**8102 Lab 5** Yue Lin

**Assignment Ⅰ**

The bar plot linking the number of neighbors and the number of cases is presented in Figure 1. The census tracts in Columbus are well-connected, because there are no census tracts without any neighbors, and most of the census tracts have three to six neighbors.

A screenshot of a cell phone

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Figure 1. The bar plot linking the number of neighbors and the number of cases.

**Assignment Ⅱ**

The plot for k nearest neighbors is presented in Figure 2. To interpret the plots, we can examine how many links are reaching out from one census tract to another.

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Figure 2. The plot for k nearest neighbors (k = 1, 2).

**Assignment Ⅲ**

The plot for distance-based neighbors is presented in Figure 3. To interpret the plots, we can examine the distance between two census tracts when there is a link between them.

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Figure 3. The plot for distance-based neighbors (band width = 0.5, 0.8).

**Assignment Ⅳ**

The Moran’s I scatterplot is presented in Figure 4. Based on the Moran’s I value (0.637), the crime rate shows spatial autocorrelation.

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Figure 4. The Moran’s I scatterplot.

**Assignment V**

The LISA cluster map is presented in Figure 5. The high-high clusters are located in the center of Columbus, while the low-low clusters are in the southeast and the southwest.

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Figure 5. The LISA cluster map.

**Assignment VI**

The Gi and Gi\* cluster maps are presented in Figure 6. Similar to the LISA map, the high-high clusters are located in the center of Columbus, while the low-low clusters are in the southeast and the southwest. Twos small differences are that the high-high clusters in both the Gi and Gi\* cluster maps cover a larger area than those in the LISA map, and the low-low clusters in the Gi\* cluster map cover a larger area than those in the LISA map.

A picture containing map

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Figure 6. The Gi and Gi\* cluster maps.

**Assignment VII**

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Figure 7. The residual plot.