**Part 1**

1. Washtenaw County’s Social Connectedness Index to other counties has a strong positive skew, indicating it has relatively strong social connections to a small set of counties. The two plots below show the distribution before and after a log transformation.

SCI from Washtenaw County log(SCI) from Washtenaw County  

1. The table below shows the 10 most connected counties to Washtenaw. Each are nearby in Southeast Michigan.

|  |  |  |
| --- | --- | --- |
| **County Name** | **State** | **SCI to Washtenaw** |
| Lenawee | Michigan | 406,350 |
| Livingston | Michigan | 378,479 |
| Jackson | Michigan | 287,758 |
| Monroe | Michigan | 254,074 |
| Wayne | Michigan | 223,543 |
| Oakland | Michigan | 160,393 |
| Ingham | Michigan | 137,083 |
| Leelanau | Michigan | 98,680 |
| Hillsdale | Michigan | 97,961 |
| Clinton | Michigan | 87,083 |

1. There is a fairly strong negative relationship between distance to Washtenaw and social connectedness to Washtenaw: closer counties are more connected. The binned scatter plot below shows the relationship between log(distance) and log(SCI). In a simple linear regression framework, the R-squared of this relationship is 0.26. Visually, we can also see this relationship if we map the county’s social connectedness.

Relationship Between SCI and Distance to Washtenaw County



Map of SCI to Washtenaw County



**Part 2**

1. To measure network concentration, I construct an estimate of the number of Facebook connections from each county to others within 50 and 100 miles. I can do this by building an estimate of the number of connections between each county pair as follows:

We know:

So:

We don’t know the number of FB Users in a county, but if we assume the share of the population that uses Facebook is roughly equal across counties then we can estimate:

Then, for each county, we can sum this measure over counties within 50 or 100 miles and divide by the sum over all counties.

1. The table below shows that counties’ average share of connections within 50 and 100 miles, respectively, is 54% and 64%. The histogram shows the distribution for 100 miles. In Washtenaw County, 58% of connections are within 100 miles. The county ranks 852nd of 3,128 nationally and 31st of 83 in Michigan in terms of least concentrated networks.

National Distribution of Share Friends Within 100 Miles



|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Variable** | **Observations** | **Mean** | **Std. Dev.** | **Min** | **Max** |
| Share Connections Within 50 mi | 3,217 | 54.0% | 13.7**%** | 0.9% | 82.9% |
| Share Connections Within 100 mi | 3,217 | 64.3% | 13.0% | 5.4% | 85.7% |

1. The binned scatter plots below explore the relationship between my measure of network concentration (share of connections within 100 miles) and three outcomes: mean household income, social mobility, and male life expectancy at Q1 income. These relationships suggest that individuals in areas with less concentrated social networks on average have higher incomes, greater social mobility, and live longer. It is possible that living in an area that is more “connected” leads an individual to have more social interactions and ultimately have “better” economic and health outcomes. With individual-level social media data, one could compare the economic/health outcomes of individuals from families of the same income living in the same geographic area, but different levels of individual network concentration.

Mean Household Income Social Mobility

 

Male Life Expectancy at Q1 Income

