Geographic Information Systems, Global Positioning Systems, and Spatial Analysis Tools in Support of Service Learning Content

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Tennessee State University
Fall 1999

- Historically Black College – 8,000 students
- Offers only Geography minor –
  No students minor in Geography
- Geography courses primarily taught to fulfill pre-service teacher requirements
- No visible use of Geographic Information Systems in teaching or research

GIS Capacity Development at TSU Fall 1999-Summer 2000

- **USDA 1890 HBCU Capacity Building Grant** funds used to launch Geographic Information Sciences (GISc) Laboratory
- **NASA Center for Automated Space Sciences (CASS)** program funds become available to support several undergraduate student researchers and expand the GISc Lab.
- **GISc Lab** formally established during summer 2000 with seven undergraduate student researchers on staff.

GISc Lab Urban/Environmental Studies Service Learning Development Fall 2001 - Present

- **Massie Chair of Excellence in Environmental Science and NASA Center for Automated Space Sciences (CASS)** programs provide funding for GIS hardware and software and support for several undergraduate research assistants.
- **GLOBE program:** TSU becomes a partner institution with the support of the Center of Excellence in Information Systems. Several local k-12 teachers are certified in GLOBE environmental sampling protocols.
- **The GISc Lab** establishes informal working partnerships with Fisk University, Vanderbilt University, Meharry Medical College, the Mayor's Office of Neighborhoods, the Neighborhoods Resource Center, EarthMatters Tennessee, and the Community at Bordeaux.
- **GISc Lab** research assistants and students enrolled in Cartography (GEOG 310) and Urban Geography (GEOG 485) engage in GIS-based environmental/urban studies-based service learning projects…

TSU Upper Division Geography Courses with GIS, Spatial Analysis and Service Learning Content

- **Urban Geography (GEOG 4850) – Course content includes urban GIS applications. An "Urban GIS Term Paper" is required.**
- Cartography (GEOG 3100) – Course content updated with GIS-based material. Students are required to complete a "hands-on" GIS project.
- Physical Geography (GEOG 3010) – Course content includes GIS, GPS, and remote sensing applications.

Challenge: Many social sciences majors have no background in Geography or GIS.

Classifications and Majors of Students Currently Enrolled in Urban Geography (GEOG 4850) for Spring 2005

Senior	Arts and Sciences
Senior	History
Sophomore	Business Administration
Senior	Arts and Sciences
Senior	Political Science
Senior	History
Senior	English
Senior	Undecided Undergrad
Junior	Business Administration
Sophomore	Biology

Challenge: Incorporating Service Learning Content into an Existing Course

- **Time Constraints**
- **Student Attitudes Towards "Extra Work"**
- **Liability and Safety Issues**
- **"Community Time" vs "Academic Time"**
- **Service Learning vs Community Service**

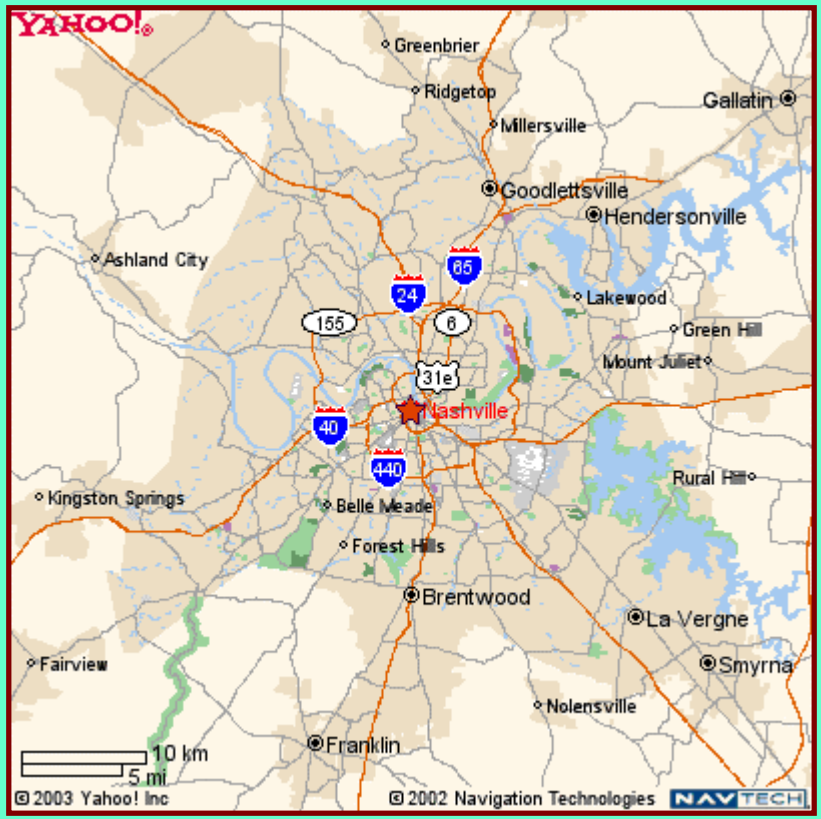
Examples of GIS and Spatial Analysis-Supported Service Learning Projects at Tennessee State University

A GPS DATA DICTIONARY TO SUPPORT NEIGHBORHOOD LIVABILITY AUDITS AND URBAN CODE ENFORCEMENT

David A. Padgett, Director and
Bryan Collins, Environmental Team Trainee
Geographic Information Sciences Lab
Tennessee State University
Nashville, Tennessee
2002

Nashville, Tennessee

- The fastest growing city in the U.S. according to a USA Today study (2001)
- The 11th fastest growing city in the U.S. according to a Brookings Institute study (2001)



Population Change in the Nashville, Tennessee MSA 1980-2000

County	1980 Total	1990 Total	2000 Total	Growth 1980-2000 (%)
Cheatham	21616	27140	35912	66.1
Davidson	477811	510784	569891	19.3
Dickson	30037	35061	43156	43.7
Robertson	37021	41494	54433	47.0
Rutherford	84058	118570	182023	116.5
Sumner	85790	103281	130449	52.1
Williamson	58108	81021	126638	117.9
Wilson	56064	67675	88809	58.4
MSA	850505	985026	1231311	44.8

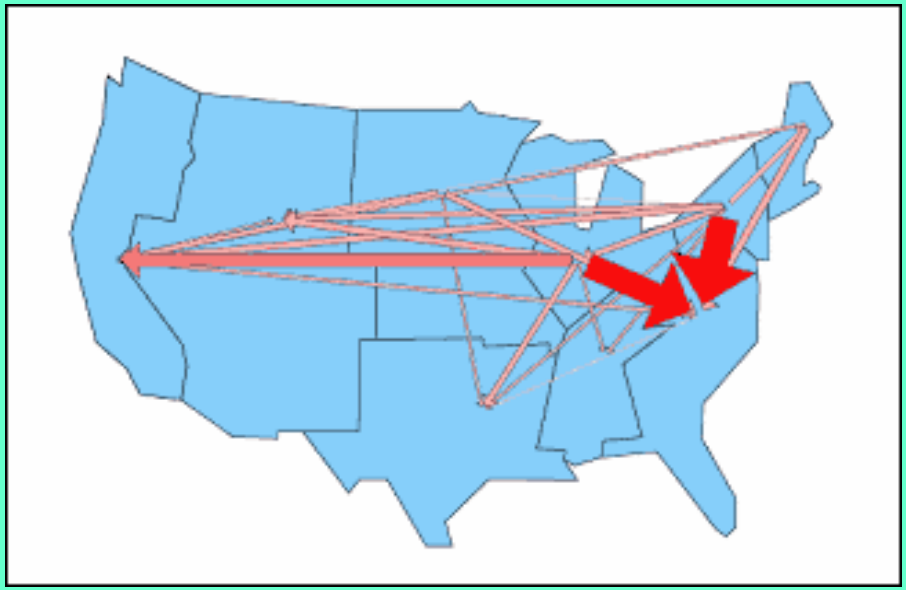
Black Population Change Nashville MSA Counties 1980-2000

County	1980	1990	2000	Growth 1980-2000 (%)
Cheatham	595	570	532	-10.6
Davidson	106,369	119,412	147,696	38.9
Dickson	1,672	1,704	1,978	18.3
Robertson	4,960	4,526	4,691	-5.4
Rutherford	8,593	10,579	17,312	101.5
Sumner	5,084	5,381	7,540	48.3
Williamson	5,202	5,445	6,564	26.2
Wilson	4,873	4,685	5,563	14.2
MSA	137348	152302	191876	39.7

Percent Black Population in Nashville MSA Counties 1980-2000

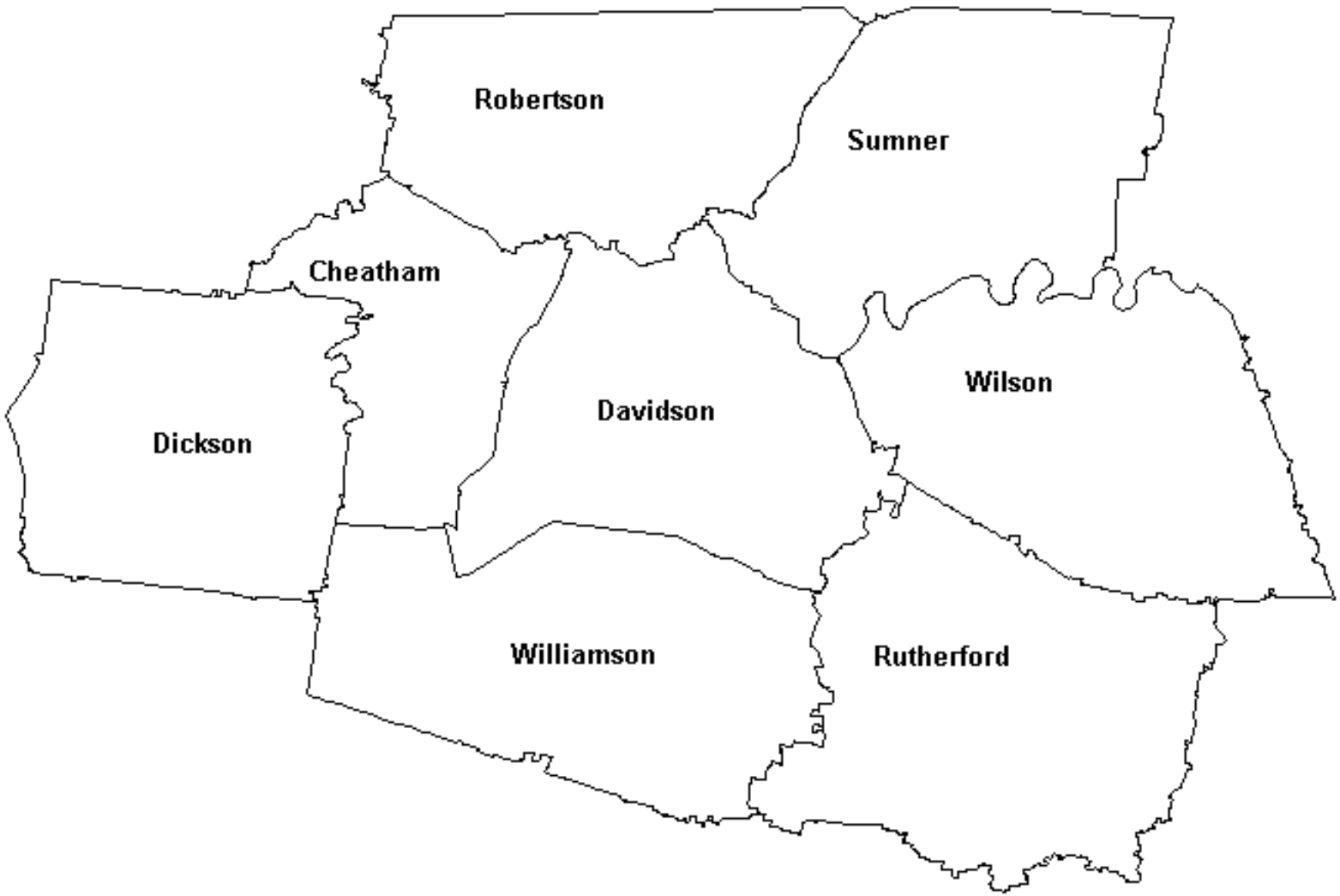
County	1980	1990	2000
Cheatham	2.8	2.1	1.5
Davidson	22.3	23.4	25.9
Dickson	5.6	4.9	4.6
Robertson	13.4	10.9	8.6
Rutherford	10.2	8.9	9.5
Sumner	5.9	5.2	5.8
Williamson	9.0	6.7	5.2
Wilson	8.7	6.9	6.3
MSA	16.1	15.5	15.6

Application of Flow Mapper in the Assessment of Internal Migration within the Nashville MSA 1995-2000



Flow Mapper, conceived by Dr. Waldo Tobler, may be downloaded at: http://www.csiss.org/clearinghouse/FlowMapper

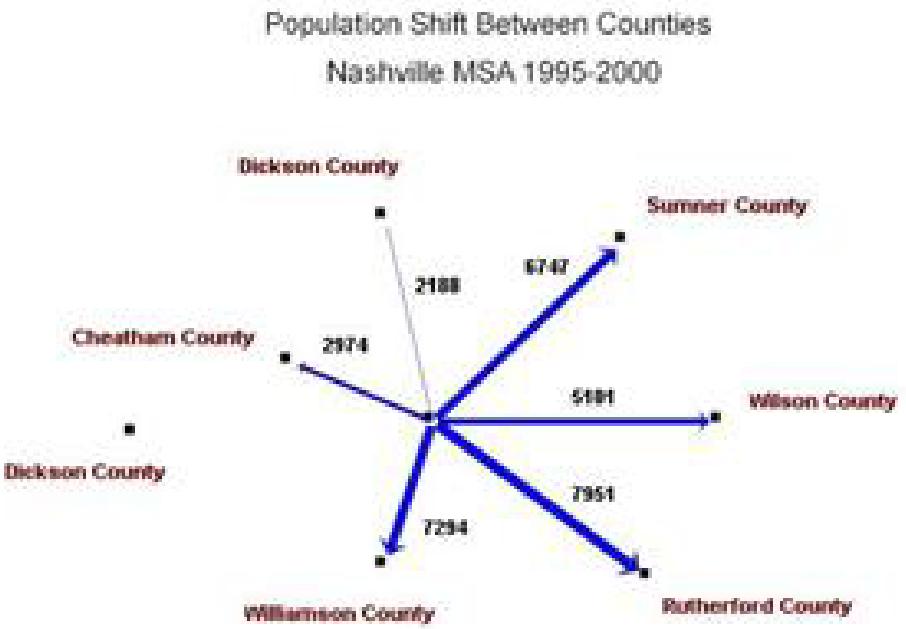
Nashville Metropolitan Statistical Area Counties - 2000



FlowMapper Input

From/To	Cheatham	Davidson	Dickson	Robertson	Rutherford	Sumner
Cheatham		1623	658	727	219	254
Davidson	4597		1387	3942	13163	10168
Dickson	214	824		43	202	116
Robertson	184	1754	20		375	1727
Rutherford	259	5212	172	160		362
Sumner	188	3694	81	1680	1327	
Williamson	333	5038	250	91	1496	212
Wilson	146	3748	31	143	1373	810

Modified Output From FlowMapper



Out-Migration from Nashville/Davidson County, Tennessee to Other MSA Counties 1995-2000

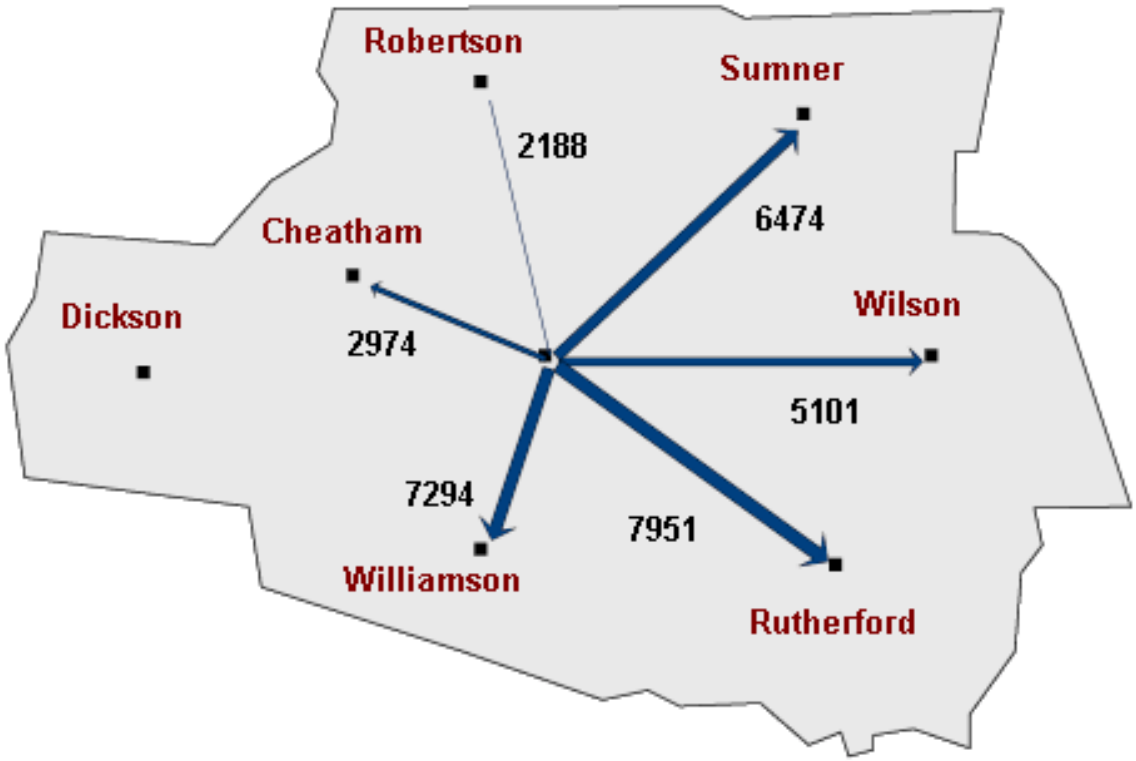


Image created using FlowMapper. Data were obtained from the U.S. Census at http://www.census.gov/population/www/cen2000/ctytoctyflow.html

North Nashville

Neighborhood History

- One of Nashville's oldest African American communities.
- Home of Fisk University, Tennessee State University, and Meharry Medical College
- Population peaked at 43,705 in 1960, but decreased to 23,765 by 2000.
- Racial composition – 77 percent non-white in 1960 to 95 percent non-white in 2000.
- Steady loss of housing units and increase in vacancy rates since the construction of Interstate 40 during the 1960s.

North Nashville Community

Neighborhood Livability Audits

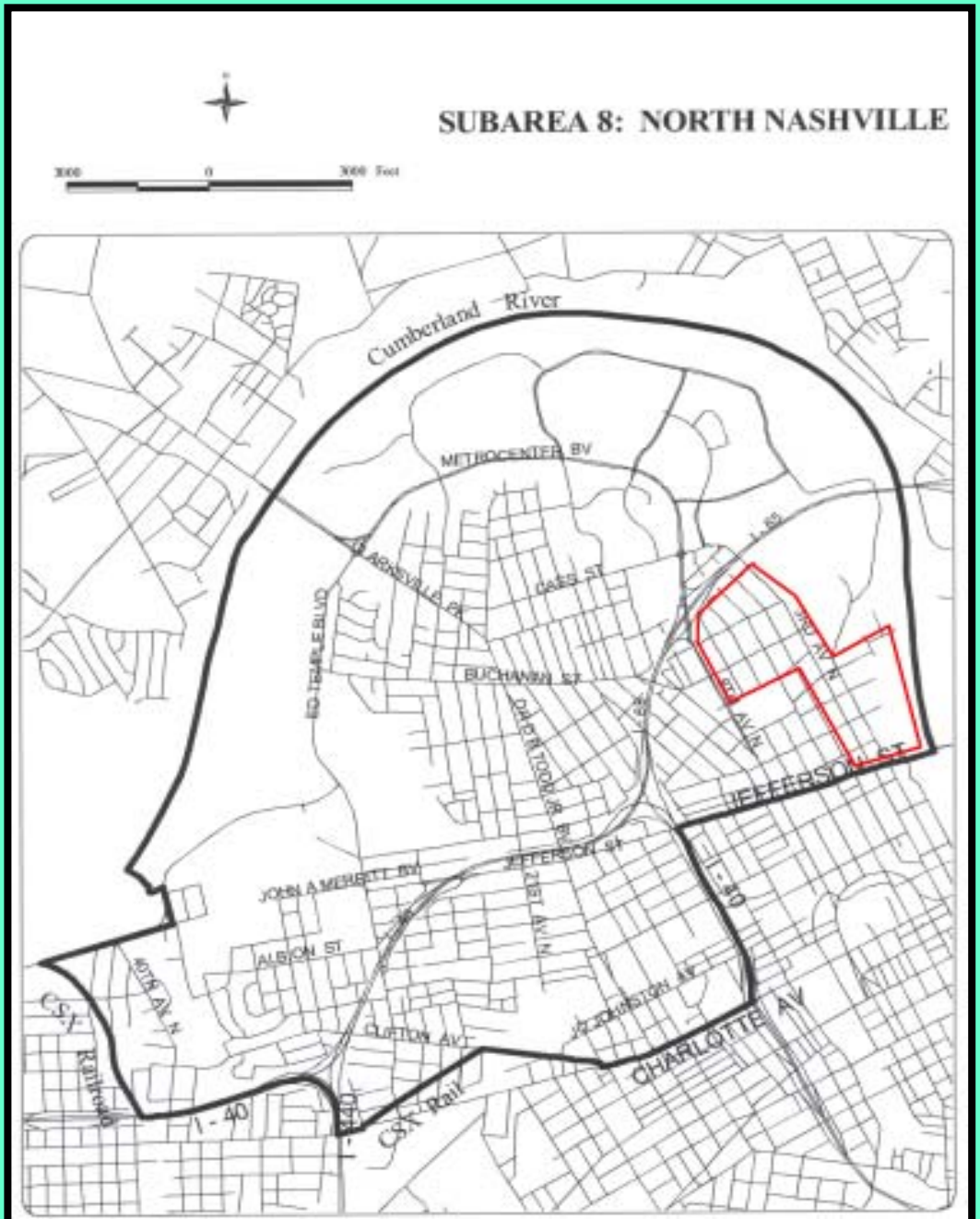
North Nashville Community

- Numbers of abandoned buildings, overgrown vacant lots and other codes violations have become increasingly more frequent.
- Residents of Nashville's North Nashville community organize to work pro-actively to stem the tide of urban decay.
- The Mayor's Office of Neighborhoods (MOON), Neighborhoods Resource Center (NRC), and Metro Health Department organize "neighborhood livability audits" with North Nashville neighborhood organizations.

Pilot Study:
GPS and GIS Applications in the Salemtown Neighborhood Audit

- Tennessee State University Geographic Information Sciences (GISc) Lab staff join Salemtown neighborhood organizations, Metro Codes Officers, MOON, and NRC to field test the utility of GPS applications in neighborhood audits and codes enforcement.
- The North Nashville Audit Form created by the NRC is converted into a digital data dictionary.
- Potential codes violations are input as features entitled “Problem” with specific violations (dumping, dilapidated buildings, overgrown vacant lots, etc) input as attributes.

Approximate Salemtown Neighborhood Boundaries



NORTH NASHVILLE NEIGHBORHOOD AUDIT FORM

August 18, 2001

DATE _____ WHAT NEIGHBORHOOD COVERED? _____

PERSON FILLING OUT FORM _____ PHONE _____ YOUR NEIGHBORHOOD GROUP _____

ADDRESS	PROBLEM (Can circle more than one problem at same address)				Check if elderly owner, etc. (explain)	DESCRIPTION / LOCATION
	Ovrgrn Vacant Lot	Old/Unlicensed Car in Yard	Broken Streets / Potholes	Streetlight out / needed		
	Hsng- Unfit / Dilap	Abandoned Car on Street	Sidewalk broken / needed	Traffic Problems		
	Trash / Dumping	Animal Cruelty / Dog Pen Odor	Crosswalks / Street Markings	Illegal Signs / Business		
	Bus Stops / Shelters	Rats / Unsanitary Conditions	Street Signs (missing, etc)	Alleys / Right-of-Way		
	Ovrgrn Vacant Lot	Old/Unlicensed Car in Yard	Broken Streets / Potholes	Streetlight out / needed		
	Hsng- Unfit / Dilap	Abandoned Car on Street	Sidewalk broken / needed	Traffic Problems		
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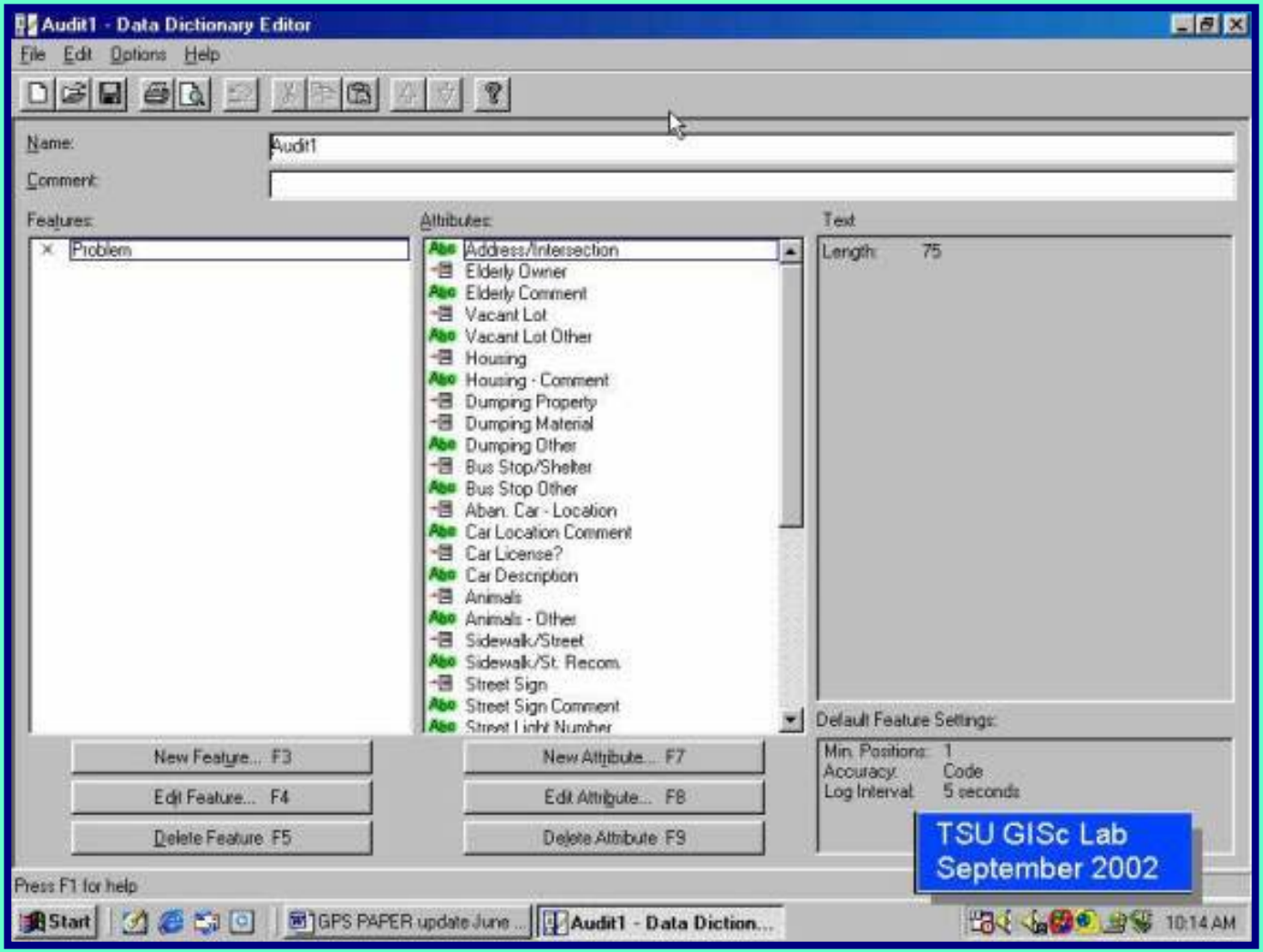
	Bus Stops / Shelters	Rats / Unsanitary Conditions	Street Signs (missing, etc)	Alleys / Right-of-Way		
	Ovrgrn Vacant Lot	Old/Unlicensed Car in Yard	Broken Streets / Potholes	Streetlight out / needed		
	Hsng- Unfit / Dilap	Abandoned Car on Street	Sidewalk broken / needed	Traffic Problems		
	Trash / Dumping	Animal Cruelty / Dog Pen Odor	Crosswalks / Street Markings	Illegal Signs / Business		
	Bus Stops / Shelters	Rats / Unsanitary Conditions	Street Signs (missing, etc)	Alleys / Right-of-Way		
	Ovrgrn Vacant Lot	Old/Unlicensed Car in Yard	Broken Streets / Potholes	Streetlight out / needed		
	Hsng- Unfit / Dilap	Abandoned Car on Street	Sidewalk broken / needed	Traffic Problems		
	Trash / Dumping	Animal Cruelty / Dog Pen Odor	Crosswalks / Street Markings	Illegal Signs / Business		
	Bus Stops / Shelters	Rats / Unsanitary Conditions	Street Signs (missing, etc)	Alleys / Right-of-Way		

NRC North Nashville Audit Form

GPS Data Dictionary



Salemtown Neighborhood

Potential Codes Violations

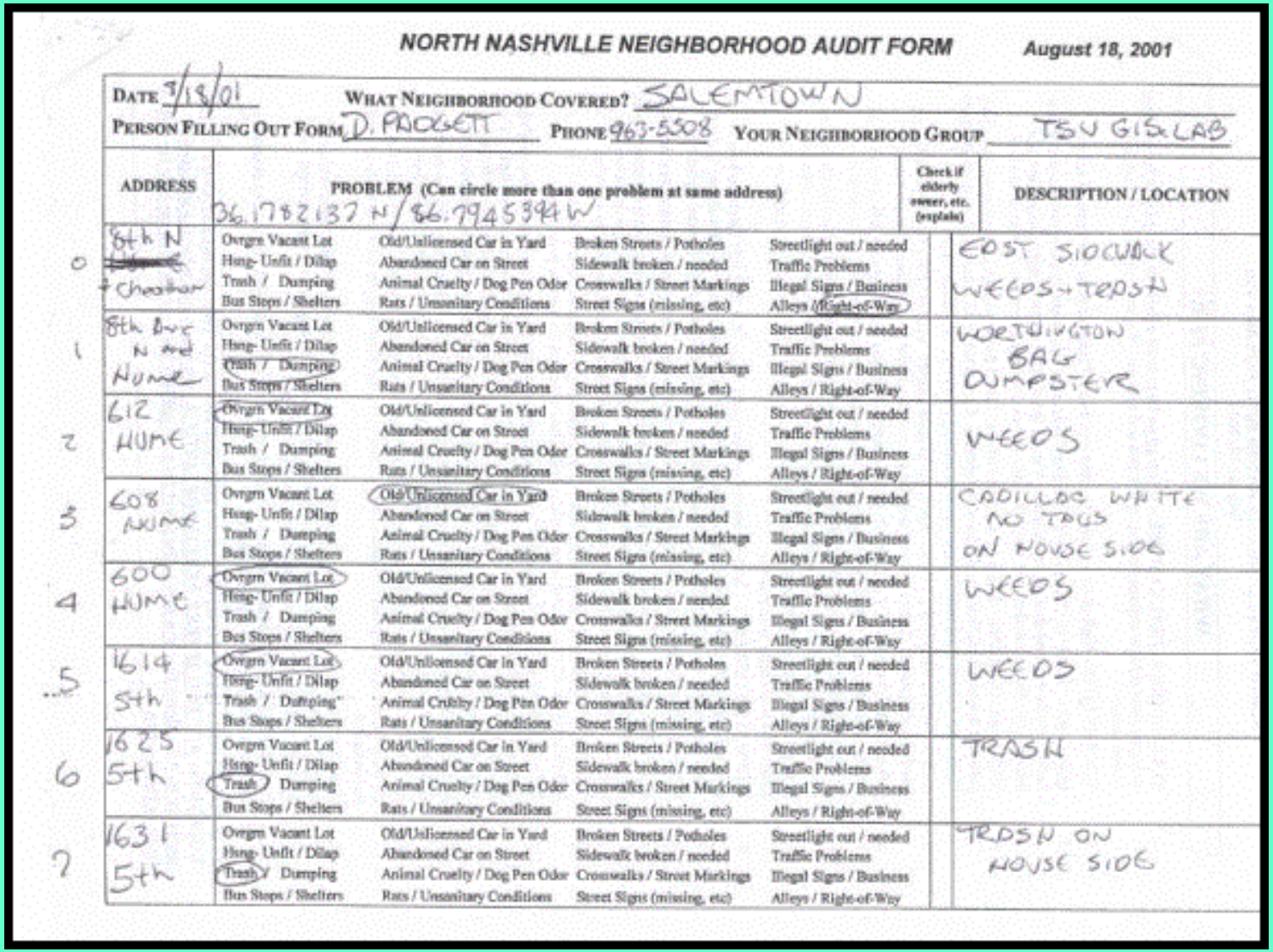
Salemtown Neighborhood Audit

GIS Map Development Process

- Latitude/Longitude coordinates of problem sites were collected using the GPS unit.
- Attribute data for problem sites were recorded on neighborhood audit forms and then keyed into the digital data dictionary.
- Neighborhood audit field data were uploaded from the GPS unit to a PC housing GPS data management software .
- Digital data were converted to text (*.txt) file format using GPS management software.
- The text file holding the site coordinates and attribute data was converted into GIS shapefile (*.shp) format.
- GIS maps were created with “pop-up” attribute data for each potential codes violation.

Salemtown Neighborhood Audit

Completed Neighborhood Audit Form



NORTH NASHVILLE NEIGHBORHOOD AUDIT FORM — August 18, 2001

DATE 3/18/01 — WHAT NEIGHBORHOOD COVERED? SALEMTOWN

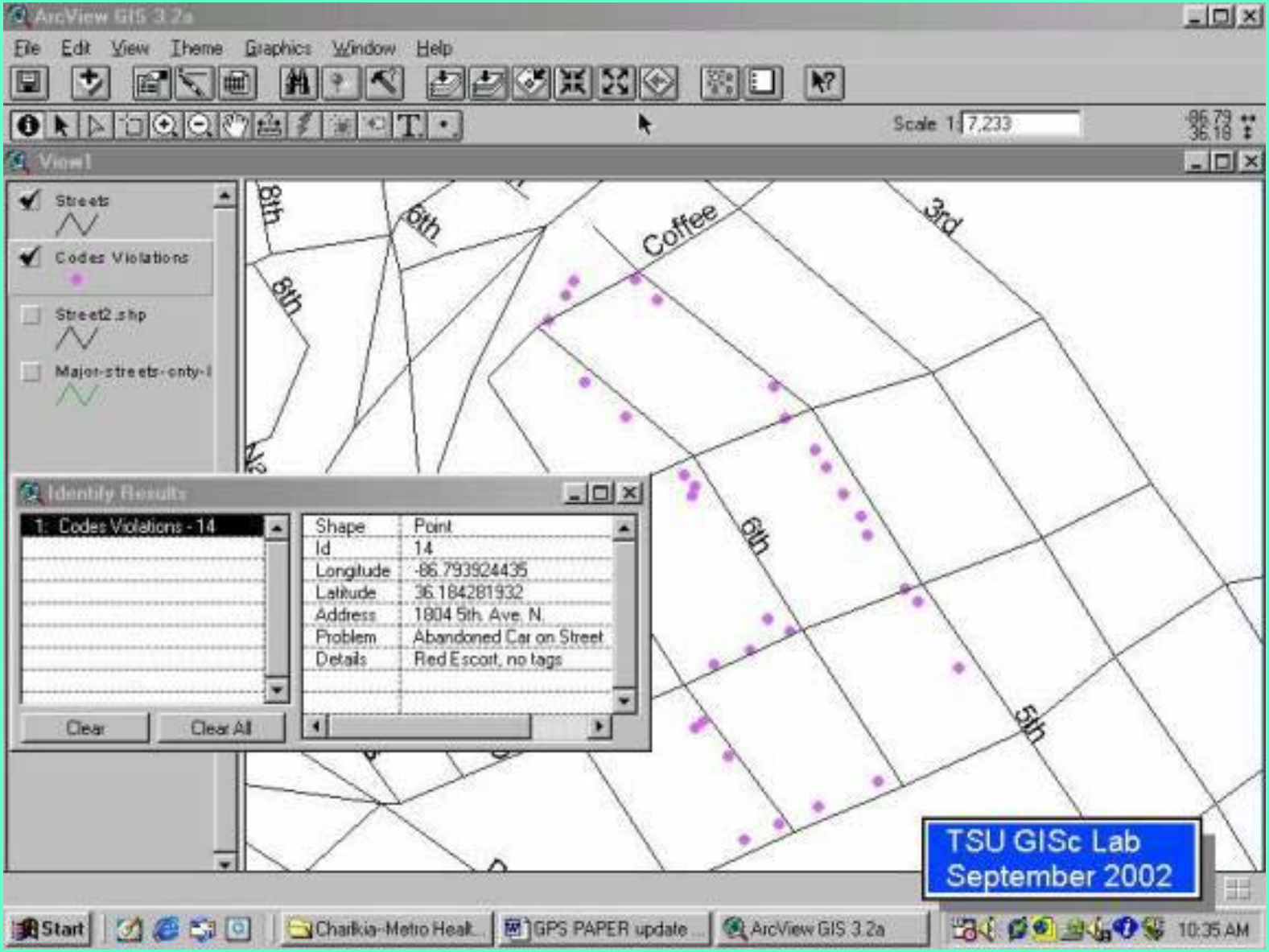
PERSON FILLING OUT FORM D. PACKETT — PHONE 963-5508 — YOUR NEIGHBORHOOD GROUP TSU GIS LAB

PROBLEM (Can circle more than one problem at same address) — 36.178213 N / 86.794539 W

	ADDRESS	PROBLEM				Check if elderly owner, etc. (explain)	DESCRIPTION / LOCATION
0	8th N + Chestnut	Overgrn Vacant Lot / Hsng- Unfit / Dilap / Trash / Dumping / Bus Stops / Shelters	Old/Unlicensed Car in Yard / Abandoned Car on Street / Animal Cruelty / Dog Pen Odor / Rats / Unsanitary Conditions	Broken Streets / Potholes / Sidewalk broken / needed / Crosswalks / Street Markings / Street Signs (missing, etc)	Streetlight out / needed / Traffic Problems / Illegal Signs / Business / Alleys / Right-of-Way		EAST SIDEWALK WEEDS + TRASH
1	8th Ave N and Hume	Overgrn Vacant Lot / Hsng- Unfit / Dilap / Trash / Dumping / Bus Stops / Shelters	Old/Unlicensed Car in Yard / Abandoned Car on Street / Animal Cruelty / Dog Pen Odor / Rats / Unsanitary Conditions	Broken Streets / Potholes / Sidewalk broken / needed / Crosswalks / Street Markings / Street Signs (missing, etc)	Streetlight out / needed / Traffic Problems / Illegal Signs / Business / Alleys / Right-of-Way		WORTHINGTON BAG DUMPSTER
2	612 HUME	Overgrn Vacant Lot / Hsng- Unfit / Dilap / Trash / Dumping / Bus Stops / Shelters	Old/Unlicensed Car in Yard / Abandoned Car on Street / Animal Cruelty / Dog Pen Odor / Rats / Unsanitary Conditions	Broken Streets / Potholes / Sidewalk broken / needed / Crosswalks / Street Markings / Street Signs (missing, etc)	Streetlight out / needed / Traffic Problems / Illegal Signs / Business / Alleys / Right-of-Way		WEEDS
3	608 HUME	Overgrn Vacant Lot / Hsng- Unfit / Dilap / Trash / Dumping / Bus Stops / Shelters	Old/Unlicensed Car in Yard / Abandoned Car on Street / Animal Cruelty / Dog Pen Odor / Rats / Unsanitary Conditions	Broken Streets / Potholes / Sidewalk broken / needed / Crosswalks / Street Markings / Street Signs (missing, etc)	Streetlight out / needed / Traffic Problems / Illegal Signs / Business / Alleys / Right-of-Way		CADILLAC WHITE NO TAGS ON HOUSE SIDE
4	600 HUME	Overgrn Vacant Lot / Hsng- Unfit / Dilap / Trash / Dumping / Bus Stops / Shelters	Old/Unlicensed Car in Yard / Abandoned Car on Street / Animal Cruelty / Dog Pen Odor / Rats / Unsanitary Conditions	Broken Streets / Potholes / Sidewalk broken / needed / Crosswalks / Street Markings / Street Signs (missing, etc)	Streetlight out / needed / Traffic Problems / Illegal Signs / Business / Alleys / Right-of-Way		WEEDS
5	1614 5th	Overgrn Vacant Lot / Hsng- Unfit / Dilap / Trash / Dumping / Bus Stops / Shelters	Old/Unlicensed Car in Yard / Abandoned Car on Street / Animal Cruelty / Dog Pen Odor / Rats / Unsanitary Conditions	Broken Streets / Potholes / Sidewalk broken / needed / Crosswalks / Street Markings / Street Signs (missing, etc)	Streetlight out / needed / Traffic Problems / Illegal Signs / Business / Alleys / Right-of-Way		WEEDS
6	1625 5th	Overgrn Vacant Lot / Hsng- Unfit / Dilap / Trash / Dumping / Bus Stops / Shelters	Old/Unlicensed Car in Yard / Abandoned Car on Street / Animal Cruelty / Dog Pen Odor / Rats / Unsanitary Conditions	Broken Streets / Potholes / Sidewalk broken / needed / Crosswalks / Street Markings / Street Signs (missing, etc)	Streetlight out / needed / Traffic Problems / Illegal Signs / Business / Alleys / Right-of-Way		TRASH
7	1631 5th	Overgrn Vacant Lot / Hsng- Unfit / Dilap / Trash / Dumping / Bus Stops / Shelters	Old/Unlicensed Car in Yard / Abandoned Car on Street / Animal Cruelty / Dog Pen Odor / Rats / Unsanitary Conditions	Broken Streets / Potholes / Sidewalk broken / needed / Crosswalks / Street Markings / Street Signs (missing, etc)	Streetlight out / needed / Traffic Problems / Illegal Signs / Business / Alleys / Right-of-Way		TRASH ON HOUSE SIDE

SALEMTOWN NEIGHBORHOOD AUDIT MAP WITH

POTENTIAL CODES VIOLATIONS



Salemtown Neighborhood Audit

GPS and GIS Support Applications: Results and Lessons Learned

- GPS and GIS applications proved to be effective in graphically displaying the extent of neighborhood codes violations.
- Keeping the GPS data dictionary as simple as possible saved time during field data entry.
- Using GPS enabled more accurate location of sites without identifiable street addresses.

Salemtown Neighborhood Audit

GPS and GIS Support Applications: Future Plans

- Data were collected in decimal degrees using the same projection and datum as that used by the Metro Planning Office allowing for them to potentially be included on Metro Government online GIS maps.
- In addition to pop-up attribute data, photographs of problem sites could be added as “hot links.”
- Methods using less expensive GPS units are under development at the GISc Lab.
- The NRC has recently hired an intern who will assist in further developing GPS applications in neighborhood audits.

Methods using less expensive GPS units are under development at the GISc Lab.

The mission of the Neighborhoods Resource Center (NRC) is to assist residents in the formation and/or development of on-going neighborhood organizations that identify and take action on their own self-interests. The NRC assists residents by providing information, leadership training, consulting and supportive services, and by forming collaborative relationships with, and providing support to, institutions that serve neighborhoods.

Job Description

The intern will work with the Geographic Information Specialist to create assessments of at least four Nashville neighborhoods. These assessments will help establish baseline indicators of neighborhood health. During the initial phase of the project, the intern will document indicators such as:

- **Neighborhood Assets** - Parks, community centers, religious institutions, schools, etc.
- **Neighborhood Challenges** - Street and sidewalk conditions, illegal dumping, abandoned cars, dilapidated buildings, graffiti, vandalism, etc.

The intern will collect neighborhood information using a standard neighborhood audit form. Each audit will also be supplemented with data collected from a GPS receiver and digital camera. Once collected, the intern will input the information into a computer database. After the data are processed, the intern will create reports and present any findings made to neighborhood groups in each area where an assessment was made, informing residents of the assets and challenges identified.

Minimum Qualifications

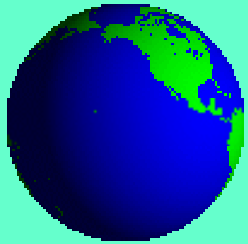
- Undergraduate or graduate student currently enrolled in any college or university who plans to return to school next fall.
- Valid driver's license, vehicle, and proof of insurance. The NRC will reimburse mileage.
- Strong interest in helping low- and moderate-income communities.
- Effective communication skills.
- Experienced user of Microsoft Office and Windows 2000/NT/98 software.

Preferred Qualifications

- Geographic Information Systems (GIS) experience: ArcView 3.x, ArcMap 8.x.
- Experience with GPS technology.

This is a 10 - 12 week summer internship.

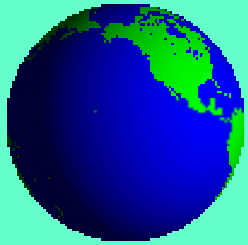
GIS and GPS Applications in Public Transit Accessibility Assessment



David A. Padgett, Director
Kiana Barnes, Lisa Johnson, and Charlkia Crayton
Environmental Team Trainees and Students
Geographic Information Sciences Lab
Tennessee State University
Nashville, Tennessee
Fall 2002-Spring 2003

Summer 2002 –

Nashville's Metropolitan Transit Authority (MTA) faces possible legal action for being out of compliance with the Americans with Disabilities Act (ADA)



Fall 2002

The Nashville Metropolitan Planning Organization (MPO) coordinates an agreement among the Nashville Metropolitan Government, MTA, and the TSU GISc Lab to conduct a GPS-based ADA accessibility survey of over 80 bus shelters. MTA did not have GPS capability at the time. GPS was selected as the tool of choice because:

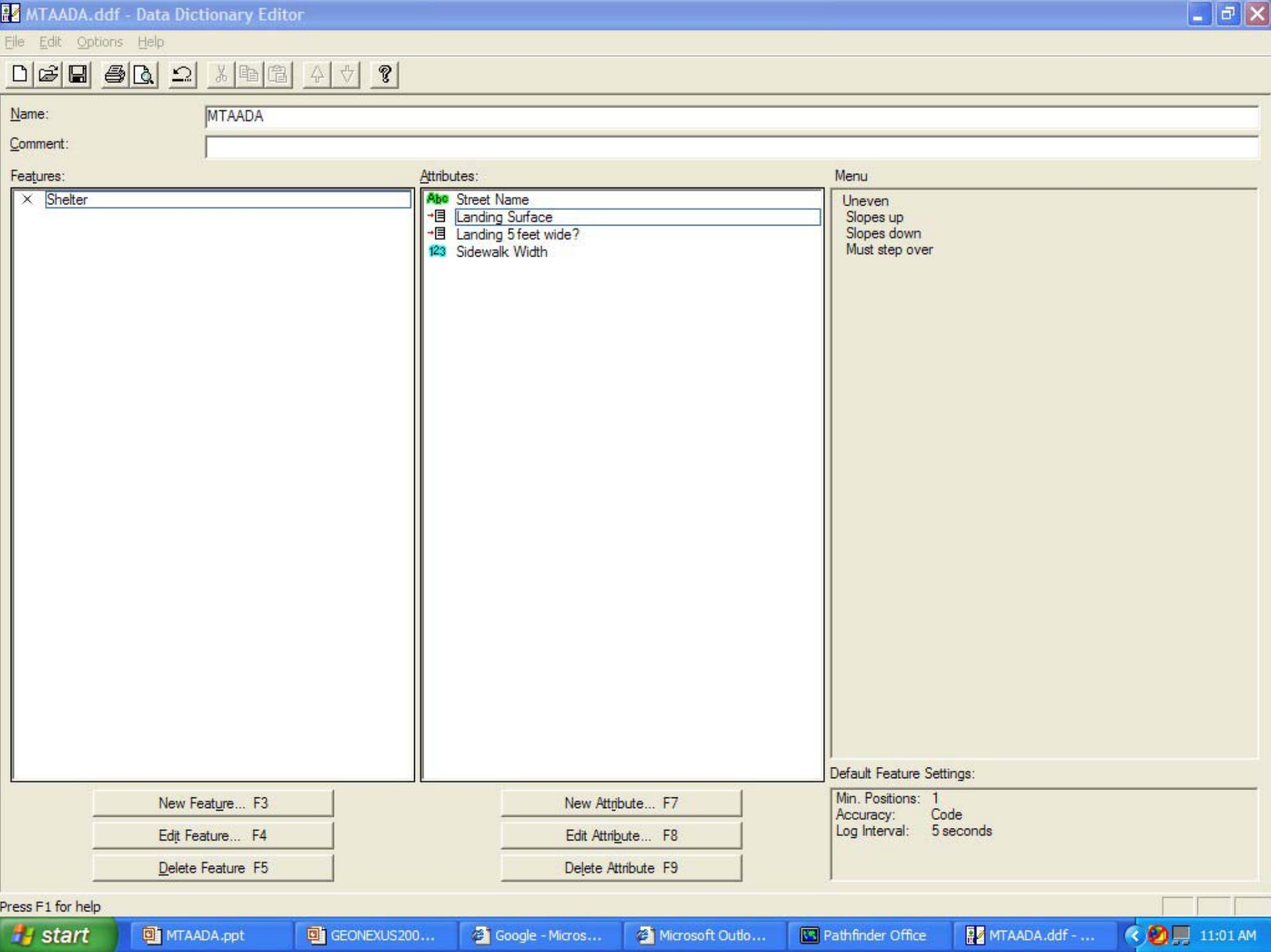
- **The survey had to be completed in a relatively short amount of time.**
- **The bus shelters had no street addresses or other geo-referenced data associated with them**
- **When combined with GIS, an effective means of monitoring could be implemented**
- **There was/is a need to develop a system-wide assessment of bus stop accessibility for all riders; this project served as a pilot program.**

MTA GPS Survey Method

- About 80 MTA bus shelters with their approximate street locations were provided by MTA.
- Representatives from Nashville's ADA Compliance Office developed a 12-page survey to be used to determine each bus stops' accessibility.
- TSU GISc Lab researchers converted the ADA survey into a GPS data dictionary and downloaded it into a hand held GPS receiver.
- The ADA data dictionary was field-tested until its output was acceptable.

Sample ADA Questions

- How wide is the bus shelter opening?
- How wide is the sidewalk in front of the bus shelter?
- Are there connections to other transportation facilities nearby?
- Are there barriers blocking the path to the bus shelter?


MTAADA.ddf - Data Dictionary Editor
File Edit Options Help
Name: MTAADA
Comment:
Features:
Shelter
Attributes:
Street Name
Landing Surface
Landing 5 feet wide?
Sidewalk Width
Menu
Uneven
Slopes up
Slopes down
Must step over
Default Feature Settings:
Min. Positions: 1
Accuracy: Code
Log Interval: 5 seconds
New Feature... F3
Edit Feature... F4
Delete Feature F5
New Attribute... F7
Edit Attribute... F8
Delete Attribute F9
Press F1 for help
start
MTAADA.ppt
GEONEXUS200...
Google - Micros...
Microsoft Outlo...
Pathfinder Office
MTAADA.ddf - ...
11:01 AM

ADA GPS Survey Field Methods

- Representatives from the Metropolitan Government ADA Compliance Office accompanied TSU GISc Lab researchers in the field to conduct the surveys.
- Each bus shelter's point location was captured using GPS.
- ADA compliance criteria were input into the GPS receiver.
- Each bus shelter was photographed

File Edit View Insert Format Tools Data Window Help

Type a question for help

Arial 10

E5 DW + KB

	A	B	C	D	E	F	G	H	I	J	
1	D	EASTING	NORTHING	BUS_STOP_I	NAME_OF_AS	DATE_OF_AS	TIME_OF_AS	WEATHER_CO	SHELTER_PR	NUMBER	AL
2	1	1725816.538	668806.322	2	DANNY WEDDELL	10/1/02	10:39:08PM	OVERCAST	YES	2	
3	2	1730555.641	669359.151	52	DW + BC + KB	10/3/02	09:39:00AM	PARTLY CLOUDY	YES	52	
4	3	1732257.905	667866.167	51	DW + KB	10/3/02	11:04:30AM	SUNNY	YES	51	
5	4	1729805.034	668002.645	48	DW + KB	10/3/02	12:07:22AM	SUNNY	YES	28	
6	5	1730526.785	668104.339	49	DW + PS + KB	10/8/02	10:12:41AM	PARTLY CLOUDY NO PRECIPITATION	YES	49	
7	6	1730465.296	668092.444	50	DW + PS + KB	10/8/02	10:39:11AM	PARTLY CLOUDY NO PRECIPITATION	YES	50	
8	7	1719797.619	663122.041	14	DW + PS + KB	10/8/02	11:48:20AM	PARTLY SUNNY NO PRECIPITATION	YES	14	
9	8	1715086.819	657035.722	13		10/15/02	02:54:31PM	CLOUDY	YES	13	
10	9	1721330.103	663143.303	66		10/15/02	10:30:14AM	OVERCAST	YES	66	
11	10	1716823.446	654357.343	75		10/15/02	11:09:09AM	RAIN	YES	75	
12	11			42		10/17/02	03:07:17PM			1	
13	12	1737653.087	668154.310	43		10/17/02	03:24:17PM	SUNNY	YES	43	
14	13			1		10/17/02	03:39:42PM			1	
15	14			1		10/17/02	03:54:08PM			1	
16	15	1739013.786	668026.215	41		10/17/02	11:40:51AM	SUNNY	YES	41	NC
17	16	1737429.110	670989.047	44		10/17/02	12:00:42PM	SUNNY	YES	44	NC
18	17	1690466.096	639729.320	59		10/22/02	10:15:39AM	SUNNY	YES	59	NC
19	18	1732036.915	663437.368	55		10/22/02	11:31:07AM	SUNNY	YES	55	NC
20	19	1718938.874	672703.047	11		10/24/02	09:32:40AM	CLOUDY	YES	1	NC
21	20			71		10/24/02	10:15:04AM		YES	43	NC
22	21	1736895.860	670372.064	45		10/24/02	11:49:44AM	CLOUDY	YES	25	NC
23	22	1737179.191	669817.579	46		10/24/02	12:06:04PM	CLOUDY	YES	46	NC
24	23			1	DW + PS	10/24/02	03:10.00PM	OVERCAST	YES	1	
25	24	1730721.518	663668.081	4		10/29/02	10:00:32AM	RAIN	YES	1	NC
26	25	1733052.690	663018.841	57		10/29/02	10:52:40PM	Partly Cloudy	YES	57	NC
27	26	1731877.810	662330.411	58		10/29/02	11:15:09AM	SUNNY	YES	58	NC
28	27	1736142.292	659465.848	5		10/29/02	11:50:28AM	Partly Cloudy	YES	52	
29	28	1738637.571	659027.016	7		10/29/02	12:16:11PM	Partly Cloudy	YES	1	
30	29	1738843.914	665033.488	29		11/12/02	10:39:35AM	SUNNY		29	
31	30	1738861.441	665018.647	30		11/12/02	11:09:49AM	Partly sunny	YES	30	
32	31	1738932.613	664898.389	31		11/12/02	11:17:46AM	Partly sunny	YES	31	
33	32	1738948.104	664867.771	32		11/12/02	11:20:32AM	Partly sunny	YES	32	
34	33	1738908.947	664857.592	33		11/12/02	11:23:13AM	Partly sunny	YES	33	
35	34	1738893.473	664864.063	34		11/12/02	11:25:56AM	Partly sunny	YES	34	

mtashelters

start MTAADA.ppt GEONEXUS200... Google - Micros... Microsoft Outlo... Pathfinder Office Microsoft Excel ... 11:13 AM

Microsoft Excel - mtashelters.dbf

File Edit View Insert Format Tools Data Window Help

Type a question for help

Arial 10

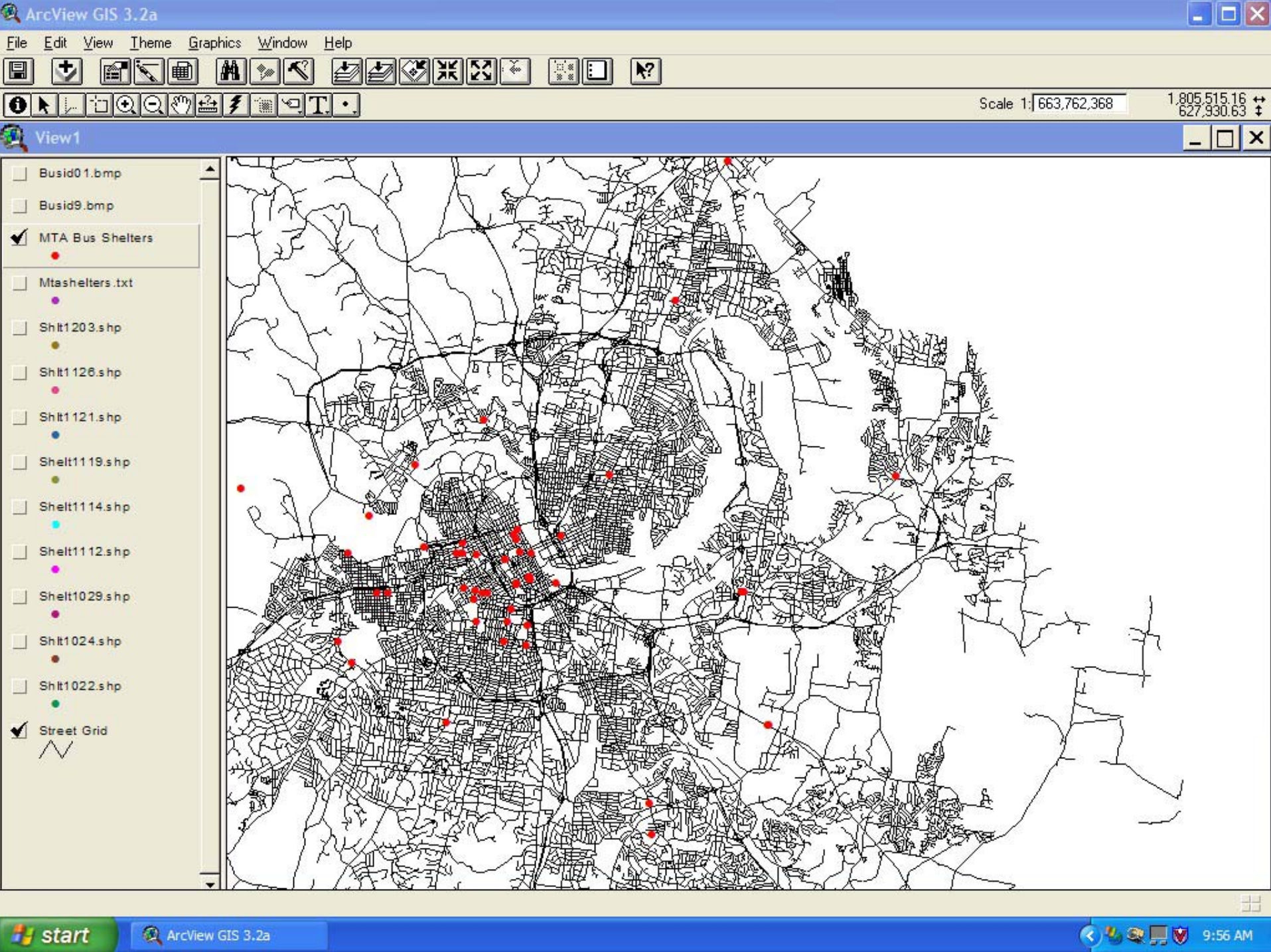
E5 DW + KB

	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
1	IS_PAD_SLO	PERPENDICU	POSITION_O	OTHER_LAND	STOP_PAD_F	PAD_SURFAC	LANDING_MA	OTHER_MATE	LANDING_EL	PROBLEM
2	YES	2.0	SIDEWALK		YES	YES	concrete		on curb	no
3	YES	0.3	SIDEWALK		YES	YES	brick pavers		on curb	no
4	NO	2.5	SIDEWALK		YES	YES	concrete		on curb	yes
5	NO	2.6	SIDEWALK		YES	YES	concrete		on curb	no
6	NO	2.5	SIDEWALK		YES	YES	concrete		on curb	no
7	YES	0.7	SIDEWALK		YES	YES	concrete		on curb	no
8	NO	3.8	SIDEWALK		YES	YES	concrete		on curb	no
9	NO	2.3	SIDEWALK		YES	YES	concrete		on curb	yes
10	YES	1.8	SIDEWALK		YES	YES	concrete		on curb	no
11	NO	2.8	SIDEWALK		YES		concrete		on curb	no
12		0.0								
13	YES	1.5	SIDEWALK		YES		concrete		on curb	no
14		0.0								
15		0.0								
16	NO	4.3	SIDEWALK		YES	YES	concrete		on curb	yes
17	YES	1.0	SIDEWALK		YES	YES	concrete		on curb	yes
18	NO	5.9	SIDEWALK		YES	YES	concrete		on curb	yes
19	YES		SIDEWALK		YES	YES	concrete		on curb	no
20	YES	0.4	OFF ROAD/NO SIDEWALK		YES		concrete		street level	no
21	NO	0.5	OFF ROAD/NO SIDEWALK		YES		concrete		on curb	yes
22	YES	1.5	SIDEWALK		YES		concrete		on curb	yes
23	YES	1.4	SIDEWALK		YES		concrete		on curb	yes
24	YES	2.0	SIDEWALK		YES		concrete		on curb	no
25	YES	1.8	SIDEWALK		YES	YES	concrete		on curb	no
26	YES	0.8	SIDEWALK		YES	YES	concrete		on curb	no
27	YES	3.4	SIDEWALK		YES	YES	concrete		on curb	yes
28	YES	1.2	SIDEWALK		YES	YES	concrete		on curb	no
29	YES	3.0	SIDEWALK		YES	YES	concrete		on curb	yes
30	NO	3.4	SIDEWALK		Yes		concrete		on curb	yes
31	NO	2.4	SIDEWALK		YES		concrete		on curb	yes
32	NO	2.9	SIDEWALK		YES		concrete		on curb	no
33	NO	3.0	SIDEWALK		YES		concrete		on curb	yes
34	YES	1.8	Sidewalk		Yes		concrete		on curb	
35	YES	1.1								

mtashelters

Ready

Screen Capture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Mtashelters.txt
Shlt1203.shp
Shlt1126.shp
Shlt1121.shp
Shelt1119.shp
Shelt1114.shp
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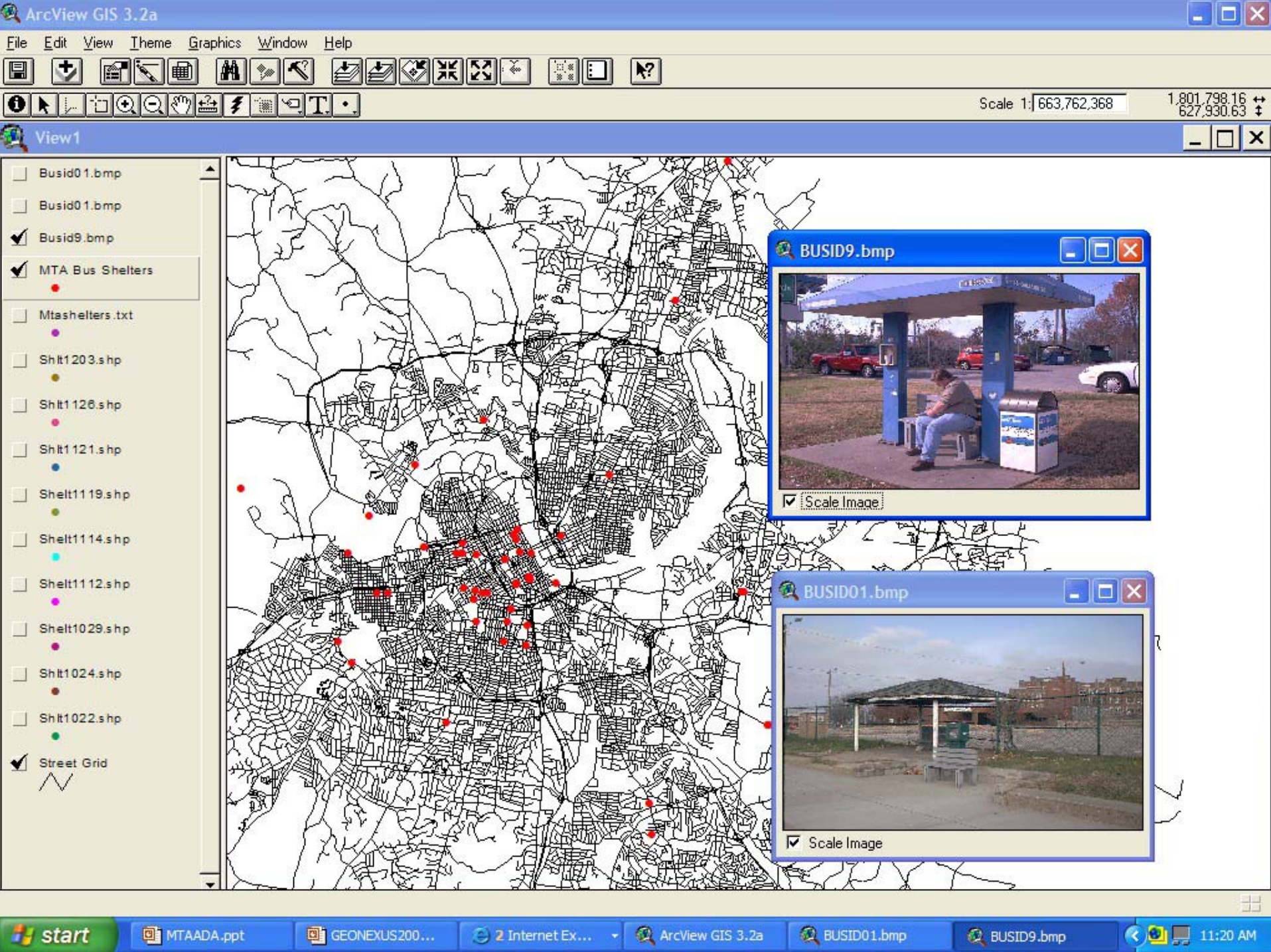
9:56 AM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MTA Bus Shelters
Mtashelters.txt
Shlt1203.shp
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Street Grid
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Scale Image
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ArcView GIS 3.2a
BUSID01.bmp
BUSID9.bmp
11:20 AM

Project Results

- All bus shelters in question were successfully surveyed and mapped over a six-month period
- The final product is now being used as a model for a MTA system-wide assessment
- The results were presented to the MTA riders' advocacy group in March 2003

Lessons Learned

- Be certain that all GPS data are collected in proper datum and coordinate system formats
- If possible, save data in plain text format
- Field test the data dictionary rigorously before proceeding
- Consult potentially affected parties to assist with database design

Acknowledgements

- James McAteer – Nashville MPO
- Diana Stephens, Chuck Yancey, Phil Saad, Danny Waddell – Nashville Metro Gov't ADA Compliance Office
- John R. Cannon, Timothy Sanderson – Nashville MTA
- Kiana Barnes, Lisa Johnson, and Charlkia Crayton – TSU GISc Lab Undergraduate Student Researchers

Spatial Analysis/GIS- Supported Student Term Paper Topics in Urban Geography – Spring 2005.

- GIS Mapping of Grocery Store Audits vs Local Demographic and Socioeconomic Data
- Distribution of AIDS Cases in Washington, DC
- Impact of a Wal-Mart upon a Smyrna, Tennessee Community
- Spatial Analysis of Three Communities' Efforts to Keep Wal-Mart out of their Neighborhoods
- Spatial Comparison of the Location of Check-Cashing Businesses vs. Full-Service Banks

Spatial Analysis/GIS- Supported Student Term Paper Topics in Urban Geography Spring 2005

- Spatial Location of Abortion Clinics vs Organizations Providing Alternatives to Abortion
- Should Nashville Invest in Expanding its Convention Center?
- Analysis of Land Uses Along a Planned Rev. Dr. Martin Luther King Boulevard Route.
- GPS and GIS Applications in the Development of a Black History/Urban Forestry Educational Walking Trail
- Population Changes Among Immigrant Residents: Nashville, Tennessee 1990-2000

Expected Results of Incorporation of GIS and other Spatial Analysis Tools in Service Learning Projects in the Urban Geography (GEOG 4850) Course

- Students will gain increased understanding of spatial analysis and cartography principles.
- Students will be able to obtain data pertaining to an urban problem and then analyze the issues from a spatial perspective.
- The course will attract students from across the social sciences disciplines due to the growing utility of GIS and related technology..
- Students will apply spatial analysis tools to support the objectives and activities of local non-profit organizations, public schools, and government agencies.
- Students will produce term papers which will demonstrate their ability to think critically and spatially about issues inherent to urban environments.

SPACE

Spatial Perspectives on Analysis for Curriculum Enhancement

Summer Workshops 2005

- **Introducing GIS for Undergraduate Social Science Courses**
  1-6 August 2005, San Francisco, California

- **GIS and Spatial Modeling for the Undergraduate Social Science Curriculum**
  10-15 July 2005, Columbus, Ohio

- **Spatial Analysis for the Undergraduate Social Science Curriculum**
  18-23 July 2005, Santa Barbara, California

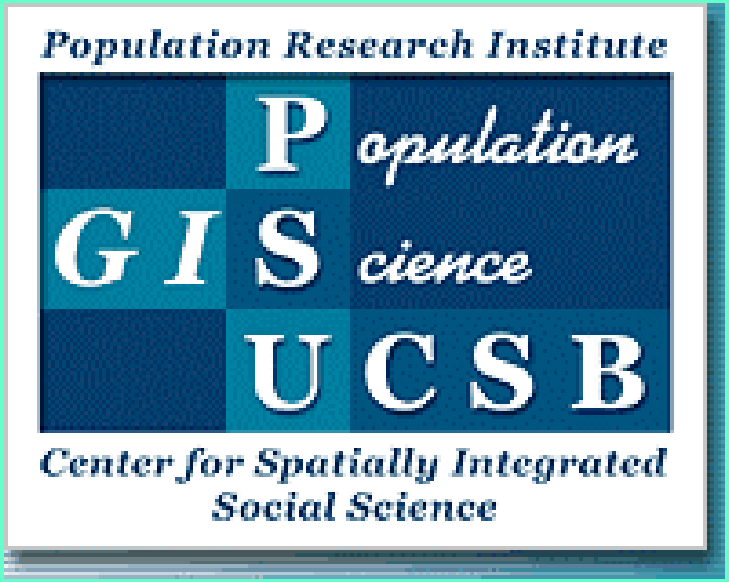
GIS and Population Science – Workshops 2005

- **State College, Pennsylvania: The Population Research Institute**
  The Pennsylvania State University, May 29-June 11, 2005

- **Santa Barbara, California: The Center for Spatially Integrated Social Science**
  University of California, Santa Barbara, June 19-July 2, 2005

SPACE

Spatial Perspectives on Analysis for Curriculum Enhancement



Scholarship Support

There are no fees required to participate in a SPACE workshop. Participants may apply for awards of up to a maximum of $1000. Participants from designated minority institutions in the United States, and participants of Hispanic American, African American, or Native American background may be eligible for additional scholarship support.

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