

Neighborhood Housing Damage and Restoration in Galveston, Texas Following Hurricane Ike

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Abstract

This research focuses on the **impacts** and **restoration** of neighborhoods in Galveston, Texas post-Hurricane Ike. Using data on parcel values collected annually from 2008 to 2015 and ACS 5-year estimates for 2005-2009, I examined the relationships between restoration and property damage, race, ethnicity and household income. My research shows that neighborhoods with higher levels of damage, higher percentages of non-Hispanic black people and lower household incomes experienced a slower pace of restoration post-Ike. This is an important contribution to the literature as few studies have been able to examine longer term housing recovery following a disaster.

Introduction

On September 13, 2008, Hurricane Ike made landfall near Galveston, Texas and left behind a trail of destruction. Hurricane Ike is reported as the third costliest natural disaster in American history. Previous research on Hurricane Ike has focused on disaster impacts and housing recovery, paying particular attention to the recovery of residential structures. This study assessed the **year-to-year restoration** values of **neighborhoods** located in **Galveston's urban core**.

Methodology

Data:

- This project used quantitative data including residential parcel data that has been aggregated to the block group level and five year ACS estimates for 2005-2009.

Hypotheses:

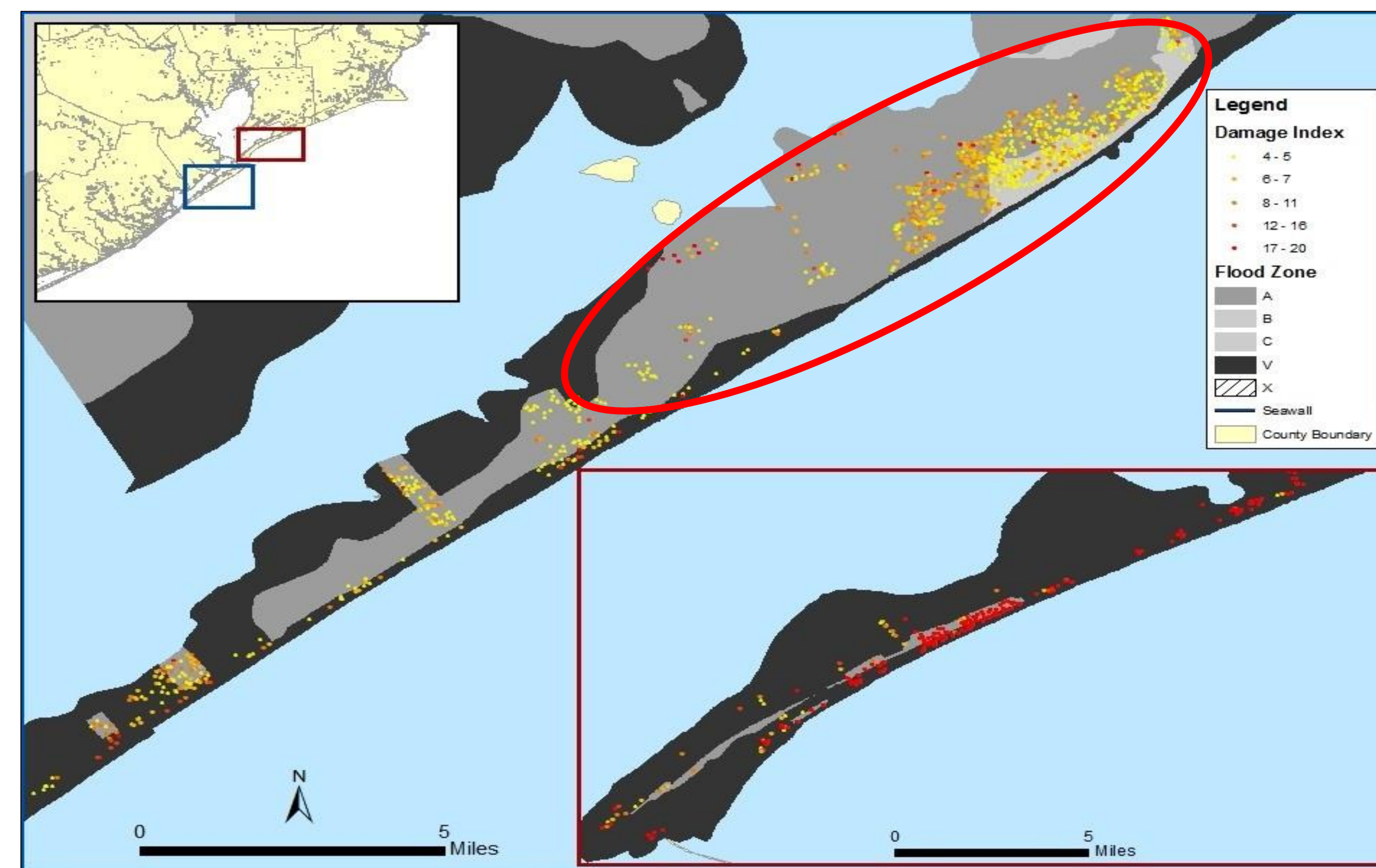
- Minority neighborhoods will have a slower rate of restoration
- Neighborhoods with higher median incomes will have a high rate of restoration.

Methods:

- Correlational analysis was performed between specific independent and dependent variables in Stata to discover their relationship.
- Regression models were estimated using Stata to assess the hypothesized relationships.

Definition of Variables

- Damage**- average assessed improvement value loss of all single family properties in the block group, aggregated to the Block Group
- Restoration**- homes that achieved their pre-Ike values after the storm.



The map above shows Hurricane Ike's damage relative to Galveston, Texas. The portion outlined in red is considered the **urban core** of Galveston.

Descriptive Statistics of Dependent Variables (n= 61)

	Variables	Mean	Standard Deviation	Minimum	Maximum
Restoration by	Damage	32.73	15.35	2.68	59.42
	2010	0.39	0.19	0	0.72
	2011	0.42	0.19	0	0.74
	2012	0.44	0.19	0	0.74
	2013	0.47	0.19	0	0.82
	2014	0.53	0.16	0	0.84
	2015	0.68	0.17	0	0.91

Descriptive Statistics of Independent Variables

Variables	Mean	Standard Deviation	Minimum	Maximum
Damage	32.73	15.4	2.7	59.4
Year Built	1955	15.2	1939	1990
Hispanic	31.1	18.11	2.1	78.3
Non-Hispanic Black	19.91	19.8	0	72.25
Owner Occupied Homes	47.73	22	9.8	92.85
Median Household Income	36.2	17	11.11	79

OLS Regression models predicting Damage and Restoration

		Restoration By					
	Damage	2010	2011	2012	2013	2014	2015
Damage	--	X	X	X	X	ns	ns
Year Built	X	ns	ns	ns	ns	X	X
Hispanic	X	ns	ns	ns	ns	ns	ns
Non-Hispanic Black*	X	<i>x</i>	<i>x</i>	X	X	X	X
Median Household Income	ns	X	X	X	X	ns	ns
Owner Occupied Homes	X	X	X	X	X	ns	ns
R squared	0.25	0.342	0.304	0.29	0.217	0.288	0.233

Key

ns - Not significant

* - Significant on a one tail test

x P(b) < 0.1

X P(b) < 0.05

█ Positive
█ Negative

Results

- The higher the percentage of damage in the block group, the slower it was to restore.
- The higher the percentage non-Hispanic Black people in the block group, the slower it was to restore.
- Neighborhoods with higher median household incomes restored at a slow rate.
- Once median household income became non-significant in 2013, the year the home was built began to determine restoration rates.

Conclusion

- Contrary to previous thought, neighborhoods with higher median household incomes restore slower than neighborhoods with lower median household incomes.
- Future research is needed to discover why neighborhoods with higher median household incomes had a slower rate of restoration.
- As expected, minority communities had a slow rate of restoration.
- Overall, restoration in Galveston has been weak.

References

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