Money vs. Morality:
The Transition to Composting in Denver, CO

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Abstract

This thesis examines the factors of existing municipal compost programs and analyzes them from the perspective of urban residents in Denver, Colorado. Research to this point suggests economic and environmental concerns are the two most pertinent when it comes to conservation action participation. My ideal goal was to determine if appealing to an urban society's environmental or economic ethic is *most* effective for transitioning residents toward more composting. The timing of the compost "rise" has presented a unique opportunity to study what type of incentives could be most influential for shifting toward environmentally conscious lifestyles. Public education campaigns are most effective for converting attitudes when the behavior is considered easy (recycling, turning lights off, etc.). I collected eighty-seven completed survey responses from a varied demographic of urban Denver residents in Civic Center Park. Prior to the survey questions, one third of participants are presented a graphic about the environmental benefits of composting and one-third about the economic benefits of composting. The final third of the participants receive no graphic at all, for my control group. With an overall average of 1.36, and as seen in figure 11, it's clear that the environmentally focused graphic group was most likely to respond "Yes" to "Is composting an important action to you?" Using an α level of 0.05, the statistical analysis graphed in figure 11 had a p value of 0.0007, suggesting a strong significance for the test statistic. The test statistic produced an F value of 12.3, and we reject the null hypothesis and can conclude that there is a statistically significant difference between the type of graphic a participant viewed prior and if they thought composting was important in the survey. Compost incentive graphics also appear to be positively influencing feelings about similar conservation actions. For turning off lights and recycling, respondents who were shown a compost incentive graphic, either economic or environmental, were both significantly more likely than the control group to respond, "Yes". Now, we need to delve deeper in PEC's and master how to best distribute that information.

Introduction

This thesis examines the factors of existing municipal compost programs and compares them to the perspective of urban residents in Denver, Colorado. Prior research suggests economic and environmental concerns are the two most pertinent when it comes to conservation action participation, but none of the research includes a head-to-head impact comparison using a public education campaign incentive graphic, something I believe this project has successfully done. Specifically, I wanted to know if appealing to an urban society's environmental or economic ethic is *more* effective for transitioning residents toward more composting. My hypothesis prior to research and survey analysis was that "Cash is King", and the financial incentive graphic would be more influential for survey responses.

Based on my hypothesis, responses would vary based on the information in the graphic (or no graphic for the control group) that they received prior to taking an identical survey. I anticipated this would reveal conclusive evidence about which type of incentive is the most impactful. This thesis contains compelling evidence that could influence future incentive decisions for environmentally conscious behaviors, *especially* municipal compost participation. If we can better understand the factors that lead people toward more composting tendencies, than our policy makers will be able to shape bills in a way that satisfies citizens while protecting the environment.

In preparation of this research effort, I conducted analyses of two case studies in the context of changes in composting trends: the San Francisco Mandatory Recycling and Compost Ordinance and Denver's Compost Collection Program. The San Francisco

ordinance is the oldest of its kind, and has set the standard that many other cities have adopted versions of since. The Denver Recycling and Compost program is an interesting analysis in the same city as my intervention, providing a unique comparison to my survey results. This program is much newer than San Francisco's, with a lot of work to do still.

To face the imminent challenges that anthropogenic climate change is responsible for, waste management strategies are a sector where a little bit of effort can make a huge impact. If our policy makers better understand which types of incentives are more likely to increase participation in environmentally beneficial action (such as compost), then huge strides will be made for climate change mitigation.

Background

My project relies on four basic assumptions: 1) Waste management is a crucial aspect of successful human societies. 2) Compost is a beneficial action for mitigating climate change while saving you money. 3) Environmental and economic benefits are the two main incentives used to sway public opinion and implement policy. 4) An electronic or online survey is an effective method for gathering data on social behaviors. These assumptions will be addressed in the order they were presented. Case studies on San Francisco and Denver's composting initiatives are reviewed first.

Case Studies

The following compost programs from San Francisco, California and Denver, Colorado are meant to provide reference for the remainder of the Background section. I will evaluate the programs on the same criteria: cost, coverage, initiative, and penalty.

San Francisco Mandatory Recycling and Compost Ordinance

Cost— Recycling and composting services are included in the trash costs, which total $35.18, as stated under the City Order. The charges are detailed as follows: $5.16 base charge per dwelling unit, $25.90 for a 32-gallon trash bin, $2.06 for a 32-gallon recycling bin, and $2.06 for a 32-gallon composting bin (sfenvironment.org). There is also an option reduce cost by dropping from the 32-gallon trash bin to a 20-gallon trash bin. There is not an option to opt out of recycling or composting services (sfenvironment.org).

Coverage— The SF Mandatory Recycling and Compost Ordinance requires every residential and commercial property to compost. Once the service is set up, the service

provider (most often Recology), will provide your home or place of business with cans and routine service. In addition, they will even provide you with a free compost pail to put scraps in before they go to the big can (sfenvironment.org).

Initiative— The San Francisco Department of the Environment has a lofty goal of making San Francisco a zero-waste city by 2020 (sfenvironment.org). Obviously, composting is a huge part of this goal, and the SF DOE believes that aggressive state legislation and community participation, this goal is achievable (sfenvironment.org).

Penalty— Under the SF Mandatory Recycling and Compost Ordinances, "Residents and businesses are required to subscribe for adequate recycling, composting, and trash service and use them properly. The Department of the Environment strives to educate and assist. Fines may be given in cases of non-compliance." However, I could not locate any specific fine amounts or when it would be necessary to administer them (sfenvironment.org).

Denver Compost Collection Program

Cost— In Denver, recycling is included in the trash collection service (typically Waste Management), though composting services are not. If you are eligible to enroll in the Compost Collection Service, it will cost a quarterly fee of $29.95 (denvergov.org).

Coverage— The Compost Collection Program covers roughly 50% of the City of Denver's neighborhoods. There is a feature on denvergov.org that allows you to enter your address and it determines if you are eligible for municipal compost pickup. If not, the website provides a few helpful links on backyard composting and what you can do on your own (denvergov.org).

Initiative— The City of Denver expanded its neighborhood compost collection nearly 50% in the Winter/Spring 2016. However, even after this expansion, the eligibility map on denvergov.org still shows more than half of the neighborhoods in the city are not eligible for compost pickup. Part of this involves infrastructure and workforce questions for downtown Denver, but certainly a larger effort could be made for more compost awareness and coverage (denvergov.org).

Penalty— Like most cities, Denver has a very strict policy against illegal dumping and stealing trash or recycling, but not much legislation for improper sorting. Since much of the city is not even eligible for compost collection services, it is unlikely they would go to lengths to fine the ones paying for the service (denvergov.org).

Waste Management

Waste management is a major opportunity for municipalities to take advantage of modern technologies and reduce impacts on our planet. The two main ways to divert waste from landfills or incinerators are *recycling* and *composting*. Composting (both backyard and municipal) is an environmentally beneficial behavior that has gained a lot of popularity in the last decade. Since many Americans and their cities have not yet hopped on the compost bandwagon, I believe the timing of the compost "rise" has presented a unique opportunity to study what type of incentives could be most influential for shifting toward environmentally conscious lifestyles.

Climate Change

The science behind climate change is undeniable and widely accepted throughout the scientific community. Key points are listed below, drawn from nasa.gov and Edmond Mathez' work, *The Science of Global Warming and Our Energy Future*. Both sources are extensively cited and scientifically sound. Here are the main points:

- Since the Industrial Revolution, the consumption and burning of fossil fuels has dramatically increased greenhouse gas concentrations in our atmosphere.
- Greenhouse gasses keep the planet livable, but too much warmth and extra atmospheric carbon will drastically affect our delicate ecosystems.
- If we don't switch to more sustainable practices soon (renewable energies, resource conservation) future generations will face unprecedented consequences.
    - Species extinction and habitat degradation, rising ocean levels, increasing natural disaster intensity, and water shortages.

Human behaviors have polluted the atmosphere to a near tipping point.

Compost's Role

To some extent, it can be hard to immediately see the impacts of composting on climate change and global warming. Yet, from air and water quality to carbon sequestration, composting can be a major player in reducing the effects of greenhouse gas emissions (Storino, 2016). Some researchers claim that improving energy efficiency actually lowers the price of energy and makes it cheaper to use, resulting in more use (Herring, 2006). This sensation is known as a 'rebound' or 'takeback' effect. Those that subscribe to these or similar beliefs claim that a better carbon policy would focus on the

shift to renewable energy, with subsidization via a substantial carbon tax. Herring stated, to limit energy consumption, energy sufficiency (or conservation) is needed and not energy efficiency.

Composting

Compost piles, especially of the backyard nature, require a delicate feedstock and nutrient balance (Barrena et. al, 2014). This means in order for the product to be nutritious and effective soil, there must be a proper balance of "green" organic materials and "brown" organic materials. "Green" organic material includes grass clippings, food scraps, and manure, which contain large amounts of nitrogen. "Brown" organic material includes dry leaves, wood chips, and branches, which contain large amounts of carbon but little nitrogen. Moisture content is another crucial factor (Vaz-Moreira, 2008). Microorganisms living in a compost pile need enough moisture to survive, because water is the key element that helps transports substances. Organic material contains some moisture in varying amounts, but moisture also might come in the form of rainfall or intentional watering. In terms of backyard compost vs. municipal compost, nutrient balance and moisture content can be controlled equally, for the most part (Barrena et. al, 2014).

The Municipal Advantage

The advantage of municipal composting is much more apparent when it comes to particle size, oxygen flow, and temperature. Particle size refers to grinding, chipping, and shredding materials, leading to increased surface area on which microorganisms can feed

(Tomati, 2002). Municipal shredders are unparalleled by any backyard set-up, leading to faster turn over from compost materials to soil.

Municipal composting facilities also have mastered oxygen flow techniques. By turning the pile, placing the pile on a series of pipes, or including bulking agents such as wood chips or shredded newspaper, aeration is greatly assisted. Aerating the pile allows decomposition to occur at a faster rate than anaerobic conditions, but too much oxygen can dry out the pile and impede the composting process (Hermann, 2011).

Finally, temperature control is a huge advantage for municipal over backyard composting. Some microorganisms require a certain temperature range for optimal activity. Certain temperatures promote rapid composting and destroy pathogens and weed seeds. Microbial activity can raise the temperature of the pile's core to at least 140° F, but municipal systems constantly keep their piles heated around this temperature, so microbial activity is more active with less effort (Barrena et. al, 2014). An alternative to heating your own pile for backyard composting may be red worms (Tomati, 2002). They are very active at eating and decomposing material, doing the work that microbial activity at high temperatures would otherwise be doing.

Conservation Incentives

Incentivizing the public towards unusual behavior is an art. In the 1980's and 90's, Paul Stern and his associates conducted several studies concerning the nature of different public incentives and how they were perceived. Three of his studies are reviewed here to better understand why conservation incentives are important.

Participation

A review by Stern et al (1986) evaluated incentive programs for residential energy efficiency. Programs were examined to analyze different incentives and their successes or failures. The goal was to determine the best pieces of incentives or nonfinancial programs in order to infer lessons for policy. It was found that larger incentives increase participation, but that marketing may be even more important than incentive size (Stern et al, 1986). Participation greatly differs between programs offering the same financial incentives, but different companies. Participation was much greater in programs operated by trustworthy organizations and aggressively, effectively marketed actions. This speaks to the potential power of prior circumstance and experience when it comes to someone's point of view.

Understanding the Problem

Stern conducted another study two years earlier, researching energy in its human context. The report generated policy options for energy problems and new approaches to energy policy. The results show that it is not possible to make effective energy policy unless you fully understand the social conflict over energy and the noneconomic factors that influence its use (Stern, 1984). The report highlights the importance of seeing energy problems and solutions in terms of social systems and not just single causes. It also suggests that designing energy systems for adaptability instead of so much detailed planning, and to treat energy policies and programs as social experiments.

Public Education Campaigns

Gardner and Stern (1996) studied the legitimacy of educational interventions for changing attitudes and providing information to the public. After reviewing several studies involving different difficulties of conservation action, it was clear that public education campaigns are most effective for converting attitudes when the behavior is easy (Gardner, 1996). They describe "easy" actions as things like recycling or turning the car engine off when idling. However, they also found PEC's were much less influential for "hard" behaviors, like driving less or installing solar panels (Gardner, 1996).

Since composting would be considered an easy behavior change (relatively low time and cost requirement), I decided a public education campaign would be my best option for an intervention of my own.

Money vs. Morality

As mentioned previously, the novelty of this thesis is in the direct competition between the two main conservation incentive concerns: save your money or save the Earth (Wagner, 2011). If we can isolate the most efficient ways to influence composting behaviors, then we should do so and implicate these strategies immediately. In more detail, "Money" represents economic/financial savings, costs, and penalties associated with composting and other conservation actions, and "Morality" includes environmental/ethical benefits or damages to our planet and future generations (Asch, 1955).

Online Survey

Unfortunately, there is relatively little research on the effect of the online method compared with more traditional paper methods. However, the consensus thus far is that electronic surveys are usually the most honest form of survey related research (Grandcolas et al, 2003). Particularly in the US, electronic surveys are becoming a mainstream market research tool. One definite benefit for online surveys is the ease and accuracy of data collection and statistical analysis (Gobo, 2014). Electronic surveys have been conducted simultaneously using essentially identical questionnaires, and a detailed comparison of responses identified a number of significant differences (Leary, 2012).

Social Desirability Bias

The study by Grandcolas et al (2003) suggested there was much less social-desirability bias apparent in electronic surveys. This is most likely a result of privacy when taking electronic surveys as opposed to pressures and time restriction with paper surveys (Leary, 2012). For the kind of information I wanted to know in my survey, avoiding as much bias as possible was crucial. If a subject can tell that I'm surveying from an environmentally conscious background, they are much more likely to skew their answers in an environmentally friendly way.

Methods

My intervention involved three survey groups of about 30 people each. Two survey groups will receive a different graphic about compost benefits, and one group with no graphic at all, acting as a control. Using the up and coming *ecotrend* of composting, I have

created two informative graphics focusing on separate types of benefits gained from producing your own compost and/or participating in a community compost program. The first graphic will focus on the financial benefits to the individual. This includes money saved on trash costs, free garden fuel, responsible food production, and more. The second graphic will focus on the moral benefits from composting, such as less "trash" in landfills or soil rejuvenation. Some other examples of moral benefits could be job creation for a compost program or reduced pollution to landscapes. After I have ensured complete understanding for each survey participant and obtaining consent, they will take the brief survey at the time of consent, or if preferred, provide their email for survey delivery within 24 hours.

Survey Design

I created a survey to analyze compost behaviors in downtown Denver. To ensure the easiest and most accurate data collection, I used Qualtrics' Survey Generation services online, and generated a survey titled "Household Behaviors". The main goals for my survey were to minimize as much inherent bias from the questions as possible and keep it relatively short so participants would complete it without feeling they should rush through (15 questions or fewer).

Incentive Graphics

Prior to the survey questions, one third of participants are presented a graphic about the environmental benefits of composting and one third about the economic benefits of composting. The final third of the participants receive no graphic at all, for a control

group. This way, I can see if my graphics are even having any influence. The economic focused graphic is explained in detail on page 11, and the environmental graphic on page 12.

Figure 1: The economic/financial incentive graphic viewed by one third of participants prior to taking my survey uses as much numerical terminology and financial symbols as possible. Everything from the dollar sign bullet points to green and gold writing attempts to make participants think "Money".

One third of the participants received the financial incentive graphic pictured previously. While composting may not seem like a lucrative activity, several aspects like reduced trash rates, personal soil generation, or grocery savings can all result from due diligence with a backyard or municipal compost pile.

The terminology in the graphic is focused on percentages and hard facts about composting. The color scheme is money green and gold, with dollar signs as bullet points for key facts. Every factor is designed to invoke financial concerns and benefits involving compost.

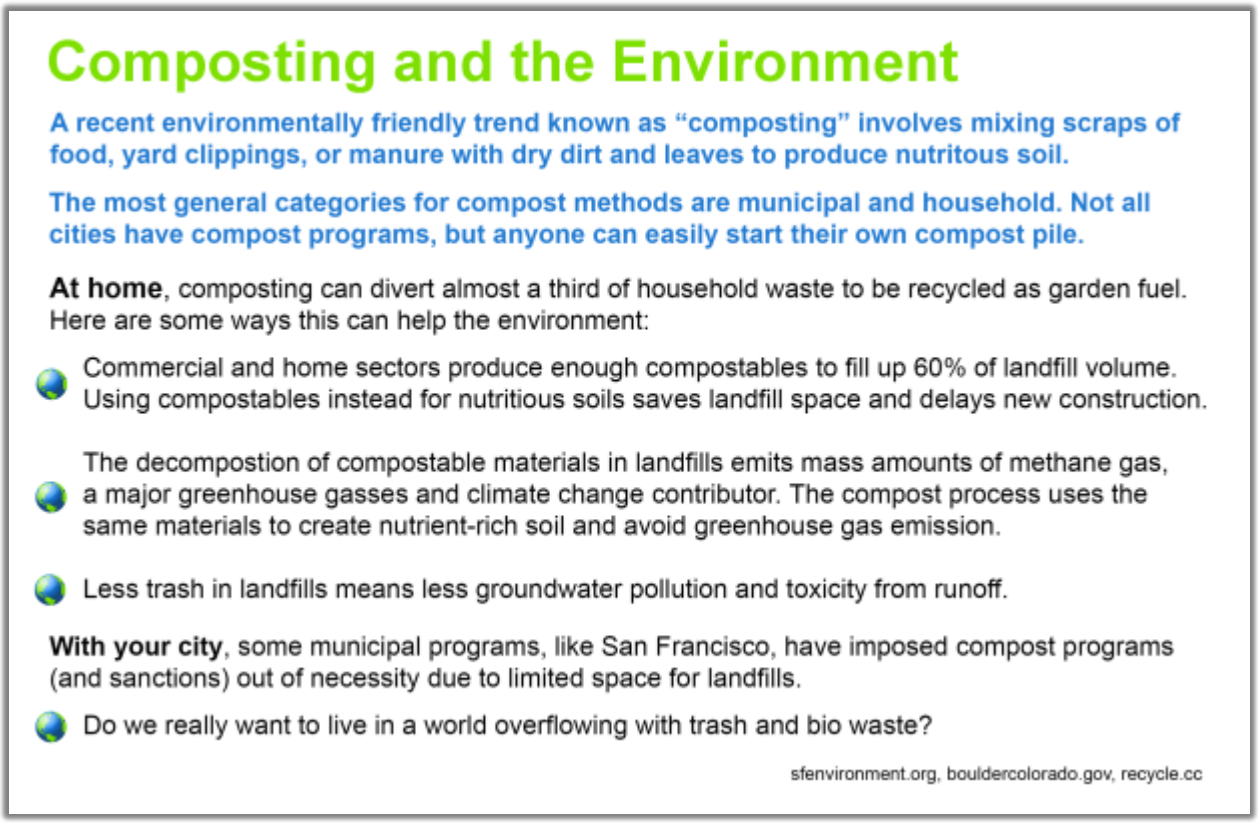

Figure 2: The ethical/environmental incentive graphic viewed by a third of the participants prior to the survey focuses on the ecological benefits of composting processes the positive impacts that means for humans. Little Earth bullet points and nature colored writing attempt to make participants think "Morality".

The final third of the participants received the environmental incentive graphic pictured above. This graphic was much easier to create because the environmental benefits of composting are much more obvious. To be as influential as possible, I tried to include the most facts that imply responsibility or guilt associated with trash and compost.

The terminology in this graphic is focused on environmental benefits and consequences of waste tendencies. The color scheme is leaf green and ocean blue, with

small globes as bullet points for key facts. Every factor is designed to invoke environmental concerns and benefits involving compost.

Questions

After considering one of the incentive graphics (or no graphic for the control group), my survey presented several questions pertaining to turning off lights, recycling, and compost tendencies at their household. While my research is mostly focused on composting behaviors, I felt that a balance of other general questions about "household behaviors" would minimize assumptions that may skew responses.

In addition, I purposefully chose recycling and lights because I felt the relationship between all of these conservation actions could also be interesting. For turning off lights, recycling and composting behaviors, I wanted to know the same three things: 1) How often do you do this action? 2) Do you consider this action important? 3) If your response to question 2 is "Yes" or "Maybe", then why is this action important to you?

Given this information for each conservation behavior, it would be possible to understand urban Denver residents' views on conservation behaviors and whether or not my "public education campaign" swayed opinions about composting. The control group is necessary to see what survey responses are like without moral or financial incentive. That way, I'll be able to tell if either graphic even made an impact on feelings toward compost and environmental action (it's possible they do not). Lastly, I couldn't resist the opportunity to obtain some basic demographic information (age, income, and education), in hopes of discovering further correlations in my data. The full survey is included in the "Survey Elements" portion of the Index section.

Survey Administration

From December 15th, 2016 to January 15th, 2017 I visited my research site eight different times. The pool of residences is within a one-mile radius of Civic Center Park in Denver, Colorado. I also wanted to minimize as much contact intimidation or bias as well. For this reason, I made sure to wear professional CU embroidered clothes and an unbiased demeanor. Interested subjects were asked to sign the consent agreement and provide contact information (email, phone, or social media) for survey delivery if they weren't willing to take the survey on the provided iPhone right away.

High Hopes

Prior to my first surveying stint on December 15th, I randomized which households to use for my study. A random number was designated for apartment buildings and homes within a one-mile radius of Civic Center Park in Downtown Denver. Then, using a random number generator, I would be able to determine which sites to visit and collect survey responses. I thought that it would be easy enough to professionally approach residents at their doors or as they are walking home and inquire about their participation in my project.

For a sample size as large as urban Denver, it's difficult to obtain enough responses to maintain a reasonable confidence interval. For the purposes of this project, 50-100 responses should be enough to reveal some trends.

Reality

My first day visiting as many randomly selected sites as possible was much more inconvenient than I had planned. First of all, navigating time wise routes between apartments and houses was a logistical nightmare. Then, by the time I finally arrived at the location on my list of randomly generated homes, most of them were not home (or ignored me). After four hours of attempting to survey, I had only four completed responses.

Discouraged, I realized I needed a new strategy. During my first trip, I could see there were hundreds of people walking through Civic Center Park over the course of the day. I figured that focusing on a higher volume would yield more results, even though I would lose some experimental control. I pre-screened all potential participants with the "Do you live in downtown Denver?" and only continued with those that confirmed they did, which also proved to be a surprisingly good icebreaker. As a result, the following seven visits to my research area were much more successful. When all was said and done, I was able to collect 87 completed responses from a varied demographic of urban Denver residents in Civic Center Park.

Results

After obtaining just over 100 responses, I refined the data to 87 clean, completed surveys. This section reviews the results of those 87 responses.

Demographics

The age distribution of my participants is remarkably even. 23% were 18-29 years old, 25% were 30-39 years old, 23% were 40-49 years old, and the remaining 29% were

older than 50. While I did attempt to self randomize age when deciding whom to survey, this distribution is better than I could have imagined.

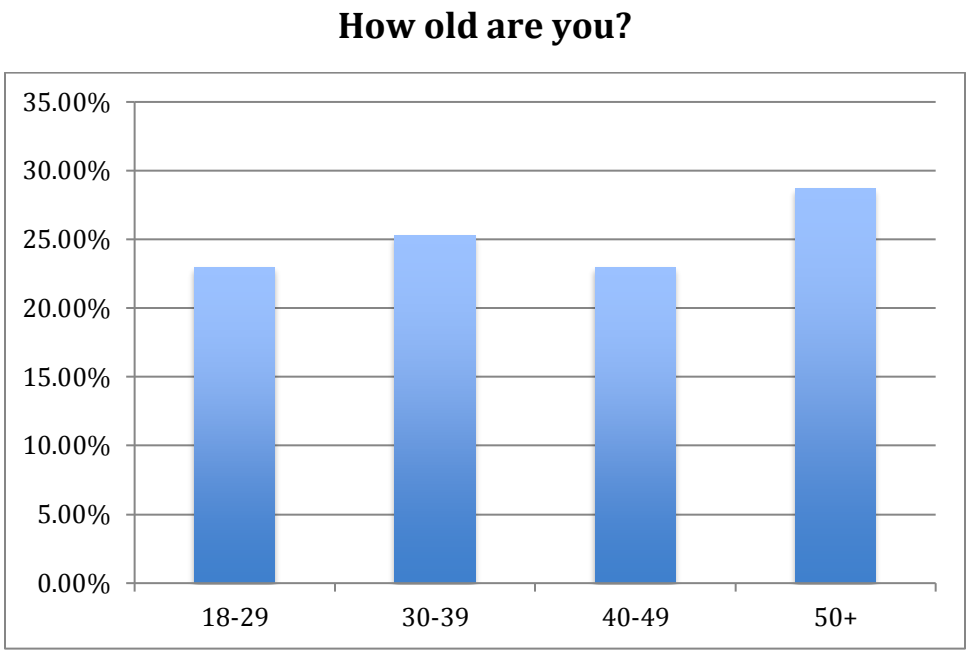

Figure 3: This graph represents the categorical age totals of the entire sample survey population (87 participants) from Denver, CO.

The highest level of education was much less diverse than age. 8% said "High School", 34% said "Some College", 39% said "Completed College", 17% said "Advanced Degree", and 1% Preferred not to answer.

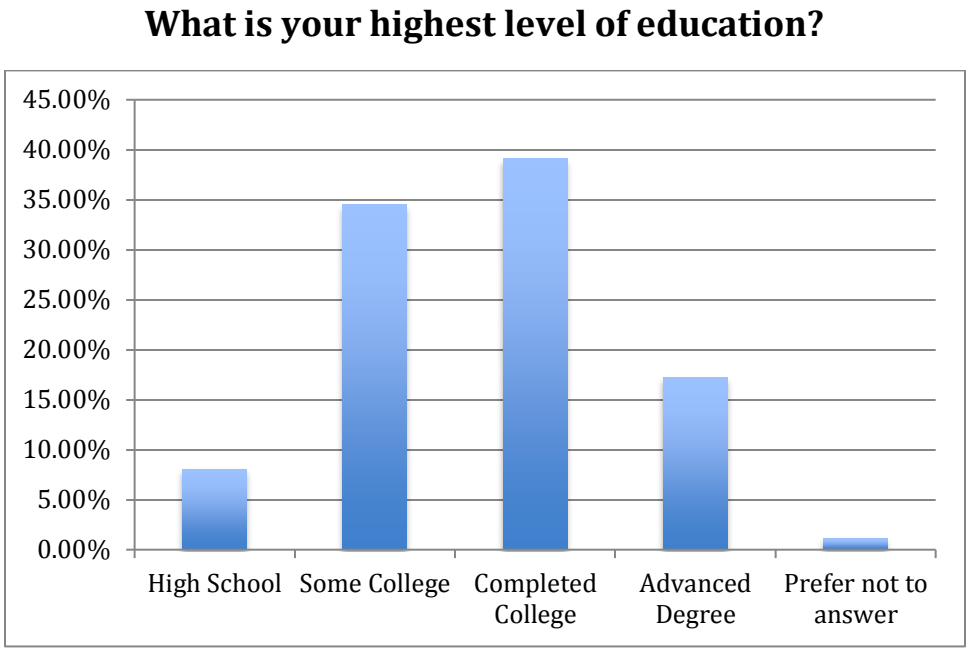

Figure 3: This graph represents the categorical age totals of the entire sample survey population (87 participants) from Denver, CO.

As far as income, the results were somewhat similar. 30% make less than $50,000 a year, 41% make $50,000-$100,000, 26% make more than $100,000, and the remaining 2% preferred not to answer.

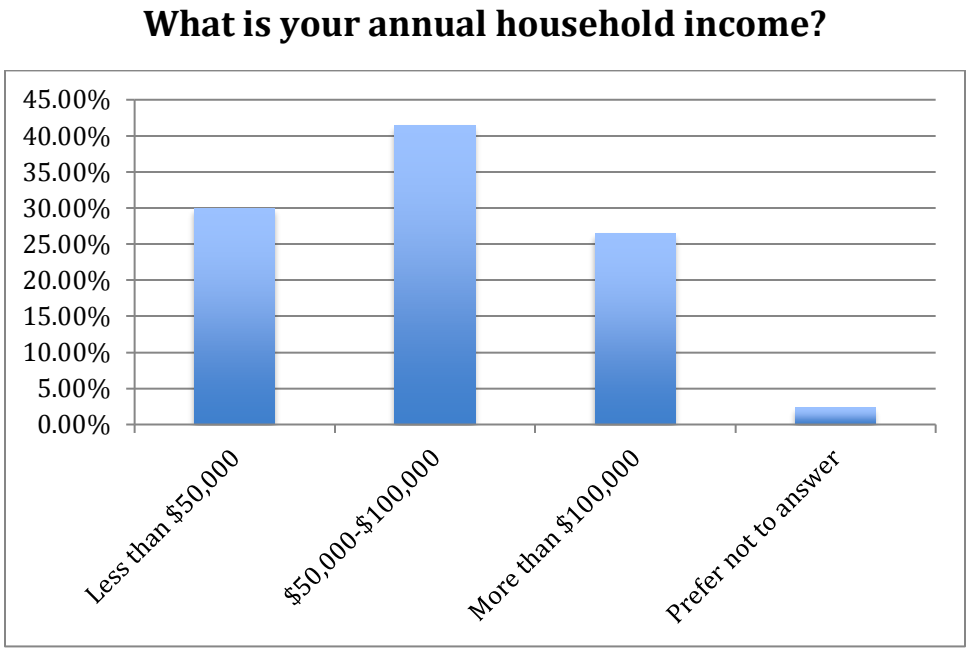

Figure 4: This graph represents the categorical annual household income totals for the entire sample survey population (87 participants) from Denver, CO.

How Often?

At first, I wanted to know how often downtown Denver residents participated in conservation actions. When asked how often they turn off the lights when leaving a room, 16% of respondents said "Always", 55% said "Most of the time", 24% said "Sometimes", 3% said "Rarely", and 1% said "Never". When asked how often they recycle, 24% said "Always", 41% said "Most of the time", 28% said "Sometimes", 6% said "Rarely", and 1% said "Never". Finally, when asked how often they compost, 2% said "Always", 26% said "Most of the time", 37% said "Sometimes", 25% said "Rarely", and 9% said "Never".

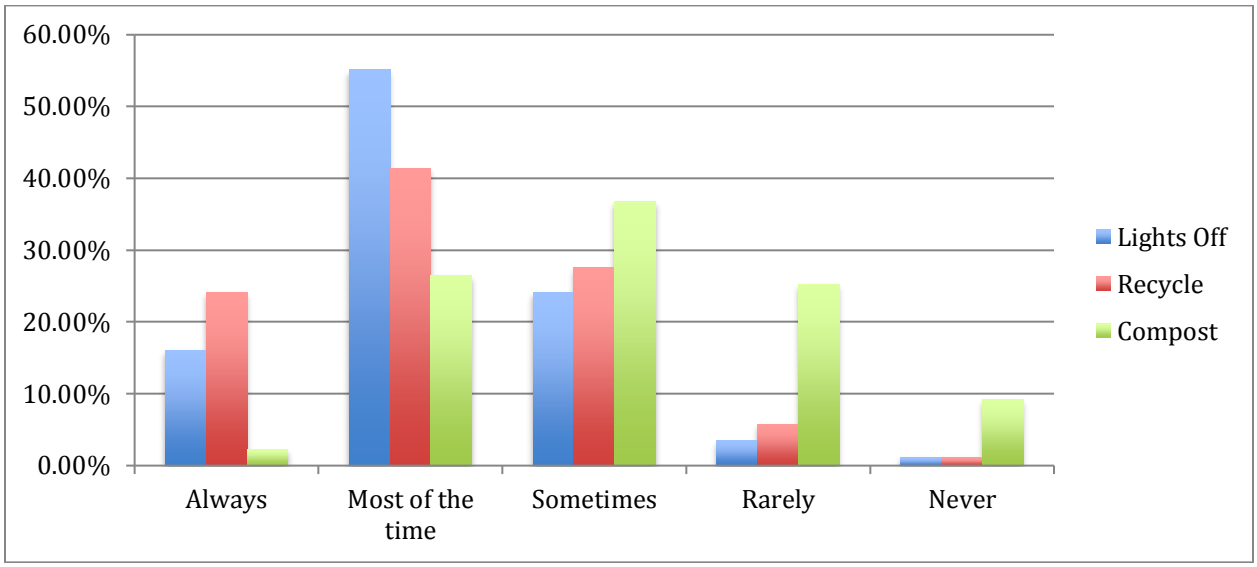

Figure 6: This graph represents how often the total population (87 respondents) turns off lights, recycles, and composts.

Is it important?

After knowing how often urban Denver residents participated in conservation actions, I wondered if residents believed these actions are important in the first place. When asked if turning off the lights when leaving a room is an important action, 64% said "Yes", 30% said "Maybe", and 6% said "No". When asked if they consider recycling an important action, 76% said "Yes", 18% said "Maybe", and 6% said "No". Lastly, when asked if they consider composting an important action, 49% said "Yes", 34% said "Maybe", and 16% said "No".

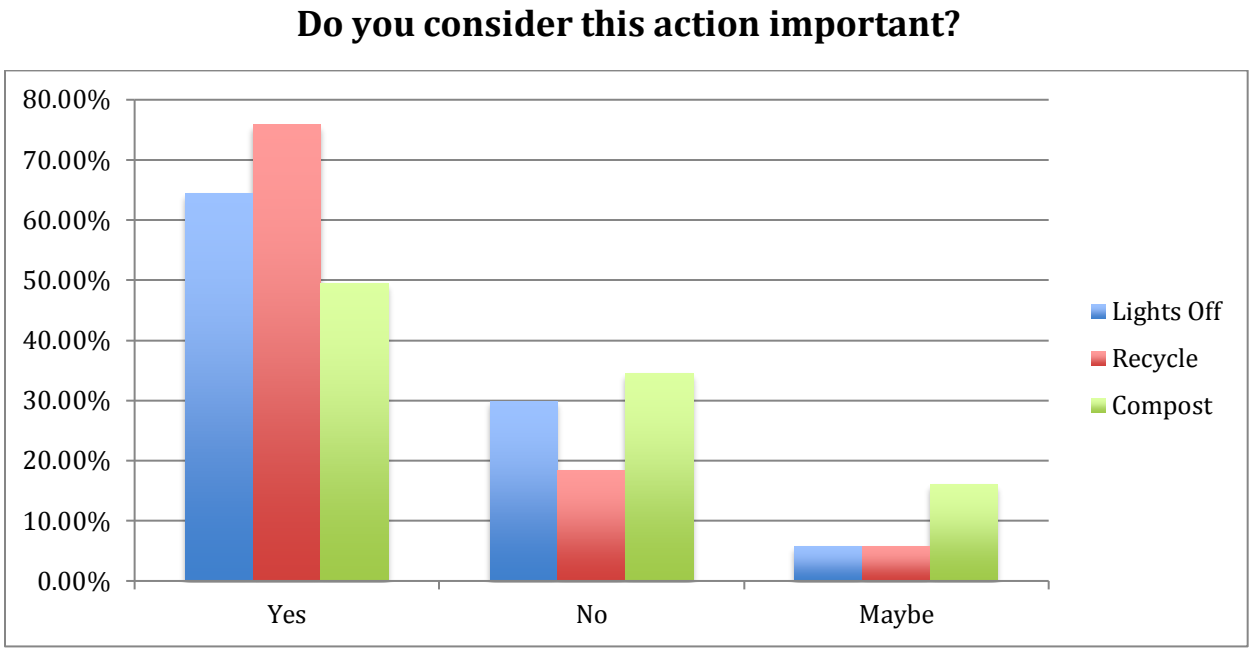

Figure 7: This graph displays if the total population (87 respondents) thinks turning off lights, recycling, or composting is important.

Why is it important?

If participants answered, "Yes" or "Maybe", to the questions on whether or not the action is important, I wanted to know why they thought so. Remember that the "Why…?" questions were "Check all that apply", so the sum of percentages in those graphs will not necessarily equal 100%. When asked why turning off the lights is important, 91% agreed that it was because "It saves me money", 54% agreed "It conserves resources for the community", and 48% agreed, "It helps the environment". When asked why recycling is important, 91% agreed that it was because "It saves me money", 54% agreed "It conserves resources for the community", and 48% agreed, "It helps the environment". When asked why composting is important, 91% agreed that it was because "It saves me money", 54% agreed "It conserves resources for the community", and 48% agreed, "It helps the environment".

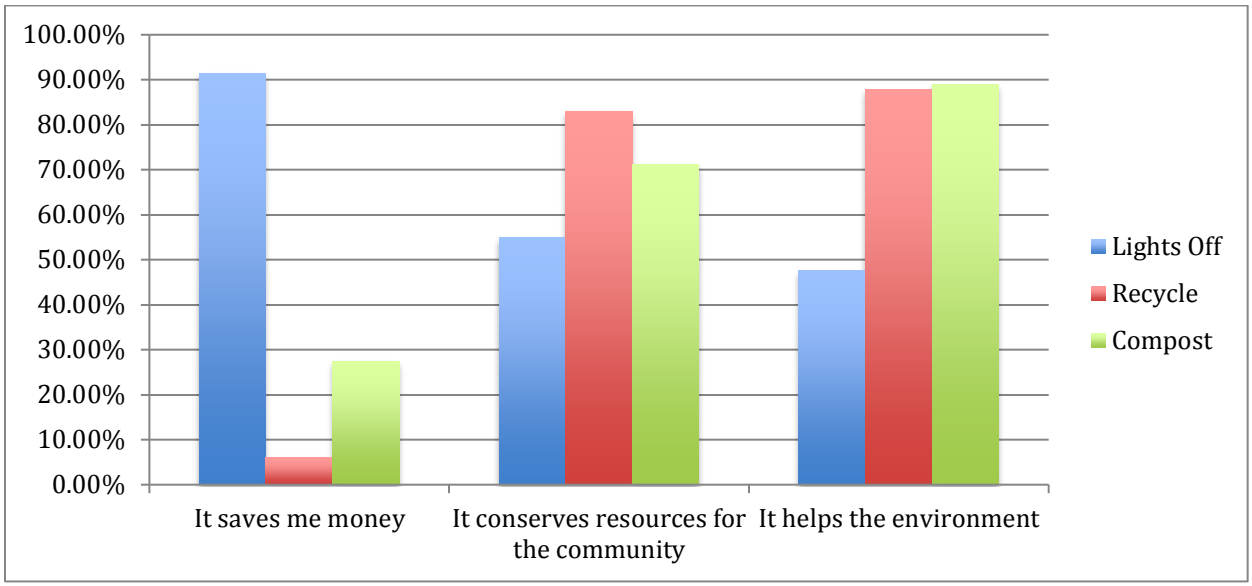

Figure 8: 82, 82, and 73 respondents said turning off lights, recycling, and composting, respectively, are important actions. This graph shows the reasons why those respondents think turning off lights, recycling, or composting is important. Respondents were allowed to select multiple responses to this question.

Were you influenced?

The final question prior to demographics blatantly asked the participants if the compost graphic they viewed prior to the survey questions influenced them. 55% said "Yes", 23% said "No", and 22% said "Not sure/undecided".

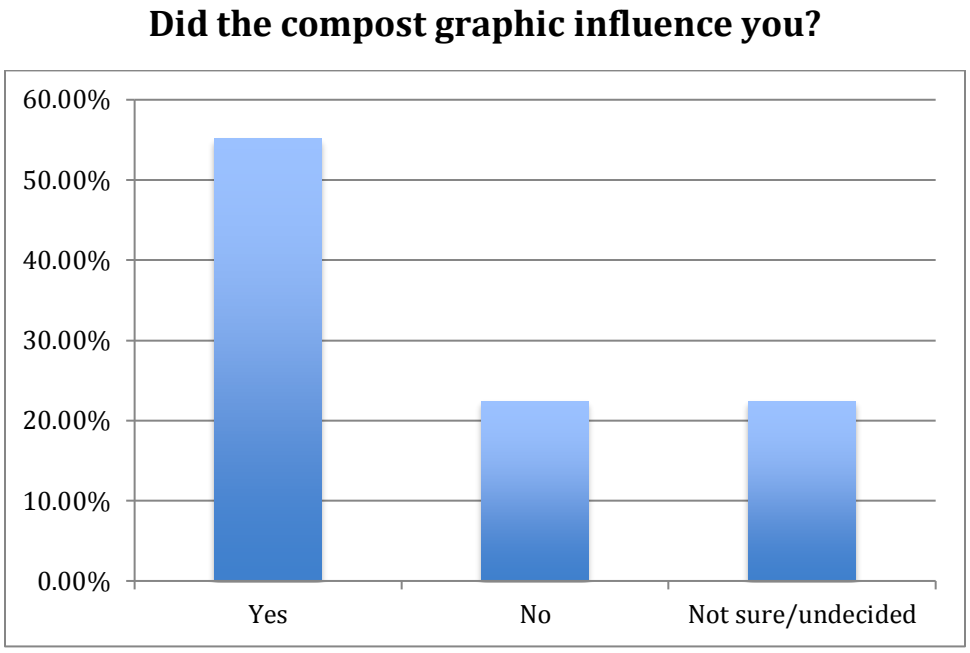

Figure 9: This graph displays if the experimental population (58 respondents) felt they were influenced by the incentive graphic they were shown prior to the survey.

Analysis

Now that I knew the responses to the individual survey questions, I felt there was a major research opportunity in comparing the responses between graphic incentive groups as well as demographic groups.

Graphic Influence

To simply test if participants could tell the information in the graphics made a difference in the way they responded to the survey, the final question (other than demographics) asked, "Were you influenced by the graphic prior to the survey?"

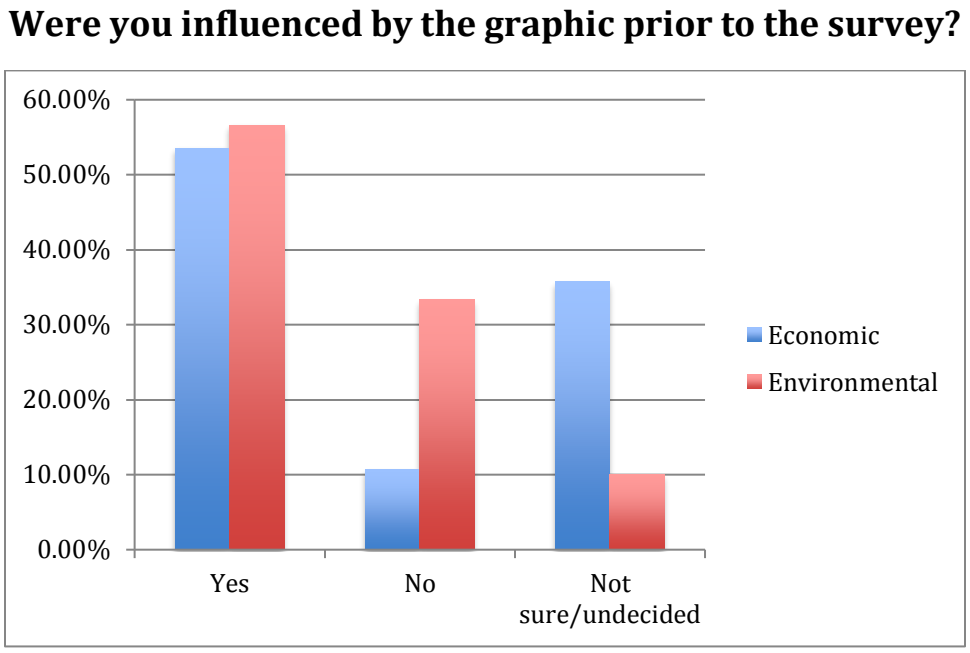

Figure 10: Differences between the incentive groups' responses to whether or not they felt the incentive graphics influenced them are graphed above. Roughly 55% of both claimed "Yes", the graphic influenced them.

Separated by graphic incentive, and excluding the control group, it seems that a larger portion of the environmental incentive group felt they were not influenced by their graphic, and a larger portion of the economic incentive group were undecided. However, a similar percentage of participants from both of these groups claim to have been influenced by their respective graphic, with a slight edge for environmental. But were they telling the truth? And how do their other responses compare to the control group?

Graphic Influence and If Composting is Important

For my first analysis, I wanted to test if the participants were actually being influenced like they said, or just responding that way because they felt they should. In order to test this hypothesis, I conducted a two tailed ANOVA analysis on the type of

graphic (control, economic, or environmental) and whether composting is an important action to them (Yes, Maybe, No).

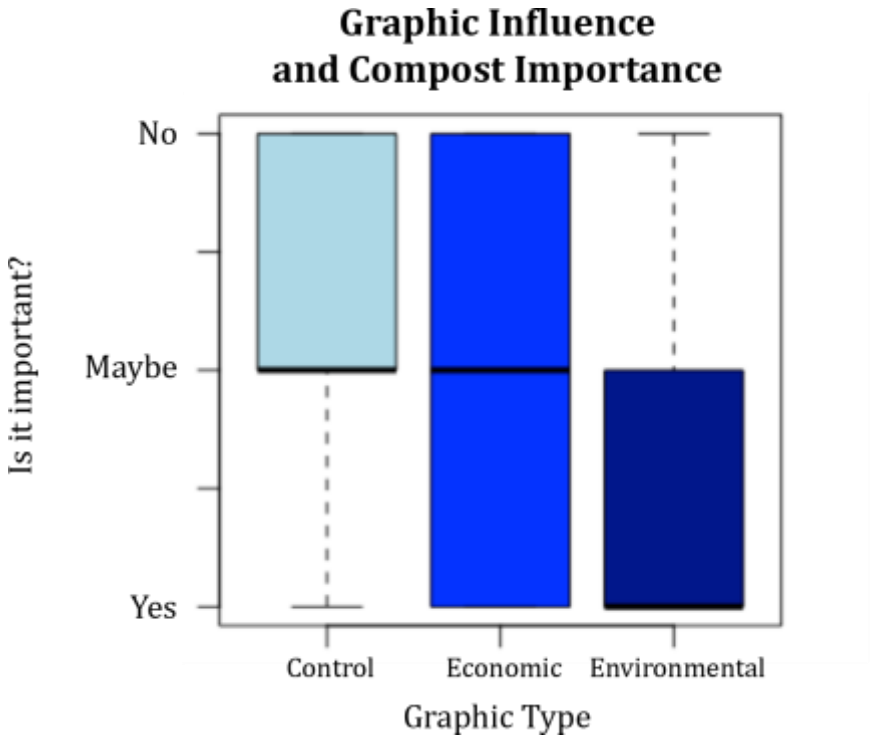

Figure 11: Compared averages of the three survey groups for the question "Do you consider composting an important action?" are graphed above.

Using an α level of 0.05, the statistical analysis graphed above had a p value of 0.0007, suggesting a strong significance for the test statistic. Consequently, the test statistic produced an F value of 12.3. Because the test statistic is much larger than the critical value ($F_{0.05;1,83} = 4.0$), we reject the null hypothesis and can conclude that there is a statistically significant difference between the type of graphic a participant viewed prior and whether or not they thought composting was important in the survey.

The answers to "Do you consider composting an important action?" were coded as 1 for "Yes", 2 for "Maybe", and "3" for "No". The control group was the least likely to place

importance on composting, with an average response of 2.03. The economic graphic appeared to be successful in proving importance of composting, dropping that group's average to 1.64. However, with an overall average of 1.36, and as seen in figure 11, it's clear that the environmentally focused graphic group was most likely to respond "Yes" to "Is composting an important action to you?"

Graphic Influence and Why Composting is Important

Of the control group participants that believed composting is important, only one respondent selected "It saves me money" as a reason for composting. All other respondents selected either "It conserves resources for the community" of "It helps the environment". 10 participants from the control group selected that they think composting is not important, and thus were not asked why they thought it was important. This suggests that without any information to legitimize composting behaviors, people are less likely to consider it important, and very rarely are aware of the financial benefits as well.

Of the economic graphic group, however, 15 of the 28 participants selected "It saves me money" in addition to "It conserves resources for the community" and/or "It helps the environment". One response even selected "It saves me money" as the only reason composting is important. Three respondents that were shown the economic graphic indicated that composting is not important, and hence were not shown the question asking why it is important. A simple, short graphic highlighting basic financial incentives for composting behaviors drastically increased the responses for saving money.

Of the environmental graphic group, only four respondents selected "It saves me money", each time alongside "It conserves resources for the community" and/or "It helps

the environment". The large majority of this group (24 out of 30, or 80%) selected "It conserves resources for the community" and "It helps the environment". Only one environmental graphic participant did not believe composting is important, so they were not shown the question asking why they think it is important.

Across all three groups, it's obvious that environmental benefit and resource conservation are the two more obvious benefits to composting. However, the financial incentive group demonstrated an interesting shift in belief most likely stemming from the graphic viewed prior to taking the survey.

Graphic Influence and Recycling

Even though my graphics are only focused on composting incentives, I hypothesized that there still may be an effect on participant's responses for questions about other household actions. For this hypothesis, I conducted a two tailed ANOVA analysis on the type of graphic (control, economic, or environmental) and whether recycling is an important action to them (Yes, Maybe, No).

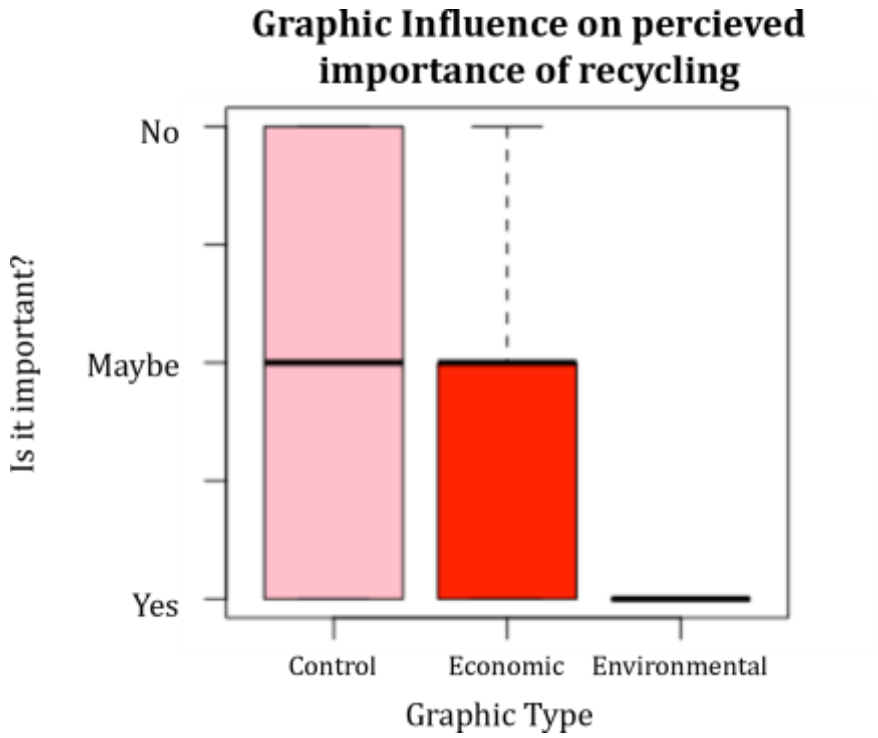

Figure 12: Compared averages of the three survey groups for the question "Do you consider recycling an important action?" are graphed above.

At an α level of 0.05, the statistical analysis graphed above had a p value of 0.0024, suggesting a significance for the test statistic. Consequently, the test statistic produced an F value of 9.9. Because the test statistic is much larger than the critical value ($F_{0.05;1,83}$ = 4.0), we reject the null hypothesis and can conclude that there is a statistically significant difference between the type of graphic a participant viewed prior and whether or not they thought recycling was important in the survey.

The answers to "Do you consider recycling an important action?" were coded as 1 for "Yes", 2 for "Maybe", and "3" for "No". Once again, the control group was the least likely to place importance on conservation action. That being said, recycling is a much more common practice, thus the average control response was a 1.52. Strangely enough, even without any information about recycling incentive, the economic graphic also appeared to

inspire importance of recycling, with an average 1.25. However, just like the responses for composting importance, the environmental incentive group had the lowest average response, at about 1.07.

Graphic Influence and Turning off the Lights

Composting and recycling importance followed a very similar pattern based on which graphic was taken prior to the survey. I find this understandable, as they are very similar actions. Both actions often require extra attention in the kitchen, especially when doing dishes or taking out the trash. My final analysis involves whether or not the incentive graphics influenced a participant's habits when it comes to turning off lights when leaving a room. Since turning off lights is a more constant, yet less effortful conservation action, I thought this might expose a different pattern. Just like for the other hypotheses, I conducted a two tailed ANOVA analysis on the type of graphic (control, economic, or environmental) and whether turning off the lights when leaving a room is an important action to them (Yes, Maybe, No).

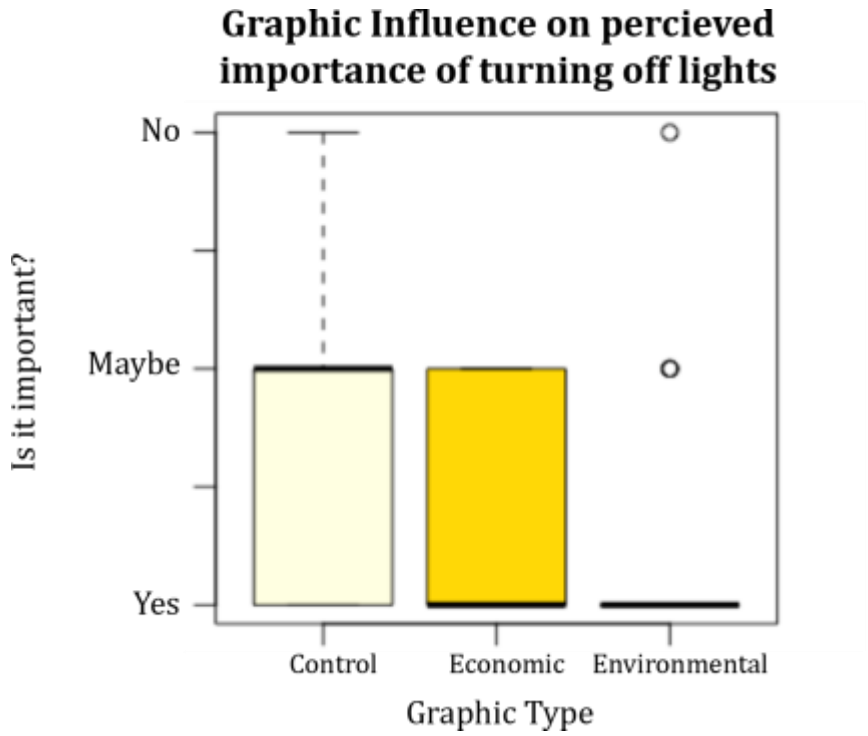

Figure 13: Compared averages of the three survey groups for the question "Do you consider turning off the lights when leaving a room an important action?" are graphed above.

Again, using an α level of 0.05, the statistical analysis graphed above had a p value of 0.0019, suggesting a significance for the test statistic. Consequently, the test statistic produced an F value of 10.25. Again, the test statistic is much larger than the critical value ($\boldsymbol{F}0.05;1,83 = 4.0$), so we reject the null hypothesis and can conclude that there is a statistically significant difference between the type of graphic a participant viewed prior to the survey and whether or not they thought turning off the lights when leaving a room is important.

The answers to "Do you consider turning the lights off when leaving a room an important action?" were coded as 1 for "Yes", 2 for "Maybe", and "3" for "No". Again, in similar fashion to the other questions concerning conservation action importance, the control group was the least likely to place importance on turning lights off, with an average

response of 1.72. Following suit, the economic graphic averaged 1.32, and the environmental graphic 1.18.

Demographic Influence

Numerous factors outside of the incentive graphics may influence a participant's response significantly. The conservation actions and demographics analyzed below are addressed in the same order as presented in the survey.

Age

The tests in this section focus on age and its potential influence on how often someone composts, recycles, or turns lights off. To a certain extent, I expected a positive relationship between conservation action and age, meaning that the older a person is, the more likely they are to care about preserving our Earth.

The age groups are coded as ages (1) for "18-29", (2) for "30-39", (3) for "40-49", and any respondents "50+" years as (4). Metrics for how often respondents participate in turning lights off, recycle, or compost are coded as (1) for "Always", (2) for "Most of the time", (3) for "Sometimes", (4) for "Rarely", and (5) for "Never".

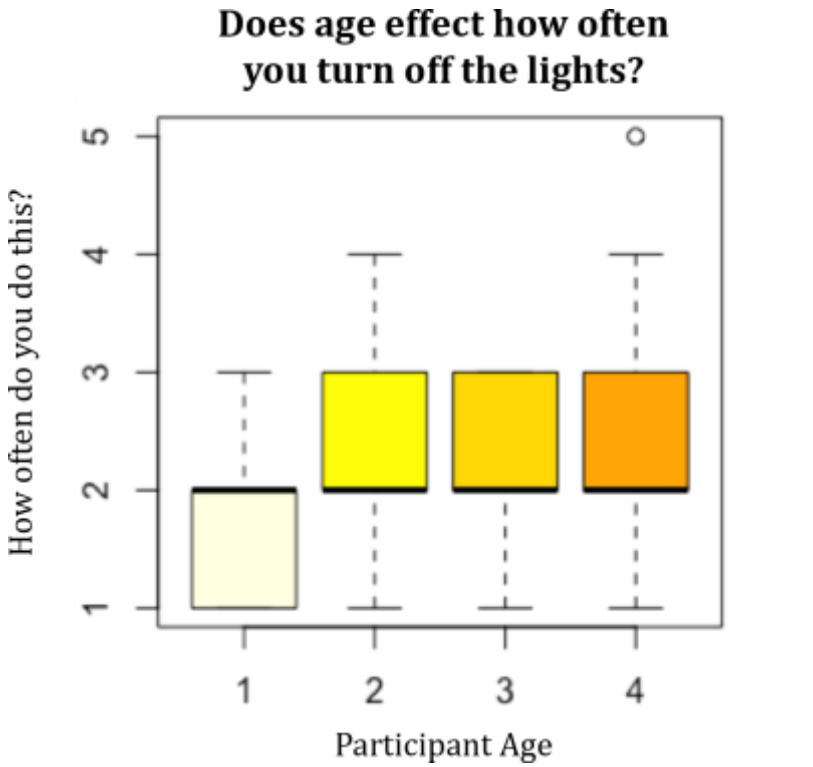

Figure 14: Compared averages of the four age groups for the question "Do you turn off the lights when leaving a room?" are graphed above. The age groups are coded as ages (1) for "18-29", (2) for "30-39", (3) for "40-49", and any respondents "50+" years as (4). Metrics for how often respondents participate in turning lights off, recycle, or compost are coded as (1) for "Always", (2) for "Most of the time", (3) for "Sometimes", (4) for "Rarely", and (5) for "Never".

For consistency, all demographic influence tests were also run at an α level of 0.05. The statistical analysis graphed above had a p value of 0.092, suggesting there is not significance for the test statistic at this level, though there would be at the nearest interval down (CI=90%, <0.1). The test statistic produced an F value of 2.9. The test statistic is smaller than the critical value ($\boldsymbol{F}0.05;1,83 = 4.0$), so we accept the null hypothesis and can conclude that there is not a statistically significant difference between a person's age and how often they turn off the lights when leaving a room. However, the p value still suggests insignificance of any relationship between these two variables.

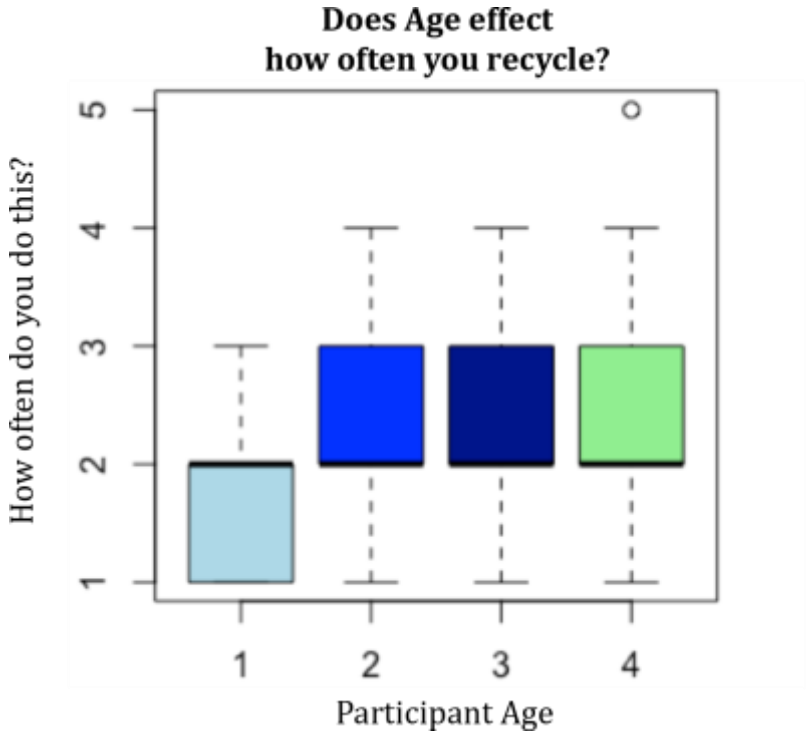

Figure 15: Compared averages of the four age groups for the question "How often do you recycle?" are graphed above. The age groups are coded as ages (1) for "18-29", (2) for "30-39", (3) for "40-49", and any respondents "50+" years as (4). Metrics for how often respondents participate in turning lights off, recycle, or compost are coded as (1) for "Always", (2) for "Most of the time", (3) for "Sometimes", (4) for "Rarely", and (5) for "Never".

At an α level of 0.05, the statistical analysis graphed above had a p value of 0.148, suggesting there is not significance for the test statistic at our desired CI level. The test statistic produced an F value of 2.13. The test statistic is smaller than the critical value ($\boldsymbol{F}0.05;1,83 = 4.0$), so, if the p value suggested a significant relationship, we would accept the null hypothesis and could conclude that there is not a statistically significant difference between a person's age and how often they recycle. Though, just like turning off lights, the p value still suggests insignificance of any relationship between these two variables.

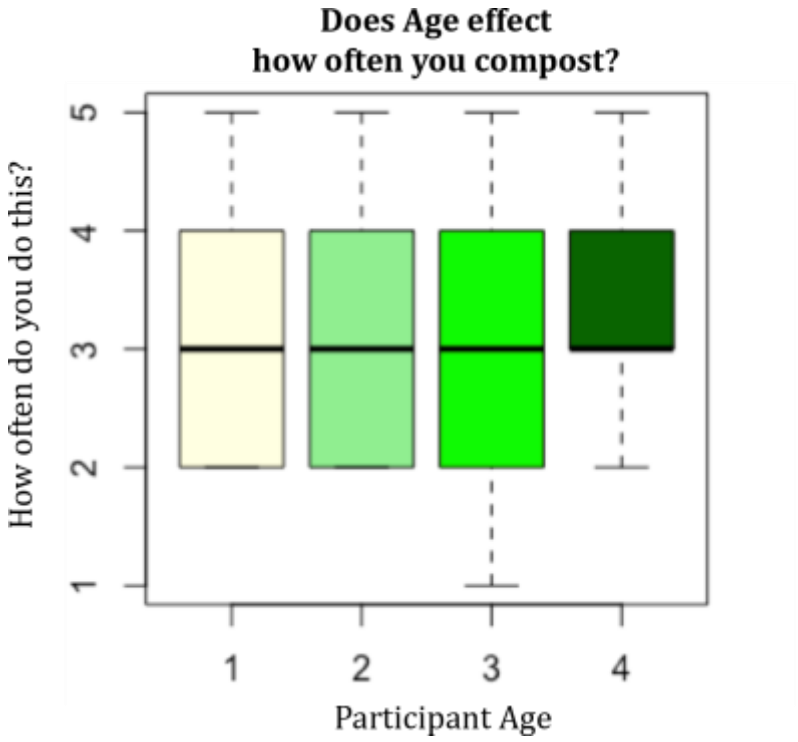

Figure 16: Compared averages of the four age groups for the question "How often do you compost?" are graphed above. The age groups are coded as ages (1) for "18-29", (2) for "30-39", (3) for "40-49", and any respondents "50+" years as (4). Metrics for how often respondents participate in turning lights off, recycle, or compost are coded as (1) for "Always", (2) for "Most of the time", (3) for "Sometimes", (4) for "Rarely", and (5) for "Never".

At an α level of 0.05, the statistical analysis graphed in figure 16 had a p value of 0.318, suggesting there is nowhere near significance for the test statistic at this level. The test statistic produced an F value of 1.011. The test statistic is smaller than the critical value ($\boldsymbol{F}0.05;1,83 = 4.0$), so we accept the null hypothesis and can conclude that there is not a statistically significant difference between a person's age and how often compost. However, more so than the previous two conservation actions, the p value suggests insignificance of any relationship between these two variables.

Education

Education levels and its potential influences on how often participants do any of the three conservation actions mentioned in the survey are tested in this section. Prior to the

analysis, I hypothesized a positive relationship between conservation action and education level, meaning that the more education someone has had, the more likely they are to believe in conserving for our planet.

The education levels are coded as (1) for “High School”, (2) for “Some College”, (3) for “Completed College”, (4) for “Advanced Degree”, and (5) for those who preferred not to answer. Only one respondent preferred not to answer this question. Metrics for how often respondents participate in turning lights off, recycle, or compost are coded as (1) for “Always”, (2) for “Most of the time”, (3) for “Sometimes”, (4) for “Rarely”, and (5) for “Never”.

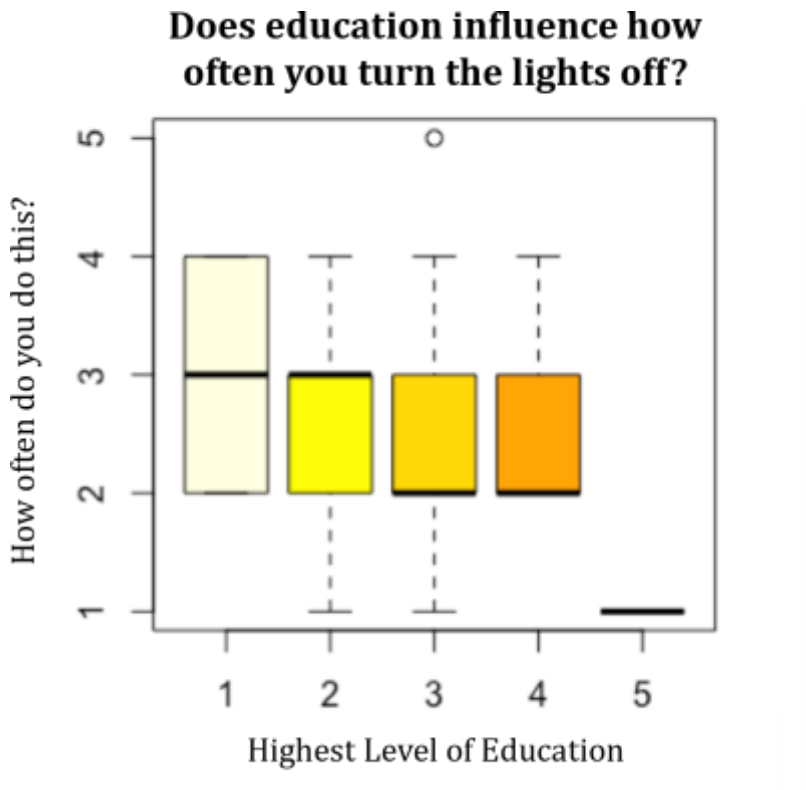

Figure 17: Compared averages of the education levels for the question “Do you turn off the lights when leaving a room?” are graphed above. The education levels are coded as (1) for “High School”, (2) for “Some College”, (3) for “Completed College”, (4) for “Advanced Degree”, and (5) for those who preferred not to answer. Only one respondent preferred not to answer this question. Metrics for how often respondents participate in turning lights off, recycle, or compost are coded as (1) for “Always”, (2) for “Most of the time”, (3) for “Sometimes”, (4) for “Rarely”, and (5) for “Never”.

Education level statistical analyses were also ran at an α level of 0.05. The statistical analysis graphed in figure 17 had a p value of 0.008, suggesting there is significance for the test statistic at this level. In addition, the test statistic produced an F value of 7.255. The test statistic is larger than the critical value ($\boldsymbol{F}0.05;1,83 = 4.0$), so we reject the null hypothesis and can conclude that there is a statistically significant relationship between a person's education level and how often they turn off the lights. It's clear from figure above that participants are more likely to turn lights off if they are more educated, though it should be noted that zero respondents with an advanced degree responded "Always", while at least one of "Some College" and "Completed College" responded "Always".

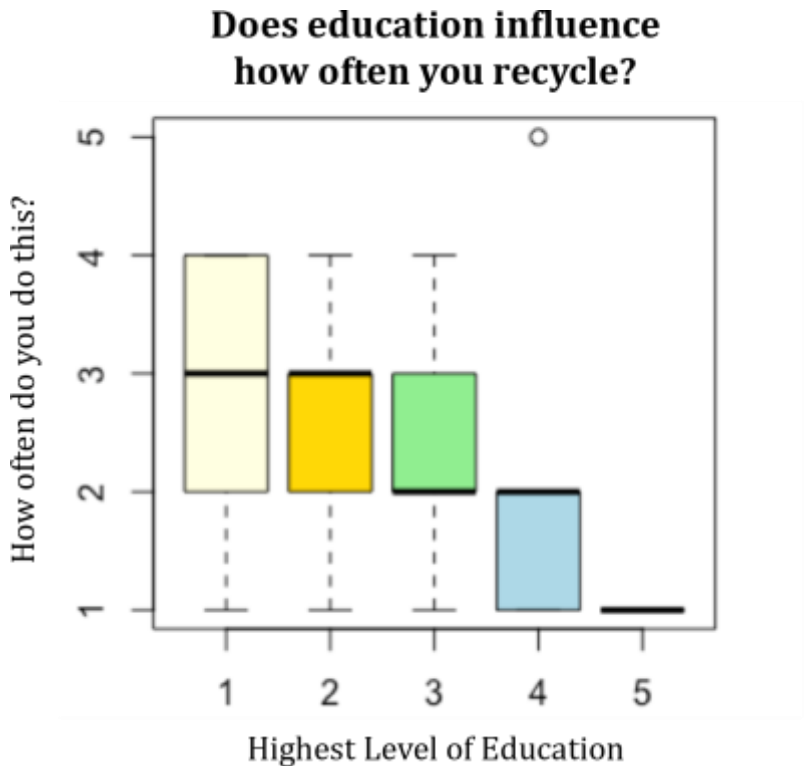

Figure 18: Compared averages of the education levels for the question "How often do you recycle?" are graphed above. The education levels are coded as (1) for "High School", (2) for "Some College", (3) for "Completed College", (4) for "Advanced Degree", and (5) for those who preferred not to answer. Only one respondent preferred not to answer this question. Metrics for how often respondents participate in turning lights off, recycle, or compost are coded as (1) for "Always", (2) for "Most of the time", (3) for "Sometimes", (4) for "Rarely", and (5) for "Never".

At an α level of 0.05, the statistical analysis graphed above had a p value of 0.003, suggesting there is significance for the test statistic at this level. Furthermore, the test statistic produced an F value of 9.258. Since the test statistic is larger than the critical value ($\boldsymbol{F}0.05;1,83 = 4.0$), we reject the null hypothesis and can conclude that there is a statistically significant relationship between a person's education level and how often they recycle. The obvious trend, as seen in figure 18 above, is that participants are more likely to recycle if they are more educated.

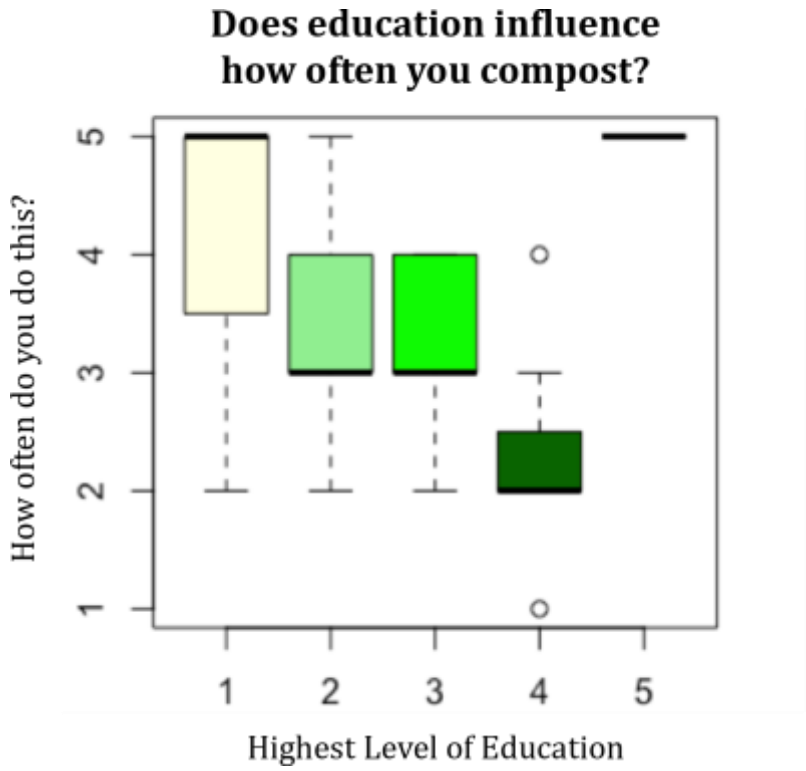

Figure 19: Compared averages of the education levels for the question "How often do you compost?" are graphed above. The education levels are coded as (1) for "High School", (2) for "Some College", (3) for "Completed College", (4) for "Advanced Degree", and (5) for those who preferred not to answer. Only one respondent preferred not to answer this question. Metrics for how often respondents participate in turning lights off, recycle, or compost are coded as (1) for "Always", (2) for "Most of the time", (3) for "Sometimes", (4) for "Rarely", and (5) for "Never".

At an α level of 0.05, the statistical analysis graphed above had a p value of 0.0002, suggesting there is significance for the test statistic at this level. Furthermore, the test

statistic produced an F value of 15.42. Since the test statistic is much larger than the critical value ($F_{0.05;1,83} = 4.0$), we reject the null hypothesis and can conclude that there is a statistically significant relationship between a person's education level and how often they compost. Once again, the figure above makes it clear that participants are more likely to compost if they are more educated.

Income

My final demographic analyses involve household income level and its potential influences on how often participants do any of the three conservation actions: turning off lights when leaving a room, recycling, and composting. Because these conservation actions can sometimes cost money at first (compost and recycling programs), I hypothesized a positive relationship between conservation action and household income level, meaning that the more money a household makes annually, the easier it is for them to participate in these actions.

The Annual Household Income Levels are coded as (1) for "Less than $50,000", (2) for "$50,000-$100,000", (3) for "More than $100,000", and (4) for those who preferred not to answer. Only two respondents preferred not to answer this question. Metrics for how often respondents participate in turning lights off, recycle, or compost are coded as (1) for "Always", (2) for "Most of the time", (3) for "Sometimes", (4) for "Rarely", and (5) for "Never".

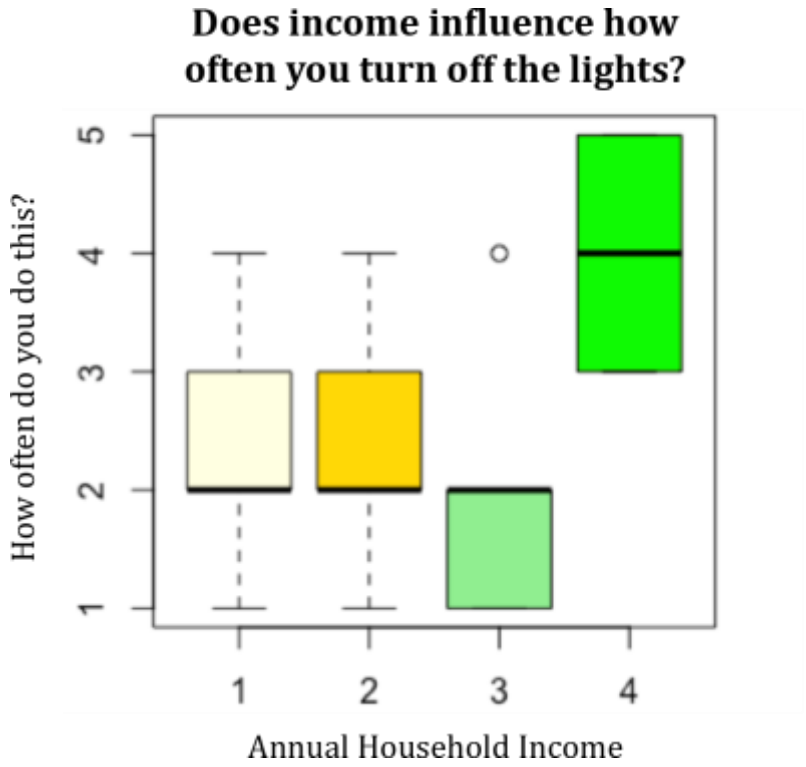

Figure 20: Compared averages of annual household incomes for the question "Do you turn the lights off when leaving a room?" are graphed above. The annual household income levels are coded as (1) for "Less than $50,000", (2) for "$50,000-$100,000", (3) for "More than $100,000", and (4) for those who preferred not to answer. Only two respondents preferred not to answer this question. Metrics for how often respondents participate in turning lights off, recycle, or compost are coded as (1) for "Always", (2) for "Most of the time", (3) for "Sometimes", (4) for "Rarely", (5) for "Never".

At an α level of 0.05, the statistical analysis graphed above had a p value of 0.432, suggesting there is no significance for the test statistic at this level. Even so, the test statistic produced an F value of 0.625 (much smaller than the critical value at $\boldsymbol{F}0.05;1,83 = 4.0$). Because of this, we would accept the null hypothesis and can conclude that there is not a statistically significant relationship between a person's education level and how often they turn off lights.

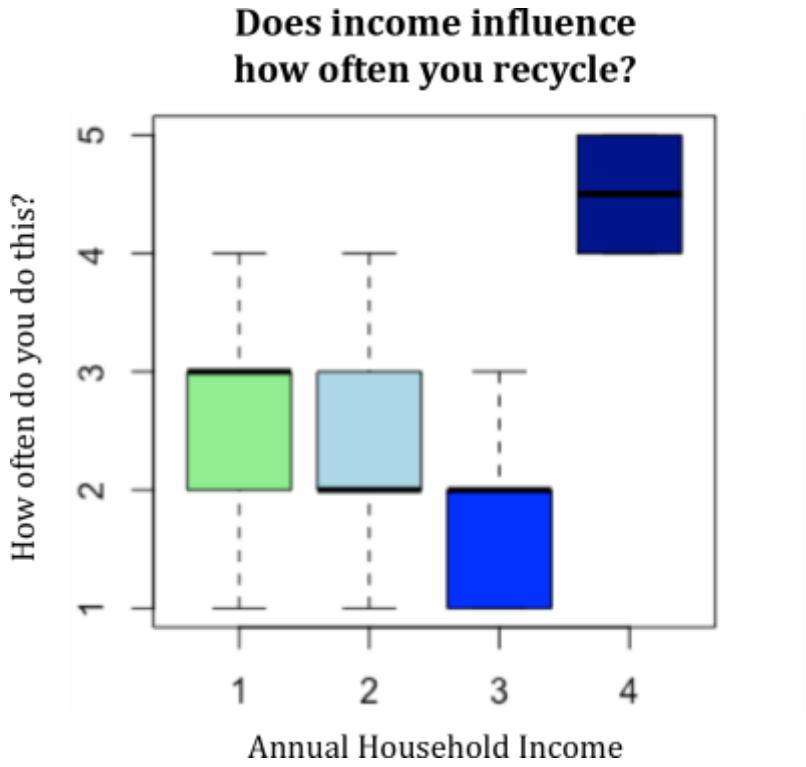

Figure 21: Compared averages of annual household incomes for the question "How often do you recycle?" are graphed above. The annual household income levels are coded as (1) for "Less than $50,000", (2) for "$50,000-$100,000", (3) for "More than $100,000", and (4) for those who preferred not to answer. Only two respondents preferred not to answer this question. Metrics for how often respondents participate in turning lights off, recycle, or compost are coded as (1) for "Always", (2) for "Most of the time", (3) for "Sometimes", (4) for "Rarely", (5) for "Never".

At an α level of 0.05, the statistical analysis graphed above had a p value of 0.156, suggesting there is not significance for the test statistic at this level. Regardless, the test statistic produced an F value of 2.05, and is larger than the critical value ($F_{0.05;1,83} = 4.0$), so we would accept the null hypothesis and conclude that there is a not statistically significant relationship between a person's income and how often they recycle. While a slight relationship may be visible based on the compared averages in figure 21, it is not strong enough to be statistically significant at our test confidence interval.

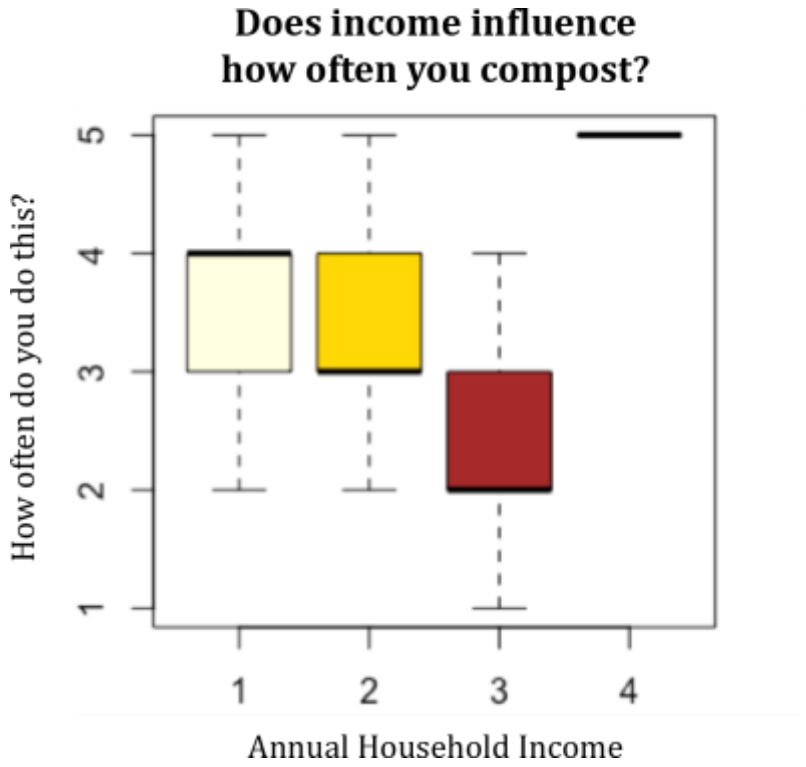

Figure 22: Compared averages of annual household incomes for the question "How often do you compost?" are graphed above. The annual household income levels are coded as (1) for "Less than $50,000", (2) for "$50,000-$100,000", (3) for "More than $100,000", and (4) for those who preferred not to answer. Only two respondents preferred not to answer this question. Metrics for how often respondents participate in turning lights off, recycle, or compost are coded as (1) for "Always", (2) for "Most of the time", (3) for "Sometimes", (4) for "Rarely", (5) for "Never".

At an α level of 0.05, the statistical analysis graphed above had a p value of 0.006, suggesting there is significance for the test statistic at this level. Consequently, the test statistic produced an F value of 7.94. Since the test statistic is larger than the critical value ($\boldsymbol{F}0.05;1,83 = 4.0$), we reject the null hypothesis and can conclude that there is a statistically significant relationship between a person's income and how often they compost. Most likely, as depicted by figure 22 above, participants will compost more if they have a higher annual household income.

Discussion

This section seeks to understand the analysis of the survey responses and draw conclusions about composting and influencing conservation action from that understanding. It also discusses possible biases and outside influencers that could not be observed from the responses provided.

Did the incentive graphics make a difference?

Of the 58 respondents that were shown an incentive graphic, either economic or environmental, 32 of them (or %55) responded that they were influenced to begin composting as a result. This reported influence was nice to see, but I was also aware of the possibility that participants were just saying yes to whether they were influenced because they it felt "right", or because they felt they wasted my time if they said they were not influenced and would rather do the "polite" thing (Asch, 1955). Of course, the most polite thing they could have done was answer the survey as honestly as possible, but most people don't consider this.

Yet, after running ANOVA analyses between the responses for "If" and "Why" composting is important and the type of graphic—control, economic, or environmental—there was significant statistical evidence that the graphics were affecting the averages of responses (Gobo, 2014). For both "Do you consider composting an important action?" and "Why is composting important to you?", participants that were shown either graphic were much more likely to answer in favor of compost. This means that participants were most likely telling the truth about being influenced by the graphics, and strengthens the ensuing analyses based on those responses.

This aligns well with theories presented by several studies cited in this thesis involving public education campaigns: PEC's are significantly effective for easier conservation actions, such as turning off lights, recycling, or **composting** (Leary, Asch, Stern).

Conservation Incentive Spillover

Not only are the compost incentive graphics positively influencing respondent's feelings about composting, but they also appear to be positively influencing feelings about similar conservation actions. ANOVA analyses between "Do you consider…. an important action?" for turning off lights and recycling, respondents who were shown a compost incentive graphic, either economic or environmental, were both significantly more likely than the control group to respond, "Yes".

This "spillover effect" is a term of my own creation, and not as well observed or documented by the field like most aspects of this project. Either way, it can certainly be argued as appropriate, since the information about the economic and environmental savings of compost behavior seem to be inspiring the same feelings about other conservation actions.

Did demographics matter?

The influence of my graphics was more significant than expected, but that doesn't mean other factors don't also play a role. After reviewing ANOVA analyses between questions asking participants "How often" they participate in conservation and their age, education, and income, not all demographics had the same amount of influence. As far as

age, none of the ANOVA analyses produced significant results. For income, the only significant result was between how often participants compost and higher income, most likely due to increased cost for materials and waste management plans. Education, however, had significant results across the board.

Conclusion

"The worth of education must now be measured against the standards of decency and human survival--the issues now looming so large before us in the twenty-first century. It is not education, but education of a certain kind, that will save us" (Orr, 2004). I felt this quote, from Orr's *Earth In Mind*, epitomizes the distinction of different education types and the situations in which they would be successful. A key point of this thesis is the success of public education campaigns for improving tendencies for conservation behaviors that are *easy*, such as municipal recycling and composting. As Orr stated, "education of a certain kind" is what will save us. However, none of the research puts incentive strategies in a head-to-head impact comparison via a public education campaign incentive graphic, as done in this thesis.

Money or Morality?

While there was a separation between the control group responses and the graphic group responses (both for more conservation action importance), there was also a separation between the two graphic group responses themselves. When it comes to which incentive graphic would have more influence on participant's attitude of conservation action, and especially composting, it was clear from my study that the environmental

graphic had a larger positive influence. That's right, morality won the fight! The remainder of this subsection explains how.

The easiest metric for conservation incentive influence are fluctuations in answers between graphic groups for the questions concerning general importance of conservation incentive, especially the question "Do you consider composting an important action?", since the graphics are focused solely on composting incentives. As mentioned in the analysis, answers were coded as 1 for "Yes", 2 for "Maybe", and "3" for "No".

The economic graphic appeared to be successful in proving importance of composting, with an average response 1.64: a solid improvement from the control group's 2.03 average. Neither was near the average of the environmental incentive influence, though, with an average of 1.36. Back up these averages with an ANOVA analysis F value of 12.5 and <.05 p value, the significance of this analysis only increases.

The spillover effects also support the environmental incentive as most influential. Recycling's control group average for "Do you consider recycling an important action?" is a 1.52. This is a considerably, and understandably, much lower baseline to improve from than composting. Recycling and programs endorsing it have existed popularly for much longer than anything involving composting. For this reason, I had low expectations for the amount of influence a quick graphic could have on something as engrained as recycling. Yet, the economic graphic still appeared to inspire importance of recycling, with an average 1.25. Lower still, at about 1.07, the environmental incentive group almost unanimously agreed that recycling is important to them. The ANOVA analysis between these responses reported an F value of 9.9 and <.05 p value, again suggesting strong significance of this relationship.

Similarly to two analyses just discussed, the importance of turning lights off increased from the control group to economic incentive group, and further still to the environmental group. Spillover from the financial incentive graphic dropped the average from 1.72 (control group average) to 1.32. The environmental graphic was most successful once again, with an average of 1.18. Finally, The ANOVA analysis between these responses reported an F value of 10.25 and <.05 p value, yet again suggesting strong significance of this relationship.

Education's Role

For ANOVA analyses between how often participants were composting, recycling, and turning off lights and their highest level of education, all three had test statistics larger than the critical value (F>4.0) and p values less than 0.05, suggesting significance of the relationship observed. In each case, a participant with a higher education level is more likely to partake in conservation actions more often.

This is a good sign for my project, which relies on simple educational graphics to influence large amounts of change. The evidence suggesting education is the most effective influencer of change for easier examples of conservation action legitimizes the argument for PEC's, and especially PEC's focused on environmental benefits (Leary, 2012).

A famous quote by Gus Speth in an interview with Steve Curwood concludes this section. I believe it succinctly contextualizes the purpose of my project and others like it:

> "I used to think that top environmental problems were biodiversity loss, ecosystem collapse and climate change. I thought that thirty years of good science could address these problems. I was wrong. The top environmental problems are *selfishness*, *greed* and *apathy*, and to deal with these we need a cultural and spiritual transformation. And we scientists don't know how to do that."

Further Research

After all the background research, case studies on San Francisco and Denver's respective compost programs, and my own survey study in downtown Denver, I believe appealing to an urban society's environmental concerns is a more effective strategy for transitioning residents toward more conservation action. The statistics and data supporting this belief are significant, and incorporate strategies proven in several credible sources cited throughout this thesis.

Now that we know environmental incentives are better for facilitating composting and other conservation actions in urban environments (or at least Denver, CO), there are many other directions this research could go from here.

Why Environmental Incentives?

From a psychological perspective, I want to know ***why*** environmental incentives were more successful. Perhaps, it has to do with prior education about the benefits of composting, recycling, or turning off lights. Most likely, when someone has been told about the benefits of these conservation actions prior to my financially focused composting benefits graphic, the focus was on the benefits to the environment. This is likely why the majority of the control group responded with "It helps the environment" when asked why composting is important.

Another option could be credibility of the information in the graphics. While all of the statements are true and cited, participants still may not be as likely to believe that recycling food waste and paper products (a.k.a. composting) can save them money, as they

are that it helps the environment. There are several possibilities, enough for another thesis in itself.

Policy and Influence

In my opinion, the more pressing question for further research would be the best ways to involve environmental incentives in public education campaigns in Denver. My study proved, across a fairly diverse group of people, that environmental incentives in brief informational graphics can make a significant difference in how people think. Now we need to delve deeper in PEC's and how to best distribute that information.

Appendix

Survey Format

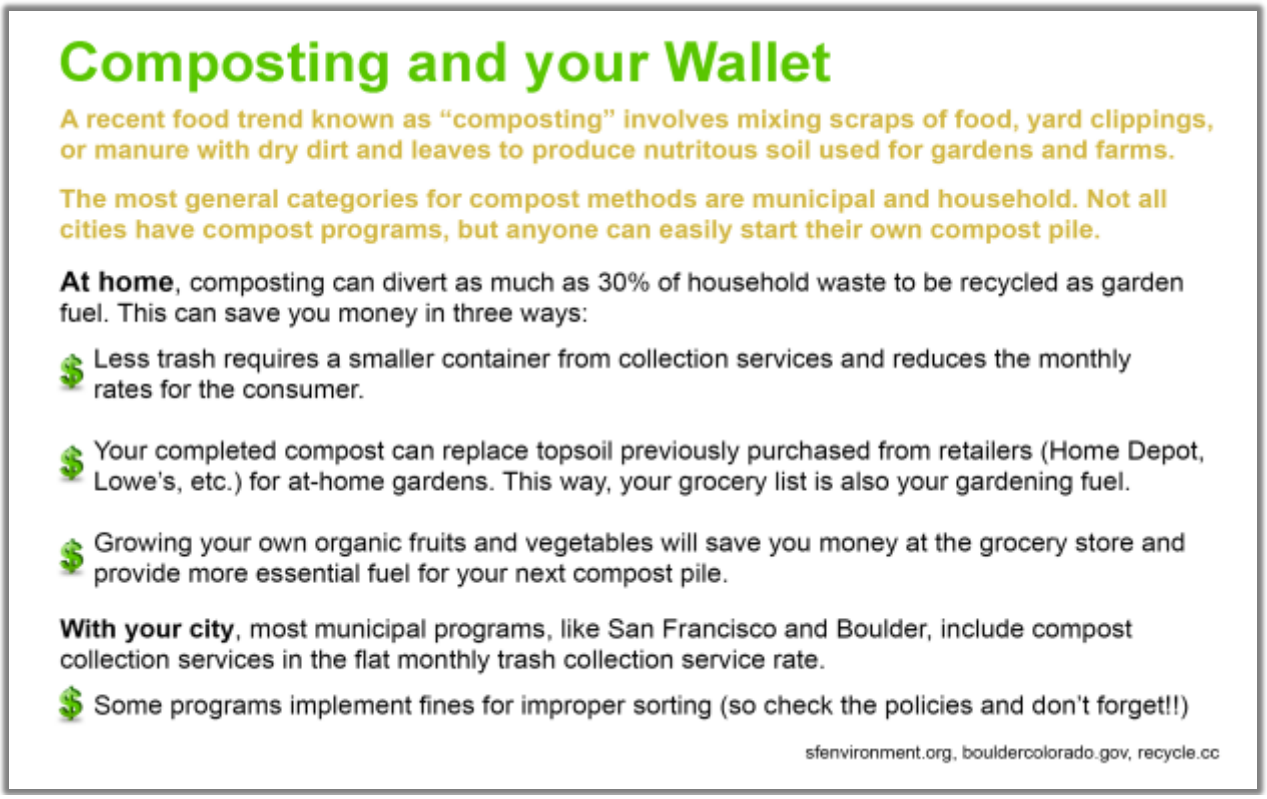

Figure 1: The economic/financial incentive graphic viewed by one third of participants prior to taking my survey uses as much numerical terminology and financial symbols as possible. Everything from the dollar sign bullet points to green and gold writing attempts to make participants think "Money".

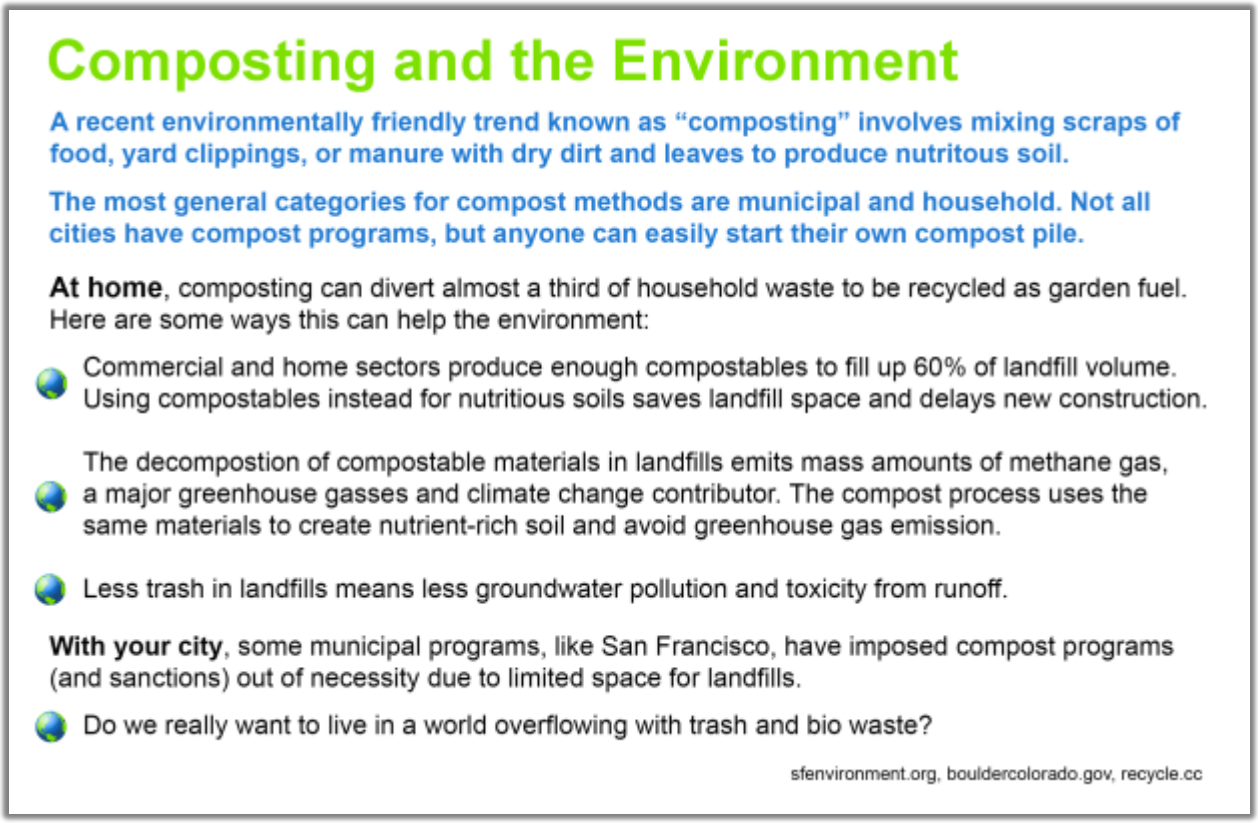

Figure 2: The ethical/environmental incentive graphic viewed by a third of the participants prior to the survey focuses on the ecological benefits of composting processes the positive impacts that means for humans. Little Earth bullet points and nature colored writing attempt to make participants think "Morality".

HOUSEHOLD BEHAVIOR SURVEY

Q1 I have completed and fully understand the consent form I signed upon agreement to participate in this study.
- ❍ Yes

Q2 You have been selected for the control group, and thus do not receive a graphic prior to answering the survey. To continue, select "I understand".
- ❍ I understand.

Q3 Consider the graphic below. Once you feel you understand the benefits of composting, select the bubble alongside to proceed to the brief survey.
- ❍ Image:Thesisgraphicfinancial

Q4 Consider the graphic below. Once you feel you understand the benefits of composting, select the bubble alongside to proceed to the brief survey.
- ❍ Image:Thesisgraphicsenv

Q5 Do you turn off the lights when you leave a room?
- ❍ Always
- ❍ Most of the time
- ❍ Sometimes
- ❍ Rarely
- ❍ Never

Q6 Do you consider turning off the light when leaving a room an important action?
- ❍ Yes
- ❍ Maybe
- ❍ No

Display This Question:
If Do you consider turning off the light when leaving a room an important action? Yes Is Selected
Or Do you consider turning off the light when leaving a room an important action? Maybe Is Selected

Q7 Why is turning off the lights important? (Check all that apply)
- ❑ It saves me money.
- ❑ It conserves resources for the community.
- ❑ It helps the environment
- ❑ Other (please list) _____

Q8 How often do you recycle?

- ❍ Always
- ❍ Most of the time
- ❍ Sometimes
- ❍ Rarely
- ❍ Never

Q9 Do you consider recycling an important action?

- ❍ Yes
- ❍ Maybe
- ❍ No

Display This Question:

If Do you consider recycling an important action? Yes Is Selected

Or Do you consider recycling an important action? Maybe Is Selected

Q10 Why is recycling important to you? (check all that apply)

- ❑ It saves me money.
- ❑ It conserves resources for the community.
- ❑ It helps the environment.
- ❑ Other (please list) _____

Q11 How often do you compost?

- ❍ Always
- ❍ Most of the time
- ❍ Sometimes
- ❍ Rarely
- ❍ Never

Q12 Do you consider composting an important action?

- ❍ Yes
- ❍ Maybe
- ❍ No

Display This Question:

If Do you consider composting an important action? Yes Is Selected

Or Do you consider composting an important action? Maybe Is Selected

Q13 Why is composting important to you? (Check all that apply)

- ❑ It saves me money.
- ❑ It conserves resources for the community.
- ❑ It helps the environment.
- ❑ Other (please list) _____

Q14 Did the provided graphic influence you to begin composting, or compost more than you did previously?

- ❍ Yes
- ❍ No
- ❍ Not sure/undecided

Q15 What is your age?

- ❍ 18-29
- ❍ 30-39
- ❍ 40-49
- ❍ 50+

Q16 What is your highest level of education?

- ❍ High School
- ❍ Some College
- ❍ Completed College
- ❍ Advanced Degree
- ❍ Prefer not to answer

Q17 What is your annual household income?

- ❍ Less than $50,000
- ❍ $50,000-$100,000
- ❍ More than $100,000
- ❍ Prefer not to answer

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