

Predicting the Likelihood of Future Gun Violence in Central Philadelphia

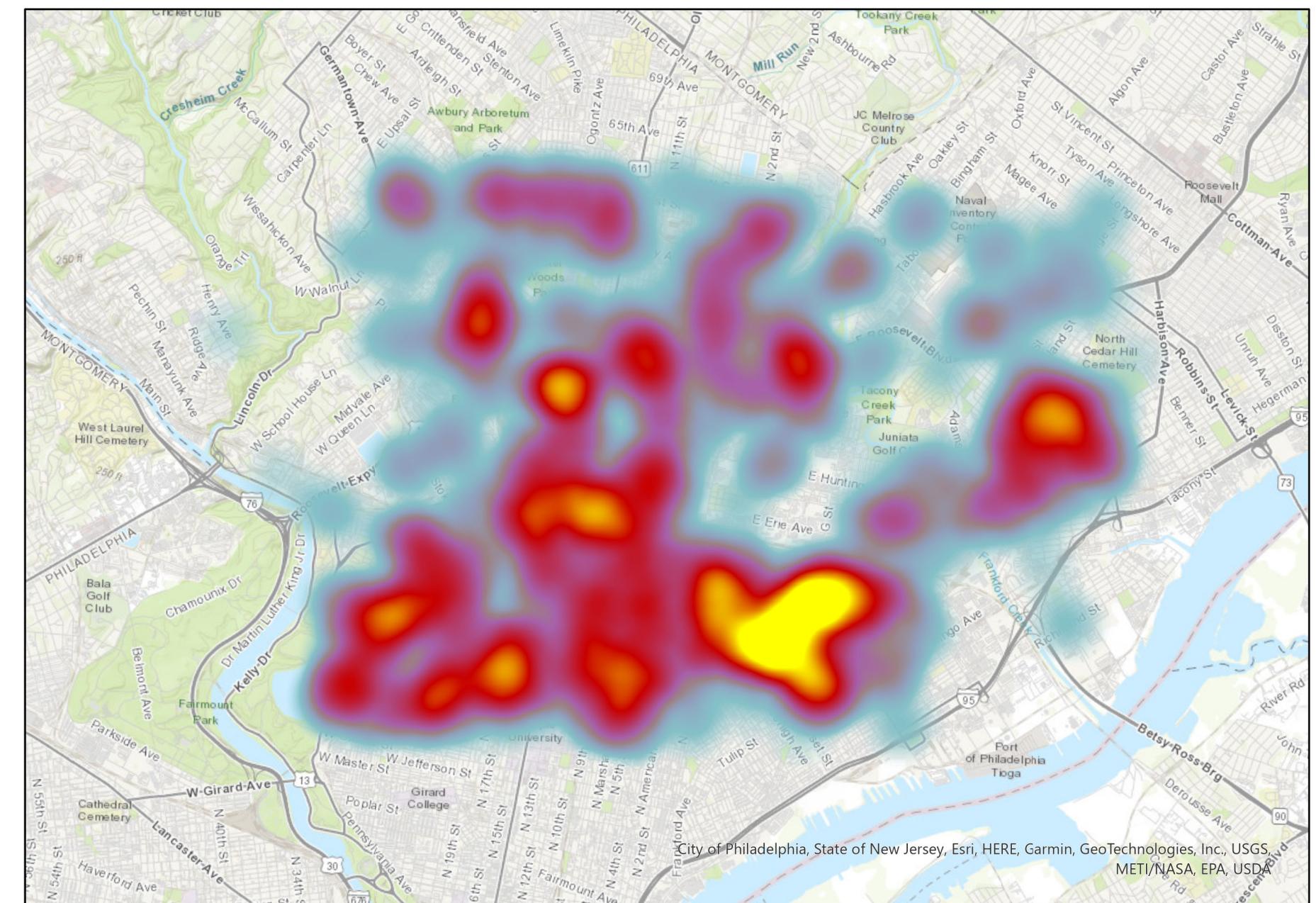
There are 8 indicators in total can be used to predict the future gun violence in Philadelphia.

Populations:

- Hispanic
- White
- Black
- Asian

Conditions:

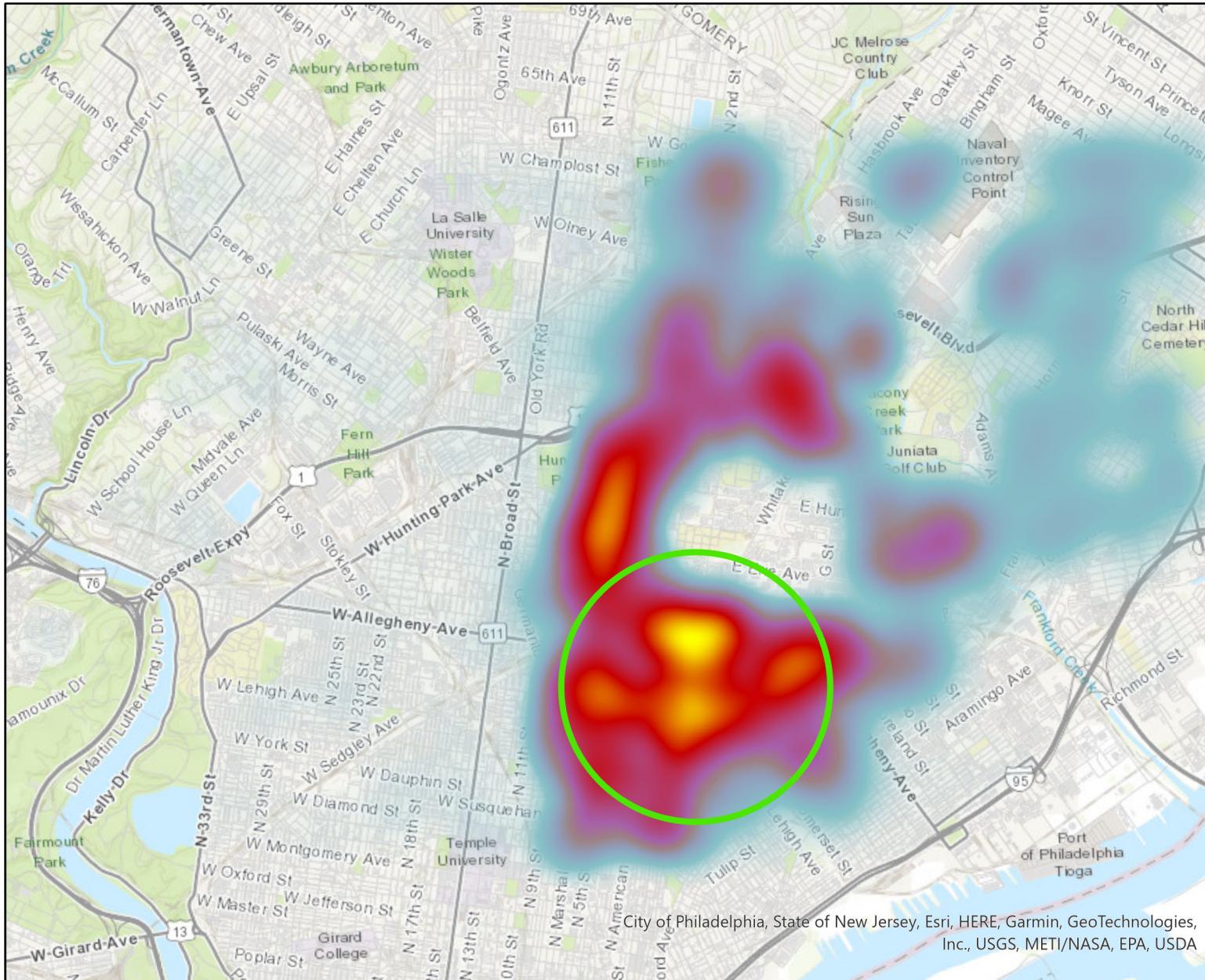
- Percentage of population in college for at least 2 years
- Percentage of population below the age of 5 years
- Median monthly rent in dollars
- Percentage of population living below the poverty line



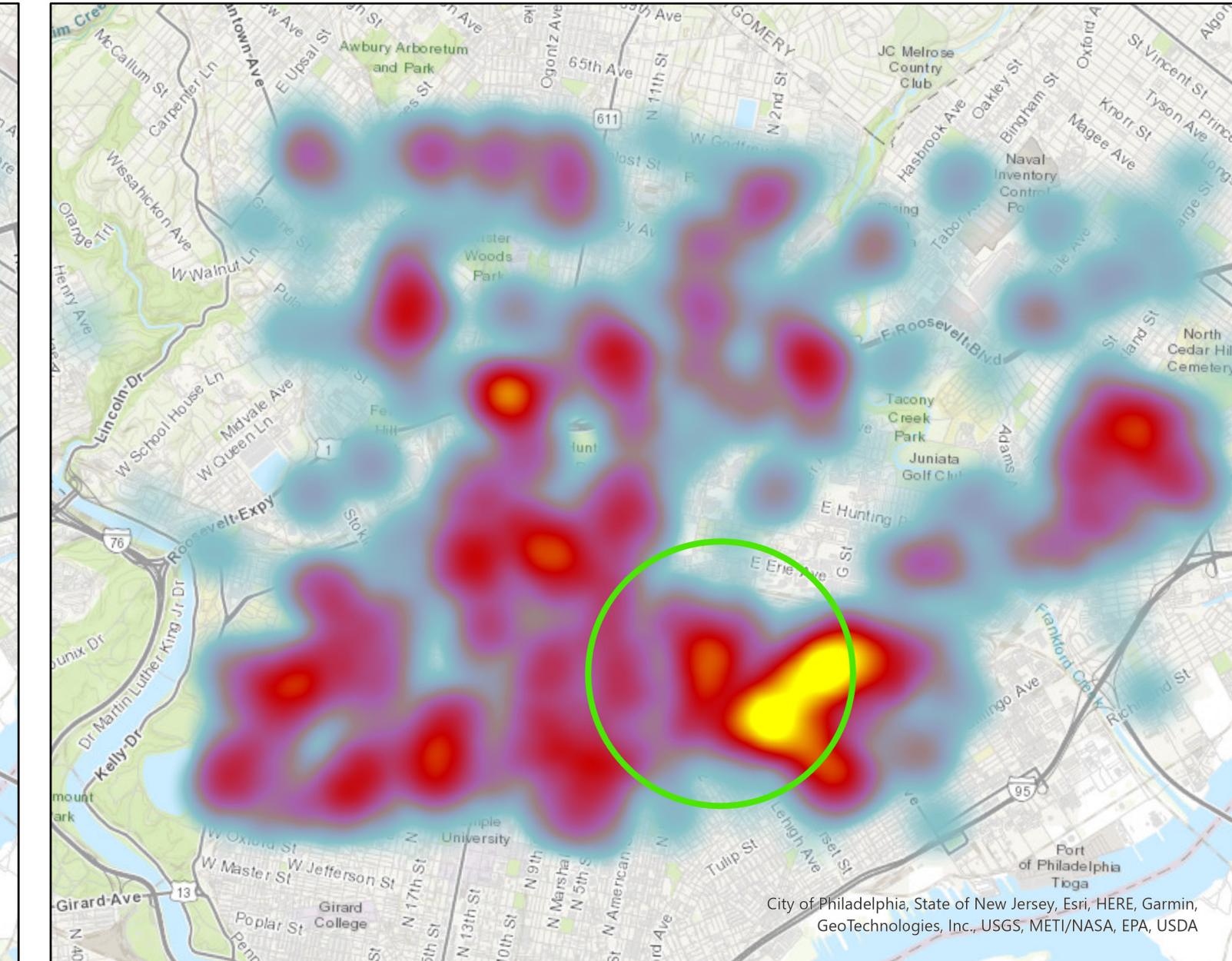
Kernel Density of Incidents in North Philadelphia

Predicting the Likelihood of Future Gun Violence in Central Philadelphia

Visual Comparison Analysis - Hispanic



Kernel Density of Hispanic Population

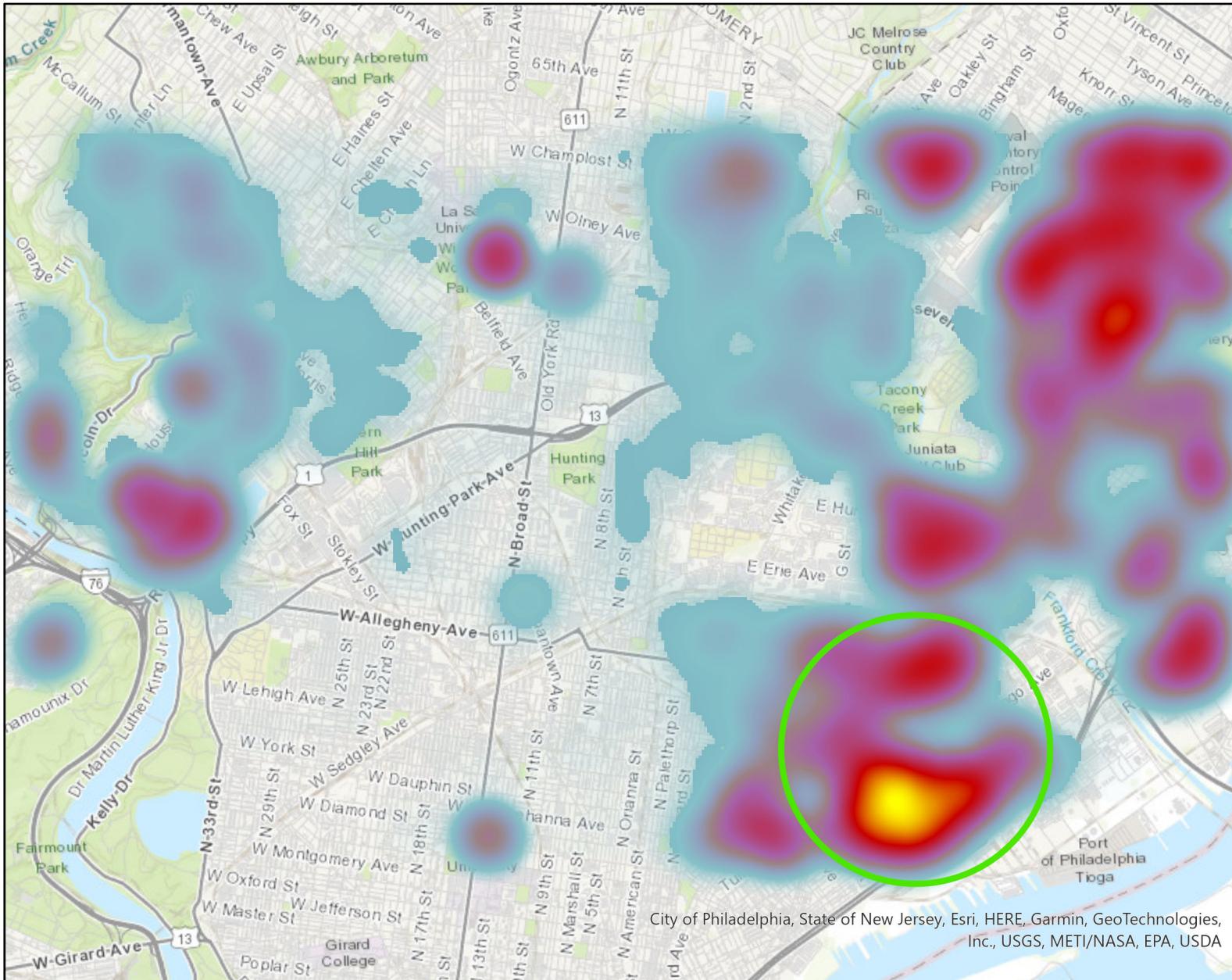


Kernel Density of Incidents in North Philadelphia

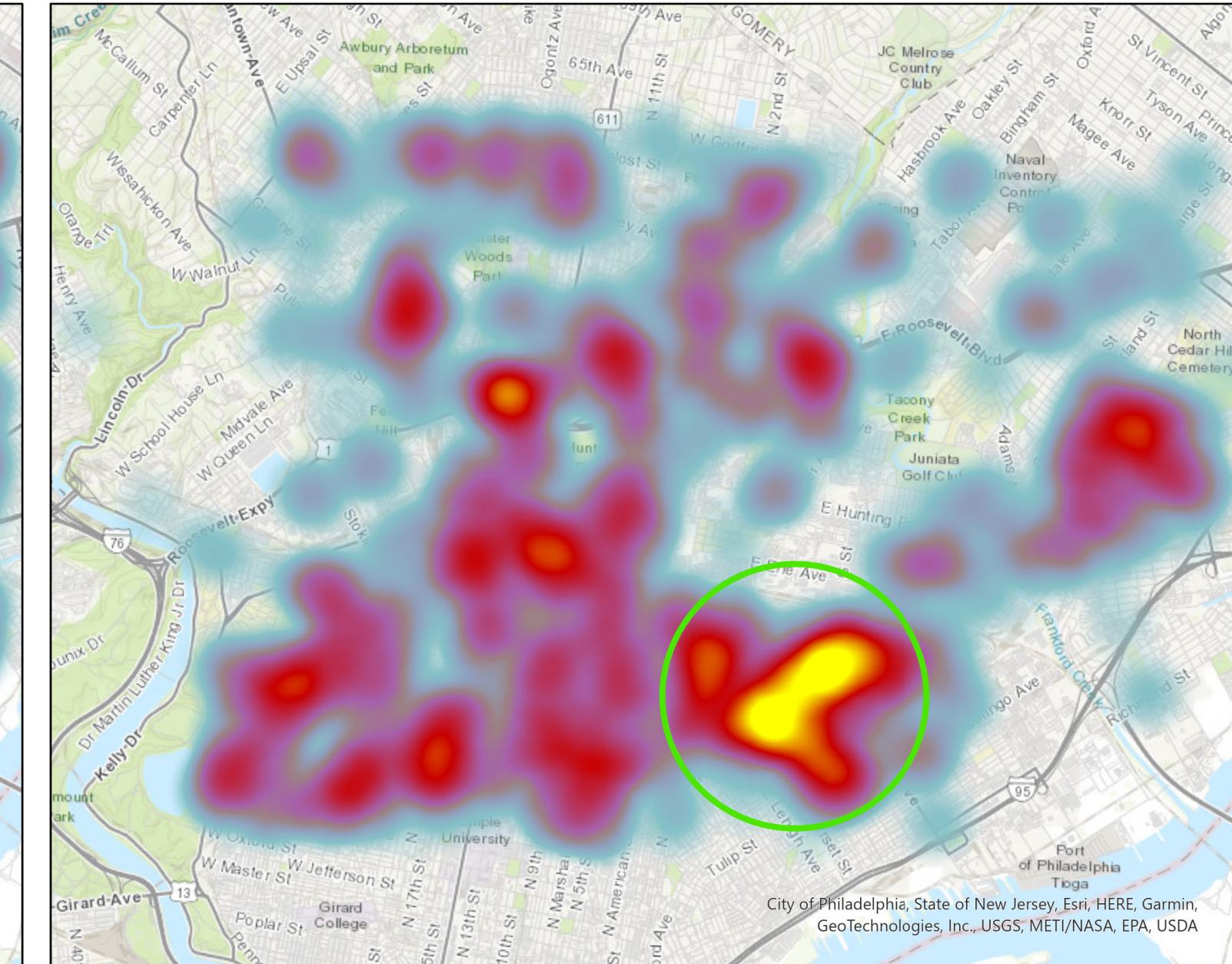
Used: Kernel Density for hispanic population. There aren't many similarity between them, so I won't choose this feature.

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Visual Comparison Analysis - White



Kernel Density of White Population

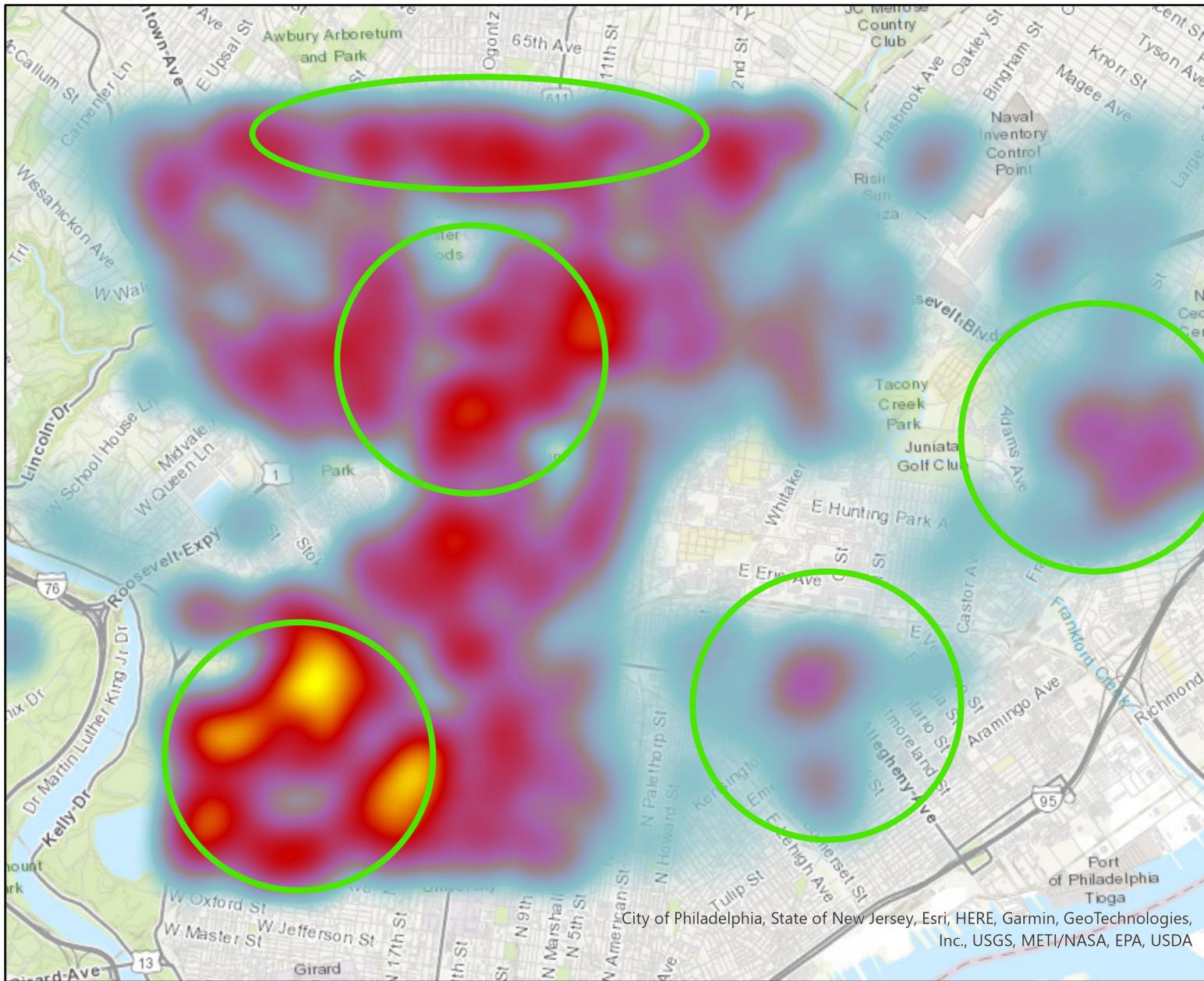


Kernel Density of Incidents in North Philadelphia

Used: Kernel Density for white population. There aren't many similarity between them, so I won't choose this feature.

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Visual Comparison Analysis - Black



Kernel Density of Black Population

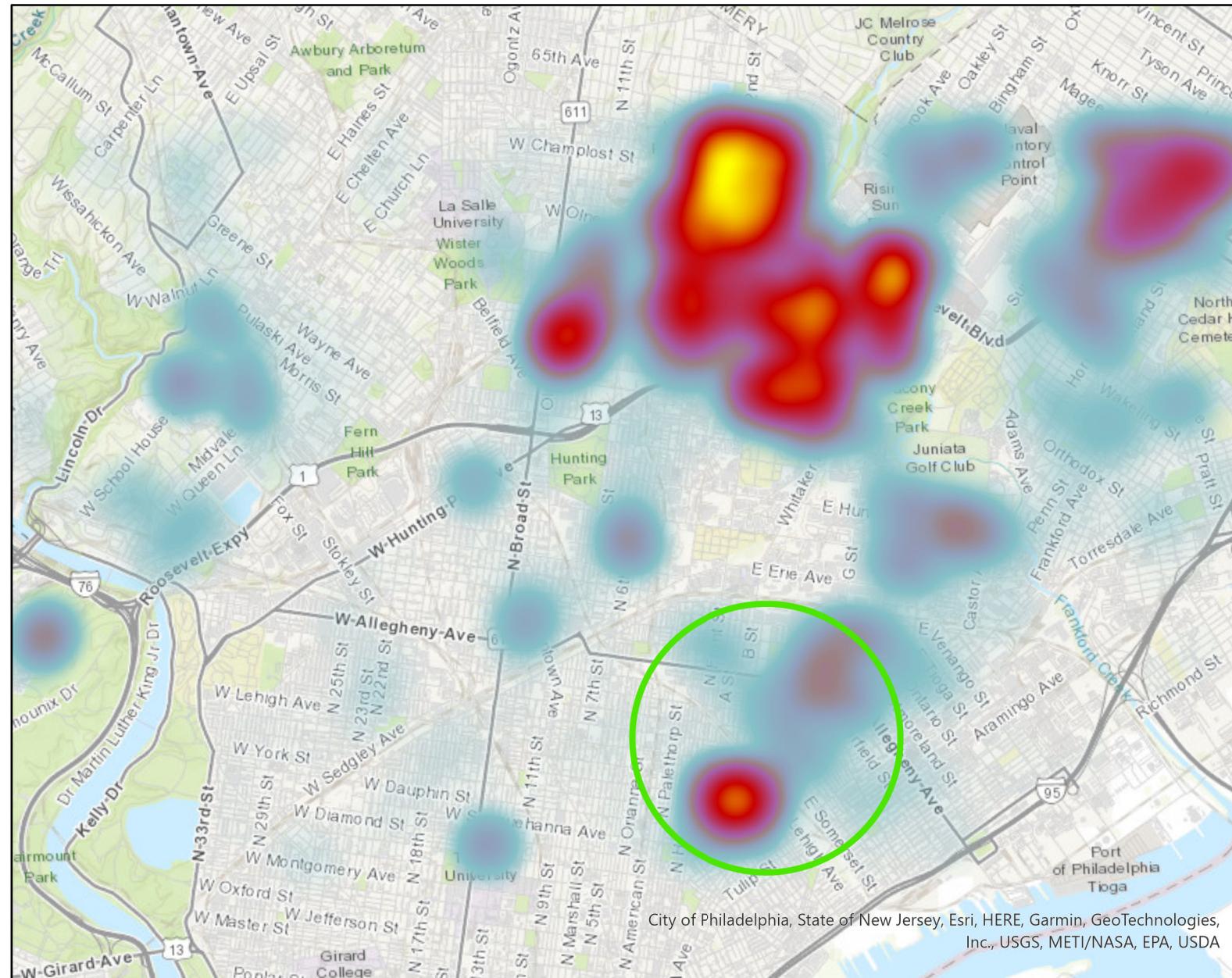


Kernel Density of Incidents in North Philadelphia

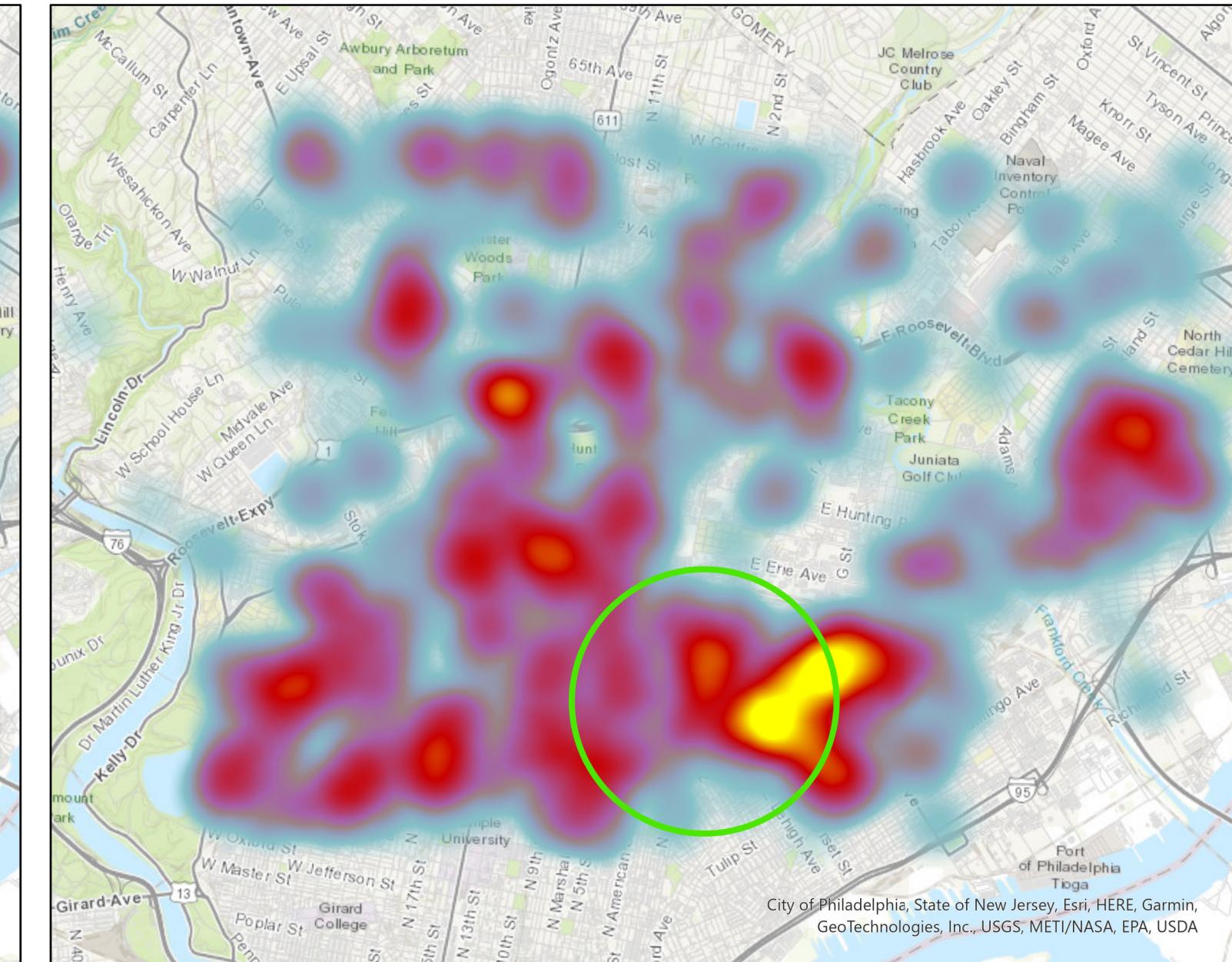
Used: Kernel Density for hispanic population. There are many similarity between them, so black population would be useful.

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Visual Comparison Analysis - Asian



Kernel Density of Asian Population

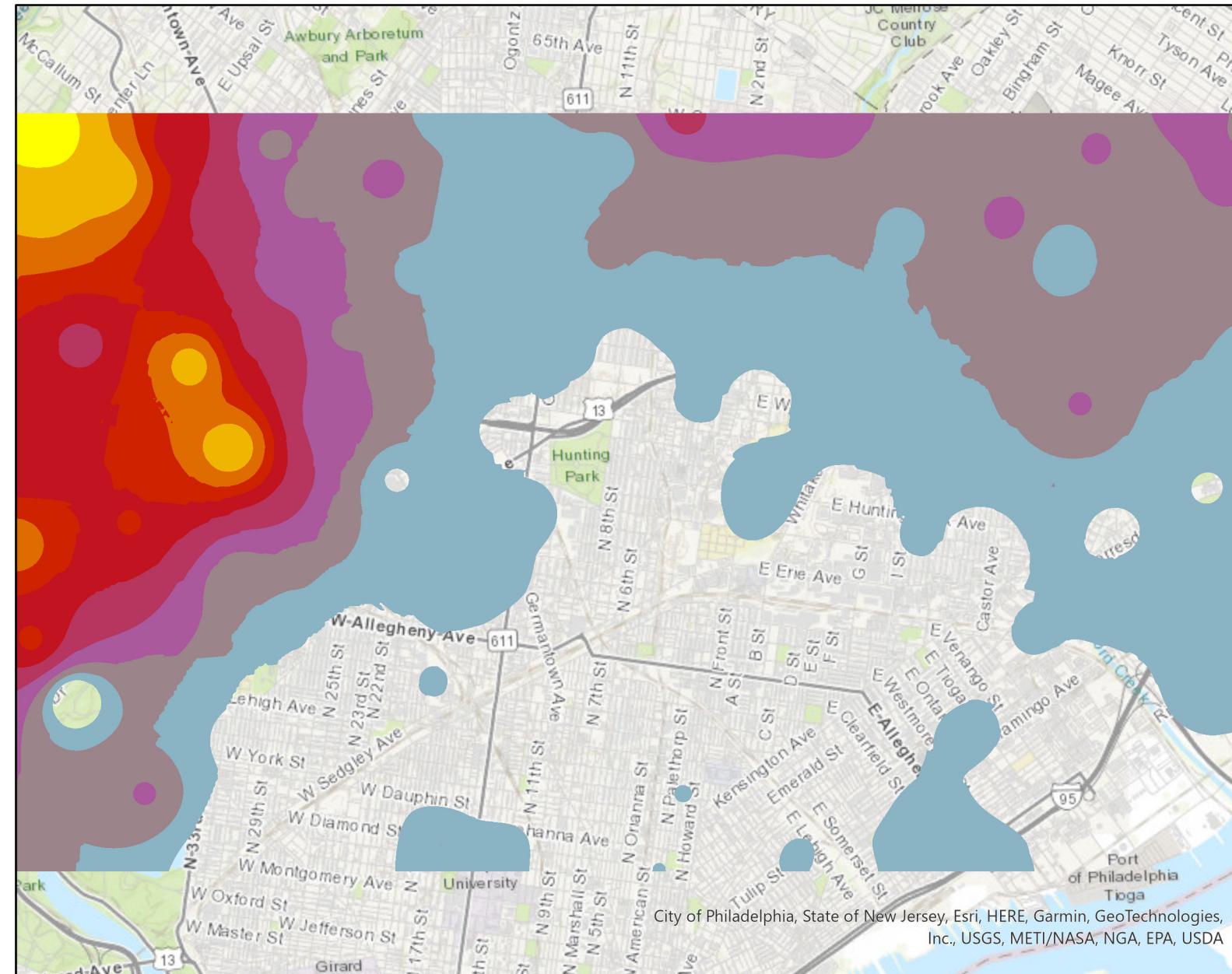


Kernel Density of Incidents in North Philadelphia

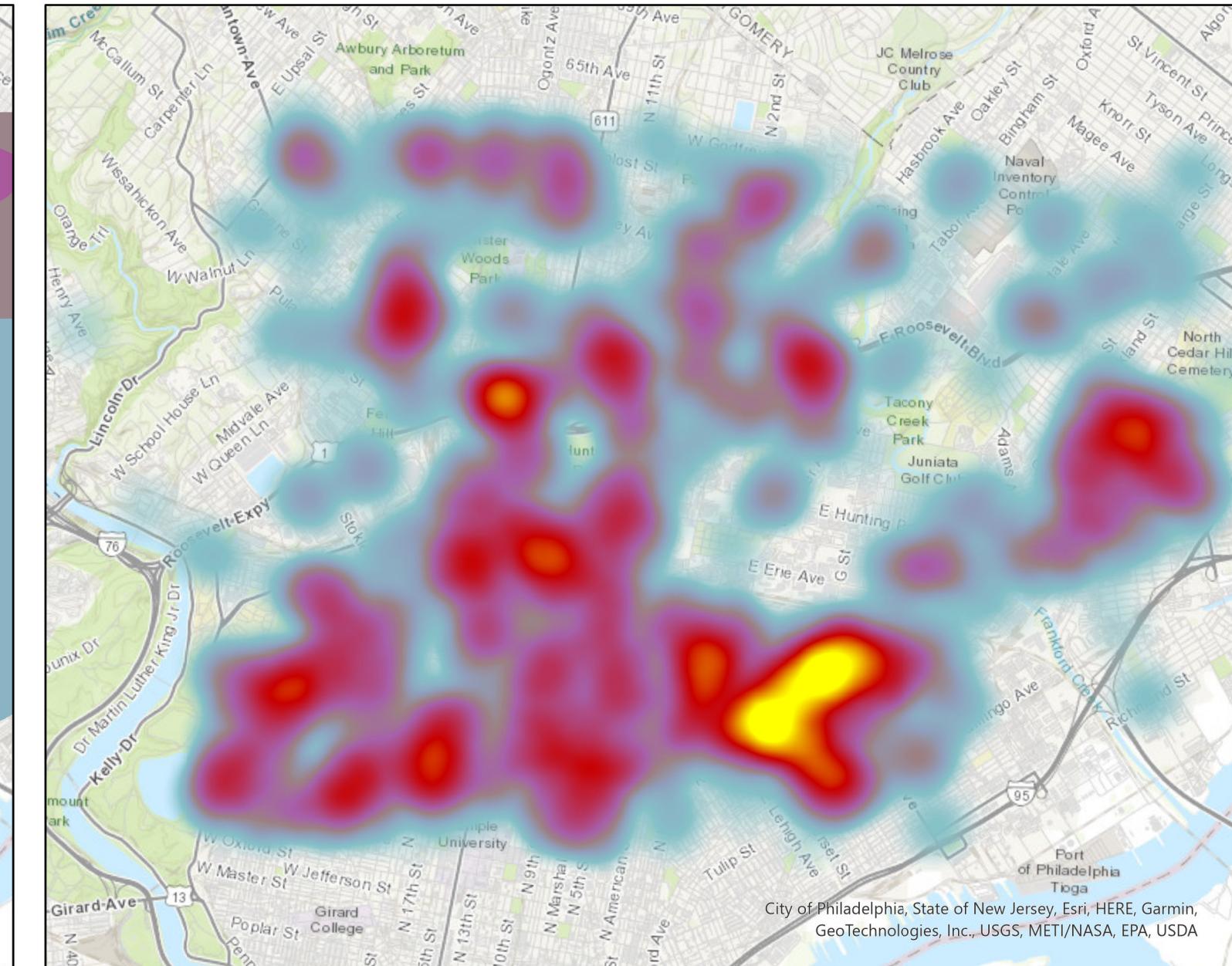
Used: Kernel Density for asian population. There aren't many similarity between them, so I won't choose this feature.

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Visual Comparison Analysis - Percentage of Population in College for at Least 2 Years



IDW

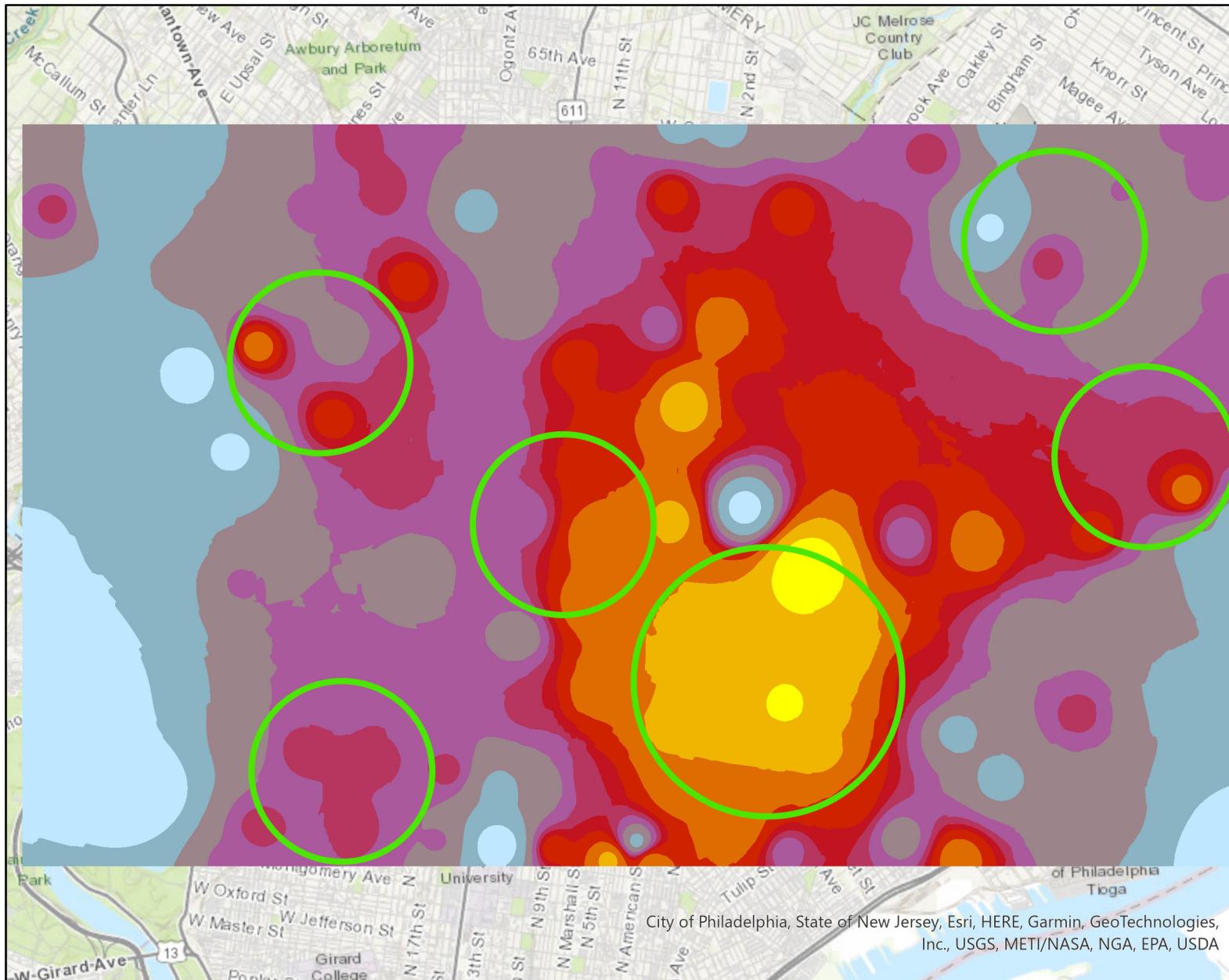


Kernel Density of Incidents in North Philadelphia

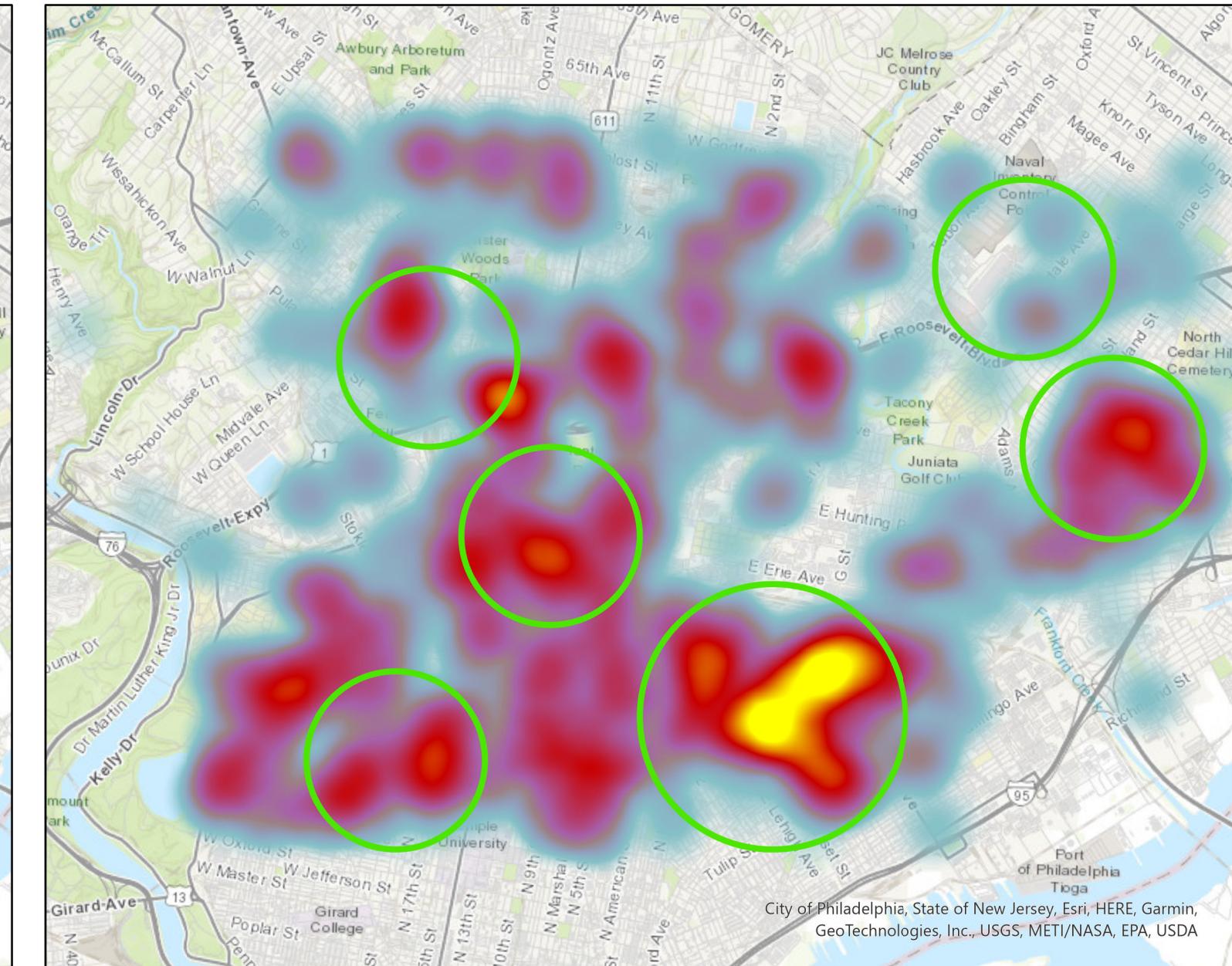
Used: IDW Interpolation as the method for pct in college for at least 2 years. I think the geographic distribution between them is just on the contrary. So I will invert this value and then use it.

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Visual Comparison Analysis - Percentage of Population below the age of 5 Years



IDW

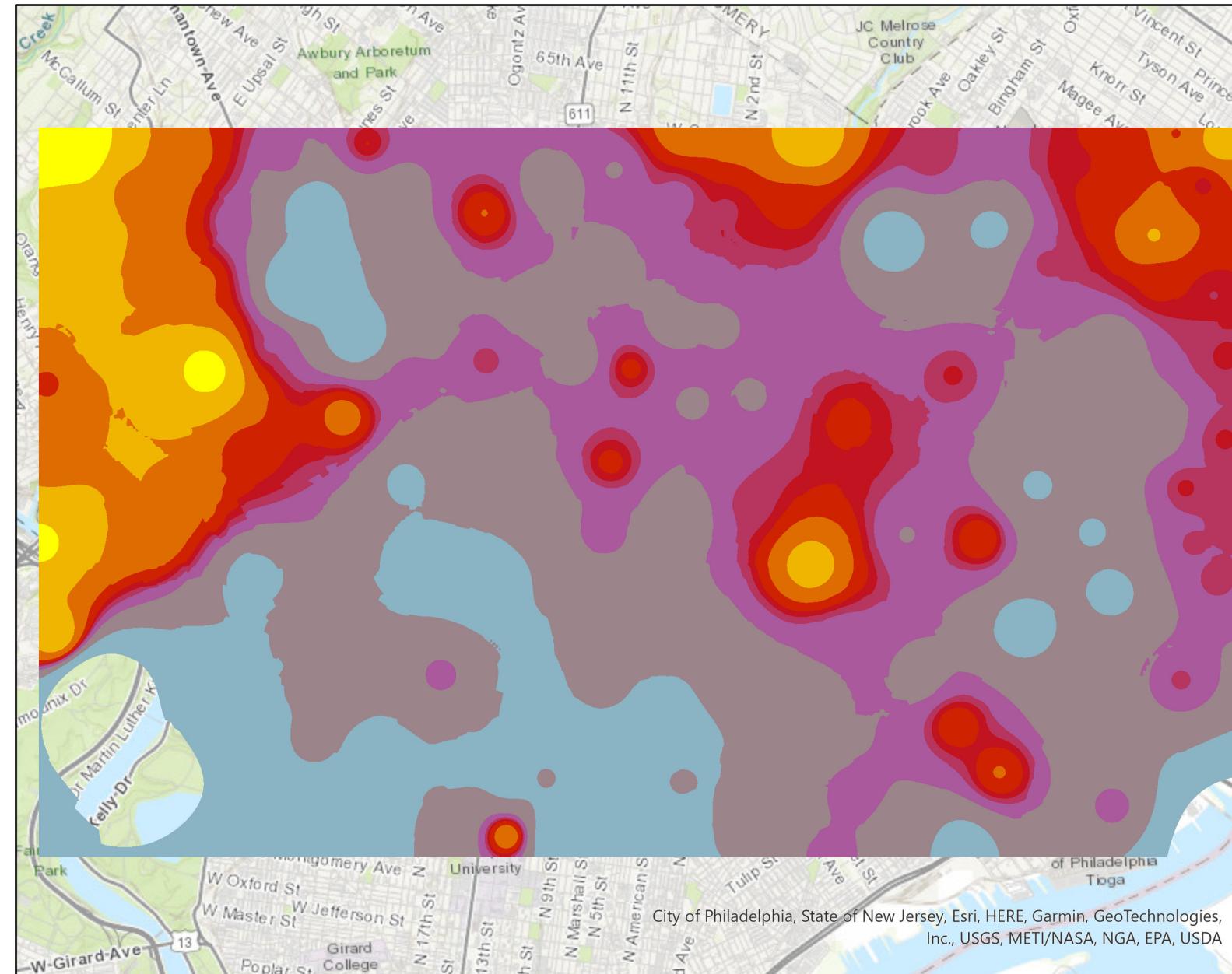


Kernel Density of Incidents in North Philadelphia

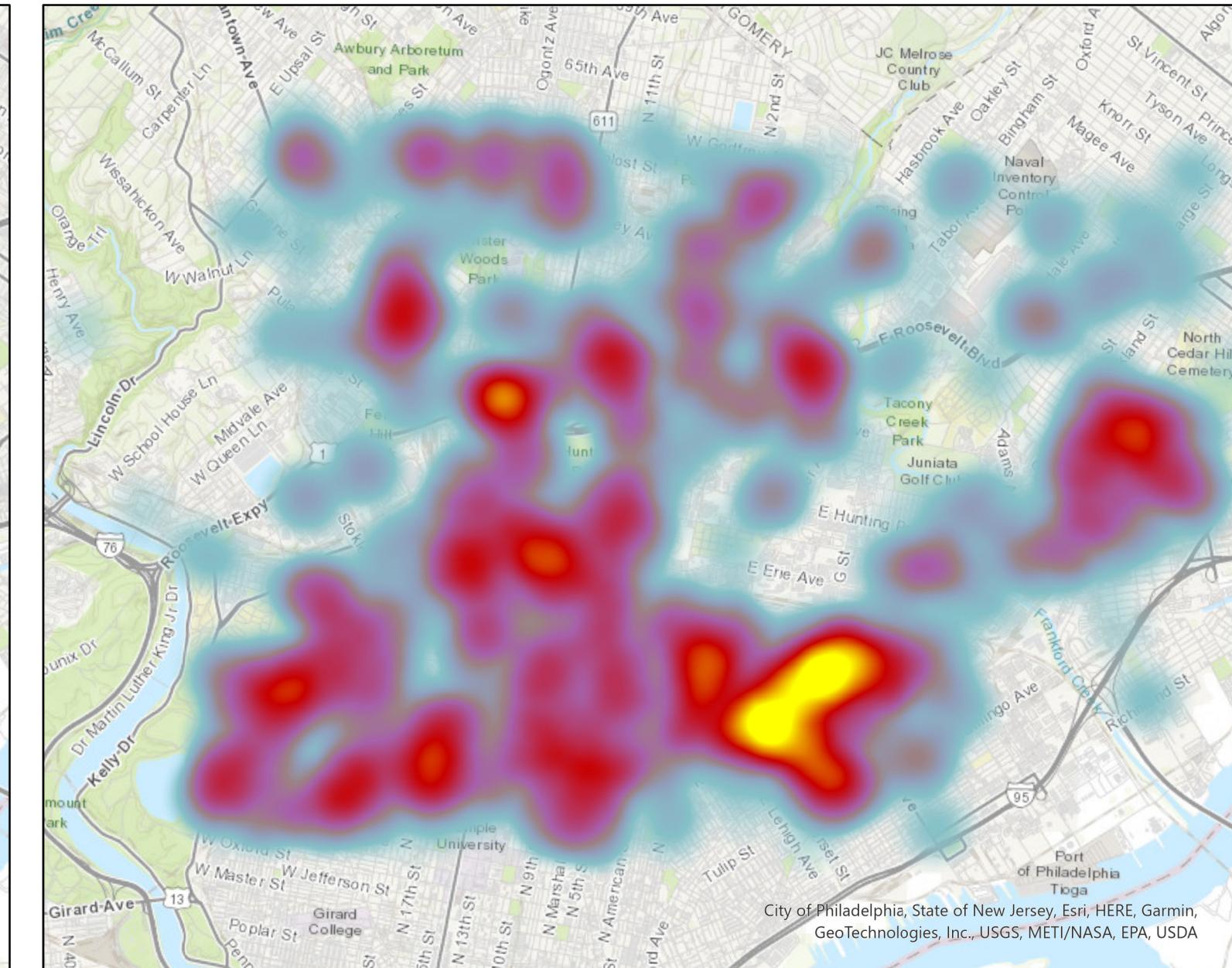
Used: IDW Interpolation as the method for percentage below 5 years old. There are many similarity between them, so it would be useful.

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Visual Comparison Analysis - Median Monthly Rent in Dollars



IDW

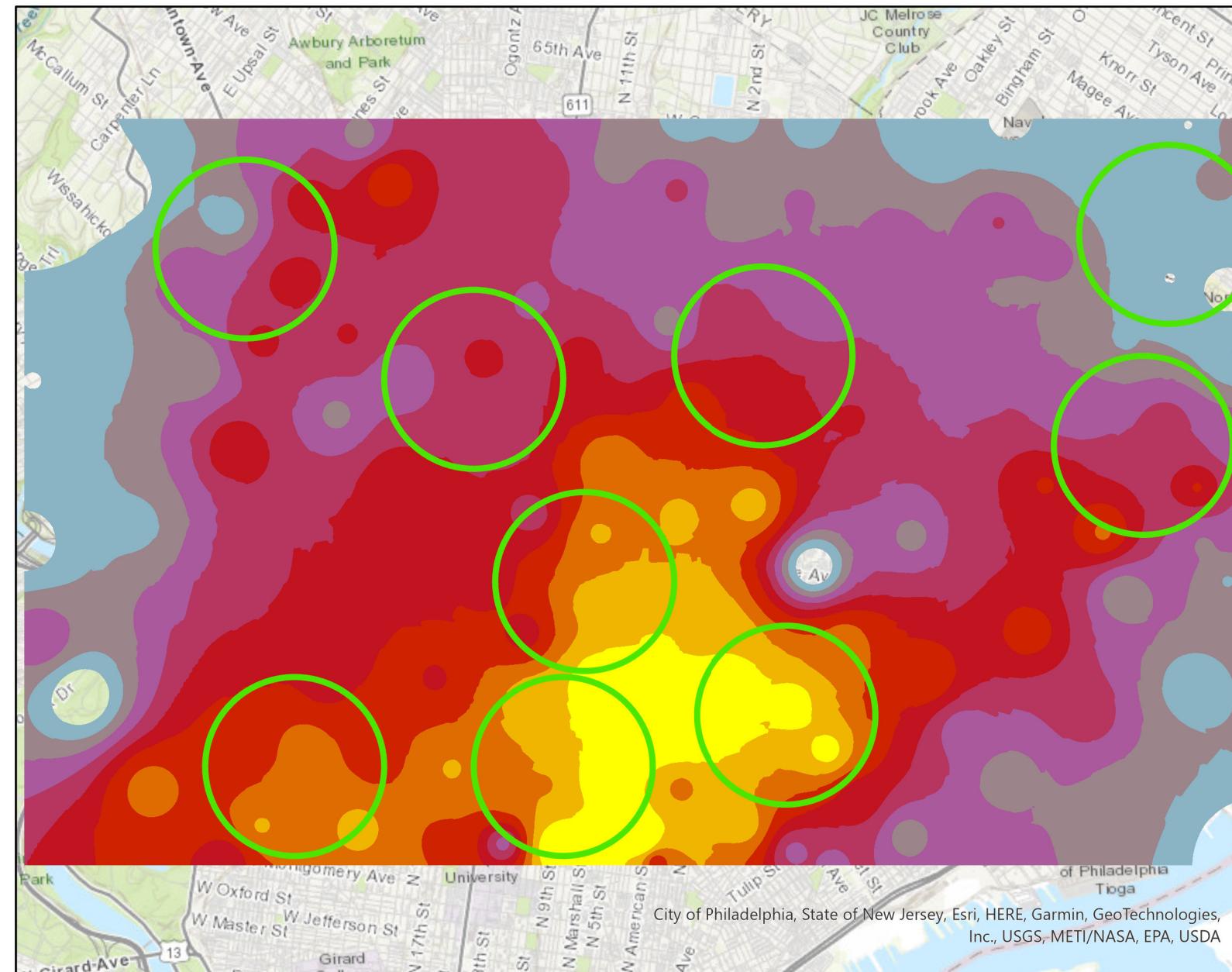


Kernel Density of Incidents in North Philadelphia

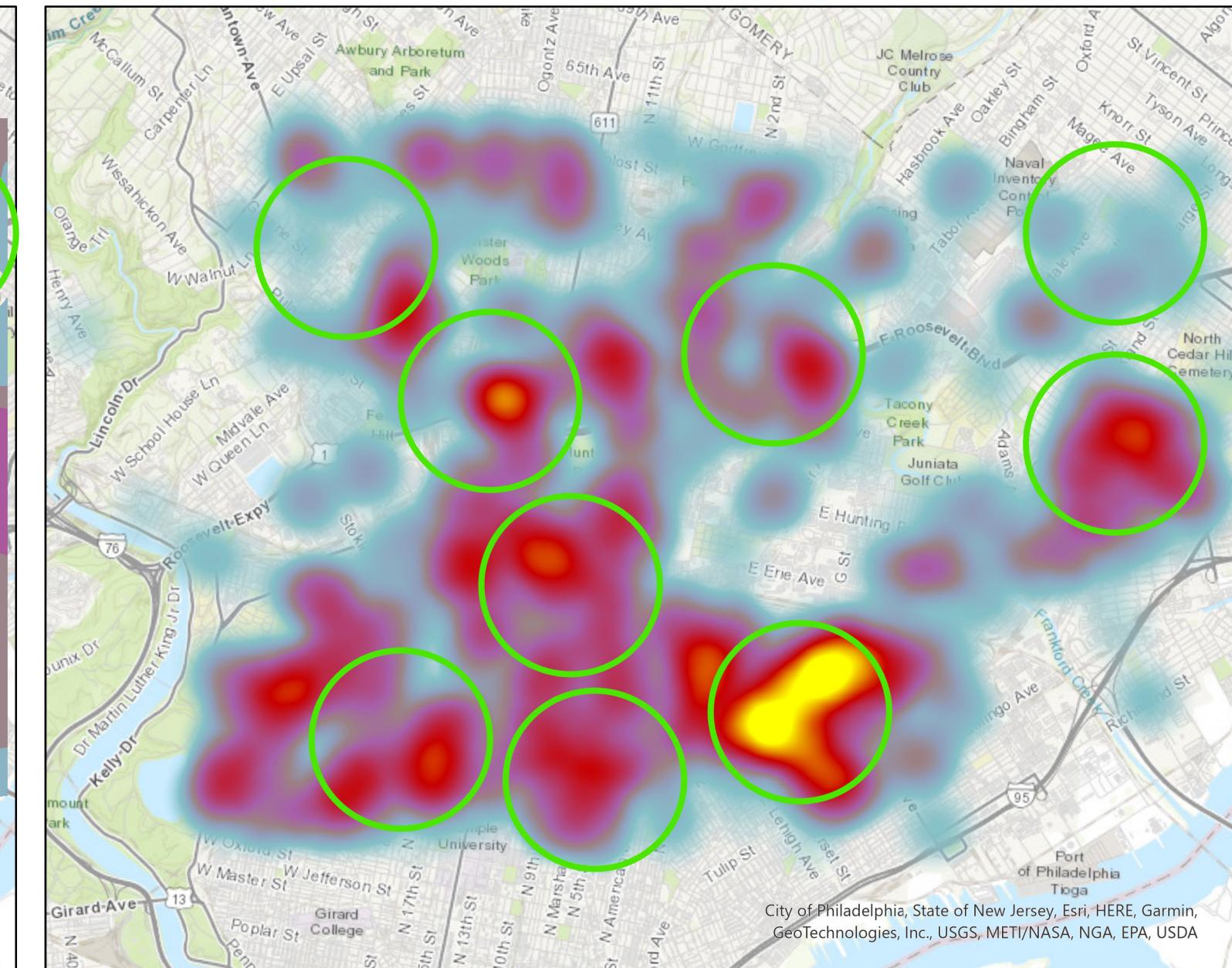
Used: IDW Interpolation as the method for median monthly rent in dollars. There aren't many similarity between the two patterns. Even in some areas, the situation is the opposite. I'll invert this value.

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Visual Comparison Analysis - Percentage of Population below the Poverty Line



IDW

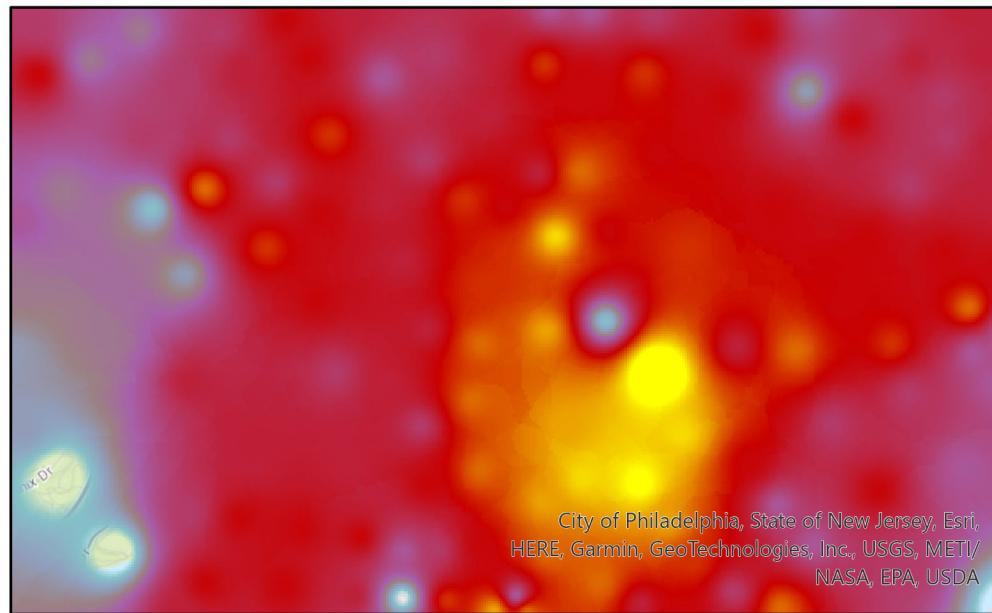


Kernel Density of Incidents in North Philadelphia

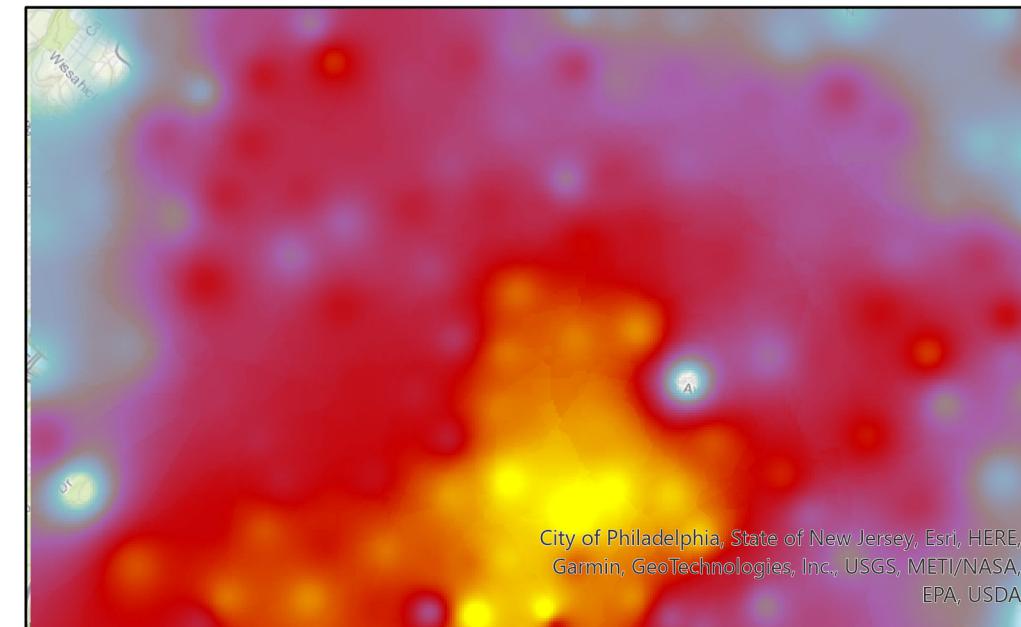
Used: IDW Interpolation as the method for percentage of population below the poverty line. There are many similarity between them, so it would be considered.

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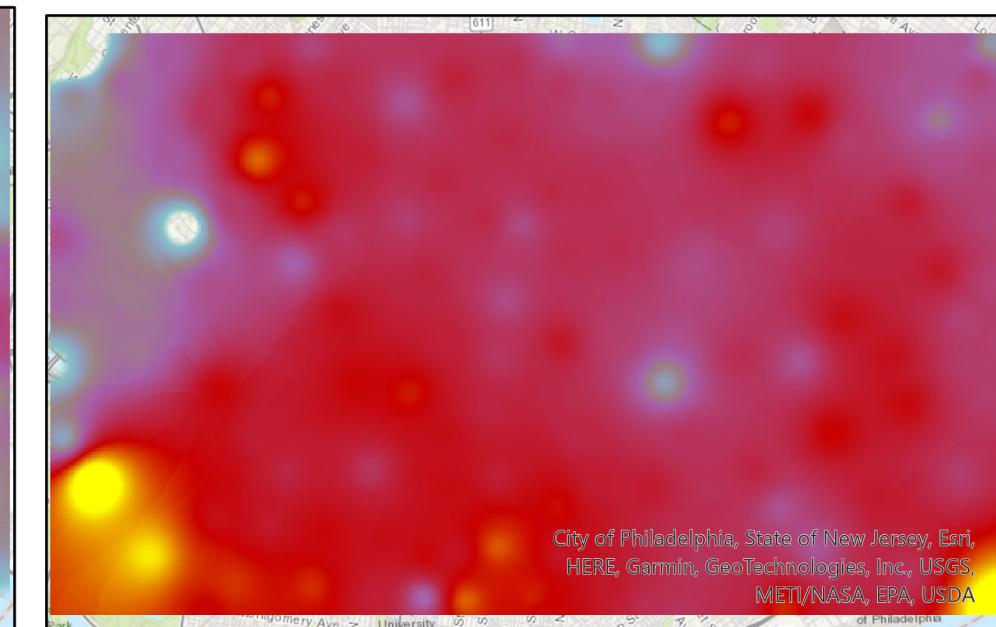
Raster Calculation - Normalizing the Values, Scale



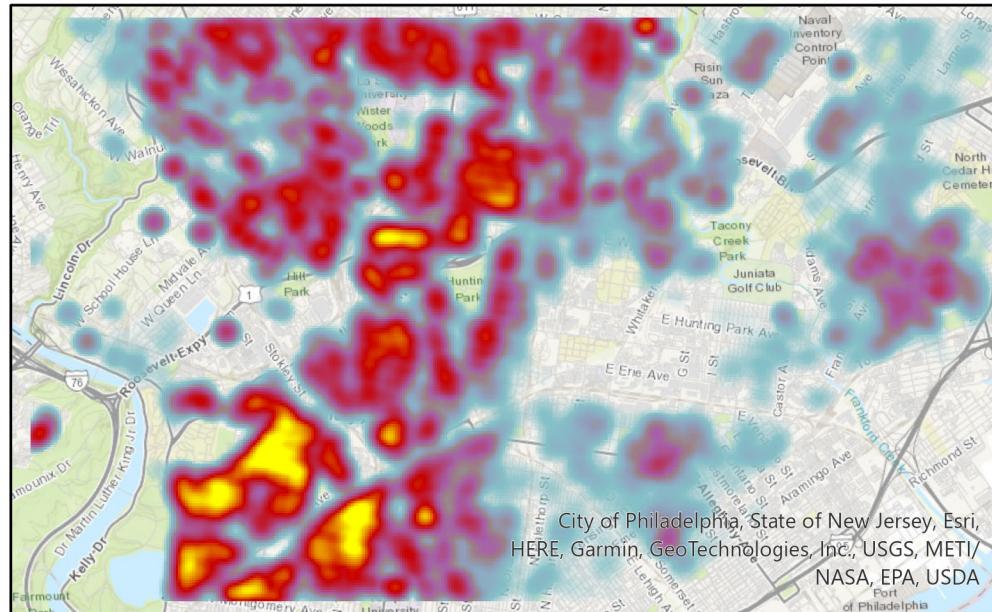
Leyr5 - Norm



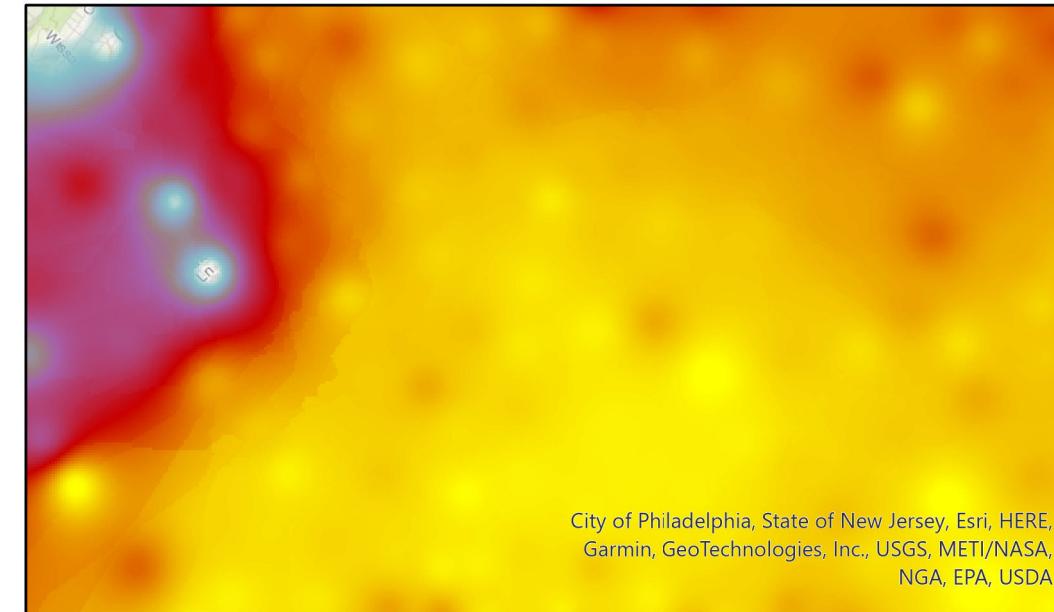
Below Poverty Line - Norm



Med Rent - Inverted & Norm



Black - Norm

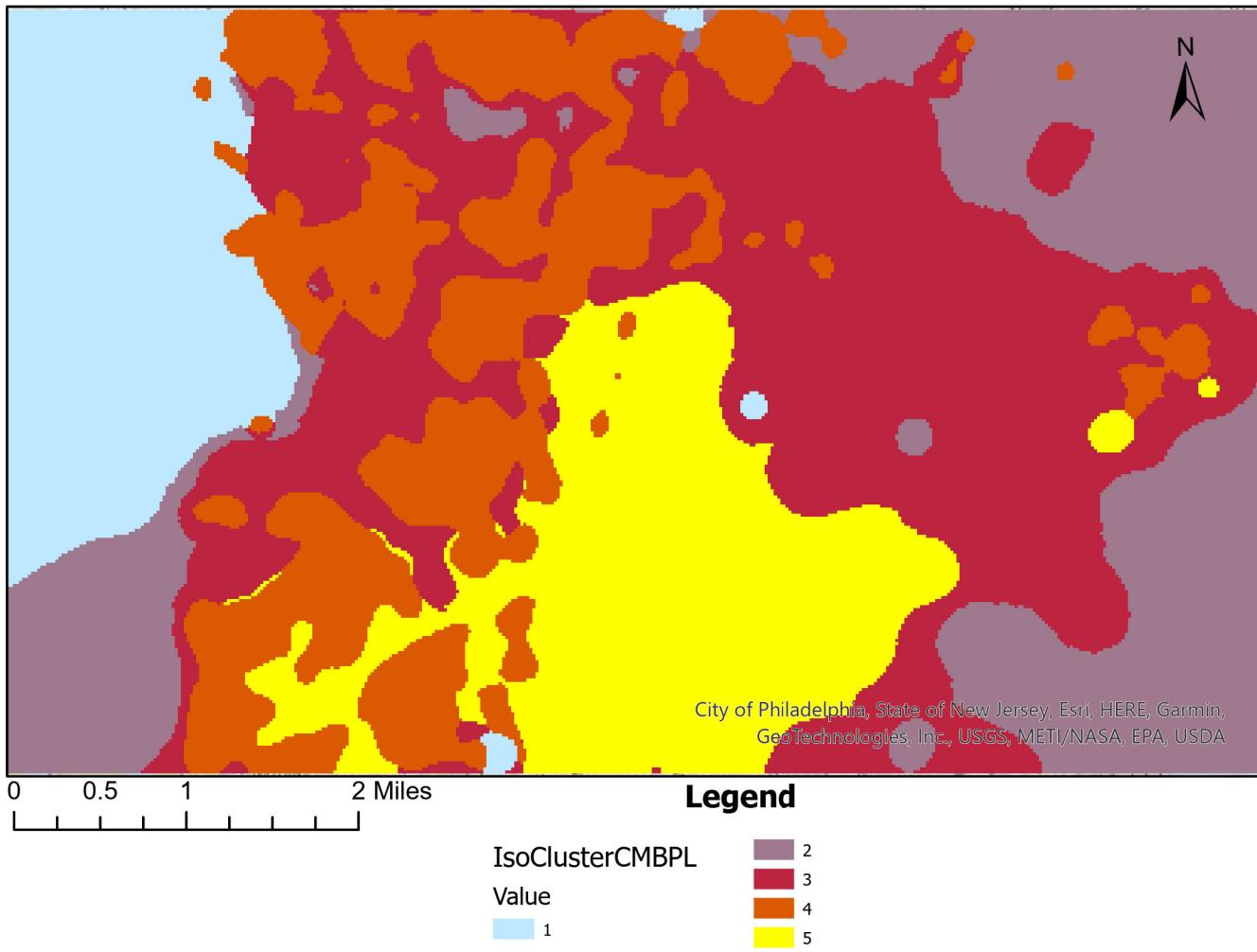


Colyr2 - Inverted & Norm

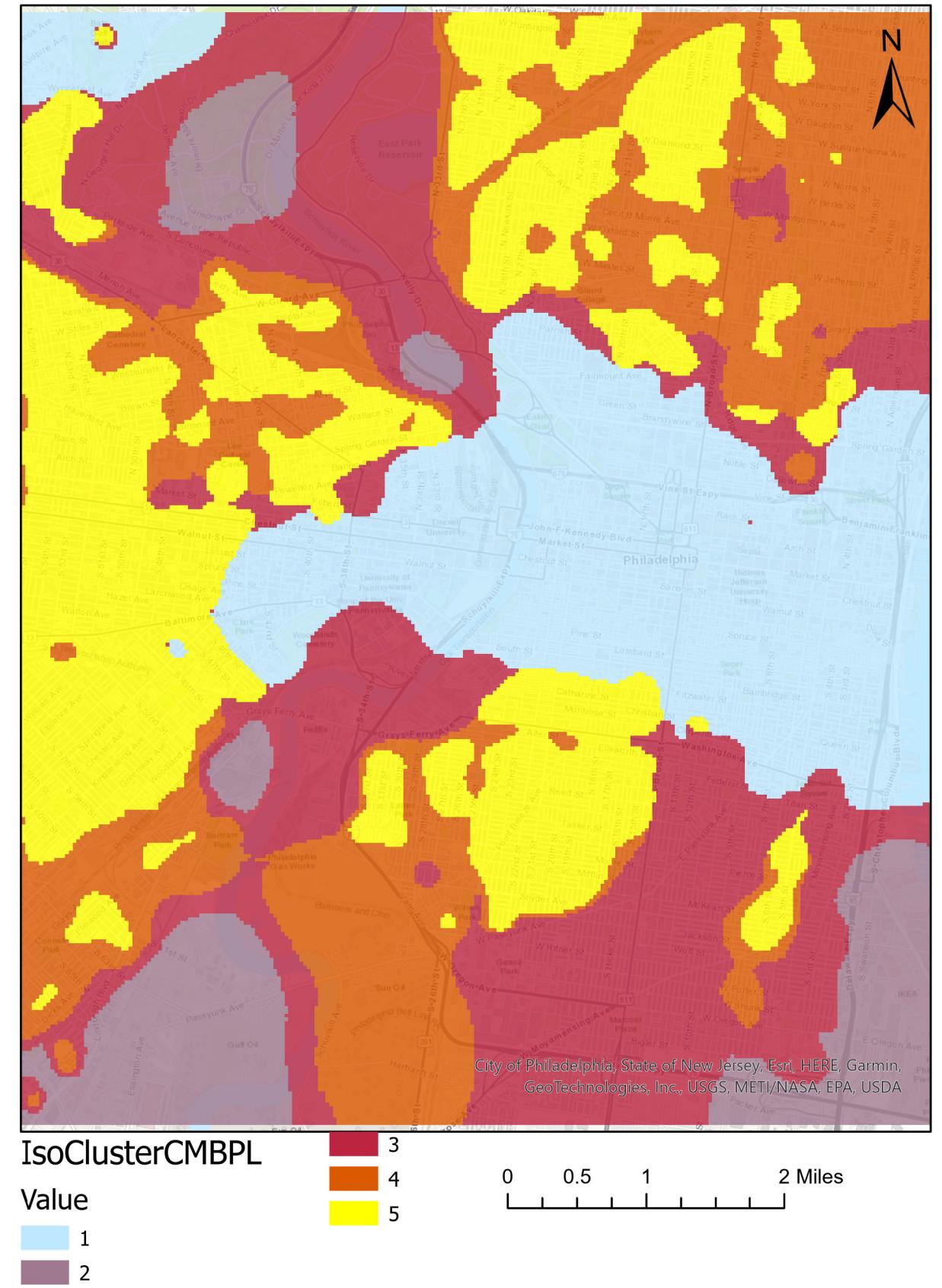
In this section, I chose 5 features, Leyr5, Black, Poverty, and another two is Colyr2, Median Rent, which are inverted. And normalized all of them.

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ISO Cluster Unsupervised Classification



Central Philadelphia Prediction



Finally, through the "ISO Cluster Unsupervised Classification" tool, input the normalized 5 features and get 5 classes, ranging from 1-5. Conduct the same processes to the Central Philadelphia, the likelihood of future gun violence map is on the right. It can be seen that the City Center and University City area is the safest. That makes sense.