

## **Foreclosure Effects: The Changing Landscape and Those Left Behind in Broward County, Florida**

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### **Introduction**

The financial crisis which has beset the United States since 2007 has particularly shown its adverse effects on the housing market. Unprecedented numbers of foreclosures in residential areas have caused visible changes in the landscape, characterized by deterioration of property, not only of buildings, but yard space.

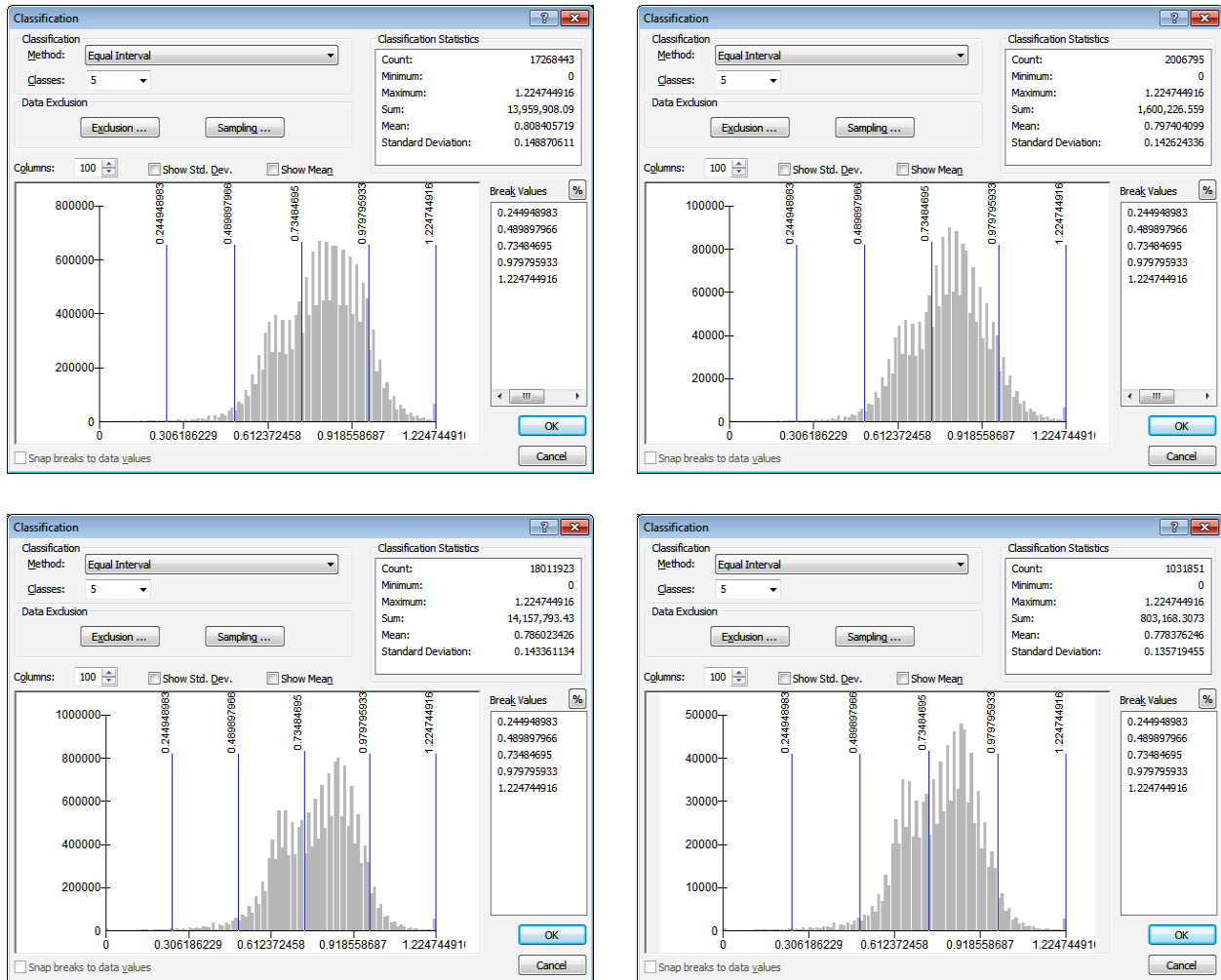
Initial GIS analysis of Broward County, Florida aerial imagery shows that there is a distinct spectral difference in lawns between properties which have and have not been foreclosed. Foreclosed properties exhibit more “brownness” than those which have not. This is to be expected, as for the most part, foreclosed properties do not have occupants present to tend to their landscaping needs.

One census tract in Pompano Beach was analyzed using the Transformed Normalized Difference Vegetation Index (TNDVI) algorithm. This algorithm indicates greenness. Foreclosed and non-foreclosed properties were separated, and when the process was run for two separate years, 2008 and 2009. The means displayed on the resulting histograms indicated that the foreclosed properties exhibited less greenness than non-foreclosed properties. These are shown in Figure 1. There are deeper underlying factors which may also be contributing to this “browning”, aspects hitherto unexplored which may be influencing the habits of people left behind in such neighborhoods; socioeconomics and other demographics, as well as concentration percentage of foreclosures in a neighborhood may have an altering effect on lawn maintenance care.

This study delves into attitudes and perceptions which may have resulted due to the mortgage crisis and have in turn affected not only foreclosed properties directly, but also the whole neighborhood. Have the people left behind been caring for their surroundings less, and if so, why? Do they have less money? Less time? Do they perceive the “bar to be lower”, so that they do not feel obligated to maintain a previously upheld standard? Or, have their habits remained unchanged in an effort to hold on to their property values? Do outlooks and habit vary depending on variables such as density of foreclosure in a neighborhood, or on demographics?

Through the use of mail-in surveys, and the subsequent statistical analysis of the responses, some patterns and invaluable information have been revealed, shedding light on how people respond to deteriorating surroundings, and how their own lawn maintenance habits are affected.

**Fig 1: TNDVI results.**  
**Top Left; 2008, non-foreclosed (mean value 0.808)**  
**Top Right; 2008, foreclosed (mean value 0.797)**  
**Bottom Left; 2009, non-foreclosed (mean value 0.786)**  
**Bottom right; foreclosed (mean value 0.778.)**



Source: Author

### History of the Mortgage Crisis

In the United States, the period of 2007 to 2010 marked the most serious financial crisis to be experienced since the Great Depression of the 1930s. One of the first indicators was the US subprime mortgage crisis which showed unprecedented increases in mortgage delinquencies and foreclosures.

An increase in loan incentives such as easy initial terms and a long-term trend of rising housing prices had encouraged borrowers to assume difficult mortgages in the belief they would be able to quickly refinance at more favorable terms. Many of these borrowers were subprime; that is to

say, they had a weakened credit history, and were at a relatively greater risk of defaulting on their loans than a traditionally approved borrower, yet their loans were approved and sales skyrocketed. All of these factors contributed to a huge housing bubble, where home prices soared to unprecedented heights.

According to Simkovic (2011), approximately 80% of U.S. mortgages issued to subprime borrowers were adjustable-rate mortgages. After U.S. house sales prices peaked in mid-2006 and began their decline forthwith, refinancing became more difficult. As adjustable-rate mortgages began to reset at higher interest rates, mortgage delinquencies soared. These foreclosures significantly contributed to falling home prices, as the market became saturated with more and more properties for sale.

Once interest rates began to rise and housing prices started to drop, refinancing became more difficult. Defaults and foreclosure activity increased dramatically as easy initial terms expired, home prices failed to go up as anticipated, and ARM interest rates reset higher. Falling prices also resulted in 23% of U.S. homes worth less than the mortgage loan by September 2010. As borrowers saw their home values sink below what they owed on their loans, many of them saw foreclosure as the only viable option. These factors, along with widespread job loss have contributed to a massive foreclosure rate in South Florida.

### **Research Questions**

How has the massive foreclosure rate affected neighborhood residential green space and how has it affected residents left behind? Literature shows that green space quantity and quality affect property values, crime rates, and psychological well-being. It is hypothesized that properties which have been neglected or abandoned through foreclosure would logically show some degree of visual degradation, the most striking being overgrown or browning lawns and landscapes.

It has been demonstrated through GIS analysis that there has been an overall “browning” of the landscape in Broward County since the onslaught of the foreclosure crisis. The author conducted mail-in surveys of single-family home residents in order to evaluate their lawn maintenance habits, concerns and perceptions before and since the crisis. It was hypothesized that even though there may be some people who continue to upkeep their properties in the same manner that they always have, there may be many, or even a majority who do not. Through statistical analysis, it is anticipated that the following questions may be answered:

- 1) Is there a “tipping point” with regards to foreclosure percentage in a neighborhood at which people take less care of their outside surroundings?
- 2) Are there other factors or variables which contribute to change in habit other than just percentage of foreclosure rate? In other words, do varying socioeconomic factors affect how residents regard their yard space? Do these variables also affect outlook, attitude and habit?
- 3) Do people in varying socioeconomic groups exhibit more or less resilience, or seem to be more or less affected by higher foreclosure rates? In other words, are there different “tipping points” for different socioeconomic groups?

## **Literature Review**

### History of the American Lawn Aesthetic

The evolution of the lawn in North America has its roots in Europe and England. Robbins (2007) notes that European medieval art shows cultivated lawn spaces that were represented as part of the garden ideal of paradise. According to art historian Monique Mosser, the distinction between a rambling grass meadow and a “lawn” was established in France during the 1500s, where estate gardeners tended to both. When the turfgrass aesthetic was imported into England in the 1700s, the meadow became less prevalent and the manicured lawn increasingly became the norm. Robbins notes, interestingly enough, that nowhere else in the world were front lawns adopted. He describes house construction in rural India and the rest of the world, and informs that where front yards even do exist, they are often enclosed living and working spaces, devoid of grass or other ground cover.

Steinberg (2006) states that the idea of cultivating grass around homes did not become popular until after the Civil War. Before that time, most people in towns and cities either cultivated small vegetable plots or simply left their yards unattended. He also mentions, as did Robbins, the significant contribution of the streetcar in the establishment of suburbs with detached housing. These new homes were required to be set back from the sidewalks by at least 30 feet, and a new landscape imperative began to develop. In 1870, Frank J. Scott published *The Art of Beautifying Suburban Home Grounds*. Steinberg (2006, p.12) cites his work; “A smooth, closely-shaven surface of grass is by far the most essential element of beauty on the grounds of a suburban house.” Shortly thereafter came the modernization of the lawn mower, with 38 patents being issued between 1868 and 1873 alone, and the invention of the lawn sprinkler, all designed to facilitate the ease of maintaining a healthy lawn.

Two of the earliest and most profound influences on the American landscape were Frederick Law Olmstead and Andrew Jackson Downing. In the early part of the nineteenth century, the public park movement had begun to take root in the United States. Frederick Law Olmstead, now considered by many to be the father of American landscape architecture co-designed Central Park, Prospect Park, and many others in both Boston and New York. These parks were intended to bring city dwellers some of the benefits of life in the country. They were modeled after English country estates, and included grassy meadows, clumps or avenues of trees, and lakes and other pastoral expanses. In 1868, Olmstead also designed the plans for Riverside, Illinois, the first major community to reflect the new suburban landscape.

However, according to Steinberg, the struggling middle class were still choosing functionality over aesthetics as late as the 1930s, opting instead to grow fruits and vegetables and to raise livestock so that they could feed their families. Steinberg, as did Robbins, also refers to the time period after World War 2; “Only with the housing boom following the Second World War did the idea of perfect turf become a national preoccupation....Turf became as ubiquitous as television, with grass grown on a massive scale in defiance of climate...The lawn became the outdoor expression of fifties conformism (Steinberg, 2006, p.13).”

The necessity for the pursuit of the perfect lawn was reinforced and perpetrated by the mass media and advertising by the burgeoning of new lawn-related businesses all across America; the lawn was now a source of great profit for major corporations, such as Scott.

Steinberg devotes an entire chapter of his book to “The Levitt Legacy”. According to the author, during the suburban housing boom, Abe Levitt and his sons built more than 17,000 homes on what used to be potato fields in Long Island, inventing “a mass-produced landscape to go along with its ready-built housing.” Steinberg (2006, p.21) quotes Abe’s son Alfred explaining “Father was the one who had the foresight to realize that by intelligent landscaping the normal depreciation of our houses could be offset.” He said that his father called landscaping a form of “neighborhood stabilization.”

Very little research has been done in direct reference to the topic being investigated for this paper. The body of literature to date has been focused on various other aspects of the foreclosure crisis, such as reasons for foreclosures, how property values have been affected by foreclosures, effects of surrounding foreclosures on nearby homes, and effects on people who have had to move due to foreclosures. There seem to be no studies which have addressed the issues of those left behind in high foreclosure neighborhoods.

#### Neighborhood Effects of Foreclosures

Much literature has been written on the effects of foreclosures, both on property values and physical deterioration of property. As William Rogers (2010, p.687) states in his paper, “Declining foreclosure neighborhood effects over time”, “Not only do foreclosures cause harm to mortgage lenders and borrowers, but neighborhoods can also be affected by increased family turnover, vacancy, and general disrepair to the housing stock.” He explains that there are two connections between foreclosure and sales price: one is that as the threat of foreclosure or default looms, the homeowner is less likely to spend money on maintenance or repairs. The second connection is that sellers of foreclosed properties hold a weak bargaining position.

In their paper, “A Theoretical Underpinning of Neighborhood Deterioration and the Onset of Long-Term Crime Problems from Foreclosures”, Wilson and Paulsen (2010) suggest that the foreclosure process and the degradation of a neighborhood are closely intertwined. They recognize that the foreclosure process occurs in two stages; one, residents not being financially able to maintain or upgrade their property, and two, once they have been forced to leave, the absence of occupants to do so. As the threat of foreclosure looms, occupants give little thought towards maintenance and investment, and their burdened financial situation leaves minimal or no means to address needed home improvements due to normal wear and tear or upgrades to their homes, which could actually increase the value of their homes. This leads to visible degradation, which becomes even more apparent when the home is vacated.

#### Impacts on Families and Communities

It is a daunting task to research how families are affected when they are forced to move out of an area, as for the most part, once they leave it is hard to find where they went, and study becomes

almost impossible. However, some researchers have found ways to address this problem, because it is a topic of significant importance with a wide range of effects.

Kingsley et al.(2009) have approached this by interviewing people at risk of foreclosure, and people who deal with them, and have been able to track them effectively in some cases. There have also been studies done on people who have had to relocate for other reasons. This displacement has in many cases caused a variety of adverse effects, such as personal and family stress, disrupted relationships and ill health. Renters can be particularly susceptible to such things, as they may not even know that their home may be in jeopardy, and they can be summarily evicted.

Kinglsey et al.(2009, p.3) explain in their paper, “The Impacts of Foreclosures on Families and Communities”, that children and older people may be particularly vulnerable. “Children must be singled out because they are likely to be affected more deeply than adults by foreclosure impacts (e.g., being forced to move to a new neighborhood and school, loss of friendships, disruption in daily routines, stress within the family).” Elderly people are also vulnerable financially, physically and emotionally.

#### Measuring the Effect of Nearby Foreclosures on Property Values using Mathematical Models

Foreclosures do not only affect a community on a personal level, but also cause economic hardship for the community at large. According to Immergluck and Smith (2006), cities, counties and school districts lose tax revenues from foreclosed and abandoned homes. He notes that neighborhood and municipal the costs of concentrated foreclosures on neighborhoods and municipalities are beginning to be studied and quantified.

Many studies have been done using multivariate analysis and other hedonic mathematical models to estimate the impact on home values from proximal foreclosures, which are significant. Some of these include works by Daneshvary and Clauretie (2011), Harding et al. (2009), Rogers (2010), Immergluck and Smith (2006), and Lin et al. (2009). Some of these calculations are very precise, and have derived estimations of impact not only by number of proximal foreclosures, but by distance as well, even taking the mean income level of a census tract into account; for example, Immergluck and Smith ran hedonic regression models, and they have been able to estimate the decline in dollar value of a single family home for each conventional foreclosure which is within an eighth of a mile (essentially a city block) of that home.

### **Methodology**

#### Initial GIS Processing

The 2011 tax roll was obtained from the Broward County Property Appraiser’s Office. The parcel shape file for Broward County (BrowardGIS.org) was joined with the Broward County Property Appraiser’s tax roll, in order that properties could be mapped with pertinent foreclosure data available in the shape file attribute table.

The last 5 sales dates of each parcel are listed in the tax roll, and through joining, were now available through the attribute table of parcel shape file. The code ‘CET’ denotes a foreclosure.

Parcels with this code were extracted for each sales date from June 2007 to the present. June 2007 was selected as a start time by evaluating monthly foreclosure numbers obtained from the BCPA web site, and noting that this was the time when foreclosure numbers began to rise significantly, as illustrated in Table 1 below.

**Table 1. Broward County foreclosures by month  
(Broward County Property Appraisers Office)**

	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>
<b>Jan</b>	35	201	323	493
<b>Feb</b>	43	201	291	429
<b>Mar</b>	67	237	269	613
<b>Apr</b>	86	427	314	362
<b>May</b>	102	361	430	379
<b>Jun</b>	112	398	468	367
<b>Jul</b>	137	431	497	443
<b>Aug</b>	153	406	352	417
<b>Sep</b>	141	402	469	320
<b>Oct</b>	255	401	521	195
<b>Nov</b>	175	300	404	117
<b>Dec</b>	213	376	401	114

*Source: Author*

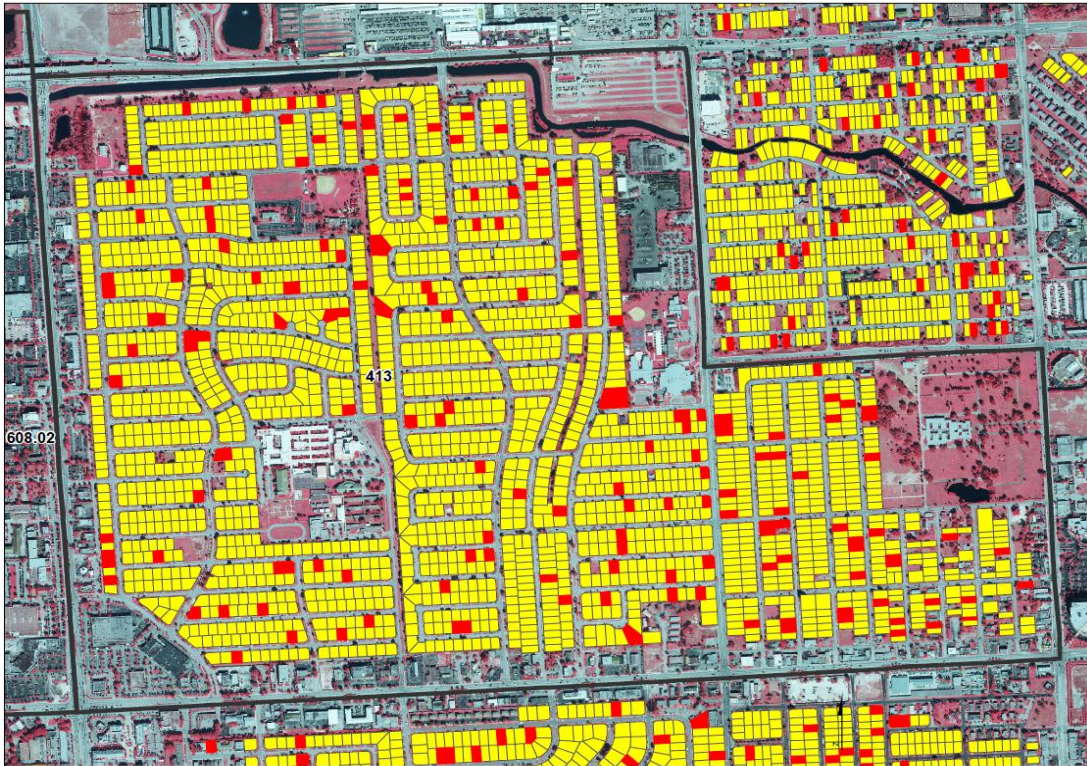
This study takes only single family residences into account, so these were further extracted from the data. Two feature classes were created; one of foreclosed properties, and one of non-foreclosed properties.

Selection of Study Areas and Distribution of Survey

Surveys designed for this research were personally and randomly delivered throughout the census tracts selected in Broward County. It was decided to do this study at the census tract level, as that is the smallest unit available for which comprehensive census data is available. This was deemed necessary so that surveys which were completed and returned by mail in envelopes with prepaid postage could be compared with the census tract data available and verified as being representative of the demographics of the census tract by noting the responses.

A census tract shape file layer was obtained from the Florida Geographic Data Library (FGDL), published by the United States Census Bureau. The total parcel shape file and the CET, or foreclosed parcel shape file were spatially joined to the census tract layer. This process generated two columns which contained parcel counts pertaining to each census tract. A field was then created, and the percentage of foreclosures for each tract was calculated.

Fig 2: Typical census tract selected.



Source: Author

Table 2. Selected census tracts for study, with foreclosure percentages.

% FORECLOSURES	AREA	CENSUS TRACT	MEAN JUST HOME VALUE	MEDIAN TOTAL HOMES
3.51	1 Hillsboro/Lighthouse Point	301	520765	1367
4.24	2 NE Lauderdale	309.04	261574	1581
4.53	3 Hollywood	919.01	205573	773
5.2	4 Fort Lauderdale/Oakland Park	506.01	204824	1192
5.6	5 Pembroke/Hollywood	1101	146047	1893
6.58	6 Plantation	608.02	122435	1246
7.3	7 Margate	413	83285	2170
7.69	8 Fort Lauderdale/Oakland Park	505.01	106307	1353
8.19	9 Hollywood	907	105208	1282
8.52	10 Sunrise	602.06	116332	1162
9.02	11 Lauderdale Lakes	503.01	105164	2039
9.76	12 Fort Lauderdale	505.02	96857	1281
10.75	13 Hollywood	912.01	96750	1339
11.24	14 Coconut Creek	202.06	110205	1370
11.49	15 Pompano Beach	302.03	85385	1393
12.36	16 Hollywood	918.01	95557	1133
12.77	17 Pompano Beach	302.01	86166	1059
13.64	18 North Lauderdale	204.05	72844	1540
14.94	19 Deerfield Beach	108	87889	2042

Source: Author



In order for foreclosure percentage to be a variable for future statistical analysis, census tracts were selected so that there is at least one tract representative of approximately each percentage point for foreclosure rate, ranging from about 3.5 to 15 percent. The only constant strived for was homogeneity within each tract; that is to say, that foreclosures are spread somewhat evenly throughout the tract, and that single-family residential homes are the majority of structures within the census tract. This was done in an effort to not have varying influences such as malls, industrial area, apartments, etc. Census tracts which mainly consist of gated communities were not considered for study, as their landscaping is usually not under the control of the homeowner, but by homeowners' associations. The selected tracts are illustrated in Figure 2 and Table 2.

### Selection of Study Areas and Distribution of Survey

The survey was designed through many iterations, modified each time through constructive criticism of both committee members and random test subjects. Questions pertaining to socioeconomic demographics and lawn maintenance habits both before and after the onset of the foreclosure crisis were designed to be as simple and understandable as possible, while still yielding the necessary pertinent information. Participants were also asked not only about their perceptions, but also their feelings about their neighborhood and any reasons which may exist for changes (or no changes) in their outside maintenance. Each survey was annotated with the census tract ID number so that origin can be pinpointed. The resulting questionnaire is attached at the end of this document in Appendix 1.

### **Statistical Analysis**

950 surveys were distributed, 50 in each of the 19 census tracts. 140 of these were returned by mail (14.7% response rate). 137 of the 140 respondents were homeowners.

Once the completed surveys were returned, the resulting data was tabulated, and statistical analysis was performed in order to reveal possible correlations between various socioeconomic factors and foreclosure percentage rates which may be affecting attitudes and perceptions and lawn maintenance. Responses for all variables, such as gender, age, lawn maintenance habits, reasons for changes in care, etc. were numerically coded. Spearman's Rho Correlation using SPSS software analyzed correlation significance between each pair of variables. Excel was used to compute numbers and percentages of responses for each variable.

### **Results and Discussion**

Table 3 shows the basic demographic data derived from all respondents. This data roughly coincides with the data for Broward County compiled from the 2010 U.S. Census. This indicates that the sample population is sufficiently representative of the total population of Broward County, and that the data can be analyzed with some degree of confidence in the results.

**Table 3. Basic demographics of Broward County survey respondents.**

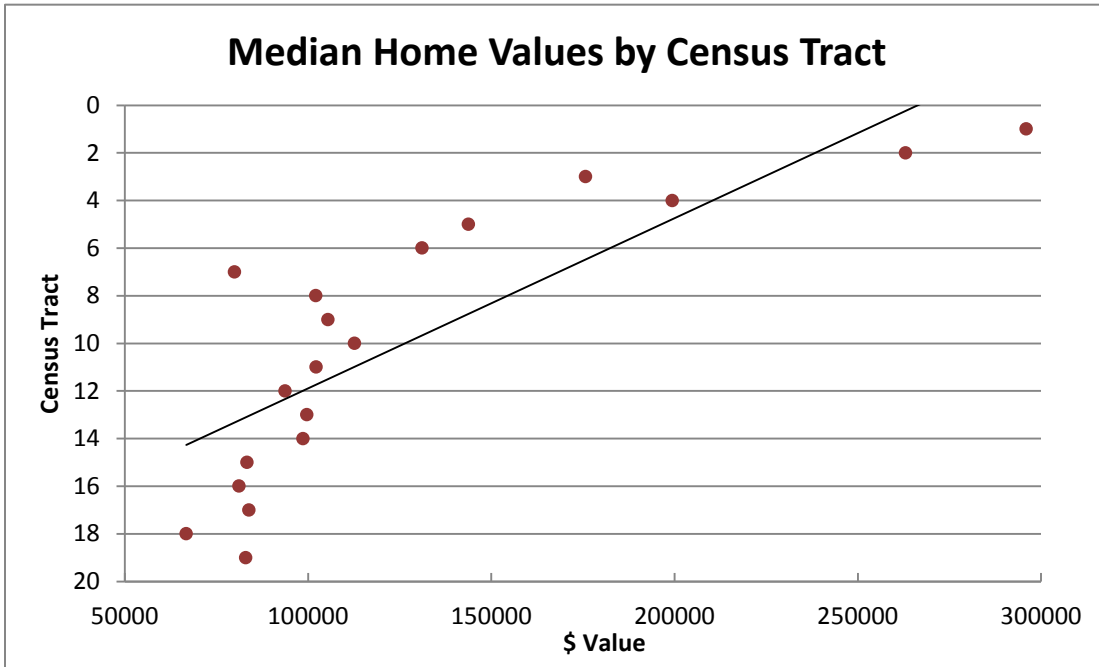
<b>Gender</b>	<b>Age</b>	<b>Income</b>	<b>Education</b>	<b>Ethnicity</b>
MALE	UNDER 25	UNDER \$20,000	HIGH SCHOOL	CAUCASIAN
<b>41.7%</b>	<b>1.5%</b>	<b>6.2%</b>	<b>20.9%</b>	<b>74.6%</b>
FEMALE	26 TO 35	\$20-35,000	VOCATIONAL	AF/AMERICAN
<b>58.3%</b>	<b>9.0%</b>	<b>18.6%</b>	<b>3.7%</b>	<b>6.0%</b>
	36 TO 45	\$35-55,000	SOME COLLEGE	HISPANIC
	<b>14.2%</b>	<b>22.5%</b>	<b>30.6%</b>	<b>15.7%</b>
	46 TO 55	\$55-75,000	BACHELOR'S DEGREE	ASIAN
	<b>33.6%</b>	<b>20.2%</b>	<b>23.9%</b>	<b>3.7%</b>
	56 TO 65	\$75-100,000	GRAD/PROFESSIONAL DEGREE	NATIVE AMERICAN
	<b>21.6%</b>	<b>16.3%</b>	<b>20.9%</b>	<b>0.0%</b>
	OVER 65	OVER \$100,000		OTHER
	<b>20.1%</b>	<b>16.3%</b>		<b>1.5%</b>

Source: Author

Correlations between Home Values and Census Tracts

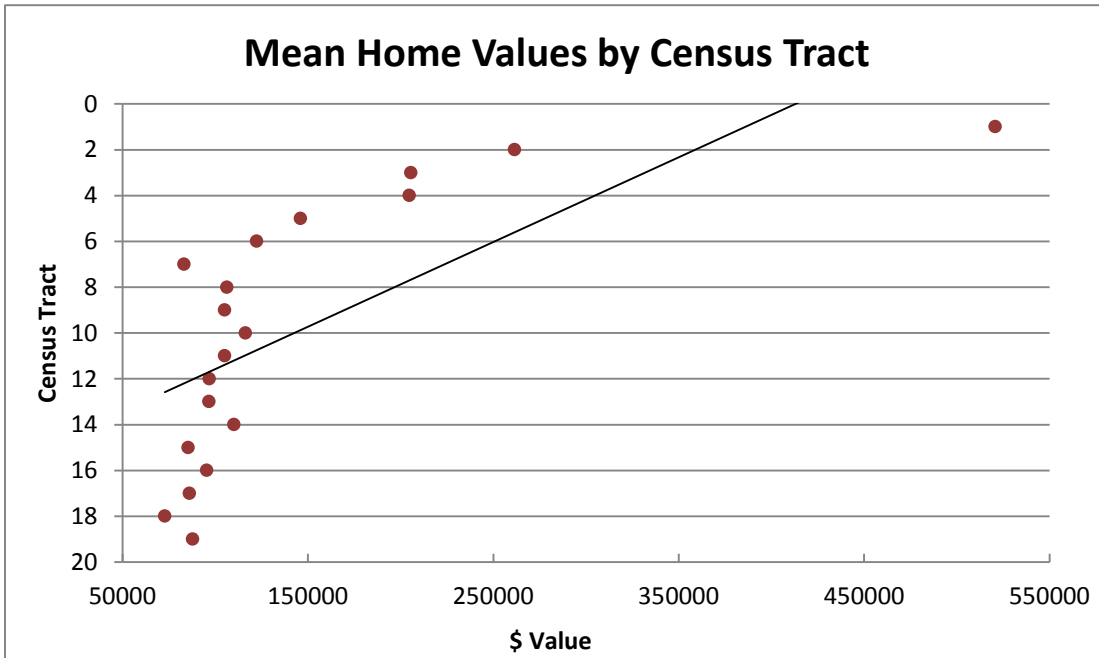
Table 1 represents the census tracts which were selected for this research. They were mainly chosen so that there would be an approximate spacing of about half a percent foreclosure rate, providing one more variable for statistical analysis. It was hypothesized that the percentage of foreclosures within a census tract may have some influence on the habits of the remaining residents. Mean and median home values for these census tracts were also available through the 2010 U.S. Census. Figures 3 and 4 below illustrate that there is some linear correlation between the median and mean home values, and the census tracts. This indicates that overall, there are less foreclosures evidenced in neighborhoods which have more expensive homes, at least in the case of these particular census tracts.

Figure 3. Median home values per census tract.



Source: Author

Figure 4. Mean home values per census tract.



Source: Author

Concerns over Value and Appearance

One of the questions in the survey addressed the issue of concern about the deterioration of home value or appearance due to neighborhood foreclosures. Respondents were asked to indicate their degree of concern on a scale of 1 to 5, as illustrated in Figure 5.

**Figure 5. Question on survey pertaining to concern over value and appearance.**

<b>5) CONCERNS</b>				
Please check or circle responses to the following questions on a scale of 1 to 5.				
<b>a. How concerned are you about your home value deteriorating due to neighborhood foreclosures?</b>				
1	2	3	4	5
Not concerned	Slightly concerned	Somewhat concerned	Very concerned	Extremely concerned
<b>b. How concerned are you about the appearance of your neighborhood deteriorating due to foreclosures?</b>				
1	2	3	4	5
Not concerned	Slightly concerned	Somewhat concerned	Very concerned	Extremely concerned

*Source: Author*

Spearman’s coefficient showed a moderate positive correlation between census tract and both concern over value (.417\*\* - 99% confidence interval), and concern over appearance (.355\*\* - 99% confidence interval): that is to say, in the census tracts evaluated, there was increasing concern over both as the percentage of foreclosures increased.

Degrees of concern were calculated and tabulated for 3 groups; the total sample population, the top third of census tracts (those with the lowest percentage of foreclosure), and the bottom third (those with the highest percentage of foreclosure). Those who responded with 3, 4 or 5 are considered to be at least somewhat concerned over neighborhood value and appearance, while those who responded with 4 and 5 are at least very concerned. These results are represented in Table 4 below.

**Table 4. Degrees of concern; comparison of responses, in percentages.**

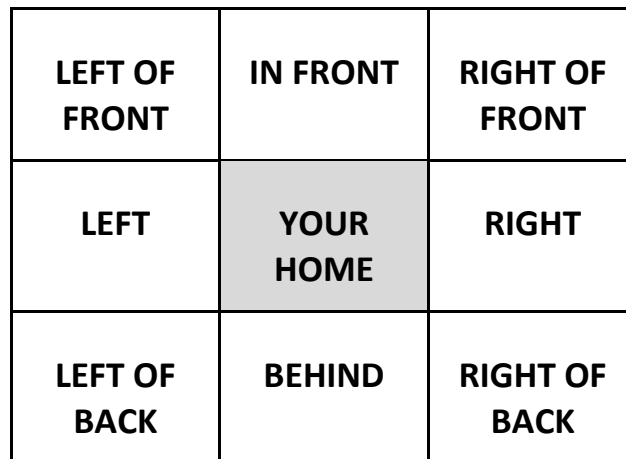
Categories	Total Population		Top Third		Bottom Third	
	Value	App	Value	App	Value	App
3, 4 and 5	<b>71.5</b>	<b>76.6</b>	<b>47.1</b>	<b>52.9</b>	<b>90.9</b>	<b>95.5</b>
4 and 5	<b>40.9</b>	<b>51.8</b>	<b>21.6</b>	<b>29.4</b>	<b>61.4</b>	<b>70.5</b>

*Source: Author*

Concern over deteriorating home values and neighborhood appearance are highly correlated (.829\*\*).

On the questionnaire, respondents were asked to indicate on a diagram which homes in their immediate surroundings they knew to have undergone foreclosure (Figure 6).

**Figure 6. Surrounding foreclosures (to be indicated by respondents on questionnaire).**



*Source: Author*

Once respondents checked off known surrounding foreclosures on the diagram, the percentages of the total population sample, the top third (those with the lowest foreclosure percentage) and the bottom third (those with the highest foreclosure percentage) were calculated and tabulated in Table 5, below;

**Table 5. Number of surrounding foreclosures for respondents in the total sample population, the top third and the bottom third, in percentages.**

Categories	Total Population		Top Third		Bottom Third	
	Value	App	Value	App	Value	App
3, 4 and 5	<b>71.5</b>	<b>76.6</b>	<b>47.1</b>	<b>52.9</b>	<b>90.9</b>	<b>95.5</b>
4 and 5	<b>40.9</b>	<b>51.8</b>	<b>21.6</b>	<b>29.4</b>	<b>61.4</b>	<b>70.5</b>

Source: Author

It is evident from the response results, and it logically follows, that those residents living in a neighborhood with a higher foreclosure rate would experience a higher number of surrounding foreclosures.

When correlating the number of surrounding foreclosures with degrees of concern, a direct linear relationship was found. A Spearman's Rho coefficient of .362\*\* (99% confidence interval) was derived, indicative of a moderate positive relationship. This further reinforces the notion that the more foreclosures there are in a neighborhood, the more concern there is for deterioration of both value and appearance.

Changes in Lawn Maintenance Habits

In the questionnaire, subjects were asked if their lawn maintenance habits had changed in the last few years, from the time before the financial crisis compared with the present. If their habits had changed, they were asked if they were presently taking more or less care of their yard spaces. The results in percentages are tabulated in Table 5. Hispanics were also independently evaluated in this analysis.

**Table 6. Lawn maintenance habits (in percentages) before the financial crisis and now; all respondents, top third, bottom third and Hispanics.**

	<b>ALL</b>	<b>TOP THIRD</b>	<b>BOTTOM THIRD</b>	<b>HISPANICS</b>
<b>Change in care:</b>				
<b>Yes</b>	<b>25.8</b>	<b>16.3</b>	<b>33.3</b>	<b>47.4</b>
<b>No</b>	<b>74.2</b>	<b>83.7</b>	<b>66.7</b>	<b>52.6</b>
<b>More care</b>	<b>43.8</b>	<b>38.1</b>	<b>45.5</b>	<b>62.5</b>
<b>Less care</b>	<b>56.3</b>	<b>61.9</b>	<b>54.5</b>	<b>37.5</b>

Source: Author

### Discussion and Future Investigation

It is clear that surrounding foreclosures have an effect on the lawn maintenance habits of residents still living in neighborhoods. Data analysis reveals that there is a linear relationship between percentage of surrounding foreclosures in a census tract, as well as foreclosures in immediate proximity and change in habit. Overall, this change manifests as a negative effect, with a higher number of people taking less care in the present than they did in the past.

The percentage of change in care increases with increased percentage of foreclosures; however, those respondents in the bottom third, while showing more than twice the percentage change of the top third, exhibited a higher degree of increased lawn care than the top third. When reasons for changes in care were analyzed, the percentages across the board were all within the same range. There is no clear indication from the data why this is so.

Of the 141 respondents, 21 were of Hispanic origin. This is theoretically a large enough sample to analyze using correlation methods. It is interesting to note that in this group, almost half of the respondents have changed their habits, and of these, almost two thirds are taking better care of their property now than they did in the past.

Because such a high percentage of respondents were Caucasians born and raised in the U.S., it is hard to come to any conclusions regarding the influence of ethnicity on habits past and present. It is certainly worth investigating the Hispanic, and other populations further in order to verify the findings of this study, and also to delve further into the reasons for the anomaly found if the above analysis is further reinforced.

There are many results in this research which cannot be explained because there has been a paucity of studies regarding socioeconomics, ethnicity and other facets which may have influences on the habits and reactions of people affected directly or indirectly by foreclosure. Further research would include targeting specific ethnic groups, administering the same survey, and also conducting open-ended interviews in order to discover some of the “whys”, along with hard data.

**APPENDIX 1**

**1) BASIC INFORMATION**

Please check appropriate answers.

a. Are you **MALE** \_\_\_\_\_ **FEMALE** \_\_\_\_\_

b. **AGE:**

Under 25 \_\_\_\_\_

26-35 \_\_\_\_\_

36-45 \_\_\_\_\_

46-55 \_\_\_\_\_

56-65 \_\_\_\_\_

Over 65 \_\_\_\_\_

c. **ANNUAL HOUSEHOLD INCOME:**

Under \$20,000 \_\_\_\_\_

\$20-35,000 \_\_\_\_\_

\$35-55,000 \_\_\_\_\_

\$55-75,000 \_\_\_\_\_

\$75-100,000 \_\_\_\_\_

Over \$100,000 \_\_\_\_\_

d. **EDUCATION:**

High School \_\_\_\_\_

Vocational \_\_\_\_\_

Some College \_\_\_\_\_

Bachelors Degree \_\_\_\_\_

Graduate or Professional Degree \_\_\_\_\_

e. **ETHNIC BACKGROUND:** Please check off ALL that apply.

**CAUCASIAN** \_\_\_\_\_

**BLACK** \_\_\_\_\_

**HISPANIC /LATINO** \_\_\_\_\_

**ASIAN** \_\_\_\_\_

**NATIVE AMERICAN**

**OTHER** \_\_\_\_\_ (Please fill in.)



- f. What country is your mother from? \_\_\_\_\_ (Please fill in.)
- g. Did your mother grow up in the United States? YES \_\_\_\_ NO \_\_\_\_
- h. What country is your father from? \_\_\_\_\_ (Please fill in.)
- i. Did your father grow up in the United States? YES \_\_\_\_ NO \_\_\_\_
- j. What country were you born in? \_\_\_\_\_ (Please fill in.)
- k. Did you grow up in the United States? YES \_\_\_\_ NO \_\_\_\_

**COMMENTS:**

**2) HOME INFORMATION**

- a. How long have you been at your current residence? \_\_\_\_\_ years
- b. Do you RENT \_\_\_\_ OWN \_\_\_\_ OTHER \_\_\_\_\_?
- c. Have you lost neighbors due to foreclosure? YES \_\_\_\_ NO \_\_\_\_ DON'T KNOW \_\_\_\_
- d. In the diagram below, please put a check mark on the properties near your home which you know to have experienced foreclosure. If you do not know, or are not sure, just put question marks in the squares.

LEFT OF FRONT	IN FRONT	RIGHT OF FRONT
LEFT	YOUR HOME	RIGHT
LEFT OF BACK	BEHIND	RIGHT OF BACK

**If you own your home, please answer the following questions:**

- a. Is your mortgage paid off? YES \_\_\_\_ NO \_\_\_\_.
- b. Do you owe more on your home than it is currently worth? YES \_\_\_\_ NO \_\_\_\_
- c. Do you at times have difficulty in meeting your mortgage payments?  
YES \_\_\_\_ NO \_\_\_\_
- d. Are you currently facing short sale or foreclosure?

**3) CURRENT LANDSCAPE CARE**

a. Who takes care of your lawn/landscape?

SELF \_\_\_\_\_

LANDSCAPER OR LAWN COMPANY \_\_\_\_\_

HOMEOWNERS' ASSOCIATION \_\_\_\_\_

OTHER \_\_\_\_\_ (Please fill in.)

b. On average, how often do you water your lawn during the dry season (winter)?

Once a week or more \_\_\_\_\_

Once every 2 weeks \_\_\_\_\_

Once a month \_\_\_\_\_

Less than once a month \_\_\_\_\_

Never, or hardly ever \_\_\_\_\_

c. How often do you plant flowers, hedges or other plants?

Once every 3 months \_\_\_\_\_

Once every 6 months \_\_\_\_\_

Once a year \_\_\_\_\_

Never, or hardly ever \_\_\_\_\_

d. On average, how often do you mow your lawn during the dry season (winter)?

Once every 2 weeks \_\_\_\_\_

Once a month \_\_\_\_\_

Less than once a month \_\_\_\_\_

**4) PAST LANDSCAPE CARE**

The following questions pertain to your landscape care habits before the mortgage crisis, or 3-4 years ago.

a. Compared to 3-4 years ago, do you think your landscape care habits have significantly changed?

Yes \_\_\_\_\_ No \_\_\_\_\_

**If your habits have changed, please answer the following:**

- b. On average, how often did you used to water your lawn during the dry season (winter)?
- Once a week or more \_\_\_\_\_
  - Once every 2 weeks \_\_\_\_\_
  - Once a month \_\_\_\_\_
  - Less than once a month \_\_\_\_\_
  - Never, or hardly ever \_\_\_\_\_
- c. How often did you used to plant flowers, hedges or other plants?
- Once every 3 months \_\_\_\_\_
  - Once every 6 months \_\_\_\_\_
  - Once a year \_\_\_\_\_
  - Never, or hardly ever \_\_\_\_\_
- e. On average, how often did you used to mow your lawn during the dry season (winter)?
- Once every 2 weeks \_\_\_\_\_
  - Once a month \_\_\_\_\_
  - Less than once a month \_\_\_\_\_
- f. If there has been a change in habits overall, are you now:
- Investing more care \_\_\_\_\_ ?
  - Investing less care \_\_\_\_\_ ?
- g. If you are caring less for your landscape, what do you attribute this to? Check all that apply.
- Don't have to keep up as much anymore since whole neighborhood has deteriorated in appearance \_\_\_\_\_
  - Change in income/ less money for maintenance \_\_\_\_\_
  - Less time \_\_\_\_\_
  - So 'upside down' in house that you will not put in any more money \_\_\_\_\_
  - Other (Please explain.) \_\_\_\_\_
- h. If you are investing more care in your landscape or there is no difference in your habits, what do you attribute this to? Check all that apply.
- Satisfaction of maintaining surroundings \_\_\_\_\_
  - Habit \_\_\_\_\_
  - Want to ensure that your home retains its value despite nearby foreclosures \_\_\_\_\_
  - Other (Please explain.) \_\_\_\_\_

**5) CONCERNS**

**Please check or circle responses to the following questions on a scale of 1 to 5.**

**a. How concerned are you about your home value deteriorating due to neighborhood foreclosures?**

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>Not</b>	<b>Slightly</b>	<b>Somewhat</b>	<b>Very</b>	<b>Extremely</b>
<b>concerned</b>	<b>concerned</b>	<b>concerned</b>	<b>concerned</b>	<b>concerned</b>

**b. How concerned are you about the appearance of your neighborhood deteriorating due to foreclosures?**

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>Not</b>	<b>Slightly</b>	<b>Somewhat</b>	<b>Very</b>	<b>Extremely</b>
<b>concerned</b>	<b>concerned</b>	<b>concerned</b>	<b>concerned</b>	<b>concerned</b>

**COMMENTS:**

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