Data Exploration
Assessing the Modified Alonso-Muth-Mills Model

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Review

Research Question

What characteristics of urban neighborhoods relate to the number of certified green commercial buildings?

Previously,

- Modified the Alonso-Muth-Mills model to describe where green buildings are built
- Data background, data cleaning, descriptive statistics
- Evaluating the model?

Outline

Today's Goal

Spend some time evaluating the modified Alonso-Muth-Mills model: what works, what doesn't, and what do we want out of our model?
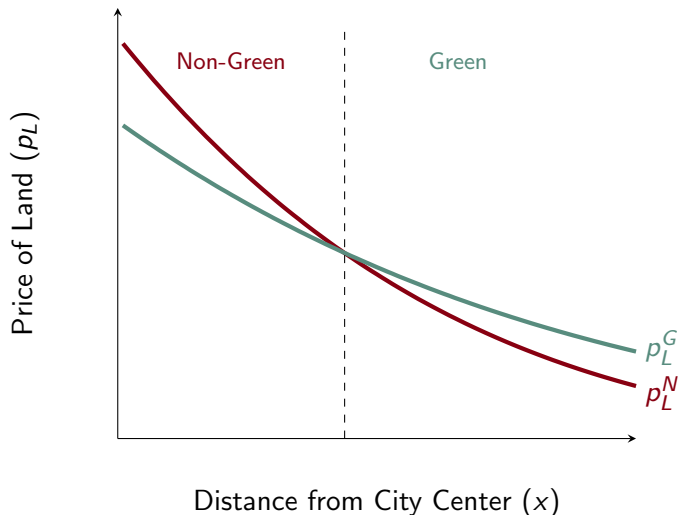
1 Revisiting the Alonso-Muth-Mills Model

2 Evidence for the Model

3 Alternative Explanations

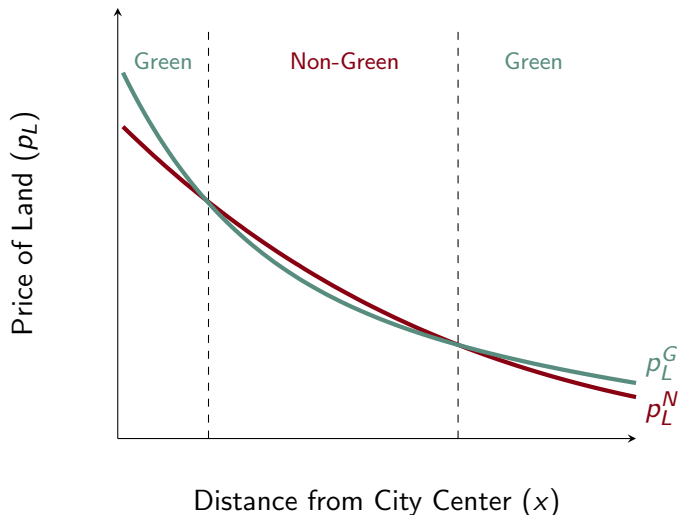# Revisiting the Alonso-Muth-Mills Model

Modifications & More

The Modified AMM

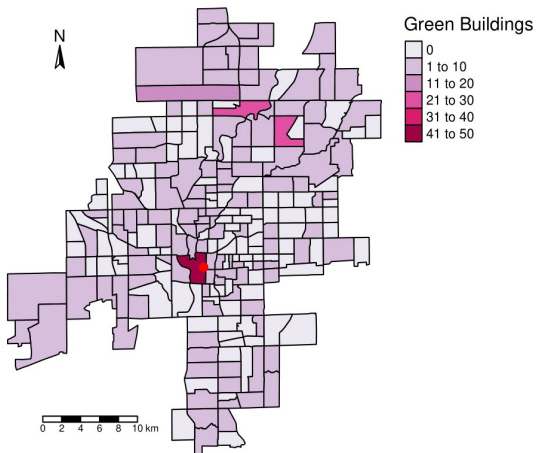Figure 1: Bid-Rent Curves with a Fixed Premium

Another Modification

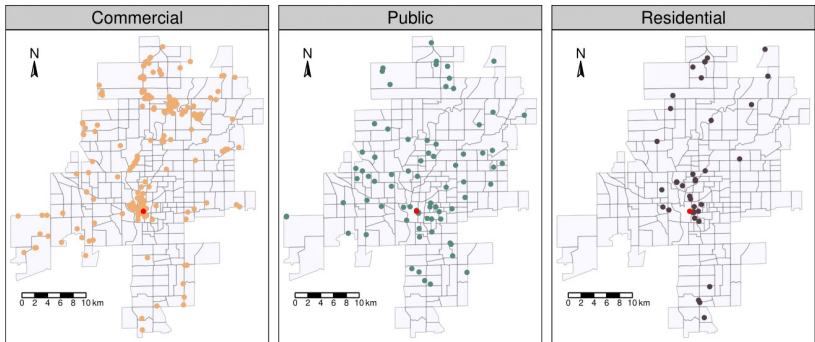Figure 2: Bid-Rent Curves with a Social Premium

Green | Non-Green | Green

Price of Land (p_L)

p_L^G

p_L^N

Distance from City Center (x)

Evidence for the Model

Are the data consistent with the theory?

Figure 3: Green Building Counts, Indianapolis
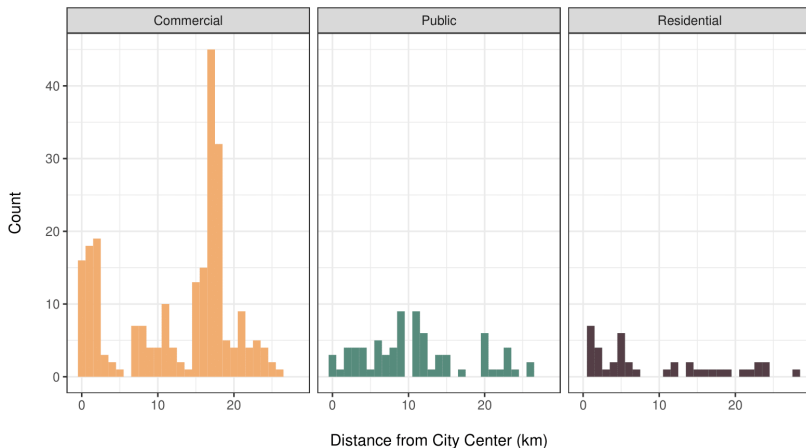
Figure 4: Green Building Locations by Type

Linearizing the City
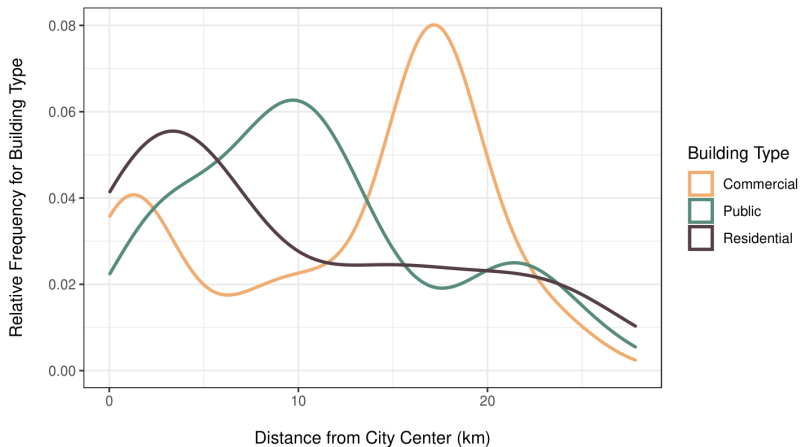
Figure 5: Green Buildings' Distance from the City Center, Indianapolis

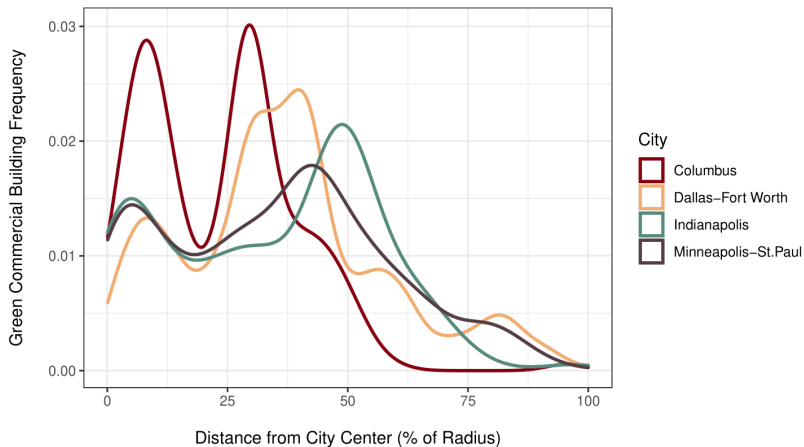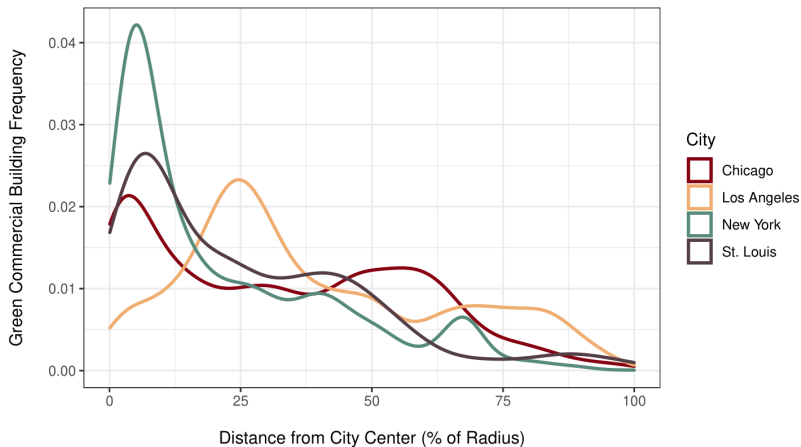Figure 6: Distribution of Green Buildings by Type, Indianapolis

Consistent Cities

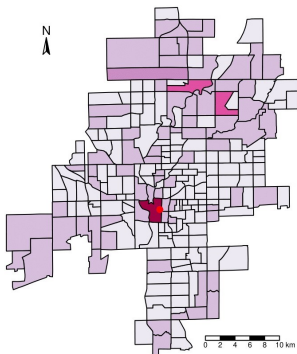Figure 7: Distribution of Commercial Green Buildings, Four Cities

Inconsistent Cities

Figure 8: Distribution of Commercial Green Buildings, Four Other Cities

Alternative Explanations

Incorporating Census Data

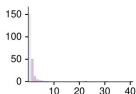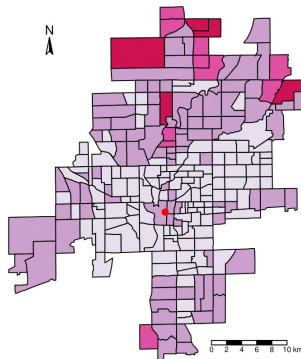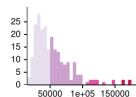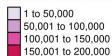Figure 9: Commercial Green Building Counts, Indianapolis

Figure 10: Median Household Income, Indianapolis

Comparing Neighborhoods

Table 1: Summary Statistics for Urban Census Tracts

Statistic	No Green Com. Building			≥ 1 Green Com. Building		
	Mean	St. Dev.	Median	Mean	St. Dev.	Median
Median HH Income	65,898	35,412	58,056	72,395	37,615	64,479
Median Gross Rent	1,247	496	1,141	1,333	525	1,221
Median Housing Value	304,704	265,826	223,000	364,572	298,303	278,100
Proportion Non-White	0.397	0.277	0.326	0.346	0.231	0.290
Proportion Heat from Electricity	0.322	0.275	0.229	0.387	0.271	0.322

Sizing Up the Model

Pros:

1. Data is somewhat consistent – there is an outer ring for many cities
2. Clear prediction

Cons:

1. Strange model environment: monocentric, linear, atemporal
2. No convenient econometric form
3. Fails to incorporate interesting (and relevant) data

Next Week

Develop a stronger theory with these ideas and stylized facts in mind:

Glaeser, Edward Ludwig, *Cities, agglomeration, and spatial equilibrium*, Oxford University Press, 2008.