ArcGIS TAZ (Traffic Analysis Zone) Program
For EMME/2 Output Mapping

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ABSTRACT:
The ArcGIS TAZ (Traffic Analysis Zone) program was designed to alleviate the economic constraints of creating EMME/2 model maps. The ArcGIS program allows GIS users to create a TAZ map for analysis in ArcMap with data outputted from the EMME/2 system. The program was written with Visual Basic and ArcObjects. By simply selecting a TAZ polygon and clicking the command button, a GIS user can instantly visualize the 10, 20, and 30 minute travel times adjacent to the selected TAZ polygon.

PURPOSE:
The purpose of this program is to allow planners at the City of Phoenix to aid developers in determining the optimal location of a new development based on commute shed travel times and employment sector data. The City of Phoenix Planning department and the Community Economic Development Department receive numerous requests from citizens and private parties for transportation analysis maps. The program allows planners to create maps that include information about the 10, 20, and 30 minute travel times between TAZs or Traffic Analysis Zones. They also include employment data by occupation for each travel time interval. Essentially, the planner selects a TAZ polygon and clicks the data view command button provided. This symbolizes the map in accordance with the 10, 20, and 30 minute travel times. Then by clicking a layout view button, a map is created that shows travel times and employment data. This map also includes all cartographic elements. Therefore, a planner can create a map for analysis in seconds, vs. spending substantial funds to contract out this task.
PROGRAM DESIGN:

**Step 1:** The first step was to retrieve the EMME2 model data in a format that could be utilized in ArcGIS. To accomplish this, the EMME2 matrix was converted to a Microsoft Access Database. Next, the database was formatted to remove all leading spaces and create a unique identifier for empty values. This was accomplished with ArcObjects using a feature cursor and various Visual Basic functions.

**Step 2:** Designed an extension to ArcGIS that retrieves records that are within a 10, 20, or 30 minute interval of the selected TAZ polygon. A module was created that:
1. Automatically switches to display view
2. Retrieves the table from the "StandaloneTableCollection"
3. Runs through the database and retrieves all records that have a travel time less than thirty minutes and collects the travel ranges in a dictionary.
4. Redefines the unique value renderer to display each travel time range.

**Step 3:** Designed an extension to ArcGIS that populates the layout with all relevant cartographic elements and all employment sector data for each travel time range. A module was created that:
1. Automatically switches to layout view
2. Populates the layout with cartographic elements.
3. Retrieves the employment table from the "StandaloneTableCollection"
4. Runs through the table and populates the layout with employment data for each time interval.

THE RESULT:
A typical planner may get a request from developers and/or citizens for specific TAZ information. The planner utilizes the TAZ program to retrieve the commute shed travel times and employment sector data. The auto-generated map is then inserted into a development report which can be used to decide if a particular property is feasible for development. As large employers look at various locations around the country, one of the first questions they ask the City of Phoenix is, "What does this location offer with respect to a pool of qualified employees?". The City of Phoenix has historically contracted this work out to Applied Economics, who has provided a map with the commute shed information on it. The City of Phoenix then passes this along to the employer/developer to compare to other communities. By allowing the planners to create the TAZ maps in the program, they can provide a higher level of service to potential business prospects. The City of Phoenix also uses the commute shed map to create marketing pieces for areas in need of redevelopment.

USER CONFERENCE MAP:
This map was shown at the Map Gallery for the ESRI User Conference 2003. The purpose of this map is to show the design process of the program as well as an example of a finished map that was created with the TAZ Program. The base cartographic elements were enhanced manually for presentation purposes.
CONCLUSION:
Commute Shed maps are an integral component in the Community and Economic Development Department’s City of Phoenix Employment Center Profile series. This program allows employees throughout the city to analyze TAZ areas without having to contract out the map creation process. Planners can now create their own maps instantaneously. This allows the City of Phoenix to save time and money by delivering reports and analysis directly to the interested parties.

AUTHOR INFORMATION:
If you would like a copy of this program or have any questions about how the program was created please contact:

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DEFINITIONS:

**Traffic Analysis Zone:**

A Traffic Analysis Zone (TAZ) is a special area delineated by state and/or local transportation officials for tabulating traffic-related data, especially journey-to-work and place-of-work statistics. A TAZ usually consists of one or more census blocks, block groups, or census tracts. Each TAZ is identified by a six-character alphanumeric code that is unique within a county or statistically equivalent entity. For the 1990 census, TAZ codes were unique within CTPP area, which generally conformed to a metropolitan area.

**EMME/2:** EMME/2 is a state-of-the-art urban transportation planning system, offering planners a comprehensive set of tools for traffic and transportation modeling.