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Grant Preparation Guide to GIS Core Services

Dear SSRI colleagues,

This document is intended as basic guide to GIS Core Services, specifically designed to assist faculty submitting a grant or purchasing GIS services. The URL for the GIS Core is http://www.ssri.psu.edu/services/gis.htm.

Stephen Matthews is director of the GIS Core Services and is the first point of contact regarding all GIS-related requests and activities. Dr. Matthews can be reached via e-mail at matthews@ssri.psu.edu or at ext. 3-9721. His office is 803 Oswald.

How can the GIS Services Core contribute to my grant application?

GIS Services Core staff members are available for consultation regarding pre-proposal issues associated with: (a) geospatial data collection, compilation, management, and use; (b) spatial analysis issues; (c) software and hardware requirements; (d) GIS programmer support; (e) timeline estimates.

Dr. Matthews and his staff have contributed text and an array of graphics (e.g., tables, charts and maps) or materials to numerous grant proposals. Recent examples include faculty applications to agencies such as **NICHD** (Crouter-HDFS; Cole/Blair), **Fogarty** (King), **NIA** (Whitfield/Burton), **NIDA** (LeTendre), **NSF** (McCarthy), **NIJ** (Ruback), **EPA** (Fisher), **NEH** (Zelinsky), **Hewlett Foundation** (Cornwell/DeJong), and the **PA Police** (Engel), etc.

What are some of the recent contributions of the GIS Service Core to SRRI Faculty research?

A common view of GIS is that it can only play a limited role in a research project (e.g., mapping and perhaps data integration). However, there are numerous opportunities for integrating GIS technologies and substantive social science research. GIS can be used in different, sometimes multiple stages of a research project (e.g., sample design, data collection, data manipulation, data validation, data exploration and visualization, data analysis, data output). Traditional GIS (data capture/entry, manipulation, storage and production tasks) as well as the application of spatial analytical techniques to social science research are all supported at SSRI.

Rarely is the map the end product of much of the work that takes place in the Core. Rather the end product is more typically likely to be the creation of:

a new derived variable (calculations based on distance, adjacency, proximity and connectivity measures or by generating density measures or generated from information collated from the integration of two or more geospatial data sets). Recent examples include work with (i) Dr. Ruback (Crime, Law and Justice) in a study retrofitting contextual data sets in a study of crime and victimization in Seattle.

a contextual data base: (individual level data linked with higher geographic or spatial levels/contexts). Recent examples include exploratory work with (i) Dr. Booth (Sociology) for his study on Marital Instability in the US where we might link county level data (e.g., unemployment rate) to individuals, and (ii) Dr. Burton (HDFS) and colleagues associated with the Three City Welfare, Children and Families Project linking census demographics to various definitions of neighborhood. The latter project also involves the integration of GIS and ethnographic research.

an integrated database: (using geography as a management or organizing framework for an array of geospatial data sets). At the most basic level this requires integrating data sets for known geographical boundaries from multiple sources. A recent example includes work with Dr. Ruback (Crime, Law and Justice) in a study retrofitting contextual data sets in a study of crime and victimization in Seattle based at the census tract level of analysis. In other projects we have integrated datasets based on geospatial units of analysis that do not always share geographic boundaries. A recent example of this type of GIS application includes work for Drs. Plutzer and Berkman (Political Science) on the integration of data from school districts and counties for the entire US. Finally, we have address-matched data for a variety of faculty including Drs. Burton (HDFS), Hammer (Communication Disorders), Zelinsky (Geography), and Whitfield (Biobehavioral Health).

the creation of measures that lead to model refinement or re-specification of a model to accommodate spatial data structure in analysis: The GIA Core is developing capacity in the application of spatial statistics to social science research applications. We have used spatial regression model formulations in work with Dr. Ruback's study of crime and victimization in Seattle. Similarly, we are currently working with Dr. Jim Wood analyzing the point pattern of Black Death events reported in England and Continental Europe in the period 1348-1349.

How much notice should I give the GIS Service Core, if I need maps, data integration, etc?

Ideally, the GIS Services Core appreciates as much notice as it is possible to provide. Designing maps for grants or presentations is usually a straightforward task but even here the time needed to produce the end product depends on a number of basic issues regarding geospatial data. Namely, whether the necessary data are digital or analog, projected or not, domestic or international, and so on.

Other maps and/or tasks that require address matching and data integration usually take more time. While address-matching is conceptually easy we invariably encounter problems when the data provided to us are missing geocodes, have inadequate geocodes, or where geocodes have errors (e.g., spelling, transposed numbers/letters, etc.). The time taken to complete a data integration task depends on the complexity of the integration – that is, the number of data sets, the spatial resolution of each data set, the accuracy and completeness of each data set, etc. Typically, building contextual data sets that link individual level data to neighborhood or higher levels of geography are the most complex.

Contact Information

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The URL for the GIS Services Core is http://www.ssri.psu.edu/services/gis.htm.

Reminders

Please contact other Core Directors for grant assistance:
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