High Ground, Hot Property: Mapping ‘Climate Gentrification’ in Miami-Dade County, Florida

Introduction

Climate change will increase the risk of flooding and inundation in Miami-Dade County. The 2015 Unified Sea Level Rise (SLR) Projection study, a comprehensive analysis of multiple climate prediction models, predicts short-term (2030) sea-level rise between 6 to 10 inches above 1992 mean sea level, 11 to 24 inches in the medium term (2060) and 31 to 81 inches in the long-term (2100). In Miami-Dade County, Florida, the highest property values are for those properties nearest the ocean. However, as sea level rises and increases potential property damage due to flood and inundation risk, coastal property is expected to lose value. Due to discriminatory housing and urban planning throughout the 20th century, low-income minority communities live in the urban core, which lies at higher elevations, such as Miami Gardens. As wealthier low-lying communities are increasingly at risk of climate-induced flooding and move toward higher elevation, they will likely displace low-income, minority communities. This project aims to map which communities are most at risk of climate-induced flooding and which communities are potentially at risk of climate gentrification. ‘Climate gentrification’ is defined as the displacement of incumbent, low-income communities of color due to low property values and the fact that the property is on relatively higher elevations than wealthier neighborhoods more at risk of flooding. Gentrification is a well understood phenomenon within urban studies, as is climate-induced flooding. However, little research has considered how climate change will exacerbate the conditions of gentrification and housing inequality.

Methods & Data

First, a literature review was undertaken to determine what the existing literature considers when looking at potential threats of gentrification. Welch (2013) identifies a number of potential neighborhood-level factors that might portend possible gentrification including racial demographic, median income of neighborhoods and adjacent neighborhoods, access to amenities and services such as public transit. My research only relies on a handful of the potential metrics that this paper used. My research relied on the theme of Housing/Transportation. The following maps depict a 2ft SLR scenario overlaid with racial census-tract level demographic data along with median income. The maps illustrate that predominately affluent, white neighborhoods are most at risk from 2ft of sea-level rise. We see that while predominately affluent, white neighborhoods along the coast line will be most affected by 2 feet sea-level rise, less affluent, Hispanic and black communities are less likely to be affected by rising sea-levels.

Projected sea-level rise data is available from the 2012 NOAA Coast Services Center inundation database. This data layer measures inundation levels for predicted sea-level rise from 1 to 6 feet. Parcel data from 2012, including classification and just assessed value, was published by the Florida Department of Revenue. Additional data on Metrorail stations, stops and major roads was published by the Miami-Dade County GIS office. Finally, the Social Vulnerability Index (SVI) (2014), compiled by the CDC, measures social vulnerability for every census tract based on 14 social factors and indicators, grouped into 4 themes. For this research I use the Housing/Transportation theme.

Demographic Survey

The following maps depict a 2ft SLR scenario overlaid with racial census-tract level demographic data along with median income. The maps illustrate that predominately affluent, white neighborhoods are most at risk from 2ft of sea-level rise. We see that while predominately affluent, white neighborhoods along the coast line will be most affected by 2 feet sea-level rise, less affluent, Hispanic and black communities are less likely to be affected by rising sea-levels.

Social Vulnerability Analysis

The Social Vulnerability Index (SVI) is compiled by the CDC using five-year ACS data. It indicates the relative vulnerability of every census tract based on 15 social factors, grouped into four themes. This research relied on the theme of Housing/Transportation. The higher percent a community was in, the more vulnerable it was in the aftermath of natural disasters, including flooding. We see that relatively more vulnerable communities are outside the 2ft SLR zone.

Neighborhood Spillover

Borrowing from Welch (2013) and Kolko (2007), I map the so-called ‘spillover neighborhood effect’, or the potential risk of gentrification of lower-income neighborhoods adjacent to higher-income neighborhoods. The map below shows that with the threat of 2 feet of sea-level rise, low-income neighborhoods immediately adjacent to wealthier neighborhoods might be at a higher risk of gentrification as populations move inland. These adjacent communities are predominately minority communities.

Assessed Value of Affected and Non-Affected Property

This research attempts to map the increasing threat of climate gentrification in Miami-Dade County, Florida. Climate gentrification will increase as wealthier communities along the coast move in land in order to avoid flooding and inundation risk. With demographic data, we see that wealthier, white communities along the coast are more at threat of climate induced flooding. This research would have benefited from more up-to-date data sources for a number of measures.

Conclusion

References:

- NOAA Climate Change. (2012). “Mean Sea Level Data.”
- Miami-Dade County GIS. (2016). “Miami-Dade County GIS.”

Table:

<table>
<thead>
<tr>
<th>In 2-feet SLR Zone</th>
<th>Within 1/4-mile of 2-feet SLR Zone</th>
<th>Outside 2-feet SLR Zone</th>
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<tbody>
<tr>
<td>Mean Value of Residential Property</td>
<td>$1,282,433</td>
<td>$371,133</td>
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<tr>
<td>Median Value of Residential Property</td>
<td>$600,600</td>
<td>$458,562</td>
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<tr>
<td>Median Value per Square-Foot</td>
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<td>$88.38</td>
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<tr>
<td>Total Value of Residential Property</td>
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<td>$36,458,682,019</td>
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<tr>
<td>Mean Social Vulnerability Index</td>
<td>.63</td>
<td>.62</td>
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