

The Use of Instructional Video to Bring About Attitudinal and Driving Habit Changes

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Introduction

The price of gasoline this summer rose at an alarming rate. For a time, the per-gallon price for a gallon of unleaded stood at or near \$4.60. While costs have begun leveling off, the issues associated with fuel prices continue to dominate the news. Simply put, it is becoming ever more important to find ways to decrease our fuel consumption.

But the need defies action. Take a look at any interstate in the San Diego area, and it is apparent that people are not carpooling, nor driving the speed limit, nor taking other basic steps to reduce the amount of gasoline that their cars consume, which ultimately would save them money. San Diegans love their cars—and definitely use them!

And it may be that people simply don't understand *how* to save on fuel costs. After all, we do seem capable of reducing what we pay for other commodities. For example, we certainly use coupons at the grocery store—and many of us have turned to email and online bill paying services to reduce or eliminate our use of stamps.

Clearly, the viability of using gas saving tips to save money is important to anyone who owns a vehicle, and is worthy of researching.

Purpose/Intent

This study explored how a video on gas saving tips would impact a group of fellow San Diego State University (SDSU) graduate students—specifically, how it might change their attitudes and current driving habits? The video discussed different strategies that individuals can use at no extra cost to them in order to use less gasoline in their vehicles, thus saving them money.

This study involved graduate students enrolled in two courses during summer 2008: EDTEC 540: Educational Technology and ED 690: Methods of Inquiry. This researcher's hypothesis was

that the video (the independent variable) will bring about measurable attitudinal and behavioral change in the participants' driving habits (dependent variable).

Impact of the Literature Review

Our need to save on fuel is both practical (costly) and environmental (saving resources). However, simply “telling” someone to use gasoline more conservatively is not a viable strategy for changing attitudes or behaviors. This review of the literature informs a study in which a convenience sampling of adults were exposed to a video structured to present the issues associated with fuel consumption and everyday “tips” that may lead to behavioral and attitudinal changes in driving habits.

The review focuses on:

- The growing price of fuel over the last four years and its impact on the nation--*and* in particular, San Diego citizens' driving habits.
- The use of video as a form of instruction.
- Studies about the use of instructional video to bring about attitudinal change.

The Ever Growing Cost of Gasoline and its Impact on San Diego Citizens' Driving Habits

For the last few years, the price of gasoline nationwide, and particularly in San Diego, has increased quite dramatically. In 2004, the average per-gallon price was \$1.80 a gallon (Wilén, 2008). By March of 2007, the price of gasoline was up to \$3.28 a gallon (Crabtree, 2007) and still on the rise. By summer 2008, San Diegans were paying between \$4.50 and \$4.65, depending on location and “brand.”

This is not the first time we've experience a “fuel crisis”. During the early 1970s—when the US imported only about a third of the oil it consumed, the country experienced significant fuel shortages, with people having to actually wait in long lines to purchase gasoline. During a 1973-1974 study conducted by U.S. Department of Energy, a survey was conducted with residents of

three Oregon cities: Hartford, Mobile, and Salem (Frieden & Baker, 1983)—and clearly the shortage affected daily habits. About 79% of the responding households reported driving less to save fuel, most notably by reducing their shopping trips and visiting relatives. However, only 36% of the people surveyed in this study actually considered the fuel crisis to be real. Many of the participants had responded that they believed that it was all made up by the big oil companies so that they could increase their profits. Put simply, people made temporary changes to counter temporary inconveniences; the crisis failed to serve as an opportunity to change long-standing beliefs and habits.

Since then, our dependence on oil has remained high (we now import about 60% of what we consume) and the price of gasoline has continued to grow at an alarming rate (Carbaugh & Wassell, 2006).

There are many issues associated with the cost of gasoline. Legislators, politicians, environmentalists, conservationists, and other groups regularly debate the issues associated with fuel consumption and different strategies that could be used to reduce our dependence on foreign oil. However, these issues are not the subject of this study or the review of the literature. A more productive and immediate strategy is to help people change their driving habits. Changing attitudes in today's world often begins with a strong media campaign, and instructional video is one way to accomplish this.

The Use of Video as a Form of Instruction

Video-delivered instruction has a long history. In fact, the motion picture projector was one of the first media devices used in America's schools. In 1910, the public school system of Rochester, NY, became the first in the nation to adopt films for instructional use (Reiser, 2001). By the time World War II came around, the use of film as instruction was routinely used to train the massive amounts of recruits being sent out to fight in the war (Torrence, 1985). In fact, the United States Army Air Force branch produced more than 400 training films, which were shown approximately four million times to military personnel during the years of 1943-1945 (Reiser, 2001, p. 56). These training films were seen as the answer of how to train a large number of recruits with different backgrounds and knowledge bases. As early as the 1950s, television was

seen as an instrument through which to deliver instruction, and many educational programs were produced. By 1955, there were 17 television stations dedicated to educational programming, and by 1960 the number of stations had grown to more than 60 (Reiser, 2006, p. 58). With the rapid advances in technology in the last few decades, the use of the computer to deliver instructional video via the internet has become common; in fact, video *is everywhere* on the internet. Of the many online sites dedicated to video, YouTube.com is the most popular, and is ranked 7th in the world with regards to internet traffic hits (Oishi, 2007). According to Oishi (2007) YouTube.com shows up to 100 million videos each day. Many of these videos are instructional videos, although not in the traditional sense. They are user-produced videos, not of the professional scale of true instructional videos. However, they do have the benefit of being available to the general population, and can provide instructional information.

In preparing for conducting this study, this researcher searched YouTube.com for a gas saving tips instructional video that met certain criteria. One was brevity; it had to be “short” enough to keep the intended audiences’ attention. Another was relevance; the tips had to be meaningful/feasible to those watching it. A third was comprehensible; the video had to be easy to follow. Finally, the video had to contain information that could be implemented immediately into the study group’s lives, and at no extra cost to them. Ultimately, the researcher selected a video from YouTube entitled “7 Ways To Save On Gas” (Ruplinger, 2007).

Instructional Video and Attitudinal Change

In order to see whether the use of instructional video can bring about attitudinal change and facilitate learning, other studies needed to be reviewed. One area where there has been much research on is the use of Public Service Announcements (PSAs) to bring about attitudinal and behavior changes. There has been considerable research conducted in this area. Dillard and Peck (2000) investigated how PSAs affect participants’ cognitively, emotionally, and attitudinally. The study involved 140 undergraduate students from communication classes at Pennsylvania State University. In groups of up to four, students viewed a series of eight PSAs and provided open and close-ended responses to them immediately following each one. The PSAs were on varying topics including drug use, infant bathtub drowning, drug use leading to AIDS, and handicapped people. The researchers used two experimental conditions and one

control condition. One experimental group was encouraged to be subjective in their responses to the PSAs, to let their “feelings” guide their responses to the questionnaires. The other experimental group was instructed to be objective in their responses to the questionnaires, and to not let their feelings, emotions, or attitudes about the topics guide their responses. The control group (natural group) received no questionnaires or processing instructions. The results of their study indicated that emotions do exert an apparent influence on evaluating the effectiveness of a PSA. Put another way, the study suggested that emotional responses to the PSAs played an important role in how the participants evaluated the PSAs, which in turn influenced their attitudes towards the social issues that the PSAs were about.

In another study, Pechmann and Reibling (2006) researched the effects of anti-smoking PSAs on teenagers. They gathered various anti-smoking ads with three different themes: a dying parent, disease and suffering, and environmental tobacco smoke (secondhand smoke). Subjects included 1,725 male and female ninth-grade students in southern California. During class periods, about 40 students at a time were taken out of their normal class schedule and brought to a room to watch 10 minutes of the TV show “The Price is Right.” Imbedded in the show were commercials—specifically, the anti-smoking ads. After viewing the show, the participants were asked to discuss the ads and also to indicate their future smoking intent. The researchers discovered some interesting things. The type of PSA used was a significant factor in deterring participants away from smoking; the one most effective focused on disease and suffering/dying—in particular where young people like themselves were afflicted. These types of PSAs appeared to cause feelings of disgust in the participants, and also lowered their future smoking intent. Interestingly, ads depicting a dying parent or environmental smoke apparently did little to change the subjects’ attitudes. The researchers hypothesized that this may be in part to the fact that many young people think that they are invincible at that age, and that disease will not happen to them.

After reviewing these studies, there is evidence to support that the use of an instructional video to bring about attitudinal change is possible. In this researcher’s study, this literature review

appears to support the hypothesis that the introduction of an instructional video will bring about attitudinal and driving habit changes.

Contextual Factors

A number of factors impacted and thus limited this research project; each is detailed below:

- The study was part of the ED 690 Summer session, which consisted of a highly compressed time-line (six weeks, start to finish). This meant that the researcher quickly had to think of a topic to study, conduct a thorough literature review, develop the instruments to collect the necessary data, and implement them to the participants of the study.
- Sampling was also a major factor of the study. True random sampling would have been time and labor intensive, and would have called for a formal protocol submission to SDSU's internal review board. Instead, this researcher conducted a non-random sampling of fellow graduate students from SDSU's ED 690 and EDTEC 540 summer classes. The results produced a sampling of 42 students originally solicited to participate in the study.
- Sampling error was encountered during the study as well. When participants conducted the pretest and posttest surveys, the last question asked was for them to enter the last four digits of their SDSU RED ID card. This information was requested by the researcher in order to match up pretest and posttest surveys to an individual. By not making this question a required field to enter during the survey, many participants did not enter the information, leading to "lost data" that had previously not been anticipated.
- The response rate from this study was a final contextual factor worth noting. Of the 42 original participants solicited, only 21 (50%) submitted their pretest survey, and only 17 (40%) submitted the posttest survey. Due to the previously discussed sampling error, many could not be matched to see if they had conducted both surveys. In fact only six participants (14%) could be matched from pretest to posttest answers.

Methodology:

Research Design

This study was designed to be a One-Group Pretest-Posttest design. The participants of the study were given a pre-experimental evaluation (pretest survey), and then were administered the experimental intervention, which consisted of watching the YouTube instructional video (independent variable). Finally, the group was evaluated (posttest survey) after having received the intervention.

Subjects

As previously discussed, 42 graduate students from ED 690 and EDTEC 540 Summer sessions were solicited to participate in the study. The participants were solicited via email from the researcher (for the ED 690 class) or indirectly from the instructor of the EDTEC 540 class.

Subjects were asked for their assistance in participating in the study, were given an overview of what the study was all about, and were assured that their participation was both voluntary and that their answers would remain confidential.

Instrumentation

The survey was the main strategy for collecting data—and the tool for developing it was SurveyMonkey, a web-based (and subscription-based) service to which SDSU/EDTEC students have access.

The researcher created two survey versions. The first served as a pretest, which subjects completed prior to watching the video. The second served as a posttest to evaluate and measure changes in the participants' attitudes and driving habits. The pretest survey was organized into the following sections:

- Questions one through seven focused on basic demography: gender, age range, how many cars they or their family own, what type of car they primarily drive (including how

many cylinders the engine has), daily miles driven, and different activities that contribute to their daily miles.

- The next set of questions utilized a five point Likert type (mostly true, generally true, neither true nor false, generally false, mostly false) scale to explore the participants' attitudes towards the current price of gasoline, feelings about public transportation, and comfort with the amount of driving that they do each week.
- The next section of questions called for subjects to rate a series of statements (using the same scale as above) about their current driving habits. Questions dealt with altering driving to avoid rush hour traffic, driving car with fuel efficiency in mind, carpooling, parking and entering restaurants instead of using drive through windows, walking to do errands instead of using a car, and driving habits on the road. Several items in this set were issues (ideas or strategies) covered in the video.
- Another question set focused on public transportation—specifically subjects' views on its convenience and how well schedules fit into their daily routine. A standard agreement scale was used here (ranging from strongly agree to strongly disagree).
- One question set attended to participants' beliefs about the benefits of changes they could make to their current habits. Using the agreement scale earlier described, the items targeted subjects' attitudes toward several gas-saving options: driving 55 mph on the freeway, using a fuel card (rather than gas or a "standard" charge-card), special fuel saving equipment, purchasing a hybrid, etc.

The YouTube video covered different steps that the viewer could take to cut down on fuel consumption, thereby saving them money at the pump. The video was chosen for a few reasons. First, it discussed items that the participants could immediately implement into their lives to save them money at the pump. Secondly, the video was under seven minutes in length, which was a significant factor in choosing a video. Due to the fact that the participants were all graduate students and most were also working professionals, the amount of time that the survey would require of them was of great importance. This researcher strived to get the best response rate to the data collection instruments by keeping them as brief as possible while still being able to gather data from them.

The posttest survey was similar to the pretest survey, and many of the questions in it were the same as the pretest survey. It was organized into the following groups of questions:

- Using a four point Likert scale (extremely-highly-somewhat-not very), the respondents were asked about how informative the video was.
- Using the same scale noted above, respondents were asked how interested they were in implementing any of the suggestions from the video.
- The next question dealt with any actions the respondents had implemented as a result of watching the video. The actions included items such as using cruise control on a regular basis, no longer idling their car to warm it up, slowing down on the freeway, acquiring a fuel card, or having not implemented any changes to their driving habits.
- The next sets of questions were taken from the pretest survey. They were the sets that measured attitudes and current driving habits. These questions' responses were to be compared to analyze changes in attitudes from pretest to posttest after the introduction of the gas saving video (independent variable).

In both the pretest and posttest surveys, the last question was for the participants to enter the last four digits of their SDSU RED ID card, so that the pretest and posttest responses could be matched to individuals.

Implementation

Participants were first given the pretest survey to gauge their current driving habits and attitudes. When the participants' clicked the submit button on their survey, they were immediately taken to the YouTube instructional video to view it. Four days after the participants had completed the pretest survey and viewed the instructional video, the follow up posttest survey was sent out to them.

It should be noted that none of the instruments were given any pilot testing to see if they would measure what the researcher's intent for them was. However, the ED 690 instructor, Dr. Marcie Bober-Michel, reviewed the instruments before they were administered. After

corrections were made to the surveys, they were administered to the sample population for data collection.

Data Analysis/Findings

As stated earlier, a variety of data was gathered from subjects on the pretest related to their current driving habits, attitudes, and basic demography. A few days after watching the instructional video, subjects completed a second survey meant to measure specific behavioral and attitudinal changes. The following sections will explain the data collection and analysis in more detail.

Section 1: Demographic Information

Of the 42 original participants solicited, only 21 (50%) submitted their pretest survey, and only 17 (40%) submitted the posttest survey. Subjects were largely female (66.7%) which somewhat characterizes the EDTEC program as a whole. Somewhat surprising was their varied ages. A majority of the participants responding (9, 42.9%) were between the ages of 31 and 40. There were also a significant number of the respondents (4, 19.0%) that were older than 51. The classes tended to be filled with working professionals who have gone back to school to pursue an advanced education degree. Below is a table showing the breakdown of students with regards to age ranges:

Table 1A Age Range of Participants

Age Range	% of Participants	# of Participants
25 or younger	9.5%	2
26-30	14.3%	3
31-35	28.6%	6
36-40	14.3%	3
41-45	0.0%	0
46-50	14.3%	3
51 or older	19.0%	4

When asked about how many cars their families owned, a majority of the participants owned two cars (9, 42.9%). A significant number of the participants owned only one car (8, 38.1%). These were most likely younger respondents who were not married (marital status was not asked of the participants). Four of the respondents (19.1%) owned three or more cars, probably consisting of married people with children.

For the “type” of car that was primarily driven, there was a close split of either compact (33.3%) or SUV (28.6%). Hybrids were owned by a small number of respondents (4.8%) probably due to their relatively new addition to the market and their price. Below is a table showing what types of cars the respondents drove as their primary car:

Table 1B: Type of Primary Car

Car Type	% of Participants	# of Participants
Compact	33.3%	7
SUV	28.6%	6
Sedan	19.0%	4
Minivan	9.5%	2
Hybrid	4.8%	1
Other	4.8%	1
Truck (small)	0.0%	0
Truck (large)	0.0%	0

Of these primarily driven cars, most were between four and six cylinders (85.3%). This correlates well to the types of cars driven, as most were either four cylinder compacts or six cylinder SUVs. Interestingly, two of the participants (9.5%) were unsure of how many cylinders their car’s engine had. One of these may be the owner of the hybrid car.

Unexpectedly, over half of the respondents (52.4%) reported driving less than twenty miles daily. One of the respondents (4.8%) drove 51 or more miles daily. With all of the driving that the respondents reported driving, they were asked what type of activities contributed to their

daily driving routines. The question in the survey allowed them to check more than one response to the question. The two most reported activities that contributed to overall daily driving were driving to either work (76.2%) or conducting errands (66.7%). Taking children to school was only reported by three (14.3%) of the participants, indicating that either most respondents had no children or that their children possibly take a school bus to school. The choices and reported occurrences are represented below:

Table 1C: Activities that Contribute Most to Overall Time Spent Driving

Activities	% of Participants	# of Participants
Driving to work	76.2%	16
Daily errands	66.7%	14
Driving to school	57.1%	12
Recreation/family outings	23.8%	5
Taking children to school	14.3%	3
Visiting/helping relatives	14.3%	3

Section 2: Data Analysis on the Unknown Participants

Due to a majority of the respondents not entering their RED ID digits into the survey, this data analysis section will cover the participants who cannot be matched to both surveys. Also worth keeping in mind is that while 16 unknown respondents took the pretest survey, only 11 unknown respondents took the posttest survey.

The first question on the posttest survey dealt with asking the respondents how informative they found the YouTube video. There was a four point rating scale consisting of choices of Extremely (rating of 1), Highly (rating of 2), Somewhat (rating of 3), and Not Very (rating of 4).

The rating average for this question was 2.73, which suggests that the majority of respondents found the information either somewhat or highly informative.

The next question asked if as a result of watching the YouTube video, the respondents were interested in implementing any of the suggestions. The scale on this question was the same as

the above mentioned scale. This question had a rating average of 2.60, once again suggesting that a majority of the respondents were somewhat to highly motivated to implement some of the suggestions from the video.

A question was asked on the survey about any changes that participants had made to their driving habits as a result of watching the YouTube video. Slowing down on the freeway and no longer idling their cars to warm them up were the two most reported changes to driving habits (40.0% of respondents for each item). Three of the unknown respondents (30.0%) had reported not taking any new actions after having watched the YouTube video. The results from the question are listed below:

Table 2A: Actions Taken as Result of Watching YouTube Video

Actions Taken	% of Participants	# of Participants
Slowed down freeway driving	40.0%	4
No longer idle car	40.0%	4
Not taken any actions	30.0%	3
Getting fuel card	20.0%	2
Use cruise control	20.0%	2

When asked about their attitudes and habits with regards to carpooling and public transportation, respondents provided data that suggested that as a whole, they do not utilize public transportation or carpool on a regular basis. The sets of questions were asked on a five point Likert-type scale. The scale for the questions either went from Mostly true, Generally true, Neither true nor false, Generally false, and Mostly false, or had a scale using the terms Strongly Agree, Agree, Neither agree nor disagree, Disagree, and Strongly disagree. A rating average of 3.00 or greater on either scale indicated either a neutral (3.00 average) or negative response to the questions. From the data collected, it appears that the respondents do not carpool or utilize public transportation on a regular basis. The data further suggests that public

transportation is inconvenient and schedules of buses, trolleys, etc. do not fit into the participants' daily routines well. However, it should be noted that these numbers reflect only aggregate data collected from survey monkey, and also that the number of participants who responded to the pretest and posttest surveys are significantly different, which impacts the accuracy of the collected data. Following is a table of means to help visualize the responses:

Table 2B: Public Transportation/Carpooling Attitudes and Habits of Respondents

Question	Pretest Mean	Posttest Mean
Carpool regularly	4.38	4.45
Use public transportation regularly	4.38	4.47
Public transportation is convenient for me to use	3.75	4.00
Bus/trolley/etc. time schedules fit into my daily routine	3.50	3.73

The last sets of questions that were analyzed had to do with things that the participants should have learned from viewing the YouTube instructional video. From pretest to posttest, it appears that some of the participants have changed their driving to drive the posted speed limit rather than keep up with the flow of traffic, possibly because they learned more about driving more fuel efficiently after having watched the YouTube video. Also, there was a more positive shift for walking to conduct errands instead of using their cars, as well as looking into getting a fuel card from their favorite stations. It is also worth noting that from pretest to posttest surveys, the numbers suggest that some of the respondents felt that there was nothing that they could reasonably change about their driving habits that would save them money at the pump. The analysis shows that participants had mixed views after having viewed the YouTube instructional video. While some had clearly taken steps towards changing their habits to increase their car's fuel efficiency, others had not. The data appears to be contradictory in

some cases. Below is a table of means to show the changes in behavior and attitudes. Once again as in prior questions using agreement scales, the lower the number (for example, a shift from 3.00 to 2.00), the more positive the results.

Table 2C: Things Participants Should Have Learned From the Instructional Video

Question	Pretest Mean	Posttest Mean
Better to keep up with the flow of traffic than drive the posted speed limit.	2.69	3.27
I can alter my driving times to avoid rush hour traffic.	2.75	3.55
I park and enter restaurants instead of use drive-thrus.	2.63	2.64
I walk to do errands rather than use my car.	2.88	2.55
Fuel cards can save me a significant amount on fuel.	3.31	2.73
Special fuel saving equipment for my car is worth the money/expense.	3.19	3.27
Cost of a hybrid is worth it.	3.00	3.09
I can't reasonably change anything about my driving habits to save money at the pump.	3.00	3.55

The next section will provide an analysis on the six known respondents that took both the pretest and posttest surveys, hopefully providing more accurate data.

Section 3: Data Analysis on the Known Participants

The six respondents that entered their last four numbers of their RED ID on both the pretest and posttest surveys provided the best data for analysis because their answers could be matched to both tests. Going back to the first question on the posttest survey asking how informative the YouTube video was, the rating average for the six known participants was 2.83, suggesting that they found the instructional video somewhat to highly informative. This rating from the known participants closely matches that of the unknown population, further appearing to show that the majority of people surveyed found the YouTube instructional video somewhat to highly informative. As to whether the known participants were interested in implementing any of the video's suggestions, the rating average for that question was 2.17, higher than the unknown rating average of 2.60. The rating average from the known group indicates that they are somewhat to highly motivated to implement suggestions from the instructional video.

When the known participants were asked about any changes that they had made to their driving habits as a result of watching the YouTube video, some interesting data was gathered. Three of the six known participants (50.0%) had slowed down their freeway driving, which closely resembles the 40.0% in the unknown population who had responded the same. Once again, about a third of the population reported that they had not taken any actions as a result of watching the YouTube video. The similarities between the known participants and unknown participants are striking, and suggest that the data collected is valid, at least for the total participants in the study. Here is a table listing the actions of the known group:

Table 3A: Actions Taken as Result of Watching YouTube Video

Actions Taken	% of Participants	# of Participants
Slowed down freeway driving	50.0%	3
Getting a fuel card	33.3%	2
Not taken any actions	33.3%	2
No longer idle car	16.7%	1
Use cruise control	16.7%	1

For the next sets of questions, because the six participants' answers could be verified on both surveys, a paired T test was conducted to provide more meaningful data than just "eyeballing" the raw data. The known participants responded very similarly to the larger unknown population with regards to the questions about carpooling and public transportation. Once again, it suggests that survey respondents do not carpool or utilize public transportation, and also that they find public transportation inconvenient and the schedules do not fit into their daily routines. All of the mean changes from pretest to posttest were not statistically significant at the 95% confidence level, but did paint a picture of overall negative feelings and habits with respect to carpooling and using public transportation. However, it is interesting to note that although the responses to all questions by the known participants were on the negative side of the scale, each question had a "positive" shift from the pretest to posttest responses. However, all questions ultimately suggested the same attitudes and habits of the larger unknown population. Below is a table showing the six known participants responses:

Table 3B: Public Transportation/Carpooling Attitudes and Habits of Respondents

Question	Pretest Mean	Posttest Mean
Carpool regularly	4.67	4.17
Use public transportation regularly	4.67	4.33
Public transportation is convenient for me to use	4.17	3.67
Bus/trolley/etc. time schedules fit into my daily routine	4.00	3.33

As was previously conducted on the unknown population of respondents, the final grouping of questions that were analyzed had to do with things that the participants should have learned from viewing the YouTube instructional video. From the data gathered, it appears that the changes were not statistically significant, but the data does tell us something about the known participants. On the whole, the data suggests that the known participants are more prone to keep up with the flow of traffic rather than drive the posted speed limit and less likely to alter their driving habits to avoid rush hour traffic. The data suggests that they are more likely to park and enter a restaurant rather than use the drive thru, and also walk rather than use their car to conduct errands. There was a positive shift in the belief that acquiring a fuel card to save money at the pump. Also, respondents answered as expected after watching the instructional video that special fuel saving car equipment is not worth the expense, nor is purchasing a hybrid. Finally, respondents believe that there are things they can reasonably change about their driving habits that will save them money at the pump. These answers to some of the questions are quite different than what was gathered from the unknown population. For example, the data collected from the unknown population suggested that they felt there was nothing they could reasonably change about their driving habits that will save them money at the pump. Another example is that in the unknown population, the rating average for question one suggested that those respondents were more apt to drive in a fuel efficient manner, while

the data collected from the known group suggested that they keep up with the flow of traffic. Below is a table showing the changes from pretest to posttest for the known participants:

Table 3C: Things Participants Should Have Learned From the Instructional Video

Question	Pretest Mean	Posttest Mean
Better to keep up with the flow of traffic than drive the posted speed limit.	3.17	3.00
I can alter my driving times to avoid rush hour traffic.	2.33	3.33
I park and enter restaurants instead of use drive-thrus.	2.17	2.50
I walk to do errands rather than use my car.	2.17	2.67
Fuel cards can save me a significant amount on fuel.	3.33	2.50
Special fuel saving equipment for my car is worth the money/expense.	2.67	3.50
Cost of a hybrid is worth it.	3.17	3.33
I can't reasonably change anything about my driving habits to save money at the pump.	3.17	3.33

Conclusion/Recommendations

The purpose of this study was to see if the introduction of an instructional video would bring about changes in the participants' attitudes and driving habits with respect to fuel efficiency. From the data collected and analyzed, there is some evidence to suggest that the viewing of the YouTube video did bring about attitude and driving habit changes in some of the participants. However, due to the small sample size and difficulties experienced matching up pretest and posttest surveys to individual respondents, the evidence that the video truly brought about the changes is suspect. Further analysis using larger samples that more accurately represent the larger population would need to be conducted.

Another recommendation would be to conduct interviews with those participants whose answers from pretest to posttest could be matched, to gather more information as to whether the instructional video truly had an impact on their answers to the survey questions. This, of course, would not be able to be accomplished due to the fact that the participants' identities were unknown by the researcher.

In the future, a study using an instructional video could be conducted, with a pre and post viewing sit down interview conducted with participants. This type of research would most likely yield excellent qualitative data to explore the hypothesis from a different angle.

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