SW 799 Section 006: (Mapping Data and Mapping Practice: An Introduction to) Geographic Information Systems (GIS) for Social Workers

Wednesday/Thursday 6/26 & 6/27/2013
8:30am-4:30pm

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NOTE: ***PLEASE*** DO THE PRE-WORKSHOP LEARNING ON P. 4 OF THE SYLLABUS. THERE ARE THREE VIDEO MODULES THAT WILL HELP YOU QUITE A BIT IN INTRODUCING YOU TO THE CONCEPT AND APPLICATIONS OF GIS. ALSO, GO THROUGH THE WORKSHEETS AND TRY AS MANY AS POSSIBLE ON YOUR OWN (OR IN SMALL GROUPS) BEFORE THE JUNE WORKSHOPS. BELIEVE ME, YOU WILL BENEFIT ****MUCH**** MORE FROM THE WORKSHOPS IF YOU DO SO.

IF YOU WOULD LIKE TO USE SIMPLYMAP, PLEASE DO SO – CLICK OR PASTE THE FOLLOWING LINK:
http://guides.lib.umich.edu/content.php?pid=42358

IF YOU WOULD LIKE TO USE EPI-MAP/EPI-INFO AT HOME, PLEASE DO SO – IT’S A FREE DOWNLOAD (WINDOWS VERSION ONLY).

IF YOU’D LIKE TO USE ARCGIS AT HOME INSTEAD OF COMING TO CAMPUS, SEE TWO WAYS TO DO THIS ON PP. 5-6 OF THIS SYLLABUS - LMG

1. Course Description:

The goal of the GIS minicourse is to provide a general introduction to the use of GIS software for social work practice. Students will learn the basics of practical mapping of data and information using a range of GIS software. Student will
learn the basic strategies of securing data, securing map images, and integration of maps and data to create single and multi-layered data maps. Students will be presented with real time applications of this mapped information in clinical and community practice. We will learn to use mapping functions of three GIS applications: SimplyMap™, (an online subscription application), Epi-Info [Epi-Map and Analysis subprograms] - a free download of mapping software - from CDC, and ArcGIS. For the SS 2013 2 - day minicourse we will focus a lot on ArcGIS. Epi-Info (Map and Analysis) will be presented as an alternative GIS strategy, and SimplyMap will be very briefly presented with emphasis on use of SimplyMap primarily as datasource.

[SimplyMap Note – June 4, 2013: UM is limited to 6 users of SimplyMap at any one time. There may be a workaround in the computer classroom. We’ll spend 10 minutes trying it out. If it doesn’t work, I will ask you to try the SimplyMap activities outside of classtime and/or on your home computer launched from the UM SimplyMap website]

Hands on GIS courses are (in my experience) best learned with patience, practice, small group problem solving, willingness to engage in trial and error, a bit of neatness in file management, and a sense of humor. Although SimplyMap, EpiMap and ArcGIS are nice software applications, it’s possible that systems crash, software hangs, and maps can literally “just disappear”. In almost all cases, patiently starting over – especially during the learning process – is a wonderful remedy!

Generally, I’ll begin each hour with a very brief lecturette (10 minutes or so) followed by my demonstration of a technique/application, followed (with handouts) with all participants trying out the technique (trial and error happily encouraged!) until most participants are able to complete and move on! We’ll end up with some closure consisting of review, troubleshooting, and Q/A.

The handouts- if followed properly – will enable you to complete a majority of basic GIS tasks commonly requested in social work and public health.

2. Course Content:

This course is intended to give students the ability to plan, design and execute a GIS project for human service areas. Students should learn the potentials and limitations of geographic analyses. They will learn how to build geographic databases, analyze data spatially and produce output that succinctly summarizes their results. Students will learn the differences, advantages and disadvantages of raster and vector systems for addressing different resources management projects. They will also learn where to acquire geographic data and the errors associated with using it. The teaching will revolve around four case studies that will allow the student to see what is entailed in developing a GIS project, and introduce the student to the resource management question.
Examples of epidemiological applications will give students the opportunity to see and use this powerful tool. Some of the topics to be covered are data import/export, layering, table management, classification, labeling, spatial and attribute queries, buffering, and address geocoding.

3. **Course Objectives:**

Upon completion of the course, students will be able to:

1. Describe the theory and practice behind the use of GIS.
2. Identify, create and import databases and information spreadsheets into a GIS (EPI-INFO, ArcGIS)
3. Identify, create and import maps, pictures and images into a GIS (EPI-Info, ArcGIS)
4. Produce a variety of simple digital data maps using several basic GIS packages
5. Define key concepts related to GIS and geographic data
6. Describe the strengths and limitations of GIS mapping applications.

4. **Course Design:**

The course will include minimal lecture (about 10 minutes/hour) and lots of hands-on worksheets and case studies supported by maps, images, and other multimedia (e.g., animations and simulations, web 2.0 resources). We’ll engage in group discussions, hands-on experience with mapping and a number of geographic software packages, collaborative problem solving in small groups and experiential exercises related to course materials.

5. **Grading and Assignments**

The course is graded as satisfactory/unsatisfactory. **Students will complete and submit a very simple GIS mapping project of their own interest.** The project should consist of a one page map (or 1-2 maps on a single page) plus no more than one paragraph description. Think of one powerpoint slide and 3-4 sentences in the “notes” section of the slide. Projects are due by the end of the final class session (June 27, 2013). Students will have some time to complete projects during the minicourse sessions.

6. **Relationship of the Course to Four Curricular Themes:**

- **Multiculturalism and Diversity:** Students will develop the capacity to identify ways in which diverse identities {ability, age, class, color, culture, ethnicity, family structure, gender (including gender identity and gender expression) marital status, national origin, race, religion or spirituality, sex, and sexual orientation} and other forms of social stratification and disenfranchisement influence can be represented and described using mapping and GIS approaches.
• **Social Justice and Social Change**: Achieving equity in distribution of resources including community information is critically important for social workers. This course will provide students with the means to understand the importance, strengths and opportunity costs of the use of public participation GIS applications in promoting social justice, promoting social change, and challenging programs, policies and services that support structural inequities, social injustice and thwart progressive social change.

• **Promotion, Prevention, Treatment, and Rehabilitation**: Space, place and time dependent data and information have been used in other disciplines to monitor, assess and evaluate health and human service related programs, policies and services that lead to promotion, prevention, treatment and rehabilitation. Students will be exposed to research and case studies that have been and can be used to visualize, analyze and evaluate a variety of human service related promotion, prevention, treatment, and rehabilitation activities.

• **Behavioral and Social Science Research**: GIS applications have demonstrated utility in the conduct of basic and applied behavioral and social science research. GIS can be used in developing research designs that assessing human service related practice, policy, and programs. This course will provide students with the capacity to understand and influence the role that GIS applications play in the creation, observation and evaluation of evidence based research in the human services.

6. **Relationship of the Course to Social Work Ethics and Values**: Ethical standards of social work practice (NASW Code of Ethics) will be used to review issues commonly confronted in the development and provision of policy, programs, and services addressing the provision of spatial education, equity mapping, spatial information, maps, and GIS software applications and technology. The ethical themes of autonomy, beneficence, fidelity and justice will be particularly emphasized and discussed.

**Course materials**: All handout materials are online. I will also kill a few trees and bring handouts to class

**Readings (all on Ctools Site)**: Read any and all as you like. If you want examples of GIS applications in human services, urban planning, and public health, these are good starts.


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Pre-Workshop Learning: View the Harvard University Overview: “What is GIS?”

**Before you come to class on June 26, 2013 please access and view this superb and strongly recommended overview of GIS** – a 3 part interactive online presentation from Harvard University. Each module is about 10 minutes in length. It can (and should) be viewed several times throughout the minicourse. Here’s the link; the tutorial can also be accessed (as well as data download) on the CTools site.

[http://hcl.harvard.edu/libraries/maps/gis/tutorials.html](http://hcl.harvard.edu/libraries/maps/gis/tutorials.html)

This overview comes with GIS exercises for use with ArcGIS (or with any GIS if you have some knowledge). You can view these exercises at home, or view them on campus. Please try the exercises yourself – if need be, we’ll briefly review the exercises in class. In particular, the buffering and clipping exercises in tutorial #3 are very useful for our work later in the minicourse.

The overview is very helpful without going through the exercises. If you have access to ArcGIS, all the better.

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**Don’t Have GIS at Home? Use SimplyMap (launch from UM website) Download EPI Info**
(which has EPI Map), Use UM Virtual Sites, or download an open source GIS

Don't have a GIS at home? Four options:

**Option One:** Use SimplyMap for a fast online solution – access by clicking (or pasting):
http://guides.lib.umich.edu/content.php?pid=42358

SimplyMap is AWESOME. If accessing Simply Map from off-campus, make sure to navigate there via the link above or UM Search Tools, because it is a paid database you can only access for free as a UM student. (This is a practical limitation of SimplyMap!) [Note: SimplyMap does not work well at all with Safari Browser; others appear okay.]

**Option Two (Easiest for Windows PC)** Download Epi-Map on your home machine. It’s free and installs quickly. Requires Windows – Will not work on native Mac OS. (If you have PC emulator, e.g bootcamp, parallels, VM Fusion + at least Windows XP installed on the Mac, that's okay- it'll work fine.)

**Option Three (Easier for both PC/Mac)** Use the UM Virtual Sites application!
Go to Virtual Sites (at UM):
http://virtualsites.umich.edu/
Click ‘Connect Now’, enter your uniquename, then click “Standard Sites Vista”. Once you do this, you will be able to access all the resources on any on-campus computer workstation in a computer lab – including ArcCatalog, ArcMap and Google Earth.

**Option Four (Challenging for PC/Mac)** Download a public domain GIS application like DIVA or Christine’s GIS (Windows Versions only, so Mac users with Intel based system can use either bootcamp, Parallels, or VM Fusion and the run the applications). DIVA does x-y geocoding (using batchgeocode creates x-y coordinates for your addresses). Christine’s GIS handles many geoprocessing tasks faster and more efficiently than ArcGIS, but the interfaces are old school - extremely close to ArcView interfaces, not ArcGIS. Probably a better strategy once users are familiar with GIS applications!

**Brief Workshop Overview (Next page...)**
Great Data Resource for SW 799 GIS Projects at University of Michigan: SAND (Spatial and Numeric Data Services)

While the 2-day session precludes your use of SAND, in the future, when you are considering making data maps, please do contact SAND!!

The University Library’s Spatial and Numeric Data Services (SAND) provides assistance with spatial data, numeric data, and statistics for the University of Michigan community. SAND offers two labs, Central - located in 203 Hatcher Graduate Library, and North - located in the Spatial Analysis Lab (room 2207) of the Art and Architecture Building.

Specifically, SAND:
- Assists in locating and acquiring digital numeric and spatial data sets, especially social science data sets
- Collaborates with the Documents Center to provide a complete resource for locating Census data
• Provides access to a variety of spatial and statistical software, and assistance in data management and translation
• Assists in using geographic information systems (GIS) software and locating campus resources for more advanced assistance
• Provides course-related and library instruction on data related topics
• Acquires, stores, and provides access to digital spatial data sets on a secure server

SAND provides lab spaces with advanced computers and software to help students and researchers work with spatial and numeric data and access to data only available from within our labs. We are equipped with ArcGIS, ArcView, ERDAS, SAS, SPSS, StatTransfer, Stata, Adobe Creative Suite (Photoshop, Illustrator, InDesign, Dreamweaver), and more.

**Miscellaneous Map Links and Resources**

**Sources for GIS Data: US (domestic) and Global (Links checked as of June 4, 2013)**

Other wonderful links for public health and public health social work GIS “one stop shopping” (for shapefiles, datasets, georeferenced and nongeoreferenced map layers and pictures) include


There are many resources for global and country specific data. Here’s a good beginning resource set:

http://library.stanford.edu/depts/gis/web.html#Foreign

for the European Union, try http://www.inspire-geoportal.eu/

Asian and Pacific Rim (but mainly China):
http://www.chinadatacenter.org/Data/FreeDataDownload.aspx

Africa Data Portal:

US Census International DataBase:
http://www.census.gov/ipc/www/idb/

http://www-sul.stanford.edu/depts/gis/FindData.html