THE AMERICAN LAWN

Examining our Cultural Commitment to an Energy-Intensive Institution

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Abstract

The American lawn is an energy-intensive cultural institution that should be reexamined as we enter an era of carbon constraint. Most research on lawns is built on the assumption that we need to transition to more environmentally friendly lawn care habits; however, our research probes the underlying assumption that our cultural commitment to the lawn is still strong. We surveyed residents of Northfield, MN on their attitudes towards their lawns in addition to examining different alternative lawn movements across the country. We found that most people had ambivalent, negative or neutral feelings towards their lawns, that many of the traditional values once associated with lawns are not as strong as they once were, and that a significant portion of respondents are interested in reducing the amount of turfgrass in their lawn. The apparent declining commitment to the lawn in Northfield has broader implications that may suggest future changes to the suburban landscape.

Introduction

The lawn is the single largest irrigated crop in America–covering three times the acreage of corn (Milesi 2005). It seems that America's love affair with corn is surpassed only by our love affair with turf. While our obsession with corn and corn products is intensely scrutinized in the media, our rivaled fixation with grass and its corresponding shelf of energy-exorbitant products goes largely overlooked. From the seaside towns of Maine to the desert sprawl of Arizona, the image of the American lawn is so tightly woven into the fabric of our neighborhoods that it often evades examination. However, as we face a carbon-restricted future, it's imperative to assess whether or not our cultural institutions are worth their energy footprint. Lawns are no exception.

After all, lawn care collectively incurs great energy costs. The EPA estimates that one-third of all water used in American homes—7 billion gallons per day— goes towards landscape irrigation (2008). In 2002, lawn care industries in the United States used 21 terajoules of energy in the production of pesticides, fertilizers, and gas-powered lawn mowers—more energy than used by the cattle ranching and vehicle manufacturing industries combined (EIOLCA 2002). Unlike cattle and cars, however, lawns don't transform their intense energy inputs into anything principally functional or consumable. Rather, Americans love their lawns for more complex, intangible reasons. The proliferation of the lawn has historically been attributed to its association with social status, obligation to neighbors, successful marketing, and desire for a connection to the community and the outdoors (Robbins and Sharpe 2003). These values make up our cultural commitment to the lawn and are therefore the focus of our research. We ask: **Does the ideal of the American lawn persist today as it did in the 1950s?**

While most scholarly discourse on the lawn focuses either on its growth as a phenomenon in the middle of last century or its growing environmental costs, our research aims to ground the

discussion in the *values* people associate with their lawns today. Little to no research has been done to measure people's attitudes towards lawns in present day. Not even our understanding of American's opinions towards their lawns in the 1950s comes from directly surveying the population. Instead, historians like Virginia Scott Jenkins use magazine articles, essays, lawn care pamphlets, advertisements, and editorials to piece together a history of the American lawn that begins with sheep grazing on imported English grasses, marks the transition from useful to ornamental, tracks the growth of the lawn care industry, and finally drops the reader off in the 1950s.

Jenkins' book *The Lawn: A History of an American Obsession* couples nicely with environmental historian Ted Steinberg's *American Green: The Obsessive Quest for the Perfect Lawn*, to paint a picture of a cultural institution that is historically entrenched in our landscape. The term "obsession" appears in both of their titles, foreshadowing their emphasis on the lawn mania that overtook suburbia in the housing boom after World War II. They paint the 1950s as a time when a singular definition of the perfect lawn was critical to having a perfect home and living the American dream. It is from these historic accounts that we gleaned the central values attached to the American lawn in the 1950s: aesthetics, duty to community, patriotism, and recreation. Our research rests on the assumption that the health and robustness of the American lawn today is predicated on the enduring strength of these values. Thus, we surveyed a sample population, residents of Northfield, MN, to get a sense of the presence and strength of these values are today.

The most ambitious and encompassing work on lawns in modern American society is *Lawn People: How Grasses, Weeds, and Chemicals Make Us Who We Are* by Paul Robbins. In addition to this book, which focuses on the pesticide industry, Robbins has written and

contributed to a number of scholarly articles about lawns. Across these works, Robbins frames lawn ecology as a political ecology. Individuals, communities, and businesses are political actors exerting influence on the landscape of the lawn. Robbins (2007) theorizes that the lawn is valuable as an asset to the neighborhood, rather than as a good consumed solely for the benefit of the individual. Pressure to uphold a perfect lawn derives from societal pressure; consequently, maintaining homogeneity with the neighborhood results in a sense of civic pride (Robbins 2007). Robbins makes no indication that the association of lawns with civic pride and positive community relations has changed since the 1950s.

Essentially, the implication across these works is that the American conception of the lawn has not transformed enough since the post-War era to warrant a new history. There have been isolated flurries of media attention on the phenomenon of the American lawn and the pockets of people that have chosen alternatives, but nothing substantial or interconnected enough to decidedly mark a reconceptualization of the lawn and its place in modern culture.

Instead of reassessing the place of the lawn in the American consciousness, most recent research on lawns is focused on lawn care habits; specifically, on defining and understanding the connection between lawn care patterns and socioeconomic status, property values, and neighborhood pressures (Robbins et al., 2001; Law et al., 2004; Zhou et al., 2008). For example, Zhou et al. (2009) and Osmond and Hardy (2004) found that households with higher levels of education and income spend more time, money, and inputs to upkeep their lawns. Robbins (2007) reported that people more highly educated and more knowledgeable about the negative effects of lawn care treatment are significantly more likely to treat their lawns with chemicals. Though the focus of our research is attitudinal rather than behavioral, these findings influenced the

demographic questions included in our survey and our decision to test for correlation between values and income and education.

None of the aforementioned studies surveyed populations similar to Northfield, MN in geography, size, or proximity to a major metropolitan area. Carleton students Nathan Evenson and Marta Lyons, however, surveyed Northfield residents in 2009 to build upon research about lawn care habits and socioeconomic information. Evenson and Lyons (2010) found that lawn care habits were separated along neighborhood lines and income and property values were directly related to lawn care intensity. They reported that openness to alternative lawns was inversely correlated with neighborhood pressure, but the most frequently cited factor keeping respondents from swapping turfgrass for an alternative was the amount of monetary and labor inputs that such changes would require. Intrigued by these results, we designed our survey to include a section dedicated to openness to alternative lawns, to test whether openness to alternative lawns is correlated with any of the traditional values attached to the ideal American lawn.

This project is informed by the historical accounts of the lawn and the modern studies about lawn care, but it significantly departs from existing literature in focus and goal. To our knowledge, no studies have examined how Americans feel towards their lawns. Using Northfield, MN as a case study, we aim to check in with the American public and determine whether their conceptions of their lawns differ from the 1950s portrait painted by historians and confirmed by Robbins. To accomplish this we first establish a snapshot of the American lawn in the 1950s, and then present the results of our survey that measures present day lawn attitudes.

The American Lawn Ideal

> *Some people hoist a flag to show they love their country. Well, my lawn is my flag. It tells the world, "Here lives a competent and trustworthy salesman of propane and propane accessories." A man who can't keep up a lawn is either inept or stupid.*
>
> Hank Hill
> *King of the Hill*
> 1997

Hank Hill, along with millions of Americans throughout history, owes his conception of the ideal lawn to Frederick Law Olmsted, who invented the American lawn in 1868. It took one century for lawns to spread throughout the entire nation, unfurling Kentucky Bluegrass across every biome, ultimately solidifying turfgrass as the number one crop in America (Science Daily, 2006). To be clear, Olmsted didn't invent lawns, he invented the *American* lawn*:* the manicured green velvet ribbon that streaks across suburbia and is inextricably wound up in our ideas of virtue, pride, and prosperity. Quite literally, lawns sit at the forefront of the American dream; the coveted single family home is universally foregrounded by a trim green square. The term "ideal American lawn" is separable from other grassy landscaping because of the loaded cultural meaning attached to it. Untangling these meanings is messy and inexact, but can be roughly parsed into four central value sets: aesthetics, duty to community, patriotism, and recreation. Understanding the relationship between the lawn and each of these values allows us a systematic understanding of that 1950s "ideal" lawn that can be compared to the present day. So, what was the lawn like in the 1950s?

Aesthetics

The aesthetic of the American lawn can be reduced to three essential characteristics: green, uniform, and short. "In this ideal, the grass sward is as pure as possible, mowed two inches high and free from dandelions and other insidious intruders," writes Bormann et al,

authors of *Redesigning the American Lawn* (2001). These qualities define the quintessential lawn of the 1950s.

The rise of the American lawn aesthetic can be traced back to the beginnings of suburbia. Olmsted designed the layout for the first genuine American suburb, Riverside, IL, with landscape specifications that would serve as the standard for a century of suburban growth (Jenkins, 1994). He insisted each house be set back thirty feet from the road to give the illusion that people lived in the middle of a continuous green field (Schroeder, 1993), setting the precedent for a uniform green yard cover.

The image of the golf course fairway and putting green was also influential on the American lawn. The US Department of Agriculture teamed up with the US Golf Association to research and provide technical knowledge about how to grow grass in various areas of the country. Lawn supply companies issued pamphlets that held golf courses as the standard for lawn perfection. Famous golfers were often featured in lawn mower commercials (Jenkins, 1994). Golf was exploding in popularity in the middle of the twentieth century and its pervasive imagery influenced the rigorous standards that came to define the perfect American lawn.

The lawn was advertised to symbolize wealth, leisure, and contentment, and thus this expanse of green was seen to be the most visually pleasing of all private land cover options. People enjoyed seeing a large expanse of green surrounding their house, and valued the appearance of a well-groomed, healthy lawn. The positive aesthetics of the lawn are part of what allowed this non-native plant to gain ubiquity across the U.S.A by the 1950s.

Duty to Community

The concept of maintaining a well-groomed green lawn as part of your duty to your immediate community is intrinsically linked with the lawn's association with wealth and prestige, a connection that dates back to the beginnings of the lawn. By the mid-twentieth century, the absence of a well-maintained lawn reflected poorly not only on the individual, but on the neighborhood of which it was a part. Pressure from neighbors to maintain lawn care standards helped perpetuate the lawns ubiquity. People valued the lawn for its ability to make them feel connected to the people around them, as well as making them feel included in a higher class to which many aspired (Jenkins, 1994).

When the lawn developed in England, it was viewed as a symbol of aristocracy and wealth, as it showed that these homeowners could afford to have land that wasn't used for food production or buildings. Once the lawn phenomenon took hold in the U.S., the concept of the manicured private space remained prolific among the elite and the growing middle class that emulated them, but was not popular with the majority of Americans at first (Jenkins, 1994).

The Garden Club Association, founded in the 1890s with the goal beautifying the American landscape and setting aesthetic standards for lawns and appropriate lawn care, played a huge role in bringing the lawn phenomenon to the lower classes (Jenkins, 1994). They gave impetus to individual homeowners to grow grass in front yards, targeting middle and lower class, immigrant, and black neighborhoods. It was said that "as one man improves his place, the whole surrounding neighborhood begins to take on a cleaner aspect until soon there are beautifully kept and well planted lawns" (Hemenway, 1911). Thus, through the encouragement of the wealthy, by the 1950s the lawn was the status quo in the United States, causing those who didn't comply to be judged harshly.

Patriotism

Patriotism, or duty to one's country, has also played a role in spurring on the lawn phenomenon. In the 1950s, having a lawn meant that you were an upstanding citizen who supported your country. This phenomenon started in the 1830s and 1840s, when cities developed and became associated with crime, low sanitation, and congestion (Jenkins, 1994). The wealthy started spending more time in the countryside, as it was believed that "it is the solitude and freedom of the family home in the country which constantly preserves the purity of the nation and invigorates its intellectual powers" (Downing, 1850).

In 1902, the USDA Bureau of Plant Industry was founded by Congress, with its goal being to "acquire knowledge concerning principles of crop production and apply this knowledge in places and in such manner as shall bring the greatest good to the greatest number" (Galloway, 1913). These crops included suburban lawns and golf-course turf. The Bureau published bulletins in 1915, 1919, and 1921 that recommended twice a week mowing, use of fertilizer, and removal of weeds for all lawns, making a well-groomed lawn a recommendation of the government. During World War II, the government also requested that homeowners maintain the upkeep of their home front as a show of strength and solidarity, and thus the lawn became a symbol of U.S. patriotism.

In the 1920s, the Garden Club Association started to teach children to garden, in the hopes that by training them in proper landscape aesthetics, they would influence their parents, or at least grow up to have proper front lawns and gardens of their own (Jenkins, 1994). Doing this would mean "fewer slums, breadlines, political exploiters and promoters of public utilities tearing away our natural resources for selfish gain" (Huttenlocher) in the future. In the 1930s,

garden clubs and community beautification campaigns were also seen as a means to help end the Great Depression and beautiful communities were often chosen over ugly communities for sites of government institutions or manufacturing plants that provided jobs and investment. By mid-20th century, the message had been sent that being a good citizen meant having a nice lawn, and thus people were drawn to the lawn as a way to support their country.

Recreation

From their inception, one of the most popular aspects of lawns was their versatility as a canvas for recreation, in the form of games, picnics, and cookouts. In the 1950s, the lawn was seen as providing a safe and aesthetically pleasing space in which one could relax, spend time with one's family and children and escape from the grind of day-to-day life.

The lawn as a place of recreation began when lawn games such as bowling, badminton, and croquet were imported to America from Europe. In World War II, the U.S. government recommended that families vacation in their own backyard to save gasoline, which was rationed at the time. Popular magazines reflected this sentiment, such as the O.M. Scott & Sons Seed Company which suggested the "tranquility of an evening with your lawn" as a viable alternative to a relaxing vacation abroad. (O.M. Scott & Sons Co., 1942). Thus, by the 1940s lawns had taken on a dual identity – private playground and private oasis.

The advantages derived from living in suburbia with a nice lawn were considered particularly beneficial when raising children. In the 1960s, the Ford Foundation conducted a study showing that city-dwelling children were less physically fit than suburban and rural children, reinforcing the idea that living in the suburbs and having a well-maintained lawn were healthy necessities for child rearing (Millman, 1984). Lawns were a private playground, a safer

alternative for children than roaming the woods or city streets. They were seen as both a babysitter and a chaperone, keeping children away from danger and reducing rates of juvenile delinquency. As Ralph Waldo Emerson said, "there is no police so effective as a good hill and wide pasture in the neighborhood of a village" (*Journal,* 1865). By mid-twentieth century, lawns were established as a place where the family could be together to relax and have fun.

Overview

By the mid-twentieth century, the ideal American lawn was in place, carrying with it the values associated with a specific aesthetic, community standards, patriotic duty, and recreation and lesuire. We next examine if these associations that existed in the past are still present in society today. The strength of these values today is a measure of the strength of the lawn in modern society.

Methodology

Case Selection

Northfield, Minnesota is a good case study for a survey about feelings towards lawns. Northfield is home to a spectrum of socioeconomic statuses among those who own homes, and a variety of neighborhoods, from older, centralized communities to newer subdivisions on the outskirts of town. According to the 2010 Census, there are approximately 20,000 residents. Most studies about lawns have been conducted in major metropolitan areas and few have taken place in towns of less than 50,000 (Evenson and Lyons, 2010). Northfield's residents include commuters to the Twin Cities, so there is a mix of homes similar to those found in suburbs of major cities, as well as those more similar to families living in rural towns.

Survey

In order to understand the current values that Northfield residents attach to their lawns, we wrote and distributed an opinion survey to three neighborhoods in Northfield, MN. The instrument tested the strength and presence of five key values on the Northfield lawn: aesthetics, patriotism, duty to community, recreation, and connection to nature. The last aspect was not present in the 1950s, but we hypothesized that connection to nature might be more important to homeowners of today. To contextualize these values, we also recorded the amount of traditional turfgrass on their lawn, the age, gender and education level of the participant, and the length of time they had lived in their house (see Appendix 1).

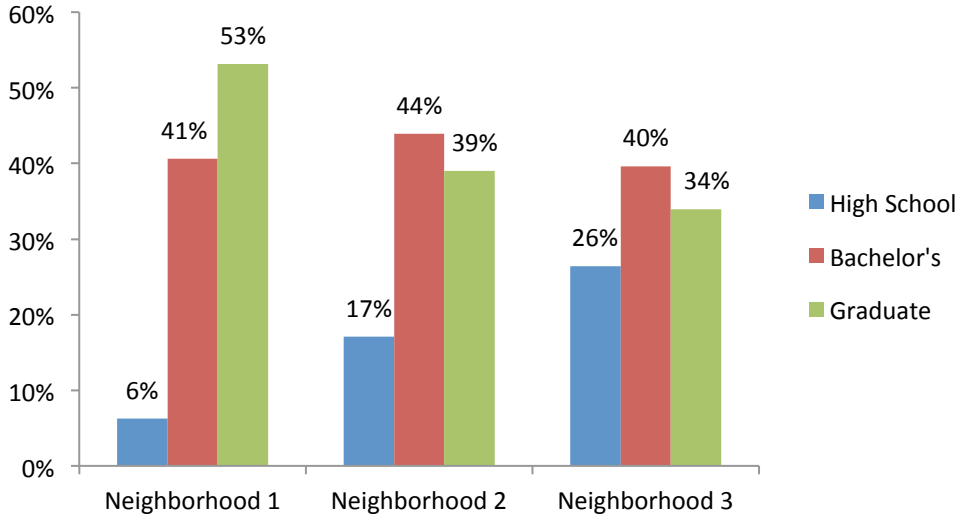
Neighborhoods

The survey was distributed to three neighborhoods in Northfield, MN, which were selected by Evenson and Lyons (2010) as a representative sample of income levels based on census data. Neighborhood 1 is located nearly adjacent to the Carleton College campus, in an area centered on the municipal Central Park. According to Evenson and Lyons (2010), the residents in this neighborhood have relatively higher education levels, older houses, and midrange incomes when compared to the other neighborhoods. Neighborhood 2, Mayflower Hill, is centered on a cluster of housing developments that is located adjacent to the Northfield Municipal Golf Club. This neighborhood has larger, younger houses, and higher income levels. Neighborhood 3 is centered on Cherry Street area to the west of the Cannon River. This area

contains middle-aged houses with relatively lower income, property, and education levels compared the other neighborhoods (Evenson and Lyons, 2010).

The average estimated market value of homes surveyed is $205,500 in Neighborhood 1, $312,600 in Neighborhood 2, and $168,700 in Neighborhood 3. The average duration of residency in the homes surveyed is 16.6 years in Neighborhood 1, 10.6 years in Neighborhood 2, and 12.3 years in Neighborhood 3. Education level of the residents surveyed also varies across the three neighborhoods. Neighborhood 1 has the highest percentage of respondents (53%) with graduate-level educations, while Neighborhood 3 has the highest percentage of respondents (26%) with high school level educations only. Around 40% of respondents in all three neighborhoods have undergraduate-level educations. The following graph displays the distribution of education levels in the three neighborhoods we surveyed.

Figure 1: Distribution of Education Levels by Neighborhood



There was no significant difference in age or gender distribution between the three neighborhoods.

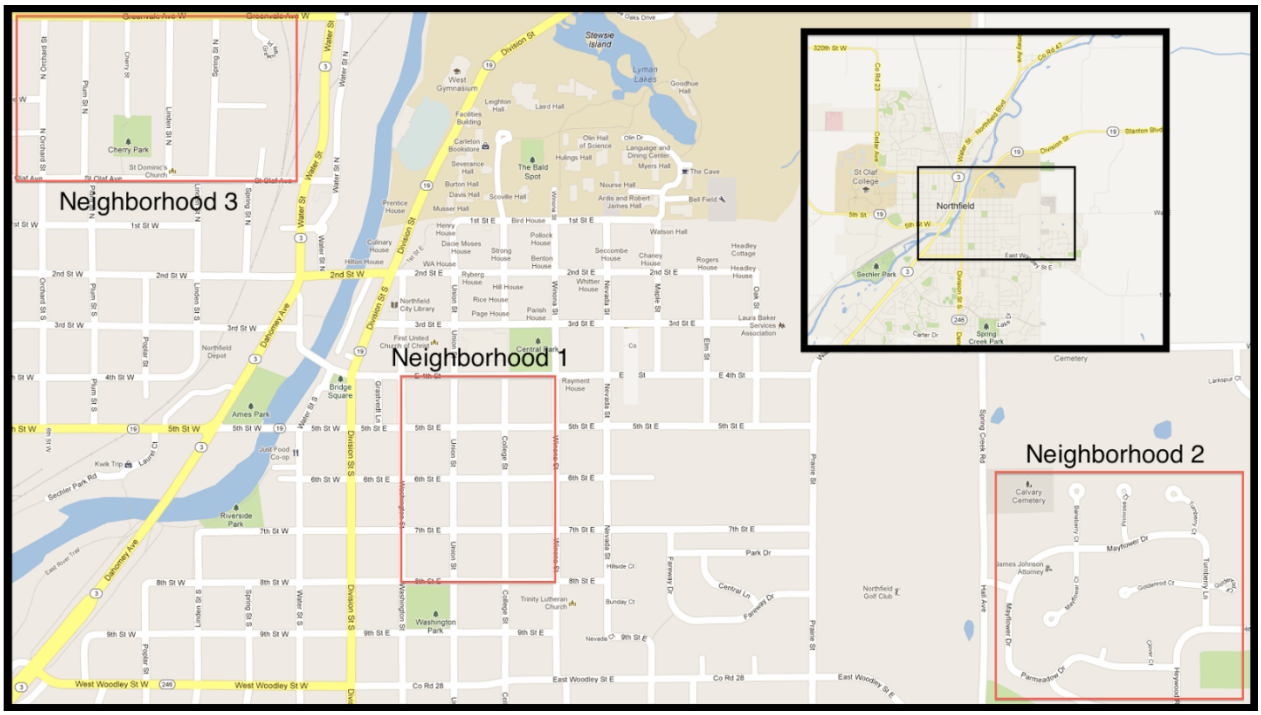


Figure 2: Survey Distribution Areas

Survey Distribution

We distributed paper surveys door-to-door between January 5, 2013 and January 26, 2013. If no one answered the door, we left a pre-addressed stamped envelope with a survey, consent form and note explaining our project under the doormat. If someone was home who was in charge of household decisions, then we gave them the survey and collected it within 20 minutes. We chose this method of distribution to obtain a higher response rate than would be achieved if all the surveys were left on people's doorsteps.

Data Processing

In total, we distributed 222 surveys and received back 129 for a 58.1% return rate. One was discarded because the back side of the survey was not filled in. 26% of surveys returned

came from the Carleton neighborhood (Neighborhood #1), 33% came from the Mayflower Hill neighborhood (Neighborhood #2), and 42% of surveys came from the St. Olaf neighborhood (Neighborhood #3). 55% of our respondents were female and 45% were male. The average age of our respondents was between 51-60 years old. 18% of our respondents held only a high school degree, 42% held a bachelor's degree, and 40% held a graduate degree. The average duration of residence was 13 years, and the average estimated market value of the homes surveyed was $223,900. The average amount of turfgrass coverage for the homes we surveyed was 68% - so most lawns in all neighborhoods were mostly turfgrass. Only 4% of homes had lawns that were less than half turfgrass. Exactly 50% of respondents reported having future plans or visions for their lawns, and of that subset 67% mentioned wanting to reduce the amount of turfgrass in their yard. We compiled home market value data from the Rice County Assessor's website, using Beacon, a local government GIS program.

In the first section, we asked respondents to circle emotions they associated with their lawns. We assigned a point value to each noun we included in the first part of the survey – positive values for positive emotions, and negative values for negative emotions. The stronger emotions were assigned greater values, and the milder emotions were assigned lesser values. For example, the word "happiness" was assigned a value of +2, while "satisfaction" incurred a value of only +0.5. Similarly, the word "anger" was assigned a value of -2, while "frustration" incurred a value of only -0.5. There were an equal number of positive and negative terms to choose from in the survey. Written-in neutral terms were given a value of 0 and excluded from our analysis for simplicity.

Each survey we received was given a "total feelings value" that was the sum of the feelings value of every word they circled.

Example 1: if a participant circled "resentment" (-1) and "frustration" (-0.5), the total feelings value for that participant would be (-1) + (-0.5) or **-1.5**.

Example 2: if a participant circled "contentment" (0.5) and "annoyance" (-0.5), the total feelings value for that participant would be (0.5) + (-0.5) or **0.**

We ran paired t-tests between all the samples we compared to test for difference, and accepted anything with a p-value > 0.05 as significant.

Results

Feelings

In the first section of the survey, we provided a list of emotion words and asked respondents to complete the following sentence using the words we provided:

"I feel _____ towards my lawn."

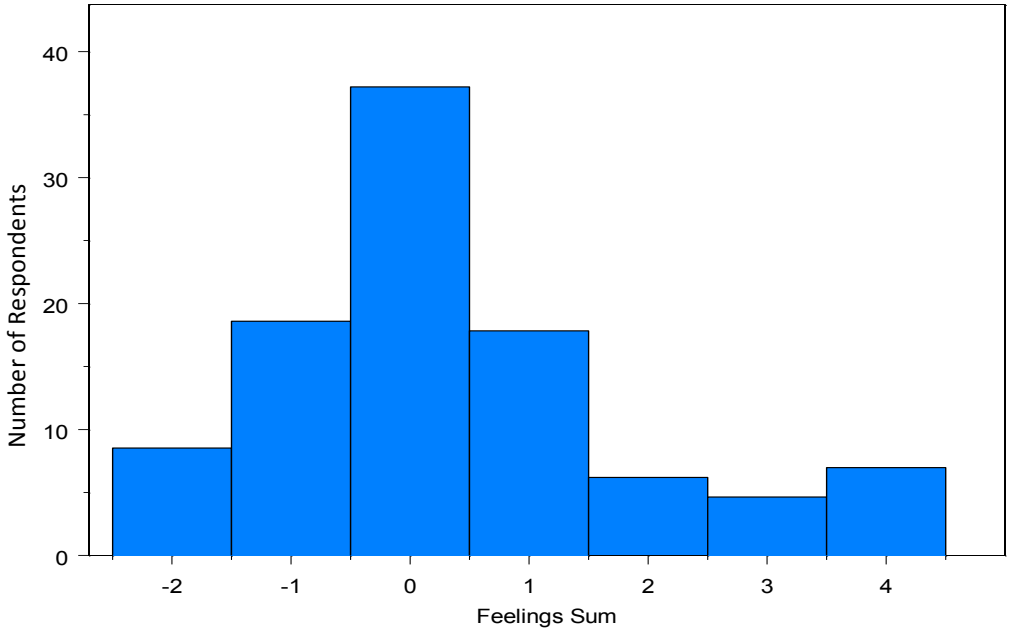
The following chart shows the distribution of those responses.

Feeling	Number of Reponses	Percent of Total Respondents
Satisfaction	60	46%
Contentment	39	31%
Frustration	33	26%
Pride	28	22%
Annoyance	25	20%
Happiness	24	19%
Other (Neutral)	13	10%
Other	11	9%
Resentment	10	8%

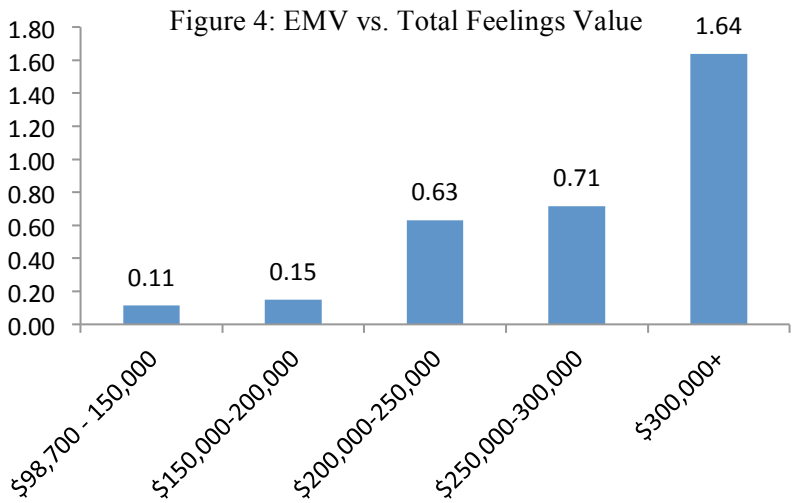
Anger	2	2%

Many respondents circled more than one descriptive word, and a significant cohort (20% of respondents) circled both positive and negative emotions, implying conflicting feelings towards their lawns. Meanwhile, 46% circled only positive words, while 21% circled only negative words. The spectrum of emotions is illustrated in the histogram below, where respondents to the far right of the graph feel the most positive towards their lawns, respondents to the far left feel the most negative, and respondents close to 0 feel the most ambivalent.

Figure 3: Total Feelings Value Histogram

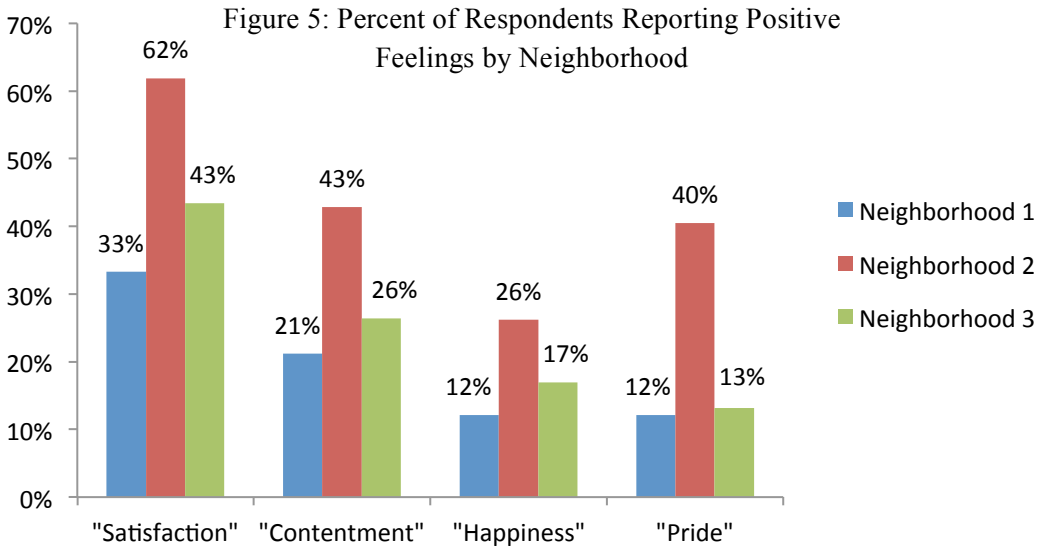


We found a significant positive correlation between estimated market value (EMV) of the home surveyed and the total feelings value for that home—simply put, people living in more highly valued homes felt more positively towards their lawns. The following graph shows average total feelings value for participants categorized by the EMV of their homes.



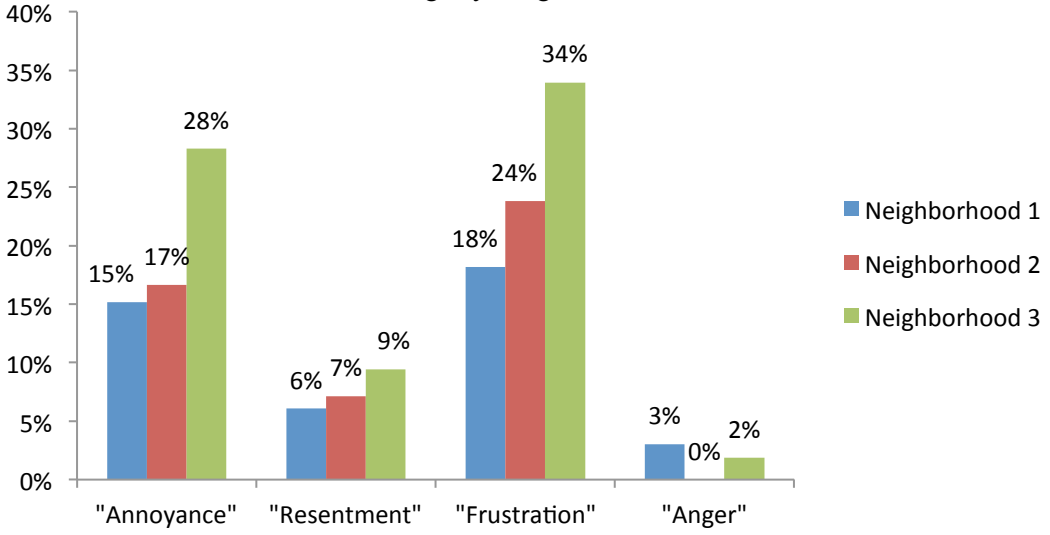
We also found that of the people who felt negatively or ambivalent towards their lawns, 55% had plans to reduce the amount of turfgrass in their lawns, compared to only 24% of people who had a positive total feelings value

Inter-Neighborhood Differences



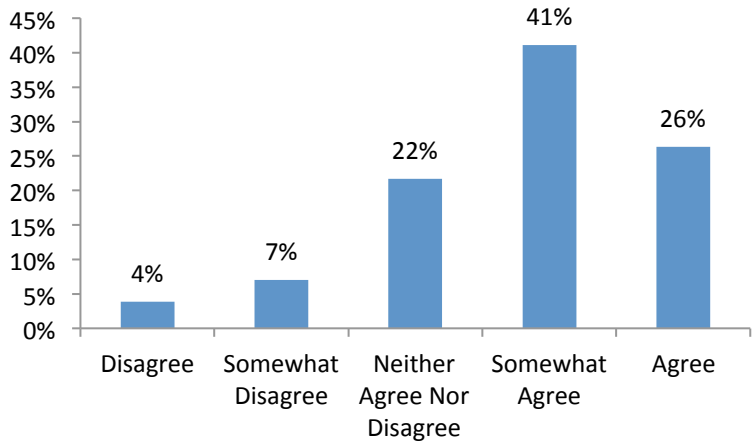
We found significant statistical differences between the three neighborhoods in the distribution of the words they circled. Overall, residents of neighborhood 2 were more likely to report having positive feelings towards their lawns, and residents of neighborhood 3 were more likely to report having negative feelings towards their lawns.

Figure 6: Percent of Respondents Reporting Negative Feelings by Neighborhood



Question 12: The satisfaction I get from my lawn is worth the amount of work I put into it.

Figure 7: Distribution of Responses to Question 12

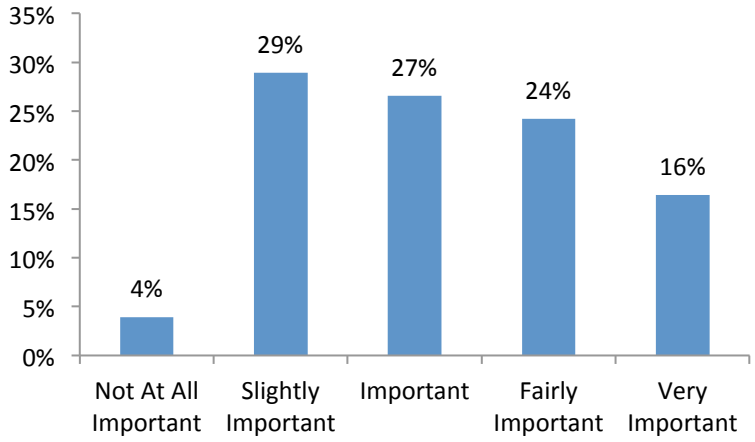


11% somewhat disagreed or disagreed that the satisfaction they get from their lawn is worth the amount of work they put into it, 22% neither agreed nor disagreed, and 67% somewhat agreed or agreed.

Aesthetics:

Question 1: How important is it that my lawn is well-manicured (mowed, trimmed, and edged)?

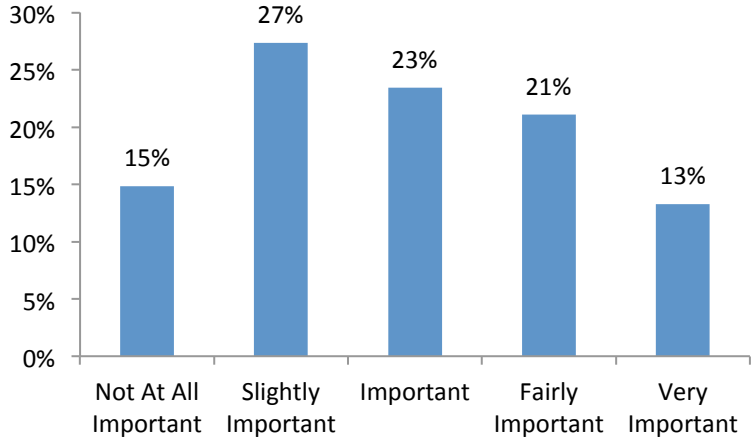
Figure 8: Distribution of Responses to Question 1



33% said it was slightly to not at all important that their lawn is well-manicured, 27% said it was important, and 40% said it was fairly to very important.

Question 2: How important is it that my lawn has little to no brown or yellowing grass?

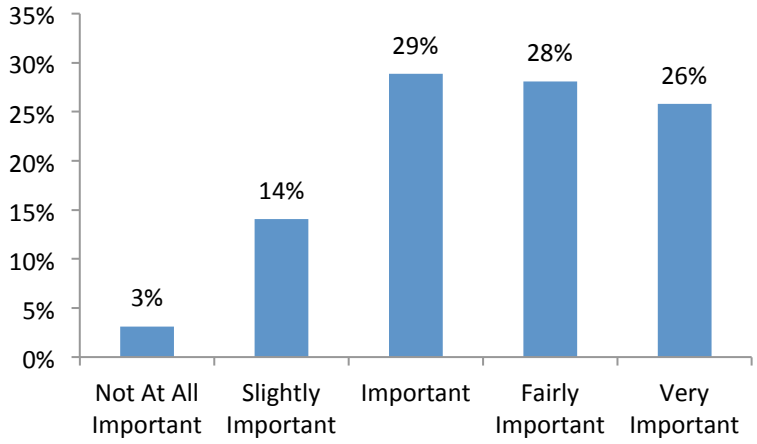
Figure 9: Distribution of Responses to Question 2



42% said it was slightly to not at all important that their lawn have little to no brown or yellowing grass, 24% said it was important, and 34% said it was fairly to very important.

Question 3: How important is it that my lawn makes my residence more attractive?

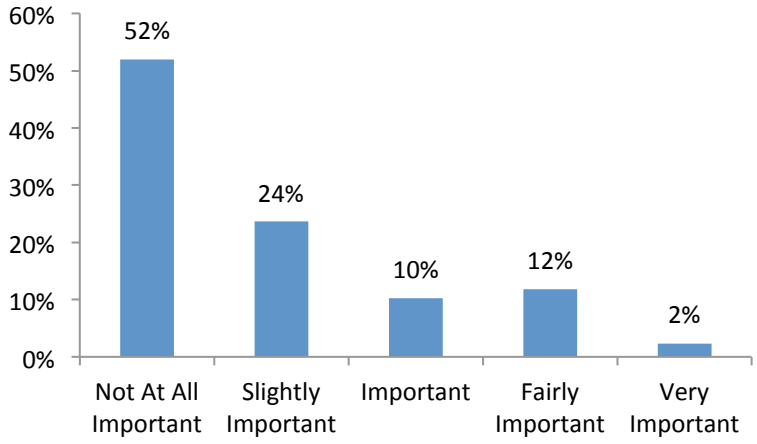
Figure 10: Distribution of Responses to Question 3



17% said it was slightly to not at all important that their lawn makes their residence more attractive, 29% said it was important, and 54% said it was fairly to very important.

Question 4: How important is it that my lawn resembles the uniform green surface of a golf course?

Figure 11: Distribution of Responses to Question 4



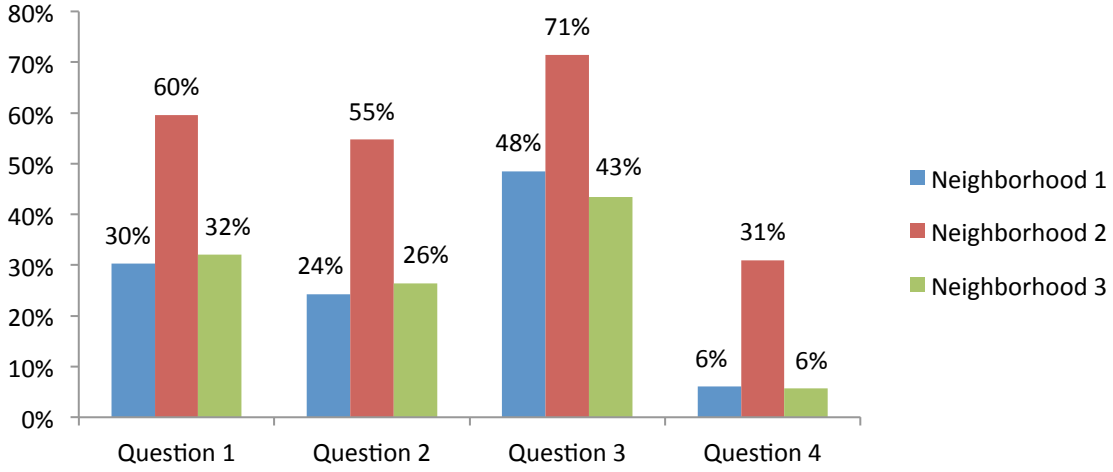
75% said it was slightly to not at all important that their lawn resemble a golf course, 10% said it was important, and 14% said it was fairly to very important.

Inter-Neighborhood Differences

Residents of Neighborhood 2, Mayflower Court, considered the aesthetic appearance of their lawn to be more important than their counterparts in Neighborhoods 1 and 3 did. The graph

below shows the percentage of respondents from each neighborhood who rated the aesthetic aspects of their lawn (well-manicured, not brown, makes the home more attractive, and resembles a golf course) as "Fairly Important" or "Very Important".

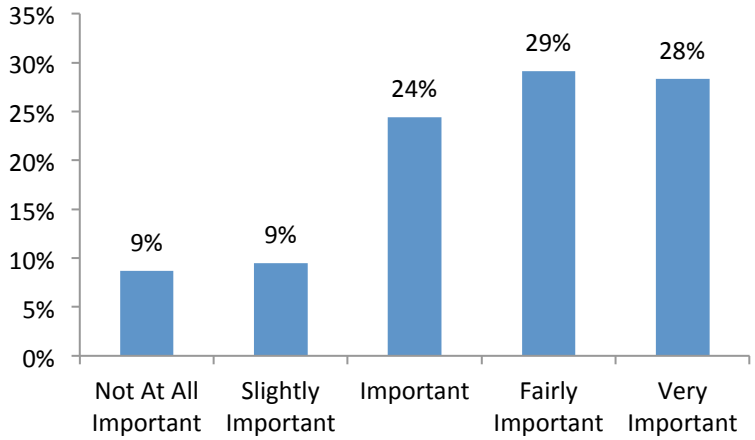
Figure 12: Percent of Respondents Rating Aesthetic Values as Fairly-Very Important by Neighborhood



Recreation:

Question 5: How important is it that my lawn can be used for barbeques and other outdoor gatherings?

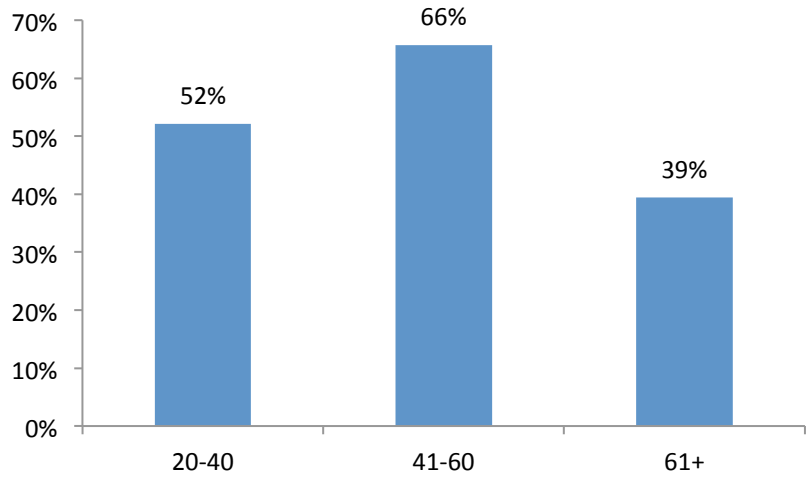
Figure 13: Distribution of Responses to Question 5



18% said it was slightly to not at all important that their lawn can be used for outdoor gatherings, 24% said it was important, and 58% said it was fairly to very important.

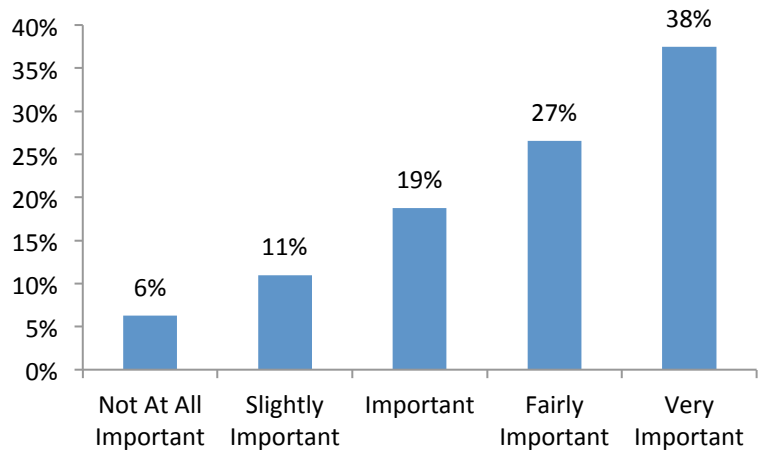
There was a correlation between age and amount of importance placed upon using the lawn for barbeques and other outdoor gatherings. Valuing lawns as a setting for outdoor gatherings peaks in middle age (41-60), then drops after age 60. The following graph shows the percentage of respondents in each age group who rated question 5 as "Fairly Important" or "Very Important".

Figure 14: Percent of Respondents Rating Question 5 as Fairly-Very Important by Age



Question 6: How important is it that my lawn provides a space that is safe and comfortable for children to play?

Figure 15: Distribution of Responses to Question 6



17% said it was slightly to not at all important that children can play on their lawn, 19% said it was important, and 64% said it was fairly to very important.

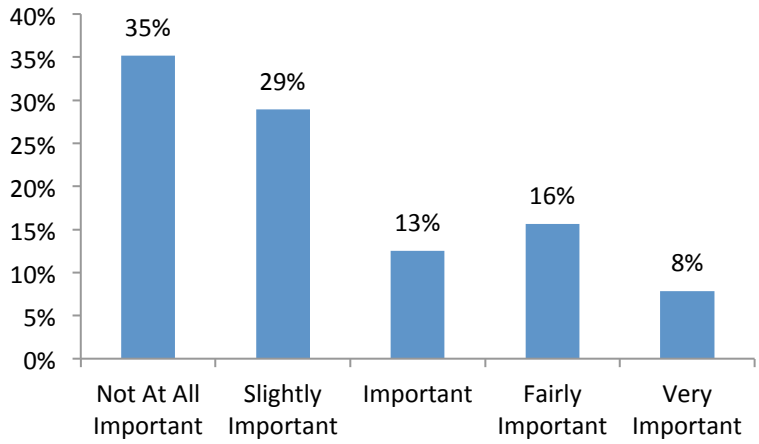
We found a significant positive correlation between those who value their lawns highly for recreation and those who value their lawns' aesthetic appearance highly (questions 1, 2, 3 and 4), as well as those who highly value respect of their neighbors (question 7).

There was no significant difference in responses to recreation values between the three neighborhoods.

Duty to Community:

Question 7: How important is it that my lawn earns the respect, or even the admiration, of my neighbors?

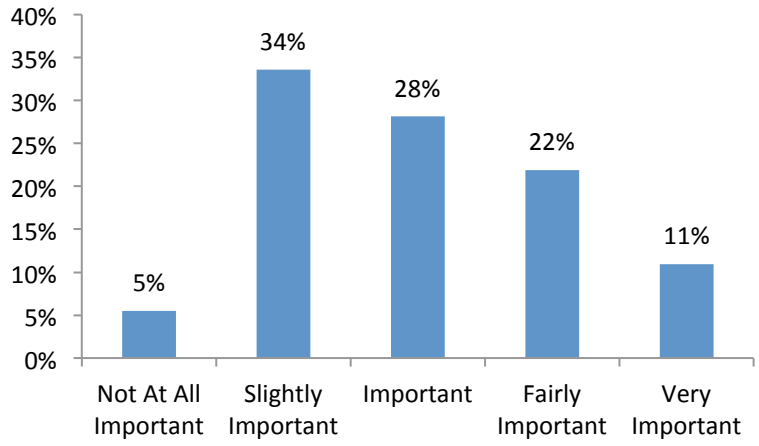
Figure 16: Distribution of Responses to Question 7



64% said it was slightly to not at all important that their lawn earn them the respect of their neighbors, 13% said it was important, and 23% said it was fairly to very important.

Question 8: How important is it that my lawn helps my house fit in with the block or neighborhood?

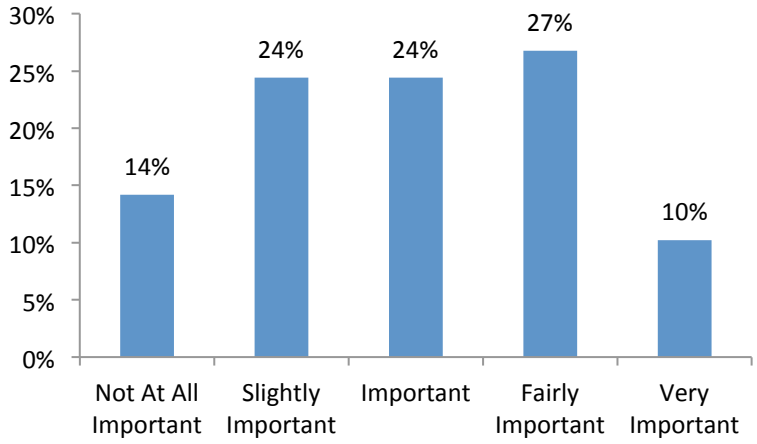
Figure 17: Distribution of Responses to Question 8



39% said it was slightly to not at all important that their lawn help their house fit in with the block, 28% said it was important, and 33% said it was fairly to very important.

Question 9: How important is it that my lawn makes me feel like a responsible member of my community?

Figure 18: Distribution of Responses to Question 9

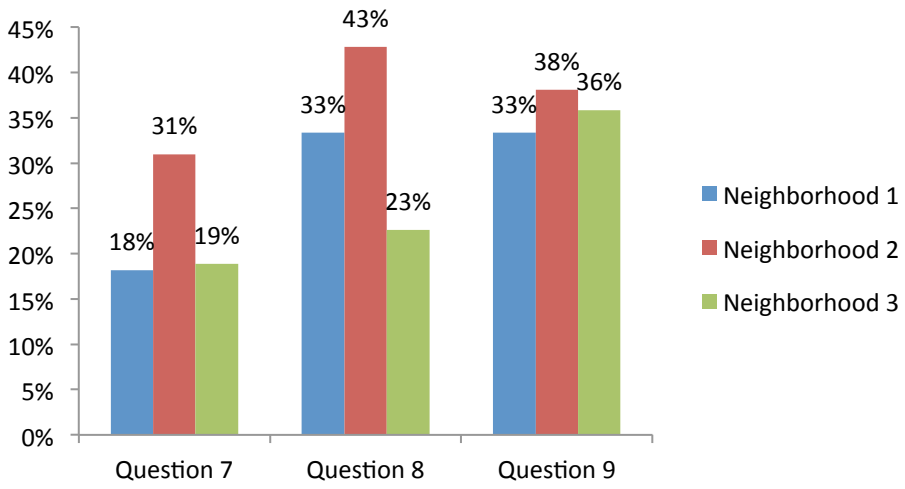


39% said it was slightly to not at all important that their lawn makes them feel like a responsible member of their community, 24% said it was important, and 37% said it was fairly to very important.

Inter-Neighborhood Differences

In all aspects of "duty to community" values (except for question 9), residents of Mayflower Court were more likely to respond positively to the questions posed. The graph below shows the percentage of respondents from each neighborhood who rated duty to their community (earning respect of neighbors, fitting in with the block, and feeling like a responsible member of the community) as "Fairly Important" or "Very Important".

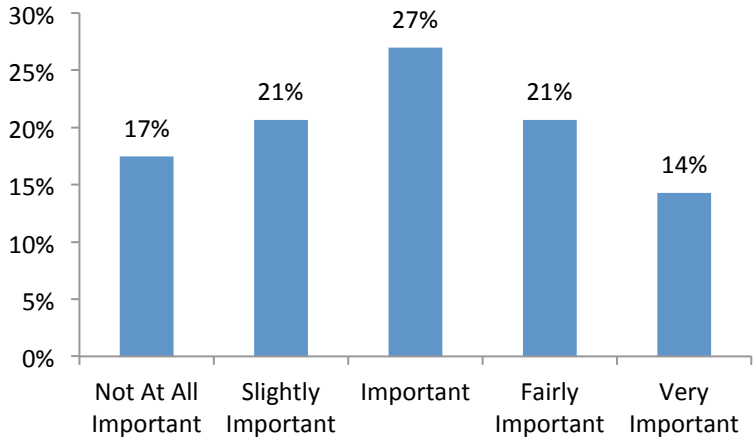
Figure 19: Percent of Respondents Rating Duty to Community as Fairly-Very Important by Neighborhood



Connection to Nature:

Question 10: How important is it that my lawn makes me feel more connected to the natural world?

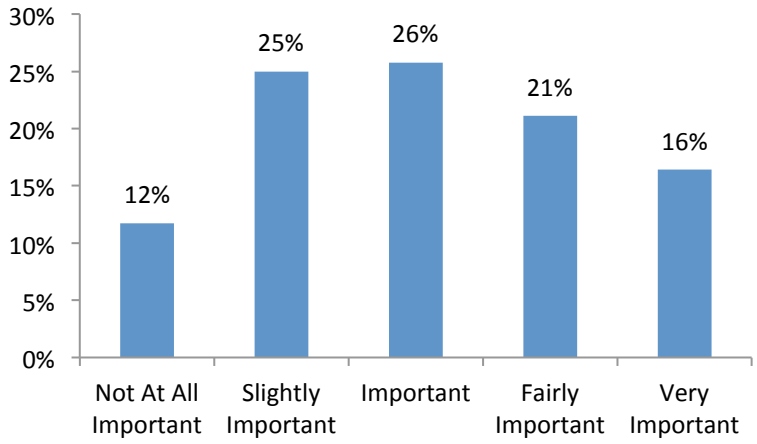
Figure 20: Distribution of Responses to Question 10



38% said it was slightly to not at all important that their lawn makes them feel more connected to the natural world, 27% said it was important, and 35% said it was fairly to very important.

Question 11: How important is it that my lawn requires few energy inputs, such as fuel for running a lawn mower or making fertilizer?

Figure 21: Distribution of Responses to Question 11

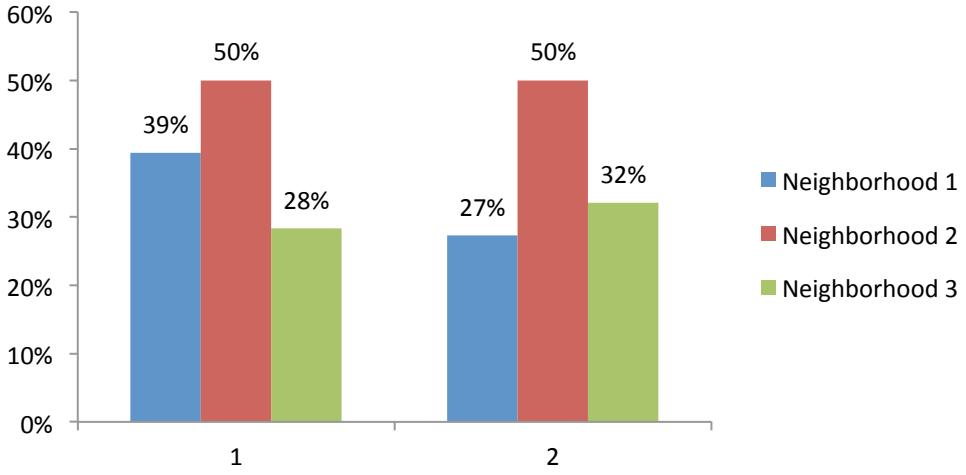


37% said it was slightly to not at all important that their lawn require few energy inputs, 26% said it was important, and 37% said it was fairly to very important.

Inter-Neighborhood Differences

For this value set we also found differences in responses between neighborhoods. Mayflower Court residents were more likely to rate connection to nature and reduction of fuel inputs as less important to them than residents from the other two neighborhoods. The graph below shows the percentage of respondents from each neighborhood who rated nature and energy values (connection to nature and reducing energy inputs, respectively) as "Slightly Important" or "Not At All Important".

Figure 22: Percent of Respondents Ration Connection to Nature as Fairly - Very Important by Neighborhood

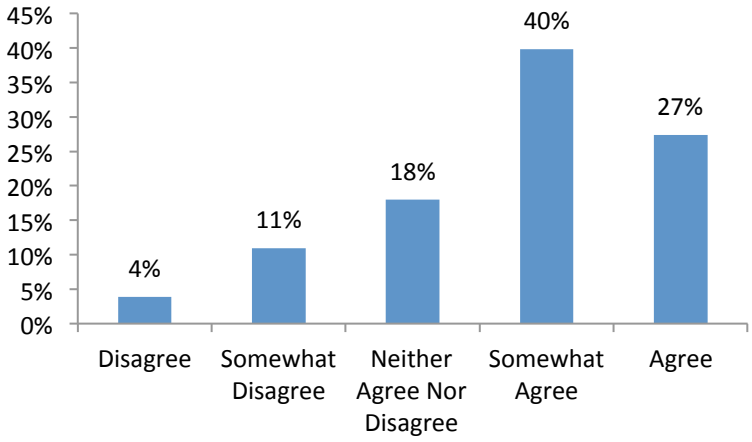


Patriotism:

Question 13: I associate lawn care with being a good citizen.

15% somewhat disagreed or disagreed that they associate lawn care with being a good citizen, 18% neither agreed nor disagreed, and 67% somewhat agreed or agreed. The following graph shows the distribution of responses to question 13 among all respondents.

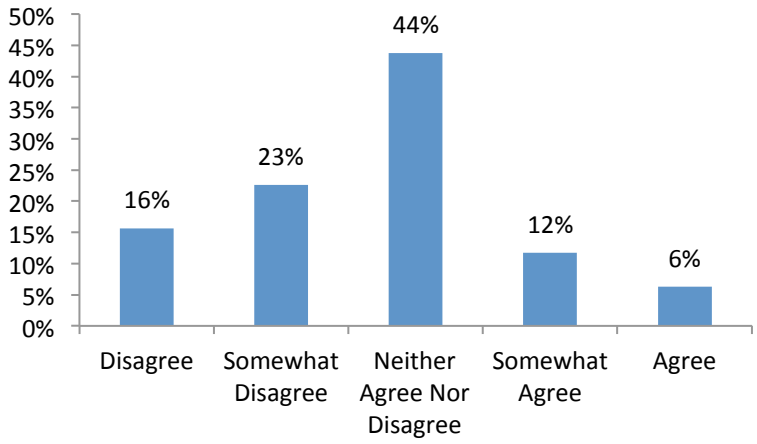
Figure 23: Distribution of Responses to Question 13



Question 14: Caring for my lawn is good for the American economy.

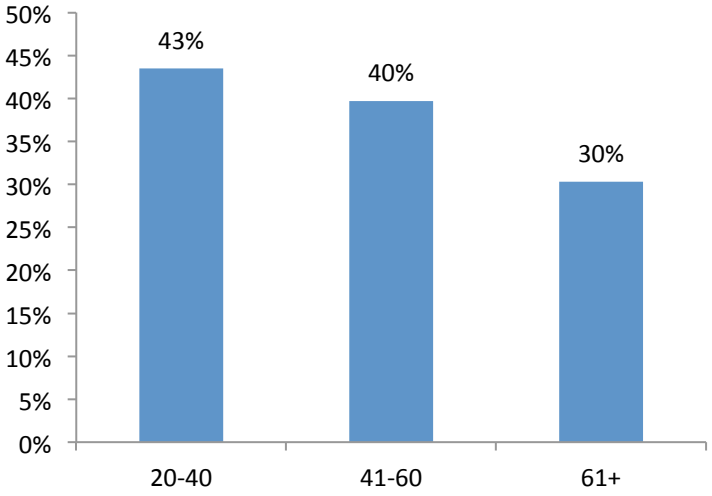
38% somewhat disagreed or disagreed that caring for their lawn is good for the American economy, 44% neither agreed nor disagreed, and 18% somewhat agreed or agreed. The following graph shows the distribution of responses to question 14 among all respondents.

Figure 24: Distribution of Responses to Question 14



There was a positive correlation between age and level of agreement for question 14. Younger respondents were more likely to disagree that caring for their lawn is good for the American economy than older respondents. The following graph shows the percent of respondents in each age category who somewhat disagreed or disagreed that caring for their lawn is good for the American economy.

Figure 25: Percent of Respondents who Somewhat Agree/Agree with Question 14 by Age

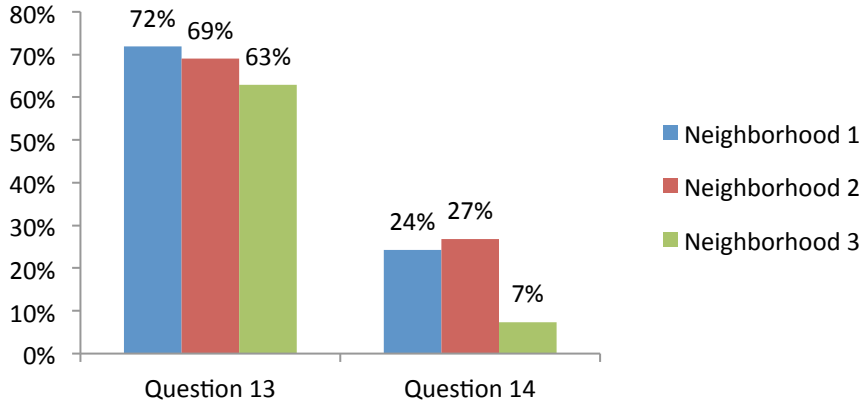


Inter-Neighborhood Differences

There were no significant differences between neighborhoods for question 13, but residents of Neighborhood 3, St. Olaf, were much less likely to agree that caring for their lawn was good for

the American economy. The graph below shows the percentage of respondents from each neighborhood who "Somewhat Agreed" or "Agreed" with patriotism values (being a good citizen and the American economy, respectively).

Figure 26: Percent of Respondents who Somewhat Agree/Agree with Patriotism Values by Neighborhood

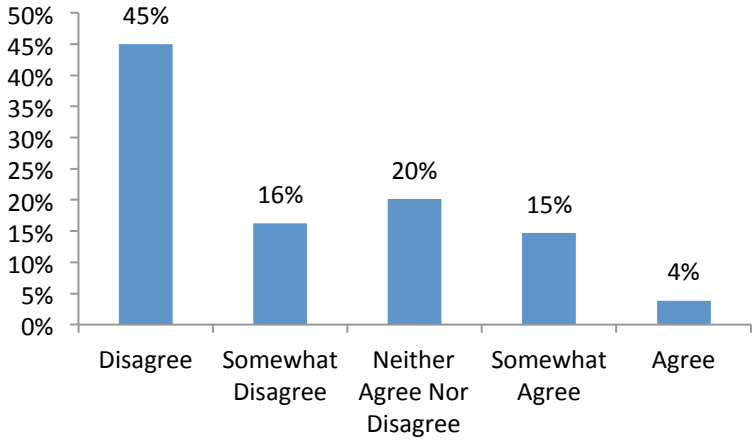


American Dream:

Question 15: Having a velvety green lawn is part of my American dream.

61% somewhat disagreed or disagreed that having a velvety green lawn is part of their American dream, 20% neither agreed nor disagreed, and 19% somewhat agreed or agreed. The following graph shows the distribution of responses to question 15 among all respondents.

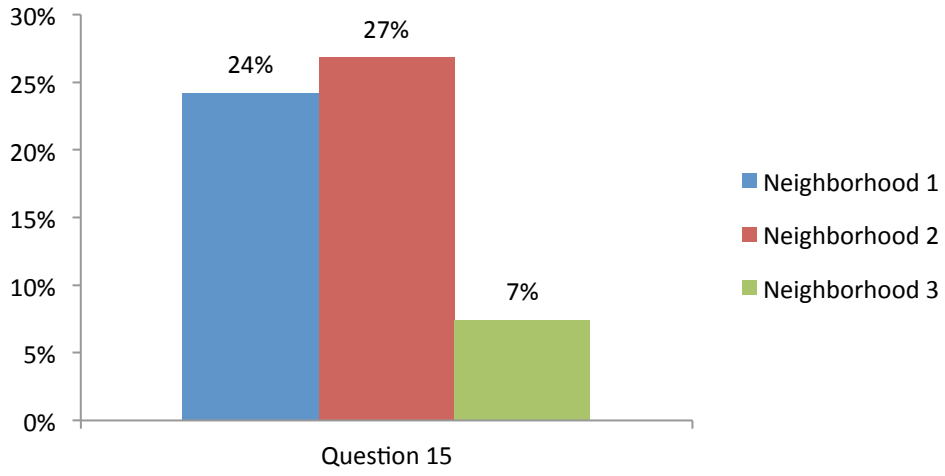
Figure 27: Distribution of Responses to Question 15



Inter-Neighborhood Differences

Residents of Neighborhood 3 were much less likely to agree that having a velvety green lawn was a part of their American dream. The following graph shows the percentage of respondents from each neighborhood who "Somewhat Agreed" or "Agreed" with question 15.

Figure 28: Percent of Respondents who Somewhat Agree/Agree with Question 15 by Neighborhood



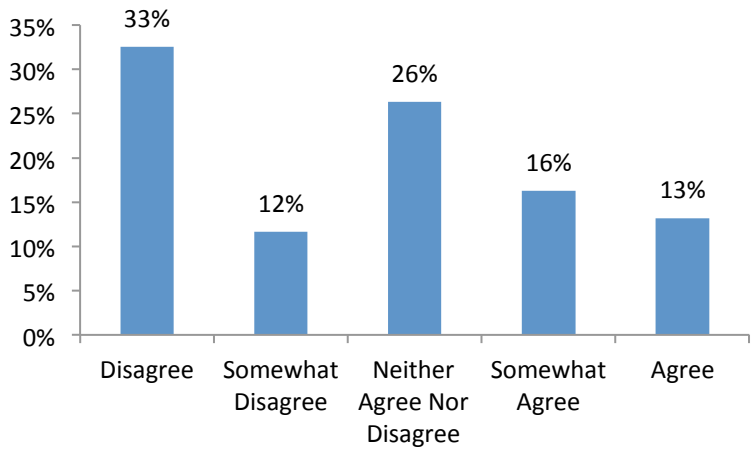
Lawn Alternatives:

The participant was asked to think of a house in their neighborhood that has an alternative lawn, and keep that house in mind as they answered the following questions.

Question 16: The lawn clashes with the neighboring landscape.

44% somewhat disagreed or disagreed that the alternative lawn clashes with the neighboring landscape, 26% neither agreed nor disagreed, and 29% somewhat agreed or agreed. The following graph shows the distribution of responses to question 16 among all respondents.

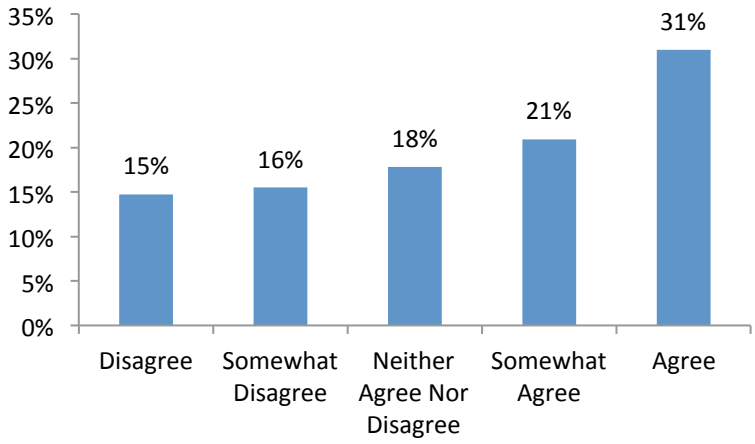
Figure 29: Distribution of Responses to Question 16



Question 17: I would consider a similar alternative lawn if it required less frequent watering and fertilizer application.

30% somewhat disagreed or disagreed that they would consider an alternative lawn if it required less frequent watering and fertilizer application, 18% neither agreed nor disagreed, and 52% somewhat agreed or agreed. The following graph shows the distribution of responses to question 17 among all respondents.

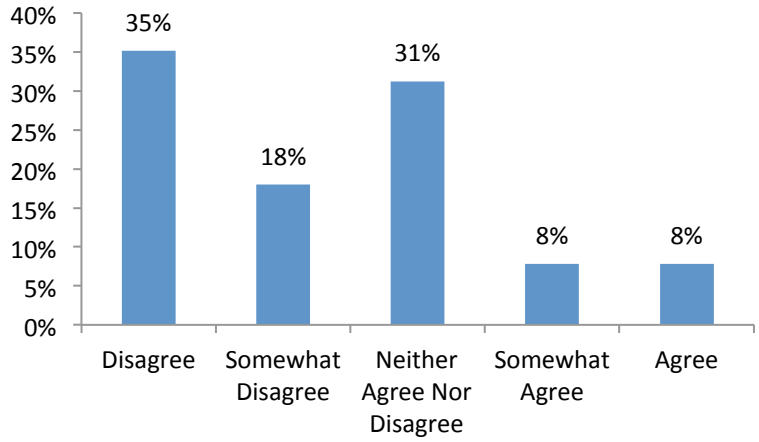
Figure 30: Distribution of Responses to Question 17



Question 18: I would consider a similar alternative lawn if my neighbors all converted their lawns first.

53% somewhat disagreed or disagreed that they would consider an alternative lawn if their neighbors converted their lawns first, 31% neither agreed nor disagreed, and 16% somewhat agreed or agreed. The following graph shows the distribution of responses to question 18 among all respondents.

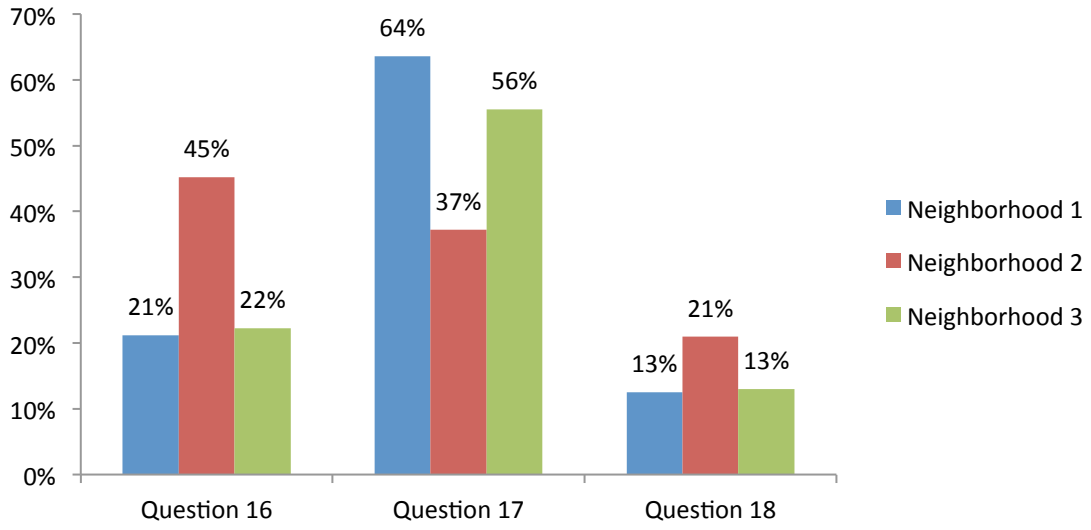
Figure 31: Distribution of Responses to Question 18



Inter-Neighborhood Differences

We found significantly different responses towards alternative landscaping between the three neighborhoods. Residents of Mayflower Court were more likely to agree that the alternative lawn in their neighborhood clashed with the other houses. In terms of probability of conversion, Mayflower Court residents were less swayed by the thought of using less water or fertilizer than the other neighborhoods, and more swayed by the thought of all of their neighbors converting first than the other neighborhoods. Below is a graph of the percentage of respondents from each neighborhood who "Somewhat Agreed" or "Agreed" with the xeriscaping questions.

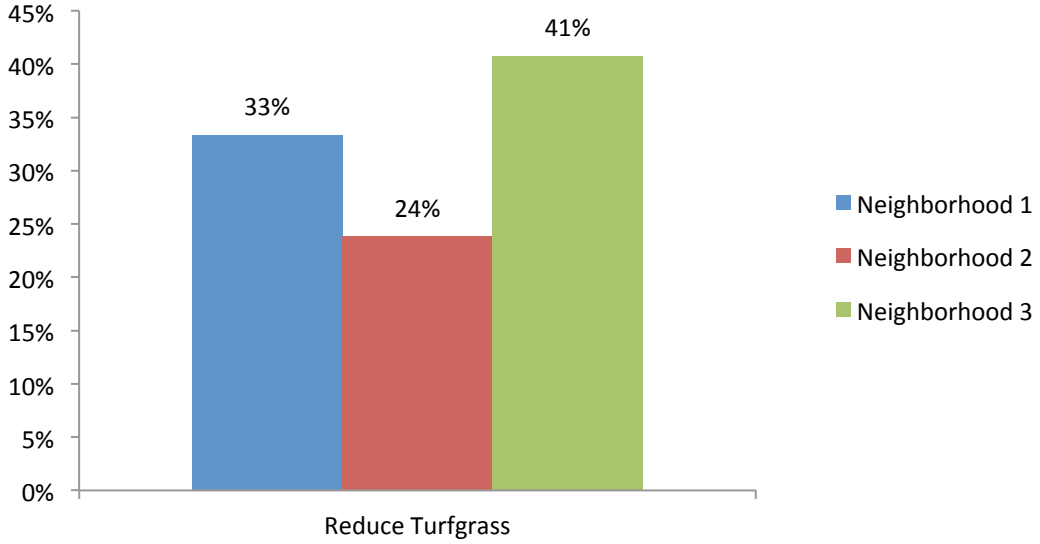
Figure 32: Percent of Respondents who Somewhat Agree/Agree with Xeriscaping Questions by Neighborhood



Future Plans:

The final question in our survey asked whether or not respondents had any future plans or visions for their lawns, and if so, to describe them. We then counted the number of respondents whose future plans for their lawns involved reducing the amount of turfgrass in their yard by any means. The following graph shows the percent of respondents from each neighborhood that had plans to reduce the amount of turfgrass in their yard.

Figure 33: Percent of Respondents with plans to reduce their turfgrass by Neighborhood



The average EMV of homes of people with plans to reduce their turfgrass was $198,500, compared to $236,800 among those with no plans to reduce the amount of turfgrass in their yard. People who wanted to reduce the amount of turfgrass in their yard also felt less positively overall towards their lawns, with an average total feelings value of .26, compared to .77 among those with no plans to reduce their turfgrass.

Discussion

Feelings

Although the story of the lawn's spread across the American landscape has been fairly well documented in the existing literature, there remains no trace of how the average homeowner in the 1950s felt about this new phenomenon. We can guess that most people felt positively towards the lawn at its inception, since it was embraced so readily and rapidly by the populace. If there were any critical voices, they were drowned out in the cacophony of lawn advertisements, how-to guides, and glossy green magazine images. In recent times, there has been extensive research into people's lawn care practices and the impacts they have on the environment. However, the crux of our research lies in a question that still has yet been asked: do people like their lawns? If so, why? And if not, do they plan to make a change? These are simple questions, but getting at the root of people's feelings about their lawns is more complicated than it first appears.

We found that most people are ambivalent towards their lawns – enjoying them at times while feeling frustrated by their needs at others. Another sizable cohort of people claimed to feel nothing, positive or negative, towards their lawns at all. 67% of respondents agreed that the satisfaction they got out of their lawns was worth the work they put into it, and only 11%

disagreed. This implies that Northfielders don't put work into their lawns to satisfy societal demand, but instead choose to invest as much time as they personally believe is worth it. However, it does not tell us much about *how much* satisfaction people get out of their lawns. Our initial hunch was that for the most part people resented their lawns, but continued to maintain them out of some outdated sense of social obligation. Yet when we examined our results, this is not what we found.

Very few people resent their lawns—in fact, the most commonly circled word was "satisfaction" (chosen by 46% of respondents), followed by contentment (31%). However, less than half of respondents reported having only positive feelings towards their lawn. One-fifth of people who circled positive words in the survey also circled negative words, suggesting ambivalent or fluctuating feelings towards their lawns. A further 20% reported only negative feelings towards their lawns. Overall, the majority of people felt neutral, ambivalent, or negative feelings towards their lawns.

While we have no historical data to show that this is a new or growing trend, we posit that this lack of positive feeling may make people more open to lawn alternatives. Of the people who had a total feelings value of 0 or lower, 55% had plans to reduce the amount of turfgrass in their lawn, compared to only 24% of people who had a positive total feelings value. This finding is significant, because it means that people who are unhappy with their lawns feel that they are able to convert to alternatives that better suit their needs, and are not trapped in the social institution of the lawn.

Residents of Mayflower Hill felt more positively overall towards their lawns than residents of the other two neighborhoods. The average total feelings value for Neighborhood 2 was 1.26, compared to 0.42 in Neighborhood 1 and 0.35 in Neighborhood 3. They were about

twice as likely to circle positive terms than their counterparts in the other neighborhoods, and three times as likely to feel pride in their lawn. We found that positive feelings towards lawns were also positively correlated with higher market value of the home. This implies that while those who have the resources to take care of their lawn might feel satisfied with its condition, there are others who cannot prioritize lawn care, and thus feel frustrated or annoyed by their inability to keep up to the high standards created by the 1950s. These are the people who are the most open to more low-maintenance alternatives to the traditional lawn.

Recreation

Of all the values a lawn provides, recreation was of highest importance among the respondents. Question 5 asked about the importance of hosting barbecues and outdoor gatherings on the lawn and 58% thought it was fairly to very important. Question 6 asked about the lawn as a space for children to play, which resulted in 64% of responses indicating it was fairly to very important. Keep in mind that including those who circled "Important," these questions elicited over 80% positive approval, an unparalleled response on this survey.

Recreation is categorically a different value than the other four—duty to community, patriotism, connection to nature, and aesthetics—because it is functional. This is interesting to note, because there are plenty of lawn alternatives that are equally conducive to recreation and leisurely pursuits. If the lawn values still strongly held among the public are compatible with alternative landscapes, then perhaps the ideal American lawn from the 1950s could be loosening its hold.

Aesthetic

Questions 1 and 2 asked respondents to share how important it was for their lawn to be well manicured and green. These were the two fundamental descriptors of the typical American lawn entrenched in the 1950s and from an initial look around the Northfield neighborhoods, we expected these aesthetic tastes to be obstinate in present day. However, the response to these aesthetics was lukewarm. According to our results, only 40% thought a well-manicured expanse was fairly to very important and a mere 34% thought it was fairly to very important to have no brown or yellowing grass. There appears to still be a general acceptance of these two aesthetic elements, but not nearly the adherence to a singular aesthetic code as seen in the 1950s.

Over half the respondents reported that it was fairly to very important that their lawn makes their residence more attractive (Question 3). From that perspective, the results to questions 1 and 2 indicate that some discolored or overgrown grass does not necessarily offset the attractiveness of a residence. This is suggestive of a slight departure from the aesthetic code of the past.

The association of the American lawn and the golf course is one marked way in which Northfield residents have dramatically departed from the aesthetic tradition of the 1950s. In post-war America, golf courses were often used as an aspirational yardstick for the suburban lawn. Our respondents enthusiastically rejected that association— only 14% reported that it was fairly to very important that their lawn "resembles the uniform green surface of a golf course."

This result poses an interesting question: do people dislike the golf course aesthetic, or merely resent the implication that they aspire to it? After all, a golf course's notable characteristics are being green and well-manicured. Yet, of the respondents that rated those two aesthetics fairly to very important, over half said that the golf course aesthetic wasn't important to them. Because these are seemingly contradictory responses, we suggest that golf courses now

carry associations that Northfield homeowners don't want attached to their lawns. Golf courses may now seem too clinical, homogenous, or environmentally unfriendly, or perhaps the air of perfection is off-putting and people are satisfied with some ragged edges.

Of those 14% of respondents that considered the golf course a model for their lawn, 72% live in Neighborhood 2. Mayflower Hill overlooks a golf course, so the people who have chosen to live there may on some level approve of the aesthetic it represents. All speculation aside, this is the first piece of evidence that indicates that residents of Neighborhood 2, Mayflower Hill, are more likely to have a conception of their lawn that more closely mirrors the ideal American lawn of the 1950s than residents of the other neighborhoods.

Duty to Community

Three questions addressed "Duty to Community" and each implied increasingly broader communities. Question 7 asked about the importance of garnering the respect and admiration of the respondents' neighbors. Given the weight of this value on the 1950s conception of the lawn, this question elicited surprisingly negative results—64% said their neighbor's regard was slightly to not at all important.

However, the next two questions were framed to include broader communities and they met with more positive responses. Question 8 asked about the importance of the lawn fitting in to the neighborhood block. This broadens the focus from the immediate neighbor-to-neighbor relationship to lean on the importance of the lawn as a function of your relationship with your wider community. These results were more positive—this time only 39% felt it was slightly to not at all important. Whereas the neighbor-to-neighbor question had 45 people choose "not at all important," thinking about the broader neighborhood dropped that number down to 7.

Question 9 was decidedly more abstract—"how important is it that my lawn makes me feel like a responsible member of my community?" Again, 39% of respondents didn't think it was important, while the other 61% thought it was important to very important. These results indicate that there is a general feeling of duty attached to the lawn, but that its not necessarily situated in interpersonal relationships. In other words, rather than a sense of duty stemming from the accumulated pressures from your individual neighbors, it exists as an entity in itself. If this is true, then the sense of duty to one's community is a vestige of a time when there were neighbor pressures to conform to a uniform lawn. Though those pressures may no longer be present, the value is enduring.

In the same vein, Question 13—"I associate lawn care with being a good citizen"—elicited a favorable response. Two thirds of respondents agreed or somewhat agreed with the statement, which again indicates a general sense of duty unattached to specific stakeholders. The question aimed to measure whether patriotism factored into the present conception of the American lawn, but because the word "citizen" doesn't necessarily invoke nationalism, we include it in our analysis as another angle on duty to community. When taken together, these four questions paint a picture of a people that don't feel direct neighborhood pressure, but do feel a general connection between lawn care and responsible citizenry.

Robbins (2007) theorizes that the lawn is valuable as an asset to the socio-geographic group—the neighborhood—rather than as a good consumed solely for the benefit of the individual. Pressure to uphold a perfect lawn derives from societal pressure and consequently, maintaining homogeneity with the neighborhood results in a sense of civic pride (Robbins 2007).

Robbins' theory suggests that lawn care habits exist in clusters, as neighborhoods internally reinforce specific lawn care standards. Though our survey measured attitudes, rather

than lawn care practices, our results lend tentative support to Robbins theory. Residents of Neighborhood 2, Mayflower Hill, responded significantly more positively to questions 8 and 9 than their counterparts. This suggests that residents of Mayflower Hill are altogether more concerned with the respect of their neighbors and with their homes fitting in with the neighborhood. Evenson and Lyons (2010) also found that Mayflower Hill displayed uniformly higher neighborhood pressures, though respondents across Northfield denied considering lawn care a civic duty.

The Future of the American Lawn

Although it is difficult to know exactly how most people felt about their lawns in the 1950s, we do know that even if there was a cohort of people who were unhappy with the lawn, there was not much they could do about it. The lawn had a powerful presence in suburbia, and there was significant social and legal pressure on suburbanites that stymied any serious alternative lawn movement that might have arisen. Today, however, a whole range of lawn alternatives have been developed across the country, and more lawn conversion manuals are written every year. Most of these manuals claim that the traditional lawn is on the way out, but even a cursory survey of any American suburb shows that the lawn still maintains its stronghold on the nation's landscape. Is this a movement that is actually taking hold in the public imagination? Or is it relegated to a faction of "guerilla gardeners", lawn extremists whose opinions bear little resemblance to those of the average homeowner?

In our survey, we asked several questions to help us ascertain whether Northfield residents were considering alternative lawns (xeriscaping, vegetable gardens, or anything other than turfgrass), or if they were largely unaware of this movement. Preliminary results show that

at this point, alternative landscaping does not have a large presence in the Northfield neighborhoods we surveyed.The majority (66%) of respondents reported having turfgrass covering at least three-quarters of their yard, and only 4% reported having turfgrass on less than half of their yard. In short, the front of most homes in Northfield is still covered by mostly lawn.

However, our results suggest that the idea of reducing turfgrass, for various reasons, is percolating in the minds of some Northfield residents. The majority of people we surveyed are open to the idea of alternative landscaping in their neighborhoods, and are not averse to their aesthetic appearance, which can be markedly different from the traditional lawn aesthetic. Only 13% of respondents agreed with question 16, which asked if they thought an alternative lawn in their neighborhood clashed with its surroundings. Even if not all residents are ready to take up the mantle of converting their lawns themselves, they did not find other alternative lawns in their neighborhood offensive to their taste.

We had initially thought that a desire to interact with nature might inspire Northfield residents to explore alternative lawns, but given a tepid response to question 10 (only 35% said it was fairly or very important that their lawn make them feel more connected to the natural world, and 39% said it was not at all or slightly important), this does not seem like a compelling reason to convert. In contrast, when asked whether they would consider a similar alternative lawn if it required less frequent watering and fertilizer application, over half responded that they somewhat agreed or agreed. People were more swayed by the low-maintenance argument than by question 18, which asked if people would consider a similar alternative if their neighbors converted first (only 16% somewhat agreed or agreed). This again implies that Northfield residents in general are making choices about their lawns less out of concern about neighborly pressure, and more out of their own desires for their front yard.

In order to get a clearer idea of whether Northfield residents might be adopting alternative lawns soon, we asked in the final part of our survey if the respondent had any future plans for their lawn, and if so, to describe them. We found that of the people with a vision for their lawn, a full two-thirds mentioned wanting to reduce the amount of turfgrass in their lawn. This general trend was represented in a surprising variety of ways, with many distinct ideas about what kind of landscape might replace the lawn. The diversity of responses is represented in the table below.

Lawn Replacement	Number of Respondents
Native/Prairie Plantings	11
Vegetable/Fruit/Herb Garden	10
Alt. Landscaping (unspecified)	10
Shrubs/Bushes	9
Trees	9
Patio/Deck	5
Flowers	4
Perennials	4
Reduce Grass (unspecified)	3
Pond	2
Zen Garden	2
Permaculture	1

Some respondents mentioned a desire to return to native prairie (though no one independently used the term “xeriscaping”), and some wanted to begin growing their own food on their property, either through vegetable gardens, berry bushes, or fruit orchards. However, many more respondents simply expressed a desire to reduce their turfgrass by planting more trees or shrubbery, or by putting in a patio. A few respondents mentioned wanting to retain a

small portion of turfgrass as a playspace for children, while converting the rest of their lawn to alternative landscaping. These results show that although the xeriscaping movement is not yet fully formed in Northfield, there is evidence of a push against turfgrass

A few participants mentioned barriers that prevented them from converting their lawns into alternative landscaping. The main obstacles were finances, followed by time and prioritizing other aspects of home improvement first. The average estimated market value of the homes of respondents interested in converting their lawns was lower than those of respondents with no plans to reduce their turfgrass, although, this may be an artifact of Mayflower Hill's higher average EMV. Neighborhood pressure may also have contributed to unwillingness to convert. The success of the movement away from turfgrass will depend on whether or not these barriers can be overcome in the future.

An articulated desire to reduce turfgrass is not new. To understand this apparent trend away from turf in Northfield, we will delve deeper into the broader history of alternative landscaping in the United States. Starting with the history of xeriscaping, lawn gardens, and lawn rebate programs, we will characterize the different ways in which people have altered their lawns in order to imagine a future Northfield with less turfgrass. We will also address the issue of backlash against lawn alternatives to understand the barriers that may impede a full transition away from lawns in Northfield.

Alternatives to Lawns

The Xeriscaping Movement

For those who reject the traditional lawn, xeriscaping, or water efficient and bioregionally appropriate landscaping, is one of the most well-known alternatives. The campaign for

xeriscaping was initiated in 1981 by the Denver Water Department, who coined the term in an attempt to heighten interest in water-saving gardening techniques (Cohen, 2011). Their goal was to show that it was possible to both conserve water and maintain beautiful, lush gardens by promoting the use of plants that are well adapted to their region. Contrary to popular belief, xeriscaping does not mean creating a landscape that requires no water, but instead encourages smart design that decreases the need for water. Efficient irrigation, proper weeding, mowing, pruning, and fertilization can also help decrease water use. The benefits of xeriscaping include a sustainable use of water supply, reduced energy and site-maintenance costs, increased property values, lower water bills, improved landscape aesthetics, protection of native habitat including estuaries, streams, ponds, and lakes, and reduced desertification. However, water companies did not encourage native planting as a lawn replacement, but rather as a lawn supplement, implying that these techniques were developed not as a reaction against lawns themselves but simply as another method for conserving water resources.

By the early 1990s, the xeriscaping movement had been co-opted by a more radical faction of society that supported transitioning away from traditional lawns to improve American society more broadly, for aesthetic, environmental and cultural reasons. In the mid-nineties, the demand for native lawns was increasing, even outside of regions affected by drought. There was now a growing understanding of the complete spectrum of environmental problems posed by lawns, as pioneering research from the academic sphere began to trickle down into the public's awareness. In 1989, Michael Pollan wrote a piece for the New York Times Magazine about his struggles with his lawn, and his feeling that they were an unnatural and unnecessary part of the American landscape. At first, those choosing to adopt these alternatives were considered extremists, and were spurned and sometimes sued by their neighbors (Robbins 2001). There

existed, and still exists today, a common misconception that if a suburban dweller did not maintain the same turfgrass lawn as their neighbors, their actions would drive down the property values of their home and the homes around them. However, a study done in southern Nevada found that xeriscaped homes demanded a higher price on the housing market than equivalent homes with traditional bluegrass lawns (Baker 2004).

Despite resistance to change in many neighborhoods, interest in native landscaping continued to spread. Some homeowners began to express dissatisfaction with the homogeneity of a suburban lawn, desiring a more authentic, organic living space for their yards (Greenlee 2009). This discontent was echoed in a flood of popular books published in the early 2000s that were equal parts gardening manual and ideological doctrine (examples include Sally Wakowski's *The Landscaping Revolution* (2000), and more recently Fritz Haeg's *Edible Estates: Attack on the Front Lawn* (2008) and John Greenlee's *The American Meadow Garden* (2009)). As development and sprawl continued to overtake wilderness land, many urban dwellers chose to rewild their homes, rejecting the relatively sterile monoculture of Kentucky Bluegrass in favor of a smorgasbord of grass, wildflower, and tree species.

The xeriscaping movement is now over 30 years old, yet it is still regarded in the literature as a fringe movement, one that is far from being accepted by society as a whole. However, there are increasing hints of a measurable impact upon the general public's perception of their lawns. A survey of Northfield residents conducted in 2010 found half of respondents stating that choosing native plants and vegetation that supports wildlife was important for their lawns, while only 30% prioritized vegetation that was neat and orderly (Lyons and Evenson, 2010). A recent opinion piece in the New York Times (Bittman, 2013) expounds the necessity of converting lawns to a more sustainable form of landscape and makes the claim that "100 years

from now, lawns will be about as common as Hummers". Xeriscaping has yet to become a widespread movement in areas that have less of a pressing need to conserve water; however, the rebate programs that have been instated in many water poor regions have led to areas where xeriscaping is becoming the norm.

The Garden Movement

Vegetable gardens have been a present, albeit less popular, lawn alternative since the dawn of the lawn. During World War II, people were encouraged to grow vegetables in their front yards, called "victory gardens," in order to reduce pressure on public food sources. These gardens were a sign of patriotism and at least twenty million homes converted their lawn for the cause ("Victory Gardens", 2006) . Victory gardens produced one-third of the country's vegetables in 1943. Eleanor Roosevelt even planted a victory garden on the White House lawn.

After the war, victory gardens were ripped up to make room for turf carpeting, but there's been a resurgence of interest in recent years. Growing food at home is in line with the growing movement towards organic, local food, but it's at odds with all the traditional lawn values outlined above. As a symbolic gesture, Michelle Obama planted a vegetable garden on the White House lawn, calling it a "Kitchen Garden." (Higgins, 2012). Unfortunately, this trend has has garnered attention in the national media mostly because of its being hotly disputed at the local level. Several recent editorials in the New York Times summarize the string of city governments and ornery neighbors that have resisted people's unconventional garden lawns. Fritz Haeg, author of *Edible Estates: Attack on the Front Lawn*, explains that front yard gardens are so contentious because "they're about reconsidering our basic value systems and ideas of beauty." It's a hopeful idea to consider, given that if just 10% of lawn space was converted to vegetable

gardens, it would take care of one third of the country's fresh vegetable consumption (Higgins, 2012). Victory gardens gained popularity during a time of national crisis; perhaps the energy crisis will be the impetus for the resurgence of the kitchen garden movement.

Rebate Programs

Starting in the late 1980s and growing since in popularity are lawn rebate programs, which have been instituted in many water poor regions in the U.S., namely areas in Nevada, California, New Mexico, Texas and Arizona. These rebate programs were started by local water municipalities in order to incentivize people conserve water by paying them a cash amount for each square foot of lawn converted to a less water-intensive form of landscape cover, usually with a maximum amount of conversion possible. These rebate programs not only support water conservation, but also allow an aesthetically pleasing landscape to be maintained by easing the financial burden of conversion to native landscaping.

The requirements and the success of each program has varied from region to region, with Las Vegas being the most successful rebate program by far, saving an estimated 55 gallons/year/ft^2 of turfgrass removed (median amount for these programs is 29 gallons/year/ft^2), and more than $1600 acre feet/year, while the median for other programs is $6/AF/year. Part of this success may be due to the fact that they originally used much more water than other regions, so their net savings was much greater. On average, residents were using 40% more water than their turfgrass actually needed (SNWA, 2004). This brings up an important finding from an analysis of these programs. The Irvine Ranch Water District found a 50% reduction in water use on non-residential landscapes when their rebate program was instated, however "most of the reductions in water use were attributable to improvements in irrigation technology and

management, rather than changes in landscape composition." (Addink, 2009). Factors such as plant spacing, vegetation coverage, plant size, and growth rate have been found to be just as important as plant selection in determining water usage. Vickie Driver, a water resources specialist at the San Diego County Water Authority, was quoted as saying, "The behavioral component is the secret to all the landscape stuff. It ultimately is dependent on the human being managing the site." (Addink, 2009).

These findings show that while these rebate programs encourage lawn conversion, they also bring to the forefront of people's consciousness the environmental impacts of their landscape choices, and this greater awareness has the power to shift people's attitudes and practices. While these programs were instated with the thought of water conversion in mind, it shows that a different outdoor aesthetic is becoming more acceptable, particularly in regions where high water usage is looked down upon. The fact that it is government agencies who are sponsoring this change also allows what might have been a niche environmental movement to be accessed by a larger portion of Americans.

Backlash

While some cities are rewarding their citizens for converting their lawn to a more environmentally friendly form of vegetation by instating rebate programs, others are punishing citizens who attempt to convert their front yard. Recently, a woman living in Oak Park, Michigan was threatened with 93 days in jail for planting a vegetable garden in her front yard, as it was seen as being noncompliant with a city code that states that only "suitable" plant material is allowed on lawn areas of residences, without fully defining what suitable means (Vanderlinden,

2011). While these charges were eventually dropped, cases like this show that people are willing to fight to keep the American lawn in its place at the forefront of the American consciousness.

The previously mentioned case is unusual only in the extreme nature of the punishment. In many cities throughout the United States, citizens have been fined for having an alternative lawn. However, governments are starting to change their legislatures to include vegetable gardens as acceptable forms of vegetation. In 2007, Sacramento changed their front yard ordinance to include vegetable gardens in reaction to residents being harassed- one woman had RoundUp sprayed over her garden after she refused to remove it (Vanderlinden, 2011). Another woman in Northbrook, Illinois was asked to remove her vegetable garden, and after refusing, was fined and cited. However, local media took up her cause and the village council rewrote their code to include vegetable gardens (Vanderlinden, 2011). Vancouver, Portland, Pasadena and Los Angeles have written vegetable gardens into the books as an acceptable form of landscape cover. However, battles over what constitutes an acceptable front yard are continuing in many cities throughout the U.S., drawing national attention, and continuing what many are starting to call the "war on gardens".

There appears to be an increasing dichotomy between corporatized green and grassroots green- cities that claim to be "green" are some of those fighting this garden movement. While cities often cite public health and safety as the main reasons for their restrictive codes, the real reason appears to be real estate values. Neighbors often bring forward complaints as they are worried that the "alternative" lawns of their neighbors will affect the value of their own property. While it may seem like a simple issue, it brings up contentious topics such as homeowner rights, property values, sustainability, food integrity and the aesthetics of the traditional American lawn.

Many of the values associated with lawns that were discussed earlier- aesthetics, duty to community, patriotism - are called into question with this new movement.

While there is no agreement on how an American front yard should look, or what role the government and surrounding neighborhood should have in deciding that, if any, the fact that it is becoming a large issue throughout the United States shows that lawns are no longer the universally accepted symbol of Americanism that they were in the '50s. While some people are still hugely invested in their lawn, a growing portion of the populace is starting to consider alternatives, with a rising movement to turn suburban lawns into more productive spaces, whether that consists of native plants, vegetables, or wildlife habitats.

Limitations and Future Research

The main limitation of this study was that it was not possible to do a direct comparison between attitudes in the present day and attitudes in the past, as it isn't possible to survey people from the 1950s. As there is no way of knowing exactly how people felt towards their lawns in the 1950s, we simply know what we were able to glean from secondary sources about society at the time.

Another large limitation of ours was the small sample size and area that we examined. As our research only examined the residents of Northfield, MN, our results are clearly not generalizable to the United States as a whole. The residents of Northfield, a small college town in rural Minnesota, may have very different perspectives on the importance of lawns and their place in society than people living in a different area of the country or people who simply reside in a more urban part of Minnesota. Given that the population of Northfield is mainly Caucasian, we also did not take racial and cultural differences into account when carrying out the survey.

The American lawn of the 1950s was a strong part of white American culture, so in future research, it would be interesting to examine whether other populations have strongly differing opinions from the dominant white culture. It would also be interesting to survey people in different areas of the country to see how that causes responses to vary and what the factors are that cause these differences.

Conclusion

In the past, awareness of the environmental impacts of our everyday practices has translated into real social and cultural changes. However, the continued pervasiveness of the American lawn, an energetically extravagant civic feature, seems to hint that Americans either have not connected their lawns to the harmful environmental effects they incur, or that the values associated with the lawn outweigh the negative consequences. The lawn debuted when environmentalism was not yet a serious concern to most Americans, and carries with it today the trappings of another time, when the American dream of the single-family home in the suburbs was at its most vivid. In our research, we investigated the ways in which people think and feel about their lawns today; if the values once associated with the lawn are still present; and whether a substantial number of homeowners are seriously thinking about converting their lawn to alternatives.

Through our survey, using the town of Northfield as a case study, we found that there is evidence of an erosion of some of the values associated with lawns in the 1950s. People's conception about what is attractive and acceptable to put in front of your home is less constricted than it once was. Not many people are particularly concerned about a few yellow patches or scruffy tops on their lawns, and few aspire to the perfection of the rolling green golf course, a

vast departure from the postwar norm. People claim to not be bothered by their neighbors' opinion of their lawn, and don't tend to make lawn care decisions based on any perceived obligation to their fellow citizens. People certainly do not associate working on their lawn and buying the affiliated products and services as a boon to the American economy, as they did in the early years of modern consumerism. However, people still respond positively to the idea of lawn care as a vague duty to their greater community. This value exists more or less distinctly from the realities that once supported it (including pressure from the government and from neighbors), which, as we have seen, are now much weaker. People still place a high importance on the capacity of their lawn to serve as a place of recreation, where children can play and barbeques can be held. Of the values that are still strong among Northfield residents, none are particularly unique to the lawn, and it is possible that people's needs may be met by other options for their front yards.

For now, the towering institution of the lawn still stands in Northfield, although many of the pillars that hold it aloft have begun to wear away. This instability in the lawn's foundation opens up the field for alternatives that better serve modern value systems. In our survey, we found substantial interest in lawn alternatives, with over half of our respondents agreeing that they would consider an alternative if it required fewer resources than their current lawn. Although there was little identification with xeriscaping or edible lawns as an organized movement, over two-thirds of people with future plans for their lawns mentioned wanting to reduce the amount of turfgrass in their yard. This may be related to our finding that less than half of Northfield residents feel purely satisfied with their lawns – the majority feel frustrated (at least part of the time), or claim to feel nothing in particular toward their lawns. This exasperation and

apathy is not without solution, and people do feel that they are able to explore nontraditional forms for their front yard.

Alternatives to lawns are very much in the public's mind, but there are several barriers to prevent a total overthrow of the current system. Alternative landscaping, though usually cheaper to maintain in the long run than turfgrass, calls for a high initial investment that many are unable to muster up. Most homes automatically come with turfgrass, and replacing it takes time and effort that often cannot be spared. Secondly, the culture of the neighborhood may not be such that lawn alternatives are desired, or even accepted, by both the residents and the homeowners association (or equivalent civic entity). As we saw in our results, residents of the Mayflower Hill subdivision were more wedded to many of the traditional aspects of the American lawn than their counterparts in the other two neighborhoods, and were less accepting of the idea of alternative landscaping. Finally, more government-side support is needed for alternative landscapes to be adopted on any large scale basis, as in many cases the law is still unclear or discouraging of anything other than 2-inches of uniform turfgrass.

If these barriers can be overcome, the makeup of the suburban landscape around Northfield may begin to change in the coming years. However, our research suggests that a gradual reduction of the amount of turfgrass in front of most homes may be more likely than a complete overhaul of the lawn system, as has been advocated by many of its critics. Adding a small vegetable garden here, or a patch of berry bushes to attract wildlife there, is a much more manageable undertaking than ripping up all of the lawn at once and replacing it with only native prairie grasses (although there are a few visionary individuals in Northfield who have done just that). While people claim to not be influenced by their neighbors' opinions, the more visible and socially accepted the anti-turf trend becomes, the more likely it is to be adopted in places that

thus far have seen nothing but wall-to-wall green carpeting. Some nurseries in the area have begun holding workshops that teach how to incorporate ecologically low-impact plantings into the yard, and we can attest that there is boundless literature for those who want to learn more about lawn alternatives. With growing civic support, societal acceptance, and educational opportunities for lawn alternatives, we may be able to envision a future urban landscape that is at the beginning of a transition from a uniform green blanket to a multicolored patchwork quilt.

Appendix 1.

Survey

For the purposes of this survey, we use the terms lawn and turfgrass interchangeably, and we use both to mean any type of short green perennial grass types. Any other type of land cover-- such as bushes, flowers, stones, or vegetables -- are referred to as alternative landscaping.

Please mark with an X where your lawn falls on the continuum.

+----------+----------+----------+----------+----------+

All turfgrass Mostly turfgrass Half Turfgrass Almost no turfgrass Mostly landscaping No Turfgrass Alternative landscaping

Please circle ALL that apply. **I feel _____ towards my lawn.**

Pride Resentment Happiness

Contentment Frustration Anger

Satisfaction Annoyance Other_____

Please rate the following statements based upon your **personal feelings** using the following scale.

1- Very important 2- Fairly important 3- Important 4- Slightly important 5 - Not at all important

How important is it that my lawn...

1. Is well-manicured (mowed, trimmed, and edged)?	1	2	3	4	5
2. Has little to no brown or yellowing grass?	1	2	3	4	5
3. Makes my residence more attractive?	1	2	3	4	5
4. Resembles the uniform green surface of a golf course?	1	2	3	4	5
5. Can be used for barbeques and other outdoor gatherings?	1	2	3	4	5
6. Provides a space that is safe and comfortable for children to play?	1	2	3	4	5
7. Earns the respect, or even the admiration, of my neighbors?	1	2	3	4	5
8. Helps my house fit in with the block or neighborhood?	1	2	3	4	5
9. Makes me feel like a responsible member of my community?	1	2	3	4	5
10. Makes me feel more connected to the natural world?	1	2	3	4	5
11. Requires few energy inputs, such as fuel for running a lawn mower or making fertilizer?	1	2	3	4	5

12. I associate responsible lawn care with being a good citizen.

Agree Somewhat Agree Neither Agree nor Disagree Somewhat Disagree Disagree

13. The satisfaction I get from my lawn is worth the amount of work I put into it.

Agree Somewhat Agree Neither Agree nor Disagree Somewhat Disagree Disagree

14. Caring for my lawn is good for the American economy

Agree Somewhat Agree Neither Agree nor Disagree Somewhat Disagree Disagree

15. Having a velvety green lawn is part of my American dream.

Agree Somewhat Agree Neither Agree nor Disagree Somewhat Disagree Disagree

Please think of a house in your neighborhood that has an alternative lawn. Keeping that house in mind, please indicate your agreement with the following statements:

16. The lawn clashes with the neighboring landscape.

Agree Somewhat Agree Neither Agree nor Disagree Somewhat Disagree Disagree

17. I would consider a similar alternative lawn if it required less frequent watering and fertilizer application.

Agree Somewhat Agree Neither Agree nor Disagree Somewhat Disagree Disagree

18. I would consider a similar alternative if my neighbors all converted their lawns first.

Agree Somewhat Agree Neither Agree nor Disagree Somewhat Disagree Disagree

Please circle your response

Sex: Male Female

Age category:
20-30 31-40 41-50 51-60 61-70 71-80 81-90 91+

Education: No Degree High School Graduate Bachelors Degree Graduate degree

How many years have you lived in your current residence? ____

Do you have any future plans/visions for your lawn? Yes No

If so, please describe:

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