

A Study of Florida's Hurricanes, 2000-2005

Relationship Between Hurricane Damage and Property Tax

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Abstract

The State of Florida has always been a prime target for hurricanes, which have brought much damage to Florida's infrastructure. The objective of this research is to study the hurricane damage reported by counties and the property tax for corresponding years in Florida from 2000-2005. First hypothesis was that the higher the hurricane damage, the higher the percentage increase in property tax throughout Florida's counties. Results show that there are other variables than hurricane damage when considering property tax changes. The second hypothesis was that there is a correlation between the change in housing units and the change in property taxes. Results confirmed the existence of a correlation between population increase and number of housing units in the State of Florida, but there was no correlation between change in housing units and the change in property taxes.

Background

As a Florida native, I was always intrigued with hurricanes and the mere fact that one storm can cause millions, and sometimes billions, of dollars of damage to one state in a matter of a couple days. In the last few years, especially after 2004, the post-hurricane scene in Florida put questions in my mind about the long-term effects of these storms. In 2005, there was a huge increase in property taxes, which affected everyone. I began speaking to my parents about it, and all they could give me was, "It's because of the 2004 hurricane season that property taxes are increasing." With a sudden tax increase, Florida residents are limited when the decision comes to move. Another problem that has been encountered is that tax increases have caused less people to move into the state and leave a number of houses on the market. Since my family had been affected by the repercussions of the storms, I decided to study if the increase in property tax is justified using hurricane damage amount as a sole reason.

Data Used

Each map (Figures 1 and 2) is a North American Datum 1987 projection. The following gives each layer in each map:

*Figure 1:

-Florida Counties:

-Source: ESRI Database

-Hurricane Damage:

-Source: Hazards & Vulnerability Research Institute (2007). The Spatial Hazard Events and Losses Database for the United States, Version 5.1 [Online Database]. Columbia, SC: University of South Carolina. Available from <http://www.sheldus.org>

Hurricane Tracks:

-Source: The National Oceanic and Atmospheric Administration (NOAA) Coastal Services Center: <http://www.csc.noaa.gov>

*Figure 2:

-Florida Counties:

-Source: ESRI Database

-Property Taxes:

-Source: Florida Department of Revenue: <http://dor.myflorida.com/dor/property/databk.html>

*Figure 3:

-US Housing Units:

-Source: US Census Bureau: <http://www.census.gov>

-Florida Population by Counties:

-Source: US Census Bureau: <http://www.census.gov>

Methodology

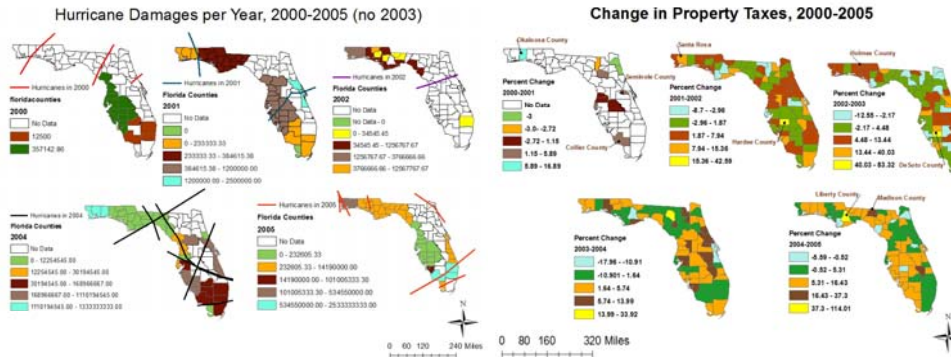
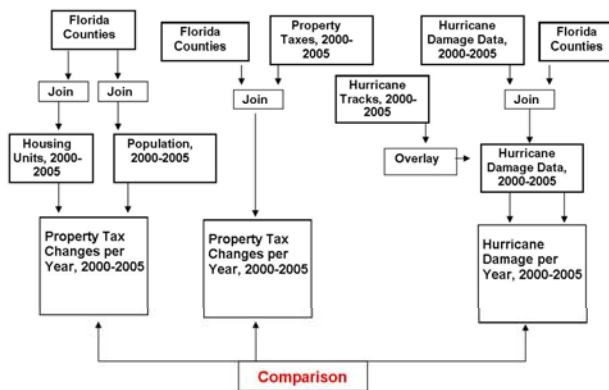


Figure 1: Hurricane Damage reported by counties throughout Florida, 2000-2005 (excluding 2003).

Figure 2: Percent change in property tax throughout Florida, 2000-2005

Results and Discussion

Hurricane Damage & Property Taxes (Figures 1 and 2):

While looking at the two maps above (Figures 1 and 2), it can be observed that Florida had a number of hurricanes coming through between 2000 and 2005, with 2004 being the most active. In 2000-2001, Collier County (southwest Florida) had little damage, but their property taxes increased 5.9% from 2000 to 2001. The county with the highest property tax change was Okaloosa, which did not have any reported hurricane "damage," but had a hurricane swipe right through the county. A similar example is Seminole County with an increase of 4.89% in property taxes. From 2001 to 2002, there was a lot of variation of changes in property taxes throughout the state. For example, Santa Rosa County (northwest Florida) had some damage to the county and the property taxes increased by 14.16%. Hardee County, which had significant hurricane damage, had an increase of property tax by 42.6% from 2001-2002. From 2002 to 2003, looking at Holmes County, DeSoto County, and counties in the northwest part of the state shows that, Holmes County had the most damage in Florida that year and only had a 7% property tax increase. DeSoto County on the other hand, did not report any damage from storms and had an increase in property tax of 83.32% that year. Except for Okaloosa County, the 8 most northwestern counties had significant hurricane damage and had property taxes increased between 2002 and 2003. From 2004 to 2005, the hurricane season of 2004 was the most active of the years I was studying. For the most part, where the damage was most severe, property taxes increased significantly. Liberty County had the largest property tax increase in the entire span of time recorded at 114%; the county also had significant damage from the hurricanes that year. Madison County also had significant hurricane damage and a 37.3% increase in property tax.

Statistically, there was no significant correlation between hurricane damage and property tax increase for any of the years studied. The correlation coefficients ranged from 0.100 to 0.167 with p-values ranging from 0.176 and 0.420.

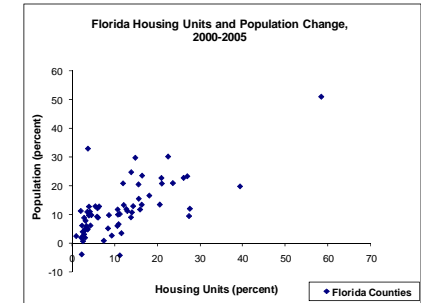


Figure 3: Housing Units showed a significant positive correlation with Population Change in Florida, 2000-2005. [r=0.703, and p = 0.0009]

Discussion

Housing Units & Population Change (Figures 3):

In general, the number and rate of increase in the housing units relate to an increasing population. However, in Florida, population is not always the determining factor in the change in housing units. Florida has not decreased their housing units between 2000 and 2005, but there has been a decrease of population in a couple of counties in Florida, Monroe and Gulf (both which had significant damage over the years). As expected though, the highest increase in population (Flagler, 51.6%) also has the highest increase in housing units (58.49%). Overall, we can see a trend of increased population that caused an increase of housing units in Florida. Statistical analysis of the relationship between these two variables show a significant positive correlation between number of housing units and population (p = 0.0009 and r = 0.703). Lack of perfect correlation (r = 1) means that there are probably many other variables that control housing market, not just the population.

Conclusion

- Hurricane damage is not the primary reason for property tax increase, even though it does have an affect.
- There is a correlation between housing units and population. As population increases, housing units increase. Strangely, population is not always the defining factor of housing units.

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