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GEOG 4140-001

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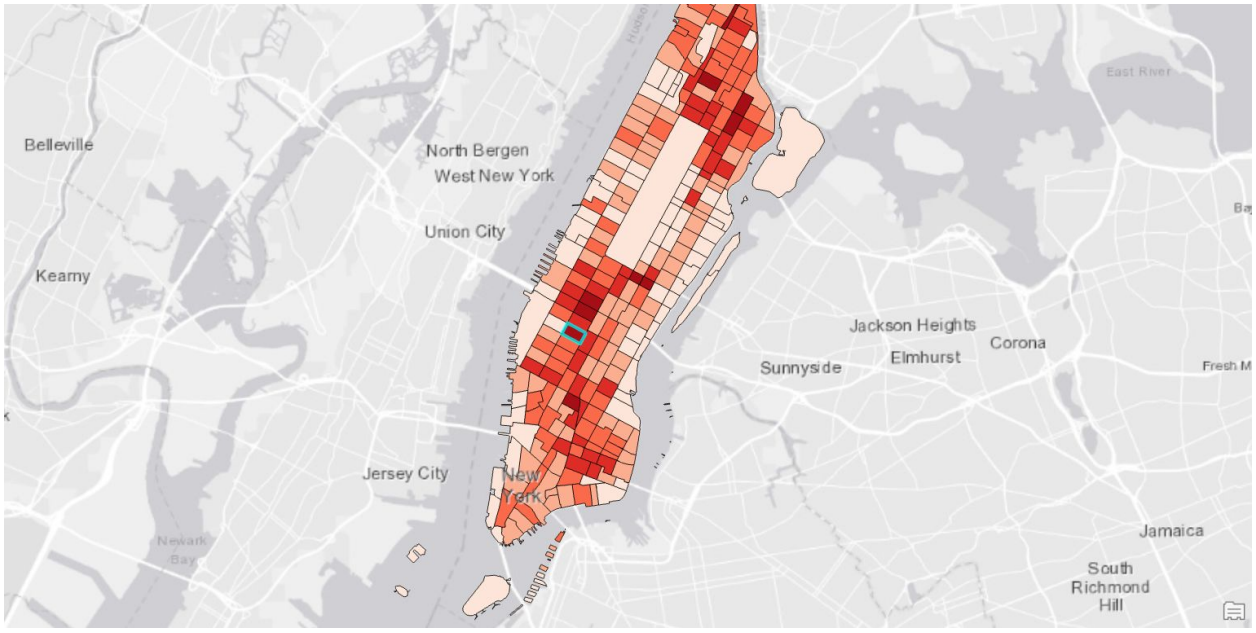
Lab 6 Deliverable 2

Describe the differences in the types of analysis conducted for this lab, compare the results, and describe some pros and cons of each method. In addition, describe some of the data requirements for each method.

Crime by Census Tract



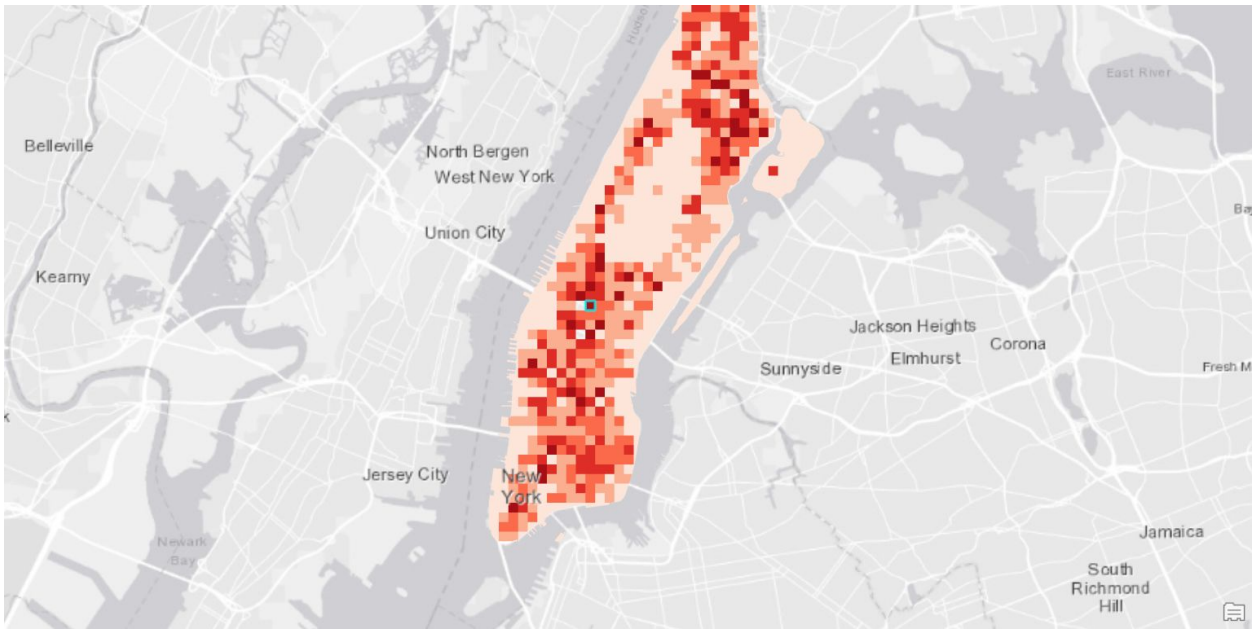
Crime per square kilometer	Coordinates
13,365	(73.9917839°W, 40.7497000°N)

The crime by census tract shows a single unit of crime committed per square kilometer by *census tract*, or government-defined districts used to record censuses. The highest census tract is located a little ways southeast of the bridge linking Manhattan to Union City. It was created

utilizing a spatial join and calculating a new field for crime per square kilometer by dividing the join count with the poly area. Afterwards, the census tracts were symbolized by a five-class graduated color scheme.

This is probably one of the more favorable ways to analyze the crime data as it provides counts for each census tract, and is a good indicator and guide for law enforcement. However, census tracts are not the most detailed if users want to be more specific like census blocks. And this is discrete data being measured as well. Because this was only organized by census tract (less objects with attributes), it would require less data than its fishnet counterpart.

Crime by Fishnet



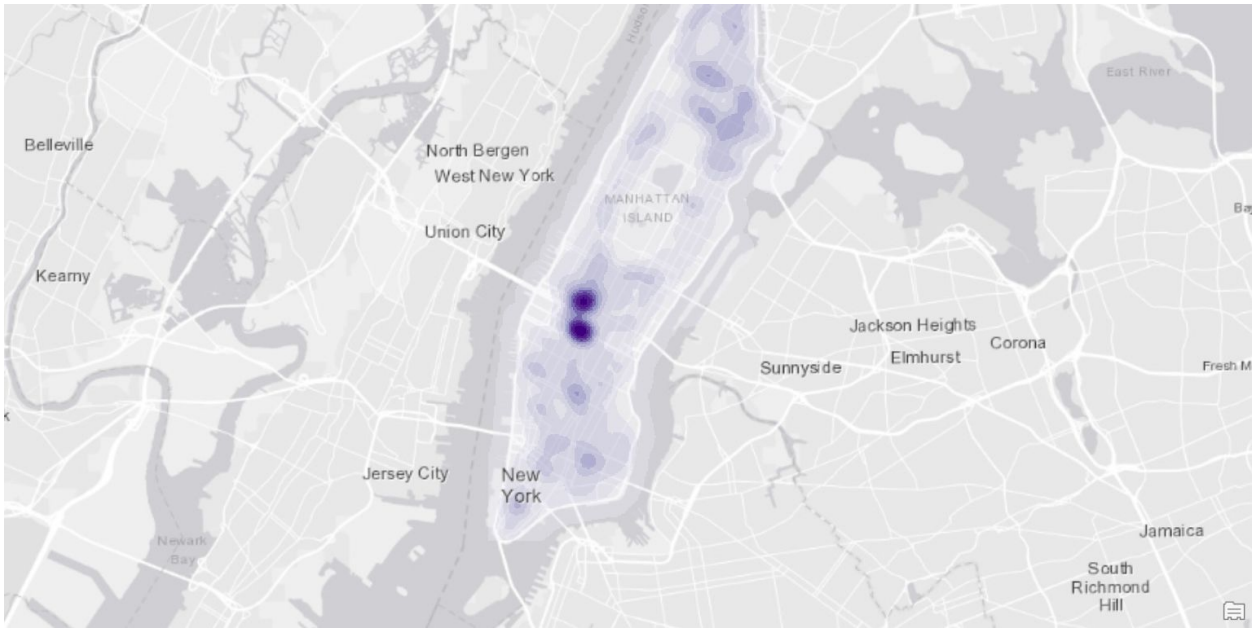
Crime per square kilometer	Coordinates
13,328	(73.9864426°W, 40.7565262°N)

The crime by census tract shows a single unit of crime committed per square kilometer by raster *fishnet cells*. The highest cell is located a little ways southeast of the bridge linking Manhattan to Union City. It was created utilizing a spatial join and calculating a new field for

crime per square kilometer by dividing the join count with the poly area. Afterwards, the cells were symbolized by a five-class graduated color scheme and clipped to the boundaries of Manhattan.

This is a less favorable way to analyze the crime data compared to its counterpart above as it provides crimes for each fishnet cell—while this does not organize the crime counts to census tracts, this could also be useful to law enforcement as each side of the square cells are measured at 250 kilometers, which can narrow down areas as opposed to encompassing larger census tracts. This is also discrete data being measured. Because a fishnet was applied and clipped (many objects, or cells, with attributes), this map's data needs more storage space compared to its census tract counterpart.

Crime by Kernel Density (500 meter radius)

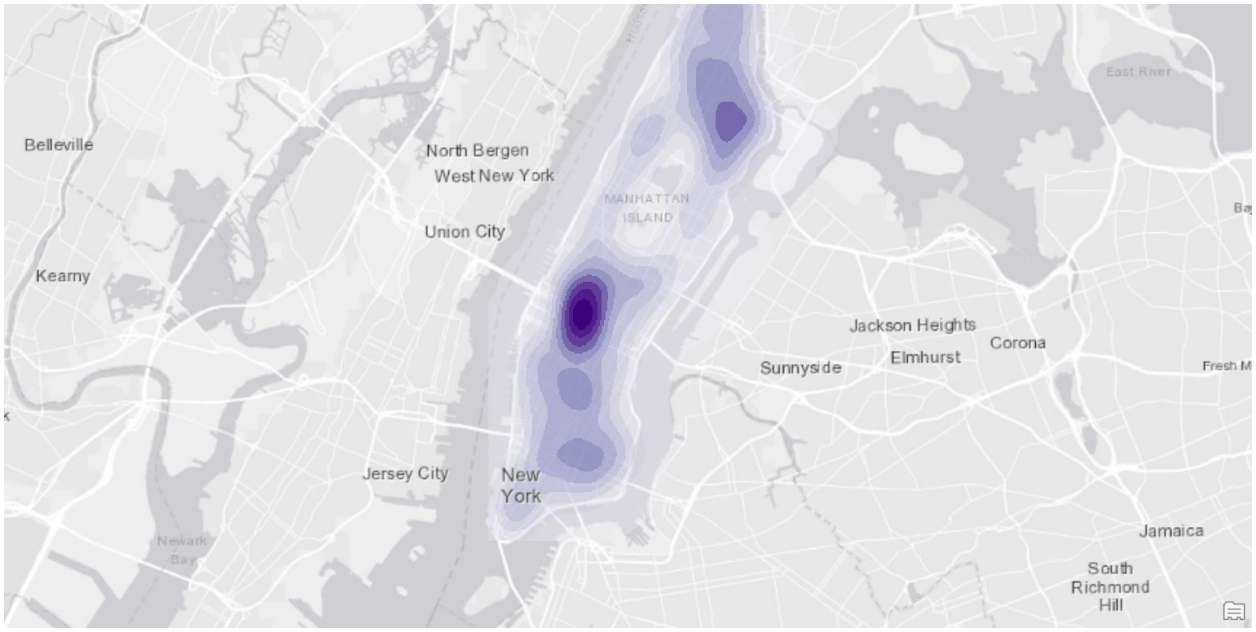


Magnitude	Coordinates
9,496.58379 - 10,551.759766	(73.9885154°W, 40.7571942°N)
9,496.58379 - 10,551.759766	(73.9896700°W, 40.7504063°N)

The map looks similar to a continuous heat map, but are actually raster cells that show the calculation of magnitude per unit area from the points using a kernel function, searching for events with a radius (bandwidth) set to 500 meters. This produces *more* visual detail, compared to its 1,000 meter counterpart, and a density surface showing where point features are concentrated, meaning it calculates how the surface value "falls off" as it reaches the radius.

This function measures the magnitude of the crimes, which are two adjacent blobs also located southeast of the bridge linking Manhattan to Union City. It was created using a kernel density tool and shows the densest (darkest purple) areas that represent the most clustered crime events. Because this is a 500 meter bandwidth, this will actually take a larger amount of space compared to its 1,000 meter counterpart. Unfortunately, that is the tradeoff when it comes to quality and storage.

Crime by Kernel Density (1,000 meter radius)



Magnitude	Coordinates
5,541.213868 - 6,156.904297	(73.9889522°W, 40.7543989°N)

The map shows the calculation of magnitude per unit area from the points using a kernel function, searching for events with a radius (bandwidth) set to 1,000 meters. This produces *less* visual detail, compared to its 500 meter counterpart, and a density surface showing where point features are concentrated, meaning it calculates how the surface value "falls off" as it reaches the radius.

This function measures the magnitude of the crimes, which is a single blob that is also located southeast of the bridge linking Manhattan to Union City. It was created using a kernel density tool and shows the densest (darkest purple) areas that represent the most clustered crime events. Because this is a 1,000 meter bandwidth, this will actually take a smaller amount of space compared to its 500 meter counterpart. Again, the tradeoff with quality and storage—this map seems to over-exaggerate the magnitude of the crimes when compared with the map just above that has more detail and shows areas that are lower in crime magnitude unlike the 1,000 meter map that combined the previous two purple densities into a single one.