Initial Data Exploration

LEED and Energy Star Data

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Review

Research Question

What neighborhood characteristics relate to the number of certified energy-efficient commercial buildings?

Previously,

- Developed some theory behind energy-efficient building
- Prediction: Green buildings will be clustered away from the city center

Outline

Today's Goal

Investigate available data on the number of certified energy-efficient (commercial) buildings from two major certification programs.

Background

Introduction to the LEED and Energy Star Databases

Energy Star Program

- Program through the US Department of Energy and the Environmental Protection Agency
- Top 25% for energy efficiency of comparable buildings
- Certified by a professional engineer or a special architect
- For federal agencies to lease space in a building, it must be Energy Star certified

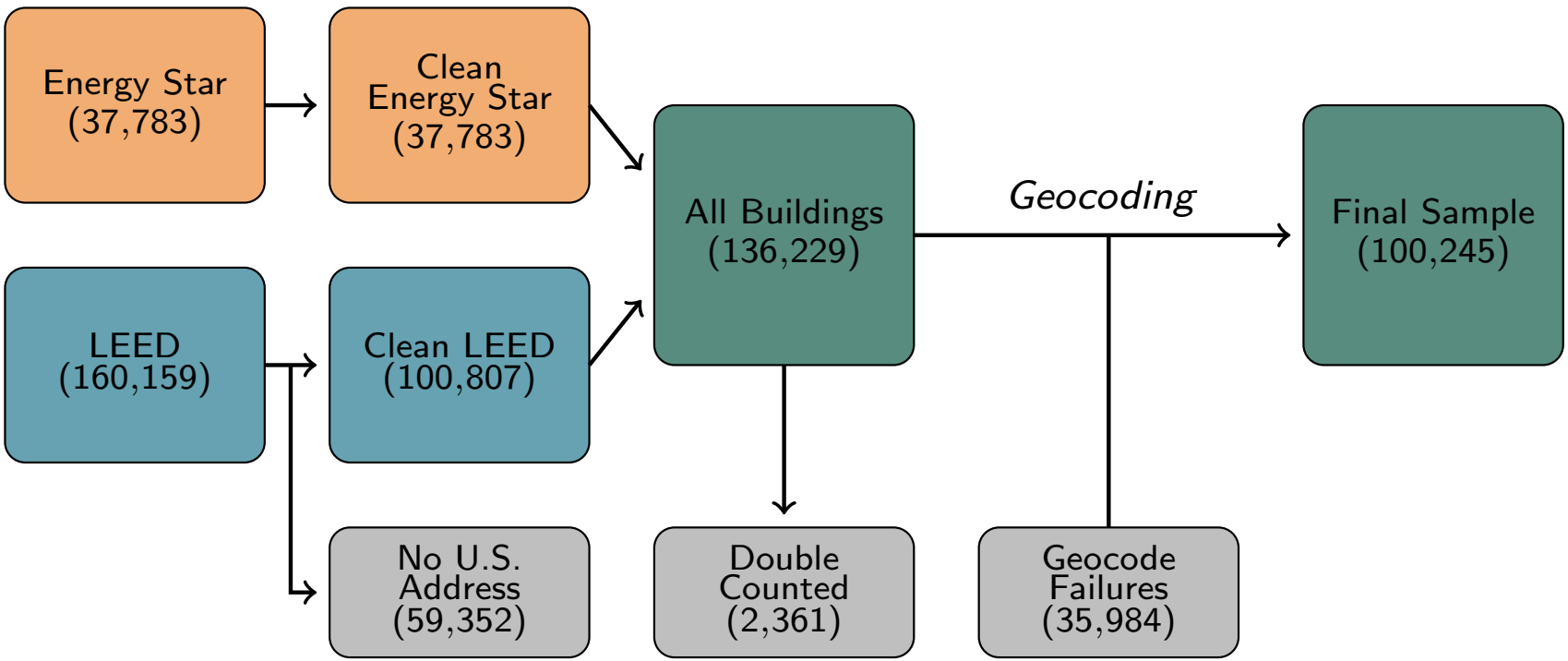
LEED Program

- Leadership in Energy and Environmental Design (LEED) program through the US Green Building Council
- Certification based variety of "green" criteria (e.g. energy-efficiency, facilities for electric cars & bicycles)
- Certified by a LEED accredited professional

Overview of Data Cleaning

Data Cleaning

Figure 1: Data Cleaning Process

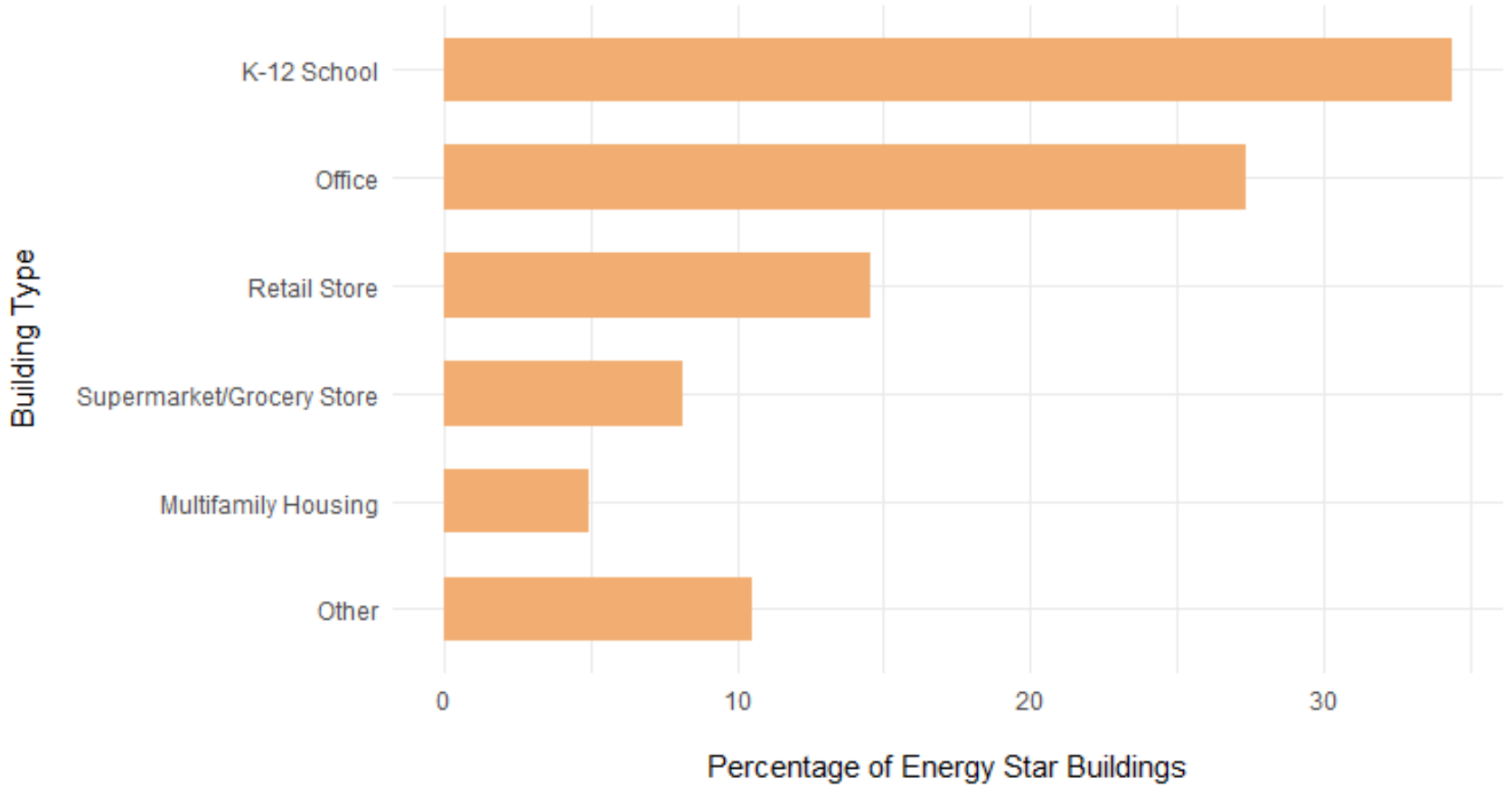


(No. of Observations)

Visualizing the Data

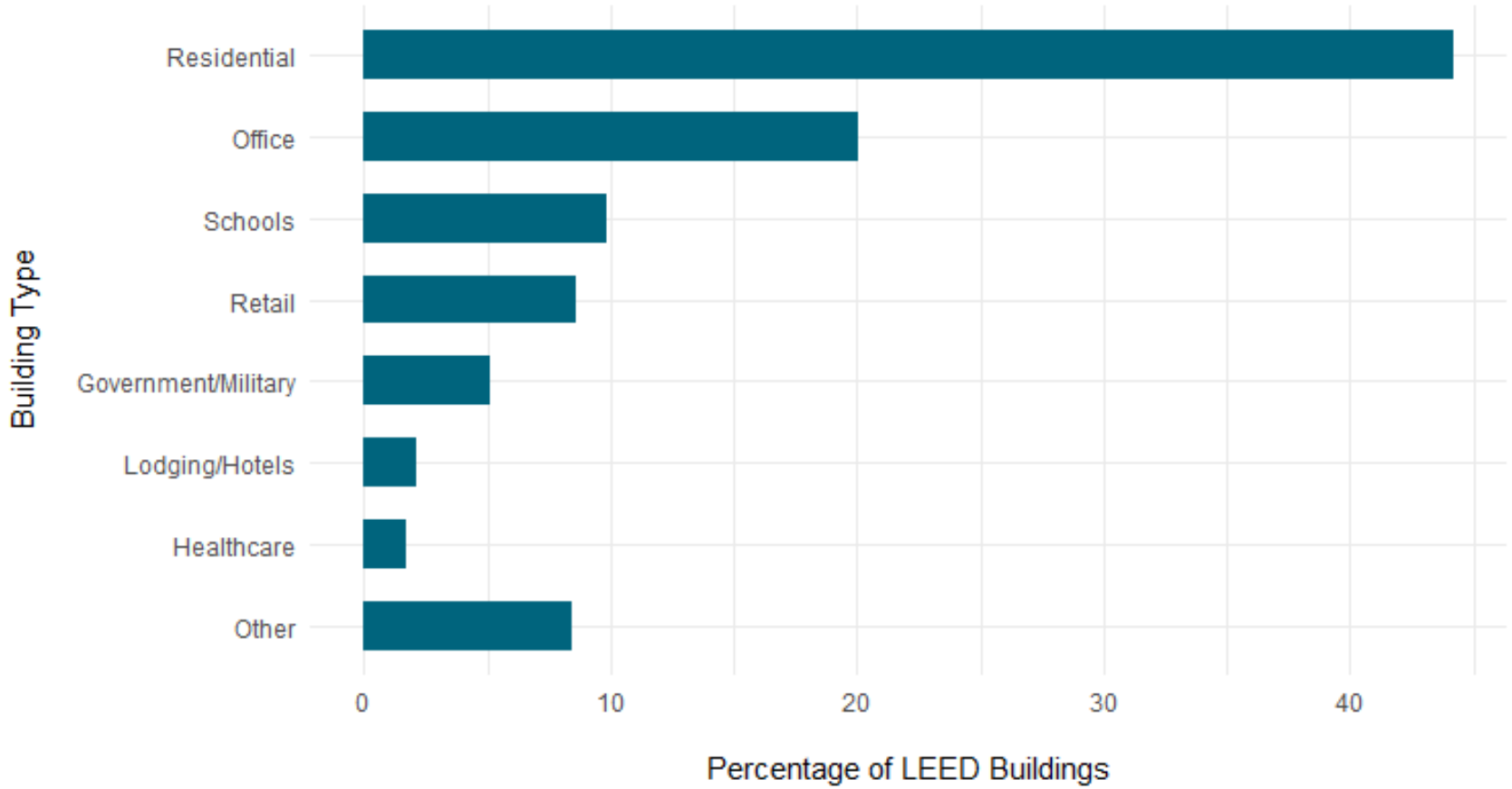
Energy Star Buildings

Figure 2: Sample of Energy Star Buildings by Type



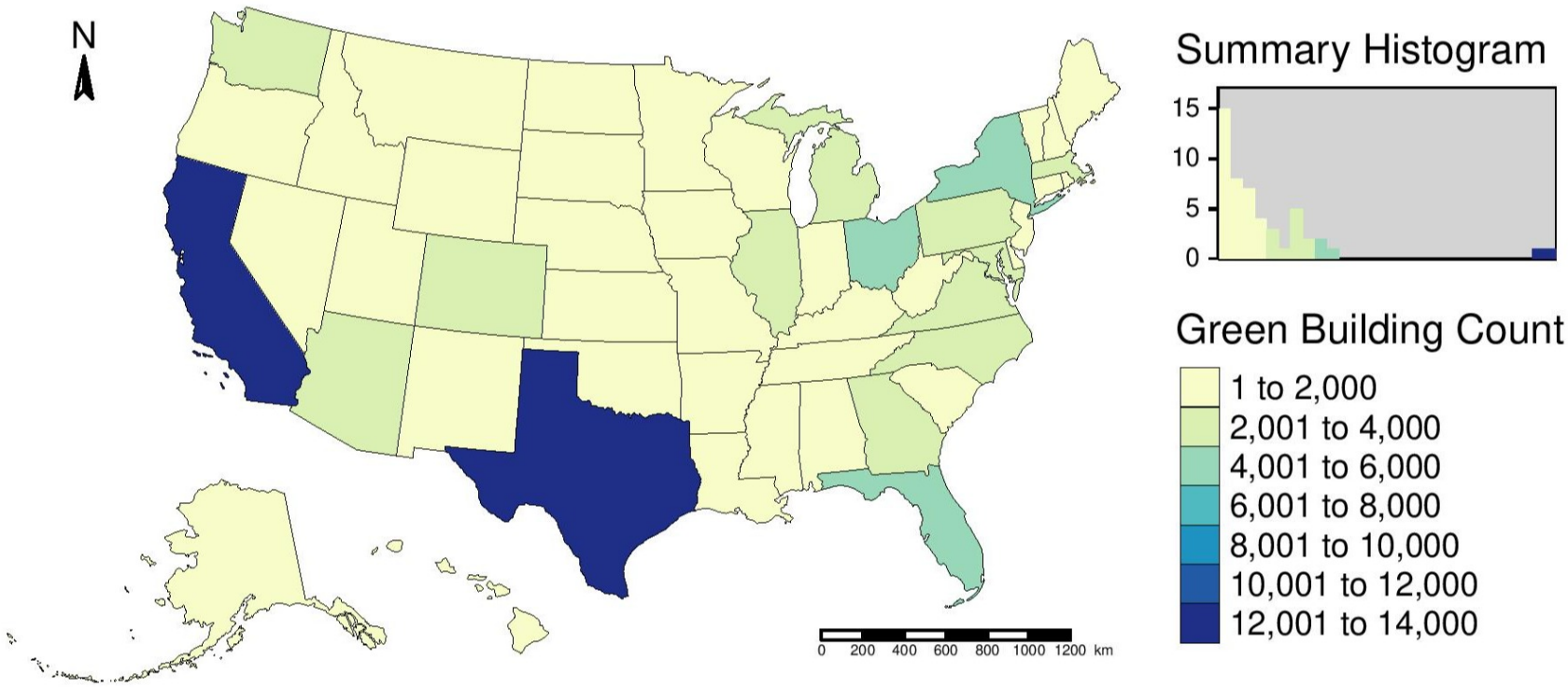
LEED Buildings

Figure 3: Sample of LEED Buildings by Type



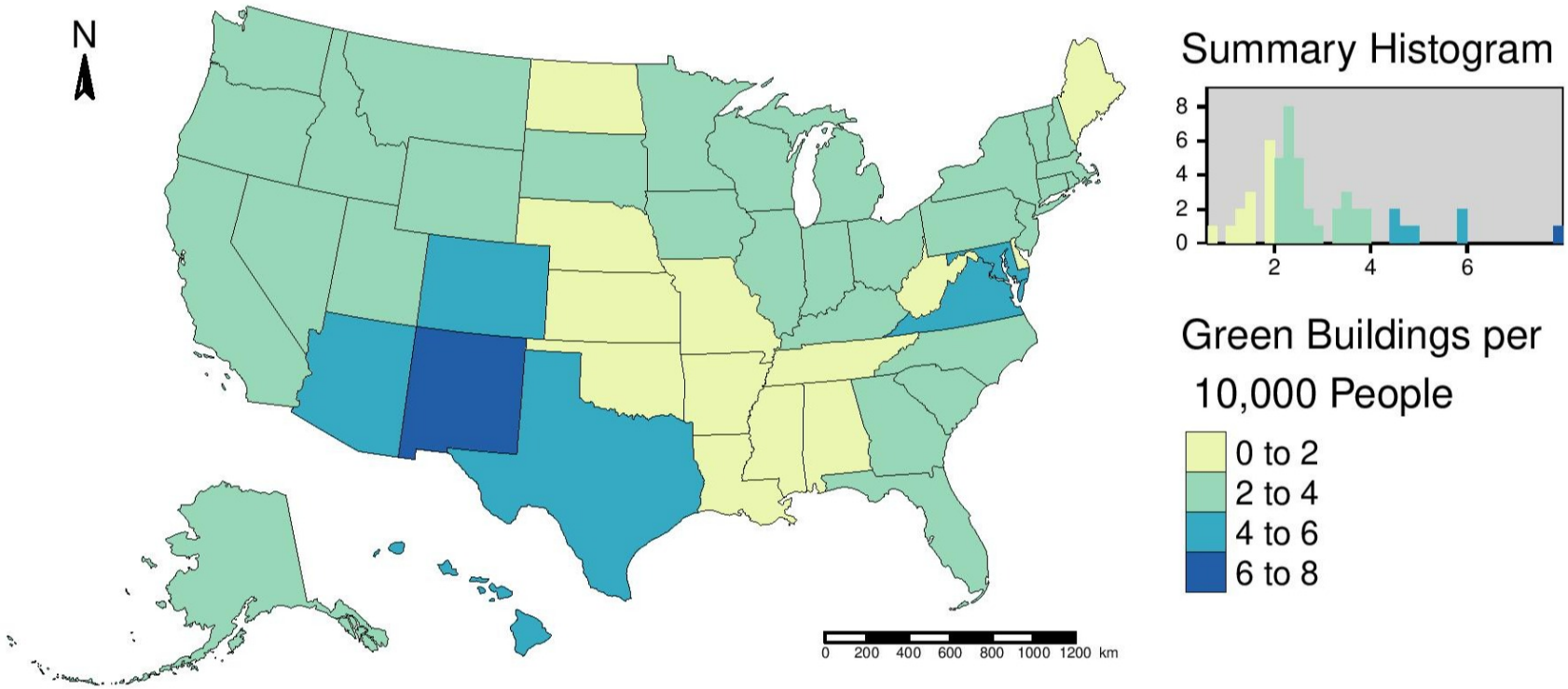
Where is the Sample?

Figure 4: Green Buildings by State



Normalizing by Population

Figure 5: Green Buildings per Capita by State



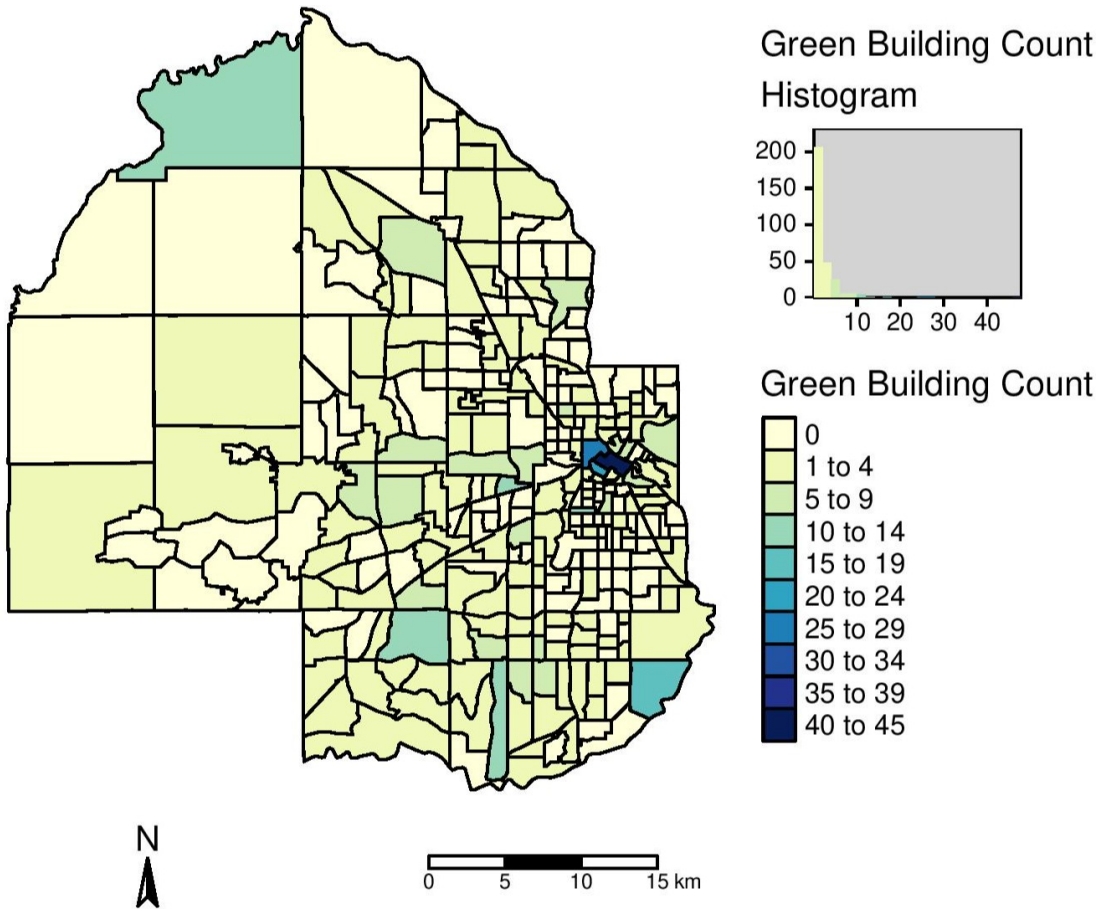
Neighborhoods Around the Nation

Table 1: Summary Statistics

Statistic	Full Sample	Commercial	Residential
Total Count	100,245	68,712	31,533
Census Tract Counts			
Minimum	0	0	0
25^{th} Pctl	0	0	0
Median	0	0	0
75^{th} Pctl	1	1	0
Maximum	458	154	456
Mean	1.376	0.943	0.433
Count ≥ 1	42.9%	39.0%	9.6%

Forming Counts

Figure 6: Green Buildings Counts, Hennepin County



Next Week

Revisit some theory: General equilibrium model for location of firms and workers.

Roback, Jennifer, "Wages, rents, and the quality of life," *Journal of political Economy*, 1982, *90* (6), 1257–1278.

Rosen, Sherwin, "Wage-based indexes of urban quality of life," *Current issues in urban economics*, 1979, pp. 74–104.