

PUBLIC HEALTH GIS NEWS AND INFORMATION

January 2003 (No. 50)

Dedicated to CDC/ATSDR scientific excellence and advancement in disease control and prevention using GIS

Selected Contents: Events Calendar (p.1); (pp.8-9); Public Health and GIS Literature 17); Website(s) of Interest (pp. 17-18); Final



News from GIS Users (pp.1-8); GIS Outreach (pp.9-15); DHHS and Federal Update (pp.15-18); Thoughts (pp.18-19)

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

January 15, 2003. "GIS-Epi: PAHO's Regional Project in the Americas". Carlos Castillo-Salgado, MD, JD, DrPH, Chief Special Program for Health Analysis, lead author. See abstract this edition. Please join us for this first of the 2003 NCHS Cartography and GIS Guest Lecture Series season, to be held, **10:00-11:30AM**, at the NCHS Auditorium, RM1100, Hyattsville, MD; This NCHS Series has been presented continuously since 1988. **Please note time change of this lecture only to 10:00AM.** Envision is available to offsite CDC/ATSDR locations; Web access is available to all others. 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). [All NCHS Cartography and GIS presentations are open to the public. Contact: Editor, *Public Health GIS News and Information*]

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

* Third Annual Public Health Workforce Development Meeting, Public Health Practice Program Office, CDC, January 21-22, 2003, Atlanta GA [See meeting website: <http://www.phppo.cdc.gov/owpp/wdm>]

* The International LIDAR Mapping Forum's Third Annual Meeting (ILMF2003), January 27-28, 2003, New Orleans LA [See: <http://www.lidarmap.org>]

* Sixth International Open Forum on Metadata Registries, January 20-24, 2003, Santa Fe NM [See: <http://metadata-stds.org/OpenForum2003>]

* Public Health Assessment: Current Issues and Future Directions, conference sponsored by the CDC Assessment Initiative and the National Association for Public Health Statistics and Information Systems (NAPHSIS) Leadership Institute, February 19-21, 2003,

Atlanta GA [See this edition Section II.B. CDC; Contact: Angeline Lewis at a_lewis@psava.com]

* 2003 National Child Care Association Annual Conference, March 12-15, Nashville, TN [See website: <http://www.nccanet.org>]

* SAS User Group International Conference, March 30-April 2, 2003, Seattle WA [See SAS conference website at: <http://www.sas.com/usergroups/sugi/sugi28>]

* 52nd Annual Scientific Conference, Epidemic Intelligence Service (EIS), CDC, March 31-April 4, 2003, training and services for EIS officers, Atlanta GA [<http://www.cdc.gov/eis/conference/conference.htm>]

* ESRI International Health GIS Conference, May 4-7, 2003, Arlington VA [See: www.esri.com/health2003]

* 16th annual Towson University Geographic Information Sciences Conference (TUGIS 2003), "Reflections on the Past: Solutions for the Present," June 2-3, 2003, Towson MD [Abstracts welcome until January 31; See: <http://cgis.towson.edu/tugis2003>]

II. GIS News

(You 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 or ATSDR)

A. General News and Training Opportunities

1. CDC's Public Health Training Network (Repeat Satellite Broadcast) **Smallpox Preparedness: Considerations for Response Team Volunteers**, Course No: SB0120A, January 9, 2003. State public health departments are working with local public health departments and hospitals to further develop their smallpox response plans, which include identifying healthcare workers and public health first responders to

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serve on Smallpox Response Teams. Pre-event vaccination of these Smallpox Response Teams will allow them to better protect the American public against smallpox attack. People who volunteer to receive the smallpox vaccine need to know 1) the conditions that increase the risk of a serious complication and how to assess if they should not be immunized, 2) instructions for caring for the smallpox vaccination site to avoid transmission of the vaccine virus to themselves or others, especially family or household members. This program will provide needed information to those people who are considering participation on a Smallpox Response Team.

MATERIALS: The Public Health Foundation will distribute videotapes, CD-ROMs, and selected print materials (free of charge) shortly after these programs. [Contact the Public Health Foundation at PHF website <http://www.phf.org> or call toll free 1-877-252-1200]

2. From **Susan Wernicke**, International Association of Crime Analysts (IACA): The open solicitation for authors or instructors continues through January 15, 2003. Updated information is posted at www.iaca.net. Further definitions/clarification regarding the vision for **Chapter Handbook, the Training Series, and Conference 2003** have been added to the site. Additionally, a new page within the website has been dedicated to Certification. A current list of certification committee members, their contact information, and a draft timeline for the implementation of the certification program has been included on the web. [Contact: Susan, IACA Secretary, at SWernicke@ci.shawnee.ks.us]

3. The CDC/ATSDR Statistical Advisory Group and the Washington Statistical Society Chapter of the American Statistical Association, are pleased to invite you to attend the **9th Biennial Symposium on Statistical Methods: "Study Design and Decision Making in Public Health,"** January 28-29, 2003, Atlanta, GA. To register on line and obtain further information, please visit <http://www.cdc.gov/od/ads/sag>. The Symposium **Short Course** will be held January 27 is entitled **"Modeling and Analysis Using Monte Carlo Methods."** The instructor is George Casella, University of Florida. [Contact: Harvey Lipman, CDC, at hlipman@cdc.gov]

B. Department of Health and Human Services
(<http://www.hhs.gov>)

4. **"Small Steps, Big Rewards"** is just one of the many initiatives and programs undertaken as part of the Secretary's Prevention Campaign. The Prevention Campaign aims to get Americans to **stop smoking, improve their diets, and engage in physical activity.** With an estimated 35 Americans dying every hour from causes related to inactivity and poor nutrition, and with the effects of smoking, diabetes, and obesity costing the economy almost \$270 billion annually, the Prevention Campaign is a common sense effort to improve America's health.

Nationally, diabetes has increased nearly 50 percent in the past 10 years, and the incidence is expected to grow another 165 percent by 2050 under current trends. About 17 million Americans have diabetes, which includes 16 million people with type 2 diabetes. In addition, at least 16 million more Americans have pre-diabetes, a condition that raises a person's risk of getting type 2 diabetes.

Administration for Children and Families

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

5. The White House Faith-Based and Community Initiatives Report **"Guidance to Faith-Based and Community Organizations on Partnering with the Federal Government"** can be accessed at the "What's New" section of the ACF website.

Agency for Healthcare Research and Quality

www.ahrq.gov

6. **Guidance for the National Healthcare Disparities Report.** Research has extensively documented the pervasiveness of racial and ethnic disparities in health care. In 1999, as part of a national effort to eliminate racial and ethnic disparities in health care, Congress required the Agency for Healthcare Research and Quality (AHRQ) to produce an annual report to be called the National Healthcare Disparities Report (NHDR). A recent Institute of Medicine (IOM) report at http://www.nap.edu/catalog/10512.html?do_ph27 offers guidance on fulfilling the potential of the NHDR, and addresses such issues as measuring disparities in access and quality, measuring socioeconomic status, developing adequate data sources, and determining AHRQ's need for adequate financial and other resources to produce the NHDR. A chapter **"Geography and Disparities in Health Care,"** by Tom Ricketts, is included.

Agency for Toxic Substances and Disease Registry

<http://www.atsdr.cdc.gov>

7. **ATSDR releases Orote (Guam) Landfill site health consultation.** The Agency for Toxic Substances and Disease Registry (ATSDR) has released findings and recommendations from an evaluation of exposure and health concerns from chemical contamination near the Orote (Guam) Landfill. In October 2001, ATSDR was asked by the US Navy, the Guam Department of Public Health and Social Services (Guam Public Health), and the Guam Environmental Protection Agency (GEPA) to evaluate contaminant levels detected in fish collected in an area from Orote Point at the Spanish Steps to Facpi Point and to determine if people who ate seafood from these areas would be exposed to levels of contaminants that could cause illness. Sampling of fish by the Navy in June 2001 had revealed that fish in the area contained polychlorinated biphenyls (PCBs), polychlorinated dibenzo-p-dioxins (dioxins), metals, and pesticides. This finding prompted Guam Public Health to issue a fish and seafood advisory in September 2001.

Centers for Disease Control and Prevention

<http://www.cdc.gov>

8. **Surveillance Systems and Methods Seminar, Epidemiology Program Office, Division of Public Health Surveillance and Informatics: "Real Time Surveillance of Acute Illness Clusters, Using Health Plan Data--The National Bioterrorism Syndromic Surveillance Demonstration Program,"** was presented December 11, 2002, in Atlanta, by Richard Platt, M.D. and M. Blake Caldwell, M.D., M.P.H. Abstract: Several health plans, a telephone nurse triage company, and the American Association of Health Plans are creating a CDC-sponsored national bioterrorism syndromic surveillance demonstration program covering over 20 million people in 50 states. The primary goals are to develop and implement standards, protocols, infrastructure, and analytic tools for detecting and reporting unusual geographic and temporal clusters of ambulatory encounters with chief complaints of acute illness that might represent the initial manifestations of a bioterrorism event.

The participants are collaborating with CDC, state and local health departments, the Department of Defense, and others to develop this system in the public domain, in a manner that will facilitate participation by

other health plans and medical groups that possess real-time encounter level information. This reporting system will require health plans to report only aggregate data (counts of events in specific geographic regions) unless a cluster is identified, in which case public health agencies are notified and information about individual cases is provided. The demonstration program is supported by a cooperative agreement between the National Center for Infectious Diseases, Division of Healthcare Quality Promotion, CDC, and the Eastern Massachusetts Prevention Epicenter. [Contact: Timothy Green at tag1@cdc.gov]

9. **Surveillance Systems and Methods Seminar, Epidemiology Program Office, Division of Public Health Surveillance and Informatics: BioSTORM: A Software Architecture to Facilitate Automated Surveillance from Diverse Data Sources,** to be presented January 24, 2003, in Atlanta, by Mark A. Musen, M.D., Ph.D., Stanford University, and David L. Buckeridge, M.D., M.Sc., VA Palo Alto Health Care System. Abstract: Considerable attention is now being placed on the role of automated systems to monitor disparate data streams related to public health for evidence of incipient epidemics. Much of the discussion has concerned the adequacy of traditional surveillance data, the role of specific patient data, and the value of "nontraditional" data sources such as absenteeism, over-the-counter drug sales, and other indirect measures of illness behavior in the population. In most research laboratories, emphasis has been placed on the particular data to be interpreted and on the particular methods for temporal and spatial analysis. To date, little attention has been placed on the development of a more general, extensible software architecture that can bring together different data sources and apply appropriate algorithms to process the data.

In this talk, we describe BioSTORM, the Spatio-Temporal Outbreak Reasoning Module that is under development in our laboratory. BioSTORM involves four separate software elements: (1) a conceptual description of the specific data sources and data elements that are under surveillance (a data-sources ontology); (2) RASTA, a control mechanism that selects appropriate problem solvers from a library (e.g., Kalman filters, Bayesian reasoners) and applies those problem solvers to specific elements of the surveillance task; (3) mappings that use the data-sources ontology to convert arbitrary

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raw data automatically into the format expected by the problem solvers within the RASTA system; and (4) knowledge bases that provide detailed information on how the input data may be processed by the RASTA problem solvers to detect abnormal patterns. BioSTORM is being created so that developers over time will find it easy to add new data sources, to add new problem solvers, and to edit the specific knowledge that defines how changes in the input data streams may relate to abnormal population-based patterns. In addition, the system is expected to provide a convenient framework for evaluating the role of different data, methods and knowledge in the surveillance process.

We have begun to evaluate our approach by analyzing historical data collected by the San Francisco Department of Health and by testing our problem solvers on data created by simulating the effects of bioterrorism in a modeled metropolitan area. The results found are promising and suggest that the BioSTORM architecture may be able to provide a model for implementing a variety of automated surveillance systems for public health. [Available only to CDC/ATSDR staff through Envision; contact: Timothy Green at tgreen@cdc.gov]

10. National Center for Environmental Health (NCEH): The *National Report on Human Exposure to Environmental Chemicals* is a new publication (see Special Reports Section, this edition) that will provide an ongoing assessment of the U.S. population's exposure to environmental chemicals using biomonitoring. This first edition of the Report presents levels of 27 environmental chemicals measured in the U.S. population. These chemicals include metals (e.g., lead, mercury, and uranium), cotinine (a marker of tobacco smoke exposure), organophosphate pesticide metabolites, and phthalate metabolites.

11. Call for Applications: The Department of Health and Human Services (DHHS), Centers for Disease Control and Prevention's (CDC) National Center for Health Statistics (NCHS), and AcademyHealth seek applications for the second cycle of the **NCHS/Academy Health Policy Fellowship**. This program brings visiting scholars in health services research-related disciplines to NCHS to collaborate on studies of interest to policymakers and the health services research community using NCHS data

systems. [The fellowship deadline is January 10, 2003; see <http://www.academyhealth.org/nchs>]

12. The Applied Sciences Branch of the Division of Public Health Surveillance & Informatics, Epidemiology Program Office presents a three-day conference, February 19-21, 2003, Atlanta GA, entitled "**Public Health Assessment: Current Issues and Future Directions.**" Topics include: Balancing the Need for Data with the Need for Privacy: Approaches to Data Release; Use of Synthetic Estimates for Community-level Data: Methodological Approaches; Working with Tribal Communities: Data Access, Ownership and Communication Issues; **Geographic Information Systems in Public Health**; Evaluating Surveillance Needs for Terrorism Preparedness and Response; CDC's Long-Term Vision for Major National Initiatives; Data Linkage: Issues and Approaches; Interactive Web-based Query Tools: Systems Demonstrations; Helping Communities Navigate the Community Assessment Process; Current Issues in Multiple Race Reporting and Trend Analysis; Use and Interpretation of Data: Tools for Developing Public Health Workforce Skills; and Small Numbers Issues in Data Preparation. [Contact: Angeline Lewis at a_lewis@psava.com; this conference is sponsored by the CDC Assessment Initiative and the National Association for Public Health Statistics and Information Systems (NAPHSIS) Leadership Institute]

13. From **Charles Rothwell**, NCHS (January 21, 2003 presentation on the **Capabilities of DataFerrett** (Federal Electronic Research, Review, Extract and Tabulation Tool), co-produced by CDC and U.S. Census Bureau, by Cavan Capps, US Census Bureau): DataFerret is a data browser for TheDataWeb, which it is a network of distributed databases webbed together to provide data on a variety of subjects and developed with CDC Wonder. DataFerrett acts as a data librarian that provides a way to search across all the documentation or metadata of the data sets and databases published to TheDataWeb. It provides a way for users to tabulate the data from different sources and to do simple descriptive analysis on demand over the web using freely available software. It provides downloads or extractions, allows users to create their own tables and provides simple graphical and mapping analysis of all data published to it. It also has reporting software that allows analysts to create their own

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profiles and interactive web pages from the network of data available. [Envision only available to CDC/ATSDR locations; Contact: Charlie at cjr4@cdc.gov]

14. The Division of Health Interview Statistics, National Center for Health Statistics, announces the **release of the 2001 National Health Interview Survey (NHIS)** public use data and supporting documentation. To view or download any files from this release, please visit the hotlinks "**Final 2001 Data Release**" or "**2001 NHIS**" at the NHIS website at <http://www.cdc.gov/nchs/nhis.htm>.

15. From **Maria Owings**, NCHS: The report, "National Hospital Discharge Survey: 2000 Annual Summary with Detailed Diagnosis and Procedure Data", is now available for download from the Internet. This NCHS publication presents national estimates for 2000 on the use of non-Federal short-stay hospitals in the United States. These estimates are provided by demographic characteristics of patients discharged, geographic region, ownership and bed size of hospitals, principal expected source of payment, conditions diagnosed, and surgical and nonsurgical procedures performed. Trend data on selected topics are presented as well. The detailed tables are a rich source of diagnosis and procedure data shown at the ICD-9-CM individual code level. Reliable estimates for these codes are shown by sex, four age groups, and geographic region of the hospital. In short, there is a wealth of information for those interested in hospital utilization in the U.S. [To download/view, visit: http://www.cdc.gov/nchs/data/series/sr_13/sr13_153.pdf; Contact: NCHS Hospital Care Statistics Branch at (301) 458.4321]

Centers for Medicare and Medicaid Services

<http://cms.hhs.gov>

16. The **State Children's Health Insurance Program (SCHIP)** site is intended to provide materials of interest to various audiences regarding the passage of SCHIP, also known as Title XXI, as part of the Balanced Budget Act of 1997.

Food and Drug Administration

<http://www.fda.gov>

17. The events of Sept. 11, 2001, reinforced the need to enhance the security of the United States. Congress responded by passing the **Public Health Security and**

Bioterrorism Preparedness and Response Act of 2002 (the Bioterrorism Act), which President Bush signed into law June 12, 2002. [See full report at FDA website]

Health Resources and Services Administration

<http://www.hrsa.gov>

18. HRSA Study Finds Narrowing Racial Gap in Women's Use of Prenatal Care: Racial disparities in prenatal care use between most African American and white women in the United States have decreased dramatically over the past two decades, according to a new study supported by HHS' Health Resources and Services Administration (HRSA). Titled "**Racial Differences in Prenatal Care Use in the United States: Are the Disparities Decreasing?**" and published in December's *American Journal of Public Health*, the study used all U.S. birth records from 1981 to 1998 to explore trends in early and adequate prenatal care use for both racial groups. [See HRSA website]

Indian Health Service

<http://www.ihs.gov>

19. HHS Sends \$100 Million to Indian Country to Prevent and Treat Diabetes. At a national conference on diabetes prevention in American Indian communities, HHS announced \$100 million in grants to support programs to **prevent and treat diabetes among American Indians and Alaska Natives**. "These grants support hundreds of programs to help people in Indian Country who are at risk for diabetes to take the right steps to prevent the disease's onset and to provide needed services to those who already have diabetes," HHS Secretary Tommy G. Thompson said.

Funded through HHS' Indian Health Service (IHS), the grants will go to 318 tribal, urban Indian, Indian organizations and IHS health programs to support diabetes prevention and treatment programs, including efforts to reduce cardiovascular disease associated with diabetes. Most of these programs involve elements aimed at preventing type 2 diabetes among Indian youth.

About 17 million Americans have diabetes today, including about 16 million with type 2. In addition, at least 16 million more Americans have pre-diabetes--a condition that raises a person's risk of getting type 2 diabetes. On average, American Indians and Alaska Natives are 2.6 times more likely to have diabetes than non-Hispanic whites of similar age. [DHHS Weekly

Report, a good timely source of agency information, at <http://www.hhs.gov/news/newsletter/weekly>]

National Institutes of Health

<http://www.nih.gov>

20. **Version 3.0 of SaTScan** is currently available at <http://srab.cancer.gov/satscan/download.html>. Some new features in this version include: Prospective space-time analyses for the early detection of disease outbreaks, adjusting for a sequence of daily or other time-periodic analyses; Space-time permutation model using only case data, for the detection and inference of space-time interaction clusters, adjusting for purely spatial and purely temporal clusters; Input and output files in dBase format; Output with geographically overlapping clusters; More detailed and varied output file options; Decreased memory use, leading to increased speed for some large data sets; and, Ability to save parameter settings for future use.

21. From **Ronald Abeles**, Office of Behavioral and Social Sciences Research: Behavioral And Social Sciences, 2003 Lecture Series. Of particular interest to the CDC Public Health GIS Users Group is the presentation "**What Can Geocoding Tell Us about US Health Disparities?**" by Nancy Krieger, Ph.D., Harvard University, February 20, 2003, 9:00-10:00AM, Natcher Building (45), Balcony B, NIH campus. [Contact: Ron at abeles@nih.gov or visit <http://obsr.od.nih.gov>]

Substance Abuse and Mental Health Services Administration

<http://www.samhsa.gov>

22. **Report To Congress on the Treatment and Prevention of Co-Occurring Substance Abuse and Mental Disorders**. According to the report, seven to ten million individuals in the United States have at least one mental disorder as well as an alcohol or drug use disorder. From studies and first-hand experiences in the substance abuse and mental health fields, many researchers and clinicians believe that both disorders must be addressed as primary and treated as such. The report discusses a number of evidence-based interventions and programs that demonstrate improved outcomes with integrated services and treatments. The report shows there are an increasing number of states and communities throughout the country that are initiating

system-level changes and developing innovative programs that overcome barriers to providing services for individuals of all ages who have co-occurring disorders. In fact, many make use of their Substance Abuse Prevention and Treatment and Community Mental Health Service Block Grant funds. States and communities that are successful build consensus around the need for an integrated response to co-occurring disorders; develop aggregated financing mechanisms; cross train their staffs; and measure their improvements in client functioning and quality of life. [Contact: Leah Young at 301-443-8956]

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

[A listing of Historically Black Colleges and universities (HBCU) may be found at <http://www.smart.net/~pope/hbcu/hbculist.htm>]

23. A recent Department of Health and Human Services-funded study of Northern Plains Indians (see http://www.nichd.nih.gov/new/releases/sids_riskFactors.cfm#) found that infants were less likely to die of Sudden Infant Death Syndrome (SIDS) if their mothers received visits from public health nurses before and after giving birth.

The Aberdeen Area Infant Mortality Study, appearing in the December 4, 2002 *Journal of the American Medical Association*, also found that binge drinking during the mother's first trimester of pregnancy made it eight times more likely that her infant would die of SIDS. Also, any alcohol use during the first three months before pregnancy was associated with a six-fold increased risk of SIDS. In addition, the study found that infants were more likely to die of SIDS if they wore two or more layers of clothing while they slept.

"This study has identified important risk and protective factors for SIDS among this group of American Indians," said Solomon Iyasu, an epidemiologist with the reproductive health program at the Centers for Disease Control and Prevention (CDC), and lead author of the study. "Strengthening public health nurse visiting programs and programs to reduce alcohol consumption among women of childbearing age could potentially reduce the high rate of SIDS." Infants in homes where a public health nurse had visited before or after birth were 80 percent less likely to die from SIDS than babies in homes that never had such visits, but the study's authors were unable to draw a conclusion about what aspects of the nurse's visit helped.

The Indian Health Service currently recommends that public health nurses make one prenatal home visit

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and visits at one and six weeks postpartum. Wearing two or more layers of clothing (not including a diaper) increased a baby's risk for SIDS more than six-fold, the researchers found. This is consistent with other studies showing that excess thermal insulation for a specific room temperature was associated with increased SIDS risk. "Parents should dress their babies lightly for sleep and maintain a comfortable room temperature. Overdressing them can result in potentially dangerous overheating," said Leslie Randall, a CDC epidemiologist.

The rate of SIDS among American Indians is the highest of any population group and was slightly more than double that of whites in 1999-1.5 SIDS deaths per 1,000 live births compared with 0.7 per 1,000. The rate of SIDS in the Aberdeen Area of the Indian Health Service, which serves reservations in North and South Dakota, Nebraska and Iowa, is the highest of all of the 12 Indian Health Service regions. During 1996 to 1998, the rate of SIDS was 3.5 deaths for every 1,000 live births. In addition, the HHS-supported Back to Sleep Campaign recommends that all infants be placed on their backs for sleep to reduce the risk of SIDS.

24. In recognition of National American Indian and Alaska Native Heritage Month, a new resource section on the **DHHS's Healthfinder web site** was launched (see <http://www.healthfinder.gov/justforyou>). This easy-to-use consumer resource provides a central point for up-to-date health information of special interest to American Indians and Alaska Natives.

American Indians and Alaska Natives are affected disproportionately by diabetes, tuberculosis, injuries, and other serious health problems. According to the 2000 census, there are more than 4 million American Indians and Alaska Natives. The special Healthfinder section highlights more than 20 of the most important topics of interest for these populations, based on discussions with American Indian and Alaska Native community leaders, patients, and students. In addition to specific wellness and disease topics such as nutrition and diabetes, these include elder care and traditional healing. More than 170 topics are available in total in the section for American Indians and Alaska Natives. The full Healthfinder site brings together information on more than 1,100 topics from more than 1,700 government agencies and nonprofit organizations. Healthfinder is headed by the DHHS Office of Disease Prevention and

Health Promotion (ODPHP).

25. From **Barbara Krimgold**, Center for the Advancement of Health: We are pleased to announce support from the W.K. Kellogg Foundation for two new cohorts of **Kellogg Scholars in Health Disparities**, in 2003 and 2004. We expect to select eight Scholars in 2003 and twelve Scholars in 2004 for a one year postdoctoral research program. The four sites for 2003 will be the University of Michigan, Harvard University, Morgan State University, and the University of San Francisco/Berkeley. Applications for 2003-04 will be due **January 15, 2003** and applications for 2004-05 will be due January 2004.

The Kellogg Scholars program was designed to prepare a new generation of minority scholars for careers and leadership roles in health disparities research, policy development and program implementation. The program is open to minority applicants with a recent doctoral degree in a relevant discipline in the behavioral or social sciences, epidemiology, public policy or other disciplines and fields that bear on the determinants of health. Minority groups have been under-represented to date in leadership roles in academic health-related careers and in national health and public policy development.

Thus, this program encourages individuals early in their careers who are interested in health disparities to focus a year of their academic career on: *research questions related to understanding health disparities by several factors including race/ethnicity, gender and income/education/socioeconomic status; *the study of mechanisms and pathways by which social, economic, political, environmental and educational factors and unfair treatment affect health; and *the development of intersectoral private and public sector policies designed to improve health and reduce health disparities. [Applications will be on the website of the Center for the Advancement of Health (<http://www.cfah.org>) and will be due to CFAH by January 15, 2003; Contact: Barbara, Director, **Scholars in Health Disparities program** at 202-387-2829 or bkrimgold@cfah.org]

D. Other Related Agency or Business GIS News

26. From the **Open GIS Consortium, Inc.**: (a) The Open GIS Consortium, Inc. (OGC) announces a new resource to link those interested in working on interoperability issues with those who need personnel to do so. The **OGC**

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Internship Project (see: <http://www.opengis.org/univ>) provides an electronic bulletin board where students can post their areas of interest and organizations can post their needs. The ultimate goal is to match up these two groups to help move interoperability in the geospatial domain forward. The project will make it easier for students seeking a professional career in the geospatial industry to find internship opportunities where skills may be gained and developed by tackling geospatial interoperability topics. At the same time institutions and companies who want to grow interoperable geospatial applications within their organizations will find it easier to locate qualified interns with specific interests and backgrounds. [Contact: Mark Reichardt at mreichardt@opengis.org]

(b) The Open GIS Consortium, Inc. (OGC) announces that a Request for Quotations (RFQ)/Call for Participation (CFP) in the **OGC Geospatial One-Stop Portal Initiative (GOS-PI)** has been issued. Responses to the RFQ/CFP, available at <http://ip.opengis.org/gos-pi/>, are due January 22, 2003. GOS-PI aims to build a standards-based portal for geospatial information discovery, access, and mapping. OGC is partnering with the Geospatial One-Stop project on this work. Led by the Department of the Interior, GOS is one of 24 US Office of Management and Budget E-Government initiatives to improve effectiveness, efficiency, and customer service throughout all layers of government. Geospatial One-Stop builds upon National Spatial Data Infrastructure objectives to enhance interoperability among geographic components of government activities. [More information about the Geospatial One-Stop project is available at <http://www.geo-one-stop.gov>]

27. From **Unistat Ltd** (release of **UNISTAT Statistical Package Version 5.5**, see site <http://www.unistat.com>). Unistat is a comprehensive statistical package that can also work as Excel add-in. It combines a broad range of very powerful data analysis procedures with presentation quality scientific graphics and excellent output. Statistics procedures include parametric and nonparametric tests, linear, nonlinear, logit, probit, logistic and Cox regressions, ANOVA, GLM, multivariate, time series, reliability, survival analyses and quality control. The graphics text objects now support symbols, subscripts and superscripts. A fully functional trial version may be

downloaded at the website. [Program Contact: MA Toker at unistat@unistat.com]

28. From **Dunrie Greiling**, TerraSeer, Inc. (announcing a new software release, **ClusterSeer 2**): ClusterSeer is software for the analysis of event clustering: it can locate disease outbreaks in time or space. ClusterSeer can identify geographic and/or temporal patterns in other types of data, including crime, demographics, or market data. It maps event data, but, more importantly, it determines the significance of map patterns so that users can evaluate patterns in their maps and in their data. ClusterSeer allows users to determine whether a cluster is significant, where it is located, and when it arose, providing insight into the origin, causes, and correlates of the event. ClusterSeer 2 offers 24 statistical methods, 15 more than in ClusterSeer version 1 and many more than in other cluster analysis software products. It also features a statistical advisor to help users decide which method is appropriate for their question and data. [Contact: Dunrie at dunrie@terraseer.com]

29. From **GeoLytics, Inc.** (Long Form (SF3) Data Now Available for All 50 States): One of the most valuable research tools has just been released-**CensusCD 2000 Long Form**. Anyone who needs demographic, housing, economic or population information about the US will want to use the CensusCD 2000 Long Form. It includes such variables as income, housing value, employment, education, poverty, ancestry, commute to work, etc. The data is available from the Nation down to Tract, Zip code and Block Group level. There are 5,500 variables available at the Block Group level, and an additional 11,000 are available at the Tract level and above.

This data set will be the basis for most demographic analysis for the next ten years. GeoLytics (see <http://www.geolytics.com>) has made it easy to query the data so that you can run a report for just the data you want to see for only the geographies you specify. All of our census-based products come with built-in mapping capabilities. [Contact: Katia Cohen at Katia@geolytics.com]

III. GIS Outreach

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

* From **Yuan Dong**, Department of Environmental Health, Shanghai Center for Disease Control and Prevention (**help with air dispersion modeling**): I

planned to use GIS to study the impact of environmental pollutants on health, but because of lack of some GIS information, the project was stranded. My project includes two aspects (1) first with an air dispersion model, I can figure out certain site exposure levels, (2) second using GIS, the air pollution data, health data and some socioeconomic data can be georeferenced on the digital map. The analysis is designed to provide us some measure of quantitative relationship between air pollution and health impacts. I would greatly appreciate any information about GIS air dispersion modeling. [Contact: Yuan Dong at huanyi2@scdc.sh.cn]

* From **Carlos A. Espinosa R.**, Universidad de Carabobo, Venezuela (**help with GIS freeware**): This is a follow-up request to the Public Health GIS Users Group as we at the Centro de Investigaciones Toxicológicas (Center for Toxicological Studies) or CITUC, request your kind assistance with obtaining free GIS software. It will be used for our research and community work. We lack funds to purchase software. Any help or guidance you may provide is appreciated. [Contact: Carlos at cituc@telcel.net.ve]

* From: **Renee Jaramillo**, Analytical Sciences, Inc. (**help with GIS course recommendation**): I am a research statistician and work as a contractor for the US EPA. I am looking for solid hands-on training opportunities that will help me quickly become proficient with the ArcView Spatial Analysis module so I can learn how to krig data and create contour maps. If you know of a 2-3 day course you can highly recommend, please send me a note. [Contact: Renee at rjaramillo@asciences.com]

IV. Public Health GIS

Presentations and Literature

NCHS Cartography and GIS Guest Lecture Series January 15, 2003. GIS-Epi: PAHO's Regional Project in the Americas", Carlos Castillo-Salgado, MD, JD, DrPH. Chief Special Program for Health Analysis; Enrique Loyola, MD, MSc. Regional Advisor in Epidemiology; Manuel Vidaurre, BSc, MSc. Information Systems Specialist; Ramon Martinez, Eng. Information Systems; and Patricia Najera, Geo, MPH. Geographic Information Systems. **Abstract.** GIS-Epi is a comprehensive Health Information Initiative at the Pan American Health Organization (PAHO) to provide an

integrated framework for analyzing and displaying the distribution of critical characteristics of the core public health needs of the populations in the Americas for decision-making and technical work. Its purpose and main activities are to *Strengthen the national epidemiological capabilities including situation analysis, surveillance in health, monitoring and evaluation of activities of disease prevention and health promotion; *Strengthen the analytical and epidemiological capacity of the managers and health decision-makers in the Secretariat of PAHO in order to orient technical cooperation; and *Strengthen the methodological approaches for the monitoring of inequalities and inequities in health and for the assessment of population-based intervention impact.

Activities are designed to: *Develop and to promote the use and development of applications of GIS-Epi; *Provide direct training for end users; Develop training materials; *Develop software based on the needs of the users of GIS-Epi; Promote a network of Multidisciplinary Collaborating Groups of GIS-Epi in the Americas; and Establish a clearinghouse of cartographic bases of the Americas.

GIS-Epi has several products and applications at the country level in the Region of the Americas. Examples of PAHO GIS-Epi main applications are: (1) Spatial description of health events in the Caribbean; (2) Public health surveillance; (3) Networking in Brazil. (4) Malaria Control; (5) Identification of environmental and occupational risks in Mesoamerica; (6) Health situation analysis in Peru; (7) Analysis of health patterns/differences at local levels in Bolivia; (8) ID of high risk groups and critical areas in Queretaro, Mexico; (9) Generation of operational research hypothesis in Petén, Guatemala; (10) Planning and programming of health services in Brazil; and, (11) Evaluation of public health interventions in Cienfuegos, Cuba.

CDC Emerging Infectious Diseases and MMWR Emerging Infectious Diseases

Emerging Infectious Diseases (EID) is indexed in Index Medicus/Medline, Current Contents, Excerpta Medica, and other databases. Emerging Infectious Diseases is part of CDC's plan for combating emerging infectious diseases; one of the main goals of CDC's plan is to enhance communication of public health information about emerging diseases so that prevention

measures can be implemented without delay (EID articles at <http://www.cdc.gov/ncidod/EID/index.htm>). The **December 2002 and January 2003** edition are available. December edition includes possible GIS-related articles: Dengue Hemorrhagic Fever in Infants; Vector Competence of California Mosquitoes for *West Nile virus*; *West Nile virus* Epidemic in Horses, Tuscany Region, Italy, and others. The January edition includes topics on foot and mouth disease in animals and cryptosporidiosis in humans, and the U.S.-Mexico Border Infectious Disease Surveillance Project.

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 <http://www.cdc.gov/subscribe.html> and access the MMWR online at <http://www.cdc.gov/mmwr>]: Vol. 51, No. 50- Provisional Surveillance Summary of the West Nile Virus Epidemic-United States, January-November 2002; Laboratory-Acquired West Nile Virus Infections-United States, 2002; Intrauterine West Nile Virus Infection-New York, 2002; Notice to Readers on: Additions to Terrorism Preparedness Compendium; Surveillance Summaries, Vol. 51, Number **SS-11- Adult Blood Lead Epidemiology and Surveillance- United States, 1998-2001**; Vol. 51, Number **SS-10- Surveillance for Traumatic Brain Injury Deaths-United States, 1989-1998**; Vol. 51, No. 48- Involvement by Young Drivers in Fatal Alcohol-Related Motor-Vehicle Crashes-United States, 1982-2001; Update: Influenza Activity-United States, 2001-02; Vol. 51, No. 47- Invasive Cervical Cancer Among Hispanic and Non-Hispanic Women-United States, 1992-1999; Progress Toward Poliomyelitis Eradication-Ethiopia, Somalia, and Sudan, January 2001-October 2002; West Nile Virus Activity-United States, November 21-26, 2002; Notice to Readers: Occupational Health Indicators for Tracking Work-Related Health Effects and Their Determinants; Notice to Readers: 2003 CDC and ATSDR Symposium on Statistical Methods; Notice to Readers: Publication of Health, United States, 2002 with Chartbook on Trends in the Health of Americans; Vol. 51, Number **SS-8-Surveillance for Waterborne-Disease Outbreaks-United States, 1999-2000**; Appendix A: Selected Case Descriptions of Outbreaks Associated with Drinking Water; Appendix B: Selected Case Descriptions of Outbreaks Associated with

Recreational Water; Vol. Vol. 51, No. **RR-18 U.S. Public Health Service Task Force Recommendations for Use of Antiretroviral Drugs in Pregnant HIV-1-Infected Women for Maternal Health and Interventions To Reduce Perinatal HIV-1 Transmission in the United States**; 51, No. 46- Enterovirus Surveillance-United States, 2000-2001; West Nile Virus Activity-United States, November 14-20, 2002, and Missouri, January 1-November 9, 2002; Notice to Readers: Approval of a New Rapid Test for HIV Antibody; Volume 51, Number 45- Influenza and Pneumococcal Vaccination Levels Among Persons Aged greater than or equal to 65 Years-United States, 2001; Notice to Readers: Use of Anthrax Vaccine in Response to Terrorism: Supplemental Recommendations of the Advisory Committee on Immunization Practices; West Nile Virus Activity-United States, November 7-13, 2002; Volume 51, Number **RR-17 Yellow Fever Vaccine: Recommendations of the Advisory Committee on Immunization Practices (ACIP), 2002**; Vol. 51, No. 44- Adverse Events Associated with 17D-Derived Yellow Fever Vaccination-United States, 2001-2002; Global Progress Toward Laboratory Containment of Wild Polioviruses-July 2001-August 2002; West Nile Virus Activity-United States, October 31-November 6, 2002.

New Books

Geographically Weighted Regression: the analysis of spatially varying relationships, by A Stewart Fotheringham, Martin Charlton and Chris Brunsdon, University of New Castle, School of Geography, Politics and Sociology (in print). Geographically Weighted Regression is a technique for exploratory spatial data analysis. A brief primer on GWR...There are, perhaps, thousands of examples of the use of multiple regression modeling in geographical enquiry. Typically these will involve estimating the relationship between one variable and a set of predictor variables for a collection of geographical entities (often a set of points, or zones). As an illustration, we might have a model with two predictor variables:

$$y = b_0 + b_1x_1 + b_2x_2 + e$$

where y is the dependent variable, x₁ and x₂ are the independent variables, b₀, b₁ and b₂, are the parameters to be estimated, and e is a random error term, assumed to be normally distributed. A basic assumption in fitting such a model is that the observations are independent of one another. With much geographical data, this is unlikely to

be the case. A second assumption that we make is that the structure of the model remains constant over the study area, in other words, there are no local variations in the parameter estimates. GWR permits the parameter estimates to vary locally; we can rewrite the model in a slightly different form:

$$y(g) = b_0(g) + b_1(g)x_1 + b_2(g)x_2 + e$$

where (g) indicates that the parameters are to be estimated at a location whose coordinates are given by the vector g . How do we estimate the parameters for such a model? Using OLS, the parameters for a linear regression model can be obtained by solving:

$$b = (X^T X)^{-1} X^T Y$$

The parameter estimates for GWR may be solved using a weighting scheme:

$$b(g) = (X^T W(g) X)^{-1} X^T W(g) Y$$

The weights are chosen such that those observations near the point in space where the parameter estimates are desired have more influence on the result than observations further away. Two functions we have used for the weight calculation have been (a) bi-square and (b) Gaussian. In the case of the Gaussian scheme, the weight for the i th observation is:

$$w_i(g) = \exp(-d/h)^2$$

where d is the Euclidean distance between the location of observation i and location g , and h is a quantity known as the bandwidth (there are similarities between GWR and kernel regression). One characteristic that is not immediately obvious, is that the locations at which parameters are estimated need not be the ones at which the data have been collected.

The resulting parameter estimates may be mapped in order to examine local variations in the parameter estimates. One might also map the standard errors of the parameters estimates as well. Hypothesis tests are possible -for example one might wish to test whether or not the variations in the values of a parameter in the study area are due to chance. The bandwidth may be either supplied by the user, or estimated using a technique such as crossvalidation. [*Geographically Weighted Regression: the analysis of spatially varying relationships* is shortly to be published by Wiley and may be reviewed and ordered at the website <http://www.ncl.ac.uk/geps/research/geography/gwr>]

From **Omar Khan** and **Ric Skinner** (announcement of edited book): This is to let you know of a new

publication entitled **Geographic Information Systems & Health Applications**. "We have edited this book by selecting the best from case studies and academic topics within the field of health geographics. The book consists of the following topical sections, chosen for their timeliness and relevance to the field: Health Disparities & Community Health Issues; GIS & Cancer; Infectious Disease & International Health; Hospitals & Healthcare." [Contact: cust@idea-group.com, Idea Group Publishing]

Titles

-Evaluation of Methods for Classifying Epidemiological Data on Choropleth Maps, Brewer CA, Pickle L. *Annals of the Assoc of Amer Geog*, 92 (4): 662-681;

-Modeling the relationship between land use and surface water quality, Tong STY, Chen WL. *J Envir Manage*, 66 (4): 377-393 DEC 2002

-The use of a GIS-based malaria information system for malaria research and control in South Africa, Martin C, Curtis B, Fraser C, Sharp B. *Health Place*, 8 (4): 227-236 DEC 2002;

-Geographic information systems and travel health, Bauer IL, Puotinen MI. *J Travel Med*, 9 (6): 308-314 NOV-DEC 2002;

-Regional variation in the incidence of symptomatic pesticide exposures: Applications of geographic information systems, Sudakin DL, Horowitz Z, Giffin S. *J Toxicol-Clin Toxic*, 40 (6): 767-773 2002;

-Remote sensing for environmental protection of the Eastern Mediterranean rugged mountainous areas, Khawlie M, Awad M, Shaban A, Kheir RB, Abdallah C Lebanon, *Isprs J Photogramm*, 57 (1-2): 13-23 NOV 2002;

-Geographic Information Systems (GIS) as an evaluation tool, Renger R, Cimetta A, Pettygrove S, Rogan S. *AM J EVAL*, 23 (4): 469-479 WIN 2002;

-Application of a GIS-based modeling system for effective management of petroleum-contaminated

sites, Chen Z, Huang GH, Chakma A, Li. *J Envir Engin Sci*, 19 (5): 291-303 SEP-OCT 2002.

-Spatial distribution of vectors of Ross River virus and Barmah Forest virus on Russell Island, Moreton Bay, Queensland, Jeffery JA, Ryan PA, Lyons SA, Thomas PT, Kay BH. *Austra J Entomol*, 41: 329-338 Part 4 OCT 18 2002.

Journal Articles and Other Submissions

Assessing and improving census tract completeness, Boscoe FP, Kielb CL, Schymura MJ, Bolani TM. *J Registry Management* 2002; 29 (4): 117-120. **Abstract:** The quality and completeness of address fields is becoming an important issue for central cancer registries because geography is increasingly being incorporated into epidemiologic studies. This paper describes the effort to investigate why 20% of a sample of 500 case reports in the New York State Cancer Registry (NYSCR) could not be successfully assigned a census tract by our automatic matching process. The most common reasons were: 1) addresses missing from the reference file, and 2) addresses with minor errors. In both situations the census tract was obtained with modest additional effort though manual geocoding, increasing the percentage of successful assignments in the sample from 80% to 99.8%. A batch of 85,863 case reports not previously assigned census tracts was also matched against a second reference file. This effort yielded 15,508 additional census tract designations and demonstrates the value of consulting more than one reference file. [Contact: Christine Kielb at clk03@health.state.ny.us]

Now available

GeoHealth 2002 Proceedings

"Supporting Decision Making in Health"

Victoria University, Wellington, New Zealand

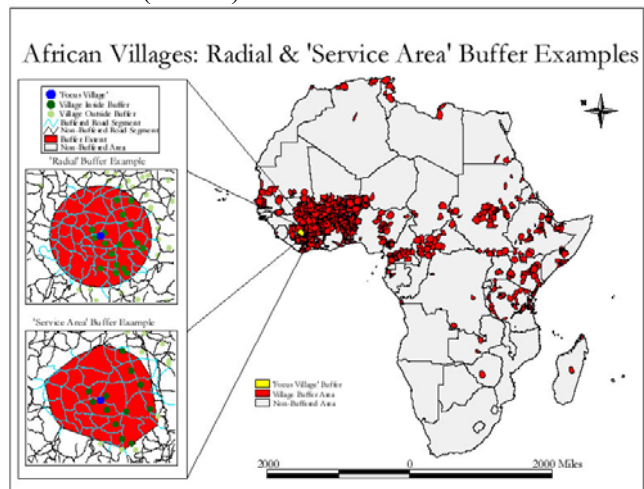
Jan Rigby, Chris Skelly and Peter Whigham, Eds. Includes co-Proceedings of the Spatial Information Research Centre's (SIRC) 14th Annual Colloquium, "SIRC 2002: Physical and Cognitive Space," held in conjunction with GeoHealth 2002, December 3-5, 2002. [To order the co-Proceedings, please contact either Jan Rigby at Jan.Rigby@vuw.ac.nz or Chris Skelly at Chris_Skelly@moh.govt.nz; **Editor:** Congratulations are extended to Jan and Chris for an outstanding GeoHealth 2002 conference]

Other Literature: Special Reports

"GIS Study in Disease Vector Ecology: Yellow Fever Exposure in African Villages,"

Jess J. Behrens and Chester G. Moore

Division of Vector-Borne Infectious Diseases, National Center for Infectious Diseases, CDC. The importance of yellow fever and its primary vector in human populations, *Aedes aegypti*, is well known. In 1973, A.W.A. Brown published a comprehensive survey of *A. aegypti* distribution throughout Africa and Asia in a WHO technical report. The regional maps in this technical document mark the locations of villages surveyed for *A. aegypti* and note the associated abundance (Brown) index value.



To demonstrate the use of GIS to better understand the distribution of disease vectors, each map was geo-rectified and more than 3000 villages were digitized from the entire document. A unique identifier and the appropriate Brown index value was assigned to each village. The resulting data set was then used in the development of a geographically based, disease ecology database, the foundation for which was taken from the regional UNEP shapefiles. Within the shapefiles, each region is divided into countries, provinces, sub-provinces, and county-equivalent Administrative Units.

After programming the database to store geographic, temporal, and abundance data for any species, the villages and their Brown index values were analyzed to develop a model of *A. aegypti* distribution. First, we examined the correlation between village Brown index value and Administrative Unit level Global Resource Information Database (GRID) estimated human population density, included with the base shapefiles. A

slight correlation existed ($r = 0.267$), as measured by the Pearson coefficient.

Subsequently, the village-level data were examined for spatial patterns in *A. aegypti* abundance. Using Arc View 3.2, all African villages with *A. aegypti* present were buffered at varying distances. We then assigned the count of other villages falling within that buffer to the source village, a measure which correlated moderately well ($r = 0.414$) with the actual Brown value for each village. The same method of selecting villages within a 100 km distance of a source village was then used to determine the average index value within this distance. If proximity to other villages with *A. aegypti* is predictive of increased abundance, then the average index value for villages within this distance should be positively correlated with the actual index value for the source village. Using the average determined in this way increased the correlation coefficient over that generated by counting villages within the 100 km distance ($r = 0.551$).

We conducted further analyses examining the role of major African roads in structuring spatial patterns of African village Brown index values. We created 100 km service area buffers using Digital Chart of the World (DCW) Class 1 and Class 2 roads and Network Analyst. Averages identical to those calculated using radial buffers produced slightly lower correlation ($r = 0.492$), probably due to village and DCW shapefile registration issues. A final analysis that estimated a Brown value for each DCW road segment intersecting a 'service area' was conducted. The estimated road segment Brown value was weighted by the GRID assigned population change for each villages coincident UNEP Administrative Unit. The average of these adjusted Brown values increased the correlation ($r = 0.618$).

Finally, Monte Carlo simulations were used to evaluate the significance ($p < .0001$) of the road segment weighted averages. Additional simulations need to be run to establish the significance of the weighting factor. The significant departure of these correlation coefficients from those created by random distributions demonstrates that the villages in Brown's survey are connected. Understanding these connections will help us derive efficient strategies for combating the movement of this deadly vector. [Contact: Jess or Chet Moore at email behrcsu@yahoo.com]

Environmental Health

New CDC Chemical Exposure Report Begins to Fill Critical Information Gaps in Environmental Health for the U.S. Population: *National Report on Human Exposure to Environmental Chemicals*

The Centers for Disease Control and Prevention (CDC) today released the first National Report on Human Exposure to Environmental Chemicals, an important new research tool that will provide better information on levels of exposure to environmental chemicals, and, over time, what these levels mean for public health.

Advances in a technology known as biomonitoring allow CDC to measure chemicals directly in blood and

Data Show Exposure to Environmental Tobacco Smoke Down Dramatically and Levels of Blood Lead Continuing to Decline

urine samples rather than to estimate population exposures by measuring air, water, or soil samples. On the basis of this scientific advancement, the new report provides data on actual levels of chemicals in humans. As data are collected over the years, researchers will be better able to determine possible health effects and design appropriate public health strategies.

This first Report initially measures the exposure of the U.S. population to 27 environmental chemicals. The Report includes metals (e.g., lead and mercury), pesticide metabolites, phthalate metabolites, and cotinine (which tracks exposure to tobacco smoke). Levels of environmental chemicals were measured in blood and urine samples collected from participants in CDC's National Health and Nutrition Examination Survey (NHANES) an ongoing national health survey of the U.S. population. The Report provides results from the 1999 survey; data from future years will help confirm these findings.

Although the report does not include new information on health risks of exposures or on potential routes of exposures, this is the first time that national exposure levels of the U.S. population are known for 24 of these 27 chemicals. CDC previously assessed the population's exposure to three substances--lead, cadmium, and cotinine. The Report provides new data for the 1999 calendar year. Previously, only limited data were available on which environmental chemicals were in the U.S. population and at what levels.

The Report will be updated with new data each

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year. Next year, CDC will combine the 1999 and 2000 data from NHANES to provide updated national estimates. In the future, the Report will also include data from other large exposure studies and studies of exposure of special-population groups within the United States. [See complete report at: <http://www.cdc.gov/nceh/dls/report>] Environmental health is one of the "Leading Health Indicators" in the U.S. government publication, *Healthy People 2010*. Information on environmental chemical exposures will assist clinicians and public health officials to better understand the relationship between toxic exposures and health consequences and will help guide public health prevention efforts. CDC will add other substances to future reports on the basis of data obtained from samples collected in subsequent NHANES surveys. CDC will continue to measure the 27 original substances as well.

The goal over the next few years is to expand the Report to provide information about 100 chemicals. CDC will monitor trends over time that may help scientists better understand the impact of environmental chemicals on our health. In the future, CDC will be able to report exposure levels for more specific population groups (e.g., children, minority populations, or women of childbearing age).

Report to North Trent Cancer Network: Mapping Patient Travel Times, by Paul White, Public Health GIS Unit, University of Sheffield. May 2002. This report describes the methods and the results of the GIS project undertaken to identify travel times of patients attending North Trent Cancer Network NHS Hospital Trusts. The aim was to estimate the travel times of cancer patients (Breast, Lung and Colorectal) attending North Trent Cancer Network NHS Hospital Trusts using three 15-minute travel isochrones (0-15 minutes, 15-30 minutes, 30-45 minutes) around the hospital trusts.

The work was carried out in five stages, (1) Geocode by postcode the locations of the eight hospital sites (for which isochrones would be generated). (2) Geocode by postcode the locations of the patient data. (3) Assign estimated speeds to the link and node road network. (4) Create travel isochrones for each of the eight locations for the 3 time intervals (15 minutes, 30 minutes, and 45 minutes). (5) Identify for each of the three cancer sites the number of cancer records located within each 15-minute isochrone.

The travel time isochrones were created using RouteView Pro™ routing and catchment analysis software (© Copyright Infotech Enterprises) working within MapInfo Professional Desktop Mapping Software (© Copyright MapInfo Corporation). Fifteen-minute time increments were used and the routes calculated were done so for the fastest times using all road types. No data relating to public transport routing is currently available, and therefore all routes calculated are done so based on car journeys traveling along the optimum routes for the fastest journey. [See complete report with maps at: <http://gis.sheffield.ac.uk/reports/pdfs/northtrencancernetwork.pdf>; To obtain further copies of this report, or information regarding the work here please contact Paul White 0114 2220831, email p.s.white@sheffield.ac.uk]

Smallpox Vaccination Commentary

Jim M. Celenza, Rhode Island Committee on Occupational Safety and Health

Smallpox Vaccination Complications. The imperative to develop a limited, controlled smallpox vaccination program is based on the view that vaccinated first responders will have much less risk of disease, much less risk of spreading it and will be able to function if a deliberate outbreak occurs. Smallpox was eradicated in the 1970s because the vaccine is very effective. Because there is no smallpox disease now, vaccinating large numbers when that vaccine can harm some has raised some legitimate concerns about how to proceed and at what pace. A small subset of those vaccinated will suffer complications.

Aside from this, some who are vaccinated and healthy can communicate the vaccine virus (which is not smallpox but a different virus called vaccinia) to close contacts who are susceptible until the vaccination site (usually on the upper arm) heals. Some degree of infection control can be achieved by covering the vaccine site with at least two dry gauze dressings and by persistent hand washing. Most complications suffered will be mild, such as the spread of the vaccinia virus to the face, eyelid, nose, mouth etc. More serious complications involve generalized illness caused by the vaccinia virus, and are much more common in patients with immune deficiency. Patients with immune deficiency and some other conditions should not be vaccinated because they are more likely to have generalized vaccinia complications. This includes people

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with HIV, transplant and cancer patients, pregnant women, and individuals with certain skin diseases. A vaccinia immune globulin, VIG, may help some with severe reactions. This means that those targeted for vaccination must be aware of their own immune status, and, potentially, the immune status of close contacts. And many health care workers are in contact at work with individuals who fit the profile for adverse vaccinia reactions.

When health care workers were last systematically vaccinated in the 1960's hospitals took special precautions such as reassigning recently vaccinated health care workers outside clinical services or giving vaccinations just before a holiday. No known cases of contact vaccinia occurred. However it is now appears to be CDC policy that no such precautions are needed even though the general population may be even more susceptible than was the one that appeared in hospitals in the 1960s.

Traditionally, it is been stated that for every one million vaccinated it is estimated that some 250 to 300 may well suffer some harmful effects (almost 500,000 health care workers and almost 500,000 military personnel are scheduled to be vaccinated under current plans). However, some authorities have argued that we should expect to see more serious adverse effects because the immunology profile of the population is more complex and riskier. [Sources: www.cdc.gov and www.healthri.org/environment/biot/smallpox; Contact: Jim at jobhealth@juno.com]

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

"Adjusted Census 2000 Numbers Now Available"

[Disclaimer: The numbers contained herein are being released pursuant to the order of the United States Court of Appeals for the Ninth Circuit in *Carter v. Department of Commerce*, 307 F.3d 1084. These numbers are not official Census 2000 counts. These numbers are estimates of the population based on a statistical adjustment method, utilizing sampling and modeling, applied to the official Census 2000 figures. These estimates utilized the results of the Accuracy and Coverage Evaluation (A.C.E.), a sample survey intended to measure net over- and undercounts in the census results. The Census Bureau has determined that the A.C.E. estimates dramatically overstate the level of undercoverage in Census 2000, and that the adjusted Census 2000 data are, therefore, not better than the unadjusted data. On March 6, 2001, the Secretary of Commerce decided that unadjusted data from Census 2000 should be used to tabulate population counts reported to states and localities pursuant to 13 U.S.C. 141(c) (see 66 FR 14520, March 13, 2001). The Secretary's

decision endorsed the unanimous recommendation of the Executive Steering Committee for A.C.E. Policy ("ESCAP"), a group of twelve senior career professionals within the Census Bureau. The ESCAP, in its recommendation against the use of the statistically adjusted estimates, had noted serious reservations regarding their accuracy. In order to inform the Census Bureau's planned October 2001 decision regarding the potential use of the adjusted estimates for non-redistricting purposes, the agency conducted extensive analyses throughout the summer of 2001. These extensive analyses confirmed the serious concerns the agency had noted earlier regarding the accuracy of the A.C.E. estimates; specifically, the adjusted estimates were determined to be so severely flawed that all potential uses of these data would be inappropriate. Accordingly, the Department of Commerce deems that these estimates should not be used for any purpose that legally requires use of data from the decennial census and assumes no responsibility for the accuracy of the data for any purpose whatsoever. The Department, including the U.S. Census Bureau, will provide no assistance in the interpretation or use of these numbers. See http://www.sscnet.ucla.edu/issr/da/Adjusted/adjust_web.html] The Census 2000 Initiative announced today (January 6, 2003 press release "Census 2000 Initiative") that the University of California at Los Angeles has now posted the recently released adjusted Census 2000 population numbers on their Web site so that they may be available to the public and the policymakers.

The link contains statistically adjusted Census 2000 population data at the block level for the entire country, pursuant to an order of the U.S. Court of Appeals for the Ninth Circuit in *Carter v. U.S. Department of Commerce*, 307 F.3d 1084. The data are adjusted based on the Accuracy and Coverage Evaluation (A.C.E.) survey conducted during Census 2000. The A.C.E. survey was designed to measure net undercounts (e.g. people missed) and overcounts (e.g. people counted twice) in the census.

Last month, the U.S. Ninth Circuit ruled unanimously in a case brought by two Oregon state legislators, and supported by numerous state and local groups that the Census 2000 adjusted data are not shielded from release by "pre-decisional" and "deliberative process" exemptions under the federal Freedom of Information Act.

"The City of Los Angeles has been fighting since 1988 for the federal government to release and use adjusted Census data to provide the most accurate basis for redistricting and the distribution of federal funds. At long last, we are now able to access this corrected Census data and understand the full dimensions of the undercount, its impact on California and the implications of the Bush Administration willfully ignoring the disproportionate undercount of Latinos, African-

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Americans, and other minority groups. The corrected data demonstrate that undercounting minority communities remains a serious problem that has not been resolved by the Census Bureau. We are proud to have played a role in forcing the release of this data", said Rocky Delgadillo, Los Angeles City Attorney. [**These data are supplied for all states and all levels of geography. The files are compressed; the approximate compressed file size is 550 mb. The full set of materials can be copied onto one 600 mb CD. The files must be uncompressed in order to use them for analysis and statistical purposes; The U.S. Census Bureau data is posted at the UCLA FTP site---http://www.sscnet.ucla.edu/issr/da/Adjusted/adjust_web.html; Contact: Phil Sparks, Census Bureau at (202) 326-8700]**

Federal Geographic Data Committee (FGDC)

[The Federal Geographic Data Committee (FGDC) is an interagency committee, organized in 1990 under OMB Circular A-16, that 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 17 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>]

A Strategy for the National Spatial Data Infrastructure (NSDI)

Goals and Objectives of the NSDI Strategy

Vision. Current and accurate geospatial data will be readily available to contribute locally, nationally, and globally to economic growth, environmental quality and stability, and social progress.

GOAL 1. Increase the awareness and understanding of the vision, concepts, and benefits of the NSDI through outreach and education. The benefits of identifying and coordinating development of geographic data to address community problems may not be obvious to all. Most geographic information systems are built for a critical operational need by a school district to route buses, by a fast food chain to locate new stores, by a scientist to model a watershed. In many cases these application-specific needs limit the potential for data sharing by enforcing particular ways of representing phenomena. Data sharing involves activities that may

initially be seen as extra work, for example documenting data sets with metadata, or canvassing other organizations for data. Enhanced participation in the NSDI will result from clearly communicating rationales for data sharing in languages appropriate to differing communities. The goal recognizes that understanding can be a lifelong process and seeks to foster the spread of NSDI concepts through communication and education. This goal encourages all communities who work with geographic data to communicate widely with others and to actively seek opportunities to work in concert. OBJECTIVES Include: *Demonstrate the [benefits of participation](#) in the NSDI to existing and prospective participants; *Promote principles and practices of the NSDI through formal and informal education and training; and *Identify and promote the attitudes and actions that help to develop the NSDI.

GOAL 2. Develop common solutions for discovery, access, and use of geospatial data in response to the needs of diverse communities. For the NSDI to succeed, geographic data must become easier to find and work with. Ideally, geographic data would be readily available as part of a common utility like the road system or the power supply. Libraries of data could reside online that users could access from anywhere. Once found, data would be easy to transfer and use in different applications; every data set would have full and complete metadata to ease the process of transfer and use. Some analyses could be performed remotely by integrating data from several sources. This goal addresses technical solutions and approaches to achieve these common solutions. Technical solutions alone are not enough, however. There must be a willingness of many communities to work together to forge the common means from the bottom up. OBJECTIVES: 1. Continue to develop a seamless [National Geospatial Data Clearinghouse](#). 2. Support the evolution of [common means to describe geospatial data sets](#); 3. Support the development of tools that allow for easy exchange of applications, information, and results; and 4. Research, develop, and implement architectures and technologies that enable data sharing.

GOAL 3. Use community-based approaches to develop and maintain common collections of geospatial data for sound decision-making. Large centralized national data holdings are costly to assemble and maintain. The most accurate and highest resolution

data are created and maintained close to the locations where they are used. As data moves away from their geographic base, away from those who have vital use for them, there is less incentive to maintain them. This goal looks toward developing the organizational relationships and technologies to build distributed locally maintained collections of data. These collections will be available for many citizens for different purposes. The framework initiative will provide a foundation layer of basic data themes on which many applications can build. A coordinated national effort will provide other thematic data layers to improve economic growth, environmental quality and stability, and contribute to social progress. Much of this effort will involve establishing common languages for talking about the natural and man made environments and the data that represent them through standards development and data models. Finally, this goal seeks to involve different communities of interest in building these common data stores. OBJECTIVES: 1. Continue to develop the [National Geospatial Data Framework](#); 2. Provide additional geospatial data that citizens, governments, and industry need; 3. Promote [common classification systems, content standards, data models](#), and other common models to facilitate data development, sharing, and use; and, 4. Provide mechanisms and incentives to incorporate multi-resolution data from many organizations into the NSDI.

GOAL 4. Build relationships among organizations to support the continuing development of the NSDI. Decisions about common pieces of geography whether they be towns, watersheds, states, or the nation should be made by the people most directly concerned. The impediments to citizen participation are not just those of awareness or of access to information. In many cases new funding sources must be found to support the information infrastructure. Often there is organizational inertia to overcome. Laws conceived in the past for different circumstances prevent groups from working together today. Access to technology can be a factor. As much as is possible, this goal intends to identify potential new resources and, at the same time, identify and remove difficulties. The goal is to achieve a vibrant network of organizations working together and with their counterparts internationally. OBJECTIVES: 1. Develop a process that allows [stakeholder groups](#) to define logical and complementary roles in support of the NSDI; 2. Build a [network of organizations](#) linked through

commitment to common interests within the context of the NSDI; 3. Remove regulatory and administrative barriers to agreement formation; 4. Find new resources for data production, integration, and maintenance; and, 5. Identify and support the personal, institutional, economic behaviors; technologies; policies and legal frameworks that promote the development of the NSDI; and, 6. Participate with the international geospatial data information community in the development of a global geospatial data infrastructure. [See full Strategy report at <http://www.fgdc.gov/nsdi/strategy/strategy.html>]

FGDC Endorses Content Standard for Digital Geospatial Metadata: Extensions for Remote Sensing Metadata

Over thirty remote sensing systems are currently orbiting the earth collecting data. Within the next five years, the number will increase to 50 systems. To describe geospatial data derived from remote sensing requires many metadata elements not provided in the current FGDC Content Standard for Digital Geospatial Metadata. Such metadata needs to be defined and incorporated into the structure of the FGDC Standard. To do so, these Extensions for Remote Sensing Metadata were developed and reviewed by the remote sensing community, in an effort sponsored by the FGDC Standards Working Group and led by NASA. They define metadata content for describing the sensor and platform, documenting the method and process of deriving geospatial information from the raw telemetry, and providing the information needed to determine the geographical location of the remotely sensed data. In addition, metadata to support data aggregation, describing both the components of an aggregate data set and the larger collection of which a data item may be a member, is provided. These extensions are compatible with the framework and content of the ISO metadata standard that is close to adoption. This compatibility will facilitate the use of this standard in future development of the ISO metadata standard for remote sensing and promote support for U.S. data models in future international metadata standardization. [The FGDC endorsed this standard 10/2002 www.fgdc.gov/standards/status/csdgm_rs_ex.html]

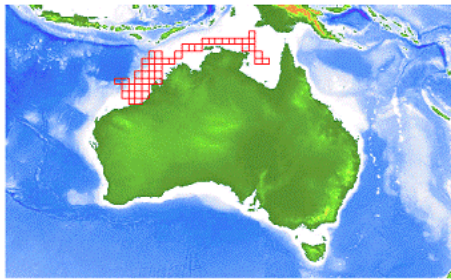
Web Site(s) of Interest for this Edition

<http://www.hc-sc.gc.ca/pphb-dgsp/fluwatch/index.html>
The Viral Respiratory Diseases Section, Division of

Immunization and Respiratory Diseases, Centre for Infectious Disease Prevention and Control (CIDPC), Health Canada, produces weekly or biweekly *FluWatch* reports, summarizing influenza surveillance activities in Canada. Readers can view in an interactive web mapping environment influenza activity level by provincial and territorial Influenza Surveillance Region.

<http://www.marine.csiro.au/csquares> **Concise Spatial Query and Representation System.** C-squares is a

system for recording, querying, display, and exchange of "spatial data" locations and extents in a simple, text-based, human- and machine-readable



Franklin Voyage FR 10/87 Hydrology Data

Dataset "footprint" using c-squares

format. It uses numbered (coded) squares on the earth's surface measured in degrees (or fractions of degrees) of latitude and longitude as fundamental units of spatial information, which can then be built up into strings of codes to represent a wide variety of shapes and sizes of spatial data "footprints".

[prePrevious&NewsItemID=2477](#) **Remapping Ground Zero.** A documentary about the role of the geospatial community in NYC's rescue and recovery efforts. If you would like a free copy of the Remapping Ground Zero video in DVD or videotape format, please contact Ron Matzner, Federal Geographic Data Committee, at rmatzner@fgdc.gov.

<http://www7.nationalacademies.org/cstb> **IT Roadmap to a Geospatial Future** focuses computer science research on the challenges associated with rapid proliferation of geospatial information. The report illuminates interdisciplinary, coordinated research opportunities in location-aware computing, databases and data mining, and visualization and human-computer interaction. [Editor: An excellent program on the report was held December 16, 2002, at the National Academies, Washington, D.C., by report committee members Dick Muntz, UCLA (computer science), Mahadev Satyanarayanan, Carnegie Mellon U (computer science), Alan MacEachren, Penn State U (geography), and Jeff Dozier, UC Santa Barbara (environmental science and management). For information on the committee and its workshop: http://www.cstb.org/project_geospatial.html]

<http://gai.fgdc.gov/girm/v08> **Geospatial Interoperability Reference Model (GIRM)** The latest draft of the FGDC-GAI Geospatial Interoperability Reference Model (GIRM) is available for public review and comment. The FGDC [Geospatial Applications and Interoperability Working Group](#) seeks to facilitate and promote the use of georeferenced information from multiple sources over the Internet. This requires interoperability ("working together") among the software systems that provide geospatial data, maps, services, and user applications. This document references the standards and specifications needed for geospatial interoperability. GIRM is intended not as a rigid definition of standards to be implemented, but rather as a consultative tool to help decisionmakers define what standards apply to a given set of activities, technologies, or organizations, to facilitate interoperable geoprocessing. [Comments should be sent by February 7, 2003 to girm-comments@gai.fgdc.gov]

Final Thoughts

GIS In Public Health 2003: Where We Appear To Be, and Heading

As the GIS Public Health 2002 curtain closes, it almost simultaneously reopens to welcome GIS Public Health 2003. From a broad perspective, this past GIS year has been productive for public health in many respects. First, there are an increasing number of people and events -nationally and globally, in academia, industry, government, and a variety of scientific organizations- that continue to insure the goals are met of advancing GIS science in disease detection, control and prevention, and the overall improved health of human and animal populations. Second, we have witnessed the call for new urgency, especially in the U.S., involving GIS in the study of health inequalities among minorities and the etiology and study of long-term care diseases. Third, new themes, such as GIS in the support of Homeland Security and bioterrorist planning and response, have taken on heightened significance in the aftermath of September 11, 2001.

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Today, more than ever, public health, with its essential role in routine and emergency care, response, remediation and prevention, its growing role with the Internet, and its increasing GIScience foundation, is an integral part of our nations' security and well being.

I believe our 2003 bearings are on course. Digital spatial data is now recognized at the highest levels of government as a capital asset. It has high priority for leveraged investment where the Federal Geographic Data Committee (FGDC) mantra "build once, use many times" will now be assured by the nation's Office of Management and Budget (OMB). This is occurring as well in many other nations. The Internet will play a key role in where we are heading. It is estimated that possibly 90 percent of all government data holdings depend on georeferenced information. Web-enabled accessibility to geospatial metadata and continued evolution of Web interoperability for geospatial analysis will truly do away with geospatial data "silos" that have long characterized government holdings. The interoperability piece will offer an important breakthrough in Web technology and new secure Web environments, Intranet and Internet, will provide needed and expanded opportunities for public health geospatial data sharing, research and analysis.

New emphasis is required to bring all of public health into GIS 2003. Every one of our approximately 3200 U.S. local health departments (LHDs) needs some GIS connectivity in order to become part of the greater GIS in public health whole. No one can be left behind and we must build the data structure from the "bottom up." There are mechanisms available to insure this national GIS public health infrastructure mandate. Everyone has a role to play in building the National Spatial Data Infrastructure (NSDI).

The federal Department of Health and Human Services (DHHS) is beginning to assume a leadership role in promoting metadata standards, developing an enterprise metadata repository, and taking the lead for the FGDC public health geospatial data theme. Guidelines for DHHS-wide uniform best designs for geospatial data activities, such as metadata templates, geocoding, Section 508 accessibility requirements, and the terms, conditions and uses regarding privacy (including new HIPAA rules) and the release of geospatial information on the Web, require national leadership. Only six weeks ago, I (CDC), Fred Broome (Census Bureau) and Dan Grauman (National Cancer Institute), respectively, addressed a special (and first-ever) joint DHHS CIO Council and Data Council meeting. We spoke to the issues of the FGDC Geospatial One-Stop initiative, geospatial metadata for DHHS data systems, and DHHS Section 508 accessibility requirements for visually and manually impaired users of geospatial graphs and maps on the Internet. Our program was well received. I came away feeling we had helped to energize DHHS leadership on these key geospatial topics.



State and local health departments (LHDs), whose role is integral to the success of public health in NSDI, will look to DHHS for our leadership and direction. If a growing part of our public health GIS agenda is geospatial mobilization and readiness, then we need to establish policy and funding (tools and training) to support those state and LHDs that lack the resources to join in a common coherent national initiative. These health departments **are** our national public health geospatial infrastructure. Web accessibility and enablement are key conditions for all. Whether through funding, creative partnerships, constructive mechanisms for sharing with other local non-public health government programs, or establishing regional collaborative activities, all public health departments require GIS empowerment and connectivity if we are to begin to deliver a responsive public health geospatial infrastructure in 2003.

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Our GIS home page contains current GIS events, archived GIS reports and other GIS links

<http://www.cdc.gov/nchs/gis.htm>