

Appendix H: CSISS Workshop on Population Science and GIS held at Penn State (May 2003)

CSISS Workshop

Population Science and GIS

May 19-23, 2003

at The Pennsylvania State University

State College, PA

Population Science and GIS CSISS Workshop

- Sponsors:** Center for Spatially Integrated Social Science (CSISS)
Population Research Institute, Penn State
Social Science Research Institute, Penn State
Department of Geography, Penn State
GIS Council, Penn State
- Location:** The Penn Sylvania State University
University Park, State College, PA
- Dates:** May 19-23, 2003
- Organizer:** Stephen A. Matthews, Senior Research Associate and Director, GIA Core,
Population Research Institute & Social Science Research Institute.

Workshop Description

The main goals of this five-day workshop are to expose population scientists to the vast array of geospatial data that are available, encourage them to think critically and creatively about how different forms of geospatial data can be integrated in their research, and introduce them to spatial analytical methods increasingly encountered in demographic inquiry. Hands-on exercises and demonstrations will cover issues associated with geospatial data handling (e.g., address-matching, deriving new variables, integrating different types of contextual data as well as using spatial analysis tools within a GIS for data visualization and modeling).

Many questions of concern to both domestic and international population scientists can be informed through a spatial or GIS perspective. The workshop will focus on applications and demonstrations drawn from studies of urban poverty, neighborhood research, racial/ethnic diversity, maternal and child health and wellbeing, epidemiology, and population-environment. Similarly, all workshop lab exercises will be based on demographic and other socio-economic and health-related data commonly used by population scientists.

Throughout the workshop attendees will be introduced to the basic functionality of ArcGIS 8.2 (ArcMap, ArcCatalog, ArcTools) with exposure to extensions such as Spatial Analyst and GeoStatistical Analyst as well as to Arcview 3.3 and spatial analysis packages that can be coupled with Arcview 3.3 (including for example, SpaceStat, Geographically Weighted Regression, CrimeStat, David Wong's program Seg, etc.).

The workshop will be mixed format, including short presentations, demonstrations, hands-on lab sessions and ample time for both formal and informal discussion.

In summary, this workshop will provide an overview of conceptual, methodological and analytical issues associated with the use of geospatial information science (GIS) technologies within the population sciences.

Monday May 19, 2003

Emphasis: Geovisualization

	Event: Morning session will be held in Walker 112 Afternoon session will be held in Walker 208 (unless noted)
8.30am	Collect from Residence Inn
9.00am	Formal Welcome Stephen Matthews, Roger Downs (Geography), Mark Hayward (Director, SSRI), and Leif Jensen (Director, PRI)
9.15am	Stuart Sweeney (CSISS - Geography, UC Santa Barbara) <i>Enabling spatial demography</i>
10.00am	Break
10.15am	Mark Gahegan (Geography) <i>Discovery, Visualization, and GeoVISTA Studio</i>
11.45am	Discussion
12.00pm	Lunch
1.30pm	Bob Hibbert (Computer Systems Administrator, Geography) and Stephen Graham (PRI) Lab Overview & Logistics
1.45pm	Mark Gahegan (Geography) & Frank Hardisty (Geography) GeoVISTA studio Lab
3.15pm	Break
3.30pm	David O'Sullivan (Geography) <i>Pitfalls and potentials of spatial data (Walker 319)</i>
4.45pm	Discussion

All presenters are at The Pennsylvania State University unless otherwise noted.

Tuesday May 20, 2003

Emphasis: Population Science, Geospatial Data Resources and GIS

	Event: Morning session will be held in Hosler 26 Afternoon session will be held in Walker 208
9.00am	Stephen Matthews <i>Population Science and GIS at PRI/SSRI</i>
10.15am	Break
10.30am	Stephen Graham (PRI) & Stephen Matthews <i>Introduction to geospatial databases commonly used in demographic research</i>
11.30am	Discussion
12.00pm	Lunch
1.30pm	Michelle Zeiders (SSRI) & Jim Detwiler (World Campus & PRI) Introduction to ArcGIS 8.x
3.00pm	Break
3.15pm	Michelle Zeiders (SSRI) & Jim Detwiler (World Campus & PRI) Building geodatabases with ArcGIS 8.x
4.45pm	Discussion

Wednesday May 21, 2003

Emphasis: International Population Science

	Event: Morning session will be held in Walker 112 Afternoon session will be held in Walker 208
9.00am	Stephen Matthews International Population Science
9.15am	Livia Montana (Macro International) Presentation discussing the opportunities for exploring spatial issues through the availability of geocodes to Demographic Health Surveys (DHS).
10.15am	Break
10.30am	Frank Tanser (Africa Centre) Discussing (a) large and (b) small scale health GIS applications in Africa
11.45am	Discussion
12.00pm	Lunch
1.30pm	Stephen Matthews Introduction to Afternoon Labs
1.45pm	Michelle Zeiders (SSRI), Stephen Graham (SSRI) & Livia Montana (Macro International) Lab on local and Nepal DHS data
3.15pm	Break
3.30pm	Frank Tanser (Africa Centre), Jim Detwiler (World Campus & PRI) & Stephen Matthews Lab focusing on health data in local studies in South Africa
4.45pm	Discussion

Thursday May 22, 2003

Emphasis: Mapping U.S. Census data focusing on race/ethnic spatial segregation

	Event: Morning session will be held in Walker 112 Afternoon session will be held in Walker 208 (unless noted)
9.00am	Stephen Matthews Overview
9.05am	Trudy Suchan (US Census Bureau) <i>Mapping census 2000 and using census data products in demographic research</i>
10.15am	Break
10.30am	David Wong (Geography, George Mason University) <i>Implementing and evaluating spatial segregation measures using GIS technology</i>
11.40am	Discussion
12.00pm	Lunch
1.30pm	Stephen Graham Introduction to ArcView 3.3
2.15pm	David Wong (Geography, George Mason University) Measuring spatial segregation with GIS: the SEG program in Arcview
3.15pm	Break
3.30pm	James Macgill (Geography) <i>Spatial analysis using data for zones (Walker 319)</i>
4.15pm	Discussion

Friday May 23, 2003

Emphasis: Spatial Analysis and GIS

	Event: Morning session will be held in Walker 112 Afternoon session will be held in Walker 208
9.00am	Stephen Matthews Overview
9.15am	Stuart Sweeney (CSISS-Geography, UC Santa Barbara) <i>ESDA applications in population science focusing on small area population projections using stochastic simulation.</i>
10.30am	Break
10.45am	Paul Voss (Rural Sociology, Center for Demography and Ecology, University of Wisconsin) <i>Spatial regression modeling in Population Science focusing on a reanalysis of data on spatial inequality and poverty among American children.</i>
11.45am	Discussion
12.00pm	Lunch
1.30pm	Stephen Matthews Lab exercise based on the use of GeoDA
2.45pm	Break
3.00pm	Paul Voss (Rural Sociology, Center for Demography and Ecology, University of Wisconsin) Demonstration and discussion of some fundamental issues regarding the use of SpaceStat
4.00pm	Discussion
4.30pm	Stephen Matthews Wrap-up

Social Events

Sunday May 18, 2003

	Event
6.00pm-8.00pm	Informal Welcome Mixer at the Marriott Residence Inn (University Drive and Atherton) Stephen Matthews (Workshop Coordinator) Mark Hayward (Director of SSRI)

Wednesday May 21, 2003

	Event
6.00pm - 9.00pm	Tudek Memorial Park, State College Catered BBQ

Saturday May 24, 2003

	Event
9.00am - 5.00pm	Sam Dennis (Landscape Architecture) All day fieldtrip around State College and surrounding area (including: State Forests, Amish and Mennonite communities, Historic Bellefonte and Boalsburg. There will be stops for lunch and snacks.

Presenters - In order of appearance:

Stephen A. Matthews is an Associate Professor of Demography and Sociology (adjunct in Geography) and Director of the Geographic Information Analysis Core within the Population Research Institute and Social Science Research Institute at Penn State. Stephen earned his degrees in geography from the University of Bristol (UK) and planning from the University of Wales – Cardiff (UK). He was a faculty member in geography at UCLA for five years before moving to PRI in 1994. His interests focus on studies of health inequality and wellbeing among low-income families, medical geography, and population and environment interactions. He has published in journals such as Area, Family Planning Perspectives, Computers, Environment and Urban Systems, Geoforum, Society and Natural Resources.

Stuart Sweeney is an executive committee member of the Center for Spatially Integrated Social Science and a faculty affiliate/advisor for the Quantitative Methods for Social Sciences graduate emphasis at UC Santa Barbara. His research is broadly focused on modeling local labor market dynamics in an interregional setting. Specific research themes related to local labor markets include modeling occupational migration and mobility processes, studying the economic effects of depopulation, and modeling agglomeration as spatial point process. He is currently engaged in research projects funded by the U.S. Department of Labor and the National Science Foundation.

Mark Gahegan is Professor of Geography and Associate Director of the GeoVista Center at Penn State. Mark received his degrees from the University of Leeds (UK) and Curtin University (Australia) and arrived at Penn State in 1998. His primary interests focus on computational and Artificial Intelligence, GIS, and data visualization. Mark has published in journals such as Journal of Geographic Information Science, Transactions in GIS, Geographical Systems, Computers and Geosciences, Photogrammetric Engineering and Remote Sensing, and Computers, Environment and Urban Systems.

Frank Hardisty is a graduate student in Geography at Penn State and he will shortly take up an appointment at the University of South Carolina. Frank has a MA degree in Geography from Ohio State. His doctoral thesis is on "Visualizing Spatio-Temporal Demographic Phenomena."

David O'Sullivan is an assistant professor of Geography at Penn State. David received his BA in Engineering from Cambridge (UK), and M.Sc. in Cartography and Geoinformation Technology from Glasgow (UK) and Ph.D. from University College London. At UCL David was based in the Centre for Advanced Spatial Analysis. David's interests are in Spatial Modelling, Complexity Theory and Geocomputation. He has published in Journal of Geographical Systems, Environment and Planning B: Planning & Design, International Journal of Geographical Information Science, and Geographical Analysis. Last year David joined forces with David Unwin and published *Geographic Information Analysis* (Wiley).

Steve Graham is a GIS Analyst at PRI/SSRI. He received his doctorate in Geological Sciences in 2000 from the University of Texas at Austin. Steve has research interests in GIS & hydrologic modeling, global hydrology & climate modeling.

Michelle Zeiders is a GIS Analyst at PRI/SSRI. Michelle received a Masters in Geoenvironmental Studies from Shippensburg University, Pennsylvania in 1995 and has worked for MapQuest and Institute for Transportation Research and Education at NC State. Michelle has research interests in GIS service applications for state and local governments and GIS applications in environmental management.

Jim Detwiler is a lecturer/instructor for Penn State's World Campus Certificate Program in GIS and GIS Analyst at PRI/SSRI. Jim has a BA in geography from Penn State and a M.Sc. in Climatology from the University of Delaware. Jim returned to Penn State in 1999. Jim has research interest in GIS & cartographic visualization, climate & health, and synoptic climatology

Livia Montana is a GIS specialist at Macro International. Livia is a graduate of the department of geography at UNC-Chapel Hill. While at Macro Livia has helped coordinate GIS operations for Demographic and Health Surveys and coordinates Macro's GIS Working Group. Livia has been involved in DHS survey planning and implementation in numerous countries. Indeed, Livia will arrive at the CSISS workshop directly from Nepal (on Northwest via Bangkok, Tokyo, Detroit and Youngstown, Ohio).

Frank Tanser is a GIS expert based at the Africa Centre for Population Studies and Reproductive Health and the Malaria Programme, South Africa. He has published GIS and health-related papers in the Journal of Tropical Medicine and International Health, Transaction of the Royal Society of Tropical Medicine and Hygiene, the International Journal of Health Geographics and on remote sensing in the Journal of Vegetation Science and Journal of Arid Environments. Frank recently received a fellowship from the Wellcome Trust to study epidemiology at Imperial College, London, UK.

Trudy Suchan works in the Population Division of the U.S. Census Bureau. She received her doctorate in Geography from Penn State in ... before moving to the Census Bureau. Trudy has published in Professional Geographer and completed with Cynthia Brewer the *Mapping Census 2000: The Geography of Diversity* in 2001.

David W. S. Wong is an associate professor of Earth Sciences and Geography at George Mason University in Fairfax, Virginia. David is a well known expert in race/ethnic segregation, in particular in the development and application of spatial segregation measures, and has published in journals such as Environment and Planning A, Urban Geography, Urban Studies, International Journal of Population Geography, Computers, Environment and Urban Systems, Geographical Analysis and Professional Geographer. In 2001 David teamed with Jay Lee and published *Statistical Analysis with ArcView GIS* (Wiley).

James Macgill is a research associate of the GeoVista Center at Penn State. He arrived at Penn State earlier this year after completing his doctorate at the University of Leeds (UK). James is the lead developer of *GeoTools* software (Open source mapping toolkit).

Paul Voss is a professor of Rural Sociology, Director of the Applied Population Laboratory and faculty affiliate of the Center for Demography and Ecology at the University of Wisconsin, Madison. Paul received his Masters and Ph.D. from Michigan. Paul serves on the advisory board to CSISS. Paul has published numerous articles in rural sociology, demography and natural resources as well as been engaged in professional service with the U.S. Department of Commerce, U.S. Census Bureau, National Academy of Sciences National Research Council among others. Paul is a "graduate" of Luc Anselin's CSISS/ICPSR training course on Spatial Regression.

PRI GIA Core Staff will be providing support services during the workshop. These include:

Prem Bhandari a graduate student in Rural Sociology
Frances Burden a graduate student in Crime, Law and Justice
Brian McManus a GIS analyst
Sundar Shrestha a graduate student in Agricultural Economics
Jason Smith a graduate student in Sociology and Demography

SSRI staff providing support services include

Bonnie Madden Administrative Core staff assistant