**Dasymetric Modeling for Manhattan  
Srinivas Konreddy**

**Project Overview:**

This lab focused on dasymetric modeling, a spatial technique to improve population estimation at finer spatial scales by using building footprints, zoning, and elevation data to reassign census block-level population counts to individual buildings. By incorporating zoning data and building height attributes, the model apportions population more accurately using either building area or building volume, offering two comparative methodologies for population redistribution.

The primary objective was to estimate the number of people living in each building in Manhattan and visualize indoor population densities. This method is especially valuable in urban planning, energy modeling, and environmental analysis, where understanding population distribution at the building level can guide infrastructure and resource allocation more effectively.

**Graphic 1:** BldgPop\_Area vs. BldgPop\_Volume Scatterplot

A graph of a graph showing a number of dots

Description automatically generated with medium confidenceThis scatterplot compares the population assigned to each building based on two models: area-based (x-axis) and volume-based (y-axis). Each point represents an individual building. The plot reveals a strong positive correlation, indicating consistency between the two methods, though taller buildings tend to receive higher population in the volume-based method. This illustrates how 3D structure information can improve accuracy in densely built environments.

A map of a neighborhood

Description automatically generated**Graphic 2:** This map displays estimated building-level population using the *BldgPop\_Area* model, visualized through dot density symbology. Each labeled polygon represents a building, and the population values are rounded to whole numbers to represent actual people. The map is zoomed in on a selected Manhattan neighborhood, clearly showcasing spatial concentration and urban density variations.

**Table 1: Population by Zoning Type**

**Description:**  
This table summarizes building population estimates by zoning classification, using the *BldgPop\_Area* model. It shows that the majority of the population resides in residential zones (54.6%), followed by commercial districts (41.8%). A smaller share is found in manufacturing zones, Battery Park City, and public open spaces, illustrating zoning influence on population distribution patterns.

|  |  |  |
| --- | --- | --- |
| **POPULATION** | | **ZONING (field ZD)** |
| **BldgPop** | **BldgPopSec** |
| 481414 | 54.6% | **R** Residential Districts |
| 368014 | 41.8% | **C** Commercial Districts |
| 19769 | 2.24% | **M** Manufacturing Districts |
| 9705 | 1.10% | **B** Battery Park City |
| 1367 | 0.15% | **P** Areas designated as PARK, BALL FIELD, PLAYGROUND and PUBLIC SPACES in NYC GIS Zoning Features. |