**VISUALIZATION OF ORIGIN-DESTINATION COMMUTER FLOW USING CTPP DATA & GIS APPLICATIONS**

**ABSTRACT**

The Southern California Association of Governments (SCAG) promotes a great number of programs emphasis on commuter flow analysis for Southern California. The SCAG GIS and Data Service Program was designed as the preferred source for customized demographic and economic studies, data and analysis, Geographic Information Systems (GIS) analysis and mapping for the Southern California now and in the future.

**OBJECTIVES**

1. Evaluate the efficiency of commuter flow analysis tools and software applications.
2. Compare commuter flow between Census Transportation Planning Products (CTPP) and Longitudinal Employer-Household Dynamics (LEHD) Origin-destination geographic data analysis, data conversion, data management, or map automation for 197 jurisdictions.
3. Access the relationship between workplace and residence.
4. Compare the efficiency of commuter flow analysis tools and software applications.

**METHODOLGY**

- Accessing and investigating the relationship between workplace and residence
- Comparing the efficiency of commuter flow analysis tools and software applications.
- Using the most recent CTPP that was officially released in October 31, 2013, which is conducted from ACS 2006-2010 (5-Year Summary).
- This version of CTPP includes small geographic units dataset is currently using a continuous survey called “the American Community Survey” (ACS). This commuter-flow project utilizes the most recent CTPP.
- GIS has the capability of managing and visualize data. This mapping project utilizes ArcGIS software to create the maps.
- SAS is a statistical program to allow users to manipulate, organize, and refine large data. One of the most important programs that has been used in this analysis is known as SAS.
- Python is a programming language that can be incorporated with GIS to create automated workflow process. It is an interpreter, object-oriented, and high-level general-purpose language.
- Environmental Systems Research Institute (ESRI) is an international supplier for GIS software program.

**CONCLUSIONS**

- The maps depict the commuter flows and patterns between home and work place throughout the region. The maps help jurisdictions, business community and others.
- The maps illustrate the commuter flows and patterns between home and work place throughout the region. The maps depict the commuter flows and patterns between home and work place throughout the region. The maps help jurisdictions, business community and others.
- In addition, this project is an expansion of an existing project at SCAG, which is known as the Local Profiles. One of SCAG’s programs and projects is to produce the Local Profiles.
- The maps help jurisdictions, business community and others.
- The maps illustrate the commuter flows and patterns between home and work place throughout the region. The maps depict the commuter flows and patterns between home and work place throughout the region. The maps help jurisdictions, business community and others.

**FUTURE IMPROVEMENTS**

1. The maps help jurisdictions, business community and others.
2. The maps illustrate the commuter flows and patterns between home and work place throughout the region. The maps depict the commuter flows and patterns between home and work place throughout the region. The maps help jurisdictions, business community and others.
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**WORKFLOW**

- Merging O-D dataset & Place codes by Census Tract codes
- Calculating job number for residents of each O-D at place level
- Sorting dataset in descending order
- Ranking Top 50 work destination
- Exporting CSV dataset to DBF file for GIS
- Designing DBF file using ArcGIS software
- Designing commuting flow map layout using ArcGIS software
- Utilizing Python to automatically create commuting flow maps

**TOP 20 COMMUTING ORIGINS IN SCAG REGION**

- Number of commuters
- Miles

**TOP 20 COMMUTING DESTINATIONS IN SCAG REGION**

- Number of commuters
- Miles

**COMPUTER FLOW MAPS BY SCAG CITY**

- City of San Bernardino
- City of Rancho
- City of Los Angeles
- City of Orange