

Understanding Recycling Behavior in Kentucky: Who Recycles and Why

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Recycling behavior and the motivations behind recycling are being analyzed in a collaborative study between the Sloan Industry Center for a Sustainable Aluminum Industry, the Center for Aluminum Technology, Secat, and the Gatton College of Business and Economics at the University of Kentucky in Lexington. The goals of this study are to determine why people recycle and to find ways to motivate people to recycle more, using Fayette County, Kentucky, as a sample study. It is hoped that the information gathered through educational and motivational efforts in this county can be used on a larger scale in communities throughout the United States.

INTRODUCTION

Motivating people to recycle aluminum provides multiple advantages to society. At the manufacturing level, secondary aluminum serves as a less costly alternative to newly produced aluminum and uses only 5% of the energy. These savings contribute to higher profit margins for companies offering products with aluminum content, or can be passed along to consumers via lower prices. These savings are realizable in local, state, national, and international markets.

Recycling is also beneficial to the environment because fewer natural resources are wasted when aluminum is recycled. Campaigns to increase recycling behavior can also raise funds for a variety of public causes and lead to increased environmental awareness.

Aluminum recycling is more readily practiced at the corporate level because the magnitude of the savings is obvious and recycling can be mandated employee and departmental behavior. At the individual citizen-consumer level, the benefits of aluminum recycling may

be apparent but not particularly motivating. Environmental enhancement is generally a desirable goal, but one person may feel insignificant in terms of being able to affect the environment in a positive manner. Additionally, cost savings, although impressive in overall magnitude, may not seem as much at the individual or household level.

Thus, the focus of this part of a col-

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laborative study between the Sloan Industry Center for a Sustainable Aluminum Industry, the Center for Aluminum Technology, Secat, and the University of Kentucky at Lexington is to find ways to inspire greater levels of individual aluminum recycling behavior, using Kentucky as a microenvironment. The goal is that information learned at this level can then be applied to communities across the United States.

Based on the findings of previously conducted research programs, recyclers in the U.S. population are reportedly older and wealthier, living in households with fewer members, and more liberal

in political orientation. By comparison, Kentuckians are younger and less wealthy, have larger households, and are more conservative politically. Thus, programs to motivate Kentuckians to recycle must overcome their tendencies not to recycle, as compared with national norms.

To increase aluminum recycling in Fayette County, behavior modification programs are proposed. A recent survey by the Kentucky Environmental Council revealed that respondents with more education performed better on 12 recycling knowledge-based questions than those with less education. However, despite their better knowledge of environmental facts, those with more education were not more likely to engage in environmentally responsible behaviors than those with less education, based on their self-reports. The conclusion may be drawn that although they understand the environmental issues, they do not connect those facts with their own actions and behaviors. This weak relationship may be attributed to a difference in the strength of their environmental convictions or the exclusion of other variables that affect the environmental attitude → behavior link.

This disconnect is an argument for behavioral modification programs that go further than simply educating the consumer on the benefits of recycling. Academic literature has provided some insight as to the attitudes toward recycling and mechanisms by which behavior modification programs work. In brief, Fayette County needs a two-pronged approach to increasing the recycling rate. The first approach is to increase the rates of those who already engage in recycling; the second approach is to modify the behavior of those who are environmentally aware but do not cur-

rently engage in recycling. The marginal benefit of reaching the third type of consumer, one who is not concerned about the environment and does not recycle, is minimal. It is possible that these consumers may modify their behavior through the economic actions proposed for the other two segments.

RECYCLING BEHAVIOR ANALYSIS

Several theoretical orientations can be identified in the applied behavioral analysis literature dealing with recycling. One strand of the literature is grounded in the belief that people are primarily utility maximizers motivated by costs and benefits. Alternatively, many authors adopt an attitude approach that tries to account for beliefs and attitudes in explaining behavior. Researchers have attempted to relate a variety of demographic, psychological, and social factors to recycling behaviors among consumers. Some researchers have attempted to address the link between this attitude and behavior in a more comprehensive manner. For example, a variety of cognitive and psychosocial variables that may influence environmental behavior have been identified. Some of the more widely studied variables are outlined here.

A key variable that has been studied is attitude toward the behavior. In general, attitudes have been positively related to environmental behavior; however, some equivocal results have been reported. Also, several studies report relatively low correlations between attitudes and behavior, which is relevant to the findings in the Kentucky Environmental Council survey. The influence of the perceived benefits of environmental behavior has also been studied. These benefits include personal benefits, such as saving money or feeling good, as well as societal benefits, such as protection of the environment. In general, these benefits have a positive influence on environmental behavior, although again there have been some equivocal findings.

Other variables studied include the degree of knowledge required and the difficulty associated with performing environmental behaviors. In these studies, knowledge typically refers to a person's understanding of both what can be done to help the environment and how it can be done. Difficulty refers to perceptions

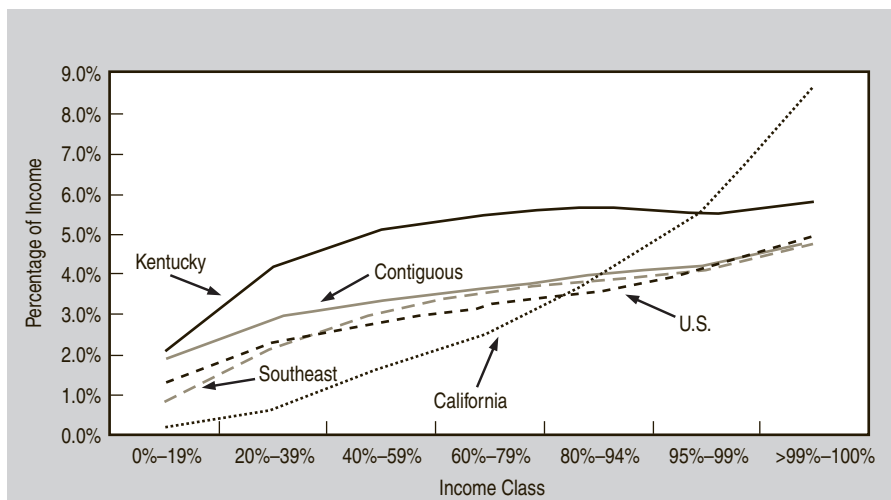


Figure 1. Income taxes as a percentage of income in Kentucky and comparison regions.²

of how easy or hard it is to perform the behavior. Although increased knowledge and decreased perceptions of difficulty have been generally associated with increased environmental behavior, mixed results have been reported.

Social influences on the performance of environmental behavior have also been studied. These studies examine the influence of relevant others, such as family and friends. In general, the results of these studies show a positive relationship between social influences and environmental behavior; however, there have been some ambiguous results.

Barriers and facilitating conditions to performing the behaviors have also been studied. These are variables such as inconvenience, effort, time, cost, accessibility of resources, or lack of facilities, that either impede or facilitate environmental behaviors. In general, when barriers are present, the likelihood of environmental behavior is reduced.

Another widely studied variable is the perceived effectiveness of performing the behavior. This construct refers to the extent to which a person's behavior is perceived to contribute to the solution of a problem; it has been likened to the notion of self-efficacy and the concept of perceived behavioral control. In general, perceived effectiveness has been positively related to environmental sensitivity and specific environmental behaviors.

Overall, the variables identified previously are found to be significantly related to environmental behavior. However, in many cases, weak or nebulous rela-

tionships are reported. In addition, the relative importance of these variables is not well understood. This may be because these variables are often studied separately in a piecemeal fashion, with only one or a few variables studied at a time. This kind of research is limiting and may lead to equivocal results for several reasons. First, it is reasonable to expect that the influence of these variables may be moderated by the presence or absence of other variables. For example, prior research by Berger and Corbin¹ find that the influence of attitude on behavior is moderated by perceived effectiveness. Second, there may be variables that mediate the relationships between the variables listed and the environmental behavior. Third, studying only one or a few variables makes it difficult to assess the relative importance of different variables for influencing environmental behavior.

RECYCLING IN FAYETTE COUNTY

A recent study of recycling behaviors found that for all characteristics except sex, there were significant differences between recyclers and non-recyclers. As discussed, the age distribution for recyclers was skewed toward older consumers. Recyclers were more educated, had higher household incomes, and had households with fewer residents and fewer adults than nonrecycler households. This is different from the findings of the 2004 Kentucky Environmental Council that did not demonstrate that recyclers in Kentucky had higher levels

of education, which implies there is no discernable difference based on income. The likely reason for this disparity is economic, which leads to differences in the environmental attitude-behavior link.

Economist William Hoyt found in a recent study of the tax system in Kentucky that the state is less regressive than most states, particularly among the southeast states. In part this occurs because Kentucky relies more on the most progressive of the taxes (i.e., the income tax) and less on the more regressive sales and property taxes than many states (Figure 1). Lower-income households do bear a lighter tax burden relative to higher-income households in Kentucky and compared to most states. But because incomes in Kentucky are lower than in most states, these households still pay relatively high taxes as a percentage of their incomes. This combination of lower incomes and higher taxes could be an explanation as to why the data in Kentucky differ from that in many other areas of the United States.

The unique situation in Lexington warrants the need for data collection specific to Fayette County. This would include determining the demographics of those who recycle versus those who do not, and more importantly, discerning the types of behavior modification that will apply to the two groups of target consumers in this unique economic environment.

See the sidebar for details on recycling theory and methods.

REVISITING RECYCLING IN KENTUCKY

With respect to recycling, the questions that need to be asked and answered by surveying Kentucky residents are:

- Do people understand the benefits (economic, personal, social, and societal) of recycling?
- Which of these benefits will matter to people to motivate them to commit to recycling?
- How can these benefits be presented so that they will resonate strongly with residents (various media options, the way the message is framed or stated)?
- What reminder or remedial programs are needed to help recyclers stay the course when they partici-

pate in recycling programs?

- What kinds of public commitment to recycling will result in the strongest ongoing participation in recycling programs?

As examples, aluminum recycling provides many benefits, including environmental, economic, and community.

Environmental Benefits

Today it is faster, less expensive, and more energy-efficient to recycle aluminum than ever before. Recycling aluminum cans saves precious natural resources, energy, time, and money. The aluminum can is 100% recyclable and can be recycled indefinitely. According to the Aluminum Association, in 2003,

54 billion cans were recycled, saving the energy equivalent of 15 million barrels of crude oil—America's entire gas consumption for one day.

Economic Benefits

The aluminum can is the most valuable container to recycle and is the most recycled consumer product in the United States. Aluminum cans are unique in that a can is recycled, turned into a new can, and back on store shelves in 60 days. Used aluminum beverage cans are the most recycled item in the United States, but other types of aluminum, such as siding, gutters, car components, storm window frames, and lawn furniture can also be recycled. Aluminum has a high

RECYCLING RESEARCH: THEORY AND METHODS

Effective recycling programs require people, first, to begin to participate and second, to continue to participate. Because recycling behavior is voluntary, people participate for reasons that are not readily apparent and not necessarily in their immediate self-interest. Therefore, to be effective, recycling programs must provide people with reasons or motives that spark their participation. These motives must be enduring enough that people maintain their interest in recycling programs over time.

Research examining other kinds of voluntary programs can provide guidance on developing communications campaigns that present motives that resonate with potential recyclers. These 12 program types have been the focus of research designed to uncover ways to increase participation rates:

- Preservation of the natural environment
- Water conservation and water quality in areas with scarce or expensive water resources
- Carpooling and speed limit compliance in urban areas with congested freeways
- Blood donation
- Organ donation
- Participation in charitable or public service organizations
- Energy use reduction during peak seasonal demand times
- Exercise, fitness, or health promotion
- Reduction of harmful behaviors, such as overeating, or alcohol consumption
- Charitable contributions
- Safe behavior in the workplace
- Ethical decision-making in work settings or ethical behavior in general

Most people would regard each of these programs as good or worthy of participation, but most do not participate in them. People believe that others should participate, but they themselves participate infrequently, if at all. Reasons for participating in these programs could well be similar to those that would energize recycling programs, and reluctance to participate in these programs is probably attributable to some of the same factors that inhibit people from recycling.

In general, explanations for a lack of participation in the listed programs can be framed as one of the following statements: "One person can't make much of a difference" (e.g., charitable giving, energy conservation, environmental conservation, blood donation, organ donation); "Why should I comply if a lot of other people aren't" (e.g., ethical behavior, speed limit compliance, carpooling); "This won't affect me because . . ." (e.g., workplace safety, smoking, alcohol consumption, lack of exercise).

Certain behavioral theories help to explain why programs like these are not as successful as hoped. These include planned behavior theory, reasoned action theory, goal-directed behavior model, altruistic behavior model, environmental behavior model, environmental concern model, and residual effect of the past on later behavior.

In their study, Taylor and Todd³ developed a model of household garbage recycling behavior based on the theory of planned behavior that we believe is the key to increasing recycling in Fayette County. This theory proposes that behavior is deliberate and planned. The theory of planned behavior is the successor to the similar theory of reasoned action of Ajzen and Fishbein.⁴ The succession was the result of the discovery that behavior did not seem to be 100% voluntary and under control, which resulted in the addition of

market value and continues to provide an economic incentive to recycle. When aluminum cans are recycled curbside, they help pay for community services.

Community Benefits

Each year, the aluminum industry pays more than \$800 million for empty aluminum cans.⁶ Many organizations, such as the Boy and Girl Scouts of America and local schools, use recycling to earn funds to further local projects. The money earned enhances programs and communities and improves the quality of people's lives. From a local can drive to raise money for school improvements to a Boy or Girl Scout troop "Cans into Cash" competition to pay for camp,

recycling is used across the country to help others. Schools can collect cans to help raise funds for various projects and thereby help to reduce or stabilize taxes.

Cans for Habitat is a national partnership between the Aluminum Association and Habitat for Humanity International that began in August 1997. Money earned from recycled aluminum cans is used to build decent, affordable housing with families nationwide. A network of Habitat affiliates, local businesses, recycling centers, and community organizations "make every can count" by recycling aluminum cans to help build homes. There are currently more than 600 Cans for Habitat affiliates participating in the

program. To date, approximately 5.125 tonnes of aluminum cans have been recycled—the equivalent of \$4 million raised by and for Habitat affiliates as part of the Cans for Habitat program. That equates to 88 houses.⁶ If every American recycled one can today, Habitat could build 56 homes tomorrow. Americans recycled \$800 million worth of cans in 2003—just 1% of that figure could build 160 Habitat for Humanity homes.

FUTURE WORK

The next phase of this study will address several research issues. First, the research method details must be developed, and successful programs in states with ongoing recycling programs will be studied. Second, the demographic attributes that have the most influence on recycling behaviors will be established; this will require segmentation of consumers. Third, it must be ascertained which messages or benefits (e.g., economic or environmental) will have the most impact on each demographic set. This will require an analysis of interactions between demographics, intent, and messages. Finally, measures of success (i.e., increases in recycling rates) must be set.

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perceived behavioral control. Briefly, according to these various theories, human action is guided by three kinds of considerations.

- Behavioral beliefs: beliefs about the likely consequences of the behavior (How will I feel or what will happen to me if I act in a certain way?).
- Normative beliefs: beliefs about the normative expectations of others (How will people I know expect me to behave and what will they think of me?).
- Control beliefs: beliefs about the presence of factors that may facilitate or impede performance of the behavior (What events or results or people could hinder my acting in a certain way?).

These three considerations are crucial when changing people's behavior and have been used recently to explain the failure of certain marketing programs. In their respective aggregates, behavioral beliefs produce a favorable or unfavorable attitude toward the behavior, normative beliefs result in perceived social pressure or subjective norm, and control beliefs give rise to perceived behavioral control. In combination, attitude toward the behavior, subjective norm, and perception of behavioral control lead to the formation of a behavioral intention. As a general rule, the more favorable the attitude and subjective norm and the greater the perceived control, the stronger should be the person's intention to perform the behavior in question.

Recently, Ajzen investigated residual effects of the past on recent behavior.⁵ He came to the conclusion that this factor indeed exists but cannot be described to habituation as many people think. A review of existing evidence suggests that the residual impact of past behavior is attenuated when measures of intention and behavior are compatible, and the residual impact vanishes when intentions are strong and well formed, expectations are realistic, and specific plans for intention implementation are developed.

Although the 1992 Berger and Corbin study¹ examined the moderating role of perceived effectiveness, we know of no studies that examined the interaction of demographic variables that may facilitate turning intent into action. Studies in this area could be beneficial to determine the target audience that will have the most impact for recycling. For example, recyclers are generally older with more income. Which variable will have the most impact on recycling behavior? Would it be more beneficial to target affluent neighborhoods comprising younger individuals or those where the average age is higher? In essence, income could moderate the relationship between age and recycling behavior, especially in Kentucky, where a unique economic situation exists. Structural analysis of the variables and interactions could provide guidance that will augment the effectiveness of behavioral programs.

Combining the results and conclusions of the studies reviewed, the following aggregate model is recommended to guide future research:

Reasons for Acting → (Desire → Intentions) → Overt Signal of Intentions → Actions

Each step reinforces the ultimate step of taking action, in this case, recycling. If Kentucky residents can be provided with sufficient reasons to recycle, they will have reasons to act. The next step is to provide motivation (intentions that reach a threshold of recognition) to engage in recycling. This would include providing a way to "sign up" or otherwise make a public commitment to recycle. Successful progress through signaling intentions should result in increased recycling.