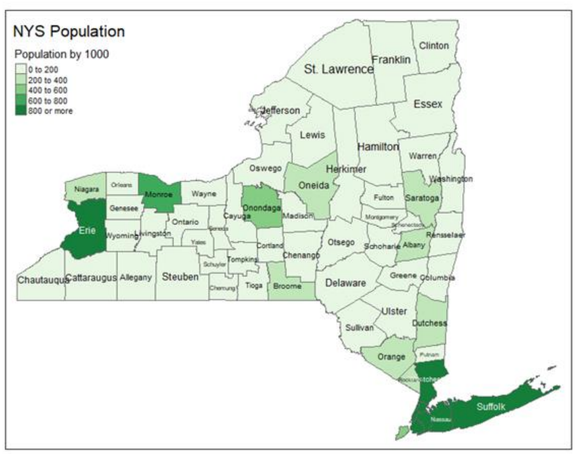
CLIMATE CHANGE AND THE URBAN ADVANTAGE:

Differences in Investments in Environmental Sustainability Between Urban and Rural Communities

Maria Isabel Olivera
Sociology Department, Queens College, CUNY

Introduction

Communities throughout the world are currently attempting to prepare for the challenges and uncertainties posed by climate change. The nature of their response, however, may ultimately be effected by the resources available to them. Wealthier communities are able to invest in innovative technologies that less affluent communities cannot afford. How wealthy a community is, may ultimately depend on its size, with urban areas being at an advantage compared to more rural areas. This paper aims to compare the amount of investments made towards energy efficiency by urban and rural communities in New York State and the resulting outcomes.



Methodology

The dataset utilized for this analysis is “Energy Efficiency Projects Beginning 1987” from Open Data NY, which tracks New York Power Authority financed public energy efficiency projects completed in New York State since 1987. The completed projects included upgrades in lighting, heating, ventilation and air conditioning systems.

For my analysis, I will be looking at the following variables:

1. Edu (numerical) - Percentage of county residents with a bachelor’s degree or higher
2. EEReduction (numerical) – Projected first year reduction in energy consumption in kilowatts
3. FYSavings (numerical) – Projected first year utility cost savings in dollars
4. Income (numerical) – Average weekly wage by county
5. Pop (numerical) – County population per 1,000
6. TPCost (numerical) – Total amount spent on an energy efficiency project in dollars

Results

The Following tables compare the socioeconomic measures and levels of investment of the top 5 and bottom 5 New York State counties for public energy efficiency projects. Urban communities significantly surpass rural areas with regards to both socioeconomic measures and investments in energy efficiency.

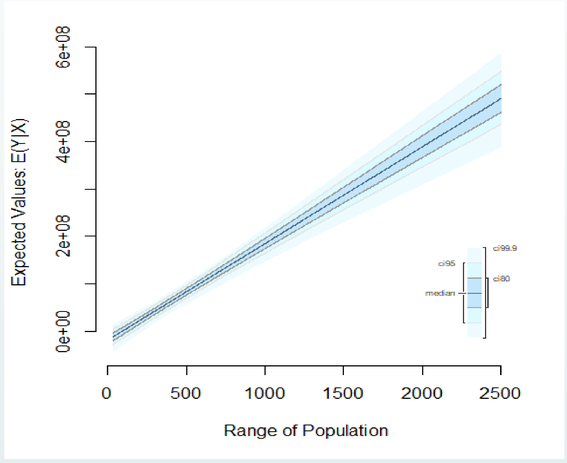
Top 5 NYS Counties for Energy Efficiency Projects

County	Population by 1000	Income	Education	Total Investment	# of Projects
New York	1586	1907	60	$640,959,041	509
Kings	2505	850	34	$541,560,955	420
Bronx	1385	978	19	$296,864,069	304
Queens	2231	965	31	$392,850,248	273
Westchester	949	1327	47	$195,966,863	194

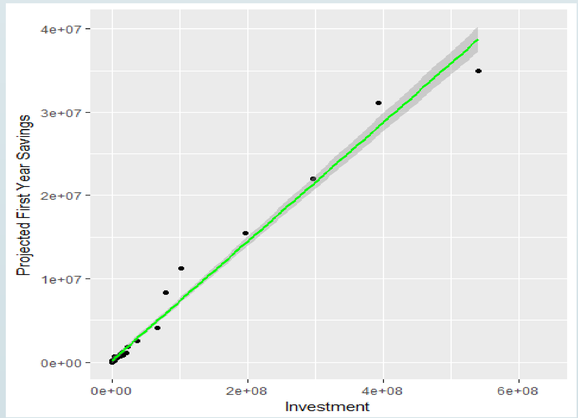
Bottom 5 NYS Counties for Energy Efficiency Projects

County	Population by 1000	Income	Education	Total Investment	# of Projects
Yates	25	653	23	$141,697	1
Sullivan	78	789	22	$2,746,875	1
Wayne	94	806	21	$144,780	1
Fulton	56	774	17	$720,009	2
Genesee	60	757	21	$56,197	2

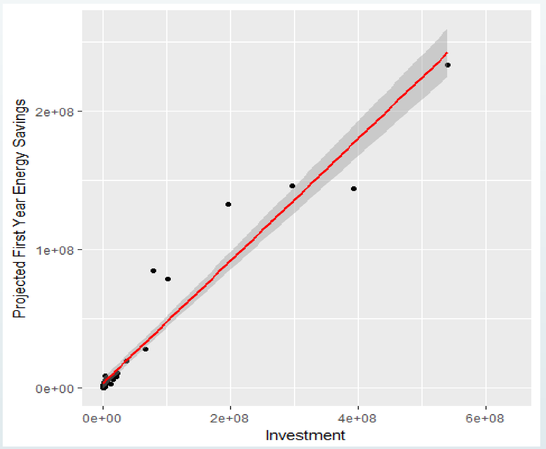
A Zelig simulation was run with population as the independent variable and total investment as the dependent variable. The simulation showed that an increase in population of 1,000 residents resulted in an average increase of investment of $204,767.



The next regression looks at the effects of different levels of investment in energy efficiency on projected first year utility cost savings. Every 100 dollars spent on energy efficiency resulted in a projected first year utility cost savings of 7 dollars. Energy efficiency projects can therefore pay for themselves in less than 15 years.



The last regression explores the relationship between total investment in energy efficiency and predicted first year energy savings. In this case, there is a clear and strong positive correlation between investment levels and energy savings. Every 100 dollars spent on energy efficiency resulted in a projected first year energy reduction of 44 kilowatts.



Conclusion

These outcomes suggest that rural communities, unable to make the same kinds of investments in sustainability as larger and wealthier urban communities, may find that climate change will only worsen the economic and social hardships and inequalities, which are already hurting them. Efforts should therefore be made to encourage and assist rural communities in funding and implementing sustainability projects in order to ensure their long-term health and survival.