This project analyzes the extent of residential segregation of populations of Berlin residents with immigrant backgrounds. First, I ask simply, where do immigrants live? In other words, which neighborhoods have the highest concentration of immigrant populations? Second, I approach the question of residential segregation by identifying clusters of residents of specific immigrant backgrounds. Do immigrant populations live disproportionately in some areas in the city and not others? Lastly, to look at a measure of how diverse these areas might be, I ask which of these neighborhoods have the greatest mix of immigrant backgrounds. Exploring these three questions creates a foundation for further research to identify common socio-economic characteristics of predominantly immigrant neighborhoods. Berlin residents with Turkish, former Soviet Union, Polish, and Arab immigrant backgrounds are the focus of my analysis.

### METHODS

To determine which neighborhoods have high concentrations of immigrants, I refer to the data published by the Berlin Development for Urban Development. The map below depicts the percentage of residents that have immigrant backgrounds by Lebenswelthandel orientierte Räume (LOR), an administrative boundary that directly translates to “living environment areas”, hereafter referred to as “neighborhoods.”

Though this map highlights regions of high concentrations of immigrant populations, generally, it does not answer the question of whether certain immigrant communities live in certain areas. To address this, I created four separate maps that show the percentage of specific immigrant groups – Turkish, Arab, Russian, and Polish – of the total population by neighborhood. This suggests that these groups tend to reside in different parts of the city, with neighborhoods in former East Berlin showing higher percentages of Russian immigrants while central neighborhoods have greater proportions of Arab and Turkish immigrants. I refer to the data published by the Berlin-Brandenburg Bureau of Statistics for information on specific immigrant groups.

To investigate this tendency further, I performed a cluster and outlier analysis to see whether specific immigrant groups live in clusters in certain parts of the city. The Anselin Local Moran’s I spatial statistics tool identifies statistically significant hot spots, cold spots, and spatial outliers in a dataset. I used this to assess where clusters of immigrant communities were occurring. A “high cluster” is an area of the city with a statistically significant concentration of residents of a specific background (at the 95 percent confidence interval) compared to other neighborhoods. In the rest of the city, these clusters could be interpreted as “immigrant communities” or “ethnic enclaves.” A “low cluster” is the opposite, an area with an unusually low concentration of residents of a specific background. Together these high and low clusters provide a measure of residential segregation, which I define as the extent to which individuals of different groups occupy different social environments. These results show that residents with immigrant background groups together in a statistically significant way; such that their places of residence are not distributed normally throughout the city as would be expected. This indicates that there may be structural or cultural influences where residents with immigrant backgrounds tend to live.

The Anselin Local Moran’s I test also identifies which neighborhoods are outliers. These outliers are the neighborhoods that are located near high or low clusters but are themselves an anomaly, since they have a surprisingly different concentration of residents with that specific immigrant background compared to the surrounding neighborhoods. The “low-high outliers” are neighborhoods with surprisingly low concentrations of immigrant residents near neighborhoods with very high and statistically significant concentrations, while the “high-low outliers” are the opposite. Both may be an indicator of some kind of residential segregation that causes these neighborhoods to be unique.

Finally, in order to assess the diversity of certain neighborhoods in Berlin, I created a “diversity index” based on the results obtained from my cluster analysis. I define diversity as neighborhoods that have a statistically significant concentration of more than one immigrant community. I overlaid the clusters of residents with Turkish, Arab, Russian, and Polish backgrounds, and assigned a 1 to each. Neighborhoods with clustering of 4 are the most diverse because several immigrant groups reside in the same area. At the map shows, there are no neighborhoods with clusters of all four immigrant groups. By this diversity measure, neighborhoods in the center districts are significantly more diverse than those in the surrounding districts.

### RESULTS

By using a cluster and outlier analysis, I depict immigrant clusters in Berlin. This provides a measure of residential segregation because it highlights parts of the city with abnormally high concentrations of residents with certain backgrounds. The outliers also suggest that some neighborhoods may be especially inclusive of immigrant groups. Whether or not they are overtly exclusive remains unclear. The diversity index shows neighborhoods that contain a particularly diverse mix of residents because residents of more than one immigrant group are clustered there. The next step in this analysis would be to explore the relationship between areas with high concentrations of immigrants and socio-economic and structural factors to understand the underlying causes of residential segregation. The graph above, for example, shows a possible correlation between unemployment rates per neighborhood and neighborhoods with high concentrations of immigrants.