

### Empirical Exercise #3-The Income Gradient

You will use numbers and pictures to determine if your MSA has the positive income gradient depicted by theory.

#### Part I: Mapping the income gradient

1. Go to [www.census.gov](http://www.census.gov). Click on the “American Fact Finder” link on the left hand menu, then click on the “Data Sets” link on the new left hand menu. In the middle of the page, select “Summary File 3”. The popup menu has a “Thematic Maps” option. Click that.
2. Under “Select a Geographic Type” there is a pull down menu, from which you select “Metropolitan Statistical Area/Consolidated Metropolitan Statistical Area”. In the “Select Geographic Area” menu that now appears, find your MSA and click that. Then click on “Show Result”
3. The map you get will be very boring. Just above the map, there will be a menu labeled “Display Map by”, from which you should select “Census Tract”. Look at the pretty map now, which displays how income varies across your region.
4. You might have to center your map over the central business district, in order to have the best picture, with the most densely defined tracts. Look up the address of (for example) the city hall, and use the “Reposition on...a street address” option to do that.
5. To get the best possible picture, click on the “data classes” option in the upper left corner, and choose the maximum number of classes (usually seven) and the “quantiles” classing method.
6. Print the map. Discuss, using the map, whether or not you think your area has an income gradient.

#### Part II: Numerical analysis of the income gradient.

1. Repeat step 1, except that instead of “Thematic Maps”, click “Custom Tables”.
2. Under “Select a Geographic Type” select “Census Tract”. You will then be asked which state, and which county. Select the county in which your central city is located. If there are multiple central cities, pick the first in the name. This will be the one with the largest population. Click “add”.
3. In the list below, click on “All census tracts” and click “Add” once again, and then “Show Result”
4. The next page will have menus. Make sure the options selected are (from the top): “from a table”; and “show all tables”. Select from the menu variable P77 (Median Family Income) and P32

(Travel Time to Work by Means...). You may have to do these one at a time.

5. We are going to measure the proximity of each tract by the proportion of people who have commute times less than 30 minutes. So select on “Workers 16 years and over who did not work at home: Total” and “Workers 16 years and over who did not work at home: Travel time to work; Less than 30 minutes”. Also select Median Family Income. Click “Next”. If everything looks good, click on “Show Result”.

6. You should get a spreadsheet-like page listing your data. The rows will be census tracts, and the columns will be the data for each tract. Copy and paste into a spreadsheet, or similar software. Do this for all of the census tracts in your data, up to forty. Add an additional column containing the fraction of total workers who have commutes of thirty minutes or less.

7. Carefully plot (you may use spreadsheet software if you want) the commuting variable on the horizontal axis and the income variable on the vertical. According to theory this data should have a positive slope. Stare at the dots. Do you think the positive income gradient has been verified?