

# PUBLIC HEALTH GIS NEWS AND INFORMATION

November 1999 (No. 31)

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



**Selected Contents:** Events Calendar (pp. 1-2); (p. 6); Special Reports (pp. 6-8); GIS Lectures (17); Website(s) of Interest (p. 17); Final

News from GIS Users (pp. 2-6); GIS Outreach (pp. 8-13); DHHS and Federal Update (pp.13-17); Thoughts (pp.17-20)

## I. Public Health GIS (and related) Events Calendar

SPECIAL CDC/ATSDR GIS LECTURES: (1) **November 15, 1999.** Celebrating the 12th annual CDC NCHS National Geography Awareness Week with the timely lecture: [Benchmark Testing of GIS Capabilities for Epidemiologic Studies of Breast Cancer on Long Island, New York](#), by Fred Broome, Geography Division, US Bureau of the Census, November 15, at 2:00-3:15 P.M., in the NCHS Auditorium, Hyattsville, MD; (2) **November 18, 1999.** [A Cognitive Study of Methods of Classifying Epidemiological Data on Choropleth Maps in Series](#), by Cynthia A. Brewer, Department of Geography, The Pennsylvania State University, November 18, at 3:30-4:30P.M. (note time change), in the NCHS Auditorium, Hyattsville, MD, and; (3) **November 30, 1999.** [The Use of a Spatial Statistics Package for GIS Analysis in Public Health Applications](#) (rescheduled due to Hurricane Floyd), by Ned Levine, Ned Levine and Associates, Annandale, VA, November 30, 1999, 2:00-3:15 P.M., at the NCHS Auditorium, Hyattsville, MD (Envision available to offsite CDC/ATSDR locations). Abstracts are included in this edition. Note: These talks are cosponsored by the CDC/ATSDR Behavioral and Social Science Working Group, the CDC Statistical Advisory Group, and the NCHS Cartography and GIS Guest Lecture Series.

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☞ The Second National Conference on Scientific and Technical Data, Data for Science and Society, U.S. National Committee for CODATA: National Research Council, March 13-14, 2000 Washington, DC [See: [www.nationalacademies.org/usnc-codata](http://www.nationalacademies.org/usnc-codata) and announcement Part II this report]

☞ 2<sup>nd</sup> International Health Geographics Conference, The Geographic Aspects of Health, March 17-19, 2000, Chevy Chase, MD [See: [www.jhsph.edu/ihgc](http://www.jhsph.edu/ihgc) ]

☞ ACSM 2000, Annual Meeting of the American Congress on Surveying and Mapping, March 18-22, Little Rock, AR [Contact: Amy Lynwander, at voice (301) 984-9450 or e-mail [alynwander@conference-managers.com](mailto:alynwander@conference-managers.com)]

☞ 96<sup>th</sup> Annual Meeting of the Association of American Geographers, April 4-8, 2000, Pittsburgh, PA [See: <http://www.aag.org>]

☞ Eighth Annual Conference of the Association for Computers and the Social Sciences Conference, "Social Science in the New Millennium," Online, April 15-May 15, 2000 [See: <http://www2.chass.ncsu.edu/css2000> and Section II. this edition]

☞ 55<sup>th</sup> Annual Conference of the American Association for Public Opinion Research, "Facing the Challenges of the New Millennium," May 18-21, 2000, Portland, Oregon [Contact: [www.aapor.org](http://www.aapor.org) or email Mark Schulman at [m.schulman@srbi.com](mailto:m.schulman@srbi.com)]

☞ 2000 Annual Conference of the American Society for Photogrammetry and Remote Sensing (ASPRS), "Start the 21<sup>st</sup> Century: Launching the Geospatial Information Age," May 22-26, 2000, Washington, D.C. [Contact: Walter Boge at voice (410) 208-2855 or e-mail [wboge@aol.com](mailto:wboge@aol.com) or visit <http://www.asprs.org/asprs>]

☞ 3rd AGILE Conference on Geographic Information Science, Association of Geographic Information

## PUBLIC HEALTH GIS NEWS AND INFORMATION

November 1999 (No. 31)

2

Laboratories in Europe, May 25th-27, 2000, Helsinki/Espoo, Finland [See: <http://www.fgi.fi/agile> 2000 or contact Fred Toppen at e-mail [f.toppen@geog.uu.nl](mailto:f.toppen@geog.uu.nl)]

[Errata Notices from Prior Edition]

The cost of John Wiley & Sons new text "Disease Mapping and Risk Assessment for Public Health," by Dr Andrew Lawson, Department of Mathematical Sciences, University of Aberdeen, UK, was listed as \$115. The correct price is \$275.

### II. News from GIS USERS

(Please communicate directly with colleagues on any issues)

#### A. General News (and Training Opportunities)

1. From **Lee De Cola**, USGS (GIS Professional Certificate Program): Public Health GIS Users may be interested to know that George Mason University (Manassas, VA) offers a Professional Certificate in GIS through the Office of Continuing Professional Education, for 1999-2000. The certificate program can be completed in 12 months but normally takes up to two years. Topics vary from database design, spatial analysis, remote sensing and map design, ArcView and advanced ArcView, to customized training in Avenue. [Program information: see <http://gis.ocpe.gmu.edu> or call (703) 993-8337]

2. From **Lynda Anderson**, CDC NCHSTP: "Capitalizing on Social Science and Behavioral Research to Improve the Public's Health," February 2-3, 2000, Emory Conference Center, 1615 Clifton Road, Atlanta, GA. The Institute of Medicine (IOM) and Commission on Behavioral and Social Sciences and Education (CBASSE) are convening a two-day symposium to explore promising areas of behavioral and social science research that may inform public health intervention strategies. Twelve leading scholars will present papers that summarize exciting research findings that can lead to interventions. In addition, a special symposium on February 3 will address the application of behavioral and social science findings to the public health needs of Georgia. The symposium is co-sponsored by the U.S. Centers for Disease Control and Prevention (CDC), Emory University, and the

Morehouse School of Medicine, while the study itself is supported by the Robert W. Woodruff Foundation in Atlanta, GA. [Contact: Brian Smedley at [bsmedley@nas.edu](mailto:bsmedley@nas.edu)]

3. From **Susan Perlin**, US EPA: EPA's National Center for Environmental Assessment (NCEA) has announced the release of an "Annotated Bibliography for Graduate Level Introductory GIS Classes Taught at EPA". This document is a compilation of annotated bibliographies prepared by EPA staff who took the Introductory GIS classes from September 1996 through December 1997. Although this document does not represent an exhaustive literature search on the field of GIS, it does provide an excellent resource on a very broad range of topics, including GIS used to study environmental impacts on land, water and air; GIS used in epidemiology studies; GIS used to study environmental justice; and GIS used to study changes in natural resources. Many references also cover issues concerning the setup of GIS systems and the collection and use of data from remote sensing and aerial photography for GIS studies. Approximately 510 different articles have been cited. [See: <http://www.epa.gov/ncea>. Go to "What's New" and the document is the first listing under 10/19/99; Contact: Susan at email [perlin.susan@epamail.epa.gov](mailto:perlin.susan@epamail.epa.gov)]

4. From **Iris Shimizu**, CDC NCHS (Online Computing Seminar): CSS2000 is the Eighth Annual Conference of the Association for Computers and the Social Sciences, a professional organization now in its eighth year, dedicated to promoting research and scholarly exchange on social science computer applications, use of technology in social science education, and the study of social impacts and issues related to information technology. CSS2000 will take place entirely online, providing state-of-the-art coverage and professional development opportunities for the entire month from April 15 through May 15, 2000.

CSS 2000 is organized around three tracks, one dealing with the research uses of computing in social science, one dealing with instructional uses, and one dealing with the study of the social impacts of

## PUBLIC HEALTH GIS NEWS AND INFORMATION

November 1999 (No. 31)

3

computing. The general theme is "Social Science in the New Millennium," focusing on how information technology is transforming the social sciences. Suggested topics for Computational Approaches to Advancing Social Science Research Methodology include: Computer-assisted survey research; Content analysis; Data visualization; Digital libraries; Event history analysis; Expert systems; Geographic information systems; Multi-level analysis; Neural network analysis; Simulation; Structural equation modeling, and; Other topics. [Contact: See Section I]

5. From **Harlan Onsrud**, University of Maine: The US National Committee for CODATA is organizing a conference, "Data for Science and Society: The Second National Conference on Scientific and Technical Data," March 13-14, 2000, in Washington, D.C. (See URL in Part I). Many of the major scientific challenges we face today require combined expertise from many disciplines. Complex problems such as the understanding of global climate change, advancing biotechnology, and progress on various types of problems facing society can only be addressed by combining and using data that in the past have been available to researchers in one field only. In conjunction with several federal science agencies, the U.S. National Committee for CODATA is organizing the second national data conference to address important multidisciplinary issues in managing and using scientific and technical (S&T) data, and to improve the visibility of those issues nationally. The main focus will be to promote the availability and usefulness of S&T data to all users, both in research and in the broader society, using examples of groundbreaking and innovative applications and highly creative partnerships. Three main challenges will be addressed in this context: 1. How can access to and use of S&T data for interdisciplinary basic and applied research be improved? 2. How can access to and use of S&T data by other sectors and applications areas outside research (e.g., in business, education, media/entertainment, general public understanding) be improved? and, 3. How do we measure and evaluate productivity and performance in the management and

use of S&T data within disciplines, across disciplines, and in other sectors and applications areas? [Contact: Paul F. Uhler, Director, U.S. National Committee for CODATA, National Research Council, at voice (202) 334-2688 or email [codataco@nas.edu](mailto:codataco@nas.edu)]

### B. Technical and Research News

6. From **Tom Richards**, CDC NCCDPHP: The Small Area Health Research Unit, Dept of Community Health and General Practice, Trinity College, Dublin Ireland Ireland, has created a National Deprivation Index of Ireland GISmap found at site [http://www2.tcd.ie/Community\\_Health/SAHRU/deprivation.html](http://www2.tcd.ie/Community_Health/SAHRU/deprivation.html) (within the theme of "Visualizing and Interpreting Spatial Health Information"). The Home Page of Trinity College is [http://www2.tcd.ie/Community\\_Health/SAHRU/](http://www2.tcd.ie/Community_Health/SAHRU/). For more information on the deprivation index, see census indicators included in 1998 deprivation index (Great Britain) at <http://www.regeneration.detr.gov.uk/98ild/indicate.htm>. [Contact: Tom at [tbr1@cdc.gov](mailto:tbr1@cdc.gov)]

7. From **Charles Rothwell**, CDC NCHS: For those of you who use graphs in production and quality control, exploratory analysis or final display of results, you may wish to visit URL-<http://www.math.yorku.ca/SCS/Gallery>. Supported by Michael Friendly of York University in Toronto, it provides an excellent historical perspective on the development of statistical graphics; gives examples, explanations and links to other sites for some interesting graphical solutions such as reordable matrices, chi square maps, scatterplot matrices, trellis plots, circle graphs for multivariate analysis of means, etc; examples of excellent graphical displays; examples of terrible attempts at display. For experts for whom this is "old hat," the site also offers some new visualization techniques. [Source: Charlie at voice (301) 436-7135, ext 160 or e-mail [cjr4@cdc.gov](mailto:cjr4@cdc.gov)]

### C. Internet News

8. From **Alan Sim, Patrick Whitaker, and Ronald R. Fichtner**, National Center for HIV, STD, and TB Prevention, CDC (Development of a Prototype Metadata Registry): The CDC Health Information

## PUBLIC HEALTH GIS NEWS AND INFORMATION

November 1999 (No. 31)

4

System and Surveillance Board's (HISSB) Standards and Liaison Committee was established in 1995 to promote standards development activities at CDC. It has disseminated information on standardized data elements via the Common Data Element (CDE) Implementation Guide (<http://www.cdc.gov/data/index.htm>). We have developed a prototype for a CDC metadata registry as a means to distribute these data standards electronically.

Metadata Registry. Metadata or "data about data," can be used to define data element semantics, standardize data warehouses, and facilitate the integration of applications. This prototype uses metadata as a means of presenting "higher-level," conceptual views of data elements as well as representations. Users are able to download these representations, or value domains, as text or XML (eXtensible Markup Language) to incorporate these standards into new or existing system(s).

It is hoped that by providing this tool on the Intranet, individuals responsible for the maintenance, design, and development of CDC systems will be able to easily incorporate the standards for common data elements as described in the CDE Implementation Guide. In addition, this prototype will help facilitate the adoption and sharing of CDE definitions and values, further enhancing the standardization and integration efforts of our CDC systems. The prototype can display and facilitate the comparison of multiple representations for a data element. The database created in Microsoft Access was developed using metadata standards (ANSI X3.285 and ISO 11179) data models. The prototype itself was written in Visual Basic 6.0 and is browser-independent.

The data elements in the metadata model refer to content, data sharing, and administration (e.g., submission authority or domain expert). The administrative metadata, versioning in particular, is critical as standards change over time. CDC would benefit from addressing these issues comprehensively through a facility such as this one or collaboration with other agencies such as HCFA, VA, Census, DOD, or EPA in efforts that are already underway. The metadata registry prototype is now available on the

CDC Intranet at <http://www.nchstp.cdc.gov/pio/iso/meta/webclass1.asp>. Tables of data elements that are currently available for download include: age type, case classification, categorical age, country, county, ethnicity, marital status, missing values, next of kin, race, region, sex, state, and report source. [Questions or comments regarding this prototype can be directed to Patrick Whitaker at email [jpw1@cdc.gov](mailto:jpw1@cdc.gov) or Alan Sim at email [avs3@cdc.gov](mailto:avs3@cdc.gov)]

9. **Editor:** For an example of what one-meter resolution (from 400 miles above) aerial images can convey for geospatial analysis, see the images (user can enlarge) of Evergreen Lake, a housing development in Evergreen, Colorado, and Washington, D.C. Images such as these can be brought into your GIS and enhance programs related to disease surveillance and prevention, or environmental risk and assessment. Examples of details that can be seen in one-meter resolution imagery include trucks, roads, pipelines, individual trees, crops, large equipment, and other objects at least one meter in size. The sensor is not powerful enough to see individual people. Locations of interest can be revisited and reimaged routinely to provide space-time analysis of change. The October 14, 1999 edition of the *Washington Post* references its uses from disaster planning to the potential to become a routine part of criminal investigations e.g., detection of type and color of vehicles at a crime scene. [See: Ikonos satellite images at <http://newswire.spaceimaging.com>]

### D. HBCU (Historical Black Colleges and Universities) GIS News

10. **Editor:** The October 21 NCHS Cartography and GIS Guest Lecture "The Historical Black Colleges and Universities (HBCUs) GIS Summer Faculty Workshop," by **Cynthia Warrick**, Assistant Professor, Department of Clinical and Administrative Pharmacy Sciences, Howard University, **Lee De Cola**, Research Physical Scientist and Geographer, USGS, and **Rudolph Wilson**, Department of Political Science and Center for Applied Research and Special Projects, Norfolk State University, drew a large audience from

## PUBLIC HEALTH GIS NEWS AND INFORMATION

November 1999 (No. 31)

5

outside agencies. In attendance were representatives from the US Office of Civil Rights, Census Bureau, Indian Health Service, Maryland Cancer Registry, Langston University and the Institute for College Research Development. [Contacts: Cynthia at email [cwarrick@howard.edu](mailto:cwarrick@howard.edu), Lee at email [ldecola@usgs.gov](mailto:ldecola@usgs.gov), and Rudy at email [rwilson@nsu.edu](mailto:rwilson@nsu.edu)]

11. From **Cynthia Warrick**, Howard University: I have been asked to conduct a research project for the Minority Health Professions Foundation Mississippi Delta Project. The title is "Areal Differences in Socially Modifiable Health Risk Factors in the Mississippi Delta - A Spatial Analysis Using GIS." This study will identify government controlled health risk factors (environmental quality, access to education and health care resources, and areas that lack crime) in several counties in the Delta Region, to determine what factors may be related to the disproportional mortality of African Americans. They are also interested in finding out what counties have the highest and lowest life expectancies between blacks and whites in the Delta. Can anyone provide me information on the availability of county or parish level mortality and life expectancy data to help support this investigation?

In another development, I am working on a research proposal to study prostate cancer. I have mortality data from the NCHS Atlas (Health Service Areas) but would benefit from additional prostate mortality and morbidity data at the county level. Also, are there sources for county insurance coverage data by race, sex, and age? [Contact: Cynthia at voice (202) 806-4919 or email [cwarrick@howard.edu](mailto:cwarrick@howard.edu)]

### E. CDC/ATSDR- Atlanta GIS News

12. From **John Mann**, ATSDR [Editor: John prepared the following list of URLs in response to questions from new or novice users at this week's Atlanta meeting for introductory GIS websites]: US Geological Survey introduction to GIS <http://internet.er.usgs.gov/research/gis/title.html>; ESRI's introduction to GIS <http://www.esri.com/library/gis/index.html> and, ESRI's Virtual Campus

and free on-line intro courses <http://campus.esri.com/campus/home/home.cfm>. For more discussions on the uses of the GIS technology for public health consider Just Another Medical Geography Page at [http://www.geocities.com/Tokyo/Flats/7335/medical\\_geography.htm](http://www.geocities.com/Tokyo/Flats/7335/medical_geography.htm). AI-GEOSTATS at [http://curie.ei.jrc.it/ai-geo\\_stats.htm](http://curie.ei.jrc.it/ai-geo_stats.htm), provides a central information server for Spatial Statistics and Geostatistics on the Internet. The International Health Geographics Conference 2000, at <http://www.jhsph.edu/ihgc/>, offers additional links and an example of a major GIS and public health conference. For a power point presentation of a GIS and disease study consider the University of Iowa at <http://lime.weeg.uiowa.edu/~seclook/ppt-test/> (Improving Public Health through GIS). For links to multiple geography and demography sites consider <http://demography.anu.edu.au/VirtualLibrary>. [Contact: John at voice (404) 639-0633 or email [jom6@cdc.gov](mailto:jom6@cdc.gov)]

13. From **Bill Henriques**, ATSDR: Please note-Preliminary announcement-I am developing a Public Health Training Network (PHTN) Satellite Broadcast entitled "GIS in Public Health: Using Mapping and Spatial Analysis Technologies for Health Protection." It will be held May 11, 2000, from 12:00-2:30. Organizations are asked to begin identifying viewing sites and site facilitators. Sites must have a steerable antenna that receives either C-or Ku-band satellite signals. Schools, hospitals, community colleges, universities, USDA county extension offices, and local chapters of the American Red Cross may have this equipment. Site facilitators are very important to the success of a broadcast. Generally, they serve as a coordinator, making sure the program runs smoothly. They also prepare the viewing room, ensure availability of a phone and/or fax for call-in questions, take the participant materials to the site, welcome participants, etc. Encourage staff to volunteer as facilitators. Information about registration will be forthcoming on the PHTN website at <http://www.cdc.gov/phtn>. [Contact: Bill at voice (404) 639-6088 or email [wah2@cdc.gov](mailto:wah2@cdc.gov)]

F. CDC/ATSDR- Ft. Collins, Hyattsville,  
Morgantown and Others GIS News

14. From **Chet Moore**, CDC NCID: Just a short note to say we are working with **Steve Guptill** and colleagues at USGS to map data coming in from the West Nile virus outbreak in NY, NJ, and CT. It will be interesting to look at the spatial detail once the data are all pulled together. [Editor- Chet manages the excellent GIS laboratory facility at Ft. Collins, CO; Contact: Chet at email [cgm2@cdc.gov](mailto:cgm2@cdc.gov)]

15. **Editor**: I attended the October working level meeting of the National Science and Technology Council's (NSTC) Committee on International Science, Engineering, and Technology (CISSET). CISSET is one of five committees under NSTC that is headed by Neal Lane, Assistant to the President for Science and Technology. Among the various topics discussed, one potential health initiative was the Ecology of Infectious Disease. The main institutional players include NIH's Fogarty Center and NSF, with cooperative partnering by NASA, DoD and USDA. The study is aimed at global climate change and the effect on diseases. An RFA has been prepared for distribution. Rita Caldwell's work in Bangladesh of vibrio cholera, biocomplexity and climate is a component of the study design. [Contact: Amar Bhat, NIH, at voice (301) 480-3414 or email [abhat@nih.gov](mailto:abhat@nih.gov)]

### III. GIS Outreach

(Editor: All requests for Public Health GIS User Group assistance are welcome; please 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)

☛ From **Michael Baker**, Wellington, New Zealand: I am a public health physician working at New Zealand's national communicable disease surveillance centre. I have a particular interest in approaches to improve the use of public health information, notably GIS, surveillance, and population registers. I am hoping to spend some time in the United States next year researching these issues. Does CDC have the capacity to take overseas epidemiologists for short-

term attachments or courses (up to 3-6 months)? I would be fully funded from NZ, so would not need any support from CDC. I would also appreciate the names of other centres or groups in the US who are considered particularly successfully at using public health information effectively e.g. GIS in disease surveillance, population registers to improve delivery of immunisation and other forms of preventive care, and surveillance systems to identify and manage threats to population health. [Contact: Michael at Kenepuru Science Centre at voice (64 4) 237-0149 or e-mail [michael.baker@esr.cri.nz](mailto:michael.baker@esr.cri.nz)]

☛ **Alexandrine Randriamahefa**, Oakwood College: I was a participant in the 1999 HBCU GIS Summer Faculty Workshop (see last edition, *Public Health GIS News and Information*, No. 30) and am trying to introduce GIS to my students in the course Introduction to Research. This is now possible because of the donation of the license to load Arc View to 15 computers from ESRI. I would appreciate receiving references about articles studying the environmental impact (any pollutants) on health using GIS. These will provide my students ideas as to how to model their projects. Thank you for any assistance you may provide. [Contact: Alexandrine is an Associate Professor in the Department of Biological Sciences and can be reached at voice (256) 726-8352 or e-mail [drand@oakwood.edu](mailto:drand@oakwood.edu)]

☛ From **Ric Skinner**, NJ Dept. of Health & Senior Services: We are trying to formally organize the many "island GIS" initiatives throughout the NJ Dept. of Health & Senior Services. While ArcView seems to be the predominant GIS software, there are isolated installations of other GIS software. Supporting our effort is the Interagency GIS Team and newly established state-level Office of GIS. I would like to hear from other state health departments that have GIS capabilities, either enterprise or ad hoc, regarding their experience and process in this regard. What works, what doesn't, etc.?

To clarify, I am not looking for software recommendations. I'm interested in how other state

departments of health have handled the programmatic, organizational, and policy issues surrounding the use and support of GIS within their organizations: e.g., do you have a "champion"?, is your GIS centralized or decentralized?, is there direction and support from the top down?, is there a specific line item in state budget for health dept. GIS?, who maintains the data?, is there a data clearinghouse that includes health attribute and spatial data?, etc. I will summarize all relevant information. [Contact: Please respond to Ric at [wskinner@doh.state.nj.us](mailto:wskinner@doh.state.nj.us)]

✉ **Sarah Greening**, Cardiff, UK (RouteView Pro): I'm just starting to use this software (an attachment to MapInfo that calculates road travel distances and times, as opposed to 'as the crow flies' distances between points) and the manual is not up to much- has anyone got experience of RouteView, who might be able to give me a few pointers? I'm sure what I'm trying to do is very simple and it should be straightforward, but trial and error hasn't got me very far yet! [Contact: Sarah at email [sarah.greening@velindre-tr.wales.nhs.uk](mailto:sarah.greening@velindre-tr.wales.nhs.uk)]

#### IV. Special Reports

Trying to Map Elusive N.Y. Cancer Source

Monday October 18, 1999, *LA Times*

They are expected to come by the hundreds--average residents with long memories of life on Long Island. With luck, they might be able to help scientists figure out why so many women there are getting breast cancer. In a hotel in Hauppauge, N.Y.-at the first of seven town meetings over four days--researchers from the National Cancer Institute will listen today to what people remember, or might have heard from a parent or grandparent, about environmental hazards that might have existed years before records were kept. In rooms decorated with pink and white balloons--the colors that have come to symbolize breast cancer--they will tell of long-closed gas stations, power facilities, military bases or underground fuel storage tanks--even pesticide spraying in areas where farms once thrived. There will be maps on the walls, and residents will be invited to mark the sites they remember. With that

information, researchers will use digital mapping technology to develop a computerized prototype of "hot spots" that could help prove the thus-far elusive link between chemicals and breast cancer.

Although scientists long have suspected a relationship between environmental pollutants and various forms of cancer, they have been frustrated in their attempts to prove a link. But if the NCI researchers succeed in producing a visual image that links breast cancer incidence with pollution sites on Long Island, the process ultimately could be used to track other cancers and their possible causes. The technology, known as Geographic Information Systems, has been around for decades and is used extensively in community and economic development, emergency management and land and natural resource use. But only recently has it been applied to medical research; the technology has become more sophisticated, public health scientists have become more computer savvy and more information about geography, environmental contamination and disease development is available.

"These applications in health could be very valuable," said Gerald Rushton, a professor of geography and adjunct professor of public health at the University of Iowa, who is a consultant on the nearly \$5-million project. All over the country's northeast corridor, from the mid-Atlantic to New England, researchers long have noted a higher-than-expected incidence of breast cancer and deaths resulting from the disease. Nationally, the cancer institute reports, there are 110.6 cases of breast cancer for every 100,000 women, with a death rate of 25.4%. But in Nassau County on Long Island, it is 117.8 cases per 100,000 women, with a 30.6% death rate. And in Suffolk County it is 113.6 cases per 100,000 women, with a death rate of 31.1%. "It's very upsetting to us, because we really think something is going on," said Martha Rogers, a councilwoman in Southampton, in Suffolk County on the eastern part of Long Island, which she says has "an unusually high number of cases, particularly among younger women."

There is little doubt that residents here will have a lot to say to the researchers. "I have hundreds of

PUBLIC HEALTH GIS NEWS AND INFORMATION

November 1999 (No. 31)

8

pieces of information that people have given me over the years," said Barbara Balaban, a member of the board of the West Islip Breast Cancer Coalition. "I've saved them all--one who spoke of an Army post and who wondered what might have been stored in the underground tunnels. Another man told me he was a construction worker at a housing development, and there was some question about the materials used in the water lines. "People talk about Agent Orange along the Long Island Railroad. Someone told me there was a watch factory and that every Friday they dumped the leftover radium into the backyard," she continued. "I don't know how much is true, but you have to look at everything--and you have to go way back."

The mapping is part of the Long Island Breast Cancer Study Project, a federally funded, \$26-million effort to determine whether environmental factors are involved in the higher-than-expected breast cancer rates in the Northeast. Grants also have been approved for the establishment of a breast and ovarian cancer registry, the tracking of possible disease trends among families, and for laboratory testing to trace breast cancer's development in the body at the cellular level. Another component is a Columbia University study that looks at whether the now-banned pesticide DDT and polycyclic aromatic hydrocarbons--ubiquitous pollutants caused by the incomplete combustion of various chemicals including diesel fuel and cigarette smoke--are associated with a risk for breast cancer. "It is a very important research study," said Joann Schellenbach, an American Cancer Society official. "DDT has been banned for a long time, yet several small studies have found DDT metabolites near the breast tissue of women with breast cancer," she said.

Yet farmers' wives, presumably exposed more directly to the pesticide, don't have a higher incidence of breast cancer than women elsewhere in the area who lived in cities. Susie Roden, 46, grew up in Southampton and was diagnosed with breast cancer at age 39. She suffered a recurrence two years ago, and is now doing well. But she is puzzled by her disease; no one in her family has ever had breast cancer, and she wouldn't otherwise be considered at high risk. At this week's meetings, she predicted, "we're going to

have a lot of environmental activists who are concerned about the water. Most of us have well water. We grew up with well water. It's been tested; they've told us it was fine. But who knows? I think we did something long ago--and now it's catching up to us." [Source: Marlene Cimons, LA Times Staff Writer, Washington, D.C.]

**Editor's Postnote:** In my comments for this article to Ms. Cimons, I conveyed two ideas, namely, (1) the importance on the use of GIS in this epidemiologic study of breast cancer is reflected in the required inclusion of GIS by public law (P.L. 103-43) and (2) GIS is well suited to model (known and estimated) space-time exposures and should result in a greater understanding of possible breast cancer and environmental relationships, given the many historical databases and residential histories available for this study. Growing supercomputing capabilities will advance computational epidemiology and spatial data analysis.

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*CrimeStat* Available

The much awaited GIS desktop software, to be demonstrated by Ned Levine on November 30 (at NCHS) is now located at <http://www.ojp.usdoj.gov/cmrc>. The program, called *CrimeStat*, was developed by Ned Levine & Associates (Annandale, VA) under a grant from the Crime Mapping Research Center of the National Institute of Justice (grant number 1997-IJ-CX-0040). It is Windows-based and interfaces with most desktop GIS programs. *CrimeStat* inputs point locations (e.g., robbery locations, facility locations) in *dBase*© 'dbf', 'shp' or ASCII format using either spherical or projected coordinates. It calculates various spatial statistics and writes graphical objects to *ArcView*®, *MapInfo*®, *Atlas\*GIS*™, *Surfer*® for *Windows*, and *ArcView Spatial Analyst*©. The program provides statistical tools for law enforcement agencies and criminal justice researchers in their crime mapping efforts. However, it can also be used for a variety of other applications for which public health analysts and researchers would be interested, e.g., hospital clients, the location of motor vehicle crashes, the location of individuals with particular medical conditions, or any



## PUBLIC HEALTH GIS NEWS AND INFORMATION

November 1999 (No. 31)

9

other location or event which can be characterized by a point. The spatial statistics in *CrimeStat* are subdivided into four categories: 1. Spatial distribution- the mean center, center of minimum distance, standard deviational ellipse, Moran's I spatial autocorrelation index, or angular mean; 2. Distance statistics- nearest neighbor analysis, linear nearest neighbor analysis, and Ripley's K statistic; 3. 'Hot spot' analysis routines- hierarchical nearest neighbor clustering, K-means clustering, and local Moran statistics; and, 4. Interpolation statistics- a single-variable kernel density estimation routine for producing a surface or contour estimate of the density of incidents (e.g., auto thefts) and a dual-variable kernel density estimation routine for comparing the density of incidents to the density of an underlying baseline (e.g., auto thefts relative to the number of households).

The program is accompanied by a sample data set, a Quickguide to the program, and a manual which gives the background behind the statistics and examples. The program and manual are free and can be downloaded from the Crime Mapping Research Center of the National Institute of Justice web page. The development effort is continuing and there will be periodic updates.

### V. GIS and Related Presentations and Literature

(This section may include literature citations, abstracts, syntheses, etc., and submissions are open to all)

#### NCHS Cartography and GIS Guest Lecture Series

Celebrating our 13<sup>th</sup> Annual National Geography Awareness Week Commemoration: "Benchmark Testing of GIS Capabilities for Epidemiologic Studies of Breast Cancer on Long Island, New York," by **Fred Broome**, Geography Division, US Bureau of the Census, November 15, 1999, at 2:00-3:15P.M., in the NCHS Auditorium, Hyattsville, MD (Envision available to offsite locations). ABSTRACT. The use of geographic information is not new to the field of epidemiology. Indeed, Dr. Snow's 1854 plotting of cholera cases in London is an excellent example, although an analogue one, of the use of geographic information techniques to support an epidemiologic study. Today, digital Geographic Information Systems

(GIS) offer powerful and unprecedented computerized technology capable of complex data manipulation and analysis. Major producers of GIS software, along with dozens of system integrators and vendors, can provide services ranging from a single GIS software package to a large scale networked system, staffed with experts, that can support research and/or other health related operations. This presentation deals with how one selects a GIS to support epidemiologic research. An extensive array of tasks were developed for benchmark testing and the evaluation of proposed performance. While the example is based on the Long Island Breast Cancer Study, the principles and guidelines for GIS selection are applicable to health related activities in general. Of historical significance, the Long Island Breast Cancer Study is the first time that the development of a GIS has ever been directed by Congress. [Contact: Fred at email [fbroome@census.gov](mailto:fbroome@census.gov)]

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"A Cognitive Study of Methods of Classifying Epidemiological Data on Choropleth Maps in Series," to be presented by **Cynthia A. Brewer**, Department of Geography, The Pennsylvania State University, **November 18**, 1999, at 3:30-4:30P.M., in the NCHS Auditorium, Hyattsville, MD (Envision available to offsite locations). ABSTRACT. Choropleth maps show enumeration areas, such as counties, with color fills keyed to ranges in the mapped data. For example, a map of lung cancer rates may use a light yellow to represent low rates with gradations through orange to a dark red for high rates. This type of map is a standard method for showing distributions of disease rates and wide ranging socioeconomic variables. The mapmaker's decisions about the ranges in the data represented by each color affect the appearance of map patterns, and there are many ways to systematically divide the data range into data classes. Classification options are readily available in mapping and GIS software, but basic guidance for their application is lacking.

We used 28 data sets and 56 subjects to examine the effects on both accuracy and confidence in user responses of seven five-class map classification

PUBLIC HEALTH GIS NEWS AND INFORMATION

November 1999 (No. 31)

10

schemes: hybrid equal intervals, quantiles (e.g. percentile), box-plot based classes, mean and standard deviation based classes, Jenks optimization, minimized boundary error, and constant map area in shared classes. Map test questions ranged from questions about particular polygons to differences in whole map patterns. We placed particular emphasis on the effects of classification on map-to-map comparisons in our research design. User-testing results indicated that the accuracy of responses varied significantly between classifications, with responses to quantile maps being most accurate. [Contact: Cindy at email [cbrewer@essc.psu.edu](mailto:cbrewer@essc.psu.edu)]

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“The Use of a Spatial Statistics Package for GIS Analysis in Public Health Applications” (Rescheduled due to Hurricane Floyd), to be presented by **Ned Levine**, Ned Levine and Associates, Annandale, VA, **November 30**, 1999, 2:00-3:15 P.M., at the NCHS Auditorium, Hyattsville, MD (Envision available to offsite locations). ABSTRACT: *CrimeStat* is a spatial statistics package that was developed for the National Institute of Justice (NIJ) to aid in crime mapping applications. The program is a public domain stand-alone Windows NT/9x program that can interface with most desktop GIS packages. It can read 'dbf' files and can write various graphical objects to ArcView, MapInfo, Atlas\*GIS, Surfer, and Spatial Analyst. It has a collection of statistical tools for the analysis of point/incident location (i.e., having single X/Y coordinates) and includes a range of diagnostic spatial statistics. Some of the routines are specific to crime analysis, but many could be applied to epidemiological and public health problems. [Contact: Ned@NedLevine.com or <http://www.nedlevine.com>]

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127th Annual Meeting of the American Public Health Association, November 7-11, 1999:

November 9<sup>th</sup> Session on Applications of GIS in International Health

“GIS as a Tool in International Health Initiatives,” by **Baker Perry**, Department of Geography and Planning, Appalachian State University. Abstract: Geographic information systems (GIS) are powerful tools that can

enhance the measurement, monitoring, mapping, and modeling of spatial data. The applications of GIS in International Health are far-reaching. Initiatives include the use of GIS to assess physical access to health care, model health facility locations, monitor immunization rates, track the spread of infectious diseases, analyze environmental impacts on community health, and model health personnel distributions-just to name a few. This presentation introduces GIS and the significance of the geographic perspective within International Health initiatives. In addition, this presentation will address important issues such as the availability of digital cartographic data in the developing world, cost, software and hardware considerations, and GIS training opportunities. Geographic information systems-when combined with proper training and experience-can significantly improve the research initiatives, project planning, implementation, and evaluation within international health. [Contact: Baker at email [perrylb@u.washington.edu](mailto:perrylb@u.washington.edu)]

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“Integration of GIS and GPS in Public Health Protection Activities,” by **William D. Henriques**, GIS Coordinator, Agency for Toxic Substances and Disease Registry. Abstract: Geographic information systems (GIS) and global positioning systems (GPS) have long been used for the characterization and protection of our natural resources. More recently, health professionals have begun to use these powerful tools to map areas of concern and analyze populations that may reside near them. Recent advances in GIS now allow mapping of geographic data over the Internet, with little or no prior experience in GIS necessary. Before these tools can be used effectively and to their full capacity, health professionals require an understanding of the uses and limitations of spatial data analysis. There is a reluctance in moving ahead in the mapping of health data due to the concerns of confidentiality and misuse of health information and collection of spatial data using a GPS. In this talk, participants will gain insight on how GIS/GPS technology can be integrated into existing programs and will obtain resources via the Internet for further information. [Contact: Bill at email

PUBLIC HEALTH GIS NEWS AND INFORMATION

November 1999 (No. 31)

11

wdh2@cdc.gov]

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“Spatial Patterns of Malaria in Padre Cocha, Peru,” by **Martha H Roper**<sup>1,2</sup>; **O Jaime Chang**<sup>3</sup>; **Adeline Chan**<sup>1</sup>; **Rebeca S. Carrion Torres**<sup>1</sup>; **Alan J Magill**<sup>1</sup>; **Allen W Hightower**<sup>4</sup>. Abstract: Padre Cocha is a village of 1400 inhabitants, situated in an area of epidemic vivax and falciparum malaria in the Peruvian Amazon. During the 1997-98 transmission year, there were 1157 P. vivax infections and 232 P. falciparum infections diagnosed at the village health post. As part of an on-going study of malaria transmission in Padre Cocha, the village was mapped using GPS hardware over the course of one week. Differential GPS correction of locations of all features mapped yielded a positional standard deviation of +0.2 meters. Mapping of household malaria incidence data revealed areas of consistently high malaria infection density and a central area of low malaria incidence. This pattern suggests that transmission dynamics are heterogeneous within this village of approximately 1 km<sup>2</sup>. Preliminary entomologic investigations showed a similar pattern of relative vector abundance, supporting the hypothesis that risk of malaria in Padre Cocha is related to geographic exposure factors. The use of GIS techniques to explore spatial relationships contributed to generating hypotheses when approaching this previously unstudied site, to exploring patterns of malaria case distribution, and to directing further entomological and epidemiological field work and malaria control measures. [Contact: Martha at mroper@hsph.harvard.edu; Author affiliations: U.S. Naval Medical Research Center Detachment<sup>1</sup>, Lima, Peru; Department of Immunology and Infectious Diseases, Harvard School of Public Health<sup>2</sup>, Boston, MA; Instituto Nacional de Salud<sup>3</sup>, Lima, Peru; Direccion Regional de Salud de Loreto<sup>3</sup>, Iquitos, Peru; Division of Parasitic Diseases, Centers for Disease Control and Prevention<sup>4</sup>, Atlanta, GA]

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“Spatial distribution and social networks among traditional healers who treat malaria in Kongwa District Tanzania,” by **Jennifer Wagman**, Department of International Health, Johns Hopkins University

School of Hygiene & Public Health. Abstract: Malaria remains one of the chief causes of mortality among young children in sub-Saharan Africa. Research was conducted between July 1998 and January 1999, focusing on the roles of the formal and non-formal health systems in the treatment of malaria in the Kongwa District of Central Tanzania. GIS (geographic information system) software and technology were used to gather information about the geographic location of traditional healers and modern practitioners within the study site. The GIS research had four objectives: 1) collect the geographic location of all healers and modern health facilities with GPS units; 2) determine travel time between traditional healers and modern practitioners using GIS software packages; 3) define the catchment area of all traditional healers (the boundaries within which each healer refers patients and receives referrals from other healers); and 4) perform a spatial network analysis, using GIS data, to observe and understand the social systems (networks) and patterns of referral for children with severe illnesses between traditional healers, traditional midwives, village health workers and shop owners who sell drugs in the five study villages. The GIS research led to important results: geographical access to the non-formal health system is excellent; there are significant differences (in location and style of practice) among male and female practitioners; and a specific subset of healers were identified as being known by all other practitioners, and as being frequent recipients of referrals for cases of serious illness including severe malaria. [Contact: Jennifer at jwagman@jhsph.edu]

Other Presentation Announcements

“A Bayesian Exploratory Data Analysis of Spatio-Temporal Patterns in U.S. Homicide Rates,” by **Bal gobin Nandram**, NCHS Research Fellow, and **Linda Pickle**, NCI, November 16, 1999, 10:30-11:30 A.M., NCHS Room 1110. Abstract: Recently, homicide has been declared an important public health problem that could be studied using epidemiological tools. To assess spatio-temporal patterns we study homicide data for 1979-96 which consist of six periods of 3 years over 798 health service areas (HSAs) which

PUBLIC HEALTH GIS NEWS AND INFORMATION

November 1999 (No. 31)

12

are small areas that make up the continental U.S. We fit several Bayesian hierarchical models to the overdispersed Poisson data which include socioeconomic covariates, correlation over time, and different functional forms of age effects. Several Bayesian diagnostic procedures are used to select one of the models, and then to further assess the goodness of fit of the selected model. Hypotheses about the patterns are tested using the Bayes factor with the selected model, and maps are used to display the patterns. One particular pattern of rates over time fits most HSAs well. Other patterns, including a decreasing trend, are also plausible for some age classes for the entire U.S. and for some subsets of regions, levels of urbanization, states and HSAs. Sponsor: Washington Statistical Society [Contact: Bal at email [bbn9@cdc.gov](mailto:bbn9@cdc.gov)]

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“Data’s Spatial Dimension: Using Geographic Information Systems to Support Health and Human Services Policy Makers,” December 2, 1999 Symposium, Hubert H. Humphry Building, Washington, D.C. The purpose of the symposium is to inform key health and human services personnel on the growing uses of spatial data and GIS to aid in public health policy decisions. The program (tentatively) will feature a variety of themes including sessions on: Introduction to Spatial Data and Uses of GIS Technologies; Presentations by State and Local Officials; Current DHHS Projects/Initiatives; Welfare Reform and Human Services; Health Planning, and; a Roundtable Discussion at the conclusion. [Contact: **Jim Gatz**, Office of the Assistant Secretary for Planning and Evaluation, DHHS at voice (202) 260-0397 or email [jgatz@osaspe.dhhs.gov](mailto:jgatz@osaspe.dhhs.gov)]

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“Statistics and a Digital Government for the 21st Century,” by **Cathryn Dippo**, Bureau of Labor Statistics; and discussant **Charles Rothwell**, NCHS. December 8, 12:30 - 2:00 p.m., at the BLS Conference Center. Abstract: The Federal Statistics Team focuses on fostering research that will advance the goal of creating a National Statistical Information Infrastructure. Over the last few years, the team has

established partnerships with a number of academic researchers who have competed for research grants from NSF's Digital Government program. In the first year of the program, NSF awarded about \$4M to proposers who will work with the Federal statistical agencies. Additional opportunities for collaboration exist with NSF's Partners for Advanced Computational Infrastructure (PACI). The Interagency Council for Statistical Policy and the Federal Information Services and Applications Council are sponsors of the team (<http://www.hpcc.gov/cicrd/> #organization). In this session, we will give a brief description of our vision for a National Statistical Information Infrastructure, discuss the aims of the Digital Government and PACI programs, and provide details on the projects underway and under review at NSF. Sponsor: Washington Statistical Society [Arrangements and contact: Karen Jackson(202-606-7524)]

Emerging Infectious Diseases

The September-October 1999 issue of CDC's journal, *Emerging Infectious Diseases* (EID), is now available at <http://www.cdc.gov/eid>. Selected articles include (titles only): Rabies Surveillance Using GIS and a Spatial Filter; Burden of Foodborne Illness in the U.S.; Human Ehrlichiosis in the United States; West Nile Fever Reemerging in Europe; Economics of Pandemic Influenza in the U.S.; Host Genetics and the Severity of Coccidioidomycosis; Drug-Resistant *S. pneumoniae* in Oregon; Diphtheria Antitoxin Levels in the Netherlands; Acute Non-HPS SNV Infection in the U.S.; and, *C. parvum* in Commercially-Harvested Oysters.

[Editor: **Andrew Curtis**, Department of Geography and Anthropology, Louisiana State University, and author of the rabies surveillance study was posed the following question, “What GIS software did you use-and did you develop any special GIS methods for spatial filters-and/or do you have any suggestions for a ‘relatively low cost approach’ so that state and local health departments (with limited resources could replicate your methods). Andrew responded: “I used ArcView (and previously Map Info) and Excel to manipulate the data. The GIS functions

PUBLIC HEALTH GIS NEWS AND INFORMATION

November 1999 (No. 31)

13

(buffering) required for the technique should be available in any desktop GIS. I agree that it would be nice to have a suite of spatial filter options built into a GIS-but at the moment, the above mentioned method provides an adequate alternative, especially if the target areas are limited in number. If you ever come across anyone who is interested in using the filter, pass on a contact and I'll do what I can to help. If you have any further questions please feel free to contact me. [Editor: Andrew can be reached at voice (225) 388-6198 or e-mail [acurti1@lsu.edu](mailto:acurti1@lsu.edu)]

*Morbidity and Mortality Weekly Report*

Selected articles from CDC's *Morbidity and Mortality Weekly Report* (MMWR): Surveillance Summaries, Vol. 48, No. SS-7- Youth Risk Behavior Surveillance-National Alternative High School Youth Risk Behavior Survey, United States, 1998; Volume 48, Number 42-National Diabetes Awareness Month-November 1999; Diabetes Preventive-Care Practices in Managed-Care Organizations-Rhode Island, 1995-1996; Influenza and Pneumococcal Vaccination Rates Among Persons with Diabetes Mellitus-United States, 1997; Progress Toward Poliomyelitis Eradication-Myanmar, 1996-1999; Vol. 48, No. 41- Fluoridation of Drinking Water to Prevent Dental Caries; Progress Toward Poliomyelitis Eradication- Nepal, 1996-1999; Update: West Nile Virus Encephalitis- New York, 1999; Update: Changes to MMWR Continuing Education Data Management System; and, Notifiable Diseases/Deaths in Selected Cities; Surveillance Summaries, Vol. 48, No. SS-6- Trends in Self-Reported Use of Mammograms (1989-1997) and Papanicolaou Tests (1991-1997) - Behavioral Risk Factor Surveillance System; Vol. 48, No. 40- Achievements in Public Health, 1900--1999: Safer and Healthier Foods; Folic Acid Campaign and Evaluation- Southwestern Virginia, 1997-1999; Self-Reported Asthma in Adults and Proxy-Reported Asthma in Children- Washington, 1997-1998; and, Notifiable Diseases/Deaths in Selected Cities Weekly Information; Vol. 48, No. 39-Primary and Secondary Syphilis-United States, 1998; Progress in Reducing Risky Infant Sleeping Positions-13 States, 1996-1997;

Update: Influenza Activity- Worldwide, May-September 1999; Reasons Reported by Medicare Beneficiaries for Not Receiving Influenza and Pneumococcal Vaccinations-United States, 1996; Update: West Nile-Like Viral Encephalitis-New York, 1999; Notice to Readers: International Infection Control Week-October 17-23, 1999; National Notifiable Diseases/Deaths in Selected Cities Weekly Information; September 24, 1999, Vol. 48, No. SS-5- Prevalence of Selected Maternal and Infant Characteristics, Pregnancy Risk Assessment Monitoring System (PRAMS), 1997; September 24, 1999, Vol. 48, No. 37- Notice to Readers: National Vaccination Coverage Levels Among Children Aged 19-35 Months-United States, 1998; Notice to Readers: Publication of Survey Results of Assessment of State Health Agencies' Readiness for 2000; Notice to Readers: Satellite Broadcast on Breast Cancer Screening; Notice to Readers: Satellite Broadcast on HIV Prevention; Notice to Readers: Satellite Broadcast on Surveillance of Vaccine-Preventable Diseases; Notice to Readers: Epidemiology in Action; [For online viewing or .pdf download of MMWR reports, see <http://www.cdc.gov/mmwr> or visit <http://www2.cdc.gov/mmwr>]

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The recent publication "Geographic Information Systems and public health: mapping the future," *Public Health Reports*, 1999;114:359-373, by Richards TB, Croner CM, Rushton G, Brown CK, Fowler L, is available on the NCI Long Island Breast Cancer Web site (see: NCI's Long Island Breast Cancer Web site: <http://www-dccps.ims.nci.nih.gov/LIBCSP>, and click on GIS, or, go directly to GIS area within the LIBCSP site: <http://www-dccps.ims.nci.nih.gov/LIBCSP/GIS.html>, and click on Learning Center, or, go directly to the Learning Center: <http://www-dccps.ims.nci.nih.gov/LIBCSP/LearningCenter.html>, and click on the PHR special section (third mention). [Editor: Appreciation is extended to Linda Anderson, Director of Communications, Long Island Breast Cancer Study Project, NCI; Tom Richards, CDC NCCDPHP; and Oxford University Press, for their coordination to make the paper available]

## VI. Related Census, DHHS and Other Federal Developments

### Summary of Recent Congressional Activity.

#### Prepared by the Office of Planning, Budget and Legislation, NCHS- Excerpts from the September 1999 Report on Legislative Activities

YOUTH VIOLENCE. Conferees are gearing up to work out differences between the Senate and House-passed juvenile justice bills after the August recess. Both bills include provisions to severely punish juveniles who commit crimes. The bills vary in significant ways, however, particularly in their vastly different approaches to guns. The House bill does not include any new restrictions on guns, while the Senate bill includes several. It requires a background check before a weapon can be sold at a gun show, requires that handguns be sold with storage or safety devices, and prohibits juveniles from owning assault weapons. In lieu of gun provisions, the House bill includes 1) a provision requiring the Surgeon general to conduct a study on the impact of violent messages delivered through the media on the health and welfare of children; and 2) a study of the marketing practices of the firearms industry. Several Senate bills address youth violence in a different way. A stand-alone bill focuses on the problem of mental illness that can lead to youth suicide and violence. It proposes additional research to improve knowledge about the causes and appropriate treatment of mental illnesses. No action has been taken on this bill. Another bill would expand the authority of the Substance Abuse and Mental Health Services Administration to increase the emphasis on programs addressing youths and violence. This bill has gained committee approval in the Senate.

#### OTHER HEALTH PROMOTION ISSUES.

Legislators always introduce lots of health promotion bills, but most of them do not precipitate enough interest to be acted on. The following health promotion bills, for example, have been introduced in the last couple of months:

\* A House bill has been introduced to reduce maternal mortality and severe complications of pregnancy through improved surveillance programs and expanded research.

\* Bills introduced in both chambers (and with over 100 cosponsors in the House) would educate the public about the importance of folic acid consumption in preventing birth defects.

\* A Senate bill directed toward dental health would require CDC to collect annual data on the dental health of residents from a number of states and submit a report to Congress on this.

\* A bill has been introduced in the House to establish a center at NIH to support research, training and dissemination of health information regarding minority health.

\* A bill has been introduced in the House to continue the Healthy Start program-administered by HRSA-to reduce the rate of infant mortality. The bill proposes to turn what has been a demonstration project into a permanent grant program, with grants intended for areas with high rates of infant mortality.

\* A Senate bill has been proposed to foster an international strategy to fighting tuberculosis. This bill calls for CDC, NIH, and WHO to work together to develop and implement a comprehensive TB control program.

No action has occurred yet on any of these bills. One bill that is moving is the Poison Control Center Enhancement and Awareness Act which was approved by the Senate Health, Education, Labor, and Pensions Committee. This bill would stabilize funding of poison control centers and increase accessibility to them, including establishment of a nationwide toll-free telephone number for accessing such centers.

Interest in food safety continues. A number of hearings have been held on this topic and more bills have been introduced. Specifically, bills have been proposed in both chambers to create a single independent agency responsible for food safety, labeling and inspection. A hearing was held on this bill but no further action has occurred. Another bill in the Senate bill would permit food stamp to be used to buy nutritional supplements. There has been no action on this bill.

PRIVACY AND CONFIDENTIALITY. The August deadline that Congress imposed on itself for enacting comprehensive medical privacy legislation

## PUBLIC HEALTH GIS NEWS AND INFORMATION

November 1999 (No. 31)

15

has come and gone without any bill having been approved even at the committee level. The Senate had the momentum to move the legislation but whenever it was on the brink of action a new disagreement would crop up and the momentum would be lost. And in the House there was never really much momentum to begin with. Under the terms of the Health Insurance Portability and Accountability Act responsibility now shifts to the Secretary who is required to issue medical privacy regulations within the next six months. The Congress, however, which has invested a great deal of effort in this issue, particularly in the Senate, would still prefer to finish it up in the fall or extend the deadline. There is general agreement, moreover, including within the Department, that congressional action is preferable. The Secretary's authority only extends to electronic information, which would leave much sensitive medical information unprotected.

Three medical privacy bills have been introduced in the last couple months - all in the House, which only recently has begun to show serious interest in this issue. These bills join the five that were already on the table. All of them address both access to and disclosure of individually identifiable health information and propose stringent penalties for violations of the disclosure restrictions. The access provisions, which have not been controversial, generally call for individuals to have access to identifiable information about themselves. Getting consensus on the disclosure provisions has been trickier. All of the bills specify that individuals would have to give approval before their identifiable information was disclosed except under certain circumstances - which vary from bill to bill. For example, the bills differ in how they would deal with disclosures for research. All of the bills would require that research supported by the Federal Government or conducted in conjunction with an application to FDA be subject to Institutional Review Board review; but some of the bills would also require some sort of review for private research.

The bills all address vital statistics, adopting one of two approaches. Bills either authorize disclosure of identifiable health information for use in

legally authorized vital statistics reports or state that laws related to the reporting of vital statistics such as birth or death information would not be superseded by the legislation.

Legislators are still seeking consensus on the preemption issue-whether federal laws should preempt existing state laws that provide confidentiality protection. Most of the bills propose a federal floor whereby states could enact laws that provided for greater protection, but others call for virtually full federal preemption.

Several of the new bills include mandates for the NCVHS. H.R. 2455, the Consumer Health and Research Technology Protection Act, requires the NCVHS to consult with the National Science Foundation to promulgate standards for disclosing, authorizing the use and disclosure of, and authenticating, individually identifiable health information in electronic form. H.R. 2470, the Medical Information Protection and Research Enhancement Act, charges the Secretary with consulting with the NCVHS: in developing model notices for written authorizations for disclosures; in submitting a report on the adequacy of protections for identifiable health information used for research; and in promulgating regulations implementing the Act.

Clashes over privacy extend far beyond the health arena and in the current Congress threaten to derail a major financial services reform bill. The House version of this bill includes privacy provisions while the Senate version does not, posing a major stumbling block for negotiators. The House version of the banking bill also includes a provision which generally prohibits insurers from disclosing identifiable health information without consent except for disclosures of such information to financial institutions. The Department would like to see this provision, which is not included in the Senate version, removed (as would privacy groups.)

Finally, Rep. Hinchey (D-NY) has introduced H.R. 2644 to limit data sharing by government agencies. This bill would prohibit federal, state, and local agencies from providing personal data about an individual to another agency without the consent of the

**PUBLIC HEALTH GIS NEWS AND INFORMATION**

November 1999 (No. 31)

16

individual. The bill would also require agencies to provide individuals with any information that they request about themselves and to provide a report each year to individuals about whom the agency collected or maintained personal information in that year, containing the information collected. No action has been taken on this bill.

CENSUS 2000. Bills to fund the 2000 census are moving through the Congress without the usual dispute over statistical sampling. The Congress has put this debate aside-at least temporarily -to concentrate on funding issues. The President's FY 2000 budget had assumed that the census would rely on statistical sampling. When the Supreme Court ruled that sampling could not be used to apportion seats among the states but could be used for other purposes, however, the Administration decided to produce two sets of numbers- a traditional headcount and a count supplemented by sampling- and put in a request for additional FY 2000 funds to do that. This request has further complicated an already difficult budget picture. Appropriators in the Senate refused to provide the additional census funding; and while the House provided all the funding, it did so only after designating it as "emergency" funding, sidestepping the overall spending caps. Conferees will have to work out these differences. The Director of the Census Bureau, meanwhile, has put the Congress on notice that to begin the census count as scheduled, his agency needs all the funds requested and needs them on time. [Editor's Note: The full report addresses additional topics which may be of interest, including the following: Budget and Appropriations, Health Insurance, Managed Care Reform, Health Care Quality, Youth Violence, Other Health Promotion Issues, Privacy and Confidentiality, Census 2000, and Other Data Issues. [If you would like additional information on any of these issues, please contact Kathy Moss, NCHS, who is the author, at voice (436) 7142, ext. 130 or email [kgm0@cdc.gov](mailto:kgm0@cdc.gov)]

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**Federal Geographic Data Committee**  
**(FGDC) News**

From **Kathy Covert**, USGS: GeoData Organizational

Initiative Moves Forward: Fifty geographic information professionals met October 13-15, 1999 in Denver, Colorado to advance an innovative public-private organizational initiative to improve geographic information coordination in the United States. Local, tribal, state, federal, academic, and private sectors were represented. The geodata organizational initiative was one of the recommended actions from the 1999 National GeoData Forum: Making Livable Communities a Reality.

This new organizational initiative addresses the issue of governance of the National Spatial Data Infrastructure. The geospatial community has been trying for several years to conceive of a way to coordinate the activities of the various organizations with a stake in the production, description, delivery, and use of geospatial data. Industry experts estimate that hundreds of millions of dollars are wasted each year due to incompatible naming conventions for geographic features and incompatible schemas for "metadata" that describes data collections; and lack of incentives and procedural models for organizations to share data that they have collected. Solving these and other problems will yield significant savings, expanded capabilities, and much new economic activity. There appears to be general agreement in the community that what is needed is a governance structure of distributed decision-making and shared leadership.

The October meeting focused on discussions with The Chaordic Alliance. The Chaordic Alliance is a not-for-profit formed by Dee Hock to assist in the creation of a new type of organization that balances chaos and order, cooperation and competition through principle-based, non-hierarchical governance structures that make them flexible, open, effective, and durable. Dee Hock is the founder of VISA International, a for-profit, non-stock membership corporation that processed transactions worth approximately \$1.3 trillion in 1998. VISA International is an example of this new type of "chaordic" organizational structure, though Mr. Hock emphasized that it is not a perfect model for the creation of a new national geodata governance structure.

The geodata community representatives at the



**PUBLIC HEALTH GIS NEWS AND INFORMATION**

November 1999 (No. 31)

17

meeting agreed to work together in ad hoc teams to conduct preliminary planning for the financing, organization, staffing, and promotional activities for a public-private project to create a chaordic organizational governance structure. The two-year project-to-be, initiated in late 1999, will work to design the governance structure, with guidance from The Chaordic Alliance. Key objectives include making the governance structure inclusive, democratic, and harmonious with existing efforts and organizations in this arena. Funding will come from both public and private sources. [ Author and contact: Kathy at email [klcovert@usgs.gov](mailto:klcovert@usgs.gov)]

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From **Richard Pearsall**, FGDC Metadata Coordinator, USGS (NEW! FGDC WebEvent Metadata Training Calendar): As a member of the FGDC Coordination Group, does your organization provide metadata training? Does your organization need metadata training? If you answered yes to either of these questions, you will be interested in the new FGDC WebEvent Metadata Training Calendar, found at <http://www.fgdc.gov/cgi-in/people/META/WebEvent/WebEvent>.

This webevent calendar enables organizations to post their scheduled metadata training classes as well as enables organizations to find out about metadata training opportunities. The hope is that this calendar will become a "self-service store" of metadata training calendar information. Organizations offering metadata training are requested to provide the training information in the event description box of the form as identified in the "Instructions" hotlink. [Contact: Rick at e-mail [rpearsall@usgs.gov](mailto:rpearsall@usgs.gov)]

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From **Greg Johnson**, USDA-NRCS, National Water and Climate Center, Portland Oregon: Announcing the formation of a Working Group on Spatial Climate, as part of the Federal Geographic Data Committee: There is a significant need for Federal coordination in the development, production and distribution of spatial climate data. There are numerous needs for spatial climate information within many Federal agencies, as well as outside the Federal government. During the

past two years there has been an increase in the number of spatial climate datasets available via the Internet, and elsewhere. However, many of these datasets have not been coordinated for content for metadata standards using established FGDC protocols. In order to provide clear and certified spatial climate information to a wide variety of Federal, state, local and private sector users, establishment of an FGDC Subcommittee on Spatial Climate Data is submitted for your review, sponsored by the FGDC. The purpose of this subcommittee would be to coordinate spatial climate data and information activities among all levels of government, as well as in the private sector.

Spatial climate data under the purview of this subcommittee are envisioned to include information about atmospheric elements, surface temperature, dewpoint/humidity, precipitation, snow, wind, radiation, and a host of derived variables; and soil temperature and moisture, and others specified. The subcommittee would function much like other FGDC subcommittees. Specific purposes could include these three identified by the Spatial Water Data Subcommittee, as well as others: 1) facilitating the exchange of information and the transfer of data; 2) the establishment and implementation of standards for quality, content and transferability; and 3) the coordination of the identification of requirements and the collection of spatial data to minimize duplication of effort where practicable and economical.

You, or a representative(s) from your agency, are invited to participate in a new FGDC Spatial Climate Working Group. While the scope of this working group may not be relevant for some groups or agencies, it is envisioned that there will be some significant interest in this topic area from a number of federal agencies, and other interested individuals and groups. [Contact: Greg at email [gjohnson@wcc.nrcs.usda.gov](mailto:gjohnson@wcc.nrcs.usda.gov) or visit <http://www.fgdc.gov/fgdc/coorwg/1999/fgdc1.html>]

**Web Site(s) of Interest for this Edition**

Several persons have contributed a variety of GIS websites for this edition. John Mann, ATSDR, reports

## PUBLIC HEALTH GIS NEWS AND INFORMATION

November 1999 (No. 31)

18

on sites that may be useful as an introduction to GIS users (see Section II.E this edition). Lee De Cola, USGS, suggests a visit to the New York State Cancer Registry, at <http://www.health.state.ny.us/nysdoh/cancer/cancer.htm>, for local data and a variety of epidemiologic information that can be used by researchers. For example, one instructional theme includes "Age-Adjusted Rates and 95 Percent Confidence Intervals" with subthemes What is age-adjustment?; Why do we do age-adjustment?; How is age-adjustment done?; Example of age-adjustment; What is a confidence interval? What are confidence intervals used for?; How are confidence intervals calculated?; Why are rates based on fewer than 20 cases marked as being unstable? A variety of datasets can be downloaded for analysis from this site. Lee also notes <http://www.dccps.ims.nci.nih.gov/LIBCSP/LearningCenter.html> for the recent study of GIS public health issues including cancer. Tom Richards, CDC NCCDPHP, points us to the PRIZM lifestyle segmentation system that defines every neighborhood in the U.S. in terms of demographically and behaviorally distinct types (62) or "clusters." Readers can enter any 5-digit ZIP Code to find a neighborhood's top five PRIZM lifestyle

clusters. The PRIZM ZIP Code Lookup Program is at <http://yawyl.claritas.com>.

Finally, Bill Wilen, Fish and Wildlife Service, notifies us about the recently developed Wetlands Interactive Mapper. During the first month of operation, the Wetlands Interactive Mapper allowed users to produce 17,793 wetland maps using their desktop computers without any special software. Nongovernment users produced more than 76 percent of these maps. The goal of the mapper is to provide information to meet the public's needs concerning their local wetlands and deepwater habitats. It will help people identify potential opportunities and potential problems, set goals, and determine the actions necessary to maintain or improve the "livability" of their communities. The information the mapper can provide will help give the people in a given community a common geographic view of their wetland systems. The mapper can be found on the National Wetlands Inventory web site at <http://www.nwi.fws.gov>. [Contact: Bill Wilen at email [Bill\\_Wilen@fws.gov](mailto:Bill_Wilen@fws.gov)]

### **Final Thought(s): Washington Geographic Information System Consortium**

As we near the beginning of the next GIS Millennium, nothing could be more exciting than to observe the many developments and accomplishments that the National Spatial Data Infrastructure (NSDI) is spawning. In the next edition I will elaborate on the key role and efforts of the Office of Management and Budget's (OMB) Federal Geographic Data Committee (FGDC) to guide the NSDI. In this issue, I want to recognize one development close to home, namely, the Washington Geographic Information System (WGIS) Consortium of the National Capital Planning Commission (NCPC), Washington, D.C. It embraces, and perhaps exemplifies, the spirit and potential of the NSDI.

The Consortium initiative was begun in 1993 based on partnerships between NCPC and local D.C. government. In 1998, the WGIS Consortium (referred from here on as the Consortium) formally organized as a result of a mandate by OMB to develop its mission. The Consortium now is viewed as a cost-saving mechanism for the National Capital Region through elimination of data duplication, coordination of accurate and timely data, and employment of cost-sharing among its public and private constituents. GIS data are routinely required for local and regional uses by NCPC, U.S. Secret Service, National Park Service, Department of Justice, General Services Administration, U.S. Geological Survey, a variety of District of Columbia agencies, the private sector, and others.

The Consortium is attracting many in the region with needs for high-quality spatial data and leading edge technologies. Consortium stakeholders represent organizations in law enforcement, health and environment,

## PUBLIC HEALTH GIS NEWS AND INFORMATION

November 1999 (No. 31)

19

transportation, land use, public works and facilities management, and the Congress, to name a few. The Consortium and its plans will answer to the Congress for the coordination of geographic initiatives in the National Capital Region. The Draft Strategic Plan of the Consortium identifies the following proposed (with the exception of 1995) project activities for the next 4-5 years:

1995 Orthophotography: first shared georeferenced aerial photography for D.C. and parts of Arlington, VA;  
1999 DC "Cadastral" Property Map/ Database: shared property map for all partners, multiple layers;  
1999 DC "Atlas" DC Wide Area Network and Internet Applications: shared orthophotography, land use, etc.;  
1999 Aerial Photography: shared updated high resolution color aerial photography from 1995;  
1999 Web-based Mapping: shared Consortium maps with government and public users;  
2000 Orthophotography: shared updated high resolution color aerial "straight down" orthophotography;  
2000 Web-based "Event Planner": collaborative D.C. special events and projects planning;  
2000 3D Visualization: shared 3D view of D.C., enabling collaborative design of built environment;  
2000 Customized Training Module: Consortium training for partners on all products and applications;  
2001 Planimetric Data: shared digital map of all D.C. physical features drawn from aerial photography;  
2001 Urban Simulation: models combined GIS and 3D data on traffic, school construction, public safety, etc.;  
2001 DC Public Utility Mapping/Permitting: mapping for coordinated utility installation with other services;  
2001 Web-based Mapping: mapping and analysis of Consortium data on the Web;  
2001 Digital Sanborn Maps: shared digital rendering of D.C. raster planimetric map;  
2002 E-Commerce: subscription data and services, and one mechanism for Consortium financial support;  
2002 Aerial Re-flight of Extended Area Only: shared non-D.C. regional aerial photography for seamless coverage;  
2002 Planimetric Update of Extended Area Only: planimetric data for areas outside D.C.;  
2002 Orthophotography Update Using Radar: shared and improved, terrain and landscape information;  
2002 Promotional Application with Data: CD/Video of Consortium products and services;  
2002 Creation of Seamless Product with Surrounding Counties: totally integrated application of all regional data;  
2002 Develop Security Related We-based coordination center: coordination of all security services on the Web;  
2002 Expand and Reengineer Training Modules: expand training capacity and technology advances;  
2002/03 DPW Street Sampling: with D.C. Department of Public Works, assures street maintenance and security;  
2003 Update Planimetrics with all Utilities: comprehensive data base to coordinate all infrastructure management;  
2003 3D Visualization: update existing applications to current technology;  
2003 Urban Simulation: enhance capacity to join 3D data in real time.

The Consortium offers cost-effective benefits through data resource collection, management, sharing and utilization efficiencies. For example, the D.C. Cadastral Property Map and Database is estimated at a total cost of \$185,000 when shared among numerous federal, regional and local data users. Conversely, the costs associated without sharing are estimated to exceed more than \$1.8 million dollars. Similar benefits are estimated in the sharing of costs for the orthophotography of Washington, D.C., the vector property maps of the Downtown and Golden Triangle Business Improvement Districts, and the D.C. Atlas. And similar GIS efficiencies have been experienced in Minneapolis-St. Paul, Nassau county and Indianapolis.

As with many NSDI startup activities, the Consortium has restructured itself to accommodate change, address new staffing needs, and seek funding for its budget (including the Congress, a key user of spatial data). It welcomes new federal, regional, local and private partners in this endeavor. The goal to establish a National Capital Spatial Data Consortium to manage the WGIS Consortium is an achievable, and very exciting, part of our NSDI.

[**Editor:** For a full report of the Consortium Strategic Plan, and its many activities, see <http://www.ncpc.gov>; I also would recommend the article prepared by Maybeth Murphy and Michael Sherman,

**PUBLIC HEALTH GIS NEWS AND INFORMATION**

November 1999 (No. 31)

20

“Preparing America’s Capital for the New Millennium,” *Geo Info Systems*, September, 1999:34-38, for its coverage of this topic; Finally, I had the distinct pleasure to attend the September 23, 1999 meeting of the WGIS Consortium and found the software demonstrations by both the Environmental Simulation Center and the Lidar Corporation to be fascinating. The former integrates 2D GIS technology with 3D CAD visualization technology and modeling principles to create real-time fly-by urban simulations. The latter has developed a new aerial photography process that uses radar technology to simultaneously collect detailed terrain information. If you are ever in the area at the time of NCPC monthly meetings you may wish to contact Deserene Worsley for arrangements at voice (202) 482-7235 or email [des@ncpc.gov](mailto:des@ncpc.gov)]

Charles M. Croner, Ph.D., Editor, ***PUBLIC HEALTH GIS NEWS AND INFORMATION***, Office of Research and Methodology, National Center for Health Statistics <[cmc2@cdc.gov](mailto:cmc2@cdc.gov)>. Copyright Notice: This report is in the public domain but its contents are not to be altered or changed without prior written approval of the editor.

**Please join us at NCHS for our 12<sup>th</sup> Annual Geography Awareness Week Programs  
Wishing Everyone a Happy New GIS and Public Health Millennium!**