MEMORANDUM

To: Dr. Jeff LaMondia, Mayor of Austin, TX

From: Lan Liu

Date: February 24, 2017

RE: Household commuting and income in jurisdictional counties.

I. Purpose

This assignment is made to show distribution of household commuting and income in five counties. And the designer need to download data by themselves instead of given data folder loaded in ArcMap.

II. Methods of creating a map

A large map was created from one merged layers and an inset map was created from a data frame with ten layers. The final layout was made with following steps:

- First, the data was downloaded based on the instructions. For example, to download geographic data, two layers ("2010 Census Tracts" and "Roads") needed to be selected, downloaded, and exported into a folder. And five layers (Fulton census tract, Cobb census tract, DeKalb census tract, Gwinnett census tract, and Clayton census tract) were added into a Data Frame. A New Data Frame was added with the same five layers to show the household commuting (including: current roads and service routes) an inset map.
- Second, before joining the variables, excel was modified for each county (The unrelated columns were deleted, only median household income and mean travel time data would be remained for each layer in each table). In order to join datasets, the attribute tables for each layer was opened and a new field was added to join excel table to shapefiles in ArcMap. Then the layer was right clicked and join was selected to join the variables, and field calculator was used to transfer the joined variables into the added filed. After this step, data joined was finished.
- Third, to show up the map consistently, all five layers were merged and join data again by using modified excel tables. (all median household income and mean travel time data were collected into two different tables). To create a chloropleth map, the quantities was set up in properties of each layer and the value was set to median or mean travel time based on different map.
- Forth, a new data frame was created and the 2nd and 3rd steps were repeated to create an inset map with joined datasets. After this step, nine layers were added into the inset map and the transparency was adjusted to show a map clearly.

III. Findings

The distribution of household income shows that in the south, northwest, northeast, and east, most of residents have income range: 0 – 36333 dollars, which is the least. And the distribution of household commuting is least in east and south which are both small areas. The service routes of bus should and could be expanded to cover these two areas better. A short haul bus routes is recommended to save the construction cost and increase the effective of service area covered by bus routes.

IV. Caveats

When the MARTA data was added into the inset map, the coordinate system was not consistent which needed transformation. If the designer did not find out this point, the map will create error. And all five counties should be merged together to show a consistent map with a short and straight forward legend, while, this step needs designer join data again with a different Excel table which the data should be collected into two tables totally.

V. Appendices

A large map with one layer and an inset map are presented in the following page.

Data Sources:

2010 Census Tracts and Roads---US Census

https://www.census.gov/geo/maps-data/data/tiger.html

American Community Survey---US Census

http://factfinder.census.gov/

MARTA Transit---Atlanta Department of Planning and Community Development GIS

http://gis.atlantaga.gov/