PROJECT NUMBER:
04108

PROJECT TITLE:
The Impact of Sprawl on Commuting in Alabama

PRINCIPAL INVESTIGATORS:
Joe Weber
Assistant Professor of Geography
The University of Alabama
Tuscaloosa, Alabama 35487-0322
Phone: (205) 348-0086
Fax: (205) 348-2278
jweber2@bama.ua.edu

Selima Sultana
Assistant Professor of Geography
Auburn University
Auburn, Alabama 36849
Phone: (334) 844-3417
Fax: (334) 844-3409
sultase@auburn.edu

PROJECT OBJECTIVE
This study will visualize urban sprawl and its influence on commuting patterns in Alabama communities. GIS-based methodologies for defining and mapping urban sprawl will be used with the 2000 Census Transportation Planning Package (CTPP). The impacts of sprawl on length and travel time of worker’s commutes to work will be identified, and the possibility of predicting future demand or congestion problem areas resulting from sprawl conditions will be evaluated.

PROJECT ABSTRACT:
It is well known that in most cities and towns growth is occurring outside the urban core area, with very low densities of residential and commercial activity. This condition is often known as urban sprawl and it has been subject to a wide range of criticism for its wasteful use of land, increased traffic congestion and lengthened travel required by residents. An understanding of increasing commuting length (trips between home and work) is critical to urban sustainability research as large traffic-flows create considerable congestion and air pollution, as well as leading to a deterioration in the quality of life. The objective of this research project is to identify the influence and importance of urban sprawl on commuting patterns in Alabama communities. This research will identify to what extent workers living in sprawl areas commute farther to work than those living in older, higher density areas of the city and to what extent the sprawl-like commercial activities are increasing commuting time and distance for residents in older-higher
density neighborhoods. Geographic Information Systems (GIS)-based methodologies for defining and mapping urban sprawl will be assessed, with procedures relevant for Alabama communities adopted. The 2000 CTPP will be used along with GIS street network datasets. The Birmingham and Tuscaloosa metropolitan areas will be used as study areas. The impacts of sprawl on length and travel time of worker’s commutes to work will be identified, and the possibility of predicting future demand or congestion resulting from sprawl conditions will be evaluated.

**TASK DESCRIPTIONS AND MILESTONES:**
1. Review current literature regarding sprawl identification and mapping to determine which methods have been utilized and the data used to develop them
2. Specify a definition for sprawl that is meaningful for urban growth in Alabama
3. Obtain data from the 2000 CTPP Part 3
4. Compile and prepare a digital transport network database
5. Carry out multivariate testing between commuting times and distances and sprawl conditions for the study areas in order to identify consistent relationships
6. Evaluate the feasibility of applying this methodology throughout Alabama
7. Prepare a summary report

**TOTAL BUDGET:**
Twelve month project, UTCA funds $9870; total budget $19,770

**STUDENT INVOLVEMENT:**
No students will work on the project.

**TECHNOLOGY TRANSFER:**
The methodology and results produced by this project will be suitable for widespread dissemination over the Internet and will be made available from University of Alabama and Auburn University websites. Opportunities will be sought to present the results at national and international academic conferences during the 2004/2005 academic year, as well as to interested transport and planning agencies and organizations within Alabama.

**POTENTIAL BENEFITS OF THE PROJECT:**
This research will enable transportation planners to better manage existing transportation systems more efficiently by planning for future transportation system needs more effectively. Additionally, overlaying the sprawl database created with other digital data will allow integration with land use and natural resource planning, remote sensing data, historic preservation, economic development, site selection by both public agencies and private organizations, business management and logistics, allowing for the impact of sprawl on other facets of urban communities to be identified as well.

**TRB KEYWORDS:**
Commuting, Geographic Information Systems, Urban Sprawl, Urban Transportation