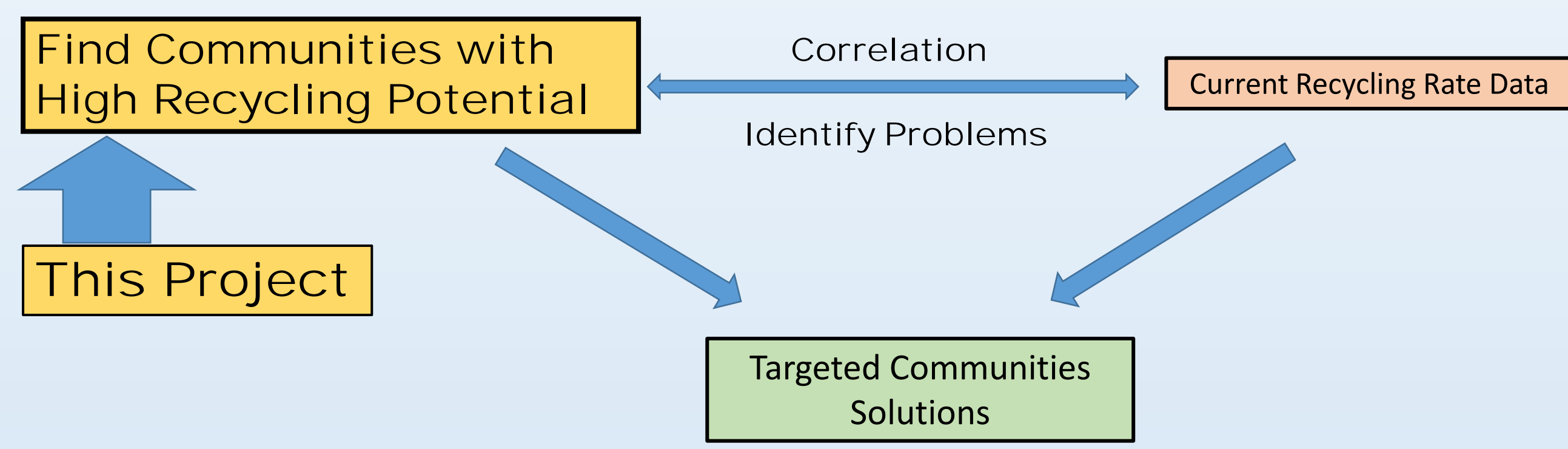


Michigan Communities Recycling Potential Communities with Population > 1,000

Michigan: Lowest Recycling Rates in Great lakes Region



Improve Michigan's Recycling Rate

Project Purpose: Find communities in the State of Michigan with high potential of recycling rate. Compare the results with the current recycling rates data. Look for correlation between socioeconomic factors and recycling behavior and identify the problems which lead to low recycling rates.

Attribute Data:

- Age: ACS_12_5YR_S0101
- Household Income: ACS_12_5YR_B19001
- Population: ACS_12_5YR_B01003
- Education: ACS_12_5YR_S1501

Spatial Data:

- Michigan Roads: All Roads
- Michigan Census Tracts Base Map

Factors influence Recycling Behavior:

Age, Income, Education, Population Density, Transportation Convenience

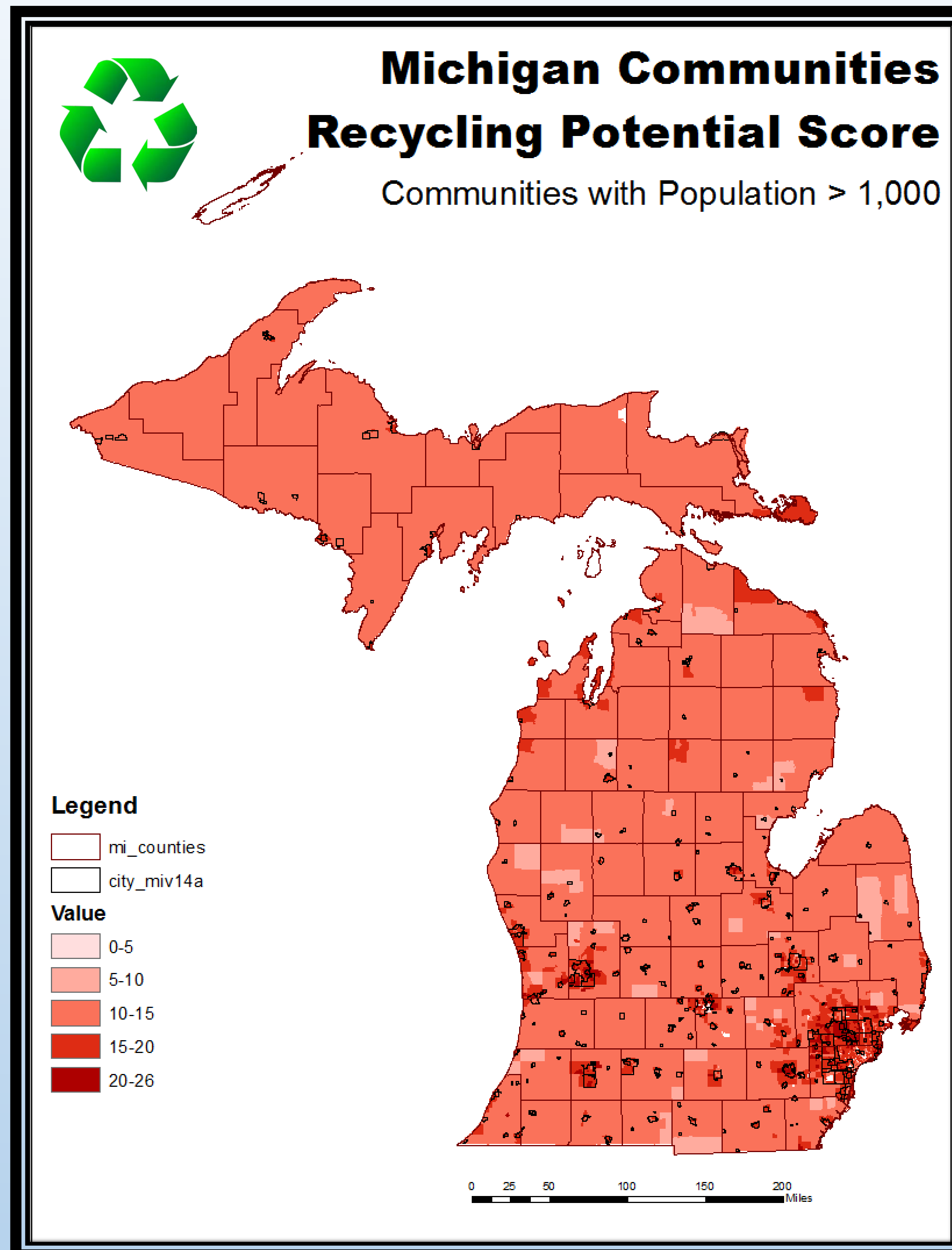
Ideal Situation

- Age: >55
- Household Income: \$35,000 - \$75,000
- Education: >= College Degree
- Population Density: Low
- Mileage of Roads within Unit: High

Fundamental Procedures:

- Calculate Value used in Excel
- Join Excel Table with Census Tracts Shapefile Table
- Group the Values and Assign a Code to Each Group
- Use Code to Convert Vector Datasets to Raster
- Use Raster Calculator to Get Output Values
- Reclassify to Get Final Output

Result



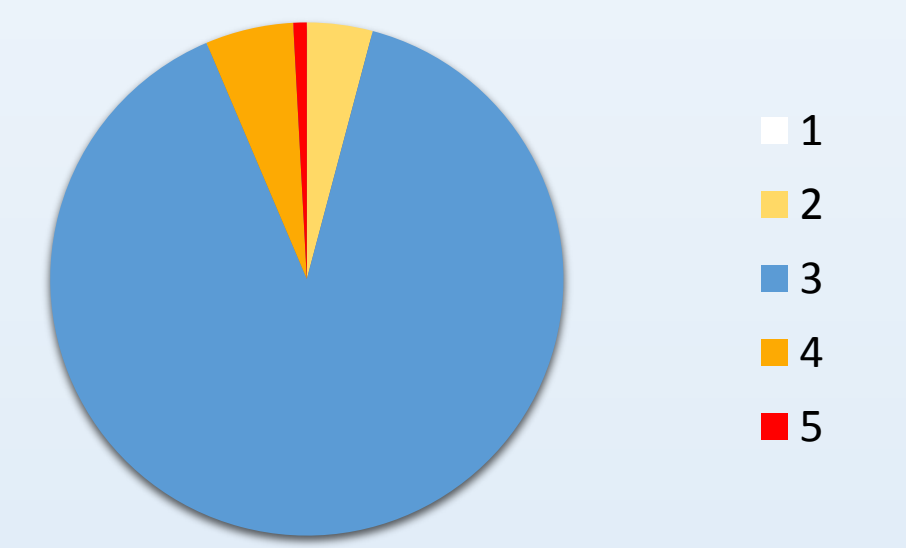
Most of Michigan's Communities (89%) have a final score of 10-15, which is relatively low compare to the total score of 45. There are 6% census tracts scored 15-20. The communities with largest recycling potential are scored 20-26, which only includes 1% of the census tracts in the state.

The map "Michigan Communities Recycling Potential Score" shows the distribution. Most of the communities with higher scores are in the lower peninsular, where transportation is more convenient.

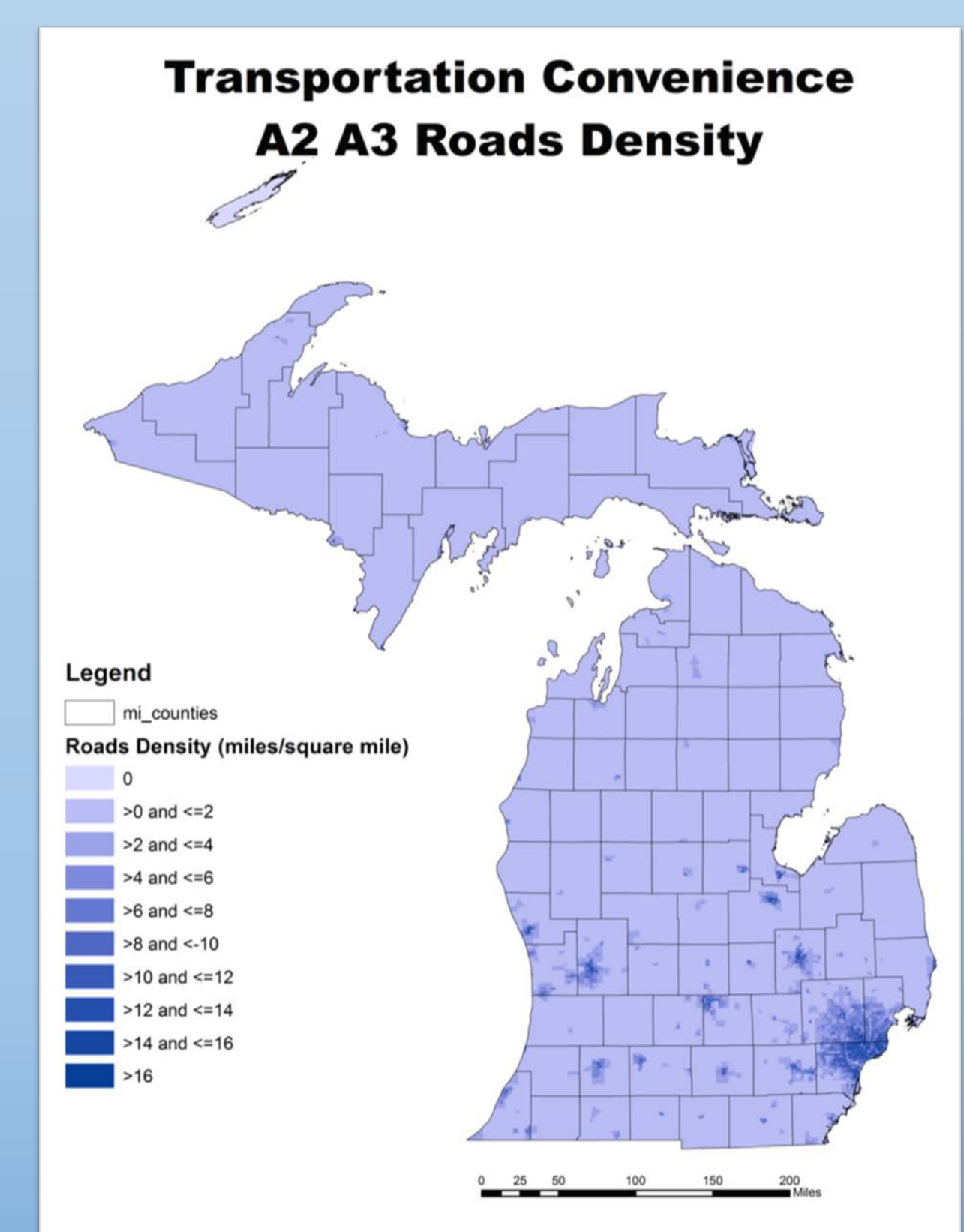
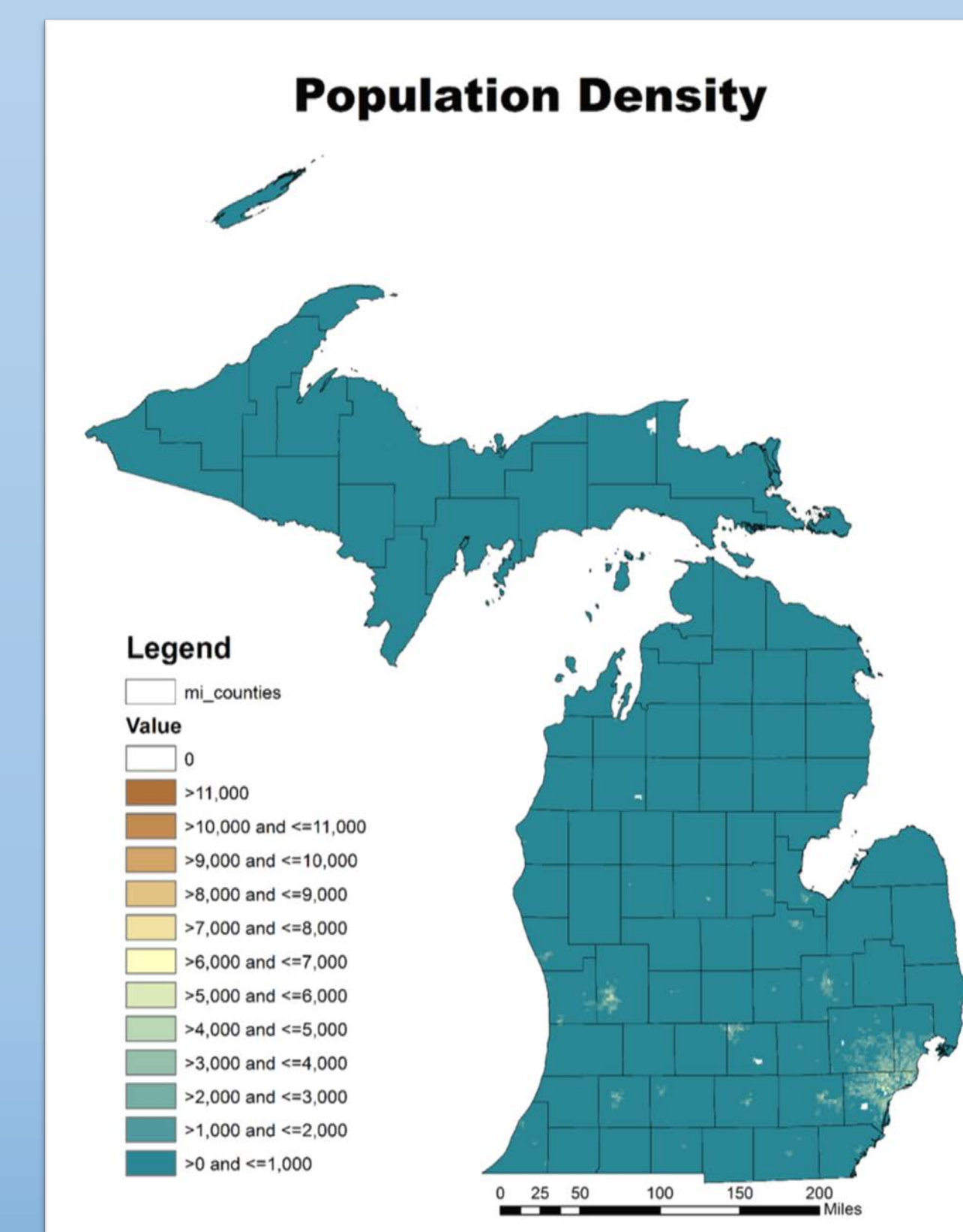
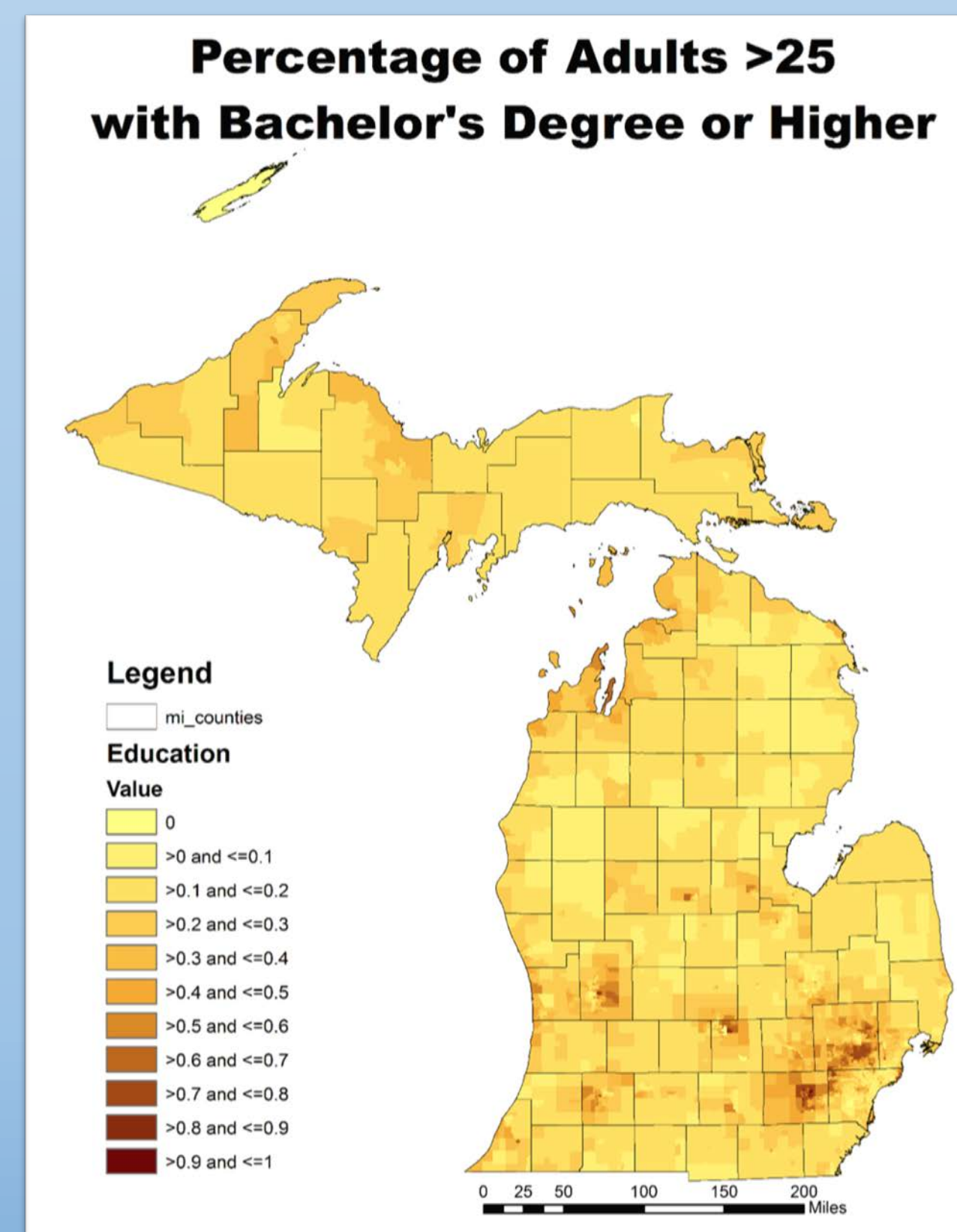
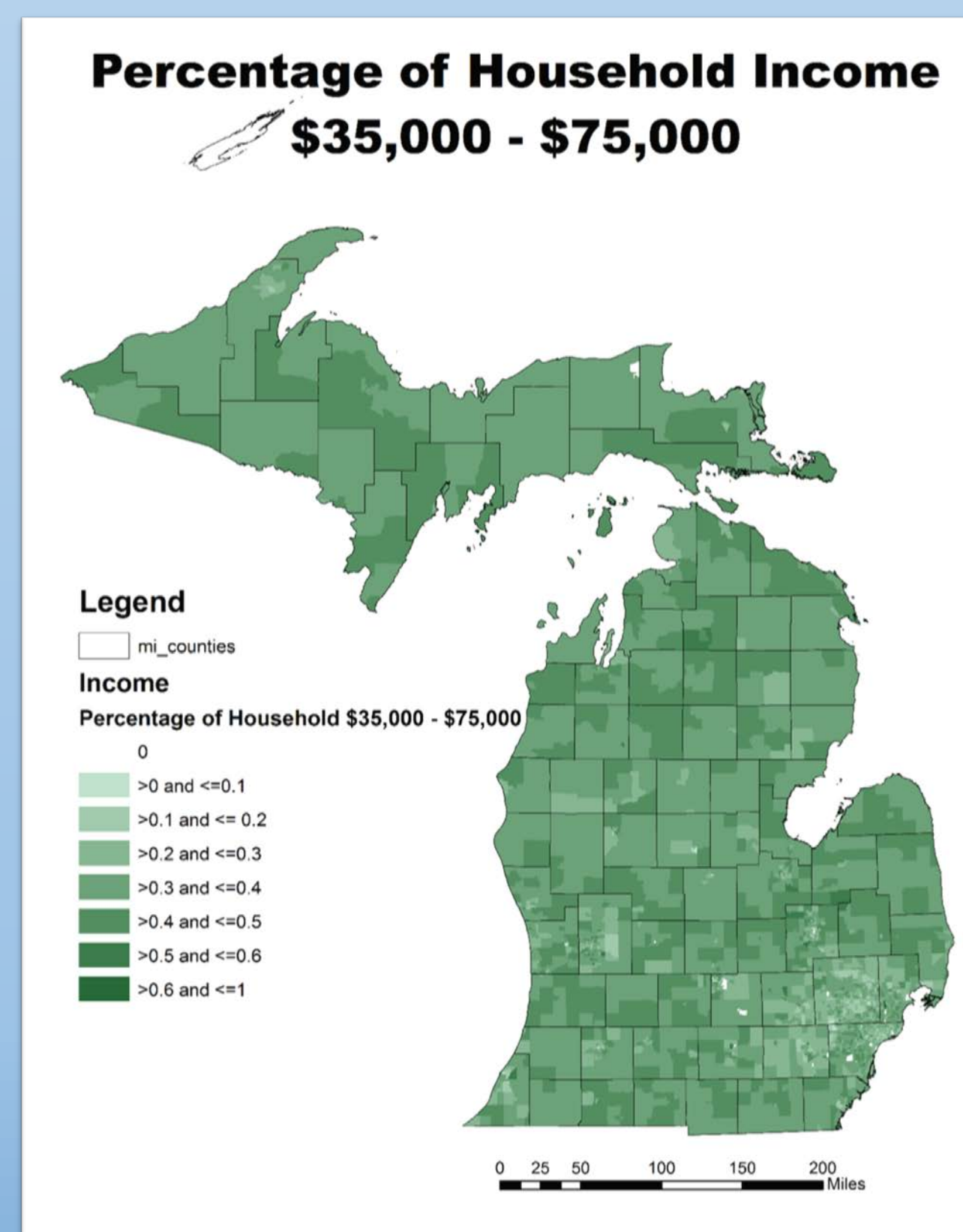
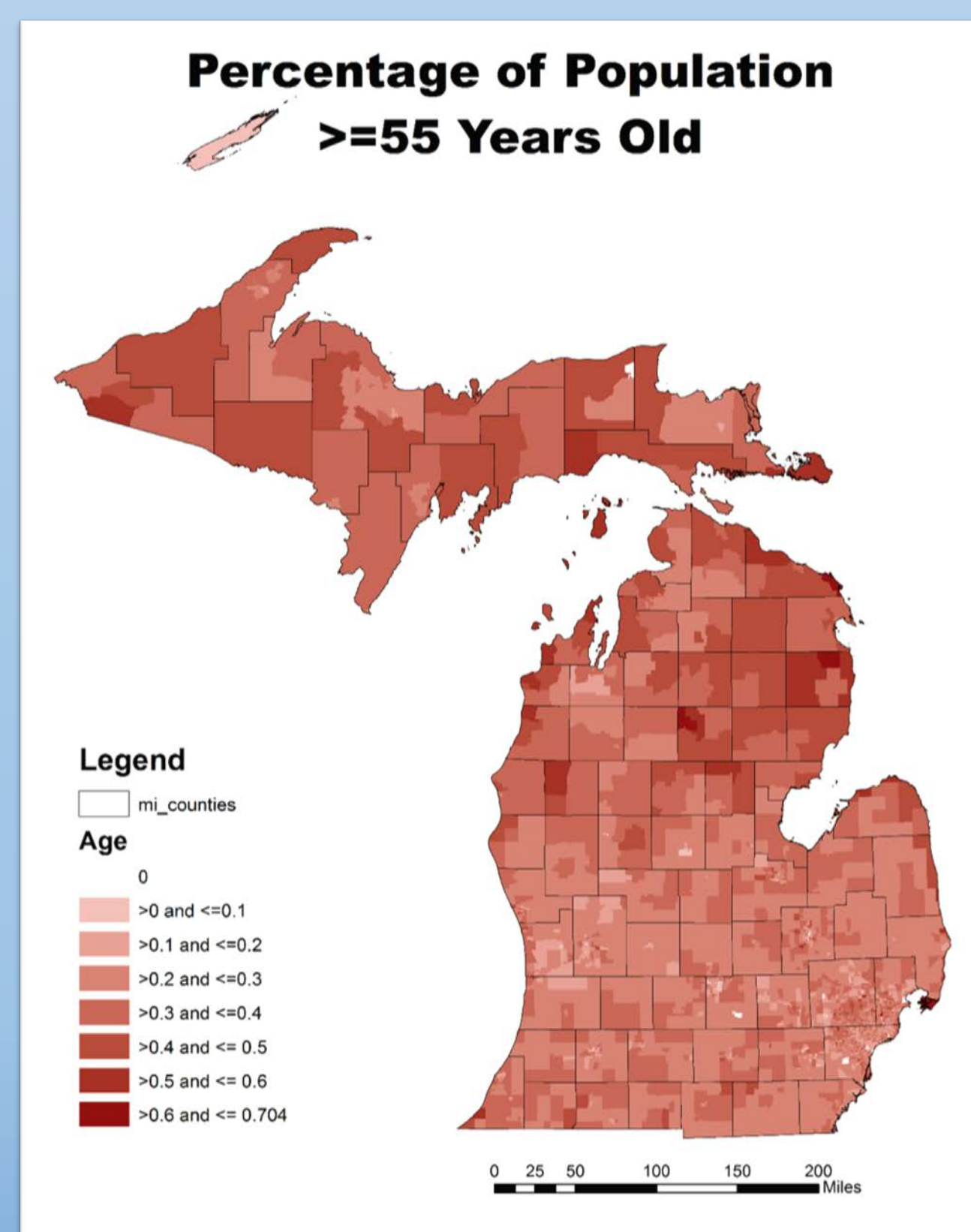
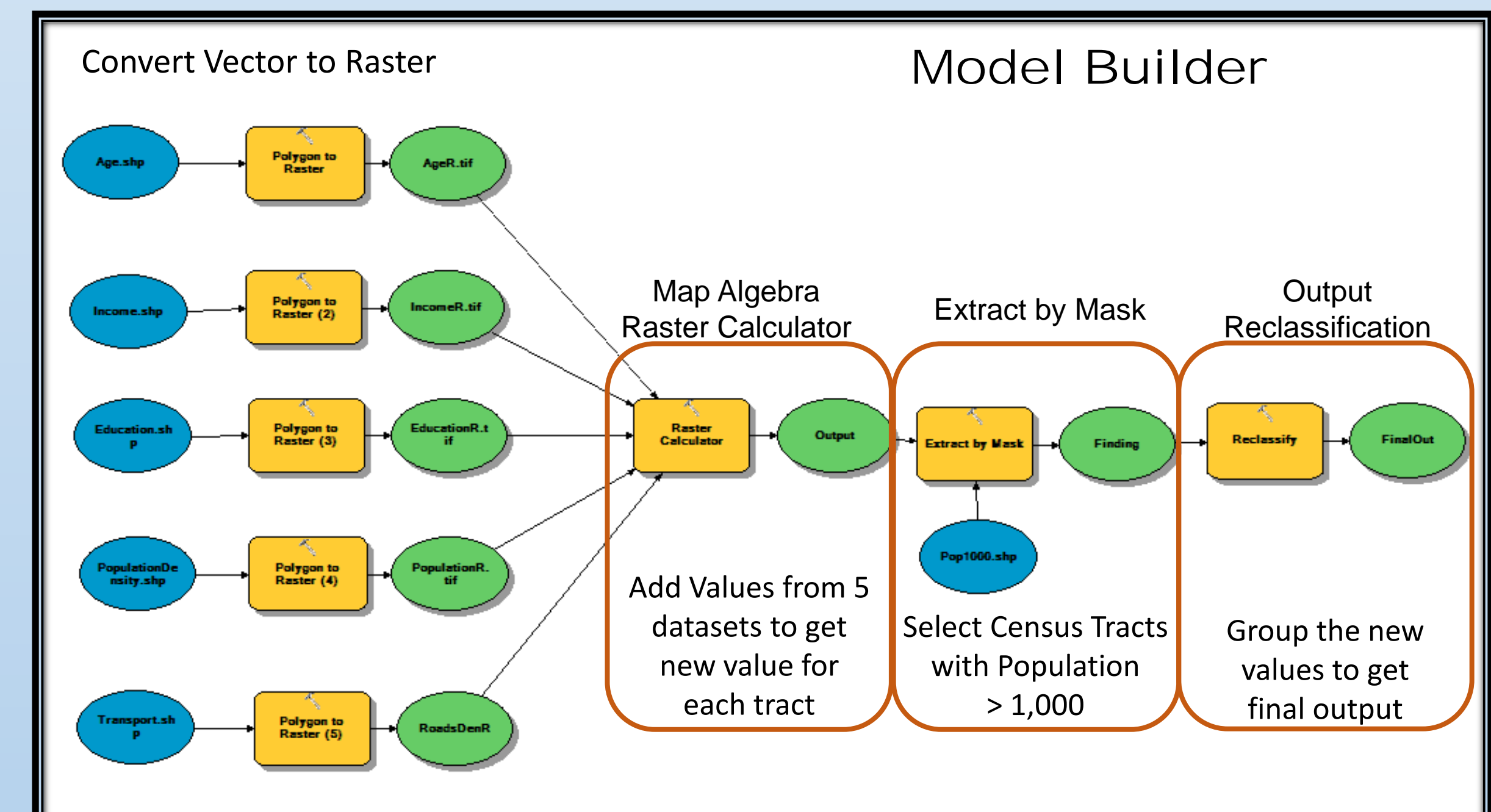
A lot of census tracts with higher scores are in Michigan cities areas.

The area with most higher score communities are in the Detroit area, which means Detroit could have a high potential of improving its recycling rate.

Michigan Recycling Potential Score Area



Calculated Value	Reclassification	Recycling Potential Score of Michigan Communities	Numbers of Census Tracts	Percentage of the Area in Michigan
0-5	1	1	54	0%
5-10	2	2	14969	4%
10-15	3	3	324743	89%
15-20	4	4	20134	6%
20-26	5	5	3083	1%



Percentage of population 55 years and older	code
0	0
>0 and <=0.1	1
>0.1 and <=0.2	2
>0.2 and <=0.3	3
>0.3 and <=0.4	4
>0.4 and <= 0.5	5
>0.5 and <= 0.6	6
>0.6 and <= 0.704	7

Percentage of household with annual income between \$35,000 and \$75,000	Code
0	0
>0 and <=0.1	1
>0.1 and <= 0.2	2
>0.2 and <=0.3	3
>0.3 and <=0.4	4
>0.4 and <=0.5	5
>0.5 and <=0.6	6
>0.6 and <=1	7

Percentage of population over 25 years old with Bachelor's Degrees or higher	Code
0	0
>0 and <=0.1	1
>0.1 and <=0.2	2
>0.2 and <=0.3	3
>0.3 and <=0.4	4
>0.4 and <=0.5	5
>0.5 and <=0.6	6
>0.6 and <=0.7	7
>0.7 and <=0.8	8
>0.8 and <=0.9	9
>0.9 and <=1	10

Population Density (Per Square Mile)	Code
0	0
>0 and <=1,000	12
>1,000 and <=2,000	11
>2,000 and <=3,000	10
>3,000 and <=4,000	9
>4,000 and <=5,000	8
>5,000 and <=6,000	7
>6,000 and <=7,000	6
>7,000 and <=8,000	5
>8,000 and <=9,000	4
>9,000 and <=10,000	3
>10,000 and <=11,000	2
>11,000	1

Road Density (miles/square mile)	Code
0	0
>0 and <=2	1
>2 and <=4	2
>4 and <= 6	3
>6 and <=8	4
>8 and <=10	5
>10 and <=12	6
>12 and <=14	7
>14 and <=16	8
>16	9

Used Python to create a tool to calculate the length of the roads within each census tract.