Superstorm Sandy and Voter Vulnerability in the 2012 US Presidential Election

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Abstract

Superstorm Sandy was an unprecedented meteorological event that devastated the Caribbean and the Northeastern Coast of the United States in October 2012. While many research efforts will focus on the atmospheric conditions that led to the creation and unusual track of the storm, this study evaluates the impact of Sandy on voter turnout in the 2012 US Presidential Election. The goals of this paper are to 1) determine if any alterations in voter turnout occurred, 2) assess the extent to which Sandy was responsible for any voter turnout changes and 3) investigate if the influence of Sandy on voter turnout was contingent upon social vulnerability. To accomplish these goals, voter turnout change between the 2008 and 2012 US Presidential Elections was analyzed at the county and municipal level for both New Jersey and Connecticut. The notable decreases in voter turnout discovered in both states were likely due to the election occurring in the aftermath of Superstorm Sandy. The correlation, spatial clustering analysis, ANOVA and multiple regression results all suggest that storm surge was more likely to be responsible for reduced voter turnout in New Jersey than in Connecticut. Specifically in New Jersey, the



findings indicate that storm surge coverage, rather than height, was

influential in reducing voter turnout and that this relationship was contingent upon the racial composition of the municipalities. Overall, understanding how Sandy affected voter turnout will help improve the resiliency of electoral systems to future natural disasters.

Data and Methodology

 $\Delta \text{ Voter Turnout} = \left(\frac{\text{Ballots Cast}_{2012}}{\text{Registered Voters}_{2012}} - \frac{\text{Ballots Cast}_{2008}}{\text{Registered Voters}_{2008}}\right) * 100$

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- Voter turnout data was gathered from state election archives for both the 2008 and 2012 Presidential Elections at the county and municipal level
- FEMA Hurricane Sandy Impact Analysis and FEMA storm surge datasets were used to evaluate the physical impact of Sandy
- A socio-economic dataset was compiled from the 2010 Census and 2007-2011 ACS to characterize each municipality's social vulnerability to Sandy
- To complement this dataset, SoVI was also included in the analysis
- Statistical tests included bivariate correlation, cluster and outlier analysis, ANOVA, Tukey's HSD and multivariate regression

Voter Turnout Change - NJ

- The atypical nature of Superstorm Sandy compared to a classic hurricane partially explains why Atlantic County did not suffer a dramatic reduction in voter turnout
- The right front quadrant of Sandy's track, where the wind speeds and storm surge of hurricanes are strongest, was also where the most drastic drop off in voter turnout occurred
- The apparently high adaptive capacity of Atlantic and Hudson County may have limited the decreases in voter turnout





Vote<mark>r Tu</mark>rnout Change - CT

- Whether due to a reduction in exposure, increased adaptive capacity and/or the scale of the unit of analysis, storm surge tended to have a less severe impact on voter turnout at the town level in Connecticut
- However, concluding that Sandy had no influence on voter turnout in Connecticut would be remiss since other ramifications of the storm, such as power outages, may have disrupted voting activities

ANOVA Results

Regression Results

Independent Variable	Coefficient	Std. Coefficient	P-Value	Sig. L
Constant	-6.3990		0.00	***
Surge Percentage	-0.0186	-0.15	0.02	*
Percent Latino	0.0015	0.01	0.95	
Percent Over 65	0.0068	0.02	0.80	
Percent in Poverty	-0.1798	-0.31	0.00	akakak
SURGE*Latino	-0.0037	-0.35	0.00	MOMONE
SURGE*Over65	0.0000	0.00	0.97	
SURGE*Poverty	0.0000	0.00	0.98	
SURGE*Obama	0.0053	0.41	0.00	acaicaic
Percent 08	-0.2285	-0.39	0.00	sicalcale
Pop Density	-0.0001	-0.16	0.04	3 1:
City	1.4970	0.15	0.01	M:
Town	2.7940	0.13	0.02	MK.
Township	0.5807	0.08	0.15	
Village	0.3153	0.01	0.85	
Percent Obama	0.1375	0.38	0.00	alcalcale
R-Squared	0.38			
Adjusted R-Squared	0.34			
F-Statistic	10.46		0.00	***

The influence of storm surge on voter turnout change became more negative as the proportion of Latinos increased, which provides empirical support for the theory that existing vulnerabilities are magnified by natural hazards

Since storm surae coverage suppressed voter turnout most severely in those municipalities that supported Obama the least, it appears likely that Superstorm Sandy decreased Republican vote share in New Jersey

Conclusion

- Dramatic declines in voter turnout were discovered with the largest decreases (~20 percentage points) occurring along the barrier islands in New Jersey
- The proportion of a municipality covered by storm surge was found to be influential in reducing New Jersey turnout rather than actual storm tide height
- Sandy's effect on voter turnout change was contingent upon racial composition and support for Obama
- Vulnerable populations need to be a focus of any adaptive planning aimed towards helping those citizens displaced by natural disasters vote and encouraging early voting as a preventative measure is advisable