Jongho Jung
Nandita Jha

1	2	3	Σ

Assignment 11

(Due: 07.02.2023)

Task 1 Inverse Distance Weighting (IDW)

(a) Impl

(b) Impl

Task 2 Choropleth Maps

(a) Choropleth maps use level of shading for a range of values to represent large amount of information and general pattern. This makes the maps visually effective to measure socio-economic and demographic data like population density, per capita income among others.

(b) When the distribution of values are not known, then Natural Breaks Classification can be a good choice to bin the values inside a choropleth map, as it identifies clusters in the data and within each cluster the range of values are divided into equal intervals. This minimizes the variance within each class and maximizes variance between different classes. Thus, in cases of non-uniform distribution of data, Natural Breaks Classification can highlight meaningful patterns in the dataset.

Task 3 Time Visualization

(a) **Visualization of a day in the life of a taxi in New York City in 2013:**
Mapping Approach: Dot density map is used to visualize taxi activity data. Here, each pickup or drop-off location of a taxi are mapped as a dot and the density of dots in a certain area reflects the level of activity in that area. This mapping approach is commonly used for visualizing spatial point data and provides a way to see the distribution and clustering of the points.

Visualization of Chicago's taxis activities between 2013 and 2016:
Mapping Approach: Heat map is used to visualize the taxi activity data. In this map, the volume of pickup or drop-off locations is represented as a gradient of color on the map, with areas of higher activity appearing as warmer colors. This mapping approach is useful for visualizing the spatial distribution of density or frequency of events over a geographic area.

(b) **Dot density map**
ADVANTAGE: When it is not possible to use color, then dot density map can still be effective. Spatial distribution and clustering of data points can be easily represented.
DISADVANTAGE: This approach can become cluttered and difficult to interpret when there is a high density of points in a small area.

Heat Map:
ADVANTAGE: This method is good for visualizing the overall pattern and distribution of data. Cluttering of data due to large number of points in a small area does not decrease the efficacy of this representation method.
DISADVANTAGE: With this approach, it is not possible to provide detailed information about individual points or locations and it can sometimes miss small or isolated patterns in the data.