INCREASING CURBSIDE RECYCLING RATES USING COMMUNITY BASED SOCIAL MARKETING

by

Manuel R. Abarca IV

An Abstract
Of a thesis submitted in partial fulfillment of the requirements for the degree of Master of Science in the Department of Safety Sciences University of Central Missouri

November 27, 2012
ABSTRACT

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This study examines the differences of implementation of Dr. Doug McKenzie-Mohr’s community based social marketing techniques to increase curbside recycling rates within targeted socioeconomic neighborhoods within the greater Kansas City, Missouri area. By examining the implementation of a three phase method coupled with a four tiered tracking mechanism, projected growth and actual growth will be examined. Each phase developed using the community based social marketing techniques. This method will provide a metric, displayed in percentage form, which can be compared from baseline data collected to each phase, validated through the tracking structure.
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This project was established through the researcher’s employment at Bridging the Gap. Researcher was in charge of managing all research and extrapolating figures from raw data. Thus all data and feedback was conducted as part of employment, yet agreement to further research the methods was granted by this organization to fulfill graduate requirements. Additionally, much aid was provided by key members of the thesis committee for the completion of this project. The data used in this study was aggregate, unidentified data provided for evaluation by Bridging the Gap and therefore not subject to human subjects review.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>LIST OF TABLES</th>
<th>vii</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIST OF MAPS</td>
<td>viii</td>
</tr>
<tr>
<td>CHAPTER 1: NATURE AND SCOPE OF THE STUDY</td>
<td>1</td>
</tr>
<tr>
<td>BACKGROUND</td>
<td>1</td>
</tr>
<tr>
<td>SIGNIFICANCE OF PROJECT</td>
<td>1</td>
</tr>
<tr>
<td>STATEMENT OF THE PROBLEM</td>
<td>1</td>
</tr>
<tr>
<td>PURPOSE OF STUDY</td>
<td>2</td>
</tr>
<tr>
<td>HYPOTHESIS</td>
<td>4</td>
</tr>
<tr>
<td>ASSUMPTIONS &amp; LIMITATIONS</td>
<td>5</td>
</tr>
<tr>
<td>DEFINITION OF TERMS &amp; ACRONYMNS</td>
<td>6</td>
</tr>
<tr>
<td>CHAPTER 2: REVIEW OF LITERATURE</td>
<td>7</td>
</tr>
<tr>
<td>CHAPTER 3: METHODOLOGY</td>
<td>30</td>
</tr>
<tr>
<td>Selecting Behaviors</td>
<td>31</td>
</tr>
<tr>
<td>Identifying Barriers &amp; Benefits</td>
<td>32</td>
</tr>
<tr>
<td>Developing a Strategy</td>
<td>34</td>
</tr>
<tr>
<td>Piloting</td>
<td>37</td>
</tr>
<tr>
<td>Implementation &amp; Evaluation</td>
<td>37</td>
</tr>
<tr>
<td>CHAPTER 4: RESULTS</td>
<td>39</td>
</tr>
<tr>
<td>CHAPTER 5: DISCUSSION</td>
<td>53</td>
</tr>
<tr>
<td>REFERENCES</td>
<td>61</td>
</tr>
<tr>
<td>ADDENDUM</td>
<td>63</td>
</tr>
</tbody>
</table>
## LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Neighborhood Breakdown</td>
<td>30</td>
</tr>
<tr>
<td>2. Neighborhood Comparison Chart</td>
<td>59</td>
</tr>
<tr>
<td>3. Phased Implementation Graph</td>
<td>59</td>
</tr>
<tr>
<td>4. Neighborhood Increase Graph</td>
<td>60</td>
</tr>
<tr>
<td>5. Addendum Neighborhood Comparison Chart</td>
<td>64</td>
</tr>
</tbody>
</table>
# LIST OF MAPS

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Neighborhood F Baseline Map</td>
<td>64</td>
</tr>
<tr>
<td>2. Neighborhood F Bins Distributed Map</td>
<td>64</td>
</tr>
<tr>
<td>3. Neighborhood F Final Tracking Map</td>
<td>64</td>
</tr>
<tr>
<td>4. Neighborhood G Baseline Map</td>
<td>65</td>
</tr>
<tr>
<td>5. Neighborhood G Bins Distributed Map</td>
<td>65</td>
</tr>
<tr>
<td>6. Neighborhood G Final Tracking Map</td>
<td>65</td>
</tr>
</tbody>
</table>
CHAPTER ONE – THE PROPOSAL

Background

A long standing relationship between the City of Kansas City, MO (KCMO) and the local leading environmental non-profit in Kansas City, Bridging the Gap, Inc. resulted in a contract to increase curbside recycling rates throughout targeted neighborhoods within the greater metropolitan area. In an effort to alter the previous results, Bridging the Gap, (BTG) decided to use a new strategic method for curbing behavior by using Dr. McKinsey-Mohr’s theory of community based social marketing.

Significance of Project

This project, if implemented correctly, could be used at a more comprehensive level to increase Kansas City, Missouri’s curbside recycling rates throughout all neighborhoods. This increase in recycling rates would justify the curbside recycling programs necessity and aid political leaders from alleviate skepticism for implementing similar programs nationwide.

Statement of the Problem

The Department of Solid Waste and the City Council identified key areas needing improvement in curbside recycling. Through analysis of neighborhood curbside recycling rates, it was found that all neighborhoods do not recycling at the KCMO average neighborhood recycling rate of 30% of their residents. The Department of Solid Waste and the City Council lacked the plan to increase the rates to reflect the national recycling rate of 34% or the city-wide average of 30%.
Purpose of the Study

This project is to analyze the history of curbside recycling in the Kansas City greater metropolitan area and the theory of community based social marketing’s use to increase participation. Since the establishment of the KCMO curbside recycling program, participation has been low creating a challenging validation of the program. To boost the low participation rates, the KCMO Department of Solid Waste tested several individual incentive programs including: free bin giveaways, educational campaigns and neighborhood-wide incentive programs to community organizations promoting the importance of increased recycling rates. These programs yielded low returns and did not justify the initial investment to the return on investment. The city was left with a program that citizens advocated for but a predominant amount of the city’s population was not using. BTG and the KCMO department of Solid Waste initiated the concept of using the community based social marketing (CBSM) methods, outlined by Dr. Doug McKenzie-Mohr, to increase targeted recycling rates.

CBSM focused on five strategies: (1) identification of a desired behavior; (2) identification of a baseline, recognizing the lag time between behavior and environmental impact; (3) research of barriers and benefits of the behavior for the target population; (4) create and implement a strategy to influence the behavior; and (5) measure outcomes relative to the baseline and then evaluate the results.

BTG constructed its methodology using the CBSM techniques. First, they identified the outlined desired behavior; to increase the curbside recycling participation in targeted neighborhoods within KCMO. Second, the CBSM strategy required identification of the baseline. Typically the KCMO Department of Solid Waste (KCMO
DoSW) would count the number of recycling bins on a few streets, and then extrapolate a rough estimate of a subdivision. These numbers were found to be incomprehensive therefore BTG decided that the tracking of every street within the defined neighborhoods was necessary to capture a true curbside recycling rate.

Third, BTG and the KCMO DoSW identified, through community engagement at neighborhood association meetings, that several barriers existed within these communities and that certain incentives would encourage the desired behavior. The residents barriers involved lack of financial resources to purchase the nine-dollar KCMO curbside recycling bin inadequate access to the location where recycling bins were sold, insufficient education of acceptable materials accepted in the curbside recycling program and overall solid waste rules and regulations. The general apathy for participation and lack of care for overall community appearance was a major barrier to overcome. Survey engagement identified some incentives to encourage the desired behavior such as offering and delivering a free curbside recycling bin directly to residents and green community events that raise awareness around sustainability. Also community block leaders would be responsible for the success of an individual block by engaging educational methods through door-to-door conversations, presentations at neighborhood meetings and competitions amongst households for monetary incentive. Providing dumpsters for community clean up is an example of the monetary incentives that would be for neighborhood associations.

Fourth, BTG and KCMO established a strategy for direct community engagement within each neighborhood determined by the KCMO city-council as BTG’s focus areas. which was to first conduct a thorough street by street baseline data collection, literately
counting and recording which households recycled and which did not. Next would be to conduct a literature drop to all residents within defined neighborhoods seeking requests for free recycling bins and delivering them of recycling bins to resident’s doors. Neighborhood tracking would be conducted for a comparative analysis to the baseline statistics, identifying new recyclers. Then staff would conduct door-to-door engagement focusing on those houses who were not already recycling seeking direct input from all residents within the defined neighborhoods; conduct a neighborhood tracking and an additional distribution of recycling bins; and finally analysis of the data compared to the baseline information and pre-engagement data for best impact of each strategy within the defined neighborhoods. BTG and the KCMO DoSW decided this effort would truly focus on individual interaction, unlike previous attempts to increase recycling rates; providing the most direct impact to change behavior to our desired outcome. Finally, BTG and the KCMO DoSW recorded the data to present to neighborhood associations, community groups and city-council members to validate the success of the program.

**Hypothesis**

H₀₁-Community based social market will increase curbside recycling in all neighborhoods to city wide average 30%.

H₁₁-Through the use of the community based social marketing strategies, the curbside recycling rates in the defined neighborhoods within the greater Kansas City, Missouri area will increase by at least 4%.
Assumptions

Assumption 1 – That increased rates of recycling are due to one portion of BTG’s implementation of the CBSM techniques only.

Assumption 2 – That residents received only curbside recycling bins from BTG’s program for an increase in the rates rather than an act of their own accord.

Assumption 3 – That possible participation of some residents was due to influence and the theory of “group think” when making neighbors aware of who was and wasn’t recycling on their blocks.

Assumption 4 – That recycling rates collected post-engagement will be sustained without continual infiltration within these neighborhoods.

Limitations

Limitation 1 – Do to the lack of individual consent, survey data is not able to be analyzed fully and included within this study.

Limitation 2 – Residents could potentially receive curbside recycling bins outside of the program.

Limitation 3 – There is potential for not capturing everyone who is recycling due to the availability of a recycling community drop-off center located in close proximity of several of these neighborhoods.

Limitation 4 – Tracking errors could occur by missing a few recycling bins during the data collection/tracking process.

Limitation 5 – Other factors beyond the control of the researcher including weather and availability of resources to collect/track multiple neighborhoods.
Limitation 6 – There is a possibility that curbside recycling bins were picked up by residents immediately after being emptied and thus not included in the weekly rate.

Definition of Terms

Curbside Recycling Program – a recycling effort where residents place materials at their curb and the materials are removed by a waste hauler, similar to trash collection.

Community Based Social Marketing – a strategy that uses social science, psychology, marketing and the scientific method to influence behavior to a greater social good.

A Divisible Behavior- A behavior response which spurs additional action to the initial action, further dividing problems into more areas that must be addressed.

End-State Behaviors- behaviors that produce the desired environmental outcome

Acronyms and Abbreviations

KCMO-Kansas City, Missouri

CBSM-Community Based Social Marketing

BTG-Bridging the Gap

KCMO DoSW- Kansas City, Missouri Department of Solid Waste

CRP-Curbside Recycling Program

EPA-Environmental Protection Agency
CHAPTER TWO – REVIEW OF THE RELATED LITERATURE

This two part analysis will set the tone for further analyzing potential differences in curbside recycling rates when the community based social marketing—further known as CBSM—tactics are used. It is important to understand the history of Kansas City, Missouri’s metropolitan-KCMO- area and curbside recycling program, it will establish baseline information as to comparative data later in the study. Understanding the development and implementation of the curbside recycling program is important to deduce any conclusions relating to the effects of the CBSM tactics.

The second portion of this literature review will be a full analysis of the community based social marketing techniques described in Dr. Doug McKenzie-Mohr’s research. These tactics were used based on prior research of similar programs of environmental advocacy.

History of Curbside Recycling in KCMO

Curbside recycling first became a pressing issue in the 1990’s when an accomplished lawyer and Vietnam War protestor named Robert Mann decided to take on this community issue and initiated the first proposal for curbside recycling to the city of Kansas City (Maggs, 2000). After gathering enough signatures to place the issue on the ballot, voters decided not to move forward. The ballot measure failed by a 4% margin but Mann did not give up (Maggs, 2000). Mann reflects on the fact that the initiative almost had a certain doomed fate, politically because it shared the ballot with an initiative to create a new landfill somewhere within KCMO causing voter confusion and paradoxically voting against recycling (Maggs, 2000). While curbside recycling had politically failed, it was not dead.
In 1991, Mann and a few other supporters of the recycling cause started a non-profit called Bridging the Gap with the intent to raise awareness about the issue of recycling (Bogue, 2012). Mann organized volunteers and financial capital to open the first recycling center in KCMO through his support of BTG.

BTG and Mann did not give up their initial cause of curbside recycling and in 1992 decided to take another stance and rally support for another ballot measure. This time, the initiative took cues from several other national efforts where a fee was assessed and the profits then returned through public incentives. The newly proposed plan was similar to the previously mentioned national programs, where charging a base fee to all residents created incentives for those who participated in the program. The charge was $2 per household but the fee could be reduced based upon the volume of recycled goods collected (Maggs, 2000). The concept of a city implemented tax is to directly fund the service yet this type of incentive program challenged the typical fee structure and left voters confused and weary of the fee. "Intellectually it was the best proposal but politically it was not a very bright proposal," Mann said (Mann, 1992).

Leveraging Mann’s newly gained political power by becoming an environmental leader within the community, he was able to gain political support for the initiative and he continued to advocate for passage of the measure. This time voters displayed their reluctance of the program by a larger margin of 8% voting the measure down.

The main issue was clarity and reluctance to adding a new fee when citizens of KCMO already paid a trash fee. The idea that an additional recycling fee for another service, even though it would reduce the content of the trash fee convoluted the issue and ultimately caused its failure. Recycling costs money and is usually more expensive than
Increasing Curbside Recycling

using landfills. "Oh, land-filling is almost always the cheapest option," said Terry Forehand, the director of recycling for the Southeastern Public Service Authority in Virginia. "Strictly economically, recycling is not the best option,” (Maggs, 2000). Simultaneously the cost per ton to dump at a landfill had reached all time lows and the cost-effectiveness of the program seemed to be disproved.

Additionally, KCMO has a unique challenge, the Hancock amendment which requires municipalities in Missouri to take each new levee or fee initiated by a county or political entity to a vote of all eligible voters within the political entities defined area (Missouri Constitution, 1980). The Hancock amendment compared to other municipalities nation-wide where the council or governing body would determine feasibility of a program and move forward with the proposal, making all associated increase in fee decisions without needing voter approval was quite the obstacle. This challenge forced Mann and his advocates to validate the need for an additional fee to nearly a half-a-million people (Onboard, 2011). “When we started out, we weren't thinking about the voters, and we weren't really working hard enough," he said. Based on the message that came from those earlier defeats, "we changed our approach, and we spent more time listening and educating people about the benefits of recycling,” said Mann (Maggs, 2000).

Ten years would lead to nothing but political maneuvering and campaign promises from council members ultimately determining that voters must pay for this addition in services. In May of 2000, Mann would be proved right when a survey conducted by Kansas City's Mid-America Regional Council showed that 93% of Kansas City residents said they were in favor of curbside recycling. However, the survey
Increasing Curbside Recycling

respondents indicated that the city should be funding the program not the tax payers. Although no curbside program had been initiated, four community drop-off centers had been opened and run by BTG through minor subsidation through the city and other outside funding sources.

The curbside recycling initiative was taken to another vote within the city-council to allow voters to make the ultimate decision in May of 2001. This initiative recommended a streamline approach of municipal departments, reducing overall costs and funding the curbside recycling program internally without a fee increase. Councilmember Jim Rowland was the initiatives advocate arguing with other council members to include the funding for curbside recycling in the upcoming budget approval but other members thought the idea was too rushed and ultimately voted the initiative down not allowing the voters a chance.

Legislation was reformulated and another initiative proposed. This time the legislation included both funding through more efficient department budgets and also a proposed trash bag limit and a pay-as-you-throw system for all additional bags. “Polling after the latest attempted price hike for recycling services in 2002 showed that voters objected to paying extra for recycling,” said Stufflebean, director of the KCMO Department of Environmental Management (“Solid waste report,” 2004). However, this initiative did survive and curbside recycling was initiated in March of 2004. The Recycle First initiative went into effect March 1st becoming available to 75 neighborhoods city wide with the anticipation of full expansion by December of the same year. The same pay-as-you-throw system would be used and all residents would be required to maintain the two-bag maximum with the option to purchase additional trash tags for one-dollar
each at area businesses. This measure could not have been successful without the continuous lobbying efforts of Bridging the Gap and advocates, keeping the priority present within the city-council. The agreement was that an educational program would be launched to raise awareness and educate residents on their participation in the program led by Mann’s BTG organization.

The Recycle First program was implemented in four phases until its completion in December of 2004. The city spent nearly $8 million annually for trash collections and disposal for about 145,000 households (Raflo, 2001). The City anticipated participation at 25% but according to a study conducted by BTG nearly 33 percent of residents were participating (Raflo, 2001). This level of participation reduced the city’s landfill contribution by 237 tons (Raflo, 2001). "We are seeing great participation in most neighborhoods and the vast majority of residents are becoming accustomed to the new program," says John Stufflebean, director of the city’s Department of Environmental Management (Raflo, 2001). “After we got used to it, it just became part of what we do," said resident Daryl Long, who admits his two daughters help remind him which plastic items are recyclable. The Long family now keeps a recycling bin next to the trashcan in the kitchen, and it doesn't require much effort (Horsley, 2004).

"It's become like a second habit," Long said.

Recycling rates steadily increased and fell off within the next six years leaving city administrators worried about the continued success of the curbside program. In 2010 KCMO and BTG embarked on a partnership to increase curbside recycling rates in targeted neighborhoods where overall rates were significantly lower than other
Increasing Curbside Recycling

metropolitan area neighborhoods. BTG determined that a new type of educational campaign was necessary to increase curbside rate in these neighborhoods.

BTG determined the use of the innovative techniques called community based social marketing would yield the highest results for this type of educational outreach. Through the creation of community networks consisting of neighborhood leaders, teams of BTG volunteers, and BTG staff; an initiative was set to canvass door-to-door, engaging the population, surveying behaviors and educating residents on the importance of recycling (Bogue, 2011). The idea of engaging residents had tremendous results by nearly doubling all the targeted neighborhood rates.

This effort was extremely successful causing the second phase of the program to be contracted to BTG to do similar work focusing on a mix of areas with higher baseline rates and lower baseline rates, testing the increase limits and fluxes between these socioeconomically different areas this time around. Curbside recycling has been a long journey for KCMO but has been a task taken in strides, on the backs of hard working environmental advocates.

Community Based Social Marketing (CBSM)

Dr. Doug McKenzie-Mohr defines Community Based Social Marketing as making psychology knowledge relevant and accessible to individuals who are key decision makers of environmental programs (McKenzie-Mohr, 2000). Traditionally programming decisions are made based upon basic statistics where the focus of municipal department heads or council members is either driven by economics or success. In contrast, the use of CBSM requires the focus to be on basic social ques relating to
Increasing Curbside Recycling

community needs. Psychological research has been limited in its breadth (for a review, see Stern & Oskamp, 1987), and relatively few attempts have been made to assist with programs to foster sustainable behavior (McKenzie-Mohr, 2000). This theory blends both the focus on community social interaction with the typical, cut-throat-numbers driven, political justification process used by decision makers.

Dr. McKenzie-Mohr explains how these individuals have professional backgrounds that ill prepare them for the challenges faced in designing behavior-change programs. He continues to discuss how the assumption that changes in behavior are brought about by increasing public knowledge regarding an issue and fostering attitudes that support desired activities; CBSM theory believes this doesn’t always equate change. Unfortunately, a variety of studies have established that enhanced knowledge and supportive attitudes often have little or no impact on behavior, as (Howard, 2000) discovered when he tried to rally support for an environmentally friendly tax on gasoline. For example:

ex. 1) Homeowners’ knowledge and attitudes regarding energy conservation changed markedly when they participated in an intensive three-hour workshop on residential energy conservation. Their behavior, however, did not (Geller, 1981).

ex. 2) Motorists who volunteered to have their cars’ emissions inspected were found not to differ from nonparticipants in their levels of knowledge or in their attitudes regarding air pollution (Tedeschi, Cann, & Siegfried, 1982).

Dr. McKenzie-Mohr continues to describe that another common misperceptions made in these program developments is accepting the theory that individuals systematically review their choices and then act in their economic self-interest.
McKenzie-Mohr explains how if this theory would be true then companies need to just fix the equation for the benefits to outweigh the costs. These assumptions are incorrect as well as defined in these examples:

ex. 1) In the early 1980’s California utilities spent $200 million annually on advertising that encouraged people to install energy-efficient devices (e.i., low-flow showerheads) and adopt lifestyle changes, such as closing blinds on sunny days (Hirst, 1984). Despite this expensive advertising campaign, household energy use remained unaltered.

ex. 2) The 1978 U.S. law that created the Residential Conservation Service mandated that gas and electric utilities should provide households with energy efficiency assessments in addition to interest-free or low-cost loans and information on contractors and suppliers (Hirst, Berry & Soderstoron, 1981). Evaluations of the resulting programs suggested that the reduction in energy use per participating household averaged only 2%-3% (U.S. Department of energy, 1984).

Dr. McKenzie-Mohr discusses the anomaly of these assumptions continuously being used to make key decisions on environmental programs. There are more issues relating to behavior change than simply attitude and education. The failure of information-intensive campaigns to foster behavior change is due in part to their developers’ underestimating the difficulty of changing behavior (Costanzo et al, 1986). McKenzie-Mohr explains that long-term systematic behavior change must be addressed by examining all barriers to the desired activity and then design a program around that.

Its effectiveness is because of its pragmatic approach, which involves the following steps: carefully selecting an activity/behavior to be promoted or altered;
identifying barriers and benefits to the activity/behavior; designing a strategy to overcome these barriers, when possible; piloting the strategy with a small segment of community; and, finally evaluating the impact of the program once it has been implemented across a community (McKenzie-Mohr, 2000). In McKenzie-Mohr’s book, *Fostering Sustainable Behavior* he highlights in further details several of these steps. I will highlight the first two steps within this section to provide a solid foundation of understanding before discussing the specifications of this project in further detail in the methodology section.

**SELECTING BEHAVIORS**

In the book *Fostering Sustainable Behavior*, McKenzie-Mohr discusses the methodology of selecting behaviors. Research was conducted to determine precisely which behaviors needed to be changed to receive the intended end-result. McKenzie-Mohr refers to the selection of behaviors as the basis for which the next steps must be conducted. Unless selected carefully, the behaviors that need to be changed can cause a rooting system that will convolute the campaign and ultimately yield convoluted results.

First, McKenzie-Mohr introduced the attempt to increase energy efficiency. While the attempt to increase energy efficiency was introduced as a broad topic, he suggests the narrowing of any project to a very definitive scope. For the purpose of this example he chose to focus on the end-result of attempting to reduce CO2 emissions through energy efficiency. McKenzie-Mohr explained his concept of selecting behavior by asking a series of questions to narrow his scope even more. To reduce CO2 emission first he determined what sector of energy consumption was worth targeting: industrial, residential, commercial/institutional and agricultural (in order of highest energy
Increasing Curbside Recycling

consumption). He explains that ideally the goal target would be the largest culprit to the desired behavior but realistically consideration must be made with effectiveness and the availability of skills to the change agent. For this examples sake, he chooses to target residential energy consumption and then describes that a list of desired behaviors should be outlined. This example helps understand the scope of the project, and narrows the window of change that the change agent will focus.

After this portion of the research process is completed, a list of desired behaviors should be created. Using the same example McKenzie-Mohr determined which behaviors in residential energy consumption was the target to reach his overall goal of a reduction in CO2. Again, research must be conducted to further investigate the areas with most opportunity for impact, in this case, residential energy consumption can be broken down into these categories: space heating, water heating, major appliances, other appliances, lighting, and space cooling (displayed in order of highest energy consumption).

Once the evaluation process was complete, a review of relevant literature around the specific project was necessary. Still using the context of our example, an evaluation was conducted on relevant literature around the project a realization concluded that there was a traditional focus on similar programs on lighting and air conditioning which comparatively were lower in terms of highest potential for impact. Although benchmark programs may be available, they are not necessarily the determining precedent to follow, and in this example case it only presented the easiest areas of altering behavior.

The next step is to determine what behaviors attribute to the problem areas. The example focused on the space heating-problem area, and the possibilities of adding insulation and installation of energy efficient windows as behaviors that could be taken to
curb CO2 use. Additionally, it is important to evaluate behaviors by determining what these behaviors are by using two fields of criteria: no behavior should be divisible; and each behavior should be end-state (McKenzie-Mohr, 2011).

Divisible behaviors are behavior responses which spur additional action to the initial action, further dividing problems into more areas that must be addressed. For example, adding insulation as a solution can transpire additional behaviors: adding insulation in the attic, external shells (walls), or the basement. McKenzie-Mohr explains that the level of specification is important because each behavior requires different approaches. Problems can quickly grow into larger blocking points during the completion of the project. As with insulation, simply adding insulation into an attic requires little work or skill compared to adding insulation to the existing shell. These types of refinement are extremely important in ensuring the completion of the project with success. Divisibility of behaviors must be taken to the final stage for implementation to truly be actionable.

The other guiding principle within the stage of selecting behaviors is to ensure they are end-state behaviors. An end-state behavior is a behavior that actually produces the desired environmental outcome (McKenzie-Mohr, 2011). McKenzie-Mohr suggests that determination of end-state behavior simply requires the asking of one question, “Will engaging in this behavior produce the desired environmental outcome, or will the target audience need to do something else before the desired outcome is achieved?” (McKenzie-Mohr, 2011). To explain this question, he uses the installation of programmable thermostats as the behavior taken through the process. Will simply purchasing the thermostats ultimately achieve the desired behavior? The purchase of the thermostat will
not guarantee their installation; nor does their installation guarantee that they will be programmed.

Once the conclusion that behaviors are non-divisible and end-state, it is recommended to analyze each behavior with three additional characteristics: 1) How impactful is the behavior?, 2) How probable is it that the target audience will engage in the behavior?, 3) What level of penetration has the behavior already obtained with the target audience? (McKenzie-Mohr, 2011).

Dr. McKenzie-Mohr discusses two preferred methods to determine the impact of the listed behaviors. The first consists of a basic review of literature, collecting information about one’s list of carefully selected behaviors. Using the residential energy CO₂ emissions reduction, McKenzie-Mohr explains how installing more insulation or a new thermostat must be validated behaviors as actually curbing CO₂ emissions. He further explains that if reliable information doesn’t exist, estimation can be made by the second method: community surveying.

Next, determining how impactful your selected behavior will be is to survey individuals who have expertise regarding residential energy use and ask them to rate each behavior on a five-point scale. By gaining this feedback through an individual approach one can eliminate any potential group bias. This process will provide validation of the potential impact.

The second step of the analysis of behaviors is determining the probability of engagement from the targeted audience. Review of literature and surveys should also be used for this step of analysis properly bringing all conclusions to end-of-state conclusions. That method being a thorough literature review of relevant programs, their percentage of
Increasing Curbside Recycling 19

success, implementation of the program, context within which the program was delivered, and the cost to deliver the program (McKenzie-Mohr, 2011). If enough relevant information does not exist, a survey of a representative sample of your target audience should be conducted to properly gauge accuracy.

Using the five point rating scale, questions should be asked focused on the list of behaviors in a clear and concise format. For example, rather than asking, “How likely are you to install a high–efficiency shower head?” you should ask several questions that set out different contexts (e.g., how likely are you to install a high-efficiency shower head if you had to purchase and install it yourself? How likely are you to install a high-efficiency shower head if you were supplied with a shower head, but had to install it yourself? And how likely would you be to install a high-efficiency shower head if you were supplied with a shower head and it was installed for you?) (McKenzie-Mohr, 2011).

By conducting a survey with this style and format the respondent is forced to consider all the options rather than responding with conforming ideals or with survey fatigue. Dr. McKenzie-Mohr offers a bit of caution when interpreting data. It should be understood that survey participants are likely to inflate their stated likelihood of engaging in the behaviors in the survey and thus should be compared to the responses of other questions to form relatively confident measures as opposed to accepting the data merely as represented.

Finally, determine the penetration level which already impacted the behavior. There is a two-tiered process to determining this measure: observation and surveying. If the behavior is observable, like curbside recycling rates, bicycling, or etc, direct observations of behavior can be used to determine the percentage of the target
(McKenzie-Mohr, 2011); however if the behavior is not visible surveys are necessary. Dependent on whether the behavior is a one-time act or repetitive will determine what questions to ask and the method to use.

In conclusion of determining what behaviors to select it is important to take these processes to their full depth, following all steps and processes. McKenzie-Mohr describes how often times environmental programs are developed simply because some felt it would be worthwhile to promote a specific behavior which later aren’t validated to have a positive effect, not solving the problem. By focusing on those behaviors that have the best combination of impact, probability and penetration, we can be more assured that our programs will have the desired outcome (McKenzie-Mohr, 2011).

**IDENTIFYING BARRIERS AND BENEFITS**

Typical perceptions associated with recycling can be identified by asking these questions: Why does an individual recycle? Is it because of personal benefit, convenience, or guilt? This section focuses on changing the identified and targeted behaviors identified to meet the end goal. Dr. McKenzie-Mohr highlights the importance of identifying the behaviors/actions that must change but explains that identifying the barriers barring participants from yielding your end results is equally important, while simultaneously exploring what will motivate them to change.

Dr. McKenzie-Mohr outlines four steps within the CBSM theory to uncover the barriers and benefits of a desired behavior/actions that a program is attempting to alter. These steps are as follows: begin by reviewing relevant articles and reports; following this review, carry out observations of people engaging in the behavior you wish to
promote (e.g. biking to work) as well as the behavior that you wish to dissuade people from participating in (e.g. driving to work); conduct focus groups to explore in-depth attitudes and behaviors of your target audience regarding the activities you wish to encourage and discourage; and building on information obtained from the focus groups, conduct a survey with a random sample of your target audience (McKenzie-Mohr, 2011).

Step 1

The literature review should have clear parameters. The use of trade magazines relating to the topics, academic journals or newsletters are places to begin your query; also an examination of governmental agencies or public clearinghouses, like environmental non-profits. Contact authors or directors of studies since these individuals are experts within the field who can lead you to preprinted or exclusive material that may not have otherwise been uncovered. This research will yield the hard evidence to base a strategy, and provide the confidence to move forward, thus allowing conclusions to be drawn on the barriers and benefits that will make a difference.

Step 2

Dr. McKenzie-Mohr explains how observations are the basic way to immediately identify certain parameters of barriers to behaviors/actions. He cited an example in which a program attempts to curb CO₂ emissions by promoting walking or bike riding to school age children. By observing the preferred modes of transportation at a local elementary one is able to identify basic trends or anomalies from which a through literature can help turn into questions to further vet within your next steps. This example must only be conducted in an unobtrusive manner and not be intimidating or influencing of any particular behaviors as to not curb natural behavior or actions. The identification and
observations of those participating in desired behavior/actions as well as competing behaviors are equally important. McKenzie-Mohr recommends the use of additional observers to ensure consistency of behavior. In terms of length of the observation portion of information gathering, it shall be continued until no new learning is happening. Dr. McKenzie-Mohr explains how the observation process not only provides valuable information about the core of behaviors/actions, but in most situations the direct identification of barriers. The example of identified barriers he uses is composting in the home. The requirement of the individual to purchase the composting container, put this unit together, find a process to transfer compost materials from kitchen to composter and then the continued maintenance of the material are all potential barriers of composting.

Step 3

The third stage of identifying barriers and benefits is the focus group process. The most important feature of the focus groups should be that participants should be paid. The purpose for this is that when volunteers are sought there is typically an underlying support or greater interest with the behavior that a program is trying to promote and will not be a true representative sample of the population the program is attempting to affect. The participants should also be chosen at random by use of a phone book or other anonymous method and participation accommodations should be made extremely convenient for individuals. This goal towards a focus group will help ensure reliability and adequate representation of a population. As the facilitator one must ensure that a set of clear and concise questions are prepared based off consistencies in the previous literature review and observation stages of barrier and benefit identification.
Once the focus group has been convened participants must be segregated into two groups, those who already participate in your desired behavior/action and those who have not. The participants should be educated as to why and how they were selected and comfort should be gained from all prior to delving into the questions. The facilitator should be acting as the navigator in the conversation while a colleague should be present for note taking. Within the discussion the facilitator must ensure that equal responses are being considered as often times one or two individuals will attempt to lead the conversation. Conversation should be raw and comments should be unprovoked and merely come naturally from the asking of the question set. Once the focus group is completed the comments collected should be carefully evaluated to account for repetitive barriers or benefits as to the desired behavior. Likewise, the group acting in competition to the desired behavior will help identify opportunities. Ultimately this is the third building block to truly enhance the final step, surveying.

Step 4

In this final stage of identifying barriers and benefits, Dr. McKenzie-Mohr recommends conducting surveys to the population. There are traditionally three options to surveying a population: person-to-person interviews, a mailed survey or a phone survey. Although the first two methods of surveying are options, Dr. McKenzie-Mohr outlines how the inefficiencies and potentially low response rates question the reliability of effectiveness of program’s resources. However, a phone-based interview has several advantages over the other two options. First, response rate for this type of survey is much higher and a researcher is able to reach a broader population and thus response reliability is much greater. Although, not everyone will inevitably agree to participate, this is an
opportunity to offer a briefer refusal survey, offering another set of data which can be compared to the larger full survey responses. Use of resources are a lot easier to validate in this form of surveying as it is often easier to reach individuals by random-digit dialing to ensure random sampling and some difficult to reach populations, like high-rise apartments or rural households, are available now for response (McKenzie-Mohr, 2011).

Dr. McKenzie-Mohr outlines seven steps to surveying a population: 1) clarify the objective, 2) list the measured items, 3) write the survey, 4) pilot the survey, 5) select the sample, 6) conduct the survey, and 7) analyze the data (McKenzie-Mohr, 2011). This process is very time consuming and resource heavy, but ultimately rich in important aspects that will lead to greater strategy and potentially better results.

Dr. McKenzie-Mohr offers the bare necessities of this step if time and money are constraints: a literature search, observation, and the replacement of the focus group and survey step with an intercept survey. This type of surveying involves asking two simple questions of representatives of your target audience: “What makes it difficult or challenging for you to do ‘X’?” and “What do you see as beneficial or rewarding about doing ‘X’?” (McKenzie-Mohr, 2011). This type of surveying should be conducted at natural places of congregation relating to the desired behavior or action. The example McKenzie-Mohr uses is, if researching reducing the transfer of aquatic invasive species, then boat launches and marinas would be good locations to survey. Similarly he suggests that these questions be asked to those participating in the behavior as well as those who are not at several locations to ensure validity of the study.

By following these steps, the researcher distinguishes between the “hunches” and tangible trends. These steps will also build reliance and validity to your efforts and
ultimately help with the development of the strategy to eliminate competing behaviors and encourage desired behaviors.

**DEVELOPING STRATEGIES**

Now that the barriers and benefits have been identified, it is time to focus on an effective strategy that will solve the problem and encourage the desired behaviors. Dr. McKenzie-Mohr focuses on addressing two behaviors simultaneously: 1) the behavior to be encouraged; and 2) the behavior to be discouraged (McKenzie-Mohr, 2011). Commonly program developers focus strictly on the idea of increasing the desired behavior without consideration to the limitations being weighed on individuals by the undesirable behaviors. By focusing simultaneously on what behaviors to encourage and discourage the root of behavior change are the target and more long-term effects can be had. Overlooking the behavior needing to be discouraged can cause unaccounted for reeducation in your desired behavior, decreasing your levitation of validation.

McKenzie-Mohr uses the example of creating a program to encourage bicycling as a means of commuting to work. Where some organizations focus merely on the idea of making biking more accessible through the creation of bike lanes, addition of bike racks, and so forth; this is not the only area causing hesitation for participants. Dr. McKenzie-Mohr explains that “while each of these approaches reduces the barriers to biking, never less many commuters might still see driving as more convenient (McKenzie-Mohr, 2011).” By focusing also on ways to minimize opposing behaviors, in this example driving, you increase the likelihood of participation. Drivers would be discouraged to drive their vehicle if limited parking was available and a high gas tax was initiated, thus
creating the idea that riding a bike could be more convenient. By addressing both issues simultaneously the desired behavior becomes more attractive.

Additionally, it is necessary to consider other aspects which affect a participant’s behavior. It is important to understand the social norms associated with the desired behavior. Much research has been conducted where respondents are affected by their peers, resulting in a change in otherwise normal individual behavior. An example Dr. McKenzie-Mohr uses is a study conducted at the University of Santa Cruz’s athletic complex to evaluate effectiveness of a water conservation project. The project was to see how effective a sign reflecting conservation had on individual reaction without introduction of a peer, compared to a similar situation where a peer was acting in the desired water conservation actions. The study displayed that when an individual with no peer interaction only observed the conservation recommendations on average of 6% (Aronson & O’Leary, 1982-83). In a random sample of shower users, 93% were aware of the conservation recommendations. Now when a peer was introduced, modeling water conservation 49% of individuals complied with the recommendations; additionally 67% of individuals complied when two peers were introduced (Aronson & O’Leary, 1982-83).

Dr. McKenzie-Mohr explains that understanding this concept can positively affect one’s ability to increase participation but making non-compliance with desired behavior a non-normative behavior. This concept of assimilation would increase participation based upon the idea of wanting to be normal and increasing the undesirability of the undesirable behavior. This idea of a prompt can also be highlighted as a mechanism to increase visibility of the desired behavior. Knowing that in the example that 93% of those
who showered knew of the sign, yet only 6% observed the recommendations proves that the introduction of the peer prompt can be successful.

Additionally, concise and clarity in communication of your desired behavior is key within this phase of development. Dr. McKenzie-Mohr explains that knowing your audience is important when framing your message. By using credible, but captivating facts your message becomes interesting and specific. Convoluted messages, focused on threatening the community seem to be less effective when reaching an audience. The idea of direct and personal contact is refreshing and allows for a two-sided conversation rather than one-sided methods. The establishment of community block leaders or use of community leaders is highly effective in spreading the importance of the desired behavior. This type of engagement also allows for feedback from those who will be affected by the behavior, allowing for open participation from everyone.

The final method for creating more perceived desirability for your behavior is to establish incentives and more convenience for those already participating in your desired behaviors, creating social diffusion amongst those who believe the behavior is taboo or non-existent while providing more of a reason to engage them. Most of these mechanisms can be viewed as incentives, particularly convenience, which even further makes the desired behavior more attractive.

**PILOTING**

The idea of a pilot allows the basic strategy to be implemented and evaluated without broad-scale implementation. This process allows for correction of any unexpected problems to the foundation of the methodology. Piloting however, can be
time prohibited and requires for an extended time frame of the overall results. This phase also helps to align more with the desired behavior the researcher is attempting to achieve. Dr. McKenzie-Mohr explains that some level of problems to be expected and the elimination of these problems before broad based implementation aids in the overall validation process. Like most pilot programs, Dr. McKenzie-Mohr believes it is important to truly establish a controlled pilot, not to be combined in the overall research. Once residents have been engaged in the pilot, their participation is skewed and their behavior changes must not be included during broad scale implementation. To ensure complete validity two focus groups should be used to rightfully draw conclusions from the pilot, through use of nearly identical representation of the control group. Evaluation of participants behavior change should be made priority to properly evaluate the return on investment from your implementation strategy. Finally alterations should be made and piloted until the strategy is proved effective, and desired behavior is achieved.

**IMPLEMENTATION & EVALUATION**

The most important portion of the broad scale implementation is to conduct baseline data collection prior to any direct engagement. This will allow you to compare any findings against this baseline data to better draw conclusions of desired behavior advancement. A continually data collection process must be maintained to track effectiveness of your strategy. Dr. McKenzie-Mohr describes how these initial steps are imperative to successful and valid results of the CBSM strategy. Also, he speaks of the opportunity to contract out the design of this portion of the strategy if desired. The final aspect is the analysis of the data and broad based publication of the results. His theory of
community based social marketing is focused around the community aspect of problem solving and thus the community must be informed of the impact of the strategy used to enhance the desired behavior.
CHAPTER THREE – METHODOLOGY

The following chapter contains the methodology for the use of CBSM practices to increase curbside recycling rates in targeted neighborhoods in KCMO and will be broken into five sections based upon the theory outlined by Dr. McKenzie-Mohr. The first section explains how the selections of behaviors were selected. The second section will describe the process of identification of barriers and benefits. The third section details the development of strategies. The fourth section examines the piloting of the strategies. In conclusion the fifth section will present a brief overview of the implementation process and discuss the tools used to evaluate the project.

Due to confidentiality the eight neighborhoods have been assigned a letter to ensure their anonymity. All eight neighborhoods were chosen by the KCMO City Council in collaboration with the KCDofSW and identified as urban part of the urban core with recycling participation rates below the city-wide average. City maps were provided listing parcel numbers in which further investigation showed needed cross examination with field comparisons. Once each neighborhood parcel map was cleaned up, eliminating vacant and ineligible apartment complexes, an accurate assessment of occupied homes were counted and used as the baseline residency count and further more known as eligible parcels. The eight neighborhoods are thus represented as following, including only eligible parcels:

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These neighborhoods predominately spread across three different City Council Districts within the KCMO area. Neighborhoods B, C, D and E are part of a
larger district outlined by a federal program designed to centralize resources and develop community leadership in an area that has experienced high rates of abandonment and economic decline. “The zone has experienced extreme abandonment, with about 25 of its properties in vacant lots and another one-sixth in vacant structures. Unemployment in Kansas City, Mo., is now 11.7% citywide and estimated to be as much as 50 percent in parts of this district. Fewer than half the homes are owner-occupied. Almost 20 percent of all mortgages were delinquent over the last two years. Median home prices for the area are under than $30,000 (Mid-America Regional Council, 2012).”

Selection of Behaviors

The behavior or action this project was attempting to change was curbside recycling participation. Overall, there are several ways for citizens to recycle within the KCMO. Three methods could be considered: use of curbside recycling, drop-off at community drop-off centers, and taking materials to a materials recovery plant (e.g. collector of aluminum cans, etc.) for processing and personal financial gain from recovery.

The City of Kansas City maintains two of the three opportunities for participation from residents: curbside recycling and community drop-off sites. The Kansas City, Mo Department of Solid Waste (KCMO DoSW) identified the need to increase participation in the recycling program as a whole to foster financial sustainability of the curbside recycling program. Funding for the implementation of the recycling portion of the KCMO DoSW waste management plan was higher than the anticipated return on investment. Therefore the infrastructure established when designing the program was
much greater than the rate of current participation by KCMO residents, creating an inefficient system.

**Identification of Barriers and Benefits**

In an effort to change this behavior to increase curbside recycling rates, initial research was conducted to determine the behaviors/actions needing to be addressed. First the KCMO DoSW evaluated how many residents were recycling within each neighborhood by personally counting individual bins placed on the curb during collection days in all neighborhoods within a pre-calculated representative sampling area. Using the national average of 34%, determined by the EPA, the KCMO DoSW determined which neighborhoods were underperforming by comparing it to the city wide average of 30% (Municipal solid waste, 2010). A study of the underperforming neighborhoods was conducted through surveys provided to residents to determine what barriers were causing the lull in participation. The two main contributing factors were lack of information and lack of availability to bins.

The KCMO DoSW responded by creating the waste management guide which was 13 pages of rules and regulations about solid waste, including those of the curbside recycling program. This was widely distributed to residents throughout the city and KCMO DoSW thought to be the missing piece of the education puzzle that residents were requesting.

Additionally the KCMO DoSW decided to solve the problem of limited access to recycling bins by providing free curbside recycling bins to all residents, initially through a redistribution of the Waste Management Guide with a voucher available to residents for
the pickup of a free bin at a local grocery or hardware store and eventually reverting to dropping off bins at residents curb during trash pickup.

Unfortunately these two attempts did not increase rates after evaluation. During the evaluation of these two practices, measures were not outlined to determine success and (like Dr. McKenzie-Mohr discussed the failures of hasty environmental programs) the programs lacked proper planning at the initial implementation phase. The KCMO DoSW decided to turn this initiative over to an outside entity as it, KCMO DoSW, determined its methods unsuccessful. A request for bids was placed out to accept proposals for programs that would successfully increase the curbside recycling program. The request had very specific requirements which included selections of targeted areas, a definition of intent and metric system for evaluation the level of success. This is the stage at which the CBSM methods were first implemented.

Bridging the Gap, the KCMO DoSW, and the KCMO City Council determined the targeted neighborhoods in which BTG would be working based upon the lowest recycling rates in the city first. After the neighborhoods were determined, BTG made it very clear that each neighborhood required different approaches and needs and that truly listening and working with community leaders was necessary to usher in the CBSM techniques. From this point the divisible behavior/action was outlined as residents participating in the curbside recycling program. When taking this behavior/action through the next step to determine the end-state behaviors associated with a resident participating in the curbside recycling program several behaviors were identified including:

- The need for individual and broad based community education of: the importance of recycling, its benefits to the community, availability and
regulations associated with participation, and clarification of any additional needs.

- Development of an overall awareness campaign revolving around recycling; community infiltration and distribution of free recycling bins.
- Precise tracking and analysis of participation rates after each level of project completion.

By understanding the divisible behavior taken to the end-state, BTG was able to provide new recyclers with the knowledge and confidence to participate in the program. By having the recycling bin delivered to their doorsteps BTG eliminated the transportation issue. Clarification of any additional questions regarding the use of residents recycling bin alleviated the lack of education component; and a By displaying the analysis of participation rates, the idea was to create new habitual participants based upon the establishment of recycling as a social norm.

Several BTG employees attended a conference where the CBSM practices were further explained as a technique where success was almost guaranteed, if used appropriately. The attendance of this conference was BTG initial motivator for using the CBSM techniques. Instead of surveying experts as recommended by McKenzie-Mohr, the BTG employees became the experts, choosing to move forward with these basic principles in the selection of behaviors process; thus impact was viewed as achievable.

**Developing Strategies**

In determining the probability that the targeted audience would become engaged in the curbside recycling program, BTG relied on knowing there were already a percentage of residents who participated in the curbside recycling program, although it
was a small amount. The assumption was, if curbside recycling was presented to neighbors as an overall benefit to their community and self, participation would become inevitable. This conclusion was made based upon the initial vote of residents in KCMO to start a curbside recycling program as well as the survey that was conducted by the KCMO DoSW which asking residents if recycling was important to them, receiving an overall positive response.

The basic strategy was to offer the utmost individualized attention, on a house-to-house basis to all residents based upon their participation in the curbside recycling program. Extensive field work was done in an effort to reach residents; initially gathering information, then moving on to the actionable items in an effort to solve the problem of low participation rates.

Instead of taking a comparative sample as was previously done by the KCMO DoSW, BTG found it imperative to have comprehensive and accurate recycling rates and began a minimum of a three pronged tracking system where every recycling bin, in each of the targeted neighborhoods was counted on three week rotations creating an initial baseline, a post-literature drop, and post-engagement percentage.

A baseline of neighborhood curbside recycling rates would be collected. Then the first phase of the CBSM initiative was to educate and inform residents as to the programs existence and goal. BTG staff would engage community leaders through neighborhood association meetings and established community gatherings to educate inform and build relationships within the community to further the initiative. Bins would be distributed or promised for home delivery at each meeting or community event. From this phase The
second tracking tier was conducted immediately upon the next applicable waste and recycling pick-up day.

In the next phase, BTG staff and volunteers conducted a literature drop of all houses within the neighborhoods informing residents of the initiative and seeking their participation as well as providing them a contact number to seek an additional recycling bin. BTG staff would deliver bins directly to resident’s homes and provide them with a KCDoSW solid waste handbook to serve as a reference.

The third phase of the curbside program would be an examination of participants. A direct door-to-door educational program for those not that aren’t participating consisted of BTG staff and volunteers that offered brochure regarding program requirements, a brief survey and an opportunity to sign-up to or a phone number to call to receive a free recycling bin. Again, bins would be distributed to residents seeking a bin. The second phase of tracking was conducted immediately upon the next waste/recycling pick-up day.

Throughout the phasing, based upon delivery dates, those residents who sought a bin and had not used it within two tracking days were contacted through the phone and asked if they had any questions regarding use of the bin or needed any further assistance in participation. This was means for BTG to fiendishly remind residents who had received a bin, yet not participated, the importance of the success of this program.

Finally, additional tracking was conducted to ensure the sustainment of the new participants and that the distributed bins were used. Throughout each of these phases constant contact was maintained with initial relationships with community leaders were utilized to advertise and spread word of success and failures. Constant representation at
Increasing Curbside Recycling neighborhood association meetings was maintained to also directly inform residents of progress and to serve as a resource for any additional questions.

Unlike previous resource distribution by the KCDofSW, BTG decided it was imperative to maintain extensive records of individuals and locations receiving recycling bins because it would finite the level of individuality this program focused on.

Piloting

In the scope of city wide implementation, the DoSW and BTG decided that these targeted neighborhoods would serve as the pilot program for eventual city wide implementation. The DoSW and BTG believe it was in the best interest of time, with inclement weather nearing, that the eight neighborhood results serve as the pilot instead of creating two smaller, sampled focus groups.

Implementations and Evaluation

The phasing methodology was put into action with great attention to detail focusing on gathering information to provide a quantitative and qualitative driven validation process. By comparing the baseline data to the post-literature drop and post-door-to-door engagement mechanisms, validation and cost-effectiveness became very apparent. Additionally the increase from each step, supported by the finite tracking program offered further justification of success beyond meeting the 4% increase requirement. Justification of the methodology became clear when the data collected from persons requesting bins who had never participated in the curbside program was compared to new recyclers that hadn’t participated in the baseline evaluation.
Conclusion

Finalization of the phasing would conclude once the three steps of field outreach were met and the minimum of three tracking mechanisms were collected. After final presentation to neighborhood associations, a broader over extending presentation was drafted as well as a project justification, which was presented to the KCMO City Council and Mayors Council. Ideally, the program would be justified and fully funded for the next year to continue tracking of the completed neighborhoods and possibly adding new neighborhood using similar tactics.
CHAPTER 4-RESULTS

In this section I will break down the four tiered, two week consistent, tracking mechanisms and the engagement phasing processes for each neighborhood.

**Neighborhood A**

With a population of 226 eligible parcels phase one was initiated, direct community action. By engaging in Neighborhood A’s neighborhood Association we were able to gauge initial community challenges in August of 2010; realizing that this was a more affluent neighborhood, than the other seven, with a tight nit community. The association was made up of at least ten residents. These residents welcomed our engagement in their community and were made aware of the change in tracking systems and told their new baseline curbside recycling rate from an average of three tracking dates from August-September of 2010. The mean of these tracking dates was 81 residents participating per recycling pick-up, with a neighborhood average participation rate of 36% participation rate.

Within the initial community engagement phase, phase 1, 16 residents signed up to receive bins through BTG staff direct outreach at the neighborhood association meetings and events. From this initial phase only 11 residents who sought a new bin from direct community engagement already recycled; where four had never recycled before and one bin went unidentified. Therefore increasing rates within this neighborhood from those three residents was a 1.7% increase within the neighborhood participation rate from the baseline average bringing the neighborhood average to 38% of residents who recycle.
Phase 2 was conducted and all 226 houses were visited during the literature drop. From calls received after the early October distribution 8 total requests were made for recycling bins. Of the eight requests, four were consistent recyclers and four were new recyclers. This increase in bins provided for an increase in overall neighborhood curbside rates by 1.7%.

Phases 3 were door-to-door survey questions and bin signup. This phase was initiated and yielded 20 new requests for recycling bins. Of the 20 requests eight had never recycled before and 12 residents had recycled during the baseline. This increase in bins was calculated to increase the baseline percentage by 3.5%.

Additionally, five bins were distributed with unknown methods of engagement. Of these five bins four were new recyclers increasing curbside rates by an additional 1.7%.

If all new recyclers actively participated within the program the new mean of the neighborhood curbside recycling rate would be at 45% of all residents recycling a 9% increase from baseline tracking.

Ideally, four sets—baseline, phase 1, phase 2, phase 3 and conclusion—of at least two consecutive week’s worth of recycling day data would have been collected but due to budget and staffing constraints within this neighborhood only three sets—baseline, phase, phase 2, 3, and conclusion were combined—of at least two consecutive week’s worth of recycling day data was collected. Thus, only phase 1 can accurately be separated from overall percentage increases. However, data collected during both phase 1 and 2 indicate that over a seven week period a mean of 100 residents was calculated averaging an
estimated 44% of all residents recycling, which has a variance of 1% from the speculated end resulting of the overall neighborhood percentage.

Upon final delivery of the last requested bin on March 25th, 2010, and the next available tracking date in April yielded a mean of 101 residents participating in curbside recycling each week, validating the three phases with an estimated 45% of all residents recycling.

**Neighborhood B**

With a population of 172 parcels this neighborhood is a combination of homeowners and rental homes, located near two universities providing residence to a varying population. This neighborhood was part of a larger nationally recognized district because of its population as referenced in the first portion of the methodology section of this document. Because of the participation in the larger district a different approach to phase 1 was developed primarily due to an already established infrastructure of staff and community networks. Thus, the initial neighborhood engagement was funneled through the district infrastructure, primarily because of a weak neighborhood association, completely eliminating the traditional first phase of community outreach. Publishing of information regarding the highlights of this program were dispersed on the districts website yielding no initial response in engagement. However, baseline tracking was conducted finding that the mean for curbside recycling rates was 76 participants per week with a neighborhood average of 44% recycling.

Phase 2 was implemented through the districts resources rather than using BTG staff, as the district staff was already conducting a literature drop to advertise weatherization, again straying from the established strategy of independent engagement.
From the combined literature drop two residents sought recycling bin, of which both residents had previously recycled yielding no increase in neighborhood recycling rates.

Again, resources were not available to conduct the thorough four part two week consistent tracking mechanisms. Thus we were left with a combined tracking for phases 1 & 2 equating an increase from the baseline mean by 12 additional recyclers, up to 88 participants, with an overall all neighborhood recycling rate of 51%.

Phase 3 began in March of 2011 directly engaging residents door-to-door. This resulted in requests of 18 recycling bins of which 13 were consistent recyclers and five were new recyclers. This addition in recyclers was estimated to increase the baseline mean to 81 recyclers and an estimated increase of 3% brought the neighborhood average recycling rate to 47% of residents recycling.

Upon the last recycling bin distribution, the final tracking set was conducted, beginning April 1st creating a new mean of 90 recyclers, bringing the neighborhood average to 53% participation.

*Neighborhood C*

With a population of 496 eligible parcels this neighborhood was a blend of rental and permanent residences, both upper middle class and middle class residents. Like other neighborhoods within the federally defined district this neighborhood had a high level of vacant and abandoned homes. The baseline data collected in the first wave of tracking yielded a mean of 16% of eligible residents recycling of on average 77 residents recycling per pick-up day.
Phase 1 of the program engaged the Neighborhood Association, whose president was familiar with BTG’s work and was anxious to engage in our process. However, his board and members disagreed and the relationship yielded little after the initial meeting. In the meeting BTG went over program details and gave away free recycling bins, totaling ten total bins. From these ten bins three were given to new recyclers, one to a consistent recycler, and five bins were distributed to someone giving it to their neighbor and thus unidentified. Recycling from this phase yielded an overall increase of 1% to the mean neighborhood curbside recycling rate.

In phase 2, BTG again utilized the federal district coordinated canvass event to disseminate their literature. This method, through telephone contact and confirmation, projected a 1.6% increase to the mean community curbside recycling rate; a total of 12 bins were requested, eight from new recyclers and four from consistent recyclers and creating an increase in the overall community curbside recycling rate to 18%.

In phase 3, BTG employees and volunteers directly engaged residents by canvassing the neighborhood, seeking information as to why people recycled and why they didn’t as well as gathering requests for recycling bins. In total 93 recycling bins were requested during this phase, breaking down to 73 requests from new recyclers and 20 requests from those who consistently recycle. This increase in those who recycled would equate to a 14.7% increase, having 150 residents within the community recycling on pick-up days and effectively creating a projected 30% total neighborhood recycling rate.

From all three phases a total of 84 new recyclers were added to the neighborhood recycling rate which should yield a total rate of 32%. However, upon the completion of
distribution, the final round of tracking was conducted to generate the actuated mean of neighborhood curbside recycling rates having a mean of 20% of all residents. The differentiation from the projected estimate for total neighborhood recycling rate and the actual rate is due to lack of participation upon receiving the bin. Thus, upon further investigation that the findings were that 36 of the total 84 new recyclers added to the curbside program failed to use their bin upon receipt prior to the last tracking day. Therefore, a more accurate comparison of the projected and actual percentages would be that needed. After deducting those who received new bins but didn’t use them would be a total of 25% neighborhood wide and actual neighborhood rate was 20%, still a deficit of some 3-4 people necessary to meet or exceed the actuated rate.

*Neighborhood D*

This neighborhood maintained 262 eligible parcels, which were also categorized in the designated federal district. Like the rest of the parcels in this federal district home ownership rates were low, rental turnover was high, and income rate was low. Phase 1 of the study was again funneled through the federal district coordinated effort and communication was conducted amongst the federal leaders. Baseline data was collected for four consecutive weeks equating to an average of 36 total recyclers per week or a weekly mean of 14% of all residents participating in the curbside recycling program.

Phase 2 commenced using the federal district resources to conduct a joint literature drop to all the neighborhoods including Neighborhood D. This effort from the federal district was only possible because of phase 1’s establishment of relationships with key leaders. From this phase four total bins were requested, three to new recyclers and one to a consistent recycler. This projected increase would add an additional 1.24% to the
total neighborhood recycling rate bringing the new mean to an estimated 15%. A second set of tracking was not conducted until February due to program restraints, although bins in this round were distributed in October. Thus, only one round of tracking was conducted before the third phase and that round of tracking, although not completely conclusive yielded an increase of 13 participants totaling 49 recyclers with a recycling rate of 19%.

From phase 3’s door-to-door engagement by BTG staff and volunteers, a total of 85 requests were made for recycling bins. Of these 85, 60 were from new recyclers and 25 were from consistent recyclers. This potential increase with the additional amount of bins would bring the total amount of recyclers from 36 to 96 creating an approximated neighborhood participation rate of 36%, an increase from the baseline of 22%. The third tier of tracking was conducted for two weeks equating a mean neighborhood recycling rate to 23% within a consistent two week time frame.

In the final tier of tracking, three weeks were tracked post-final delivery of requested bins. An average of 58 residents recycled within these three weeks creating a mean weekly recycling rate of 23%. With all three phases, the estimated growth from the baseline recyclers would be an additional 63 recyclers added per day, creating the common recycling day of 96 residents participating with a weekly mean rate of 38%. There was a 15% difference between estimated growth rate and actuated recycling rate.

*Neighborhood E*

This neighborhood is made up of 483 eligible parcels recognized as a portion of the federally designated district. This neighborhood shares similar traits as the other federal districts recognized areas, however there is a higher number of larger homes and
Increasing Curbside Recycling 46

according to the neighborhood association more cohesion for urban renewal and restoration of old residences. Baseline tracking was conducted and concluded that an estimated 90 residents participate on an average pick-up day, resulting in an estimated 19% participation rate.

Within the first phase of the program BTG staff visited with the neighborhood association leader and community organizations, an established event was automatically identified as an opportunity to engage residents. The neighborhood association held a potluck dinner in which staff attended to garner more support and distribute bins. A total of 16 bins were distributed at the potluck and another established event, from which six were new recyclers and 10 were consistent recyclers. This addition from phase 1 would yield an estimated increase of 1%, bringing the total number of participants to 96 per pickup.

Phase 2 of the program was again collaboration between the federally designated area and BTG for the literature which yielded a total of 12 requests for bins; 9 of which were from new recyclers and 3 from consistent recyclers. This addition would yield an estimated increase of 2% with a total of 99 participants per pickup day for an overall neighborhood approximate recycling rate of 21%.

Upon completion of phase 3, the door-to-door engagement process, BTG collected 89 requests for recycling bins. Of these 89 requests 58 of them were from new recyclers and the remaining 31 were from consistent recyclers. This large addition to the recycling base had an estimated growth of 11%, with 148 recycling participants bringing the new neighbor recycling rate to an estimated 31%. Tracking was conducted following phase 3 for the remaining phases to a mean of 22% or 108 participants. However,
something peculiar happened within one of these tracking dates. Upon the completion of 99% of all bin distribution the following weeks recycling rate was calculated as 145 participants and a neighborhood recycling rate of 30%.

After completion of all phases the results should have yielded 34% of all neighborhood residents participating or an estimated 163 residents recycling per pickup day. The final set of tracking was conducted to show that an estimated 95 people recycled per pickup and a neighborhood recycling rate of 20%. The projected increase and the actuated increase share a 14% disparity.

*Neighborhood F*

This neighborhood has 1827 eligible parcels. The neighborhood is mostly made up of a few split level houses and predominately ranch style homes. Baseline tracking was conducted and yielded an average recycling participation of 282 residents with a mean neighborhood recycling rate of 16%.

Phase 1 immediately commenced and BTG staff initially engaged the two neighborhood leaders seeking permission to present at the next neighborhood association meeting. Upon gaining permission, BTG presented baseline tracking data and comparison information of other KC, MO neighborhoods. From these meetings and an established household hazardous waste event within the community several bins were requested. Also, an agreement was made to include our literature, similar to what was handed out during phase 2, within the annual neighborhood newsletter. In total phase 1 yielded distribution of 44 total bins, 23 to new recyclers and 21 to consistent recyclers. With the estimated participation of 44 new recyclers it was projected that 305 participants would
participate growing the neighborhood recycling rate to an estimated 17%, or a growth of 1%.

Phase 2 was conducted as a traditional literature drop of all residents. Within this phase 38 total bins were requested, 28 from new recyclers and 10 from consistent recyclers. This addition of 28 bins was calculated to increase the neighborhood recycling rate by 1%, making the new projected rate 17%.

Phase 3’s door-to-door engagement was conducted by a unique collaboration to only Neighborhood’s F and G. A collaborative partnership was established by the KCMO Youth Board, Engage KC; a group of students from the University of Central Missouri Innovative Business class; Bridging the gap and two additional financial sponsors, to create a direct action event that would accomplish a large portion of the door-to-door engagement process. The idea was to allow the student group to plan the targeted door-to-door engagement process, rally volunteer support to canvass all homes within one day. Although the students reached 75% of eligible parcels in both neighborhoods, BTG staff and volunteers did complete the remaining 25%. From this engagement process in neighborhood F a total of 154 bins were distributed during this phase, with 112 being to new recyclers and 42 being distributed to consistent recyclers.

This phase would have a projected expansion of the neighborhood recycling rate by 6%, growing the weekly pickup participation to 394 and an overall participation rate of 22%. Because of the participation in phase 3 by the University of Central Missouri student group, continuous support was established and the delivery of bins process became a lot easier creating the opportunity to track the immediate results of phase 3. From three weeks immediately prior to the quick response of phase 3, an average of 375
residents participated per week equating a mean of 21% of all residents were recycling. This immediate tracking calculation was only 1% point off of the projected increase from phase 3’s calculations.

In the final weeks of tracking, the neighborhood recycling mean was consistent at 21% of all residents participating in the curbside recycling program. However, the projected overall participants per week was suppose to increase by 163 participants bringing the weekly participants to 445 residents which would have increase the overall recycling rate to 24%, failing short 3% of the actual end of program recycling rate at 21%.

*Neighborhood G*

This neighborhood encompasses 705 eligible parcels, very similar to and geographically located parallel to neighborhood F. This neighborhood had predominately more split level and two story houses and only a few ranch style houses. The baseline data collected indicated that an average of 172 residents recycling weekly creating a weekly mean neighborhood recycling rate of 24%.

Phase 1 was exactly the same as neighborhood F, as they do have a separate neighborhood association but partner to create a coalition since they are in such close proximity to each other. From the neighborhood association meetings, community hazardous waste collection event and neighborhood newsletter this phase allowed for a total of 30 bins requested 14 to new recyclers and 16 to consistent recyclers. This phase thus had a projected effect of an increase of 2% bringing the total neighborhood recycling
rate to 26% and adding 14 more recyclers per week reaching a projected 186 residents per weekly pickup.

In phase 2 the literature drop was conducted to all residents which had a request rate of 15 additional bins, 6 of which were to new recyclers and 9 to consistent recyclers. This addition to the recycling base would be estimated to have an effect of 1% on the overall neighborhood recycling rate.

In phase 3, the same collaboration of organizations in neighborhood F was conducted for the door-to-door engagement process. A total of 124 bins were requested, 79 from new recyclers and 45 from consistent recyclers. This increase in residents using bins would have a projected weekly recycling populous of 251 residents and a projected weekly neighborhood recycling rate of 36%.

Although phases 2 and 3 were only a week a part their delivery of bins requested happened within the same two day time frame and thus was tracked within the same window of time. This set of tracking yielded an average of 227 residents recycling per week and a mean weekly neighborhood recycling rate of 32%.

Overall all three phase had a projected increase of weekly residents of 99 additional recyclers per week, with a projected total of 271 residents recycling per week, and an increase of 14%, bringing the neighborhood recycling rate to 38%. Upon the completion of the final tier of tracking it was calculated that an average of 215 residents recycled for a mean weekly neighborhood recycling rate of 31%, a disparity from the projected to actual rate by 7%.
Neighborhood H

This neighborhood is very similar to those within the defined federal district. Predominately low to middle income, high rental occupancy and turnover are present within this community. There are 1303 eligible parcels with predominately ranch and split-level homes. Baseline data was conducted and an average of 203 residents participates weekly within the program, establishing a weekly mean neighborhood recycling rate of 16%.

Phase 1 was conducted; however there were no longer any recycling bins available for distribution at this time so only community relationships were constructed. This neighborhood was actually a coalition of two adjacent smaller neighborhoods, but due to low amount of resources joint forces to create a coalition. This coalition would be extremely beneficial in helping BTG identify the population we were working in and the potential constraints with residents in participating in the program.

Phase 2 was initiated and all residents received a piece of literature explaining the benefits and importance of the program, while offering a free recycling bin. From this phase a total of 85 bins were requested, 65 to new recyclers and 20 to consistent recyclers. This addition in recyclers would have a significant impact, projecting that now 268 residents would participate on pickup days each week and the neighborhood recycling rate would increase by an estimated 5%, to a projected 21%. Tracking was conducted after this phase allowing for a comparison of projected to actual values. The tracking yielded an average of 246 people recycling per week and a mean neighborhood recycling rate of 19%.
In phase 3, focus was placed on completing the door-to-door engagement immediately and thus BTG staff and volunteers did so in the dead of winter. After completion of this phase it was calculated that 338 requests for bins were placed, 236 from new recyclers and 102 from consistent recyclers. This was a significant expansion of the recycler base increasing resident participation in this phase alone to an estimated 439 residents participating per week with an overall projected neighborhood recycling rate of 34%. The tracking model was sustained in this neighborhood and this round yielded an average of 315 participants per week with a mean of 24% neighborhood recycling rate, yielding a disparity of 10%.

Overall 301 new recyclers received a bin, which would create an average recycling pickup day to include some 504 residents with a projected neighborhood recycling rate of 39%. After the final round of tracking was conducted, it was concluded that an average of 344 residents recycled per week creating a mean neighborhood recycling rate of 26% and increase of 10% from the baseline data, but falling 13% short of the projected neighborhood recycling rate.
CHAPTER 5- Discussion

One of the main flaws with this study was the lag time for returning responses to recycling bin requests. Due to a delayed delivery of recycling bins, which was out of BTG’s control since the KCoSW was in charge of the purchase and management of the bins, several issues were caused to the study. The first of which was two to seven week delays from point of residents requesting a bin to a bin being delivered to their door. This could have caused apathy to settle within residents who were initially excited to begin participation with this program with the excitement generated from direct contact.

A second major flaw with this project was the establishment of the four tiered, minimum of two week consistent, tracking measures following each phase; predominately the first and second phases. A combination of weather conditions, workload, and lack of enough employees required consolidation of resources and didn’t allow for such an expansive tracking system. Also, the geographic location coupled with the limited workforce didn’t allow BTG to conduct tracking simultaneously in all neighborhoods. This effort, if completed, would have yielded more specific results and effectiveness of conducting each phase of the program.

Neighborhood A

Overall the phasing process yielded a 9%, from 36% to 45%, increase in the neighborhood curbside recycling rate, proving a successful implementation of the CBSM strategies. Although this neighborhood was somewhat biased because its initial baseline rate was over the 34%, this program proved that even neighborhoods performing at higher percentages could be affected by this strategy.

Neighborhood B
This neighborhood brought unique challenges to the CBSM strategy because of its background and district participation. It is assumed that a transformation of this neighborhood from its other district members, as the baseline rate was significantly higher than the overall average of neighborhoods in the district. There could also be a positive correlation of natural participation increases around community awareness. This is the only explanation for the additional nine recyclers, equating to an additional 6% increase to the neighborhood participation rate.

**Neighborhood C**

This neighborhood’s end results were not as significant but exposed several circumstances that affect total neighborhood recycling rates. The first, weather, on two occasions the amount of participation has been either present or snow has been still present on neighborhoods streets, significantly reducing actual percentages per week. It is common for a weekly fluctuation of 1-2% but any percentage of 4% or greater has been correlated with either a holiday delaying services, present weather conditions or a direct effect of the program. Another assumption can be made that due to the understood facts of this outlined federal district, unemployment, and occupancy turnover rates are significantly higher thus there is a large number of residents who would vacate their homes within the time frame of the program creating voids from the initial baseline percentage. Overall, success was achieved in the highest point from the direct engagement survey door-to-door canvass or phase 3. Success was not met in bringing this neighborhood to the 34% national neighborhood threshold.

**Neighborhood D**
This neighborhood showed significant improvements from the baseline data, with a consistent level of growth per each end of distribution of bins from phases. However, the conclusion of this neighborhood tracking showed an estimated 15% disparity from estimated to actuated growth within the neighborhood. Upon further investigation it was concluded that 24 new recyclers received a bin but did not use it on any of the recorded tracking days, thus leaving 38% of the estimated growth from the additional 63 bins, out equating a more realistic number of 75 recycling bins per day used and a neighborhood recycling rate of 28% which leaves only a 5% disparity between actual tracked percentages to projected. The difference can be assumed to encompass the high turnover rate in residency and thus the fluctuation of participation.

**Neighborhood E**

This neighborhood showed stagnation amongst participation. The ambitious response rates projected a high probability of success, which fell 14% shy of the projected estimates. This could be attributed to an estimated 31 new recyclers who received a recycling bin did not use it. Thus, the actual participation should have been 132 participants and hold an estimated 27% recycling rate within the community. This figure is more accurate and only bridges a 7% disparity amongst actuated and projected neighborhood recycling rates.

**Neighborhood F**

This neighborhood had an immense advantage by collaborating in phase 3, effectively expanding the workforce and eliminating this variable which affected other neighborhoods. Although the projected and actuated participants varied by 3% this could have been affected due to those new recyclers who received a bin but did not use it within
the time from of our tracking. Thus, after removing the 59 persons who fall within this category of receiving a bin through any of the phase, being a new recycler and not using the bin the most accurate project of residents using bins would be an estimated 386 per weeks pickup, translating to a 21% overall neighborhood recycling rate. This projected rate is precisely in line with the actuated final tier of tracking.

*Neighborhood G*

There were many commonalities between neighborhood F and G in the phasing processes. Overall, the phases yielded a disparity of 7% from projected growth to actual growth. After deducting the 37 residents who received a recycling bin as a new recycler but did not use it, the new projection would be that 234 residents recycled weekly at a neighborhood recycling rate of 33%. When compared to the actual tracking data collected 215 residents recycled for a mean weekly neighborhood recycling rate of 31%, a disparity from the projected to actual rate of only 2%. This two percent could have been caused by high turnover within rental properties, weather conditions, or general fluctuation amongst recycling rates per week.

*Neighborhood H*

This neighborhood was a unique because of its very visible similarities to the federal designated neighborhoods, yet did not receive such designation. Similar problems were immediately identified and yet the outcomes were very different.
In Phase 1 the first mishap was the exhaustion of our recycling bins, leaving BTG with no way to properly complete this phase to the same level as other neighborhoods.

However, unlike other neighborhoods phase 2 was executed and a tier of tracking was conducted to analyze and compare projected effects to actual affects. In this phase projections were that 268 residents would recycle expanding the neighborhood recycling rate to 21%; yet after deducting those residents who were new recyclers yet didn’t use the bin during tracking, the actual increase was 258 total residents for a neighborhood recycling rate of 20%. After tracking of resident’s progress it was found that an average of 246 residents participated weekly and the mean neighborhood recycling rate was 19%, a 1% disparity. This level of disparity can be classified as either natural fluctuation of rates per week or turnover in residents renting homes.

In phase 3 a total of 236 from new recyclers would have been a significant expansion of the recycler base increasing resident participation in this phase alone to an estimated 439 residents participating per week with an overall projected neighborhood recycling rate of 34%. However, 108 of those 236 new recyclers receiving a bin did not use their bin. Thus the new projection would be an estimated 331 participants per week with a projected 25% neighborhood recycling rate. The tracking model was sustained in this neighborhood and this round yielded an average of 315 participants per week with a mean of 24% neighborhood recycling rate. The disparity of 1% is consistent with the average fluctuation from week to week.

Overall this neighborhood was projected to yield 301 new recyclers which would create an average recycling pickup day to include some 504 residents with a projected neighborhood recycling rate of 39%. However, 118 new recyclers received a bin but
didn’t use it within the time frame of the program. Thus the projected totals are inflated. The new projections with this population deducted would be 386 residents participating for an estimated neighborhood recycling rate of 30%. After the final round of tracking was conducted, it was concluded that an average of 344 residents recycled per week creating a mean neighborhood recycling rate of 26% and increase of 10% from the baseline data, but falling 4% short of the new projected neighborhood recycling rate. Although it should be considered that considerable snow accumulated during the month of December in 2010 and four federal holidays were recognized during the time frame of the collection of this data, possibly affecting at least three tracking dates, resulting in four unusual fluctuations between collection dates.
## Neighborhood Comparison Chart

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## Phased Implementation Graph
Neighborhood Increase Graph

REFERENCES


ADDENDUM

This project was in part of a two year contract with the city of KCMO DoSW and thus an additional year of the project furthermore perfected the community based social marketing techniques used within this first year’s summary. Seven new neighborhoods were identified, with five above the 30% citywide average. This approach was taken because it was thought that since such successful growth was made within low performing recycling neighborhoods, more drastic affects would be made in an area with already high levels of recycling efficacy.

Thus a leaner portion of the first years phasing was established, focusing merely on the direct engagement of residents through the conducting of a literature drop and door-to-door engagement, eliminating already established buy-in through neighborhood leaders and associations like in phase one of the first years program. Additionally, a new tracking system was developed through collaboration with Dr. Keshav Bhattarai from the University of Central Missouri’s Geographic Information Systems (GIS) program. The use of GIS software allowed for the manipulation of models after each set of tracking data and substantially expedited the tracking models.

Only basic abilities of the GIS software were used to help display the affects of the programs phases to necessary viewers as well as allow for more direct understanding of areas and pockets needing more focus within each neighborhood.

The success of this program can be viewed on the following pages tracking results chart.
## Addendum Neighborhood Comparison Chart

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### Neighborhood F Baseline Map
![Neighborhood F Baseline Map](image1)

### Neighborhood F Bins Distributed Map
![Neighborhood F Bins Distributed Map](image2)

### Neighborhood F Final Tracking Map
![Neighborhood F Final Tracking Map](image3)