Environmental Protection Agency Fuel Economy Label

Pre-Focus Groups Online Survey Report

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Office of Transportation and Air Quality
U.S. Environmental Protection Agency

and

National Highway Traffic Safety Administration
United States Department of Transportation

Prepared for EPA by
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Introduction and Methods

In 2006, EPA updated how the city and highway fuel economy values are calculated to better reflect typical real-world driving patterns and provide more realistic fuel economy estimates. EPA is now initiating a new rulemaking to ensure that American consumers continue to have the most accurate, meaningful and useful information, as well as an understanding of how the labeled vehicle impacts the environment. With the introduction of advanced technology vehicles on the market the EPA must provide metrics that are relevant and useful for vehicles such as Electric Vehicles, Extended Range Electric Vehicles and Plug-in Hybrid Electric Vehicles.

To help inform the creation of the new label, EPA engaged PRR Inc. to work with them in the design and implementation of several information gathering tasks including:

- Literature review

- Focus groups in 3 phases, including pre-group online surveys

- Expert panel

- National online survey of new vehicle buyers and intenders

The purpose of the pre-group online survey was to obtain additional information regarding their vehicle purchase process, the role of fuel economy in their purchase decision, how they used the current fuel economy label, and motivators and barriers to their purchasing alternative fuel vehicles. Data from all the three pre-group online surveys was merged into one database for analysis purposes since the survey questions were very similar across all three phases. A total of 404 of those recruited completed the online survey.

This report presents a comprehensive summary of the findings from the three pre-group online surveys. It should be noted that the results of these surveys are not intended as representative of any larger group of new vehicle buyers and reflect only the experience of the focus group participants. Nonetheless, these results can provide important insights to be used in conjunction with the other research tasks connected with this overall project.

Key Findings

- Vehicle use:

  - Most (88.1%) were the principal drivers of their new vehicles and almost all drove their vehicles five to seven days a week (91.8%).

  - Over half (54.7%) reported that they planned to drive this new vehicle between 9,001 to 15,000 miles per year, with another fifth (20.1%) planning to drive between 15,001 to 20,000 miles per year.

  - Respondents mostly used their new vehicles for errands and shopping (93.1%), visiting family and friends (83.4%), for recreation (81.3%), and for travel to and from work (75%).

- Vehicle purchase process:

  - Over a third (34.1%) purchased a new vehicle less frequently than every five years. Around a fifth reported purchasing a new vehicle every five years (17.5%), every four years (18.7%), or every three years (21.1%).

  - More than three-quarters (77.5%) had a specific vehicle in mind before they first started looking, and just over half (51.5%) started researching vehicle information about one to three months before buying.

  - More than half (53.6%) compared two to three vehicles before making their final decision, with only 12.7% considering just one vehicle.

- More than three-fifths (62.8%) considered more than one vehicle type, with a third (32.9%) considering two vehicle types and another fifth (19.7%)considering three vehicle types.

- More than half (52%) considered a sport utility (SUV) vehicle when they were first looking.

- The top five most important factors they considered when buying their newest vehicle were driving comfort, price, safety, reliability, and gas mileage.

- Over three-fourths (78%) reported that they compared common factors across the vehicles. The top five common factors were: size/seating capacity/cargo capacity (50%), gas mileage/fuel economy (39.8%), vehicle type/category (25.4%), vehicle price (21.2%), and make/model reputation (18.6%).

- One-fourth (25.5%) relied on themselves the most when deciding which vehicle to purchase. A fifth (21.2%) reported that they relied on their spouse/partner and/or their immediate family for their vehicle purchasing decision.

- Role of fuel economy:

  - Fuel economy was fairly important when choosing a new vehicle. Three-fifths (60.4%) rated it a '9' or above on a 10-point importance scale.

  - Over two-thirds (67.5%) indicated they searched for information about fuel economy before buying their most recent new vehicle. Most respondents looked for this information at manufacturer's websites (67.1%), on the fuel economy label (59.5%), using Consumer Reports (56.3%), and/or at auto dealerships (31.3%).

  - Almost three-quarters (72%) reported that they trust the EPA for fuel economy information.
    - Close to one-third (31.1%) indicated in their qualitative comments that EPA is an unbiased, trustworthy, reliable and reputable agency that is regulated by the government.

- Another 15.6% said that it was EPA's job to test vehicles and set standards for fuel economy.
- About 11% said that EPA was committed to protecting the environment and fuel economy regulation was part of protecting the environment.

- Of those who did *not* trust the EPA for fuel economy information:
  - Over one-fourth (27.2%) indicated in their qualitative comments that they had not thought about EPA as a source of information on fuel economy.
  - Another 17.5% thought the EPA was biased towards its own agenda and did not think it was trustworthy.
  - About another 17% were unfamiliar with the EPA and about another 17% stated that EPA mpg estimates were not accurate and higher than real-life estimates.

- Most (88.2%) remembered seeing the fuel economy label when they bought their most recent new vehicle (without the aid of seeing the label in the survey). Of those who did not remember unaided, when shown a copy of the label almost all (95.9%) then remembered seeing the label.

- The fuel economy label played a fairly important role in helping respondents choose a vehicle (mean importance score = 7.41 on a scale of 1 to 10). The most helpful fuel economy label information was the highway mpg, city mpg, combined fuel economy compared to other vehicles, expected range for most drivers in regard to highway mpg, and expected range for most drivers in regards to city mpg.

- Most (83.7%) did not think the fuel economy label was hard to understand or that it needed to be improved. Of those who thought that the fuel economy was hard to understand and needed to be improved, over one-fifth (21%) stated that they had difficulty understanding the combined fuel economy section of the label.

- Motivators and barriers to purchasing fuel efficient vehicles:

  - The top motivators that might persuade respondents to seriously consider buying an advanced technology vehicle include: lower alternative fuel cost or higher gas prices (73%), lower vehicle price (60.3%), better mileage than a gasoline fuel vehicle (34.9%), positive environmental impact (29%), and higher reliability and dependability of the vehicle and vehicle parts (17.1%).

  - The top barriers that prevent respondents from seriously considering buying an alternative fuel vehicle include high cost of vehicle (66.3%), expensive maintenance (45.8%), expensive cost of parts/battery (45%), and parts/vehicles are unreliable (36.8%).

  - The most compelling factors for buying a fuel efficient vehicle were 'to save money', followed closely by 'because it was better for the environment', and 'to reduce our dependency on other countries'.

  - When it came to environmental concerns, the top two environmental factors of most concern were toxic exhaust emissions and smog.

- Market segments: A cluster analysis was performed to identify possible market segments from among the respondents to the online survey. Cluster analysis is an exploratory data analysis technique designed to reveal natural groupings within a collection of data. As such, cluster analysis can suggest potentially useful ways of grouping market segments. Three clusters were identified:

  - Cluster 1: '**Care more about the environment than fuel economy**' - less concerned about fuel economy and other vehicle factors, but more concerned about environment (33%)

  - Cluster 2: '**Care most about fuel economy as well as the environment**' - most concerned about fuel economy, other vehicle factors, as well as environment" (44%)

  - Cluster 3: 'Care less about fuel economy and the environment' - less concerned about fuel economy and other vehicle factors, and least concerned about environment" (23%)

Introduction

Background

In 2006, EPA updated how the city and highway fuel economy values are calculated to better reflect typical real-world driving patterns and provide more realistic fuel economy estimates. In addition, EPA redesigned the fuel economy label to make it more informative for consumers. The redesigned label more prominently featured annual fuel cost information, provided contemporary and easy-to-use graphics for comparing the fuel economy of different vehicles, used clearer text, and included a Web site reference to www.fueleconomy.gov which provided additional information.

EPA is now initiating a new rulemaking to ensure that American consumers continue to have the most accurate, meaningful and useful information, as well as an understanding of how the labeled vehicle impacts the environment. With the introduction of advanced technology vehicles on the market the EPA must provide metrics that are relevant and useful for vehicles such as Electric Vehicles, Extended Range Electric Vehicles and Plug-in Hybrid Electric Vehicles.

To help inform the creation of the new label, EPA engaged PRR Inc. to work with them in the design and implementation of several information gathering tasks including:

- Literature review

- Focus groups (in 3 phases, including pre-group online surveys)

- Expert panel

- National online survey of new vehicle buyers and intenders

It was decided to use a three-phase approach for the focus groups in order to accommodate the sheer amount of information required to be covered in the focus groups, as well as to use each phase to inform the next phase on overall label design in regard to both content and look. The three phases were designed to address the following issues:

- Phase I – Use of the current fuel economy label, as well as content and design of the label for internal combustion engine vehicles

- Phase II – Understandability of and preference for metrics for advanced technology vehicle labels

- Phase III – Assessment of full label designs for conventional and advanced technology vehicles in regard to content and look

Methodology

This document provides an overview of the results of the pre-group online surveys from all three focus group phases. (See Appendix A for the survey questions from Phase 3[1].) The data was merged into one database for analysis purposes since the survey questions were very similar across all three phases. In those cases where a question was not asked in all three phases of the survey, it is noted in the body of the report.

A total of 32 focus groups were conducted between February 22nd and May 27th, 2010 in the cities of Seattle, Chicago, Houston and Charlotte. Groups were gender specific, were conducted in English, and each lasted two hours.

Participants were recruited from within panels developed and maintained by the focus group facility used in each city. In order to screen out 'professional focus group participants,' only those who had not participated in a focus group in the last six months were included. In addition, participants were required to demonstrate evidence that they had purchased a new vehicle (not a used or pre-owned vehicle; not a motorcycle; not a 'Cash for Clunkers' purchase) in the last 12 months. In addition, participants must have been the sole or primary decision maker with regard to this new vehicle

[1]   Although the survey questions were similar across the three phases of focus groups, the Phase 3 survey questions provides the most complete set of questions and is provided in Appendix A.

purchase. Having internet access was also a requirement so that they could complete the pre-group online survey. To ensure a good cross-section of participants, each focus group included individuals representing diversity in: type of new vehicle, price range of new vehicle, distance they typically travelled daily in this new vehicle, if they had seriously considered an advanced technology vehicle before purchasing their vehicle, and demographic characteristics.

Recruits were asked to complete an online survey before they took part in the focus group discussions. The purpose of the online survey was to obtain additional information regarding their vehicle purchase process, the role of fuel economy in their purchase decision, how they used the current fuel economy label, and motivators and barriers to their purchasing alternative fuel vehicles. The survey questions were developed by PRR, with input from the EPA, NHTSA (National Highway Traffic Safety Administration) and OMB (Office of Management and Budget).

Those recruited were sent a link to the pre-group online survey approximately one week in advance of the scheduled focus groups. They were instructed to complete the online survey at least 2 days prior to their group. Follow-up reminder calls were made to those who had not completed the survey in the specified timeframe. A total of 404 of those recruited completed the online survey. It should be noted that not all those who completed the online survey participated in the subsequent focus groups. It should also be noted that the results of these surveys are not intended as representative of any larger group of new vehicle buyers and reflect only the experience of the focus group participants. Nonetheless, these results can provide important insights to be used in conjunction with the other research tasks connected with this overall project.

Data Processing and Analysis

Data processing consisted of coding and entering quantitative and qualitative responses. Open-ended question responses were coded to allow for inclusion in the quantitative analysis. Response range and logic checks (with the use of frequency tables) were performed in order to check for miscoded variables thereby cleaning the final data file. Data analysis was conducted with SPSS software (Statistical Package for the Social Sciences).

Data analysis involved the use of appropriate descriptive statistical techniques (frequencies, percentages and means) and explanatory statistical techniques (in this case Cramer's V and Kendall's tau-c) to test for the statistical significance of relationships between variables.[2] A cluster analysis was also performed to identify possible market segments from among the respondents to the online survey.

Throughout this report, relationships between variables that are statistically significant at the .05 level or less, and that are meaningful to an understanding of the data are reported. It should also be noted that some of the charts presented in the report are for "multiple response variables", meaning that the survey respondent could select more than one answer. In such charts the percentages will add up to more than 100 percent.

2   *Cramer's V* is a measure of the relationship between two variables and is appropriate to use when one or both of the variables are at the nominal level of measurement. *Cramer's V* ranges from 0 to +1 and indicates the strength of a relationship. The closer to +1, the stronger the relationship between the two variables. *Kendall*'s tau-*c* is a measure of the relationship between two variables and is appropriate to use when both of the variables are at the ordinal level of measurement. *Tau-c* ranges from -1 to +1 and indicates the strength and direction of a relationship. The accompanying "p" scores presented in this report for Cramer's V and tau-c indicate the level of statistical significance reported if they are at the .o5 level or less.

Demographic Profile

Sample demographics as a percentage of the total sample.

	Sample
Gender	**(n = 404)**
Female	45.0%
Male	42.3%
Did not answer	12.6%
Age	**(n =404)**
20 - 24	3.2%
25 - 34	20.5%
35 - 44	21.8%
45 - 54	22.0%
55 - 64	15.6%
65 or older	5.7%
Did not answer	11.1%
Household income before taxes	**(n = 404)**
$15,000-$25,000	2.0%
$25,000-$50,000	10.4%
$50,000-$75,000	19.3%
$75,000-$100,000	17.1%
$100,000-$125,000	12.9%
$125,000-$150,000	5.4%
$150,000 and more	6.9%
Did not answer	26.0%
Education	**(n = 404)**
HS diploma or GED	4.5%
Some college/AA/Technical degree	25.0%
College graduate	40.8%
Post graduate	17.8%
Did not answer	11.9%

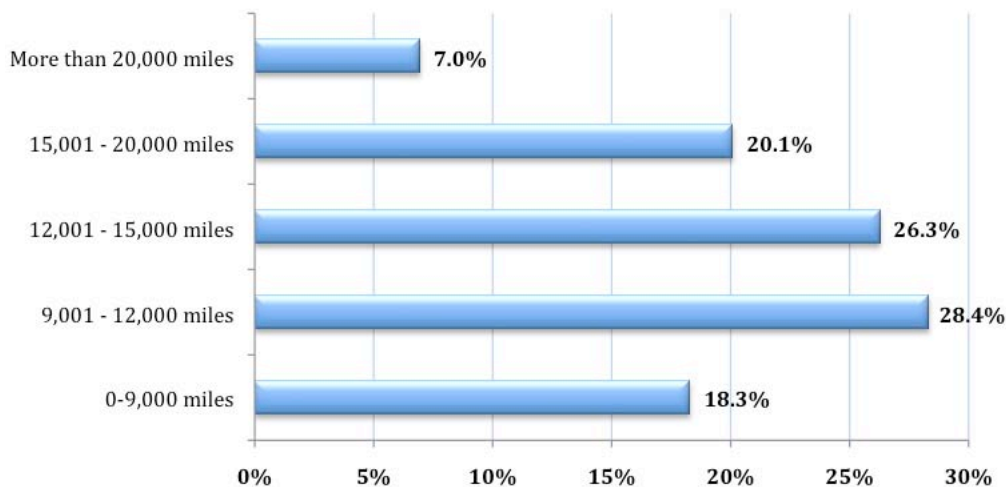|	Sample
Vehicles per household	**(n = 404)**
1	15.3%
2	41.1%
3	12.4%
4	5.0%
5 or more	2.5%
Did not answer	23.8%
Licensed drivers in household	**(n = 404)**
1	14.9%
2	46.5%
3	9.9%
4	4.0%
5 or more	0.7%
Did not answer	24.0%

Vehicle Use

Respondents were asked if they were the principle driver of the new vehicle, how many days their new vehicle was driven, approximate annual mileage, and for what trip purposes the vehicle was used.

More than half drive their new vehicle between 9,001 and 15,000 miles per year
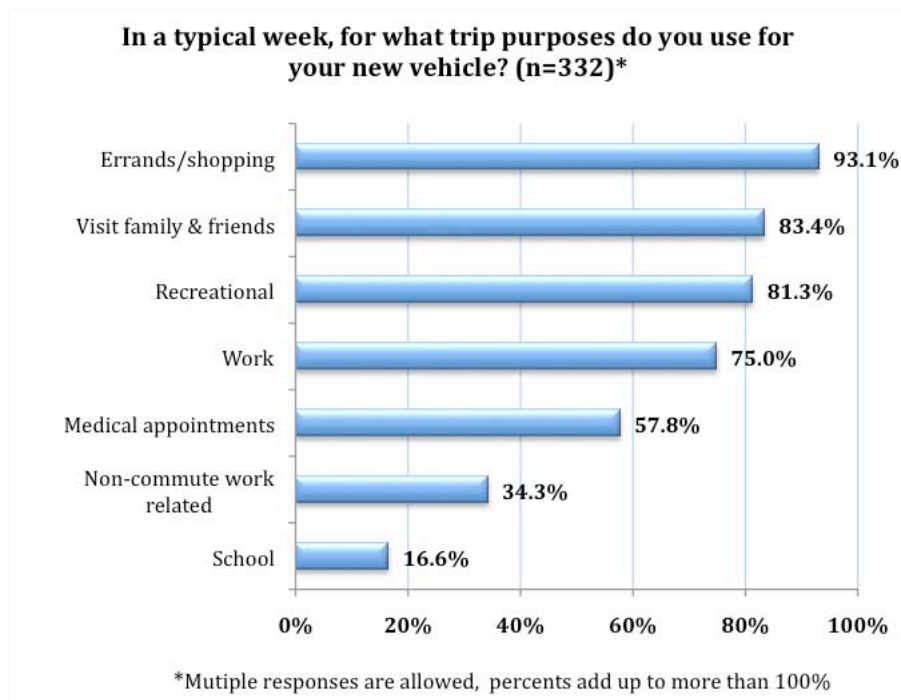
Most of the respondents (88.1%) were the principle drivers of their new vehicles and almost all drove their vehicles five to seven days a week (91.8%). Over half (54.7%) reported that they planned to drive this new vehicle between 9,001 to 15,000 miles per year, with another fifth (20.1%) planning to drive between 15,001 to 20,000 miles per year. Only 7% planned to drive more than 20,000 miles per year.

About how many miles per year is this vehicle driven? (n = 388)

Mileage	Percentage
More than 20,000 miles	7.0%
15,001 - 20,000 miles	20.1%
12,001 - 15,000 miles	26.3%
9,001 - 12,000 miles	28.4%
0-9,000 miles	18.3%

Most used new vehicles for errands, visiting family/friends, recreation, and/or commuting to work

Respondents mostly used their new vehicles for errands and shopping (93.1%), visiting family and friends (83.4%), for recreation (81.3%), and for travel to and from work (75%).

In a typical week, for what trip purposes do you use for your new vehicle? (n=332)*

Trip purpose	Percentage
Errands/shopping	93.1%
Visit family & friends	83.4%
Recreational	81.3%
Work	75.0%
Medical appointments	57.8%
Non-commute work related	34.3%
School	16.6%

*Mutiple responses are allowed, percents add up to more than 100%

Vehicle Purchase Process

Respondents were asked how often they purchased a new vehicle and to describe the process they used for purchasing their most recent new vehicle, including who or what they relied on the most when deciding which vehicle to purchase. Additional questions focused on the importance that various factors played in their final purchase decision, as well as the number and types of vehicles they had seriously considered before making their final choice.

Many reported a fairly systematic purchase process involving research before visiting a dealership

More than three-quarters (77.5%) had a specific vehicle in mind before they first started looking, and just over half (51.5%) started researching vehicle information about one to three months before buying.

When they were asked to describe the process they used to buy their most recent vehicle, many said that they started with online research to learn more about vehicles that fit their needs and preferences (such as particular vehicle type/category, manufacturer preference, price range, etc.). They visited websites such as Edmunds.com, manufacturers' websites, auto-dealer websites, auto-blogs, consumer review websites, etc. to create a list of comparable vehicles to consider further. Many also said that they read Consumer Reports and found it to be a reliable source of information on vehicles. As a part of this search process, they gathered information on specific factors such gas mileage, safety, reliability, warranty, etc. that they thought were important for each vehicle that was in their consideration set. Subsequently, they visited auto-dealers based on their preference for particular makes, availability of vehicle model, consumer reviews of dealers, price quotes, financing options, etc.

They then test drove the vehicles at these dealerships, bargained for price and financing, and subsequently bought the vehicle that they liked the most during the test drive and that best fit their needs, preferences and price range.

*Most considered more than one vehicle and shopped across vehicle types*

More than half (53.6%) compared two to three vehicles before making their final decision, with only 12.7% considering just one vehicle.

How many vehicles did you compare before deciding? (n = 379)
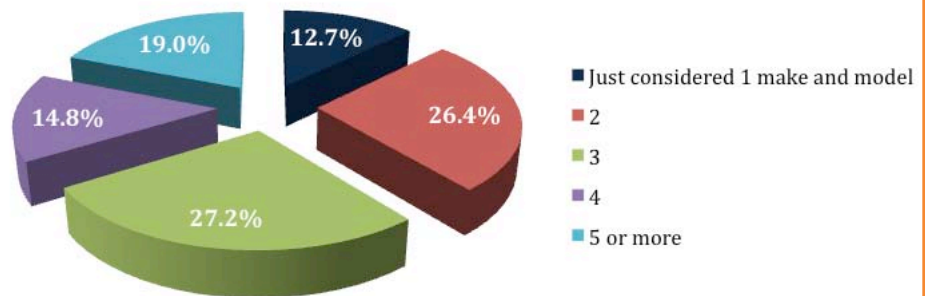
However, when it came to the types of vehicles seriously considered, more than three-fifths (62.8%) considered more than one vehicle type, with a third (32.9%) considering two vehicle types and another fifth (19.7%)considering three vehicle types.
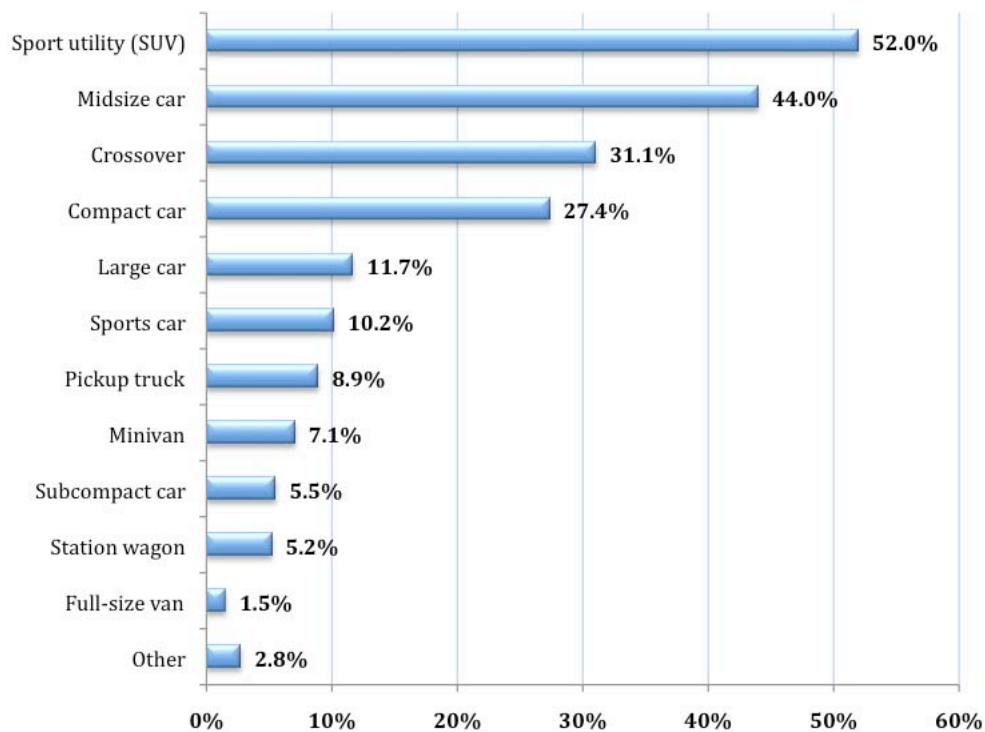
Number of vehicle types seriously considered (n=325)
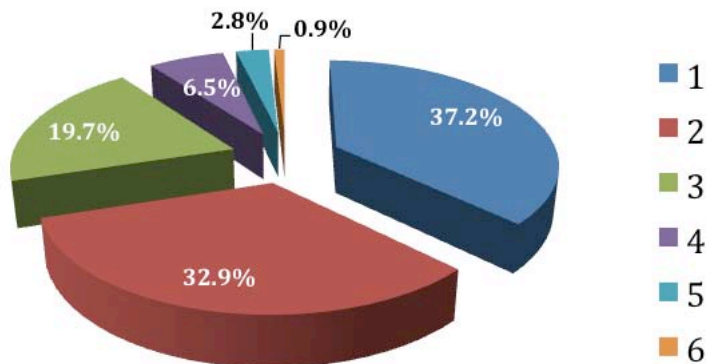
Most popular vehicle types shopped for included SUVs, midsize cars, crossovers and compact cars

More than half (52%) considered a sport utility (SUV) vehicle when they were first looking. Almost as many considered midsize cars (44%), with about a third (31.1%) considering crossover vehicles, and about a quarter (27.4%) considering compact cars.
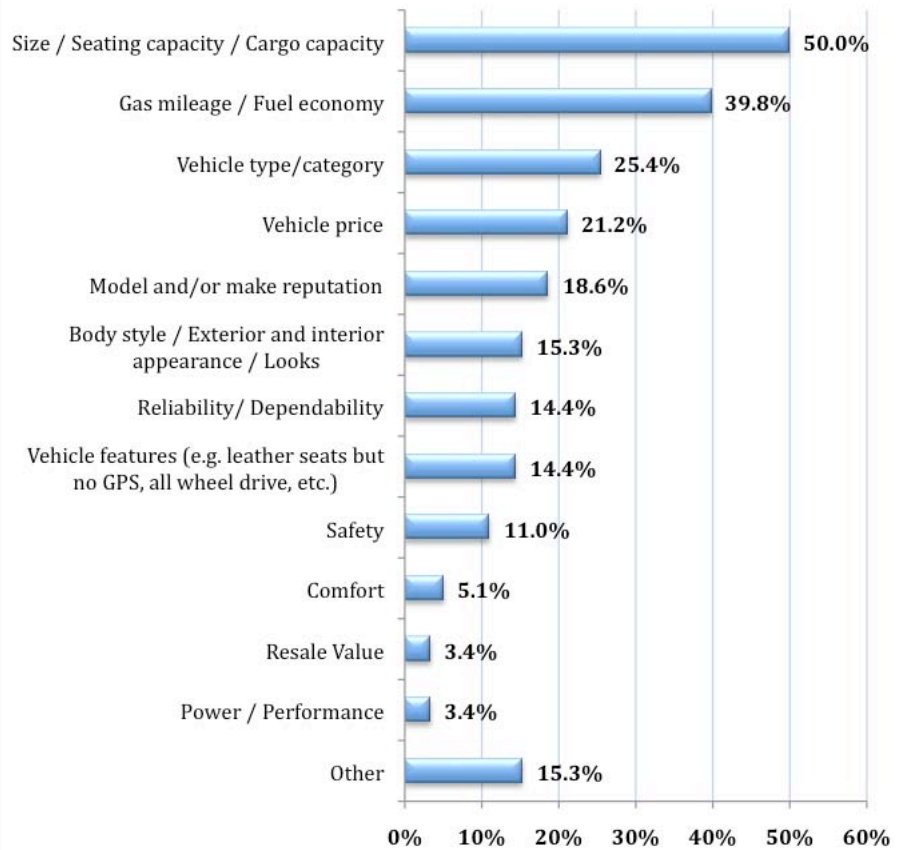
Which type of vehicle did you seriously consider when you were first looking for a new vehicle? (n=332)*

Vehicle type	Percent
Sport utility (SUV)	52.0%
Midsize car	44.0%
Crossover	31.1%
Compact car	27.4%
Large car	11.7%
Sports car	10.2%
Pickup truck	8.9%
Minivan	7.1%
Subcompact car	5.5%
Station wagon	5.2%
Full-size van	1.5%
Other	2.8%

*Multiple responses allowed; percents can add up to more than 100%

Seventy-eight percent of the respondents reported common factors across the vehicles compared. The following are top five common factors across the vehicles they compared: size/seating capacity/cargo capacity (50%), gas mileage/fuel economy (39.8%), vehicle type/category (25.4%), vehicle price (21.2%), and make/model reputation (18.6%).

What was that common factor(s) or attribute(s) that drew you to those specific vehicles? (n = 118)*

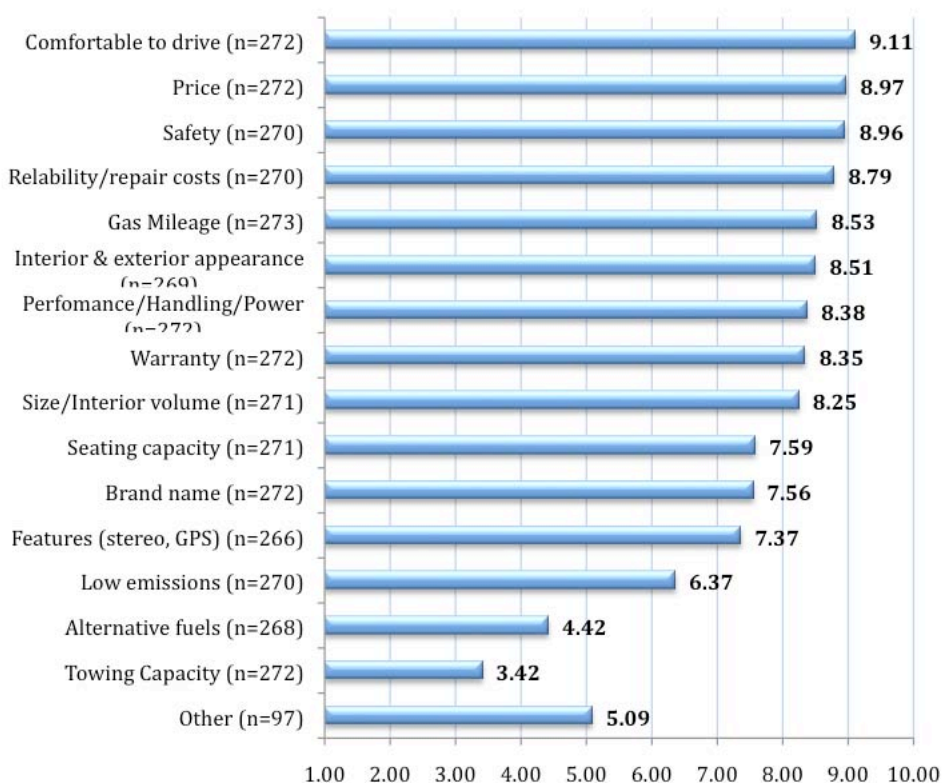| Factor	Percentage
Size / Seating capacity / Cargo capacity	50.0%
Gas mileage / Fuel economy	39.8%
Vehicle type/category	25.4%
Vehicle price	21.2%
Model and/or make reputation	18.6%
Body style / Exterior and interior appearance / Looks	15.3%
Reliability/ Dependability	14.4%
Vehicle features (e.g. leather seats but no GPS, all wheel drive, etc.)	14.4%
Safety	11.0%
Comfort	5.1%
Resale Value	3.4%
Power / Performance	3.4%
Other	15.3%

* Multiple responses allowed; percents add up to more than 100%

Of those who did not purchase the vehicle(s) that they first considered, close to one-third (30%) said that they had changed their decision based on their changed need at that time. For example, participants were now looking for a bigger vehicle, a more fuel efficient car such as a hybrid, etc. as compared to when they initially considered a particular vehicle. Twenty percent said that they changed their decision after they test-drove the vehicles. Another 16.7% found the vehicle that they had originally considered to be more expensive than they could afford.

Comfort, price, safety, reliability, and gas mileage top the list of influencing factors

The top five most important factors they considered when buying their newest vehicle were driving comfort, price, safety, reliability, and gas mileage.[3] But, as can be seen in the table below, many other factors were also important, including, but not limited to: interior& exterior appearance, performance/handling/power/, warranty, size/ interior volume, and seating capacity.

Mean scores of factors important in buying new vehicle

Factor	Score
Comfortable to drive (n=272)	9.11
Price (n=272)	8.97
Safety (n=270)	8.96
Relability/repair costs (n=270)	8.79
Gas Mileage (n=273)	8.53
Interior & exterior appearance (n=269)	8.51
Perfomance/Handling/Power (n=272)	8.38
Warranty (n=272)	8.35
Size/Interior volume (n=271)	8.25
Seating capacity (n=271)	7.59
Brand name (n=272)	7.56
Features (stereo, GPS) (n=266)	7.37
Low emissions (n=270)	6.37
Alternative fuels (n=268)	4.42
Towing Capacity (n=272)	3.42
Other (n=97)	5.09

3   Based on phases 2 and 3 data where the question was asked as a rating question (as opposed to a ranking question as in phase 1).
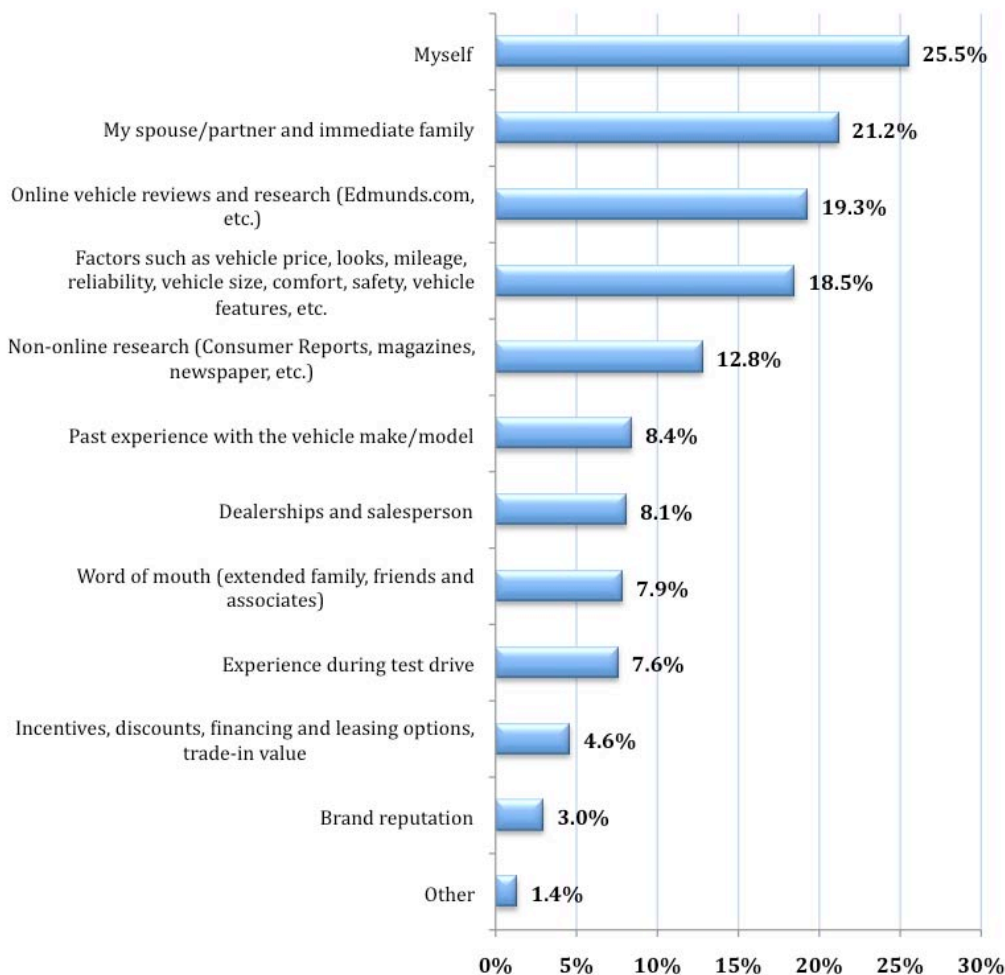
It was further found that:

- Comfort was more important for women[4]

- Price was more important for those with lower incomes[5]

- Safety was more important to those who were younger[6] and with less education[7]

- Reliability/repair costs was more important to those with less education[8]

- Gas mileage was more important for those with less education[9] and lower income[10]

- Interior & exterior appearance was more important for those in Houston and Chicago[11] and for those who purchase new vehicles more frequently[12]

- Performance/handling/power was more important to those with less education[13]

- Warranty was more important for those with less education[14] and those from Charlotte, Houston and Chicago[15]

- Size/interior volume was more important to those with less education[16] and those with more licensed drivers in the household[17]

- Seating capacity was more important to females[18]

- Brand was more important to those who compared fewer vehicles before making a purchase decision[19]

- Low emissions was more important for women[20] and those with less education[21]

- Alternative fuels were more important for younger buyers[22]

- Towing capacity was more important to those who were younger[23], those with more working motor vehicles in the household[24], and those with more licensed drivers in the household[25]

4   Cramer's V = .239, p = .026

    Tau-c = -.119, p = .008

6   Tau-c = -.1-9, p = .013

7   Tau-c = -.155, p = .001

8   Tau-c = -.116, p = .019

9   Tau-c = -.180, p = .000

    Tau-c = -.149, p = .001

11 Cramer's V = ,246, p = .006

12 Tau-c = -.122, p = .009

13 Tau-c = -.149, p = .003

14 Tau-c = -.199, p = .000

    Cramer's V = .236, p = .014

16 Tau-c = -.136, p = .009

17 Tau-c = .130, p = .004

18 Cramer's V = .265, p = .041

19 Tau-c = -.165, p = .001

    Cramer's V = .297, p = .009

21 Tau-c = -.164, p = .001

22 Tau-c = -.154, p = .001

23 Tau-c = -.104, p = .020

24 Tau-c = .143, p = .001

    Tau-c = .124, p = .002

Almost half relied on themselves or family members when making a vehicle choice

One-fourth (25.5%) said that they relied on themselves the most when deciding which vehicle to purchase. A little more than a fifth (21.2%) reported that they relied on their spouse/partner and/or their immediate family for their vehicle purchasing decision. Another 19.3% said that they relied on online vehicle reviews and research, with another 18.5% relying most on checking for factors such as vehicle price, looks, mileage, reliability, size, comfort, safety, features, etc. when deciding which vehicle to purchase.

What or who did you rely on the most when deciding which vehicle to purchase? (n = 368)*

Category	Percent
Myself	25.5%
My spouse/partner and immediate family	21.2%
Online vehicle reviews and research (Edmunds.com, etc.)	19.3%
Factors such as vehicle price, looks, mileage, reliability, vehicle size, comfort, safety, vehicle features, etc.	18.5%
Non-online research (Consumer Reports, magazines, newspaper, etc.)	12.8%
Past experience with the vehicle make/model	8.4%
Dealerships and salesperson	8.1%
Word of mouth (extended family, friends and associates)	7.9%
Experience during test drive	7.6%
Incentives, discounts, financing and leasing options, trade-in value	4.6%
Brand reputation	3.0%
Other	1.4%

* Multiple responses allowed; percents add up to more than 100%

Just over a third (34.1%) of the respondents purchased a new vehicle less frequently than every five years. Around a fifth reported purchasing a new vehicle every five years (17.5%), every four years (18.7%), or every three years (21.1%). Only 8.6% purchased new vehicles more frequently than every three years.

How often do you typically purchase a new vehicle? (n=337)

Category	Percentage
Longer than every 5 years	34.1%
Every 5 years	17.5%
Every 4 years	18.7%
Every 3 years	21.1%
Every 2 years	6.8%
Every year	1.8%

Role of Fuel Economy

Respondents were asked how important fuel economy was to their vehicle buying decision, if they searched for information about fuel economy, where they searched for this information, and if they trusted fuel economy information provided by the EPA. They were also asked if they remembered seeing the fuel economy label on the vehicle window, how important this label was in helping them choose their new vehicle, and lastly how helpful specific label information was in their vehicle buying decision.

Fuel economy was fairly important when choosing a new vehicle

The average city mpg of respondents' new vehicles was 23 mpg, and the average highway mpg was 28 mpg. In regard to the importance of fuel economy, the average importance score was 8.07 (on a scale of 1 to 10, where 10 meant fuel economy was *very important*), with 60.4% rating the importance of fuel economy a 9 or 10.

Further, it was found that the lower the education level[26] and the lower the household income,[27] the more likely one was to attach more importance to fuel economy in a vehicle choice. In addition, the higher the concern about environmental factors,[28] the more likely one was to attach more importance to fuel economy in a vehicle.[29]

26 Tau-c = - .105, p = .013

27 Tau-c = -.129, p = .003

28 Concern about environmental factors was based on an index constructed by adding up the individual responses to each of the environmental concern items. The items were weighted equally. Overall, females scored higher on this index than males (Tau-c = .277, p = .000)

29 Tau-c = .190, p = .000

Majority searched for fuel economy information

Just about two-thirds (67.5%) indicated they searched for information about fuel economy before buying their most recent new vehicle. Most respondents looked for this information at manufacturer's websites (67.1%), on the fuel economy label (59.5%), using Consumer Reports (56.3%), and/or at auto dealerships (31.3%). Males were more likely than females to search for such information,[30] as were those who compared more vehicles before making a final vehicle choice[31] and those who had higher environmental concerns.[32]

Where did you search for information on fuel economy and fuel consumption? (n=252)*

Source	Percentage
Manufacturers website	67.1%
Fuel economy label	59.5%
Consumer reports	56.3%
Auto dealers	31.3%
Edmunds.com	31.0%
Others with a similar vehicle	29.0%
Auto magazines	25.8%
Government websites	16.7%
TV	11.1%
Newspapers	7.1%
Radio	3.2%
Environmental organization	2.8%
Other	3.6%
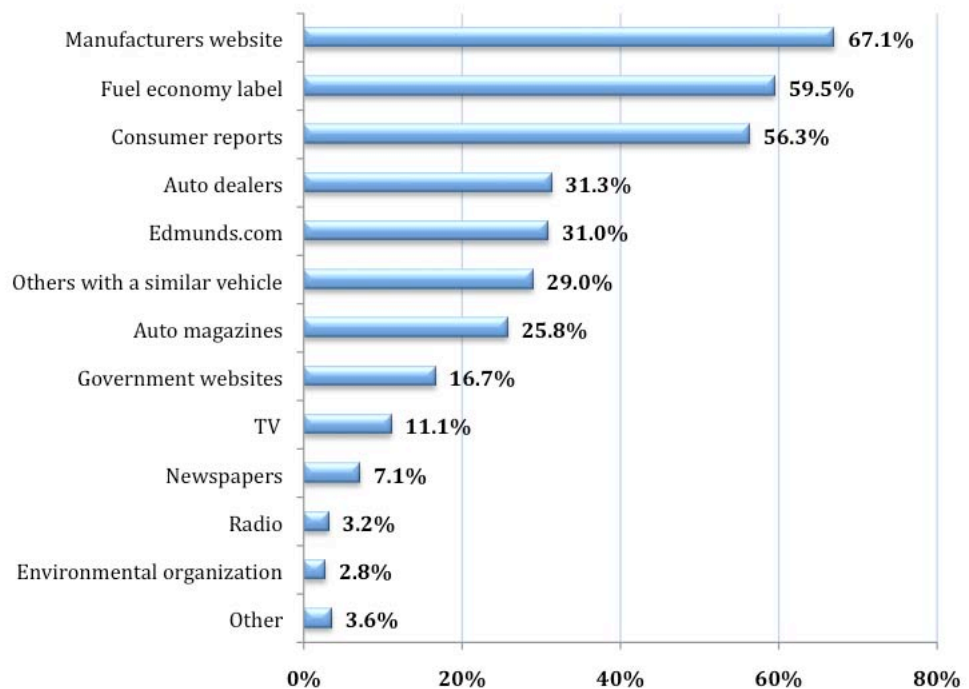
* Multiple responses allowed, percents add up to more than 100%

30 Cramer's V = .163, p = .009

31 Tau-c = .228, p = .000

32 Tau-c = .106, p = .035

Most trust the EPA for fuel economy information

Almost three-quarters (72%) trust the EPA for fuel economy information. Females[33] and those who were younger[34] were more likely to trust the EPA fuel economy information.

Of those who reported that they trusted the EPA for fuel economy information, close to one-third (31.1%) indicated in their qualitative comments that EPA is an unbiased, trustworthy, reliable and reputable agency that is regulated by the government. Another 15.6% said that it was EPA's job to test vehicles and set standards for fuel economy. About 11% said that EPA was committed to protecting the environment and fuel economy regulation was part of protecting the environment.

33 Cramer's V = ,119, p = .026

34 Tau-c = -.158, p = .002

Why do you consider the U.S. Environmental Protection Agency to be a trusted source of information for fuel economy? (257)*
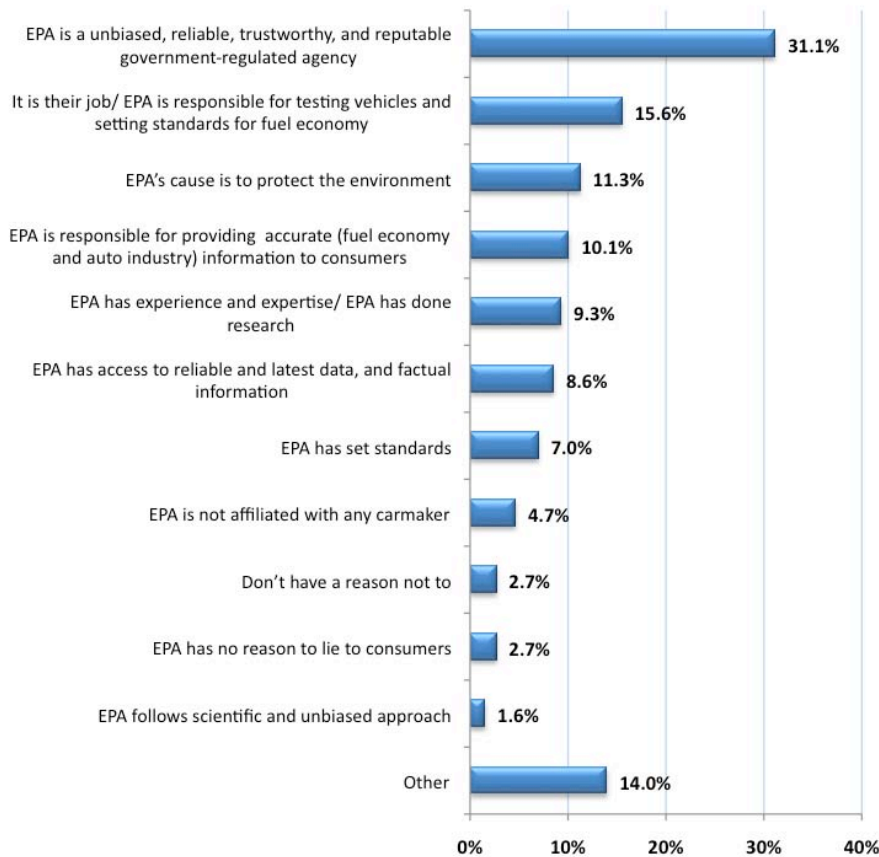
Response	Percent
EPA is a unbiased, reliable, trustworthy, and reputable government-regulated agency	31.1%
It is their job/ EPA is responsible for testing vehicles and setting standards for fuel economy	15.6%
EPA's cause is to protect the environment	11.3%
EPA is responsible for providing accurate (fuel economy and auto industry) information to consumers	10.1%
EPA has experience and expertise/ EPA has done research	9.3%
EPA has access to reliable and latest data, and factual information	8.6%
EPA has set standards	7.0%
EPA is not affiliated with any carmaker	4.7%
Don't have a reason not to	2.7%
EPA has no reason to lie to consumers	2.7%
EPA follows scientific and unbiased approach	1.6%
Other	14.0%

* Multiple responses allowed; percents add up to more than 100%

Of those who did *not* trust the EPA for fuel economy information, over one-fourth (27.2%) indicated in their qualitative comments that they had not thought about EPA as a source of information on fuel economy. Another 17.5% thought the EPA was biased towards its own agenda and did not think it was trustworthy. About another 17% were unfamiliar with the EPA and about another 17% stated that EPA mpg estimates were not accurate and higher than real-life estimates. Ten percent indicated that the EPA is responsible for providing accurate fuel economy and auto industry information.

Why don't you consider the U.S. Environmental Protection Agency to be trusted source of information for fuel economy? (n =103)*

Response	Percent
Did not think of them as a source for information on fuel economy	27.2%
EPA is a biased toward their own agenda and cannot be trusted/ Don't trust the government	17.5%
Not familiar with EPA	16.5%
EPA estimates are not accurate and higher than real-life driving estimates	16.5%
Prefer other independent research sources such as Consumer Reports, etc. over EPA	6.8%
EPA is under political pressure/ EPA is biased towards carmakers, lobbyists and/or special interest groups	5.8%
Do not consider EPA to be an expert on autos/ EPA's main focus isn't autos	3.9%
EPA is more interested in environment than price-regulation	3.9%
Don't know	3.9%
Other	5.8%

* Multiple responses allowed; percents add up to more than 100%

Most saw the fuel economy label and thought the label was fairly important

When asked if they remembered seeing the fuel economy label when they bought their most recent new vehicle, most (88.2%) did remember without the aid of seeing the label in the survey. Of those who did not remember unaided, when shown a copy of the label almost all (95.9%) then remembered seeing the label.

In regard to how important the fuel economy label was in helping to choose a vehicle, the average importance score was 7.41 out of 10 (on a scale of 1 to 10, where 10 meant the fuel economy label was *very important)*.[35] The fuel economy label was more important to those:

- The higher their new vehicle city mpg was[36]
- The higher their new vehicle highway mpg was[37]
- The more important gas mileage/fuel economy was in vehicle choice[38]
- The more important low emissions was in vehicle choice[39]
- The more important alternate fuels was in vehicle choice[40]
- The higher their environmental concerns were[41]

Most of the respondents (83.7%) did not think the fuel economy label was hard to understand or that it needed to be improved. The most helpful fuel economy label information was:[42]

- Highway mpg (more so for those with less education[43])
- City mpg
- Combined fuel economy compared to other vehicles
- Expected range for most drivers in regard to highway mpg
- Expected range for most drivers in regards to city mpg

Other findings regarding the helpfulness of specific fuel economy label information include:

- Estimated annual fuel costs information was more helpful to those who were younger[44] and those with less education[45]
- Statement about 'your actual mileage will vary' was more helpful to those with lower income[46]
- Those with higher environmental concerns were more likely to think that all the information on the fuel economy label was more helpful[47]

35 Based on phases 2 and 3 data where the question was asked as a rating question (as opposed to a ranking question as in phase 1).

36 Tau-c = .252, p = .000

37 Tau-c = .207, p = .000

38 Tau-c = .448, p = .000

39 Tau-c = .206, p = .000

40 Tau-c = .190, p = .000

41 Tau-c = .169, p = .000

42 Based on phases 2 and 3 data where the question was asked as a rating question (as opposed to a ranking question as in phase 1).

43 Tau-c = -.108, p = .030

44 Tau-c = -.114, p = .018

45 Tau-c = -.111, p = .034

46 Tau-c = -.144, p = .003

47 Tau-c ranging from .144 to .234, p < .05

Mean helpfulness score of fuel economy label information

Label information	Mean score
Highway mpg (n=264)	8.28
City mpg (n=266)	8.23
Combined fuel economy compared to other vehicles (n=266)	6.89
Expected range Hwy mpg (n=263)	6.87
Expected range city mpg (n=265)	6.86
Estimated annual fuel cost (n=265)	6.15
Statement about 'your actual mileage will vary' (n=265)	5.65
Reference to fuel econony guide (n=266)	4.52
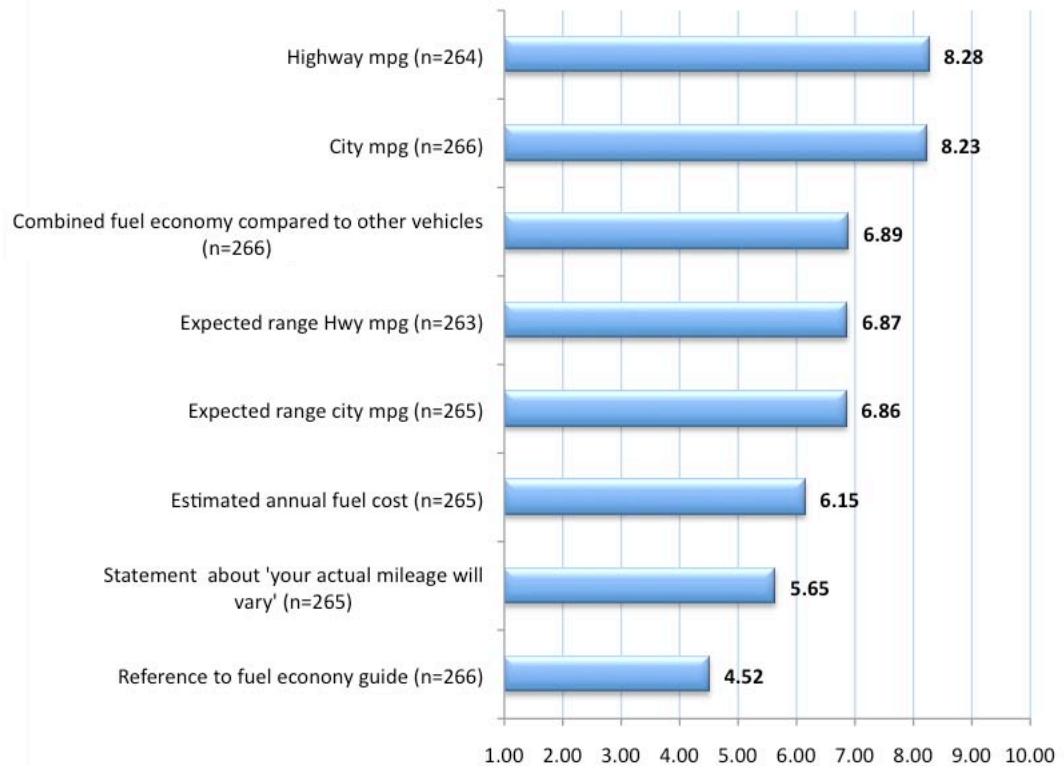
Of those who thought that the fuel economy was hard to understand and needed to be improved (n=62),[48] over one-fifth (21%) stated that they had difficulty understanding the combined fuel economy section of the label. About 15% reported that the annual fuel cost estimate reported on the label was not accurate (as gas prices changed over time and across different locations in the county). Another 13% reported that the expected range estimate was unclear and ambiguous. According to them, the label needed to provide information on the factors that were considered to calculate the range and who represented "most drivers". About 10% indicated that the statement about the free fuel economy guide needed to be more prominent on the label.

48   This was especially more so the case among those who compared five or more vehicles (Tau-c = .196, p = .000)

What is hard to understand or what could be improved? (n = 62)*

Response	Percentage
Combined fuel economy section of the label is difficult to understand	21.0%
Annual fuel cost estimate is not accurate (need to be adjust based on varying oil prices in different parts of the country, make it a scale based on a range of fuel cost, varies every month, etc.)	14.5%
Expected range is unclear and ambiguous (add how range varies with different factors, what factors are considered for "most drivers", define "most drivers", etc.)	12.9%
The statement about free fuel economy guide needs to be more prominent	9.7%
City and highway MPG estimates are unclear (that is, what speed are these based on, how have these been determined, etc.)	8.1%
Website reference needs to more prominent	4.8%
Information on fuel type and its impact on MPG needs to be added	3.2%
Information on how low tire pressure can affect mileage needs to be added.	1.6%
There is a need for information based on different mile-cost ratios	1.6%
Information on emission testing needs to be added	1.6%
A statement on how the MPG ratings are developed under perfect driving conditions of which you may or may not achieve, needs to be added	1.6%
Other	25.8%

* Multiple responses allowed; percents add up to more than 100%

Motivators and Barriers to Purchasing Fuel Efficient Vehicles

Respondents were asked to rate how serious certain environmental concerns were to them, what were the top motivators and barriers to purchasing advanced technology vehicles, and how compelling specific factors were to buying a fuel efficient vehicle.

The biggest environmental concerns were for toxic exhaust emissions and smog

In regard to environmental concerns, the top two environmental factors of most concern were toxic exhaust emissions and smog (on a scale of 1 to 10, where 10 means a *serious concern*). Carbon dioxide, greenhouse gasses, and climate change/global warming came in closely tied for third.[49] Women were more concerned about all these environmental factors,[50] except for smog and greenhouse gases where there were no significant gender differences.

Lower fuel costs, lower vehicle prices, and better mileage were top motivators for purchasing alternative fuel vehicles

When asked in an open-ended question, the following were the top things mentioned that would motivate respondents to seriously consider buying an alternative fuel vehicle: lower alternative fuel cost or higher gas prices (73%), lower vehicle price (60.3%), better mileage than a gasoline fuel vehicle (34.9%), positive environmental impact (29%), and higher reliability and dependability of the vehicle and vehicle parts (17.1%).

49 Based on phases 2 and 3 data where the question was asked as a rating question (as opposed to a ranking question as in phase 1).

50 Cramer's V ranging from .262 to .320, p <.05.

What are the top three things that would motivate you to seriously consider buying an alternative fuel vehicle? (n = 252)*

Lower cost of alternative fuel / Higher gas prices	73.0%
Lower cost of vehicle	60.3%
Better mileage than a gasoline vehicle	34.9%
Better for environment	29.0%
The parts & vehicle are reliable and/or dependable	17.1%
Provide detail on maintenance cost / Low maintenance and repair cost	12.3%
If alternative fuel vehicles were more attractive	9.5%
Good power and performance	8.3%
Large passenger capacity/size of alternative fuel vehicle	7.5%
Convenience of getting fuel	6.3%
Tax benefit for purchasing vehicle	6.0%
Purchasing an alternative fuel vehicle removed my dependence for gasoline	6.0%
Good range	6.0%
Vehicle has a good safety rating	6.0%
Vehicle easy/comfortable to operate	5.2%
Convenience of getting service	3.6%
Longer warranty and warranty of vehicle parts	3.2%
Long vehicle/battery life	3.2%
Good resale value (ROI)	2.4%
Manufacturer preference	2.0%
To own the newest technology	2.0%
Other	40.1%

0%   20%   40%   60%   80%

* Multiple responses allowed; percents add up to more than 100%

The following are the top things that were reportedly preventing respondents from seriously considering buying an alternative fuel vehicle: high cost of vehicle (66.3%), expensive maintenance (45.8%), expensive cost of parts/battery (45%), and parts/vehicles are unreliable (36.8%).

What are the top three concerns that might prevent you from seriously considering buyong an alternative fuel vehicle? (n = 249)*

Concern	Percent
Expensive cost of vehicle	66.3%
Expensive maintenance	45.8%
Expensive cost of parts/battery	45.0%
The parts and vehicle are unreliable	36.8%
Performance and power is questionable	14.9%
Not enough space in vehicles	14.1%
Inconvenient to charge	13.7%
Expensive fuel cost	12.0%
New technology that does not have bugs worked out	11.2%
Alternative fuel vehicles are not stylish	10.4%
Vehicle is not safe	9.6%
If the vehicle has poor range	8.8%
Inconvenient to find alternative fuel	8.0%
None	6.4%
Poor performance on miles per gallon	6.4%
Inconvenient to find maintenance service	5.2%
Vehicle parts bad for the environment	3.2%
Limited selection of vehicle styles to choose	2.8%
Confusing to operate alternate fuel vehicle	2.4%
Preferred brand does not create alternative fuel vehicle	2.4%
Poor selection of model options	2.0%
Other	27.3%

* Multiple responses allowed; percents add up to more than 100%

'Saving money' and 'better for environment' the most compelling reasons or buying fuel efficient vehicles

The most compelling factors for buying a fuel efficient vehicle were to save money, followed closely by because it was better for the environment, and to reduce our dependency on other countries. Females found all of the items in the chart below more compelling than males,[51] except for 'better for the environment' and to 'reduce our dependency on other countries', where there were no significant gender differences.

Other findings include:

- Those from Charlotte, Houston and Chicago found 'better for the environment' more compelling than those from Seattle.[52]

- Those with less education found 'makes our oil supplies last longer' more compelling.[53]

- Those who drove their vehicles more days per week[54] or more miles per year[55] found 'to reduce the number of trips to the gas station' more compelling.

- Those who were younger[56] or who drove their vehicles more miles per year[57] found 'to reduce our dependency on other countries' more compelling.

51 Cramer's V ranging from .353 to .461, p < .05

52 Cramer's V = .313, p = .001

53 Tau-c = -.123, p = .047

54 Tau-c = .107, p = .044

55 Tau-c = .120, p = .036

56 Tau-c = -.188, p = .000

57 Tau-c = .115, p = .038

Mean compelling score for purchasing fuel efficient vehicles

Factor	Score
To save money (n=173)	9.17
Better for the environment (n=176)	8.29
Reduce our dependency on other countries (n=175)	8.13
To reduce the number of trips to the gas station (n=174)	7.82
Makes our oil supplies last longer (n=176)	7.72
Reduce climate change (n=175)	7.31

1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00 9.00 10.00
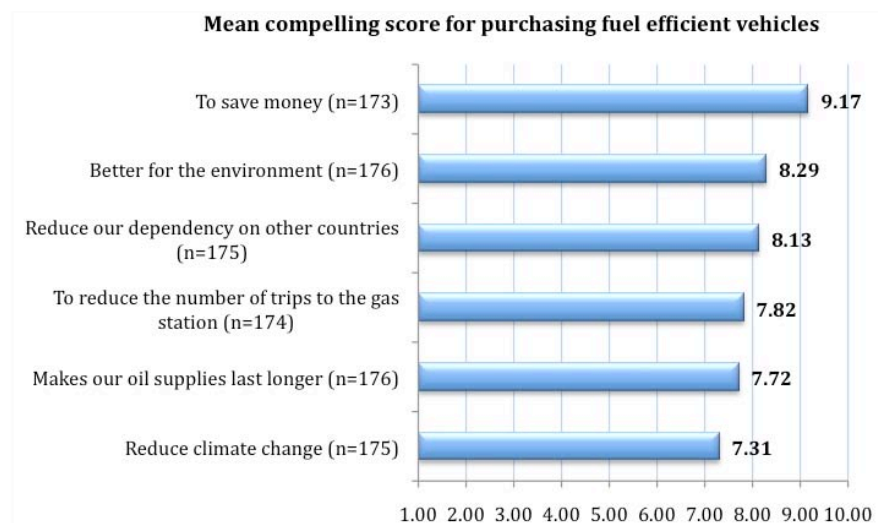
Market Segments

A cluster analysis was performed[58] to identify possible market segments from among the respondents to the online survey. Since the respondents were comprised of persons specifically recruited for the focus groups in four cities, the results of this cluster analysis do not represent new vehicle buyer segments in the general population. Nonetheless, these results may shed some additional light on the overall issue of the content and design of fuel economy label.

Cluster analysis is an exploratory data analysis technique designed to reveal natural groupings within a collection of data[59]. As such, cluster analysis can suggest potentially useful ways of grouping market segments. Three clusters were identified:

- Cluster 1: '**Care more about the environment than fuel economy**' - less concerned about fuel economy and other vehicle factors, but more concerned about environment (33%)

- Cluster 2: '**Care most about fuel economy as well as the environment'** - most concerned about fuel economy, other vehicle factors, as well as environment" (44%)

- Cluster 3: '**Care less about fuel economy and the environment'** - less concerned about fuel economy and other vehicle factors, and least concerned about environment" (23%)

The following were some factors that differentiated one cluster from another, as can be seen in the table below.

58 The variables in the cluster analysis included those dealing with: reported city and highway mpg of new vehicle, importance of specific factors in the new vehicle buying process, importance of fuel economy in vehicle buying process, importance of fuel economy label and its specific metrics in vehicle buying process, trust in EPA for fuel economy information, level of concern with environmental threats, and how compelling specific factors are in motivation to buy fuel efficient vehicles Because these different variables are measured on different scales (for example, some 10 point scales, some dichotomous, some interval as in the case of city mpg), the variables were standardized through the use of Z-score conversion prior to the cluster analysis being performed.

59 The K-means cluster analysis procedure was used. This procedure attempts to identify relatively homogeneous groups of cases based on selected characteristics, using an algorithm that can handle large numbers of cases. Distances are computed using simple Euclidean distance. The algorithm requires one to specify the number of clusters. It provides cluster membership, distance information, final cluster centers, and analysis of variance F statistics. While these statistics are opportunistic (the procedure tries to form groups that do differ), the relative size of the statistics provides information about each variable's contribution to the separation of the groups.

Cluster 1 –'Care more about the environment than fuel economy' (n= 127, 33%)	Cluster 2 –'Care most about fuel economy as well as the environment' (n= 169, 44%)	Cluster 3 –'Care less about fuel economy and the environment' (n=92, 23%)
• Most likely to consider SUVs (57%), mid-size cars (38%), crossover vehicles (35%), and/or compact cars (20%).	• Most likely to consider mid-size cars (54%), SUVs (53%), compact cars (37%), and/or crossover vehicles (34%).	• Most likely to consider SUVs (47%), mid-size cars (39%), crossover vehicles (24%), and/or compact cars (23%).
• Place more importance on safety, price, emissions, seating capacity, towing capacity, and alternative fuels when choosing a new vehicle, as compared to Cluster 3.	• Place more importance on safety, price, performance, comfort, emissions, size/interior volume, seating capacity, towing capacity, appearance, features, reliability, brand, warranty, and alternative fuels when choosing a new vehicle, as compared to other clusters.	• Place more importance on performance, comfort, appearance, and brand when choosing a new vehicle, as compared to Cluster 1.
• Place least importance on fuel economy and the fuel economy label when choosing a new vehicle as compared to the other clusters.	• Place most importance on fuel economy and the fuel economy label when choosing a new vehicle as compared to the other clusters.	• Place more importance on fuel economy and the fuel economy label when choosing a new vehicle as compared to Cluster 1.
• More likely to find the reference to the 'Free Fuel Economy Guide' on the fuel economy label to be helpful as compared to Cluster 3.	• Most likely to find estimated annual fuel costs, city mpg, highway mpg, combined fuel economy comparison scale, expected city mpg range, expected highway mpg range, the statement about 'your actual mileage will vary' and the reference to the 'Free Fuel Economy Guide' on the fuel economy label to be helpful as compared to the other clusters.	• More likely to find city mpg, highway mpg, combined fuel economy comparison scale, expected city mpg range, expected highway mpg range, and the statement about 'your actual mileage will vary' on the fuel economy label to be helpful as compared to Cluster 1.
• Most likely to consider EPA a trusted source of fuel economy information as compared to the other clusters.	• More likely to consider EPA a trusted source of fuel economy information as compared to Cluster 3.	• Least likely to consider EPA a trusted source of fuel economy information as compared to the other clusters.
• Were more concerned about CO2, global warming, green house gases, smog, toxic exhaust emissions, drilling for oil, and burning coal for electricity, as compared to Cluster 3; more likely to find 'better for the environment' and 'reduces climate change' as compelling in regard to buying a fuel efficient vehicle, as compared to Cluster 3.	• Were most concerned about CO2, global warming, green house gases, smog, toxic exhaust emissions, drilling for oil, and burning coal for electricity, as compared to the other clusters; most likely to find 'better for the environment' and 'reduces climate change' as compelling in regard to buying a fuel efficient vehicle, as compared to other clusters.	• Were least concerned about CO2, global warming, green house gases, smog, toxic exhaust emissions, drilling for oil, and burning coal for electricity, as compared to the other clusters; least likely to find 'better for the environment' and 'reduces climate change' as compelling in regard to buying a fuel efficient vehicle, as compared to other clusters.
• Get lower than average reported city and highway mpg.	• Get higher than average reported city mpg and somewhat higher than average reported highway mpg.	• Get higher than average reported city mpg and somewhat higher than average reported highway mpg.
• More likely to be female (54%) than male (46%).	• More likely to be female (57%) than male (43%).	• More likely to be male (62%) than female (38%).
• More likely to be from Seattle (35%) and least likely to be from Houston (18%).	• Most likely to be from Chicago (31%) and least likely to be from Seattle (15%).	• Most likely to be from Charlotte (32%) and about equally likely to be from Houston (25%), Chicago (22%), or Seattle (22%).

Appendix - Phase 3 Survey Questions

Introduction

Thank you very much for agreeing to participate in one of our focus groups. As a person who recently purchased a new vehicle, your opinions are very important to us. This brief survey will allow you to share some of your opinions before the focus groups and allow us to use our time together most productively. All your responses will be completely confidential and will only be reported in combination with those of other focus group participants.

The survey will take about 12 to 15 minutes of your time and is best viewed by maximizing your computer screen. Please be sure to scroll down to the bottom of each page and click the "Next" button to proceed. The bar at the bottom of each page tells you how much of the survey you have completed. The survey is programmed so that if you need to stop and complete it at a later time you will be brought back to where you left off. Please click "Done" at the end of the survey so that your answers will be saved in our database. Once you have clicked "Done", you will not be able to make any changes.

Please complete the survey at least 2 days before your scheduled focus group. Thank you for sharing your opinions and we look forward to meeting you in person!

Focus Group Information

* 1. Please indicate your full name here

Focus Group Information

✱ 2. Please indicate the focus group you will be attending.

- ○ Seattle – 5/17 (6:00 pm - 8:00 pm)
- ○ Seattle – 5/17 (8:15 pm - 10:15 pm)
- ○ Seattle – 5/18 (6:00 pm - 8:00 pm)
- ○ Seattle – 5/18 (8:15 pm - 10:15 pm)
- ○ Charlotte – 5/19 (6:00 pm - 8:00 pm)
- ○ Charlotte – 5/19 (8:15 pm - 10:15 pm)
- ○ Charlotte – 5/20 (6:00 pm - 8:00 pm)
- ○ Charlotte – 5/20 (8:15 pm - 10:15 pm)
- ○ Houston – 5/24 (6:00 pm - 8:00 pm)
- ○ Houston – 5/24 (8:15 pm - 10:15 pm)
- ○ Houston – 5/25 (6:00 pm - 8:00 pm)
- ○ Houston – 5/25 (8:15 pm - 10:15 pm)
- ○ Chicago – 5/26 (6:00 pm - 8:00 pm)
- ○ Chicago – 5/26 (8:15 pm - 10:15 pm)
- ○ Chicago – 5/27 (6:00 pm - 8:00 pm)
- ○ Chicago – 5/27 (8:15 pm - 10:15 pm)

Vehicle Information

In this section we are interested in the type of new vehicle you purchased most recently during the last 12 months.

3. How often do you typically purchase a new vehicle?

○ Every year
○ Every 2 years
○ Every 3 years
○ Every 4 years
○ Every 5 years
○ Longer than every 5 years

Vehicle Information

4. When did you purchase your most recent new vehicle?

○ Last 3 months
○ 4 to 6 months
○ More than 6 months

Vehicle Information

5. What is the type of new vehicle you purchased most recently? (For example – Ford Explorer.)

Make
Model

6. According to the fuel economy label on the vehicle, how many city and highway miles does this vehicle get per gallon? If you do not remember, please put a zero in the 'Don't remember' box.

City
Highway
Don't remember

7. In a typical week, how many days is your new vehicle driven?

○ 1
○ 2
○ 3
○ 4
○ 5
○ 6
○ 7

8. In a typical week, for what trip purposes do you use your new vehicle? (check all that apply)

☐ Travel to or from work

☐ Travel to or from school

☐ Errands/shopping

☐ Non-commute work-related travel

☐ Recreational or entertainment activities

☐ Visit family or friends

☐ Medical appointments

☐ Other

Vehicle Information

9. Are you the principal driver of this vehicle?

○ No
○ Yes

Vehicle Information
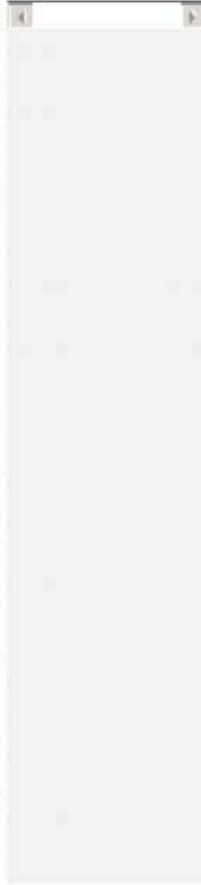
10. About how many miles per year is this vehicle driven?

○ 0-9,000 miles

○ 9,001-12,000 miles

○ 12,001-15,000 miles

○ 15,001-20,000 miles

○ More than 20,000 miles

Process of Selecting Vehicle

Here we're interested in the process you used to choose your most recent new vehicle.

11. Thinking about the vehicle you purchased new most recently, briefly describe the method that you used to decide which vehicle to buy? (If a person in addition to yourself [such as a spouse, partner, family member, friend, etc.] was involved in the decision, please describe their involvement.)

Process of Selecting Vehicle

12. Thinking about this vehicle, please rate each of the following factors in regard to how important they were in your decision to buy this vehicle. (Please use a scale of 1 to 10, with 1 being 'not important at all' and 10 being 'very important'.)

	1 - not important at all	2	3	4	5	6	7	8	9	10 - very important
Emissions	○	○	○	○	○	○	○	○	○	○
Gas mileage / Fuel economy	○	○	○	○	○	○	○	○	○	○
Price / Affordability	○	○	○	○	○	○	○	○	○	○
Towing capacity	○	○	○	○	○	○	○	○	○	○
Comfortable to drive	○	○	○	○	○	○	○	○	○	○
Other (specify below)	○	○	○	○	○	○	○	○	○	○
Size / Interior volume	○	○	○	○	○	○	○	○	○	○
Seating capacity	○	○	○	○	○	○	○	○	○	○
Brand name	○	○	○	○	○	○	○	○	○	○
Features (such as stereo, GPS)	○	○	○	○	○	○	○	○	○	○
Safety	○	○	○	○	○	○	○	○	○	○
Reliability/repair costs	○	○	○	○	○	○	○	○	○	○
Performance / Handling / Power	○	○	○	○	○	○	○	○	○	○
Warranty	○	○	○	○	○	○	○	○	○	○
Alternative fuels	○	○	○	○	○	○	○	○	○	○
Interior and exterior appearance	○	○	○	○	○	○	○	○	○	○

If you chose 'other' above, please specify

Process of Selecting Vehicle

13. How long before your purchase did you start researching vehicle information?

○ Less than 1 week before

○ 1 week before

○ 2-3 weeks before

○ 1 month before

○ 2-3 months before

○ 4-6 months before

○ 7-9 months before

○ 10-12 months before

○ More than a year before

○ Did not research vehicle information

Process of Selecting Vehicle

14. Did you have a specific type of vehicle in mind when you first started looking for a new vehicle?

○ No

○ Yes

○ Don't know

Process of Selecting Vehicle

15. Which types of vehicles did you seriously consider when you first started looking for a new vehicle? (Check all that apply.)

☐ Sports car
☐ Subcompact car
☐ Compact car
☐ Midsize car
☐ Large car
☐ Station wagon

☐ Sport utility vehicle (SUV)
☐ Crossover
☐ Pickup truck
☐ Minivan
☐ Full-size van
☐ Other

Process of Selecting Vehicle

16. Was this the same type of vehicle you ended up purchasing?

○ No
○ Yes

17. If no, why not?

Process of Selecting Vehicle

18. How many vehicles did you compare before making your decision?

○ Just considered 1 make and model
○ 2
○ 3
○ 4
○ 5 or more

Process of Selecting Vehicle

19. Please list the vehicles you did consider before making your final purchase decision? (For example - Honda Accord EX-V6.)

1.
2.
3.
4.
5.

20. Was there a common factor or attribute across all the vehicles you listed above that drew you to those specific vehicles?

◯ No
◯ Yes

Process of Selecting Vehicle

21. What was that common factor(s) of attribute(s) that drew you to those specific vehicles?

#1
#2
#3

Process of Selecting Vehicle

22. What or who did you rely on the most when deciding which vehicle to purchase?

Role of Fuel Economy in Vehicle Purchase

Now we're interested in how you thought about fuel economy when you shopped for your most recently purchased new vehicle.

23. On a scale of 1 to 10, where 1 is 'not important at all' and 10 is 'very important', how important a consideration was fuel economy when choosing your new vehicle?

Level of importance	1 = Not important at all	2	3	4	5	6	7	8	9	10 = Very important
	○	○	○	○	○	○	○	○	○	○

Role of Fuel Economy in Vehicle Purchase

24. Before buying your most recent new vehicle, did you search for information about fuel economy/fuel consumption?

○ No
○ Yes
○ Don't know

Role of Fuel Economy in Vehicle Purchase

25. Where did you search for information on fuel economy/fuel consumption? (please check all that apply)

☐ Environmental organization
☐ Fuel economy label on vehicles
☐ Manufacturers' Web sites
☐ Consumer Reports
☐ Auto magazine (e.g. Car & Driver, Road & Track, Motor Trend)
☐ Government Web sites (e.g. fueleconomy.gov, EPA Green Vehicle Guide)
☐ Edmunds.com

☐ Other (please specify below)
☐ Auto dealers
☐ Television ads
☐ Asked others who have similar vehicle
☐ Radio ads
☐ Newspapers

26. If you searched other places for this information, please specify where.

Role of Fuel Economy in Vehicle Purchase

27. Who do you consider a trusted source of fuel economy information?

Role of Fuel Economy in Vehicle Purchase

28. Do you consider the U.S. Environmental Protection Agency a trusted source of information for fuel economy?

○ No
○ Yes

29. If yes, why?

30. If no, why not?

Use of Fuel Economy Label

We are interested in your thoughts about the fuel economy label as a source of information.

31. Do you remember seeing the fuel economy label on vehicle windows when shopping for your most recent new vehicle ?

○ No

○ Yes

○ Don't know

Use of Fuel Economy Label

This is where the fuel economy label is <u>usually</u> found.

32. Do you remember seeing the fuel economy label?

○ No
○ Yes
○ Don't know

Use of Fuel Economy Label

33. On a scale of 1 to 10, where 1 is 'not important at all' and 10 is 'very important', how important was the fuel economy label in helping you to choose the make and model of your most recent new vehicle?

	1 = Not important at all	2	3	4	5	6	7	8	9	10 = Very important
Level of importance	○	○	○	○	○	○	○	○	○	○

Use of Fuel Economy Label

EPA Fuel Economy Estimates

These estimates reflect new EPA methods beginning with 2008 models.

CITY MPG
18
Expected range for most drivers
15 to 21 MPG

HIGHWAY MPG
25
Expected range for most drivers
21 to 29 MPG

Estimated Annual Fuel Cost
$2,039
based on 15,000 miles at $2.80 per gallon

Combined Fuel Economy
This Vehicle
21
10 ▼ 51
All SUVs

Your actual mileage will vary depending on how you drive and maintain your vehicle

See the FREE Fuel Economy Guide at dealers or www.fueleconomy.gov

34. Thinking about the information shown on the label, please rate each piece of information in regard to how helpful it was to you in choosing your vehicle. (Please use a scale of 1 to 10, with 1 being 'not helpful at all' and 10 being 'very helpful'.)

	1 - not helpful at all	2	3	4	5	6	7	8	9	10 - very helpful
Statement "Your actual mileage will vary depending on how you drive and maintain your vehicle"	○	○	○	○	○	○	○	○	○	○
Expected range for most drivers in regard to city mpg	○	○	○	○	○	○	○	○	○	○
Highway mpg	○	○	○	○	○	○	○	○	○	○
Estimated annual fuel cost	○	○	○	○	○	○	○	○	○	○
Combined fuel economy comparison to other vehicles in the vehicle class	○	○	○	○	○	○	○	○	○	○
Expected range for most drivers in regard to highway mpg	○	○	○	○	○	○	○	○	○	○
Reference to the 'Free Fuel Economy Guide at dealers or www.fueleconomy.gov'	○	○	○	○	○	○	○	○	○	○
City mpg	○	○	○	○	○	○	○	○	○	○

Use of Fuel Economy Label

EPA Fuel Economy Estimates

These estimates reflect new EPA methods beginning with 2008 models.

CITY MPG
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Expected range for most drivers
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This Vehicle
21
10 — 51
All SUVs

Your actual mileage will vary depending on how you drive and maintain your vehicle.

See the FREE Fuel Economy Guide at dealers or www.fueleconomy.gov

35. Is there anything on the fuel economy label that is hard to understand or that could be improved?

○ No

○ Yes

Use of Fuel Economy Label

36. What is hard to understand or what could be improved?

Types of Advanced Technology Vehicles

This page is for educational purposes in preparation for your participation in the focus group. Four types of advanced technology vehicles are either already available or will be in the near future:

• **Hybrid Vehicles** use a gasoline engine as well as an electric motor to propel the vehicle. However, power for the electric motor comes from a battery that is charged by the gasoline engine and by "recovering" the energy from the decelerating and braking

action of the vehicle. Therefore the only fuel a hybrid vehicle uses is gasoline, either to propel the vehicle or to charge the battery.

- Electric Vehicles use electricity stored in batteries to propel the vehicle. You charge the battery by plugging your vehicle into an electrical outlet. This could be a standard electric outlet or a high voltage custom-installed charging station for more rapid charging. Like hybrid vehicles, energy recovered from braking and decelerations can be used to charge the battery. The vehicle travels until the charge is depleted or you re-charge it. You do not have the option to run it on gasoline.

- Extended Range Electric Vehicles have two modes of operation, when the battery is charged and when it isn't. 1) Once charged, the car uses all the electricity, then it turns on the gasoline engine. 2) When it's discharged, it works like a hybrid—battery gets recharged when driving and braking. Therefore, when discharged it uses gasoline, either to propel the vehicle or to charge the battery. Important: daily driving distance can GREATLY affect amount of gasoline used. Can go all the way from zero gasoline (if shorter commutes and plenty of recharging) to entirely gasoline (if longer drives and no recharging).

- Plug-in Hybrid Electric Vehicles work like an Extended Range Electric Vehicle in that it has two modes of operation—when battery is charged and when it isn't, but: 1) When it's charged, the car uses up the charge along with the gasoline — may use both at once, may or may not have periods of using just electricity. 2) When it's discharged, works like a hybrid — battery gets recharged when driving and braking. Therefore, when discharged it uses gasoline, either to propel the vehicle or to charge the battery. Important: daily driving distance can GREATLY affect amount of gasoline used.

Motivators and Barriers to Purchasing Fuel Efficient Vehicles

37. What are the top *three* things that would motivate you to seriously consider buying a fuel efficient vehicle?

#1

#2

#3

38. What are the top *three* concerns that might prevent you from seriously considering buying a fuel efficient vehicle?

#1

#2

#3

39. For each of your concerns described above, what could be changed or what would you need to know to resolve those concerns such that you would <u>seriously consider buying a fuel efficient vehicle?</u>

#1 _____

#2 _____

#3 _____

Motivators and Barriers to Purchasing Fuel Efficient Vehicles

40. Please rate each of the following on a scale of 1 to 10 (with 1 being 'not compelling at all' and 10 being a 'very compelling') in regard to how compelling they are to buying a fuel efficient vehicle.

	1 - not compelling at all	2	3	4	5	6	7	8	9	10 - very compelling
Better for the environment	○	○	○	○	○	○	○	○	○	○
To save money	○	○	○	○	○	○	○	○	○	○
Makes our oil supplies last longer	○	○	○	○	○	○	○	○	○	○
Reduces climate change	○	○	○	○	○	○	○	○	○	○
To reduce the number of trips to the gas station	○	○	○	○	○	○	○	○	○	○
Reduce our dependency on other countries	○	○	○	○	○	○	○	○	○	○
Other (please specify below)	○	○	○	○	○	○	○	○	○	○

41. If you answered 'Other" above, please specify here.

_____

Environmental Issues

42. Please rate each of the following environmental concerns on a scale of 1 to 10 (with 1 being "not a concern at all" and 10 being a 'serious concern'.)

	1 - not a concern at all	2	3	4	5	6	7	8	9	10 - serious concern
Greenhouse gases	○	○	○	○	○	○	○	○	○	○
Burning coal for electricity	○	○	○	○	○	○	○	○	○	○
Drilling for oil	○	○	○	○	○	○	○	○	○	○
Climate change/global warming	○	○	○	○	○	○	○	○	○	○
Toxic exhaust emissions	○	○	○	○	○	○	○	○	○	○
Carbon Dioxide (CO2)	○	○	○	○	○	○	○	○	○	○
Smog	○	○	○	○	○	○	○	○	○	○

Demographics

In this section we would like to know a little bit about you. Please remember that all of your answers are strictly confidential.

43. How many working vehicles does your household have?

○ 1
○ 2
○ 3
○ 4
○ 5 or more

44. How many licensed drivers in your household?

○ 1
○ 2
○ 3
○ 4
○ 5 or more

45. What is your gender?

○ Male
○ Female

46. Which of the following ranges includes your age?

○ 20-24   ○ 45-54
○ 25-34   ○ 55-64
○ 35-44   ○ 65 or over

Demographics

47. What is the highest level of education you have completed?

○ Less than high school   ○ College graduate (Bachelor's degree or equivalent)
○ High school diploma or GED   ○ Postgraduate degree (Masters, Doctorate, Law, Medical)
○ Some college / AA degree / Technical school degree

48. Which of the following categories includes your household's total 2009 income (before taxes)?

○ Less than $15,000

○ $15,000 to less than $25,000

○ $25,000 to less than $50,000

○ $50,000 to less than $75,000

○ $75,000 to less than $100,000

○ $100,000 to less than $125,000

○ $125,000 to less than $150,000

○ $150,000 or more