The Decline of The Rural Midwest

Introduction

The overall trend in the United States, for the last 150 years, has been that of people moving out of rural areas and into more urban areas. This is usually due to more opportunities in cities in terms of education, jobs, and amenities. In 2010, the US Census Bureau defined urban as either urbanized area, which are areas of more than 50,000 people, or urban clusters, which are areas of at least 2,500 people, but no more than 50,000 people, everything else is considered rural. (US Census Bureau)

This project started with the question, “what is the pattern of population density in the rural Midwestern United States, over the last forty years, and what factors have influenced this pattern?” To answer this question I looked at the total population in the Midwest states—Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin—at the county level, from 1970 to 2010 (by decade). I proposed that from 1970 to 2010 there would be a decrease in the rural population and an increase in population in urban centers. I also looked at variable data, for each county during each decade, that might have had an effect on this shift in location of the population concentrations; this included per capita income and the population of persons over the age of 25 who had a college degree. I evaluated if both income and education affected the population density patterns in the Midwest from 1970-2010.

Methodology

I used both ArcGIS and GeoDa for my analysis. ArcGIS allowed me to analyze the population density, at the county level, for each variable during each decade, and GeoDa allowed me to run linear regressions for the influence of a previous decade’s income, population, and education on the decade’s total population that was being regressed.

Using a layer I created by joining the time series data with the 2000 county level boundaries shapefile I created a population density, a per capita income, and a completed college education population density map for each decade. I also looked at a local Moran’s I for each variable over the decades and a quantile, or density, map in Geoda. This allowed me to look at the clustering and trends of population, and confirm that lower county total populations were not only clustered together, but where in rural areas, while the higher total county populations were clustered in urban areas.

Conclusion

Overall my results suggest that both education and income influence total population increase. Through a time series animation of LISA cluster maps, quantile maps, significance maps, and Moran’s I scatter plots, there is an obvious trend of higher population density in more urban areas. This is, high population density counties tend to be next to other high population density counties, and low population density counties tend to be next to other low population density counties. This trend is also true for income levels (high-high near urban areas, and low-low near rural areas) and college education populations (more densely populated near urban areas).

Reference map