The first of hurricane: GIS analysis of hurricanes and domestic violence offences in Florida

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Basic Article Information

- Title: The first of hurricane: GIS analysis of hurricanes and domestic violence offences in Florida
- Author: Karina Mukazhanova Powell
- Year: 2018
- The main focus of the article is to see if after a natural disaster, specifically hurricanes, instances of domestic violence increase.

Importance

- This study is important to me, because I have gained interest in GIS as a career path from this course. Being able to read a study that uses a software and methods that I have done in class allows me to potentially see what I could be doing in my career.

 This study is important to society, because it brings to light the potential suffering and vulnerability that citizens of this country, specifically Florida, go through each hurricane season. With this study, politicians can become informed and come up with plans and hopefully solutions, in order the decrease the incidents and those affected.

Key Terms

- Domestic violence violent behavior by someone in a home/domestic circle.
- GIS (Geographic Information System) a system that uses geography and data and projects it on a map in order to analyze the information presented.
- Spatial Cluster Method grouping together spatial objects in clusters in order to show similarity
- SHELDUS (Spatial Hazard Events and Losses Database for the United States) a database for natural disasters that has information like the affected location or the direct losses as a result of the event.

Summary of Lit Review

- Ellsberg and Heise (2005) found that it is more likely for a woman to be assaulted or murdered by her current or previous partner than by anyone else.
- Bolin (2007), Enarson and Fordham (2001) found that natural disasters effect on domestic violence and vulnerability of individuals had overwhelming negative impacts that affect women, minorities through race and ethnicity, as well as the elderly population.
- Enarson (1999) found that domestic violence shelters were unprepared for the outcomes that natural disasters could bring. The unpreparedness stems from lack of funding and lack of qualified personnel.

Theory

- This study is based on the Social Disorganization Theory. It can be defined as an increased likelihood of crime being committed in an area that is highly populated and diverse, with people constantly leaving and entering.
- This study used this theory in order to explain how incidences of domestic violence are affected by property loss during long hurricanes.

Hypotheses/Research questions

- The author's purpose was to see the relationship between reported domestic violence incidents and property loss in Florida counties, due to the long hurricane season in 2004.

Methods

- Basic study information and sample characteristics
 - This study was performed in Florida and focuses on Florida counties.
 - The data was from mainly 2004 and 2005, but also 2017 and 2002.
 - The data was collected from SHELDUS and Florida Department of Law Enforcement.
- Key variables and How they are measured
 - Key variables were hurricane duration, property loss, and reported domestic violence incidents. Hurricane duration and property loss were both measured by and taken from SHELDUS. Reported domestic violence incidents were measured by and taken from the Florida Department of Law Enforcement.

How was GIS used in this study

- The author, using ArcMap, created a vulnerability map. This allowed domestic violence patterns during the hurricane season, as well as directly after.
- Using and projecting on a map of Florida the information gathered from SHELDUS about both the property loss in USD and the duration of tropical storms and hurricanes from 2004, allows you to see the most affected counties that year.
- Using and projecting data from Florida Department of Law Enforcement about domestic violence incidents on a map of Florida shows which counties had a domestic violence incidence increase in 2004.
- The spatial cluster method was used to be able to observe the relationship between variables.
- A vulnerability map for 2017 was also used in order to see if there is a recurring trend in the 2004 hurricane season and the most recent 2017 hurricane season.

Findings/Conclusions

- The research shows that there was a significantly higher amount of domestic violence occurrences in 2004 and 2005 when compared to other years. This supports the hypothesis where domestic violence increases when there is a long lasting hurricane.
- The research found that in a short time period, in addition to the 4 hurricanes, Florida was also hit by 16 tornados and 4 tropical storms lasting upwards of 4 days. The research was on domestic violence incidence in 9 Florida counties in 2002 and 2004, and 7 of the 9 showed an increase in the reported incidence. One county's reported number was more than double.
- Despite experiencing large property loss, some counties did not have high rates of domestic violence, while some counties did have high rates of domestic violence but didn't experience large property loss.

Limitations

- Since domestic violence and natural disasters are both complex, further investigation using more control variables is required.
- Using statistical tools including logistics regression would allow for more precise information in support of the hypothesis.
- Creating more maps based on the following years of recovery would allow you to see if the trend is consistent.

Recommendations for further research

- For further research, the author first recommends using control variables like population income or evacuation procedures, that affect both the prevalence of domestic violence and the recovery process post-hurricane in certain sections of the state.
- To be able to qualitatively see those the hurricane actually affected, the author also recommends using interviews from people in shelters and data from population surveys.