

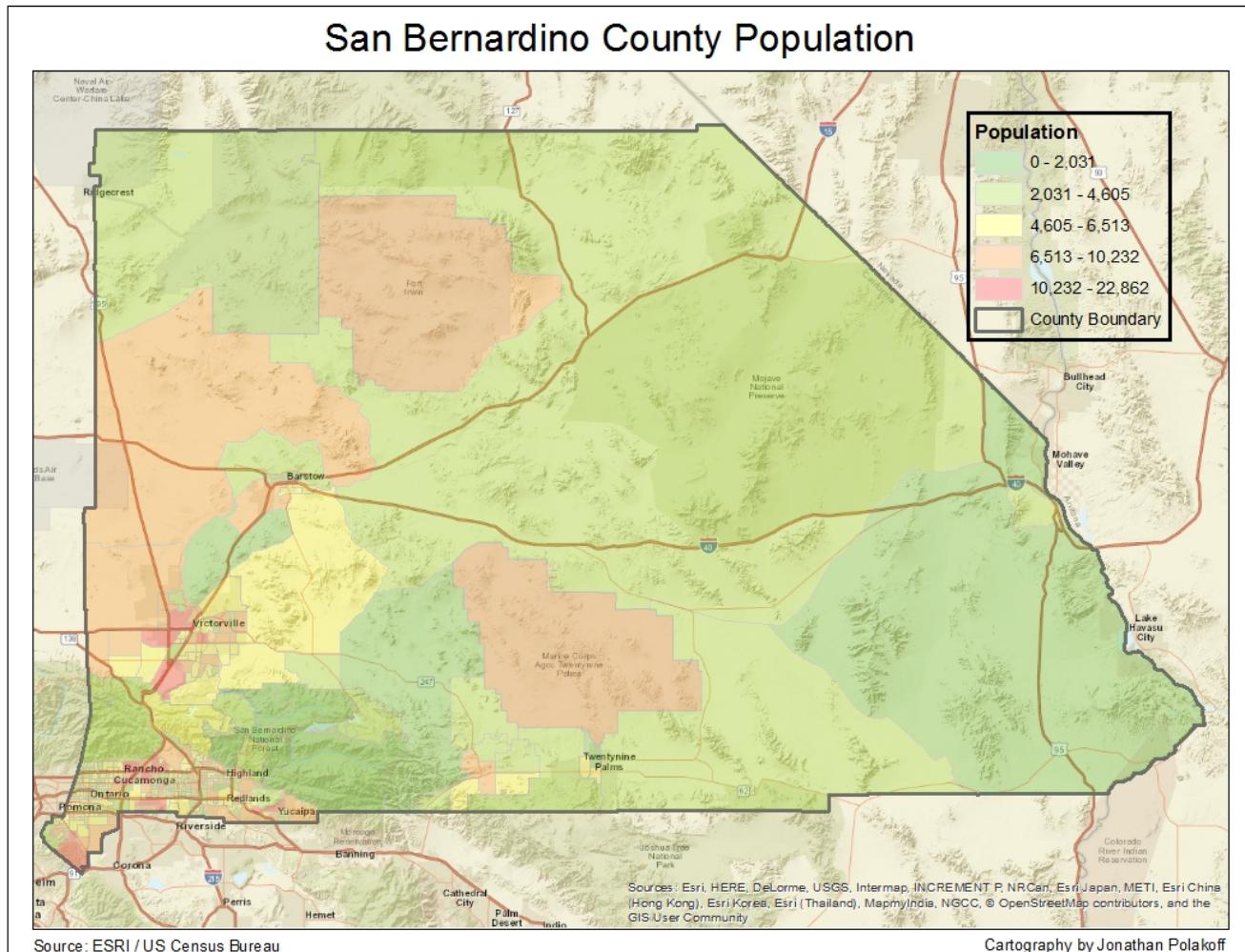
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Intermediate GIS Final Project  
“Where Fast Food Proliferates”

San Bernardino County is a diverse and complex place – it is the largest county in the United States, the birthplace of McDonald’s, the epicenter of the last housing crisis and home to pockets of stunning natural beauty. In many ways, the county is a microcosm of Southern California: a sprawling expanse of urban, suburban, exurban and rural landscapes crisscrossed by busy freeways.

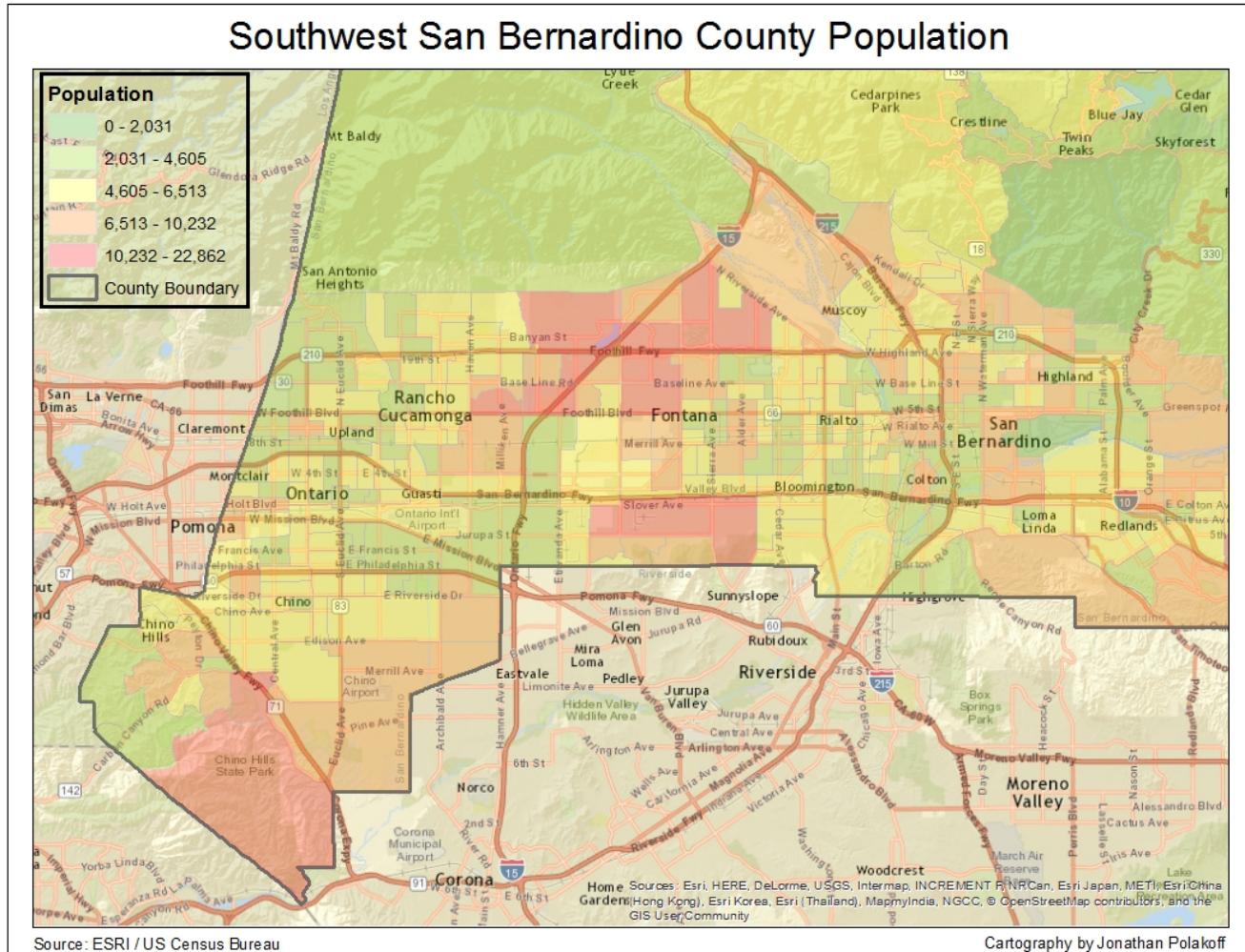
The county is also emblematic of several trends in food access in the United States. Those trends include a proliferation of fast food locations and a relative lack of access to fresh foods in some low income areas. In this topographical analysis, I will take a look at the parts of San Bernardino County with the greatest concentration of fast food restaurants, while also examining the economic makeup of those areas and examining whether there is adequate access to fresh food from grocery stores in those areas.

The goal of this analysis is to identify those areas within San Bernardino County that combine 1) easy access to fast food, 2) low wages and 3) low access to fresh foods from supermarkets. While food access clearly has important public health impacts, an analysis of those health impacts is not within the scope of this project. Instead, I hope to provide a framework to identify specific areas that deserve closer scrutiny to ensure access to healthy food.

Let's begin with a reference map of San Bernardino County that shows the areas with the greatest populations. Much of the county's population is concentrated in the many small census tracts in the county's southwestern corner.

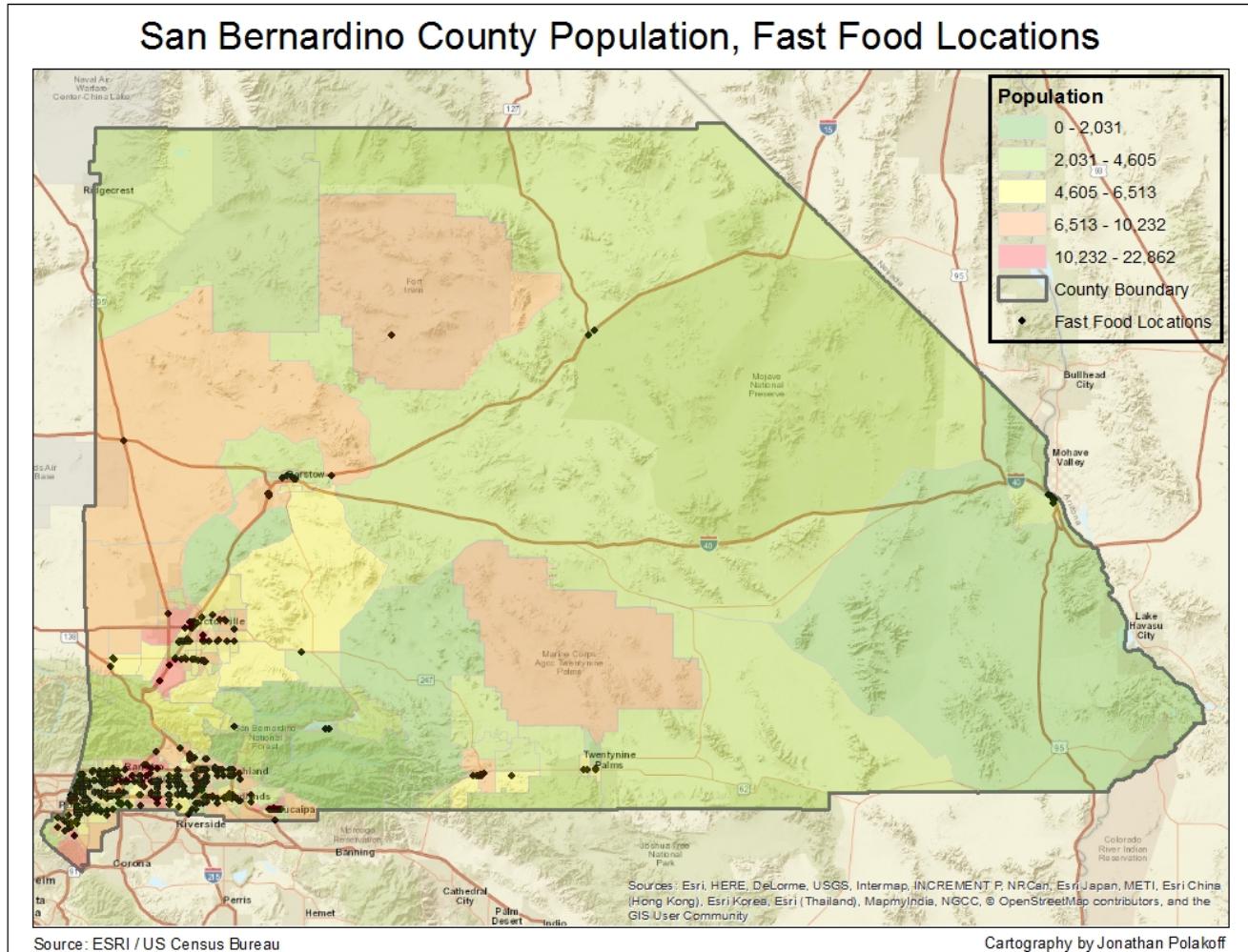


Here's a closer look at some of the population centers in the southwest portion of the county. Throughout this presentation, I will continue to evaluate the county as a whole, while paying particularly close attention to the southwest portion.



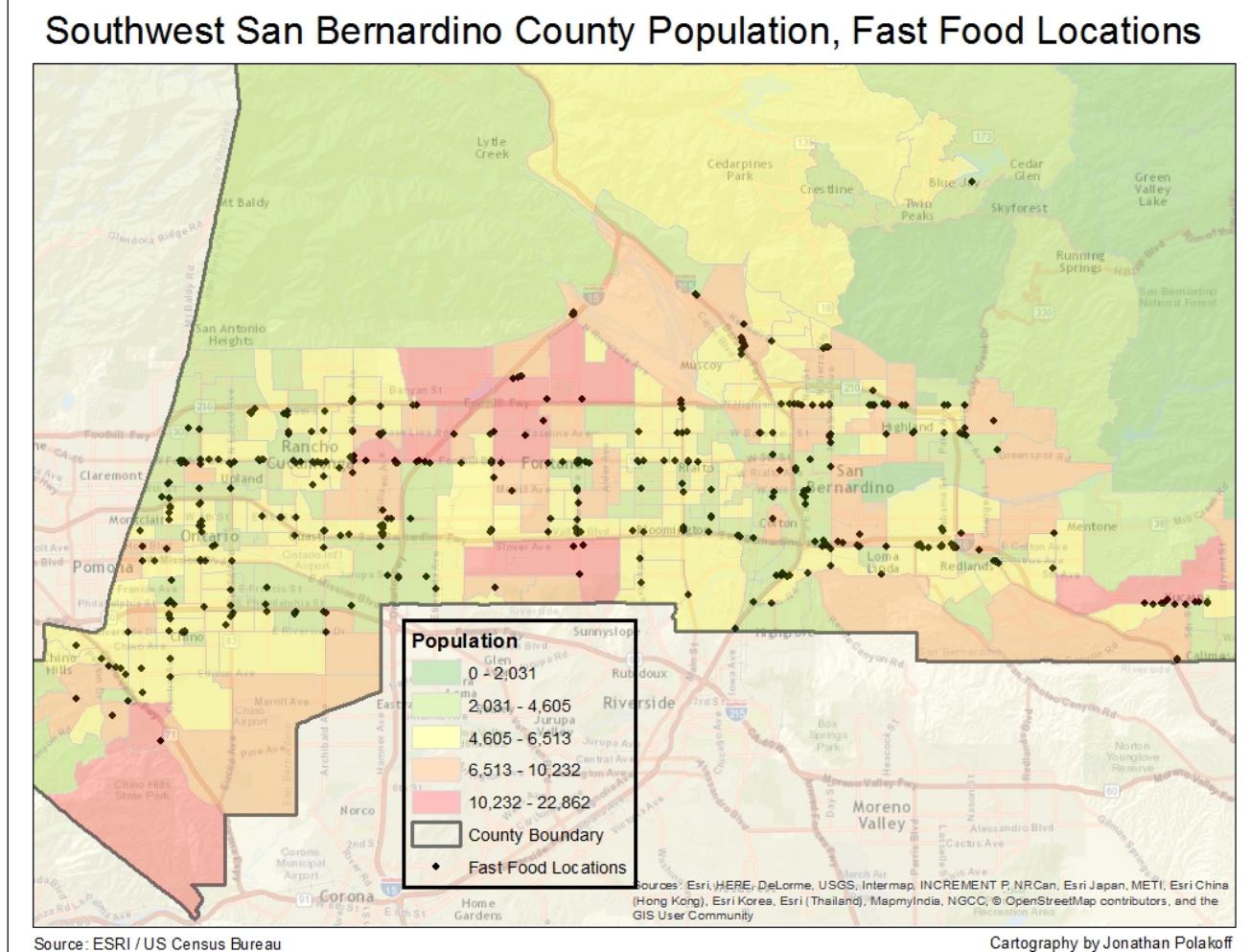
Source: ESRI / US Census Bureau

Here we have a map of the county with all of its fast food locations. There are 512 locations in total, with most of them located in the southwest portion of the county, in an area near the 60 and 10 freeways, near the borders of Los Angeles County and Orange County.



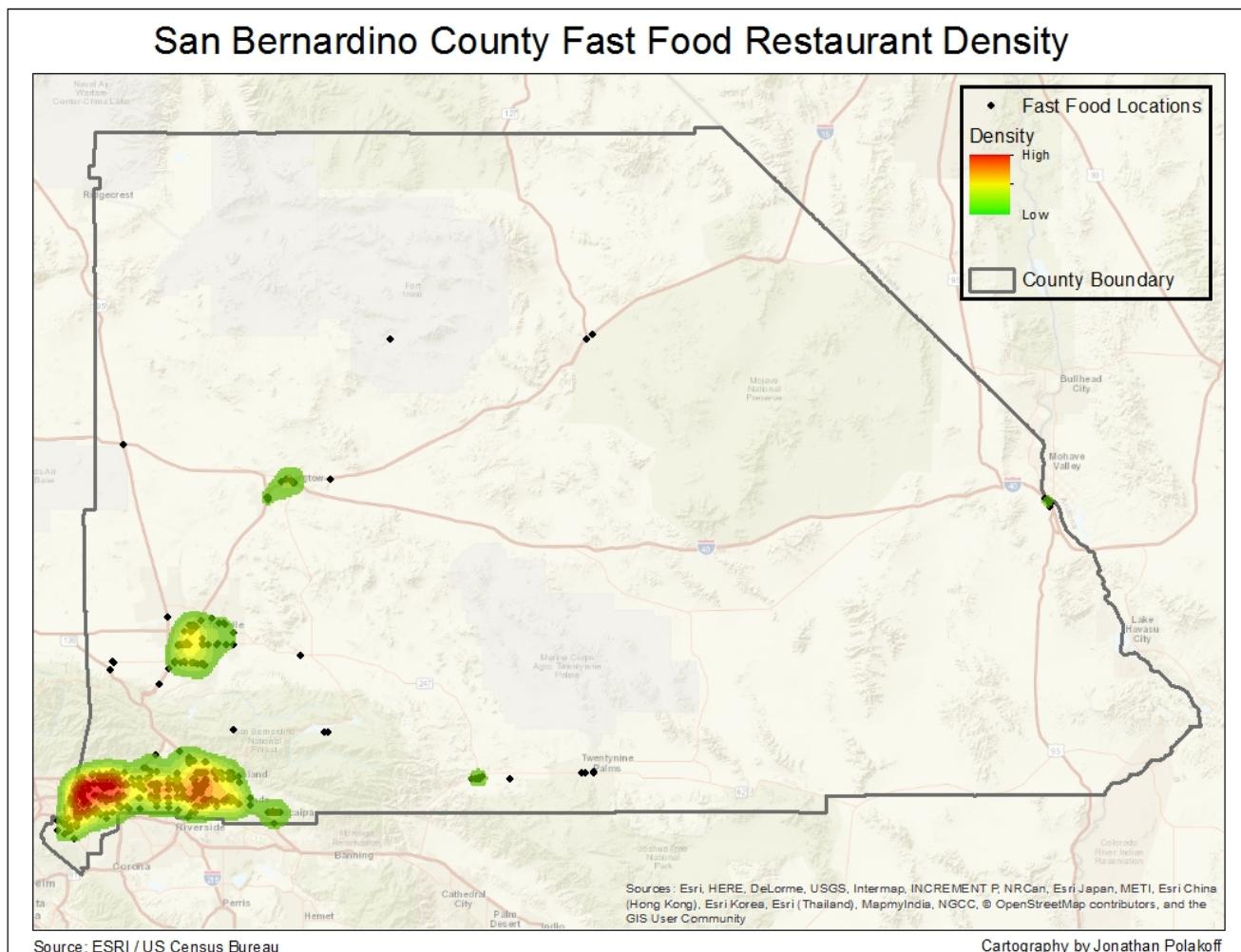
(Data source: <http://arcg.is/2rBLG7w>)

Let's take a closer look at some hard-to-see census tracts in the southwestern portion of the county. A close look demonstrates that fast food restaurants are distributed throughout highly populated census tracts, as well as less-populated census tracts.

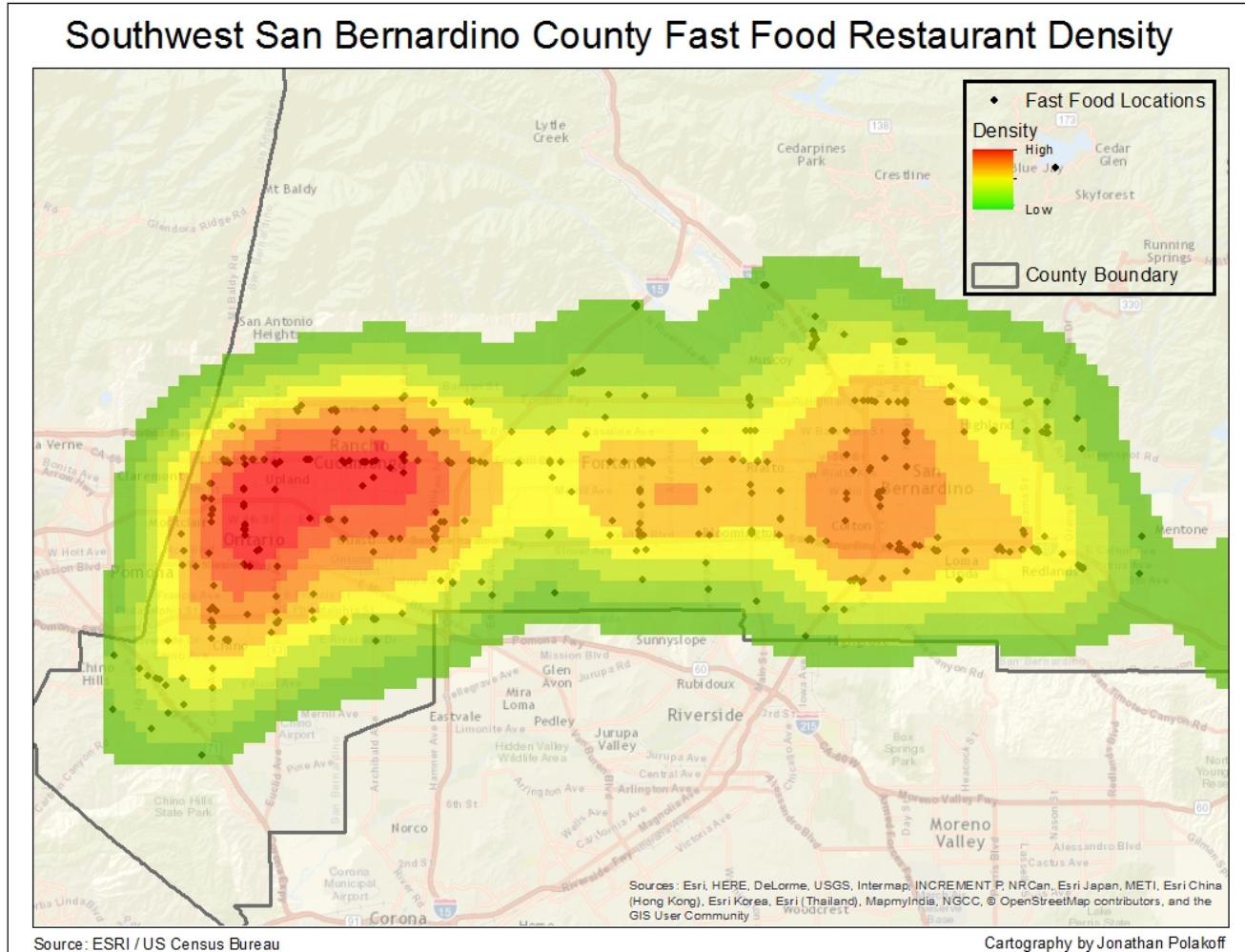


Source: ESRI / US Census Bureau

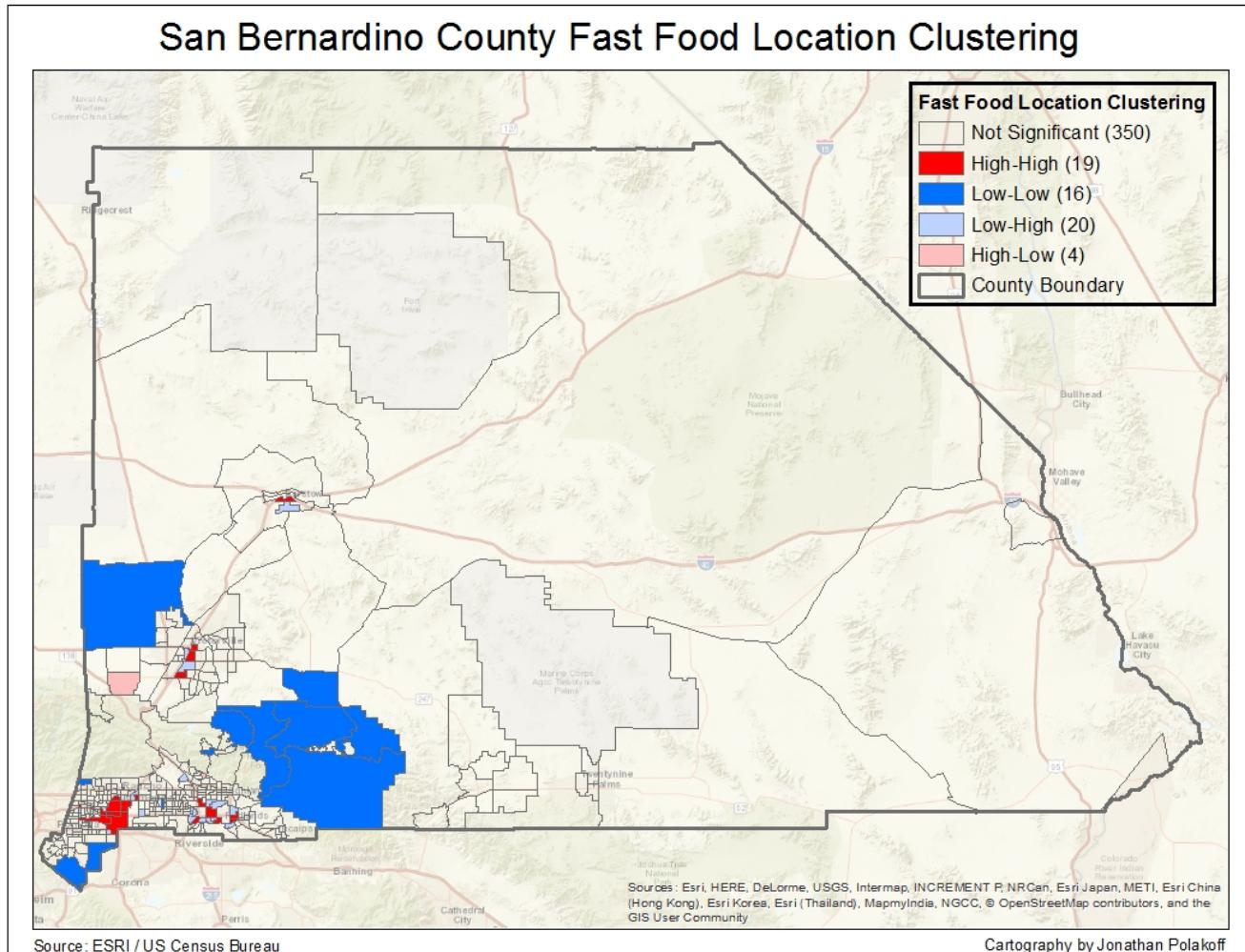
The density of fast food locations can perhaps be more easily interpreted with a heat map. The heat map displays the areas with the greatest concentration of fast food locations in red. Areas with more moderate concentrations of fast food locations are shaded in yellow, with lower concentrations in green. While the greatest concentration of fast food locations is clearly in the southwest portion of the county, this map also shows important concentrations of fast food locations in the areas surrounding Barstow and Victorville.



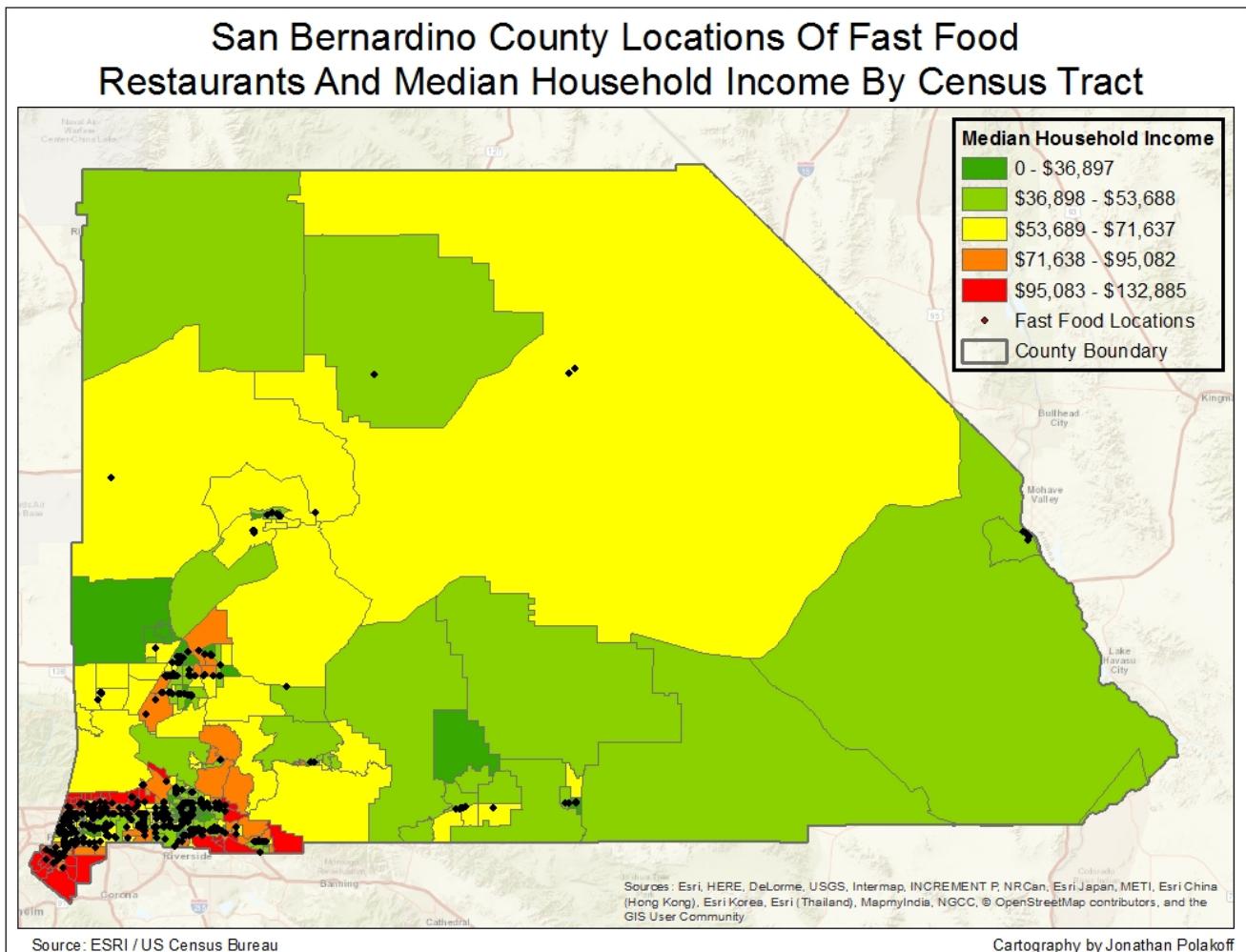
This heat map gives a closer look at the two areas of greatest fast food restaurant concentration. They are in the Ontario-Rancho Cucamonga and San Bernardino areas.



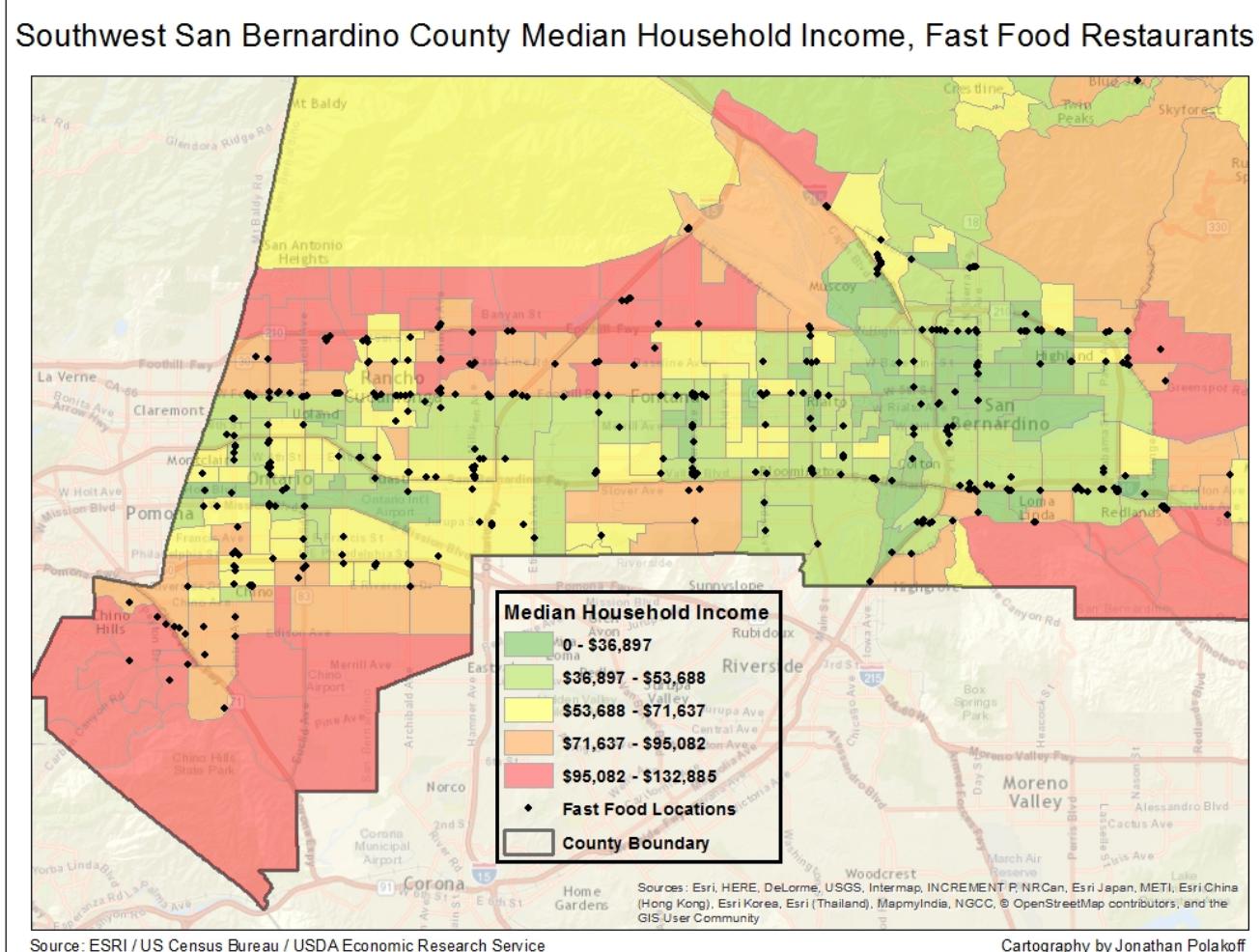
We have now determined that fast food locations are concentrated in particular areas of the county. But is there anything statistically significant about how those locations are clustered? A cluster map analysis suggests that there is. Nineteen census tracts with high concentrations of fast food restaurants are clustered geographically with census tracts that also contain a high concentration of fast food locations.



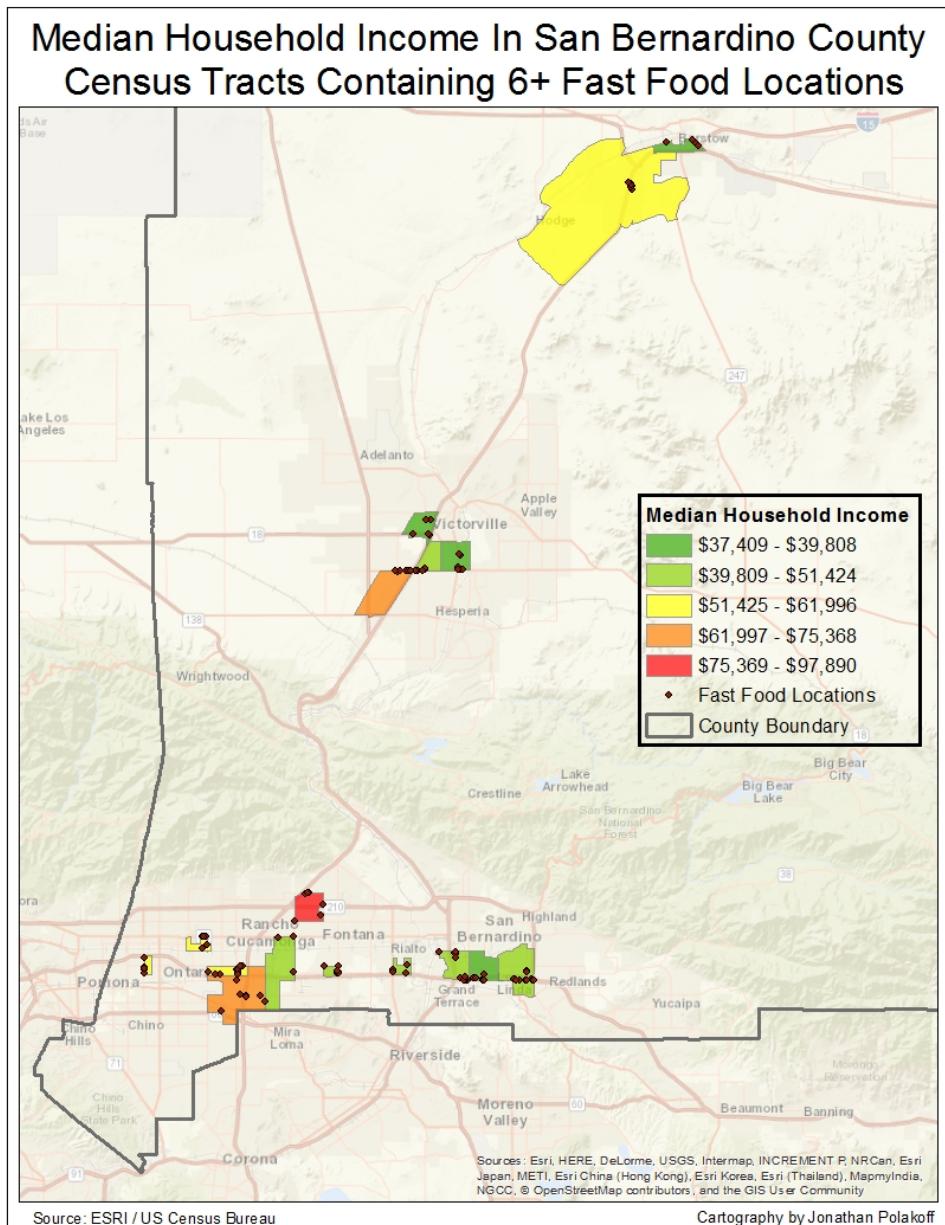
While the previous maps have been helpful in identifying the distribution of fast food restaurants, our central question revolves around income and access to healthy food. Let's take a look at a map showing the county's median household income alongside fast food locations.



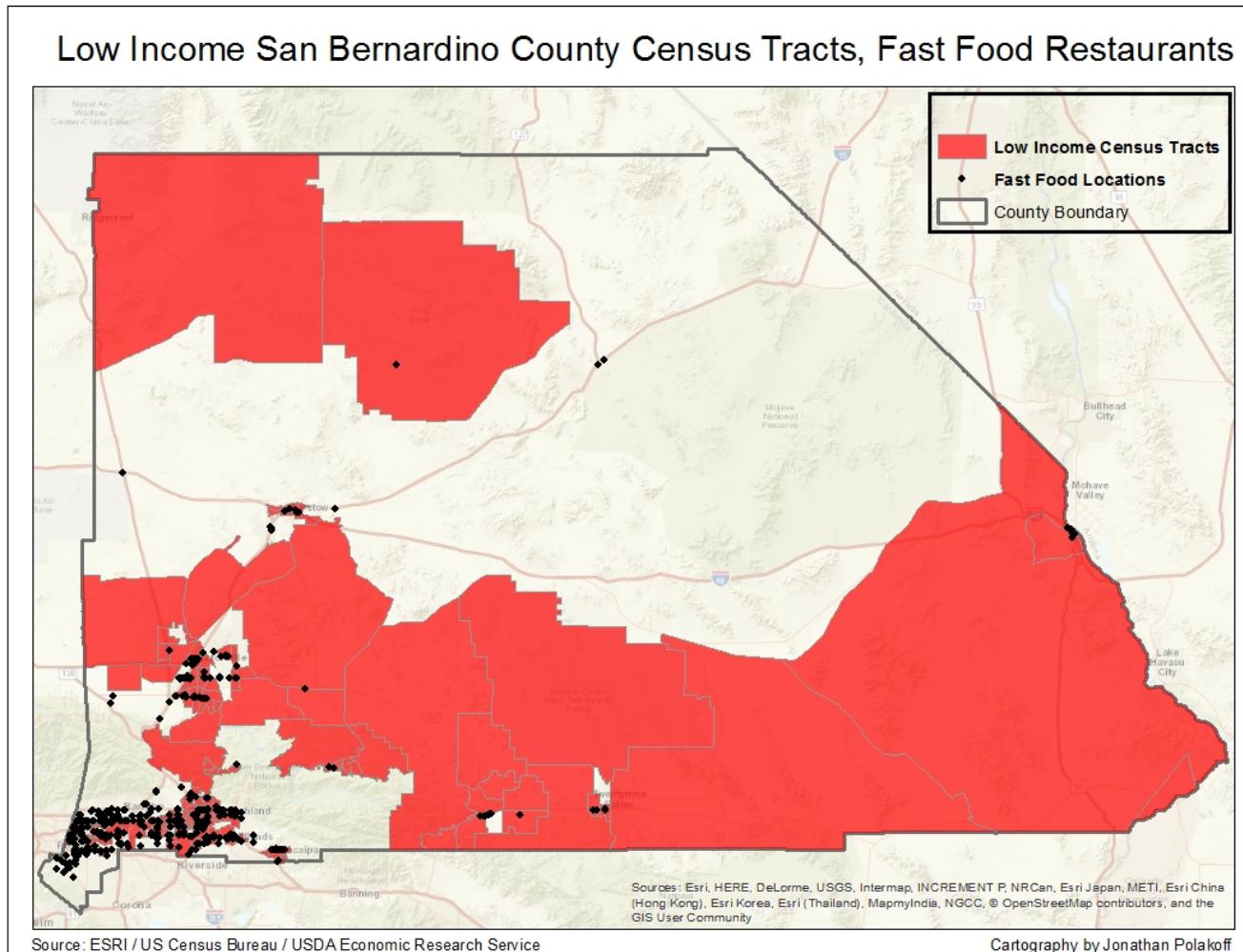
A closer look shows that many census tracts on the lower end of the median household income scale contain several fast food locations.



Let's filter our median household income data to take a closer look at the few census tracts that contain six or more fast food locations. There appears to be a trend. The majority of census tracts containing six or more fast food locations also have a median household income that falls in the lower end (\$37,409 – \$51,424) of the county's median household income range. What's more, none of the census tracts containing six or more fast food locations have a median household income above \$97,890.

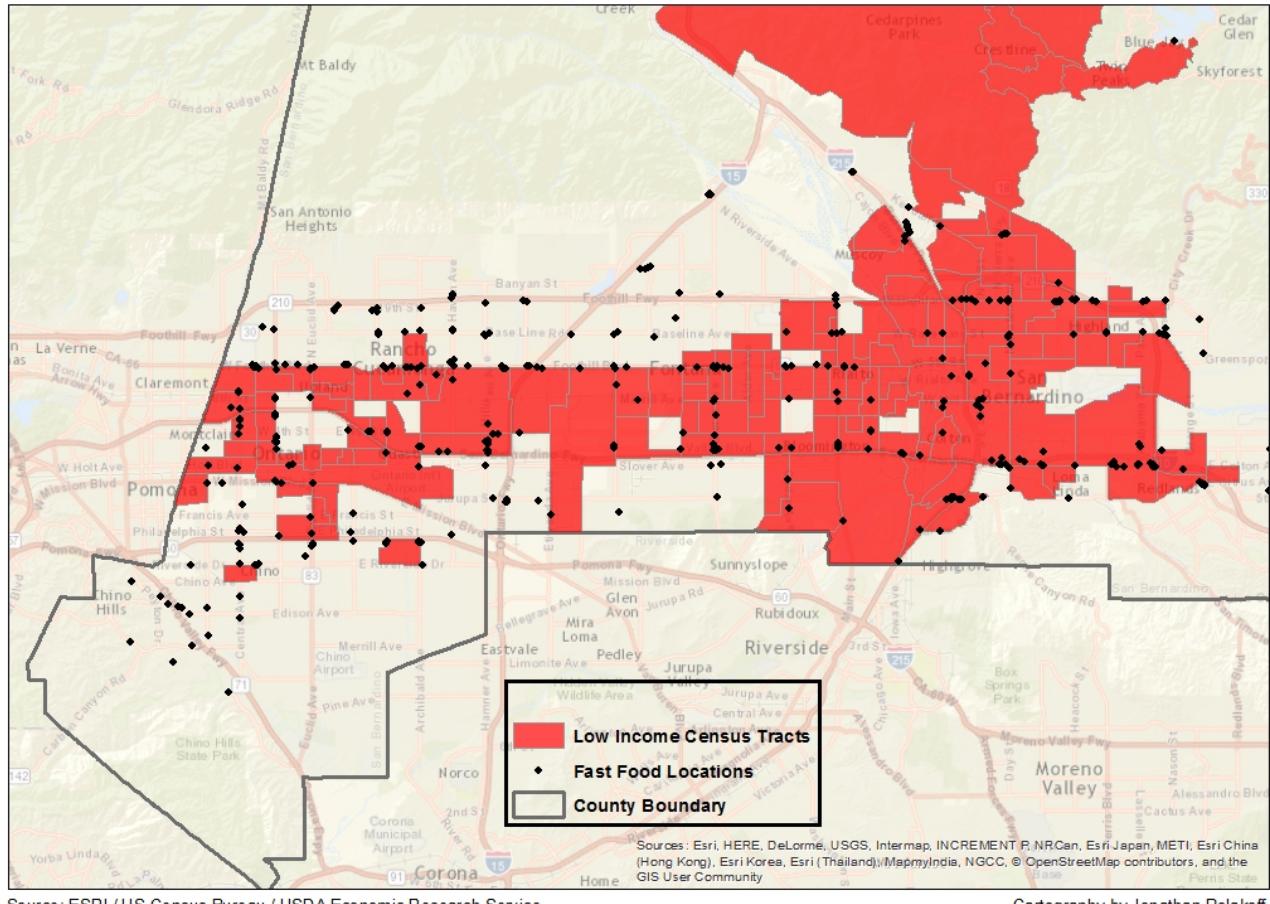


Now, let's take a look at low income census tracts and fast food restaurants. The low income census tract data comes from the US Department of Agriculture's Food Access Research Atlas – a data source that will continue to be used in this analysis.



Again, it's clear there are plentiful fast food locations in low income census tracts.

### Low Income Southwest San Bernardino County Census Tracts, Fast Food Restaurants



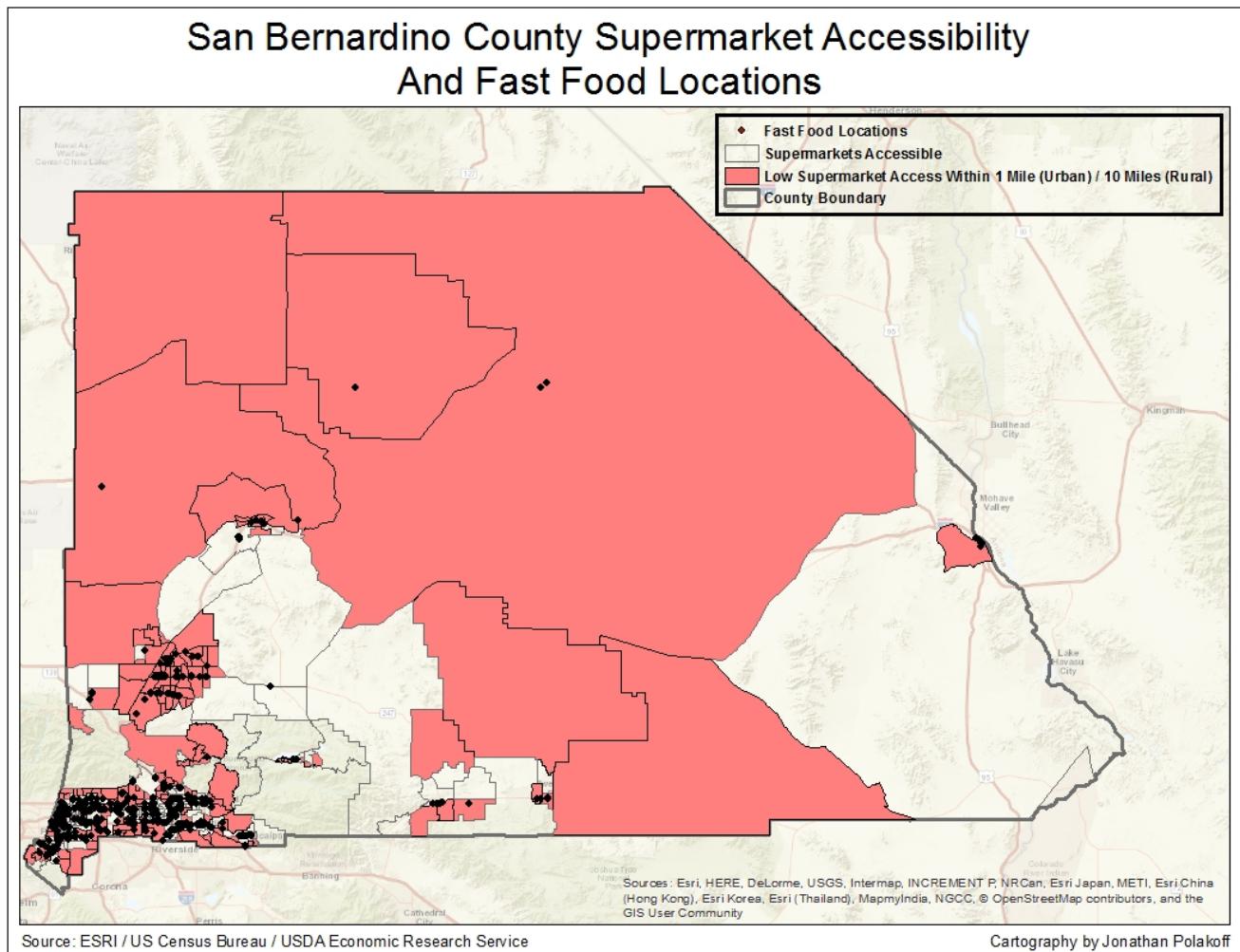
Source: ESRI / US Census Bureau / USDA Economic Research Service

Cartography by Jonathan Polakoff

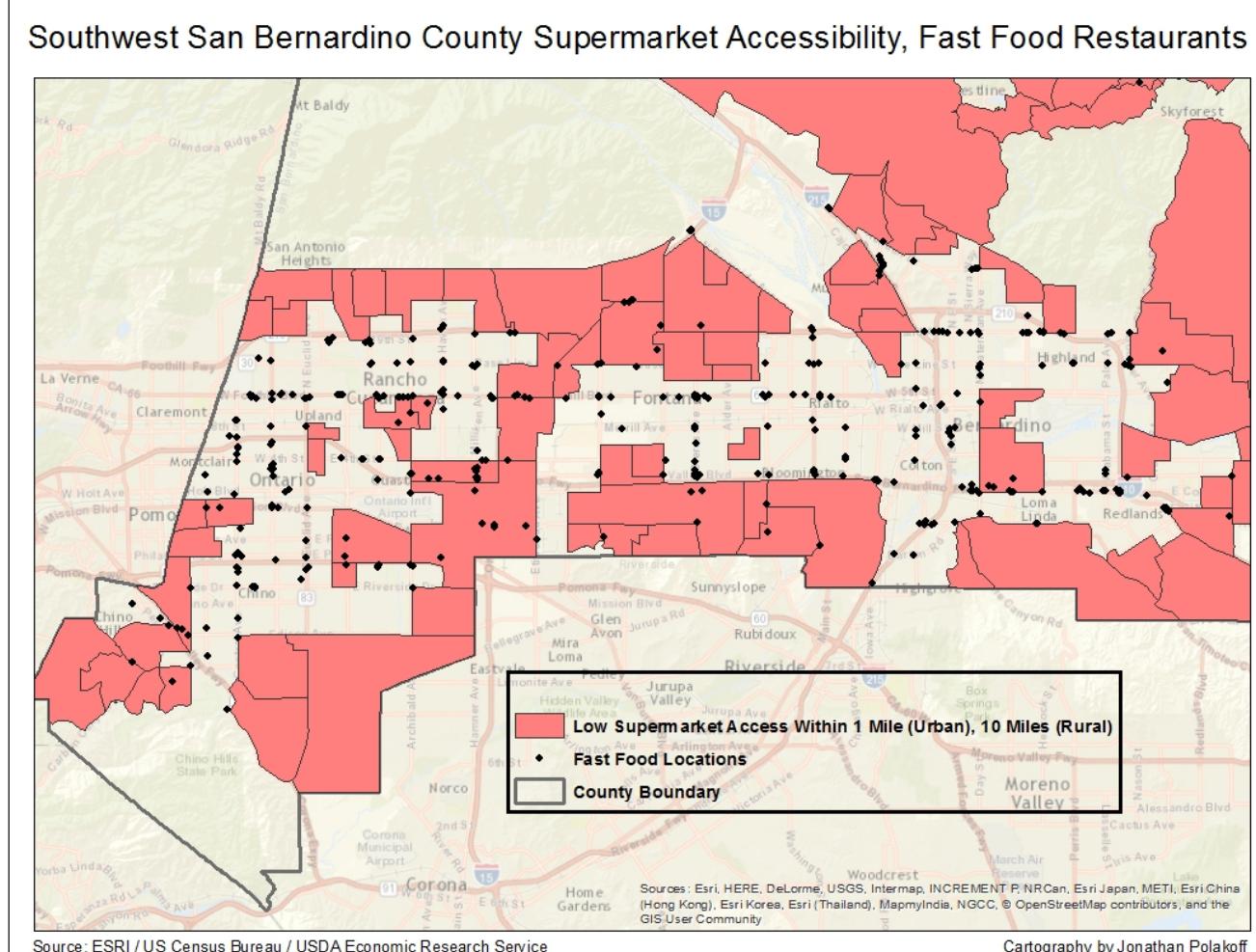
Now, let's address the question of fresh food accessibility.

Let's use the USDA's supermarket accessibility data to examine areas that have good access to fresh food at supermarkets and areas that do not. (Data source: <http://bit.ly/2sJIAOy>).

In this map, the pink areas were deemed to have low accessibility to supermarkets within 1 mile (in urban areas) and 10 miles (in rural areas). The map also shows fast food locations in the county. Clearly, there are fast food options available in census tracts that were determined to have low access to fresh foods at supermarkets.



A closer look shows that many of the census tracts that contain many fast food options do provide adequate supermarket access, but other tracts containing several fast food locations *do not* provide adequate supermarket access.



To arrive at our most important takeaway from this analysis, we'll filter our data to display census tracts that 1) have six or more fast food locations, 2) were identified by the USDA as having low access to supermarkets at 1 mile in urban areas or 10 miles in rural areas and 3) were identified in USDA data as low income.

These are the areas that deserve close scrutiny from government officials and the business community to ensure that residents have sufficient access to healthy and fresh alternatives to fast food.

