

**Velocommuter.org
Social Marketing on the Internet**

Michael B. Stringer

Spring 2008

Date: _____

Approved:

Pat Halpin, Advisor

Master's Project submitted in partial fulfillment of the
requirements for the Master's of Environmental Management degree in
the Nicholas School of the Environment and Earth Sciences

Duke University

2008

Abstract

The goal of this Master's Project is to create a website that motivates Americans to ride a bicycle to work or school. Creation of the website includes application of Social Marketing, which is a strategy to promote a socially-desired behavior within a target population. The website velocommuter.org is created to encourage teens and young adults, who already ride bicycles for recreation, to also use their bikes for transportation. The website encourages visitors to make a pledge to try riding a bike to work or school.

To create the most effective and influential website, a prescribed Social Marketing protocol was followed. Initial research guided selection of a specific audience and these individuals were targeted for surveys and a focus group. Information about attitudes gathered from the target audience is used to tailor website content, which directly addresses the target group's reported barriers and benefits to biking to work.

Using a Social Marketing approach for this Master's Project has yielded a great deal of information about those who ride a bicycle to work or school. Intuitions and assumptions about this population are tested and accepted or rejected before costly mistakes can occur.

I conclude that employing a social marketing strategy to guide the creation of a website to influence behavior is indeed a sound approach. Organizations hoping to make a realistic impact on people's unsustainable behaviors might be wise to consider adopting a similar behavior change strategy. However, it is difficult to draw conclusions about how much of the target behavior is actually created as a result of the website, given the relatively short timeline of this project.

Table of Contents

Abstract	ii
Table of Contents	iii
List of Figures	iv
Introduction.....	1
Background	2
The Challenge: Commuter Travel Behavior Change.....	5
Project Scope	9
What Constitutes a Social Marketing Campaign?	9
Developing an Environmental Behavior Change Strategy	12
A Standardized Approach	12
Barriers and Benefits.....	13
Why a website?	16
Social Marketing on the Web	17
The Velocommuter.org Social Marketing Campaign.....	20
The Velocommuter.org Website.....	22
Strategy	24
Results.....	24
Discussion	31
Survey/Focus Group Discussion.....	32
A Sound Strategy	33
Part of a Comprehensive Strategy to Combat Global Warming.....	35
Research can be Expensive, but Worthwhile.....	36
Practice, Practice, Practice	36
A Pledge does not a Velocommuter Make... ..	37
Technical Expertise Required	38
The Future of Velocommuter.org	38
Conclusions.....	39
Appendix I – Bicycle Commuter Survey.....	40
Appendix II – Bicycle Commuter Survey Quotes	42
Appendix III – References	44

List of Figures

FIGURE 1	How People got to work in the U.S. in 2003.....	2
FIGURE 2	Percentage of Americans Bicycling in the Past 30 Days by Gender, Age, and Race/Ethnicity.....	3
FIGURE 3	The Five-Step Environmental Education and Communication Process.....	10
FIGURE 4	A Model for Behavior change which employees Community-Based Social Marketing.....	12
FIGURE 5	A Causal Model of Bicycle Commuting Behavior.....	15
FIGURE 6	Assessing the Benefits and Barriers of Riding a Bicycle to School or Work as Compared to the Alternate Options.....	20
FIGURE 7	Survey Responses Regarding Barriers to Initially Adopting Target Behavior....	25
FIGURE 8	Survey Responses Regarding Barriers to Daily Engagement in the Target Behavior.....	27
FIGURE 9	Survey Responses Regarding Motivations to Engage in the Target Behavior....	28
FIGURE 10	Survey Respondents' Reported Commute Distance.....	29
FIGURE 11	Respondent Rating of Employer Support on a Likert Scale.....	30
FIGURE 12	Respondent Rating of Importance of Appearance at Work/School on a Likert Scale.....	30
FIGURE 13	Respondent Rating of Importance of Appearance While Riding a Bicycle on a Likert Scale.....	31
FIGURE 14	SWOT Analysis of Using the Internet for an Environmental Communications Strategy.....	34

Introduction

Today, the human population is faced with one of the biggest challenges in its history: reversing the potentially devastating impacts of global warming. The cities of the United States, where a large portion of climate-warming gas emissions originate, have been, and will continue to be overbuilt to accommodate the automobile. Recent discussions about solving global warming have centered on technological advances (e.g. better pollution control, more efficient use of fuels). However, technology alone will not solve the problem – Americans need to reduce their dependence on the automobile.

On the face of it, there seems to be little incentive for Americans to use automobiles less, given the fact that populations in developing countries will merely consume any fuel *not* consumed by Americans, thus offsetting any gains made by those Americans who act on behalf of the climate. In addition, a looming crisis is hard for the average person to understand and therefore act upon, given the lack of localized, visual evidence of global warming. However, a well-designed environmental communications strategy, paired with well-crafted legislation, can make powerful inroads into the entrenched mindset and habits of automobile driving.

The purpose of this Master's Project is to explore the potential of an environmental communication strategy to change Americans' commuting behavior. The final product of this Master's Project is a website (<http://www.velocommuter.org>) that is designed using well-tested behavior change strategies. The messages and interactive content on the website are based on social research into the barriers and benefits to adopting a specific behavior for a target audience. The goal of this Project is to encourage more Americans, aged 18 to 22, to ride a bicycle to work or school on a regular basis. This population was selected because teenagers have the highest

percentage of regular internet users and because this group is much more likely to already ride a bicycle for recreation than other age groups.

Background

Over 90% of Americans use an automobile to travel from home to their place of employment ("Mode of Transportation," 2001). Reliance on the automobile has resulted in poorly planned cities, a crippling reliance on increasingly scarce quantities of fossil fuels, air quality concerns, and an obesity epidemic in this country ("Transportation" 2008, Brown 2001). These concerns are well-known by Americans, but, unfortunately, simply knowing about the negative aspects of driving provides little incentive for most people to give up the convenience and comfort of their automobile (McKenzie-Mohr and Smith 1999; McKenzie-Mohr 2000).

According to a recent ABC News Poll, the average distance that Americans travel to their job is 16 miles. The drive in their

automobile takes an average of 26 minutes, but on a bad traffic day, the average commute can take 46 minutes to complete, resulting in an average speed of less than 21 miles per hour (Langer 2005). Gasoline prices at the pump are currently averaging over \$3.50 per gallon and

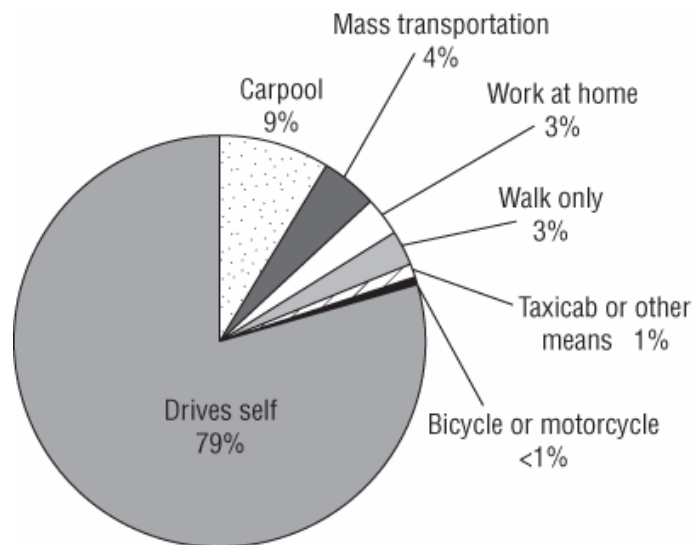


FIGURE 1 How People got to work in the U.S. in 2003 ("How People Get to Work").

bulk crude oil prices recently closed at over \$119 per barrel, a record high. As these convenience and financial factors play a more prominent role in people’s lives, they will become more significant barriers to our use of automobiles. The various alternative transportation options become more alluring as the differences between the barriers and benefits of each mode of transportation undergo change.

There is also increasing evidence that Americans are not getting enough exercise. If Americans were to get up to an hour of exercise every day, our health maintenance costs would decrease dramatically ("Dietary Reference" 2005). However, most Americans would balk at the idea of finding an extra hour to fit in an exercise routine. Riding a bicycle might lengthen the time for commuting to work, but it also enables one to fit in a cardiovascular workout that might not happen otherwise. Biking to work just one day per week would significantly reduce every

American’s risk of diseases like Type II diabetes, heart disease, and chronic obesity.

To alleviate the problem of an unsustainable trend in transportation behavior, one must consult with health experts, behavioral psychologists, governments, and environmental groups to

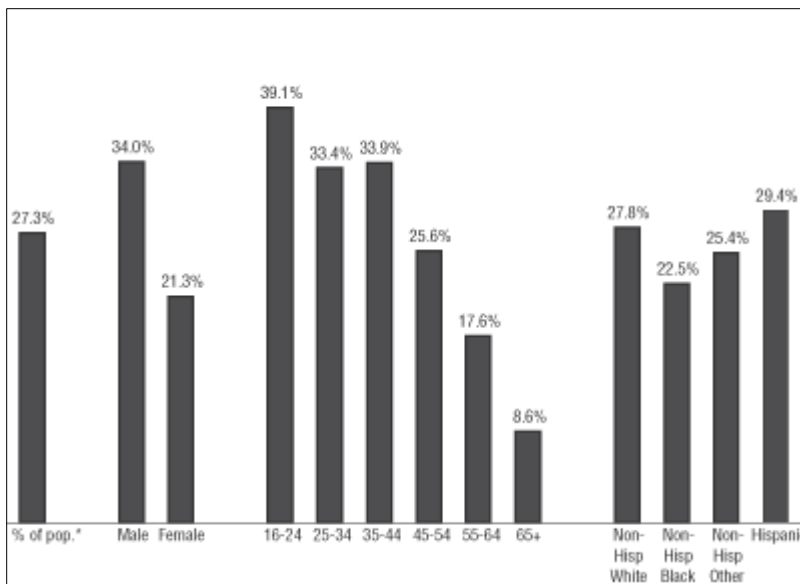


FIGURE 2 Percentage of Americans Bicycling in the Past 30 Days by Gender, Age, and Race/Ethnicity (Source: USDT 2004)

develop strategies to create more sustainable transportation behavior. While much attention has been paid recently to structural solutions to global warming like cap-and-trade systems or carbon taxes, we must also consider softer, voluntary approaches which enhance structural solutions like regulations.

The bicycle presents an excellent alternative to the automobile. Bicycle use by Americans is on the rise, especially among young people (See Figure 2). In 1990, Americans made a total of 1.7 billion bicycle trips. In 2001, this number nearly doubled to 3.3 billion trips. However, the percentage of total trips was only an increase of 0.2 percent, as Americans' overall number of trips *also* almost doubled over the same time period (USDT,FHA 2004).

Changing behavior is the essential goal here. In order to change behavior, there are hard and soft approaches. The relative merits of hard (i.e. regulations, taxes) versus soft (i.e. education, information campaigns) approaches are not argued here. Instead, this Project attempts to show the potential of a well-crafted environmental behavior change campaign. Such campaigns will be a vital thread in the fabric which will be sewn together in coming years to combat global warming and other health-related concerns.

An important issue with environmental information campaigns, however, is that they are often carried out by practitioners who very often do not pre-test their campaign strategy, nor do they target a particular group of actors that engage in an unsustainable activity. On the other hand, there are a number of accomplished social psychologists who are well-versed in successful applications of their field in creating more sustainable behaviors (McKenzie-Mohr 2000).

Bridging this gap between environmental program directors and psychologists is an emerging application called Community-Based Social Marketing (SM). Practitioners of SM use a standard

methodology for campaigns that incorporates traditional marketing principles into a targeted pro-environmental behavior change strategy.

Finally, some have argued that voluntary compliance programs like SM are needed more today than in previous times due to the changing nature of pollution. The policies designed to curtail the emissions of large point sources from the 1960's on were effective. However, the American economy is changing from industrial to service-based, where pollution emitters are more disbursed across the landscape. Not only is it difficult to find all of the sources, but oftentimes those responsible for pollution emissions lack the ability to comply with regulations because of cost, language barriers, and/or technical capacity (Rejeski and Salzman in Dietz and Stern 2002).

Therefore, environmental managers must now confront a new challenge: managing larger numbers of pollution sources that are hard to access and regulate. This Project seeks to explore a new direction in environmental management in which Social Marketing facilitates communication with stakeholders using the internet.

The Challenge: Commuter Travel Behavior Change

In his seminal 1968 article "The Tragedy of the Commons," Garrett Hardin discusses the problems associated with managing common pool resources like global air quality. He discusses the concept that a resource, utilized by a group of people with no pre-defined property rights, would fall victim to each individual's self-interest. Each individual, acting in his or her own self-interest, would incrementally degrade the resource by rationally reasoning that the addition of one more unit of utility gained stands to improve his or her lot by one, despite the fact that the overall utility or health of the resource is reduced. "Ruin is the destination toward which all men rush, each pursuing his own best interest in a society that believes in the freedom of the

commons.” He continues, “Freedom in a commons brings ruin to all” (Hardin 1968). Hardin’s solution to the commons dilemma is structural (“Mutual coercion mutually agreed upon”) – he suggests that appeals to conscience are doomed to fail.

This view of commons management is now considered overly simplistic. While structural solutions like organized government law or property rights allocation are often the most effective means to protect a resource, there are many situations where structural solutions are too difficult to manage. Without social support for legislation, enforcement will be impossible, as evidenced by increased environmental degradation after creation of the Wolong Nature Reserve in China (Liu, Linderman et al. 2001). Society must build rules for itself based on trust, mutual understanding, and communication. Social norms, ecological conditions and legislation must be layered together in order to provoke meaningful behavior change (Dietz 2003).

Each individual’s personal justification for engaging in an unsustainable behavior is likely to differ on a number of levels. In other words, “people do destructive things to the environment for many different reasons that are compelling to them, and that may override personal concern for the environment in the particular instance” (Gardner and Stern 1996). Factors that limit action are numerous, vary with actor, situation, and over time; and affect each other.

Ostrom et al. (1999) state that there are four main types of common pool resource users:

1. Those who always act in a self-interested way and never cooperate (free-riders);
2. Those who are unwilling to cooperate unless assured that they will not be exploited by free-riders;

3. Those who are willing to initiate reciprocal cooperation in hopes that others will return their trust; and
4. Possibly a few genuine altruists who always try to achieve higher returns for a group.

While there may be a large number of people in Group One of Ostrom's list, there are significant numbers of people in groups two and three. For the members of group two, it is possible to produce an environmental communication effort which creates greater concern for the health of the planet and their need for exercise while accentuating the positive aspects of being an early adopter of an exciting new activity. If these efforts are undertaken simultaneously with implementation of new laws and financial incentives, both efforts will be more successful in changing behavior. Indeed, as Weiner and Doescher state, "individuals are more willing to conserve when they believe others are conserving" (1991).

In the 40 years since Hardin's article was published, we have seen that there are numerous methods besides structural solutions to manage commons dilemmas. In addition to structural solutions like government laws, regulations and incentives, one can utilize:

- **Education Programs** which attempt to encourage pro-social behavior by giving people information and trying to change their attitudes;
- **Small Group/Community Management**, in which informal social arrangements are agreed upon to preserve the resource; and
- **Moral, Religious and/or Ethical Appeals** to encourage pro-social behavior (Gardner and Stern 1996).

All three of these solutions to commons management will be used in this environmental communications program. The Velocommuter.org website will have numerous educational components including reasons to adopt the behavior and how to do it successfully. While

community management techniques are increasingly difficult today and debatably impossible to accomplish via the World Wide Web, the website will portray the world's atmosphere as a fragile resource shared by everyone. Finally, efforts made during this Project will better define an environmental ethic (as proposed by authors Aldo Leopold (1949), Wendell Berry (1977) and others), which will attempt to influence Americans to view excessive automobile commuting as unethical and immoral.

While it is important to have a strong theoretical component when devising an environmental communications program to change behavior, creating campaigns which effectively accomplish behavior change “requires a healthy dose of skepticism about your own and others’ personal theories” (McKenzie-Mohr and Smith 1999). Therefore, I will employ and test techniques used by community-based social marketers to ensure that my strategy is sound, the website is intuitive, and that people respond positively to messages on the website. Because I will be deploying Community-Based Social Marketing via the World Wide Web, I will be delving into a somewhat newer way to use these techniques, though I am not the first to do so (as exemplified below, see “Social Marketing on the Web”).

Campaigns focused on changing commuter's travel behavior are faced with a number of challenges, including:

- **External Barriers**, including fuel prices, long commuting distances, and limited access to transportation alternatives;
- **Internal Barriers**, including perceptions regarding alternatives to automobiles, possible negative attitudes about transportation alternatives, missing awareness about their impact on the environment; and
- The **habitual nature** of the decision process underlying travel behavior problems (Seethaler and Rose 2003).

This campaign will focus on reducing the internal barriers and breaking the habits of automobile commuters. Changing the external barriers can only be accomplished by long-term commitments by local governments and fundamental changes in Americans' home-purchase decision process. In addition, because so many individuals are not faced with the external barriers (due to their close proximity to their job), reducing the internal barriers has a huge potential to change the impact that automobile commuting makes on our environment.

Project Scope

In order to create an internet-based social marketing campaign, I am developing a dynamic website called Velocommuter.org. The site is dedicated to educating visitors about using bicycles for transportation. I employ well-tested behavior change strategies to create more sustainable transportation behavior: convince more Americans to ride their bicycles to work or school.

An important aspect of this Master's Project is to make the website part of a social marketing campaign to promote biking to work. This includes using surveys and focus groups to assess specific benefits and barriers to adopting this behavior by the target audience. These are essential elements of a social marketing campaign, as explained below.

What Constitutes a Social Marketing Campaign?

Attempting to create a more sustainable behavior can be a daunting task. Most environmental informational campaigns have failed to make any significant changes in people's behavior. This is due to a number of factors that campaign designers often overlook. These factors include:

- A variety of barriers to adopting a behavior exist;

- The degree to which these barriers factor into the decision-making process differs from person to person; and
- Changing attitudes does not necessarily change behaviors.

Social Marketing (SM), by contrast, has been shown to be very effective in bringing about behavior change. Practitioners begin by identifying a specific behavior and a target population.

This is followed by:

- Identifying barriers and benefits to adopting a sustainable behavior;
- Designing a strategy that utilizes behavior change tools;
- Piloting the strategy with a small segment of the targeted population; and
- Evaluating the impact of the program once it has been implemented across the community

(McKenzie-Mohr and Smith 1999).

In Step One, practitioners assess the barriers and benefits of the selected activity. Barriers can be either internal to the individual, such as lack of knowledge about *how to do* the activity, or external, as in structural changes to the community required to carry out the activity. Important to the process is the recognition that these perceptions vary from person to person, but it is important to get some overall trends as one begins the process.



FIGURE 3 The Five-Step Environmental Education and Communication Process (Day 2002).

In the next step, practitioners identify the behavior change tools that are best suited for the target audience and the sustainable behavior being sought. Behavior change tools include soliciting a commitment from individuals to do the selected activity, developing community norms that make the activity a ‘normal’ part of life, and creating effective messages like “Don’t mess with Texas” (see sidebar).

In the next phase, researchers pretest and revise the plan of action. This entails use of focus groups and interviews to make sure that no missteps are made with the target audience. This is also an opportunity to learn more about the target audience, especially in relation to the target behavior. The information gained during this phase of the campaign will help give the Project a better chance of realistically creating more of the sustainable behavior.



In 1986, Texas Department of Transportation officials were concerned with the amount of litter that was accumulating on roadsides around the state. Using social research, officials learned that a majority of the litter was being discarded by young males. The state hired a marketing firm to come up with an ad campaign that would target these individuals to change their behavior.

The ad agency GDS&M, using Social Marketing tools like surveys and focus groups, came up with the anti-litter slogan “Don’t Mess With Texas” and it was an instant success. The campaign is credited with reducing litter on Texas highways 72% between 1986 and 1990.

The slogan is still in use today. It is the most successful antilitter campaign in history (McClure and Spence 2006).

Stage Four is the implementation phase. This is the part of the process with which most environmental professionals are most familiar. The difference with the approach advocated here is that program design is not completed when the program is rolled out to the public. Instead, implementation gives SM practitioners an opportunity to learn more about the target population.

During the final stage, campaign coordinators continue to re-evaluate the program as it stands and consider other opportunities to engage the target population through more avenues or media. The most successful environmental behavior change strategies use a variety of approaches, working together, to encourage a sustainable behavior (Gardner and Stern 1996).

Developing an Environmental Behavior Change Strategy

A Standardized Approach

Doug Mckenzie-Mohr and William Smith (1999) describe the essential elements to a social marketing campaign: identifying barriers and benefits to adoption of the desired behavior, designing a strategy, piloting the strategy with a small segment of the intended audience, and finally evaluating program effectiveness once it is implemented. The authors suggest that a successful social marketer “requires a healthy dose of skepticism about your own and others’ personal theories” (44). In other words, focus groups and other feedback mechanisms which

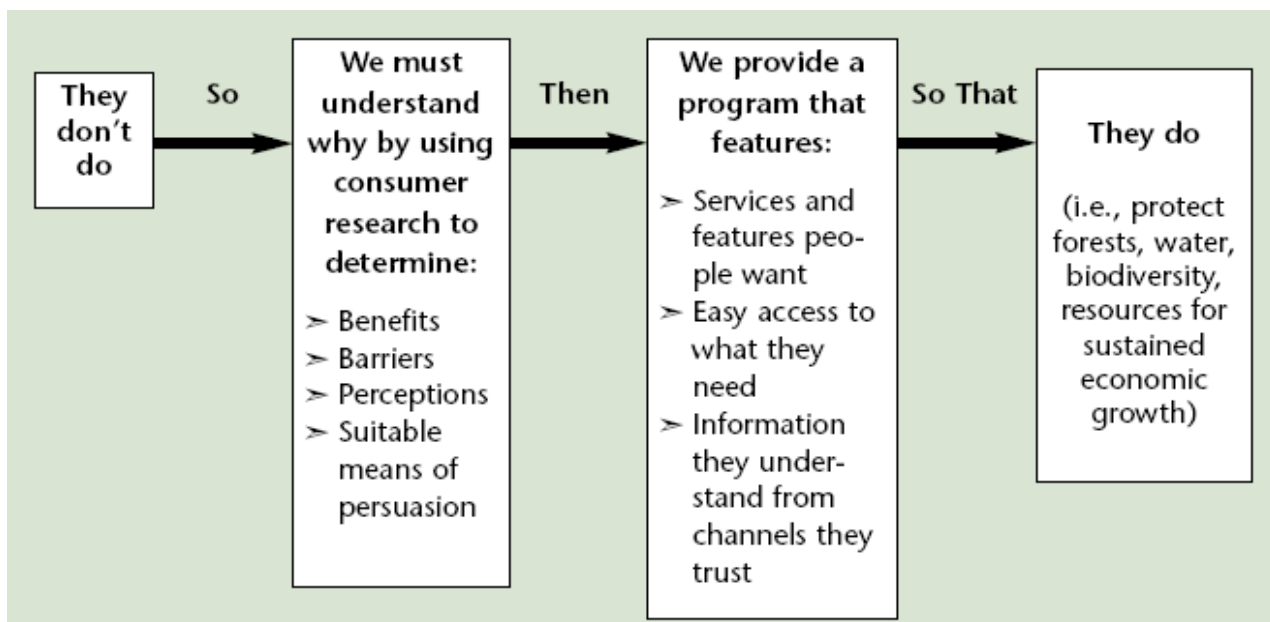


FIGURE 4 A Model for Behavior change which employs Community-Based Social Marketing (Day 2002).

assess the intended audience are absolutely essential elements of a program designed to change behaviors.

In fact, there is considerable support in the literature for SM practitioners using a standardized approach, based on the experiences from other fields like public health. Monroe (2003) concludes from her research that there are several key components to establishing conservation behavior activities, including:

- Identifying the targeted behavior and the audience;
- Understanding the barriers and benefits that resonate with that audience;
- Asking people to make a commitment to undertake the desired activity;
- Providing meaningful procedural information about engaging in the activity;
- Reminding people about the ways the activity conforms to their view of themselves;
- Showing people how easy the behavior is, and reminding them of the consequences;
- Reminding people how satisfying they find participating in the behavior;
- Offering small incentives to enable people to start the behavior; and
- Providing feedback on the progress being made based on the number of people conducting the action.

Barriers and Benefits

Developing a campaign to promote bicycling should focus on individuals. Shankwiler (2006) created mental maps of bicyclists' commute to work and concluded that bikers are all unique individuals with "different motivations, perceptions, and behaviors" and that a ground-up approach might be more effective in promoting citizens to bike to work (as opposed to most federal, state, and local government's top-down approaches). Baltes (1996) concludes that the

data his research group collected was inadequate because of its aggregate nature: “The acquisition of individualized data ... would certainly provide better insight into the final determinants that influence bicycling” (101). Collins and Chambers (2005) assert that to achieve a transport-mode shift, public policy strategies should focus on individuals' transport-related environmental beliefs (personal control and environmental effect of cars) and situations.

Getting people to change behaviors is different from changing their attitudes about the environment. Sorrell (2005) suggests that, in fact, changing attitudes should be a low priority in behavior-changing campaigns and the goal should rest solely on changing the behavior.

In order to overcome the barriers to cooperation in a social dilemma, Weiner and Doescher (1991) review social experimental research and give a number of barriers and ways to overcome these barriers in a social marketing campaign:

- **The Sucker Barrier** – Emphasize that the goal will be achieved. Individuals who believe that the goal will not be achieved are less likely to cooperate than those who believe it will be achieved.
- **The Self-Interest Barrier** – Communicate information that reduces the perceived size of the social dilemma (“save a tree” instead of “save a forest”). Also, emphasize that the individual's contribution will determine whether or not the goal will be reached. In social science experiments, telling subjects their contribution would determine whether or not the group's goal would be reached enhanced their willingness to contribute. Finally, the authors suggest that practitioners emphasize how easy it is to cooperate instead of the financial or other benefits (emphasizing how easy it is to recycle instead of emphasizing a reduction in the monthly garbage bill because of recycling).

- **The Mistrust Barrier** – Emphasize that others are cooperating or planning to cooperate. Many Americans say that they support the environment because this is socially desirable, but their voting record and habits tell otherwise. The authors suggest that communications that express Americans’ desire to cooperate will be more effective in overcoming the mistrust barrier. Also, enhance the degree to which an individual identifies with his or her group so that these people are shown to all share a common fate (Wiener and Doescher 1991).

The Commitment

In their book on community-based social marketing, “Fostering Sustainable Behavior” (1999),

Doug McKenzie-Mohr and William Smith lay out a number of strategies for overcoming the barriers of adopting certain behaviors. These include commitments, prompts, norms, communications, and incentives. This campaign will use the commitment and communications strategies. Commitments have been shown to increase

Level of Causality	Type of Variable	Examples
7	Household Background	Income Education
6	External Incentives and Constraints	Gas Prices Bikes Available Weather Roads
5	Values	Altruism Environmentalism
4	Attitudes and Beliefs	Social Influences Foreign Oil/ Terrorism Belief about Impact
3	Knowledge	Automobile Emissions Biking Attire Bicycle Safety
2	Attention/Commitment	Mentors Message Framing
1	Biking to Work	

FIGURE 5 A Causal Model of Bicycle Commuting Behavior (adapted from (Gardner and Stern 1996; 2003))

volunteer compliance in programs (Sherman 1980). “When individuals agree to a small request, it changes the way they perceive themselves” (McKenzie-Mohr and Smith 1999). Making a small commitment makes an effect on a person and he may “become, in his own eyes the kind of person who does this sort of thing...” (Freedman 1966). Social researchers have shown this to be an effective method when the commitment is made in person (Freedman 1966), and some research has concluded the same effect from subjects using a computer (Gueguen 2001; Gueguen 2002). Also, this commitment-consistency mechanism has been reported to be self-enforcing, especially when the commitments are written (Werner, Turner et al. 1995; McKenzie-Mohr 2000) or made in public (Schienker 1994; Kelly 2006).

Why a website?

While SM is usually used to create successful community-based projects, a website can be an effective way of changing young people’s behavior. First, internet use among teens is on the rise and teens are turning more and more to social networking to organize and enhance their social lives (Lenhart 2005; 2007). The internet is also a great reference tool for those interested in learning more about biking to work or school. The internet is an extremely inexpensive and effective tool for reaching a wide-ranging, diverse audience. By establishing a virtual presence in communities that do not already have a ‘critical mass’ of bicycle commuters, velocommuter.org can also create a sense of community online (as is often the case for people with unique interests). Finally, using an online application to get people to make commitments makes gathering information about the person easy, so that, in the future, the person can be reminded of the commitment by email with helpful encouragement to keep the goal in mind.

Velocommuter.org is different from other websites. While there are other websites focused on biking to work, velocommuter is different in several key ways:

1. Most biking websites tend to be internally-focused (by bikers – for bikers). This website will be designed from the ground up to encourage people who may not consider themselves *avid bicyclists* to use their bikes for commuting to and from work;
2. While many bike-promoting websites are hosted by bike-related companies, this one will attempt to remain free of any advertising or bias; and
3. The content on the Velocommuter.org website will be continually enhanced by ongoing social research into the barriers and benefits of riding a bicycle to school or work.

Social Marketing on the Web

A number of websites use strategies designed to encourage visitors to adopt a new behavior as described below. Most sites adopt the commitment-consistency strategy by asking the user to make a pledge or commitment to do something. By asking the user to supply his or her email address, the website can presumably follow up on the commitment with an email message with a request for a bigger commitment, or at least remind the visitor that he or she made the commitment.

Clif Bar

Clif Bar recently launched a website to promote their “2 Mile Challenge” (2milechallenge.com). The name of this campaign is based on their claim that “40% of urban travel is two miles or less,” so they challenge visitors to use a bicycle to travel such trips. The website invites users to enter an address so that the site can return a map of a two mile radius around the location. The map produced is a so-called *mashup* of a Google Map with helpful elements superimposed by

the 2milechallenge website, such as a circle showing the two mile radius and locations of various destinations like coffee bistros and bike shops.

This site is useful in that it gives the visitor a realistic challenge and shows in very good detail how to work towards the goal. The site invites visitors to make a commitment and gives a number of options for how to do it and levels of commitment. Making the commitment will enable Clif to send email updates to the address provided.

Energy Star

The U.S. Department of Energy's Energy Star program maintains a website dedicated to influencing consumers to purchase energy-efficient compact fluorescent light bulbs (CFLs)⁶.

Visitors are encouraged to make a commitment to change light bulbs in their house to CFL bulbs to reduce energy.

The program also encourages businesses and organizations to compete for the number of employees signing pledges at the website through their Pledge Driver program. The top five Pledge Drivers are recognized on the website. This creates a competition between organizations to encourage employees to join the program. So far, the program has over 1.2 million pledgers.

New American Dream

New American Dream (NAD) has created their Carbon Conscious Consumer website (<http://c3.newdream.org/>) around some basic SM techniques. They create an environmental awareness campaign, such as bringing your own shopping bags to your grocery store, and ask people to tell others about the idea. NAD campaigns have more potential to change behavior because they target a specific behavior (e.g. bringing your own grocery bags to the store),

⁶ Website URL: <http://www.energystar.gov/index.cfm?fuseaction=cal.showPledge>

educate site visitors about why it is important, and then ask visitors to encourage their friends to adopt the new behavior. Those who attract the highest number of others to come and learn about the issue on their website are rewarded by recognition on the website.

One Billion Bulbs

One Billion Bulbs (<http://www.onebillionbulbs.com>) is a website dedicated to a specific behavior: getting people to replace their incandescent bulbs with CFL bulbs. Visitors are invited to help work towards the site's goal of switching out one billion light bulbs. They are invited to sign in and pledge to replace a number of bulbs set by the visitor. If they replace more bulbs, they are invited to return and add that to their tally of bulbs changed. Similar to the Green Star site, groups of users are encouraged to get together and compete for total numbers of bulbs changed. The highest-reporting groups are recognized on the web site's home page.

Rails to Trails Conservancy

The Rails to Trails Conservancy, an organization dedicated to rededicating old railway corridors into multi-use trails, asks visitors to make a pledge "to Burn Calories, Not Carbon!TM by walking and biking more and driving less"⁷. The website contains a form that visitors can complete to make the pledge. Presumably, the Conservancy would follow up with those who make this pledge with regular email updates about current events. No mention is made about sending inspiration or motivation to help people keep to their pledge, which would be helpful in changing behavior.

⁷ Website URL: <http://support.railstotrails.org/site/PageServer?pagename=pledge>

The Velocommuter.org Social Marketing Campaign

The goal of this Project is to build a website that attempts to remove the internal barriers that prevent Americans from biking to work or school. Using research, surveys, and focus groups, I have identified the barriers and incentives that are most influential for my target audience in the transportation-mode decision process (see Figure 5). This information has been used to create and continually improve a website designed to encourage this behavior.

	Riding a Bicycle	Riding in An Automobile (Alternative One)	Carpooling or Public Transportation (Alternative Two)
Benefits	<ul style="list-style-type: none"> • Healthy • Trendy • Most Sustainable • Least expensive 	<ul style="list-style-type: none"> • Easy • Established/ Accepted Norm • Convenient • Fast • Safe 	<ul style="list-style-type: none"> • Inexpensive • More Sustainable • Multi-tasking opportunities
Barriers	<ul style="list-style-type: none"> • Least Safe • Slowest • Gear requirements • Less socially acceptable • Less comfortable 	<ul style="list-style-type: none"> • Least Sustainable • Most Expensive • Can be Inconvenient 	<ul style="list-style-type: none"> • Less convenient • Slow • Least socially acceptable • Less Safe

FIGURE 6 Assessing the Benefits and Barriers of Riding a Bicycle to School or Work as Compared to the Alternate Options.

The target audience for this campaign is young adults who already ride a bicycle for recreation. These individuals already have the gear needed to bike to school or work, so no significant financial outlays would be required to adopt, or at least try this behavior. Such individuals in my home town of Ashland, Oregon probably already have a favorable view of riding a bicycle for transportation, given the number of individuals who engage in this behavior locally. A

substantial number of people in Ashland regularly ride a bicycle to school or work, so I also have an opportunity to survey individuals who already engage in the desired behavior.

I distributed surveys (see Appendix I – Bicycle Commuter Survey) to approximately 50 individuals and received 29 completed. I approached bicycle riders on the street, handed them a survey, and asked that they return it by mail. The survey results are given in the Results Section. On the survey, there is a place for bikers to list how they have overcome the barriers they faced before they began biking to work. Those quotes are listed in Appendix II.

When I handed the survey to the biker, I also asked him or her if s/he would mind participating in a focus group about biking to work. Nineteen individuals signed the sheet. I later contacted these individuals, asking them to attend the focus group at the scheduled time and place.

I followed up with each individual who signed the focus group sheet to let them know the time and date of the focus group. I sent email messages to each individual at least twice and called each individual at least twice to remind them of the time, date, and location. Six individuals attended the focus group (More would have likely come if I had not accidentally scheduled the meeting at the same time as the NCAA National Championship Basketball game). I paid each attendee \$20 (of personal funds) for their participation.

All of the information gathered through the surveys and focus group will be used to more accurately target the barriers and benefits that these individuals face when considering the mode of transportation to get to and from work. The website will be modified as a result of this information to enable it to better promote the targeted behavior: biking to work or school. In addition, the quotes and personal testimonials gathered will be added to the website (names will

remain anonymous) to show site visitors how and why others just like them have undergone this disruptive change in their commuting habits.

The Velocommuter.org Website

The Velocommuter website is designed specifically to encourage visitors to ride a bicycle to work or school. On the home page, there is a provocative image and message that is designed to appeal to people's need to manage their time more effectively. This image and message will likely change over time as a result of on-going message testing and refining of the campaign. Navigation of the website is accomplished easily by selecting one of several tabs located on the top of every web page ("Home", "About Us", "Knowledge", "Inspiration", "News", and "Site Map").

The site has been written with PHP, in addition to the more traditional HTML website code language. The PHP code allows the site to be much more dynamic than HTML-based websites and more in line with the Web 2.0 concept. Visitors can contribute to site content by signing a pledge, giving feedback on the web log entries, and users are encouraged to become site content authors themselves. PHP also enables the website to interact with several MySQL databases which store visitor information.

The Knowledge section is filled with helpful bits of information that help visitors understand what is needed to successfully start riding a bicycle to work or school. This section is designed based on feedback I received from survey respondents and focus group attendees. The principle benefits and barriers highlighted in the social research help craft which elements are most important and deserve the most attention on the site.

The Inspiration section is designed to inspire readers to get excited about biking to work or school and lose a bit of inhibition along the way. This section was also heavily influenced by information received in the market research.

The Commitment. The key element of the Inspiration section is the Velocommuter Pledge page. This is a place where the visitor can sign a pledge to “try riding a bicycle to work or school at least once.” When the user enters his or her personal information into the form, the data is added to a MySQL database on the web server and a follow-up email is sent to the visitor with helpful hints about getting started biking to work or school. Also, on the Pledge confirmation page, the pledger receives a tally of how much carbon dioxide they will keep out of the atmosphere if they keep to their pledge for one year. This information is also included in the email sent at the time of the pledge.

The information stored in the MySQL database will be helpful in contacting these individuals by email at infrequent intervals to keep them motivated and to get them to commit to commute by bicycle more often. Social Marketing practitioners call this a ‘prompt.’ These names are posted publicly on the website home page (with their permission).

The News section of the website is a web log (or ‘blog’) with postings based on current events in bicycle commuting and other helpful information for bicycle commuting novices. This section has several important functions:

1. The blog is interactive in the sense that users are welcome to comment on the subjects and so it is an opportunity for others to contribute; and

2. Every time I post to the blog, my web server alerts several search engines that there is new content on the site. This has the potential to direct more web traffic to the website.

Strategy

Velocommuter.org is designed to encourage more Americans to adopt the behavior of riding their bicycle to work. Site visitors are invited to commit to biking to work at least once per month and they are shown how much carbon will be offset as a result of their heroic action. In addition, they will see their contribution added to the total amount of offsets given by all pledgers. Bikers are invited to add original content to the site which may help others in their situation. Also, by asking bikers to help encourage new bikers, we will avoid the concept of a top-down, didactic method by using a bottom-up, organic process of bringing more bikers into the fold. Our website will stress the concept of style and bicycles because we want to overcome a sense that bikers should be somehow marginalized by society. In short, we want bikers to better define themselves in this age of increasing awareness of America's burgeoning carbon footprint and poor health. More discussion of Velocommuter.org's strategy is included in the Discussion Section.

Results

I approached approximately 50 bikers in Ashland, Oregon on Monday mornings between the hours of 7:00am and noon. I distributed approximately 45 Bike-to-Work Surveys (see Appendix I) to bikers who stated they were biking to work. Nineteen of these individuals agreed to give their contact information for possibly attending a focus group. Most bikers requested that they be able to mail-in the survey, so most completed surveys were returned to me by mail. I received 29 completed Bike-to-Work surveys. A selection of quotes from the surveys, describing how

individuals coped with initial barriers and how they cope with daily barriers to biking to work are listed in Appendix II.

On April 9, 2008, I hosted a Bicycle Commuter Focus Group at the Ashland, Oregon Public Library. Six people attended the session. More people had expressed interest, but there was an apparent conflict: the NCAA Men’s Basketball Championship Game was being played at the same time. All attendees were compensated for attending and provided with refreshments.

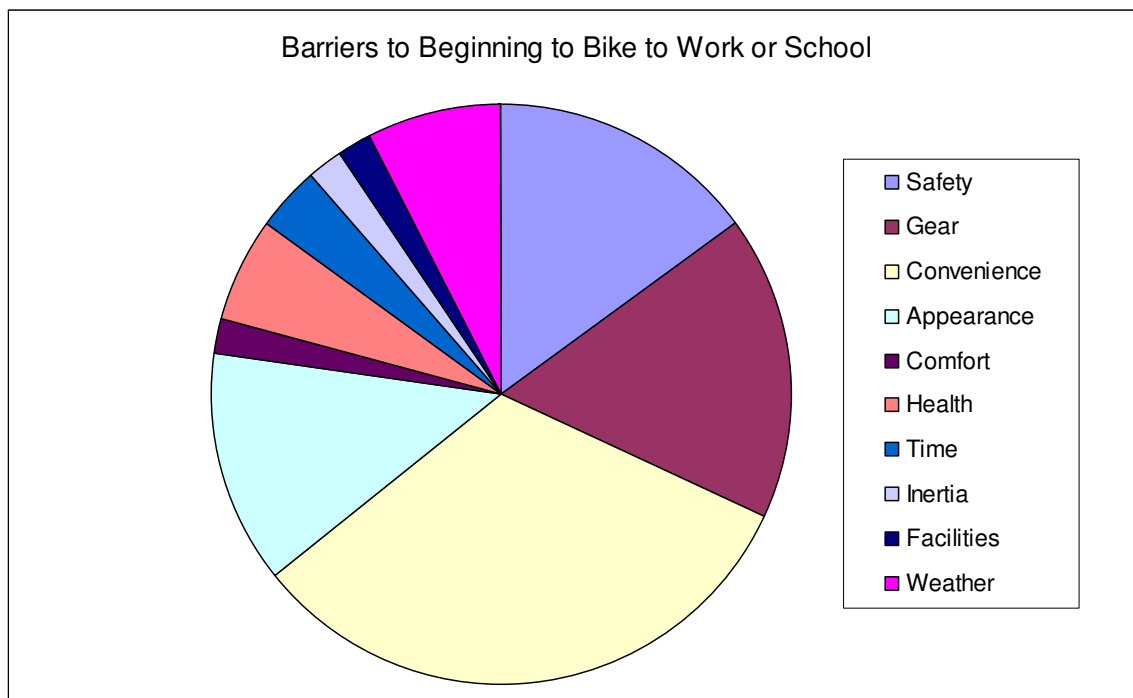


FIGURE 7 Survey Responses Regarding Barriers to Initially Adopting Target Behavior.

The data from all responses to the first three questions, which assess benefits and barriers to biking (“Number 1 benefit/barrier” and “Number 2 benefit/barrier”) are added together to get a percentage of total responses. The responses “1” versus “2” were compiled equally and un-weighted (a “1” receives an equal weight as a “2” response) because of my need to gather more generalized data and self-reporting is often somewhat inaccurate anyway.

The first question on the Bike-to-Work survey was “When you decided to ride your bicycle to work or school, what were the two biggest barriers you had to overcome?” Survey respondents indicated that convenience (59%) was the biggest barrier to them, followed by the need for biking gear (31%), safety concerns (28%), appearance at work (24%), concerns about the weather (14%), the perception that the individual would be unable to perform the task (10%), and others (see Figure 7).

In the focus group, attendees discussed overcoming these barriers. Some individuals decided that their health had reached a point that needed to change and overcame the lack of fitness obstacle by trying to drive part of the way or to catch a ride home from work with a spouse or co-worker. One individual simply had a catastrophic car failure and borrowed a friend’s bicycle, decided he liked it, and fell in love with the idea. Others already enjoyed riding a bicycle and found the transition relatively simple once they settled on a bicycle that was comfortable and had the right gear.

The second question on the Survey was “What are your two biggest daily challenges to biking to work or school?” Respondents indicated that weather (83%) is the biggest daily barrier to performing the target behavior, followed by convenience (28%), need for a vehicle during the workday (24%), safety concerns (21%), and others (see Figure 8).

Despite overwhelmingly indicating that weather was the most significant barrier to biking every day, most individuals surveyed had been encountered biking to work on very cold mornings, near the freezing mark. This apparent paradox was resolved in the focus group. Most people reported not liking to ride a bicycle in heavy rain, due to safety concerns and concerns about their appearance at work.

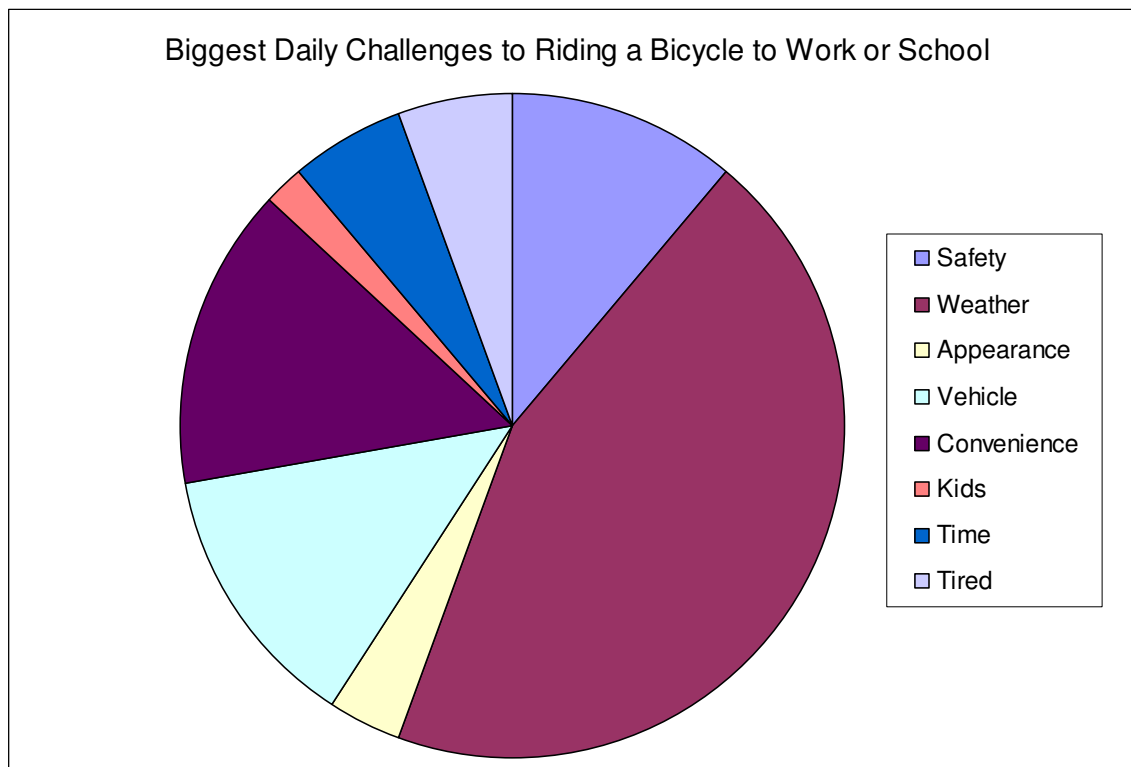


FIGURE 8 Survey Responses Regarding Barriers to Daily Engagement in the Target Behavior.

The third question on the Survey was “What are your biggest motivations for riding a bicycle to work or school?” Respondents indicated that physical health (62%) is the biggest motivation for them to engage in the target behavior, followed by concerns about the environment (52%), cost of operating an automobile (31%), their mental health (28%) and others (see Figure 9).

Interestingly, many focus group participants agreed that biking to work is more convenient than driving on most days. These individuals reflect the survey population in that they live about 3 miles from their job in a town that caters to bicyclists more than most towns in the U.S., so these factors likely had a role to play there. However, respondents listed other, more universal reasons for finding biking more convenient, including no parking costs, no purchase of increasingly expensive fuel, and being able to park a bicycle much closer to the entrance of buildings.

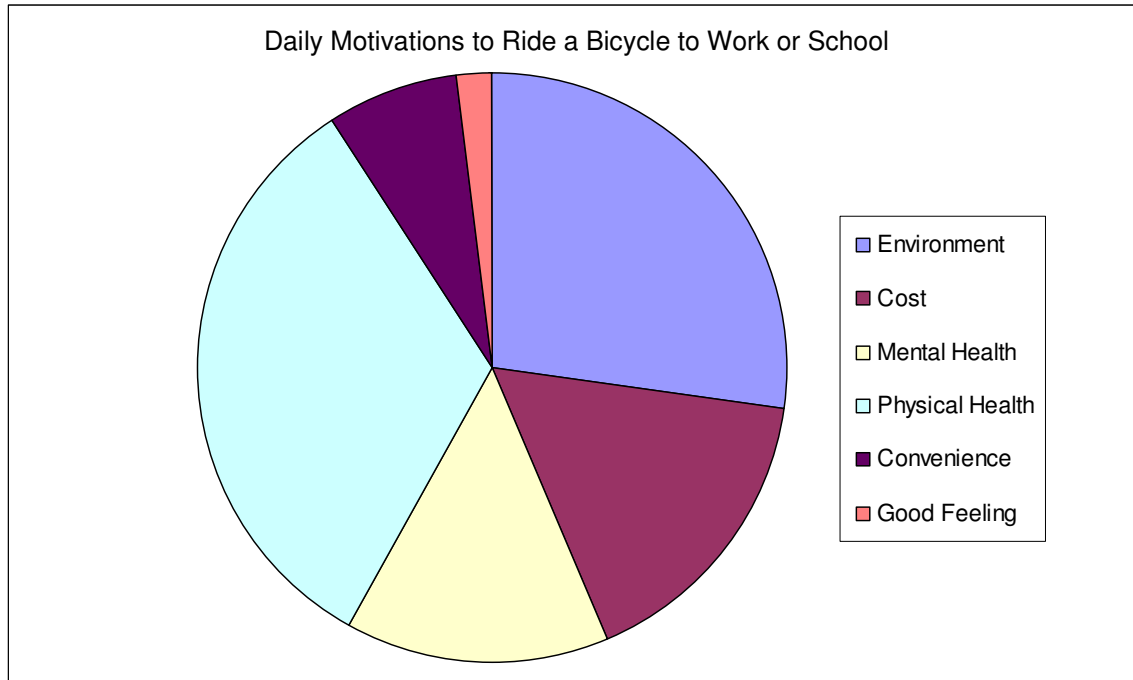


FIGURE 9 Survey Responses Regarding Motivations to Engage in the Target Behavior.

Respondents reported living an average of 3.64 miles from their place of employment. The average reflects one individual who rides a bicycle and a bus to school. Minus that individual, the average commute distance for the rest of the respondents is 3.04 miles. The median commute distance for the group is 2 miles (see Figure 10).

Respondents reported having commuted by bicycle an average of 4.26 years. The median reported time since starting to commute by bicycle is 3 years. Respondents reported commuting by bicycle and average of 3.84 days per week with a median value of 4 days per week.

In answering the question “Who do you think wants you to ride a bicycle to work?” 41% of respondents reported that person is a “friend” and 28% reported that person is a “spouse.” Few respondents answered the question about who they felt would *not* like them biking to work, and the few responses show no patterns.

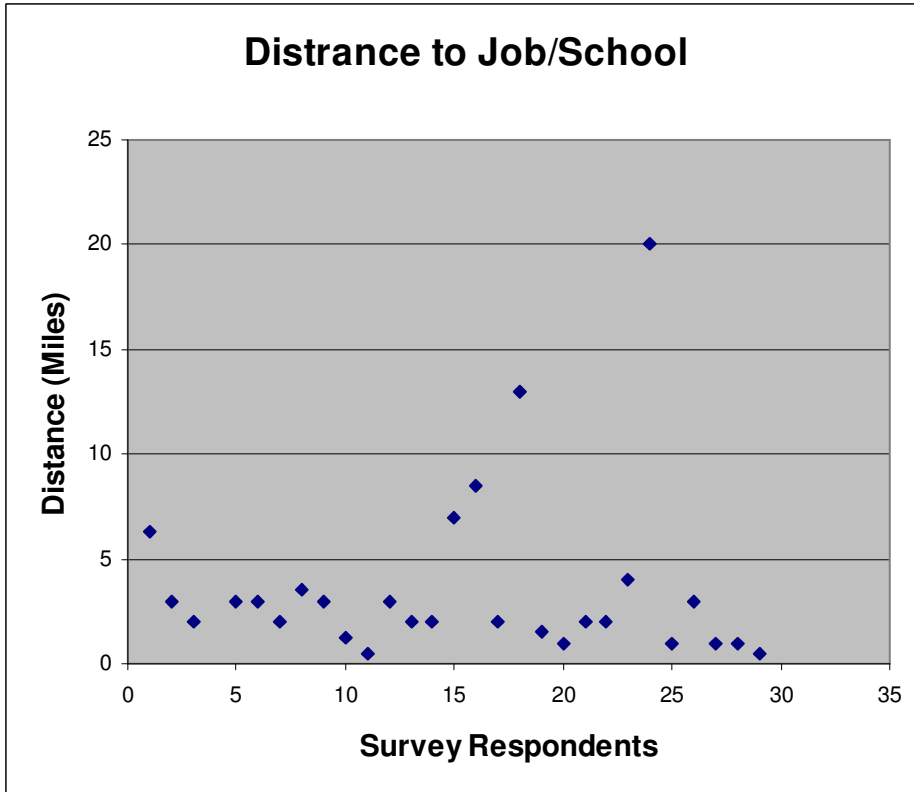


FIGURE 10 Survey Respondents' Reported Commute Distance.

Figure 11 shows how survey respondents weighted the support they get from their employers on a Likert scale. Figure 12 shows how survey respondents weighted the importance of their appearance at their job on a Likert scale.

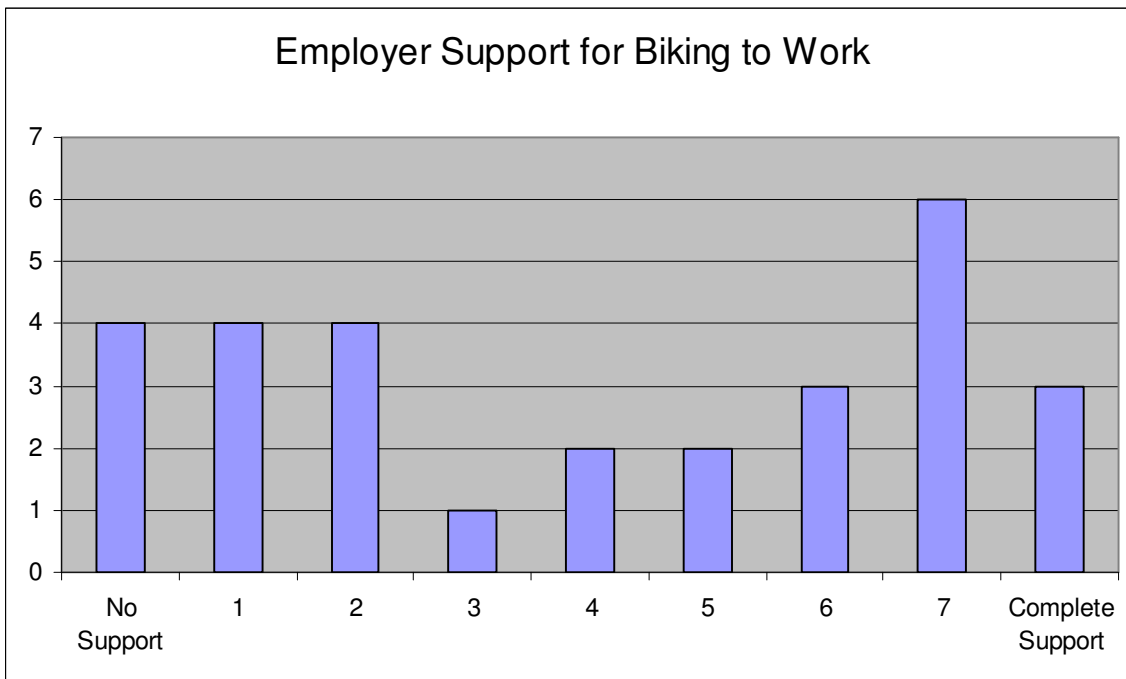


Figure 13 shows how respondents weighted the level of importance they placed on their appearance while riding a bicycle.

When asked how much respondents use the internet to obtain information about biking and bike-related gear, the average was 22 times per year. However, 41% of respondents reported not using the internet at all for this purpose and the median value was once per year.

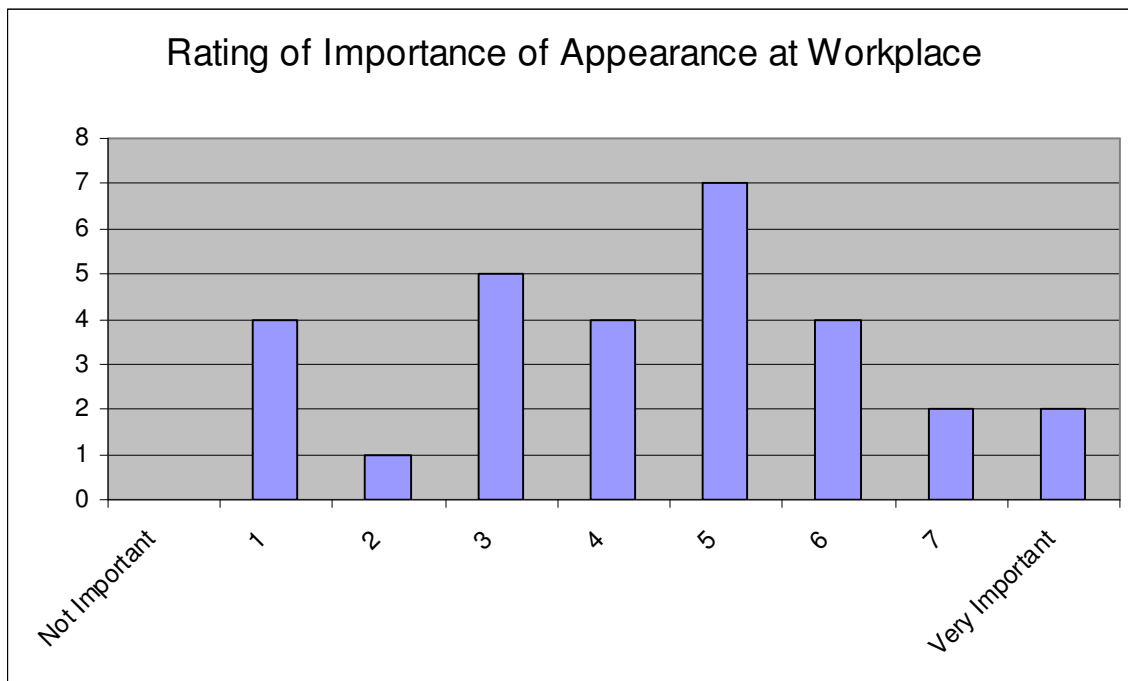


FIGURE 12 Respondent Rating of Importance of Appearance at Work/School on a Likert Scale.

Answering the question about bike-related facilities available at their destinations, 65% of respondents reported having a bike rack at their school or workplace. However, only 27% of respondents reported having a place to change clothes, 17% reported having access to a shower and 17% also reported having access to a bike locker.

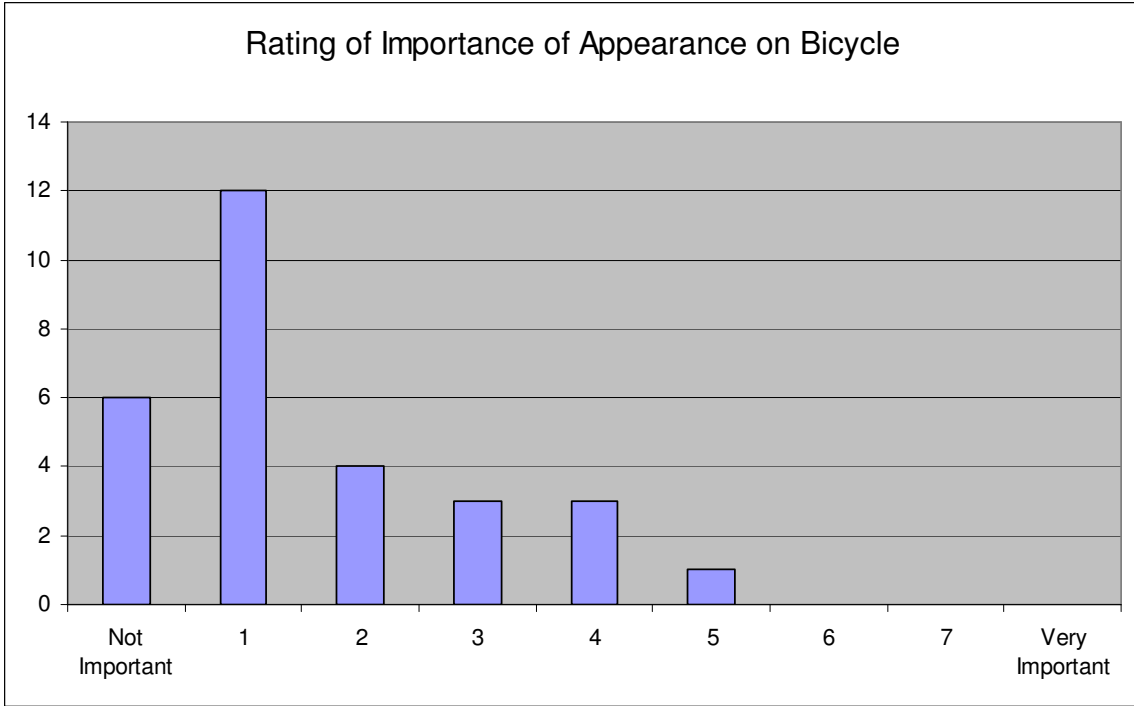


FIGURE 13 Respondent Rating of Importance of Appearance While Riding a Bicycle on a Likert Scale.

Focus group participants reporting having much pride in being bicycle commuters. Some joked that they like to light-heartedly taunt car drivers (who, for example, have to warm up their cars and scrape ice off of their windshields on cold mornings). Others felt more of a utilitarian attachment to biking, citing the need for exercise and the basic need to transport themselves without access to an automobile.

Discussion

As acknowledged from the beginning, changing other people’s behavior is no simple task. Setting goals and assessing which strategies are most effective is challenging, given the large number of influential factors. There is a strong tendency among program developers to jump head-first into a behavior change strategy without a very strong grasp for the true potential of the program to create a desired behavior. Oftentimes, programmatic decisions are made based on a

strong intuition and background in a particular field. However, this does not give reason to eliminate feedback loops from an organization's outreach efforts.

Survey/Focus Group Discussion

Selection of a younger (aged 18-22) target group was based on my initial research and assumptions. However, as I began surveying bikers, I noticed that there seemed to be two very different sets of bicycle commuters. Most bicycle commuters surveyed appeared to be either under about 22 years old or over fifty years old (I did not ask the person's age on the survey).

From surveying bikers and through the focus group, it is apparent that there are several groups that would be appropriate to target in a bike-to-work promotion campaign. One group of individuals is college-aged, lives within three miles of work or school, has a relatively low income, and has a strong environmental ethic. A second group that would be good to target are adults who have recently seen their youngest child reach 'driving age'. The second group also lives within relative proximity to his or her job (recall that the *average* commute distance in the U.S. is 16 miles) and feels strongly that exercise is a necessary component of good health. These characteristics became evident during the focus group and ideally these two groups of people would have participated in separate sessions.

For all bikers surveyed, these individuals seemed to be somewhat ambivalent about their appearance at work (though several people did indicate that work appearance is "very important"). Also, apparently appearance while riding a bicycle is not very important for survey respondents.

A Sound Strategy

Creating a social marketing campaign over the internet can be an effective way to invoke a desired sustainable behavior. As managers consider ways to address the behaviors in the U.S. that create greenhouse gas emissions, the context within which the debate over containment measures occurs is important. For example, in this country, there is no social norm which suggests that driving an SUV is morally wrong or somehow bad. However, there appears to be a growing concern for how much gasoline Americans consume and that therefore somehow consumption should be taxed, or at least made more expensive. Such concerns enable lawmakers to realistically consider climate change legislation with the knowledge that there is at least a modicum of political support and that signing onto a climate bill would not be political suicide.

Velocommuter.org has the potential to create enthusiasm for a world that is less confined by the automobile. This method of behavior change strategy is rooted in the concept that information and inspiration, provided to the right people, will empower these individuals to seek out their own solutions to climate change as well as to be more open to more didactic and financial restrictions on the use of the automobile.

Social marketing is truly an effective tool for creating a desired behavior. An important factor in developing avenues of communication with the target audience is to find a medium that the group trusts, and is exposed to regularly. For example, billboards are effective because they break up (sometimes monotonous) natural scenery with easy-to-read and comprehensible messages and branding. Using feedback mechanisms advocated here, managers can assess how to more effectively create trust and enthusiasm in their target audience.

The internet is an effective tool for communicating with a target audience that is dispersed geographically. Sharing success stories of people who have made a switch from driving to biking to work can be quite helpful and empowering to site visitors. Also, by creating an online community that believes strongly in the utility of the bicycle, others who might not already have a group of friends that believe similarly are instantly exposed to a group with this established norm.

The internet is also an easy way to collect personal information from someone in order to contact them at a later date for follow-up. In the case of a commitment to engage in a particular activity, the internet is always available to accept this commitment from an individual. Also, by collecting commitment information from people from all across the country, it takes little time for the group to post an impressive figure of collaboration. This entices others to join, as it immediately appears to be a popular option. In the case of the velocommuter Pledge, it only took 100 pledgers to commit to bike to work to offset 170,000 pounds of carbon dioxide (which would have been released into the atmosphere if these individuals had commuted by car).

<p>Strengths:</p> <ul style="list-style-type: none"> • Relevance: Internet is well-used by target audience • Adaptive • Interactive • Low energy consumption 	<p>Weaknesses:</p> <ul style="list-style-type: none"> • Less-personal form of communication • Disparate population • Untested ability to create desired behavior
<p>Opportunities:</p> <ul style="list-style-type: none"> • Widgets on other Websites • Pledge Driver Program • Co-branding with Social Entrepreneurial Company 	<p>Threats:</p> <ul style="list-style-type: none"> • Hackers • Overuse of the Online Commitment by NGOs

FIGURE 14 SWOT Analysis of Using the Internet for an Environmental Communications Strategy.

Finally, by hosting the commitment online, each pledger's name is immediately made public, an important tool to create more consistency between making the commitment and actually engaging in the act.

Part of a Comprehensive Strategy to Combat Global Warming

An environmental behavior change communication strategy is an important component of an overall strategy to combat global climate change. It is becoming increasingly clear that

Americans must be influenced to reduce carbon emissions through a variety of means that include financial incentives, regulating tailpipe emissions, and changing norms and attitudes.

However, this does not justify a large amount of spending on ineffective strategies. Each method must be weighed for its relative strength in changing actual behaviors. So, while voluntary approaches tend to be much less expensive than command-and-control programs, they are often much less effective as well— a careful balance must be the goal.

One criticism placed on the environmental movement as it stands today is that it is somewhat elitist and few options exist for low-income populations to participate and reduce their carbon footprint. In the case of many low-income groups in the United States, the bicycle is the mode of transportation for those who cannot afford an automobile. So, once an opportunity for upward mobility exists, oftentimes the first habit to change would be switching to commuting by automobile. There is very little normative influence amongst many low-income groups to remain loyal to the bicycle once the financial situation allows otherwise. Obviously, different motivations and barriers to adopting my targeted behavior exist for low-income groups and social research might provide key insights into these populations. By collecting this data, environmental managers can look to round out tail-pipe emissions regulations, highly-taxed automobile fuel, and other regulatory programs to reduce carbon emissions with strategies to

encourage biking by these populations. One important consideration would be to create a multi-lingual approach to the communications strategy.

Research can be Expensive, but Worthwhile

Research into program development can be difficult for small organizations hoping to make a powerful change. Much of the scientific literature is accessible for students and faculty members at universities, but the average communications strategist has no access to scholarly research and must rely on help from other organizations or trial-and-error. Also, universities might be reluctant to partner with a specific organization for fear of alienating a portion of the student body or alumni.

However, organizations should look to create partnerships with local colleges and universities because both can benefit from such relationships. Indeed, a partnership with an institution will benefit a small organization by having a place for focus groups and access to a small pilot population with whom it is easier to interact than the general population.

Universities can benefit from such relationships by creating unique opportunities for social change. Institutions of higher learning are often wary of being exposed to political controversy, but social change is often sprung from these very institutions, which for many is a point of pride.

Practice, Practice, Practice

As mentioned previously, organizations promoting environmental causes are often understaffed, under-funded, and confined to tight grant funding cycles. However, even seemingly entrenched social problems like teen pregnancy, sexually-transmitted diseases, and smoking have seen dramatic declines in recent years as a result of social marketing efforts. While there are obviously very different characteristics of social and environmental problems, environmental

managers have much to learn from their medical counterparts. By practicing social marketing consistently, environmental program managers can make strides by sharing notes on the process and avoiding costly mistakes in the future.

For example, fear of a sexually-transmitted disease is likely a more compelling reason to change one's behavior than an unknown, possibly tragic future state of the planet. So there is considerable work to be done in regards to message testing and refining for the environmental field.

In a recently-launched campaign to promote environmental awareness, WeCanSolveIt.org, the Alliance for Climate Protection (ACP) seeks to bring about awareness of climate change. ACP appears to have used very sophisticated marketers to develop the campaign and hopefully the environmental movement in general will benefit from the knowledge that this group gains during the process. With a budget of over \$300 million, it is one of the most ambitious and costly public advocacy campaigns in history (Eilperin 2008), so its success or failure will be quite helpful to environmental communication strategists in the future.

A Pledge does not a Velocommuter Make...

The simple act of signing an online petition may or may not make much of a difference in one's life and there is no way of assessing whether or not this effort actually changes behaviors during the course of this Master's Project. Over a long period and with enough participation and Pledge signers, I will be able to follow-up with these individuals to assess whether or not the act of signing the Pledge made a difference in their commuting habits. However, other researchers have documented that making such commitments made a slight difference in subject's perception of him or herself (Werner, Turner et al. 1995) and that making the commitment public can add to

its effectiveness (Kelly 2006). My hope is to eventually follow up with a group of people who have signed the pledge and assess how many of these individuals actually made the switch from commuting by automobile to riding a bicycle. Again, the MySQL database will be helpful in choosing a set of individuals to contact in the future.

Technical Expertise Required

Designing an internet project requires a skill-set that is somewhat different from that of actually creating the code for the website. In addition, pursuing a social marketing strategy requires different skills as well. I find myself somewhat unique in having all three skills and so I must cautiously recommend such a strategy to small organizations without having dedicated resources and a strong belief that this is a sound strategy for the organization. However, with adequate expertise and experience, an online social marketing strategy is an excellent way to round-out an outreach and development plan for any organization.

The Future of Velocommuter.org

There are several avenues to follow in pursuit of the Project's goal, to entice more Americans to use a bicycle for transportation:

1. Continue surveying the target population and seeking out new and innovative ways to reach this audience on a shoestring budget;
2. Create a 'Pledge Driver' program in which businesses and organizations can sign up to encourage employees to make the commitment. This might be an effective program to roll out during National Bike-to-Work Month (May) or over the summer, when the concept of riding a bicycle is more palatable. This would be an opportunity to create a Bike-to-Work Challenge among employees - to see who can log the most miles commuting by bicycle; and

3. Proactively contact employers to encourage them to create a bicycle commuting program through their business. Businesses can promote the program without significant expenditures and might even realize lower parking costs as a result of a successful internally-promoted program.

Conclusions

I have attempted to loosely tie together three concepts through this Master's Project: voluntary transportation demand management, an environmental communications strategy, and the internet. There do appear to be aspects to all three concepts that make this Project work well together as a cohesive whole, but I have little concrete evidence to suggest that this methodology is truly effective at changing behavior. However, if viewed as a starting point, then this is a worthwhile venture.

Velocommuter.org is online today and will be there indefinitely, so the potential to reach more people continually exists. In addition, adding more content and modifying the layout will be relatively simple. More research is needed to refine the strategy. However, new names appear every day in the database, so finding a group to contact will be much easier.

Finally, I must reiterate that I do not advocate a large-scale re-tooling of the environmental management toolbox. Managers will always need to have a number of coercive techniques at his or her disposal to reduce environmental degrading behaviors. Instead, the purpose of this Project is to show the potential of a new tool which, if used correctly, can wield very real and cost-effective results.

Appendix I – Bicycle Commuter Survey

Bike-to-Work Survey

This survey is being conducted by Michael Stringer, a graduate student at Duke University's Duke Environmental Leadership Program (www.nicholas.duke.edu/del). This survey is being conducted in order to assess what motivates current bicycle commuters. Questions? Comments? Contact Michael at (541) 488-0373 or michaelbstringer@hotmail.com.

For the following Questions, please select your answer from one of the options provided. If you do not see an appropriate response, you may add an additional one under "Other."

1. When you decided you wanted to ride your bicycle to work or school, what were the two

Biggest barriers you had to overcome?

(Circle a "1" and "2" next to your **Number One** and **Number Two** biggest barriers)

Safety Concerns **1 2** Gear Needs **1 2** Convenience **1 2**

Work Appearance **1 2** Other: _____ **1 2**

Briefly describe how you overcame these barriers

2. What are your two **Biggest Daily Challenges** to biking to work or school?

(Circle a "1" and "2" next to your **Number One** and **Number Two** biggest challenges)

Safety **1 2** Weather **1 2** Work appearance **1 2** Need for vehicle **1 2**

Convenience **1 2** Children **1 2** Other: _____ **1 2**

3. What are your **Biggest motivations** for biking to work or school?

(Circle a "1" and "2" next to your **Number One** and **Number Two** biggest motivations)

Environment **1 2** Cost **1 2** Mental Health **1 2**

Physical Health **1 2** Convenience **1 2** Other: _____ **1 2**

4. How far do you live from your job/school? _____ Miles

5. How long have you been biking to work/school? _____ Years

6. How many days per week would you say that you ride your bicycle to work or school?

(Circle One) Less than One One Two Three Four Five

7. When not riding a bicycle, what form of transportation do you use to get to work or school?

(Circle One) Car Truck Carpool Bus Walk Other: _____

8. If there were someone in your life that you think **Wants** you to bike to work or school, who would that person be?

(Circle One) Spouse Friend Mentor Parent Child

Other: _____

9. If there were someone in your life that you think **Does Not Want** you to bike to work, who would that person be?

(Circle One) Spouse Friend Mentor Parent Child

Other: _____

10. Please rate the level of support you get from your employer/school for biking to work:

(Circle One) No Support 1 2 3 4 5 6 7 Complete Support

11. Please rate the importance of your appearance **at your job/school**:

(Circle One) Not important 1 2 3 4 5 6 7 Very Important

12. Please rate the level of importance of your appearance **while riding your bicycle**:

(Circle One) Not important 1 2 3 4 5 6 7 Very Important

13. How often do you use the internet for obtaining information about bicycling technology, gear recommendations, and discussions? (Circle One)

Never Once a Year Once a Month Once a Week More Often

14. What bike-related facilities do you have at work/school? (Circle all that apply):

Changing Area Shower Bike Locker/Closet Bike Rack Other: _____

Thank You for your time!

Appendix II – Bicycle Commuter Survey Quotes

Overcoming the Convenience Barrier:

“I realized I could bike anywhere in Ashland in about 15 minutes.”

“Drove half-way for 3 weeks until I could stand to sit on the seat for that long”

“I have to remind myself that it does not take that much longer to drive. If I feel lazy, I remind myself that biking will help wake me up and give me more energy in the long run.”

“Felt better about saving money (no need for second car), and helping environment, also increased exercise is a plus.”

“Better planning to reduce car use and getting in shape (making it up the hill).”

“Leaving earlier to bike slowly so I don’t sweat, when it’s not convenient I just have to buck it up!”

“Adjust other activities to allow for the ride.”

“I found it’s more convenient to bike.”

“Sold nice car”

Overcoming the Gear Barrier:

“I bought front and rear fenders, good lighting, rain gear; these help with appearance.”

“At first it was friends loaning me bicycles until I could afford to buy my own.”

“I bought a bicycle and the gear needed to commute rain or shine.”

“Bought good lights/rain gear”

Overcoming the Work Appearance Barrier:

“I wore windbreakers over my clothing to keep clean or brought a change.”

“Carry shoes and some garments in panniers, leave some at work, bought raingear”

“Rolled clothes. Sponge Bath in handicap stall.”

Overcoming the Safety Barrier:

“I learned my route and alternatives completely.”

“Just try it and realize it’s no big deal”

“Become more aware of my surroundings”

“Use bike path by RR tracks but very dark in early a.m. but safer than street (use headlamp)”

Overcoming the Weather Barrier:

“I don’t have good fenders so I bike commute when NO RAIN is forecast. I walk the rest of the time”

“I bought waterproof pants and jacket – flashing reflectors/headlight”

Overcoming the Physical Stamina Barrier:

“Everything I do all day is physical so biking everywhere sometimes I feel too exhausted.”

Appendix III – References

- Baltes, M. (1996). "Factors Influencing Nondiscretionary Work Trips by Bicycle Determined from 1990 US Census Metropolitan Statistical Area Data." Transit [0938-2062] vol:1538 pg:96.
- Berry, W. (1977). The Unsettling of America. San Francisco, Sierra Club Books.
- Brown, L. R. (2001). Eco-Economy: Building an Economy for the Earth, W.W. Norton & Co.
- Collins, C. M. and S. M. Chambers (2005). "Psychological and Situational Influences on Commuter-Transport-Mode Choice." Environment and Behavior. **37**: 640-661.
- Day, B. A. (2002). Heating Up Society to Take Environmental Action. Academy for Educational Development.
- "Dietary Reference Intakes For Energy, C., Fiber, Fat, Fatty Acids, Cholesterol, Protein, and Amino Acids" (2005). Institute Of Medicine of The National Academies.
- Dietz, T. (2003). "The Struggle to Govern the Commons." Science **302**(5652): 1907.
- Dietz, T. and P. C. Stern (2002). New Tools for Environmental Protection : Education, Information, and Voluntary Measures.
- Eilperin, J. (2008). "Gore Launches Ambitious Advocacy Campaign on Climate." The Washington Post. March 31, 2008. Retrieved on April 22, 2008 at http://www.washingtonpost.com/wp-dyn/content/article/2008/03/30/AR2008033001880_pf.html
- Freedman, J. (1966). "Compliance Without Pressure - Foot-in-Door Technique." Journal of personality and social psychology **4**(2): 195.
- Gardner, G. T. and P. C. Stern (1996). Environmental problems and human behavior.
- Gueguen, N. (2001). "Fund-raising on the web: The effect of an electronic foot-in-the-door on donation." Cyberpsychology & behavior **4**(6): 705-709.
- Gueguen, N. (2002). "Foot-in-the-door technique and computer-mediated communication." Computers in Human Behavior **18**(1): 11-15.
- Hardin, G. W. (1968). "The Tragedy of the Commons." Science **162**(3859): 1243.
- "How People Get to Work: 2003." U.S. Bureau of Transportation Statistics. Retrieved on April 23, 2008 from http://www.bts.gov/publications/transportation_statistics_annual_report/2005/html/chapter_02/figure_04_09.html.

Kelly, A. E. (2006). "Publicly Committing Oneself to an Identity." Basic and Applied Social Psychology **28**(2): 185.

Langer, G. (2005). "Poll: Traffic in the United States." Retrieved March 23, 2008 from <http://abcnews.go.com/Technology/Traffic/story?id=485098&page=1>.

Lenhart, A. et al (2005). "Teens and Technology: Youth are leading the transition to a fully wired and mobile nation." Pew Internet & American Life Project. Retrieved April 24, 2008 from http://www.pewinternet.org/report_display.asp?r=162.

Lenhart, A. et al (2007). "Social Networking Websites and Teens: An Overview." Pew Internet & American Life Project: 10. Retrieved April 24, 2008 from http://www.pewinternet.org/PPF/r/198/report_display.asp.

Leopold, A. (1949). A Sand County Almanac. New York, Oxford University Press.

Liu, J., M. Linderman, et al. (2001). "Ecological Degradation in Protected Areas: The Case of Wolong Nature Reserve for Giant Pandas." Science **292**(5514): 98-101.

McClure, T. and R. Spence (2006). Don't Mess with Texas: The Story Behind the Legend, Idea City Press.

McKenzie-Mohr, D. (2000). New Ways to Promote Proenvironmental Behavior: Promoting Sustainable Behavior: An Introduction to Community-Based Social Marketing. **56**: 543-554.

McKenzie-Mohr, D. and W. Smith (1999). Fostering Sustainable Behavior: An Introduction to Community-based Social Marketing.

"Mode of Transportation Used to Commute to Work in the Past Week, in Percent." (2001). Retrieved March 23, 2008, from http://www.bts.gov/publications/highlights_of_the_2001_national_household_travel_survey/html/table_a06.html.

Monroe, M. C. (2003). "Two Avenues for Encouraging Conservation Behaviors." Human Ecology Review **10**(2): 113.

"National Bicycling and Walking Study: Ten Year Status Report." (2004). U.S. Department of Transportation, Federal Highway Administration.

Ostrom, E. E., J. J. Burger, et al. (1999). "Revisiting the commons: local lessons, global challenges." Science **284**(5412): 278-82.

Schienker, B. R. (1994). "The Impact of Self-Presentations on Self-Appraisals and Behavior: The Power of Public Commitment." Personality & social psychology bulletin **20**(1): 20.

Seethaler, R. and G. Rose (2003). Application of Psychological Principles to Promote Travel Behaviour Change. 26th Australasian Transport Research Forum, Wellington, New Zealand.

Shankwiler, K. D. (2006). "Developing a Framework for Behavior Assessment of Bicycle Commuters: A Cyclist-Centric Approach." Georgia Institute of Technology.

Sherman, S. J. (1980). "On the self-erasing nature of errors of prediction." Journal of personality and social psychology **39**(2): 211.

Sorell, M. L. and P. Massachusetts Institute of Technology. Dept. of Urban Studies. (2005). "Transportation choices : can social marketing make a difference?"

"Transportation and Health." from Retrieved March 23, 2008, from <http://www.transact.org/library/factsheets/health.asp>.

Werner, C. M., J. Turner, et al. (1995). "Commitment, behavior, and attitude change: An analysis of voluntary recycling." Journal of Environmental Psychology **15**(3): 197-208.

Wiener, J. L. and T. A. Doescher (1991). "A Framework for Promoting Cooperation." The Journal of marketing **55**(2): 38.