multidisciplinary colleagues, the public and policy makers- we assure a robust, scientific and synergistic approach to this challenging earth-space journey. Envisioning with certainty the discovery of new associative and causal relationships, and driven by our dedicated purpose to improve life as we know it, this is an especially exciting time of exploration for geospatial and public health science.” Xie Xie (‘thank you’ in Chinese, pronounced ‘shey shey’)! Editor



“Celebrating CDC’s First 60 Years”

Charles M. Croner, Ph.D., Geographer and Survey Statistician, and Editor, *Public Health GIS News and Information*, Office of Research and Methodology, National Center for Health Statistics, and first DHHS Representative, Federal Geographic Data Committee, at cmc2@cdc.gov. Celebrating our 70th 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> - please join us **June 15**, 2006, for our next GIS Guest Lecture

PUBLIC HEALTH GIS NEWS AND INFORMATION

May 2006 (No. 70)—12th year of continuous reporting

23

APPENDIX: MAPPING HEALTH INEQUALITIES

[Thirteenth in Collaborative Series: See May, July, September, November 2004, January, March, May, July, September, November 2005; and January, March 2006 editions at NCHS GIS website; also, see the complete archive at http://communitysolutions.com/store/index.asp?DEPARTMENT_ID=121]

Persons with Disabilities by Race, Cuyahoga County, 2000

By Terry Lenahan¹ and Mark Salling, Ph.D.^{1,2} (1) The Center for Community Solutions and (2) Maxine Goodman Levin College of Urban Affairs at Cleveland State University, Cleveland, Ohio

More than 56 million Americans live with disabilities.¹ In an effort to remove the barriers those with disabilities face on a daily basis, the Americans with Disabilities Act was signed into law in 1990. This groundbreaking piece of civil rights legislation guarantees equal opportunity for persons with disabilities in employment, public accommodations, transportation, government services, and telecommunications. By removing these barriers, the Act enables our society and economy to benefit from the skills and talents of those with disabilities. Yet persons with disabilities also require social and health-care delivery systems to support their needs.

The 2000 Census reported disabilities by several types including sensory, physical, mental, and self-care disabilities. A person is considered to have a disability if they responded affirmatively to the existence of a long-lasting condition such as:

- * blindness, deafness, or a severe vision or hearing impairment (sensory disability);
- * any condition that substantially limits one or more basic physical activities such as walking, climbing stairs, reaching, lifting, or carrying (physical disability);
- * learning, remembering, or concentrating (mental disability); or
- * dressing, bathing, or getting around inside the home (self-care disability).

Disabilities are enumerated for persons age five and older. One person can have up to four disabilities or one in each of the categories of sensory, physical, mental, and/or self-care.

Nationally, 19 percent of the total population had one or more disabilities. Physical disabilities were the most prevalent, occurring in 8.2 percent of the entire population.

Disability rates are higher for some populations, including the urban population and some racial and ethnic minorities. The overall rate of persons with one or more disabilities in Cuyahoga County, where the city of Cleveland is located, was 20 percent (18 percent for Whites and 25 percent for African Americans). However, the rate was 26 percent in Cleveland (25 percent for Whites and 27 percent for African Americans). In the 10 Statistical Planning Areas² in Cleveland with 95 percent or more African Americans, all had disability rates *higher* than 25 percent. Conversely, 22 municipalities in Cuyahoga County had 95 percent or more Whites; all had disability rates *below* 25 percent.

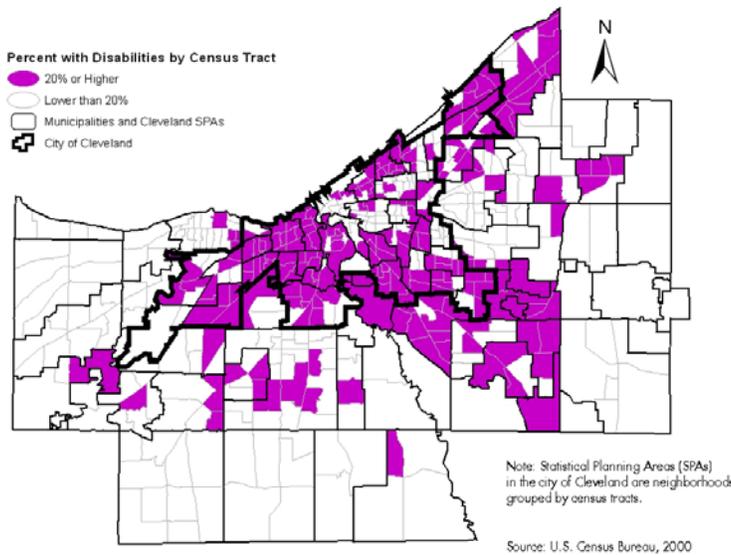
The two maps effectively present the geographic coincidence of disabilities and racial concentration, as well as the higher rates of African Americans with disabilities in the suburbs compared to Whites. Of the 500 census tracts in Cuyahoga County, 221 had a White population with 20 percent or higher disabled, or 44 percent of all county tracts. But 278 tracts had an African American population of 20 percent or more disabled, or 56 percent of total census tracts in the county.

¹ The American Association of People with Disabilities (March 17, 2003) www.aapd.com

² Statistical Planning Areas are census tracts in the city of Cleveland grouped into recognizable neighborhoods.

The strength of the relationship between total disabled population and race was tested with a correlation coefficient or r .³ We found a strong positive correlation (+0.49 among the census tracts in the county) between the percent of total disabled population and percent African American population.

White Population with 20 Percent or Higher Disabilities in Cuyahoga County, Ohio



More than one-fourth of Cleveland's population, the majority of which are African American, had at least one disability. With only 13 percent of the population in the city of Cleveland age 65 or older compared to 18 percent in the suburbs, it seems other socioeconomic factors may be important in accounting for the relatively high rate of disabilities in Cleveland.

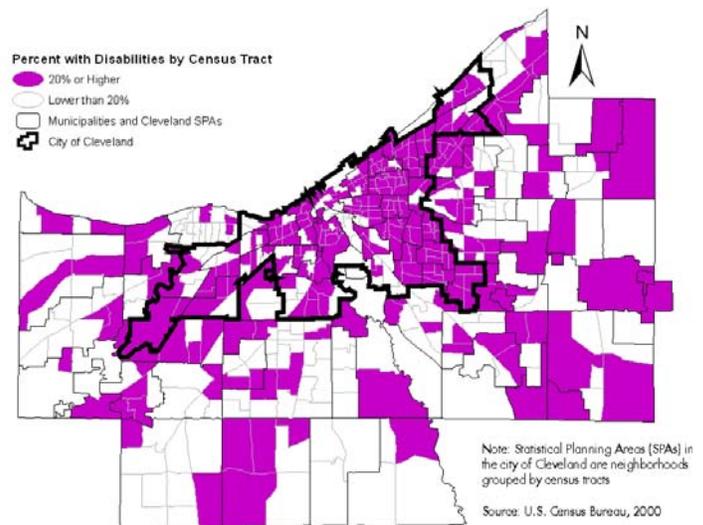
The types of disabilities that African Americans have are also distinguishable from those experienced by Whites. Nationally, 25 percent of disabled Whites had a physical disability, while 21 percent of disabled Blacks had that disability. In Cleveland, those rates were 25 percent and 24 percent, respectively. At the national, county, and city levels, disabled Whites were also more likely to have a

sensory disability (ranging from 10 percent in Cleveland to 11.5 percent nationally) than disabled African Americans (ranging from 7.8 percent in Cleveland to 7.4 percent nationally).

African American Population with 20 Percent or Higher Disabilities in Cuyahoga County, Ohio

African Americans were more likely to have disabilities that interfered with employment and going outside of the home than were Whites, at the national, county, and city levels. Rates of mental and self-care disabilities were similar for both races, about 14 percent and 8 percent, respectively, at all levels.

Of course, race and urban residence are not the only factors associated with disabilities in the population. In particular, differences also exist among age cohorts and various demographic and socioeconomic groups. Nationally, persons with a disability were more likely to be living in poverty than those who did not have a disability.⁴ And, as in the nation, persons with a disability in Cleveland were more likely to be living in poverty than those who did not have a disability.



³ The correlation coefficient, r , ranges between -1 and +1; the closer to +1 indicating a strong positive association and a coefficient approaching -1 indicating a strong negative association between the two variables.

⁴ U.S. Census Bureau, Census 2000, SF3

PUBLIC HEALTH GIS NEWS AND INFORMATION

May 2006 (No. 70)—12th year of continuous reporting

25

Thus, regardless of cause, disabilities affect different segments of the population at different rates, and urban poor and African Americans are perhaps affected most of all.

Maps created by Terry Lenahan, Policy and Planning Associate in Research, The Center for Community Solutions. Data provided by Northern Ohio Data and Information Service, Maxine Goodman Levin College of Urban Affairs at Cleveland State University, Cleveland, Ohio. Indicators on disabilities by age, employment status, and poverty status can be found in *Social Indicators 2003: Community Health*, produced by The Center for Community Solutions and United Way Services of Greater Cleveland. The complete report may be seen at Community Solutions' Website, [See CCS: www.communitysolutions.com]. Contact Terry Lenahan at tlenahan@communitysolutions.com.