

Advanced Automobile Concepts Market Analysis



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To: Advanced Automobile Concepts
From: Kailyn White and Courtney Newton
EXECUTIVE SUMMARY

Problem Identification

The issues of automobiles and global warming have rapidly become a growing issue that car manufacturers are dealing with daily. Advanced Auto Concepts, a new division of a large and multinational automobile manufacturer, ZEN Motors, headquartered in the United States has been selected to help reengineer existing models or develop complete new models of automobiles. While the sales for larger automobiles are currently declining, the sales of small fuel efficient automobiles are currently rising. The need to conduct marketing research is heavily noted. With ZEN Motors being mainly known for their larger automobiles, it would be best to completely develop new models rather trying to revive their current models.

Results of each hybrid model

Super Cycle one-seater model

Significant independent variables include: marital status, income level, hometown size, age, number of people in household, level of education, and gender. Variable directly related to the dependent variable: hometown size. The most important independent variable, in terms of a beta value of .341, is hometown size.

Runabout Sports two-seater

Significant independent variables include: income level, hometown size, number of people in the household, age, level of education, "gasoline emissions contribute to global warming", and marital status. Variables directly related to the dependent variable: the hometown size and marital status. Most important independent variable, in terms of beta value of .378, is hometown size.

Runabout with Luggage two-seater

Significant independent variables include: hometown size, education level, and marital status, number of people per household, "hybrid automobiles that use alternative fuels will reduce fuel emissions", and "Americans use too much gasoline". Variables directly related to dependent variable: hometown size, marital status, education, and "Americans use too much gasoline", respectively. The most important independent variable, in terms of beta value of .494, is hometown size.

Economy four-seater

Significant independent variables include: income level, level of education, age, size of hometown, and "hybrid autos that use alternative fuels will keep gas prices down". Variables directly related to the dependent variable: age, education level, income level, and "hybrid autos that use alternative fuels will keep gas prices down." The most important independent variable, in terms of beta value of .371, is age.

Standard four-seater model

Significant independent variables include: hometown size, level of education, number of people per household, age, income level, gender, "we should be looking for gasoline substitutes", and "gasoline prices will remain high in the future". All variables, except for hometown size, are directly related to the dependent variable. The most important independent variable, in terms of a beta value of .400, was the number of people per household.

Recommendations:

Considering the results of each hybrid model, it would be ideal for ZEN Motors to utilize the independent variables that are directly related to each model in order to develop a corresponding target market. It would also be important for the marketing team to focus on the most important independent variable indicated by the standardized beta value. Using standardized beta value, one can distinguish appropriate differences among the each independent variable.

Unit 1: The Usefulness of Marketing Research for AAC

Chapter 1

The situation facing AAC and ZEN Motors.

Below is a brief summary of the situation facing AAC and ZEN Motors.

ZEN Motors has been losing market share to other competitors and has created a new division, Advanced Automobile Concepts (AAC), to revive ZEN automobile brands. The situation ZEN Motors and ACC are facing involves AAC not exactly knowing how to approach the revival effort. The CEO of AAC, Nick Thomas, recognizes that the market share of ZEN's only large, luxury brand is being diminished by competitors. After further research he realizes that highly evaluated models are small and fuel-efficient. ZEN has been reluctant to move into the small and fuel efficient brands because in the past these larger cars and trucks have been very profitable to the company. With that, as sales have been eroded in recent years, ZEN has not been willing to make the investment to develop new models. Nick knows he must come up with new automobile designs and innovations, but he runs into a few issues. Nick knows that rising oil prices and global warming will determine consumer behavior; however, he has experienced these uproars in his past and claims that he has seen them "come and go." Nick knows what the consumer wants right this second, but he is not sure if that consumer desire will last.

Types of marketing research studies that may be useful for AAC

Listed below are different types of marketing research studies that may be useful for AAC as it moves forward to establish marketing mix decisions for ZEN Motors.

A. Identifying Market Opportunities and Problems

- Market-segments identification

- Marketing audits SWOT analysis
- Product/service-use studies
- Environmental analysis studies

B. Generating, Refining and Evaluations Potential Marketing Actions

- Proposed marketing mix evaluation testing
- Concept tests of proposed new products or services
- New-product prototype testing
- Advertising pretesting
- Distribution effectiveness studies

C. Monitoring Marketing Performance

- Image analysis
- Tracking studies
- Customer-satisfaction studies
- Distributor-satisfaction studies

D. Improving Marketing as a Process

- How can we better understand “new media”: blogs, social networking, mobile phones, etc.?
- How can companies use consumers to help them created innovative new products and services?
- What are new ways to study consumer behavior, for example, through the use of virtual/simulated shopping or ethnographic studies?
- How do the car reviews, posted on the internet, affect consumers?

Chapter 2

In order to describe the strength of consumers' attitudes toward future oil price levels and global warming, Nick Thomas decides that he must gather primary information. Using the 11-step marketing research process we were able to determine the following:

The type of research design that Nick should use.

Nick should use a descriptive research design in order to collect primary information. Nick needs to answer the "who, what, when, where, and how" questions in order to describe the marketing variables needed to determine the best approach to collect and analyze data. He needs to discover consumer attitudes and behaviors associated with automobile selection and/or global warming. Descriptive research will also help Nick evaluate the competitors that are taking ZEN's market share.

The type of information Nick must gather.

Since Nick has gathered a great deal of secondary data, he will need to gather more primary information. Data would need to be collected to deal with the task at hand: Will this recent appeal for more fuel-efficient vehicles go away? Are consumers concerned with global warming enough to affect what they purchase? In order to answer these questions Nick could conduct a survey that will help him determine the right way to revive ZEN Motors.

Specific questions Nick must ask of the respondents.

Nick must ask respondents questions such as, how they feel about global warming, what they would be willing to do to help stop global warming, what size/style of car they prefer, how would they measure or describe their concern for rising oil prices, and what their opinion is of the current ZEN Motors large automobile brand, in order to gain perspective.

Who Nick should include in the sample plan.

Nick should sample people that are between the ages of 22-65 and have the resources (income) to purchase an average-priced, brand new vehicle. He should also look for people that are purchasing vehicles from ZEN competitors, like brands from Japan and Korea, because he would want to find out what products they offer that the consumers desire.

Unit 2: Establishing Secondary Information Relevant for AAC's Marketing Situation**Chapter 6****Determine what types of secondary information Nick should seek.**

Nick should seek external secondary data from published sources, syndicated services data, and external databases. By using published data he could access information and research that has already been conducted in order to save time and money. For the information that he cannot access freely, Nick should look into syndicated services data. Nick should look into external databases for a more in-depth perspective on the problem and evidence to back up his published and syndicated materials.

Advanced Automobile Concepts

Market Analysis

Write a “literature review” on the secondary information available on consumer attitudes towards global warming as it relates to automobile selection, trends in the development and marketability of fuel-efficient cars and the availability of alternative fuels.

Kailyn

Literature Review

As the concern for global warming increases among consumers, so does the concern for fuel efficiency. In recent years the auto industry has been redesigning vehicles in order to fulfill the demand for decreased carbon emissions as well as the demand for more affordable vehicle options. The evaluation of consumer attitudes, purchasing behaviors, fuel efficient vehicle types, competitive strategies, and new technologies are all key in determining the future of the fuel efficient vehicle market as well as where the automotive industry is headed.

Consumer attitudes, as it pertains to vehicle preference, has shifted over the last five or six years. Motor companies are searching for tomorrow's trends in vehicle buying behavior. Purchasing fuel efficient vehicles is one thing that consumers are not yet doing, but a study shows that they are willing to consider doing so as a way to conserve fuel ("More Americans", 2009, p. 2). A survey by *Consumer Reports* in 2006 stated, "...37% of people in the market for a vehicle want a more fuel-efficient than they currently own, a jump from previous surveys" (Hyde & Ellis, 2006, p. 1). In 2007, Consumer Reports recorded that 52% of the survey sample reported that they would trade size and capacity for better fuel economy (Ratnam, 2007, p. 1). Ford Motor Company has suffered a significant decrease in their industry leading-utility vehicles and pickup trucks. However, they do not rest assured that rising gas prices have caused this decline. George Pipas, director of sales analysis for Ford stated, "There was a decline going on before gas prices started to rise" (Hyde & Ellis, 2006, p. 2). Ford's large truck and SUV sales leveled off in the year 2000. Pipa later admitted that increased gas prices had accelerated the rate of decline (Hyde & Ellis, 2006, p. 2).

Bill Perkins, owner of two Chevrolet dealerships in Michigan, says that many consumers want to know, "What kind of fuel economy am I going to get?" He establishes that although fuel economy is becoming more important to buyers, it will not necessarily determine their purchase,

but they still care to know. (Guilford, 2011, p. 2). Jumpstart Automotive Group has a similar outlook: “Car buyers remain motivated by economic factors, basing their immediate purchase decisions on price and value” (“Jumpstart Automotive”, 2011, p. 2). Jumpstart’s most popular search term for vehicles was “affordable”. In this case, consumers may not be shifting their vehicle selection due to global warming; rather in result of bad economic conditions. Rapidly increasing gas prices would stream in junction with bad economic conditions: consumers need fuel efficiency in order to save money, but that has nothing to do with their concern for global warming. One 2009 study showed that 73% of middle class Americans were concerned or very concerned about conserving energy and nearly half of the respondents indicated that they see energy conservation as a way to save money (“More Americans”, 2009, p. 1). Regardless, consumers are willing to switch to more fuel efficient cars just as long as they are affordable and worthwhile.

Tomorrow’s consumers may be challenged with deciding exactly what type of vehicle they would like to drive, but as Helen Robertson says, “one thing is certain: all will be greener and more fuel efficient” (Robertson, 2011, p. 1). Consumers are cautious about fuel efficient vehicles because of the information overload that comes with deciding which type to choose. There are four main engine types: hybrid electric, battery electric, fuel cell, and direct injection diesel. With that, alternative fuels: petrol and alcohol blends, natural gas (LPG and CNG), and hydrogen. A study in China showed that consumers are not fully informed of the alternative energies. Consumers are concerned about what technologies are around for the long term and what will be phased out relatively soon (Smith, 2008, 2).

Shell has recognized a need for a significant decrease in fuel consumption. The company feels that it is important for car and energy manufacturers to work together and form a “more

cohesive partnership” (Robertson, 2011, p. 1). In efforts to form this bond, Shell developed a special lubricant that can potentially increase fuel efficiency by up to 6.5%. Shell’s vice-president of global commercial technology, Selda Gunsel, claims that new-concept lubricants can have a significant impact on decreasing fuel consumption in vehicles, ultimately lowering carbon emissions (Robertson, 2011, p. 2).

Decreasing fuel consumption alone is not going to solve the problem at hand. Tatsushi Terada, Japan’s deputy environment minister, claims that companies need to “foster the idea of using cars intelligently” by switching to greener fuels. By 2020, Japan’s Ministry of Economy wants 50% of new car sales to be electric vehicles (Robertson, 2011, p. 2). Keeping the economic downturn in mind, however, electric/hybrid vehicles are considered very expensive to buy and are generally not a valid alternative to conventional cars. One expert claimed, “Such initial high costs may be discouraging people... despite excellent mileage, it may take time for consumers to seriously consider owning hybrid vehicles” (“South Korea”, 2011, p. 1). Pike Research conducted a survey based on consumer thoughts concerning plug-in electric vehicles (PEVs) which they claimed to be a sample that was nationally representative and demographically balanced. The survey found that “40% of participants stated they would be extremely or very interested in purchasing such a vehicle, assuming the price was right” (“Electric Vehicle”, 2012, p. 1). The price that the manufacturers have in mind for future PEVs is far from what consumers are willing to pay. Price is not the only issue with electric cars: Christoph Stuermer, an analyst at HIS Automotive consultancy, describes his test drive as smooth, but compares it to “a toy bumper car.” He says, “...I’m not sure how well it would handle particularly fast, busy roads – or whether this driver would feel very comfortable navigating it...” With the growth of future populations, IHS feels that consumers will own more

than one vehicle: an electric car for running errands and a larger more luxurious vehicle for long trips (Robertson, 2011, p. 3).

In contrast to the downside of electric vehicles, Continental Automotive has designed a breakthrough in fuel efficient engines. For those who do not enjoy the feeling of driving “a toy bumper car”, Continental’s new turbocharged engine may be the answer. The technology “combines excellent engine response and driving pleasure, with reduced fuel consumption and less CO₂ emissions” (“Continental Automotive”, 2012, p. 2). The more appealing aspect of this engine is its fully automated assembly, which increases quality and decreases cost. August Hofbauer, director of application engineering and sales for Continental says, “Continental’s cutting-edge turbocharger technology will make it possible for modern internal combustion engines to remain competitive with alternative engines over the long term with respect to efficiency, sustainability, scalability, performance and affordability” (“Continental Automotive”, 2012, p. 2). Continental has allowed Ford Motors Company to get an edge on the competition by supplying innovative turbochargers for the company’s new engine platform (“Continental”, 2011, p. 1). After successful collaboration, the 2012 Ford line-up can give North Americans the performance they desire in their vehicles all while lowering fuel consumption, which, in turn, decreases the carbon emissions that are contributing to global warming.

It seems that a common trend in the development of fuel efficient vehicles is innovation. As Continental did, car makers are looking into what consumers desire that the competition does not offer and designing fuel efficient vehicles based on those attributes. AMP Electric Vehicles, for instance, introduced the first all-electric all-wheel drive SUV at the 2012 North American International Auto Show in Detroit (“AMP Electric”, 2012, p. 1). Jim Taylor, CEO of AMP stated, “There is a segment of buyers who demand all-wheel drive functionality in an SUV and

prior to the introduction of this new vehicle they were locked out of the EV market. We believe that this 100% all-electric AWD SUV represents an important first for the EV industry,” (“AMP Electric”, 2012, p. 2). Senator Sherrod Brown of Ohio suggests that the reason the auto industry has been able to turn around since the bailout is due to the innovation that companies like AMP do (“AMP Electric”, 2012, p. 2).

An American fuel economy leader since 2008, Hyundai Motors is giving the competition something to worry about (“Most Fuel-Efficient”, 2010, p. 1). In 2011 Hyundai introduced the Elantra, an entire lineup of vehicles with 40-mpg highway fuel economy rating—one of many characteristics Honda Civic, Toyota Corolla, and Chevrolet Cruz did not offer (Beene, 2010, p. 1). Hyundai decided that unlike the 2010 Sonata, the 2011 Elantra was not going to feature the fuel conserving technology of a gasoline direct-injection engine because it increases the price of the vehicle (Beene, 2010, p. 1). Given the recent studies on consumer behavior, this strategy gave Hyundai a competitive advantage in the automotive industry. Consumers were no longer held back by the price tag of fuel efficient vehicles and were given an opportunity to save money and lower carbon emissions.

In conclusion, along with the issues regarding performance, it seems the most common issue that is holding consumers back from purchasing fuel efficient vehicles is the high price tag. As companies like Hyundai conduct more research and develop more efficient processes, fuel efficient vehicles will become more appealing to consumers. The evaluation of consumer attitudes, purchasing behaviors, fuel efficient vehicle types, competitive strategies, and new technologies are all key in determining the future of the fuel efficient vehicle market as well as where the automotive industry is headed. There is no way to know exactly what type of

vehicles consumers will be demanding in the future, but “one thing is certain: all will be greener and more fuel efficient” (Robertson, 2011, p. 1).

Unit 3: AAC's Marketing Problem and Research Objectives; Exploratory and Casual Designs

Nick Thomas is concerned about the strategic direction of AAC, consumer's attitudes towards global warming, and with the issue of how many models ZEN should create, manufacture, and market.

Chapter 4

Identify the source of the problem.

A gap between what was supposed to happen and what actually did happen is the source of Nick Thomas' problem. ZEN Motors was previously an industry leader in large luxury vehicles; until the issue of global warming became pertinent and consumers stopped purchasing "gas guzzlers." This is known as a failure to meet objectives. Also, Nick Thomas' should have evaluated the symptoms that were occurring and began to evaluate possible decision alternatives.

Another source, that is not immediately known, is an opportunity. This is when a gap exists between what did happen and what could have happened. Unlike its competitors, ZEN Motors did not foresee the issue of global warming as it pertains to automobile sales, which is why their sales dropped. This is easily defined as an opportunity because ZEN Motors can (and is attempting to) reengineer the products to fir the new customer demand.

The Douglas Report problem identification.

Focusing on these three areas identified in The Douglas Report – (1) demand for the different basic models, (2) identification of market segment/s, and (3) marketing efficiency – describe the problems facing Nick Thomas.

ZEN Motors has developed a division called AAC in order to revive the ZEN Automobile Brand; however, there are still several problems to be addressed in order for this to be successful. Below the issues concerning the demand for the different basic models, identification of market segments and marketing efficiency will be discussed.

ZEN Motors and Nick Thomas are both concerned with the variety of models they should create and manufacture but The Douglas Report explains that the demand for fuel efficient automobiles will be enough to justify manufacturing several models. Thomas is still faced with determining which models have the highest demand and they cannot simply settle with only one model since there are many different market segments who will more than likely prefer a different model.

The market segment that encompasses the fuel efficient automobile industry is very broad and consists of individuals from numerous demographics. Since the desire for a hybrid or fuel efficient car is not stereotyped to specific demographics, Nick Thomas will more than likely struggle to determine the gender, income, marital status, level of education, and basic background information on the market segment. Without knowing definite answers to these questions Nick Thomas is unable to identify the need for passenger and storage space in ZEN Motors new models. Lastly, the dilemma of marketing efficiency should be on the forefront of Thomas' mind due to the rising competition of fuel efficient and hybrid cars. Also, with smaller vehicles come lower profit margins. With this being stated, it is crucial for ZEN Motors to determine if this current trend is a fad or if it is truly the new way of transportation due to increased fuel prices.

Describe the research objective needed to satisfy each problem.

Research Objective: Conduct a survey based upon a representative sample of all American households who have stated a demand for a different basic hybrid model, are a proper representation of their market segment, and will help increase ZEN Motors market efficiency within the hybrid automobile sector. This objective will be measured on a 5-point scale ranging from 1 = Very Unlikely to purchase to 5 = Very Likely to purchase a hybrid automobile.

Nick wants to gather input from consumers about their attitudes and intentions of purchasing a hybrid or fuel efficient automobile that will improve fuel efficiency while maintaining a stable cost.

Chapter 5**Suggested research design: Problem 1**

What research design would you suggest in determining how consumers feel about certain issues, how important these issues are to them, and what terms they use to discuss these issues?

Nick Thomas must now consider what type of research design should be used to answer some of the current problems at hand. It is impertinent that he understands the customers feelings towards the issue of global warming, their actual intent to purchase a fuel efficient automobile, and how much and increase in mpg will sway them to purchase a ZEN Motors automobile over their competitors.

Exploratory research could be conducted to determine the consumers overall feel towards fuel efficient cars and global warming itself because it is used to gain background information about the issue at hand. This research design is used to clarify problems and to establish the next

research priorities. Secondary data, experience surveys, case analysis', focus groups, and projective techniques are all pertinent to collecting exploratory research.

Suggested research design: Problem 2

What research design would you suggest to determine all of the following: Which attitudes are strongly associated with purchase intentions of different auto models? Will these relationships vary around the country and will they exist for definable market segments? Why?

To determine the actual intent to purchase of those strongly associated with fuel efficient automobiles Nick Thomas must use descriptive research. Who, what, where when, and how questions are answered through this type of research and is often used when there is a larger population being evaluated, which will ultimately answer the question of whether or not this trend is specific to only a certain country.

Suggested research design: Problem 3

Lastly, which type of research design would best determine how much of an increase in mpg will be needed for consumers to have equal preference for ZEN Models as for those outselling ZEN today?

Casual Research could be used to determine how much of an increase in mpg will be needed for consumers to prefer a ZEN Motors automobile over their competitors. This type of research uses "if-then" statements to manipulate the variables of interest. Cause and effect would be very easy to investigate with this type of research. Researchers would be able to increase the mpg of the automobile and see exactly what type of outcome it would have on a customer's intent to purchase the automobile.

Chapter 8

Focus Group Document

The current and previous approach Nick Thomas, CEO of Advanced Automobile Concepts, has been using to determine new-product development is a cross-function approach. With the general plan of ZEN Motors evolving from oversized automobiles to smaller, more fuel efficient cars, they will need to not only change their technique but also gather the customers' preferences on different types of cars.

Research question to be answered

The main research question that ZEN Motors and AAC are concerned with answering is what are customers' automobile preferences and possibly their opinions on hybrid and fuel efficient automobiles. This planning document will contain information pertaining to the research question at hand, participant profiles, recruitment protocol, potential screening questions, logistics for the focus group session, and the moderator's guide. This document is essential in the research process and to verify that the focus group will not only answer the question at hand but run smoothly for the participants as well. ZEN Motors is seeking to offer two choices of automobiles that are very different from each other but both still obtain to offer lower mpg ratings. Participants' general car preferences will be considered as well as their preferences between the two possible models ZEN Motors is considering. Through this focus group, ZEN Motors is striving to be able to alter their current advertisements to depict what they believe their customers value most.

Next ZEN Motors and AAC must carefully consider the participants they would find appropriate to participate in the focus group. It is generally said that the best and most effective type of focus groups contain homogenous characteristics but the participants should not be

friends or even casual acquaintances. The participants should be of similar age to offer a more comfortable and open environment. Also, when participants share homogenous characteristics the moderator and researcher are able to assume they understand the issue being discussed.

Participant profile

- Gender: Male or Female
- Age: 25-35
- Income: \$35,000 a year or less
- Marital Status: Married with no children
- Interests: all enjoy the same leisure activities
- Job Status: employed
- Education: College education
- Current owners of a non-hybrid or fuel efficient vehicle

The structure of the focus group and the participants involved will not only help the participants feel at ease but encourage them to participate and voice their opinions on their car preferences. By the participants not being current owners of hybrid or fuel efficient vehicles, researchers will be able to determine what their possible opinions and intentions of becoming an owner. Now that the participant profile has been constructed the hard part is determining how to recruit members who are willing to participate in the focus group. Simply selecting members will not be sufficient since each member must have homogenous characteristics without being friends or even acquaintances. The telephone is always a prospective way of contacting potential participants but this recruitment type has deteriorated over the past several years. Focus groups must remain ethical and keep tabs on participants who may just be participating solely for the monetary compensations.

Recruitment Protocol

- Screening surveys handed out at local areas that individuals in the age group of 25 to 25 would be. Such as, gyms, grocery stores, shopping centers, etc.
- Partner with neighboring gas stations to retrieve customers' telephone numbers from the usage of credit cards at their gas pumps, if funds allow.
- Attempt to acquire a local magazine mailing list that might link together homogenous characteristics of potential participants. Example: Our State Magazine in North Carolina.
- Work with a non-gender specific clothing store within the age group of our focus group to acquire a customer emailing list. Accompany a discount to the clothing store for participating in the screening process.

To insure that qualified participants are being surveyed, researchers must come up with screening questions to ask during the recruitment process. Screening questions will help to eliminate the respondents that do not meet the participant profile. This step is crucial for research and the case study itself because if the respondents are not an accurate representation the entire data will not be useful and could possibly sway the results of the entire study.

Screening Questions

1. Do you currently own an automobile?
2. If so, what type of automobile do you drive? Sedan, SUV, hybrid, or any other type of automobile that uses an alternate type of fuel.
3. For the following questions answer whether you agree or disagree with the statement:
 - a. Global warming is a pressing issue currently.

- b. Larger automobiles that require more gasoline are not causing harm to our environment.
 - c. The use of hybrid cars is going to be a fad that will quickly fade.
 - d. Hybrid and fuel alternative automobiles will hopefully be the only means of transportation within the next few decades.
 - e. I would drive a hybrid or fuel efficient automobile over a traditional sedan or SUV.
 - f. I believe that there is a linkage between global warming and the usage of non-hybrid automobiles.
4. Rate each of the following questions on a scale of 1 to 7, with 1 being the lowest and 7 ranking the highest.
- a. How likely are you to purchase a hybrid automobile in the next 3 years?
 - b. How would you rank the attractiveness of current hybrid automobiles with 1 being the least attractive and 7 being the most attractive?
 - c. How important is fuel efficiency to you?
 - d. How well do the current hybrid automobiles on the market fit your needs?
5. Please select the highest level of education you have attained?
- a. GED or high school diploma
 - b. Some college
 - c. Undergraduate degree
 - d. Graduate degree
 - e. Doctoral degree

Logistics for the focus group session

A traditional focus group consisting of twelve respondents will be used by ZEN Motors and it will occur at the ZEN Motors conference room. The conference room will consist of a large round table and all the respondents and the moderator will be gathered around the same table. A ZEN Motors conference room was chosen for the focus group location because it is seen as a common meeting place that participants would feel comfortable driving to. Participants might have been weary to drive to the moderator's house if they do not personally know the moderator. Also, the conference room provides a quiet atmosphere where researchers are able to observe through an operation window.

Before participating in the focus group the participants must have completed the screening questions to ensure that they will provide desirable results and meet the participant profile that was previously stated. The participants will all receive a cash incentive of \$75 and refreshments will be offered at the focus group meeting. Also, each respondent must sign and submit the confirmation letter and will receive a follow-up phone call the day before the focus group will occur:

Focus Group Confirmation Letter

Dear Participants Name,

April 8, 2012

We appreciate your time that you devoted to complete our screening survey and are pleased that you are willing to participate in ZEN Motors focus group meeting. The meeting will be on Friday, April 23rd, 2012 at ZEN Motors in Conference Room 101.

Please confirm that you will still be available to participate in this focus group by calling our front desk at 252-311-4545. Enclosed is a map with directions to ZEN Motors. Upon arrival, please enter the main office and our staff will help escort you to the appropriate location.

Thanks again,

Ashley Roberts

Moderator's Guide

The focus group will follow the same format as the screening questions but more in depth.

- *Question types:*

Screens

Warm-ups

Transition (statements and questions)

Complicated and difficult-to-answer

Classification and demographic

- *Introduction:* “Hello everyone my name is Ashley Roberts and I will be the moderator for this focus group. Feel free to help yourself to refreshments before we begin. Throughout this focus group if you need a question repeated or rephrased please do not hesitate to ask.”
- *Screens:* “I am going to begin with some background questions. Feel free to raise your hand or simply chime in to answer the following questions.”

What type of automobile do you currently drive?

How much do you generally spend on gas?

How many times a month to you generally have to purchase gas?

What is your current view on hybrid or fuel alternative automobiles?

- *Warm-ups:* “I’m going to display and read the following sentences, I would like for each of you to complete the rest of the sentence with the first thing that comes to mind.” Projective technique (Sentence-completion test)

Global warming and automobiles_____.

Hybrid automobiles are_____.

SUV’s are practical for people who _____.

I can see myself driving_____.

- *Transitions:* “Raise your hands as I read the following questions and tell me if you agree or disagree with each statement. Feel free to elaborate on your response.”

Hybrid cars are only practical for smaller families.

Global warming has a direct correlation with the current need for new and improved hybrid and fuel efficient automobiles.

I plan on purchasing a hybrid automobile within the next three years.

The environment and I would benefit from ZEN Motors manufacturing hybrid or fuel alternative automobiles.

- *Complicated and difficult-to-answer:* “Rate each of the following questions from 1 to 7, with 1 being you strongly disagree and 7 being strongly agree.”

I can see myself driving a hybrid automobile.

Hybrid automobiles will help reduce gas prices and protect our environment.

ZEN Motors is actively striving to meet customers’ needs by manufacturing a stylish and fiscally sound automobile.

The overall look of ZEN Motors hybrid automobiles is what would attract me to the automobile itself.

- *Classification and Demographics:* “Please write the answers to the following questions down and then we will discuss them as a group once everyone has completed them.”

List your top three favorite TV shows

What are three of your hobbies?

Do you have any children?

What is your highest level of education?

- *Closing:* “Thank you all for participating in this focus group. Your cash incentives will be distributed as you exit the conference room. Thanks again for your time.”

Unit 4-Descriptive Research, Survey Design and Measurement

In order for Corey Rogers to collect data regarding the purchases of new automobiles and the features that will be included, he must consider the best way of collecting this data while still preserving the integrity of the results. It is important to have a 50-50 split of both male and females and to ultimately make sure that the results reflect the demographics and profile of the American public.

Chapter 9

Mail Survey Method

If a mail survey were used, what would be the pros, cons, and special considerations associated with achieving the overriding objective of the survey?

By using a mail survey, Corey must keep in mind that there will be a slow response rate and results can be considered biased. However, if Corey is very budget conscious, this would be a good data-collection method but the use of mailed surveys has greatly declined. One advantage to a mail survey is the fact that it is self-administered and interviewers are not needed.

Nonresponse is very prevalent among mail surveys because many respondents purely do not want to take the time to fill out the survey and place it back in the mail. Also, self-selection bias is important to consider with this type of data-collection method because it can generate data that is nonrepresentative of the general population.

Many telephone data-collection companies offer national coverage. Some have centralized telephone interview facilities and some offer Computer-Assisted Telephone Interviewing (CATI) services.

Telephone Survey Method

If a telephone survey were used employing one of these companies, what would be the pros, cons, and special considerations associated with achieving the overriding objective of the survey?

If Corey took the next step up from distributing mail surveys he might consider the use of central location telephone interviewing or (CATI). Central location telephone interviews generally have a fast turnaround, good quality control, and reasonable costs. Quality control is very important because the recruitment and training of all interviewers is considered uniform. Also, the company is able to control when the interviewers' work which helps insure that the interviewers' are making the calls during times that the researcher has requested. However, there has been much negativity that has surrounded this form of data-collection and that frustration is

often part of the job. Secondly, Computer-Assisted Telephone Interviewing, CATI, has been used to help telephone interviewing companies advance their central location telephone interviewing processes. One advantage of this data-collection method is that the use of the computer helps eliminate human interview errors that might skew the data. Also, tabulation is able to be run at any point during the survey rather than having to wait for several days for the results. One downfall to this method is the startup costs that are associated but over time, through quality control and time savings, the funds are replenished. Both of these methods would be helpful for Corey if the startup costs were not greater than the data that would ultimately be collected.

A Drop-off survey, Group-administered survey, or Mall-intercept survey would not likely achieve the overriding object. Below is an indication of why these data collection methods would be ineffective.

Drop-off Survey Method

Corey would not find the usage of a drop-off survey to help him achieve his objective because of the fact that there are clearly too many respondents to try and reach solely through dropping off and picking up the survey. The data that is needed is not severely time sensitive but there are simply not enough employees to successfully complete this data-collection method.

Group-administered Survey Method

A group-administered survey could come back with nonrepresentative data due to the fact that in group settings respondents' are hesitant that ask questions that may be pertinent. Determining if the group was a fair representation of the population would be difficult to measure.

Mall-intercept Survey Method

Mall-intercept interviewing would not be helpful for Corey because a shopping mall is generally not a comfortable atmosphere for respondents'. Often times, shoppers are in a hurry which could result in nonrepresentative data.

In-home Survey Method VS. Online Survey Method

Compare the use of an in-home method to the use of an online method for the Advanced Auto Concepts survey. What are the relevant pros and cons for each? Indicate which method would be best and why.

In-home and Online Surveys are generally two of the most popular forms of data-collection methods. Each method is very specific to the type of product or service that is being researched. For in-home surveys, interviewers' often know that interaction with a product is crucial to the respondents' answers. Online interviews allow the respondent to work at their own pace and often involve ideas or products that are less tactile and more opinionated. The use of online interviewing would ultimately be most effective for the Advanced Automobile Concepts survey because the price is relatively cheap, an interviewer is not needed, and it allows the respondent to move at their own pace.

Chapter 10**Identifying measurement scale for constructs**

Advanced Auto Concepts at Zen Motors has not made their final decision on the survey data-collection method but an online survey appears to be most affective both for the respondents' and the company. We must now identify the measurement scale that will be used for the

constructs in the survey. The overall question that Advanced Automobile Concepts is striving to have answered is “Would you purchase an alternative-fuel automobile?” and this question can ultimately be answered with a simple “yes” or “no” response. However, the entire survey would not be as useful with just nominal-scaled questions. An unanchored scale would be beneficial for Advanced Auto Concepts to use because it is easy for the researchers to gauge the respondents’ satisfaction. The scale ranges from 1, being the least positive, to 5, being the most positive. An unanchored scale would help the respondents’ not feel overwhelmed since the survey will more than likely be in depth and long. A metric scale using interval questions is going to help Advanced Auto Concepts to conclude whether or not the respondents’ are likely to purchase an alternative-fuel automobile. Interval questions are going to rank the respondents’ answers which will ultimately help the researchers conclude the likeliness of them purchasing an alternative-fuel automobile.

The level of measurement is very important because it will supply ZEN Motors with information about the object at hand and it determines what conclusions the company is about to make. Also, if ZEN Motors uses a high-level scale, such as an interval scale, they will be able to have a more statistical analysis and determine if an alternative-fuel automobile will be profitable for their company.

Recommended scale formats for identified constructs

Current vehicle ownership

A categorical scale format would be ideal since order, distance, and origin will not be needed to obtain information.

Beliefs about global warming and the effects of the use of gasoline on global warming

A mixture of both categorical and metric scales would be useful for these questions because origin will more than likely not be needed. However, some questions may involve distance if the respondent is asked to rank their opinion of something on a given scale.

Beliefs about gasoline price levels and trends

A mixture of both categorical and metrics scale would be beneficial since questions regarding description, order and distance would be ideal. Respondents would generally not be asked to state an actual number value or origin.

Opinions of the impact of alternative-fuel automobiles on global warming

A mixture of both categorical and metric scale would be most useful when documenting the respondents' opinions since description, order and distance are all crucial.

Intentions to buy an alternative-fuel automobile

A mixture of both categorical and metrics scale would be beneficial since questions regarding description, order and distance would be ideal. Respondents would generally not be asked to state an actual number value or origin.

Preferences for various sizes of alternative-fuel automobiles

A categorical scale would be useful to describe questions consisting of order, but no distance or origin.

Preferred television show type, magazine, radio music genre, & newspaper section

A categorical scale would be useful to construct questions that have order, but no distance or origin.

Draft Questionnaire

Complete draft questions that could be used with the scale format you are proposing.

Current vehicle ownership:

What is the size/type of your current vehicle(s)? Check all that apply. (Nominal)

- ☐ Economy/Subcompact
- ☐ Compact
- ☐ Mid-size/Intermediate
- ☐ Full size
- ☐ Luxury
- ☐ Convertible
- ☐ Compact SUV
- ☐ Mid-size/Standard SUV
- ☐ Full size SUV
- ☐ Premium SUV
- ☐ Minivan
- ☐ Other, please specify: _____

Which fuel type does your vehicle use? Check all that apply. (Nominal)

- ☐ 87 Regular
- ☐ 89 Mid-grade or Plus
- ☐ 92 Premium
- ☐ Liquefied Petroleum Gas (LPG, commonly known as propane)
- ☐ Compressed Natural Gas (CNG)
- ☐ Liquefied Natural Gas (LNG)

- ☐ Methanol (M85)
- ☐ Ethanol (E85)
- ☐ Biodiesel (B20)
- ☐ Electricity (hybrid)

Is your current vehicle eco-friendly (hybrid, bio-diesel, combustion engine, etc.)? (Nominal)

- ☐ Yes
- ☐ No

Beliefs about global warming and the effects of the use of gasoline on global warming

Global warming is a serious issue and needs to be addressed by corporations and citizens, alike.

Circle one. (Interval)

Strongly Disagree 1 2 3 4 5 6 7 8 9 Strongly Agree

Check one of the following statements that most closely relates to your feelings. (Ordinal)

- ☐ The issue of global warming is urgent and should be taken care of immediately.
- ☐ Global warming is a problem, but I'm not too concerned.
- ☐ I am indifferent about the issue of global warming.
- ☐ I do not know much about the issue of global warming.

How harmful do you think gasoline emissions are for the environment? Circle One. (Interval)

Not Harmful 1 2 3 4 5 6 7 8 9 Very Harmful

Beliefs about gasoline price levels and trends

Are rising gas prices effecting your budget/lifestyle decisions? (Nominal)

- ☐ Yes
- ☐ No

What would you consider a “reasonable” amount for weekly gasoline costs? (Ordinal)

- ☐ \$20-\$30
- ☐ \$30-\$40
- ☐ \$40-\$50
- ☐ \$50-\$60
- ☐ \$60-\$70
- ☐ \$70-\$100
- ☐ Other, please specify: _____

How concerned are you about rising gasoline prices? (Interval)

Not concerned 1 2 3 4 5 6 7 8 9 Very
concerned

Do you think gasoline prices will continue to rise over the next 5-10 years? (Nominal)

- ☐ No. I think that there will be a solution in the next 5-10 years and the oil prices will eventually be affordable again.
- ☐ Yes. I think that there is a need for alternative fuels because the price of oil is not acceptable or affordable and will not become affordable in the near future.
- ☐ Other, please explain:

Opinions as to the impact of alternative-fuel automobiles on global warming

How beneficial do you think alternative fuel vehicles are to the issue of global warming?

(Interval)

Not Beneficial 1 2 3 4 5 6 7 8 9 Very Beneficial

Do you think automobile manufacturers have an obligation to create fuel-efficient vehicles in order to decrease the impact of global warming? (Nominal)

☐ Yes

☐ No

If not, please explain:

Intentions to buy an alternative vehicle

Rank each type of car based on how likely you are to purchase, 1 being very likely. (Ordinal)

☐ Very small (1 seat), no trunk space, and very high mph

☐ Small (2 seat), very limited trunk space, and high mpg

☐ Hybrid models (compact and moderately high mpg)

☐ Alternative-fuel models

Some people believe that by purchasing a fuel-efficient vehicle they can make a difference on the impact of global warming. Do you agree or disagree with this statement? Circle one.

(Interval)

Disagree 1 2 3 4 5 6 7 8 9 Agree

How likely are you to purchase a fuel-efficient vehicle in the next 3 years? Circle one. (Interval)

Not likely 1 2 3 4 5 6 7 8 9 Very likely

What would/is prevent/preventing you from purchasing a fuel-efficient vehicle? Check all that apply. (Nominal)

☐ High price

☐ Lack of safety

☐ Size(usually small)

- ☐ Body style or looks
- ☐ Other, please explain: _____

Preferences for various sizes of alternative-fuel automobiles

Rank each size of car based on how likely you are to purchase, 1 being very likely. (Ordinal)

- ☐ Mini (1-2 seats)
- ☐ Economy 2-door
- ☐ Economy 4-door
- ☐ Standard

1. Preferred television show type, magazine type, radio music genre, and newspaper section

Check all television show categories that interest you. Check all that apply. (Nominal)

- ☐ Sports
- ☐ Sitcom
- ☐ Documentary
- ☐ Soap opera
- ☐ Reality TV
- ☐ Drama
- ☐ Travel
- ☐ Food
- ☐ Drama
- ☐ News channels
- ☐ Home & Garden
- ☐ Other, please indicate: _____

Check all magazine types that interest you. Check all that apply. (Nominal)

- ☐ Business and Finance
- ☐ Family Living
- ☐ Travel
- ☐ Lifestyle
- ☐ Gardening
- ☐ Sports
- ☐ Teen
- ☐ Health and Beauty
- ☐ Video Games
- ☐ Fashion
- ☐ Music
- ☐ Other, please indicate: _____

Check all radio music genres that interest you. Check all that apply. (Nominal)

- ☐ Rap/hip-hop
- ☐ Pop/rock
- ☐ Classical
- ☐ Easy listening
- ☐ Electronic
- ☐ Jazz
- ☐ Religious
- ☐ Country
- ☐ Folk
- ☐ Other, please indicate: _____

Check all newspaper sections that interest you. Check all that apply. (Nominal)

- ☐ Business
- ☐ Editorials
- ☐ Entertainment/lifestyle
- ☐ Sports
- ☐ Local news
- ☐ National news
- ☐ International news
- ☐ Feature articles
- ☐ Cartoons/crosswords
- ☐ Other, please indicate: _____

Which form of media do you use most often? Rank each option, 1 being most often. (Ordinal)

- ☐ Television
- ☐ Newspaper
- ☐ Magazine
- ☐ Radio
- ☐ Other, please indicate: _____

Chapter 11

Final questionnaire

Design a questionnaire suitable for an online panel of consumers.

Global warming is a serious issue and needs to be addressed by corporations and citizens, alike.
Circle one.

Strongly Disagree 1 2 3 4 5 Strongly Agree

Check one of the following statements that most closely relates to your feelings.

- ☐ The issue of global warming is urgent and should be taken care of immediately.
- ☐ Global warming is a problem, but I'm not too concerned.
- ☐ I am indifferent about the issue of global warming.
- ☐ I do not know much about the issue of global warming.

How harmful do you think gasoline emissions are for the environment? Circle One.

Not Harmful 1 2 3 4 5 Very Harmful

How beneficial do you think alternative fuel vehicles are to the issue of global warming?

Not Beneficial 1 2 3 4 5 Very Beneficial

Are rising gas prices effecting your budget/lifestyle decisions?

- ☐ Yes
- ☐ No

High gasoline prices will affect the type of cars that consumers are interested in purchasing.

Strongly Disagree 1 2 3 4 5 Strongly Agree

How concerned are you about rising gasoline prices?

Not concerned 1 2 3 4 5 Very concerned

Do you think gasoline prices will continue to rise over the next 5-10 years?

- ☐ No. I think that there will be a solution in the next 5-10 years and the oil prices will eventually be affordable again.
- ☐ Yes. I think that there is a need for alternative fuels because the price of oil is not acceptable or affordable and will not become affordable in the near future.
- ☐ Other, please explain:

Please indicate how appealing/attractive the following vehicle options are:

A very small automobile, 1 seat, with very high mpg ratings

Not appealing 1 2 3 4 5 Very appealing

A small automobile, 2 seats, with high mpg ratings

Not appealing 1 2 3 4 5 Very appealing

A hybrid compact-size automobile with moderately high mpg ratings

Not appealing 1 2 3 4 5 Very appealing

What is your current age?

_____ years

What is your current income level?

\$ _____

What is your gender?

- ☐ Male
- ☐ Female

Indicate your highest level of education.

- ☐ Middle School
- ☐ High School
- ☐ Associates degree, 2 year program
- ☐ Bachelor's degree, 4 year program
- ☐ Master's degree
- ☐ Higher than Master's degree

What is your current marital status?

- ☐ Single
- ☐ Married

What is your current dwelling type?

- ☐ Single-family home
- ☐ Multiple-family home
- ☐ Condominium/Townhouse
- ☐ Mobile home

What is the size of your hometown?

What is your current primary vehicle value?

- ☐ No vehicle
- ☐ Economy
- ☐ Standard
- ☐ Luxury

What is your current primary vehicle type?

- ☐ No vehicle
- ☐ Car
- ☐ Pick-up truck
- ☐ SUV/Van

Please indicate how closely the following characteristics relate to your true lifestyle:

I am a band-wagoner.

I cannot relate 1 2 3 4 5 I can very much relate.

I am a trendsetter.

I cannot relate 1 2 3 4 5 I can very much relate.

I like to be different.

I cannot relate 1 2 3 4 5 I can very much relate.
 I care about my image.

I cannot relate 1 2 3 4 5 I can very much relate.

Please indicate how likely you are, in the next 3 years, to purchase the following:

A very small hybrid automobile, 1 seat, with very high mpg ratings (in the next 3 years)

Not likely 1 2 3 4 5 Very likely

A small hybrid automobile, 2 seats, with high mpg ratings (in the next 3 years)

Not likely 1 2 3 4 5 Very likely

A hybrid compact-size automobile with moderately high mpg ratings (in the next 3 years)

Not likely 1 2 3 4 5 Very likely

A standard size hybrid automobile (in the next 3 years)

Not likely 1 2 3 4 5 Very likely

A standard size synthetic fuel automobile (in the next 3 years)

Not likely 1 2 3 4 5 Very likely

A standard size electric automobile (in the next 3 years)

Not likely 1 2 3 4 5 Very likely

Alternative fuel automobile (in the next 3 years)

Not likely 1 2 3 4 5 Very likely

Please rank the following automobile options, 1 being most preferred vehicle type:

- A very small hybrid automobile, 1 seat, with very high mpg ratings
- A small hybrid automobile, 2 seats, with high mpg ratings
- A hybrid compact-size automobile with moderately high mpg ratings
- A standard size hybrid automobile
- A standard size synthetic fuel automobile
- A standard size electric automobile
- Alternative fuel automobile

Check all magazine types that interest you. Check all that apply.

- Business and Finance
- Family Living
- Travel
- Lifestyle
- Gardening
- Sports
- Teen
- Health and Beauty
- Video Games
- Fashion
- Music

— Other, please indicate: _____

Check all radio music genres that interest you. Check all that apply.

- Rap/hip-hop
- Pop/rock
- Classical
- Easy listening
- Electronic
- Jazz
- Religious
- Country
- Folk
- Other, please indicate: _____

What time during the day do you normally watch the local television news? If applicable, list more than one.

1. _____
2. _____
3. _____
4. _____

Check all newspaper sections that interest you. Check all that apply.

- Business
- Editorials
- Entertainment/lifestyle
- Sports
- Local news
- State news
- National news
- International news
- Feature articles
- Cartoons/crosswords
- Other, please indicate: _____

Design a Code Sheet for the survey.

V1. Global warming is a serious issue and needs to be addressed by corporations and citizens, alike. Circle one. (Interval)

Strongly Disagree 1 2 3 4 5 Strongly Agree

NOTE: variables correlate with number chosen.

V2. Check one of the following statements that most closely relates to your feelings. (Ordinal)

- ☐ The issue of global warming is urgent and should be taken care of immediately. (1)
- ☐ Global warming is a problem, but I'm not too concerned. (2)
- ☐ I am indifferent about the issue of global warming.(3)
- ☐ I do not know much about the issue of global warming. (4)

V3. How harmful do you think gasoline emissions are for the environment? Circle One.

(Interval)

Not Harmful 1 2 3 4 5 Very Harmful

NOTE: variables correlate with number chosen.

V4. How beneficial do you think alternative fuel vehicles are to the issue of global warming?

(Interval)

Not Beneficial 1 2 3 4 5 Very Beneficial

NOTE: variables correlate with number chosen.

V5. Are rising gas prices effecting your budget/lifestyle decisions? (Nominal)

- ☐ Yes (1)
- ☐ No(0)

V6. High gasoline prices will affect the type of cars that consumers are interested in purchasing.

(Interval)

Strongly Disagree 1 2 3 4 5 Strongly Agree

NOTE: variables correlate with number chosen.

V7. How concerned are you about rising gasoline prices? (Interval)

Not concerned 1 2 3 4 5 Very concerned

NOTE: variables correlate with number chosen.

V8. Do you think gasoline prices will continue to rise over the next 5-10 years? (Nominal)

- ☐ No. I think that there will be a solution in the next 5-10 years and the oil prices will eventually be affordable again. (1)
- ☐ Yes. I think that there is a need for alternative fuels because the price of oil is not acceptable or affordable and will not become affordable in the near future. (2)
- ☐ Other, please explain:

V9. Please indicate how appealing/attractive the following vehicle options are: (Interval)

V10. A very small automobile, 1 seat, with very high mpg ratings

Not appealing 1 2 3 4 5 Very appealing

V11. A small automobile, 2 seats, with high mpg ratings

Not appealing 1 2 3 4 5 Very appealing

V12. A hybrid compact-size automobile with moderately high mpg ratings

Not appealing 1 2 3 4 5 Very appealing

NOTE: variables correlate with number chosen.

V13. What is your current age? (Ratio)

_____ years

NOTE: no precode is used as the respondent will write in a number.

V14. What is your current income level? (Ratio)

\$_____

NOTE: no precode is used as the respondent will write in a number.

V15. What is your gender? (Nominal)

- ☐ Male (0)
- ☐ Female (1)

V16. Indicate your highest level of education. (Nominal)

- ☐ Middle School (1)
- ☐ High School (2)
- ☐ Associates degree, 2 year program (3)
- ☐ Bachelor's degree, 4 year program (4)
- ☐ Master's degree (5)
- ☐ Higher than Master's degree (6)

V17. What is your current marital status? (Nominal)

- ☐ Single (0)
- ☐ Married (1)

V18. What is your current dwelling type? (Nominal)

- ☐ Single-family home (1)
- ☐ Multiple-family home (2)
- ☐ Condominium/Townhouse (3)
- ☐ Mobile home (4)

V19. What is the size of your hometown? (Ratio)

NOTE: no precode is used as the respondent will write in a number.

V19. What is your current primary vehicle value? (Nominal)

- ☐ No vehicle (0)
- ☐ Economy (1)

– Standard (2)

– Luxury (3)

V20. What is your current primary vehicle type? (Nominal)

– No vehicle (0)

– Car (1)

– Pick-up truck (2)

– SUV/Van (3)

V21. Please indicate how closely the following characteristics relate to your true lifestyle:

(Interval)

V22. I am a band-wagoner.

I cannot relate	1	2	3	4	5	I can very much relate.
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V23. I am a trendsetter.

I cannot relate	1	2	3	4	5	I can very much relate.
-----------------	---	---	---	---	---	-------------------------

V24. I like to be different.

I cannot relate	1	2	3	4	5	I can very much relate.
-----------------	---	---	---	---	---	-------------------------

V25. I care about my image.

I cannot relate	1	2	3	4	5	I can very much relate.
-----------------	---	---	---	---	---	-------------------------

NOTE: variables correlate with number chosen.

V26. Please indicate how likely you are, in the next 3 years, to purchase the following: (interval)

V27. A very small hybrid automobile, 1 seat, with very high mpg ratings (in the next 3 years)

Not likely	1	2	3	4	5	Very likely
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V28. A small hybrid automobile, 2 seats, with high mpg ratings (in the next 3 years)

Not likely	1	2	3	4	5	Very likely
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V29. A hybrid compact-size automobile with moderately high mpg ratings (in the next 3 years)

Not likely 1 2 3 4 5 Very likely

V30. A standard size hybrid automobile (in the next 3 years)

Not likely 1 2 3 4 5 Very likely

V31. A standard size synthetic fuel automobile (in the next 3 years)

Not likely 1 2 3 4 5 Very likely

V32. A standard size electric automobile (in the next 3 years)

Not likely 1 2 3 4 5 Very likely

V33. Alternative fuel automobile (in the next 3 years)

Not likely 1 2 3 4 5 Very likely

NOTE: variables correlate with number chosen.

V34. Please rank the following automobile options, 1 being most preferred vehicle type:

(Ordinal)

- _ V35. A very small hybrid automobile, 1 seat, with very high mpg ratings (1)
- _ V36. A small hybrid automobile, 2 seats, with high mpg ratings (2)
- _ V37. A hybrid compact-size automobile with moderately high mpg ratings (3)
- _ V38. A standard size hybrid automobile (4)
- _ V39. A standard size synthetic fuel automobile (5)
- _ V40. A standard size electric automobile (6)
- _ V41. Alternative fuel automobile (7)

V42. Check all magazine types that interest you. Check all that apply. (Nominal)

- _ V43. Business and Finance (0;1)
- _ V44. Family Living (0;1)

- ☐ V45. Travel (0;1)
- ☐ V46. Lifestyle (0;1)
- ☐ V47. Gardening (0;1)
- ☐ V48. Sports (0;1)
- ☐ V49. Teen (0;1)
- ☐ V50. Health and Beauty (0;1)
- ☐ V51. Video Games (0;1)
- ☐ V52. Fashion (0;1)
- ☐ V53. Music (0;1)
- ☐ V54. Other, please indicate: _____

NOTE: The (0;1) indicates the coding system that will be used. Each response category will be defined as a separate question.

V55. Check all radio music genres that interest you. Check all that apply. (Nominal)

- ☐ V56. Rap/hip-hop (0;1)
- ☐ V57. Pop/rock (0;1)
- ☐ V58. Classical (0;1)
- ☐ V59. Easy listening (0;1)
- ☐ V60. Electronic (0;1)
- ☐ V61. Jazz (0;1)
- ☐ V62. Religious (0;1)
- ☐ V63. Country (0;1)
- ☐ V64. Folk (0;1)
- ☐ V65. Other, please indicate: _____

NOTE: The (0;1) indicates the coding system that will be used. Each response category will be defined as a separate question.

V66. What time during the day do you normally watch the local television news? If applicable, list more than one. (Ratio)

NOTE: no precode is used as the respondent will write in a number.

V67. Check all newspaper sections that interest you. Check all that apply. (Nominal)

- ☐ V68. Business (0;1)
- ☐ V69. Editorials (0;1)
- ☐ V70. Entertainment/lifestyle (0;1)
- ☐ V71. Sports (0;1)
- ☐ V72. Local news (0;1)
- ☐ V73. State news (0;1)
- ☐ V74. National news (0;1)
- ☐ V75. International news (0;1)
- ☐ V76. Feature articles (0;1)
- ☐ V77. Cartoons/crosswords (0;1)
- ☐ V78. Other, please indicate: _____

NOTE: The (0;1) indicates the coding system that will be used. Each response category will be defined as a separate question.

Unit 5: Sampling Considerations for AAC

AAC is now confronted with the sample selection step in the marketing research process and they must ensure that they garner an accurate sample of all households within the United States.

Chapter 12

Population definition

Specify the population definition.

With an online panel being the final decision for the survey, Advanced Automobile Concepts must now focus on achieving a selection of participants that is a fair representative sample. All households in America is the population that is going to be surveyed and even individuals who do not own automobiles will still be targeted. The development and manufacturing process of the alternative-fuel automobiles is estimated to take five years and after this process has been completed, many non-owners could have decided to purchase an automobile. Also, many non-owners may not be owners due to the impact that the current automobiles may have on the environment. With this being said, non-owners may gravitate towards an alternative-fuel automobile.

Sample frame

If a probability sampling method is used, what would be a reasonable sample frame for a telephone survey, a mail survey, and an online survey?

With a probability sample method being used the chance of selection is said to be “known” which is often theoretical since the probability value is generally never calculated. There are four types of probability sampling methods: simple random sampling, systematic sampling, cluster sampling, and stratified sampling. If a telephone survey was being conducted a

simple random sample would be a good method because random telephone numbers could be selected from a computer. This guarantees each member in the population sample the same chance of being selected. Cluster sampling would be beneficial for a mail survey since the surveys may need to be distributed across a wide geographic area. Also, if a group of individual's seems to be similar it is easier and more economically efficient to sample only a cluster of individuals rather than the entire population. Lastly, systematic sampling would be useful for an online survey. With a constant "skip interval" this method is more efficient and less time consuming than a simple random sample. A systematic sampling is sufficient because it truly has a random starting point and each member of the population has an equal opportunity of being selected.

Problems in simple random sampling

Regardless of the survey method, what are the practical problems involved with drawing a simple random sample of American households?

Conducting a simple random sample gives each member of the population an equal chance of being selected but there can be some drawbacks to this method. Obtaining an accurate list of the population can often be one of the biggest drawbacks. A current and complete listing is needed to begin the process of a blind draw but with residents constantly moving and relocating, finding an accurate list is a demanding and almost impossible task. If an electronic list does not already exist, a manual process is required to be able to identify each population member. Since all households need to be sampled by Advanced Automobile Concepts, a simple random sample poses as a very tedious and time consuming task due to the size of the population, which is approximately 111 million units.

Random Digit Dialing: advantages & disadvantages

What are the advantages and disadvantages of random digit dialing if it was used for this sample plan?

Random digit dialing is heavily used within the simple random sampling aspect of market research. A computer compiles a simple random sample of telephone numbers to contact and request they complete a telephone survey. However, the issue of new telephone numbers and those that do not have their numbers listed can drive down the effectiveness of this method. Also, a recent increase in cell phone ownership can make this method not as trustworthy since many residents are no longer using landlines. Often times many phone calls result in failed attempts due to nonexistent numbers, respondents who simply do not have time to participate, or those participants that do not pick up the telephone.

Probability Online Panel: advantages & disadvantages

Should Advanced Automobile Concepts use a probability online panel such as the one maintained by Knowledge Networks, Inc.? With respect to the sample design, what are the advantages and disadvantages involved with using this approach?

Advanced Automobile Concepts would most likely receive the most accurate results by using an online probability panel. It uses a process called address-based sampling that randomly selects residential households and is said to be a statistically valid representation of the US population as a whole. Also, address-based sampling is able to contact the cell phone only users that would not be able to be reached through random digit dialing. Knowledge Network, Inc. is able to supply US families that do not have internet access with a free netbook computer to complete the probably online panel. Lastly, they are able to reach more households by combining probability sampling, Web service provision, Spanish language recruitment, and the advantages

that come along with the internet to form a reliable sampling of the entire population. However, not as many surveys would be able to be conducted per month since the price of this service is more than likely high. Due to the size of Advanced Automobile Concepts population, the usage of a probability online panel would be beneficial if the costs associated with this method are not greater than the discovery of the results.

Chapter 13

Calculating expected cost and sample error

Nick Thomas has agreed with Corey Rogers of CMG Research to conduct an online survey. For a “blended” online survey of 50 questions, the cost is roughly \$10 per complete response.

Calculate the expected cost and sample error for each of the following sample sizes: 20,000; 10,000; 5,000; 2,500; 1,000; and 500.

Sample size	Expected Cost	Sample Error
20,000	\$200,000	±0.69%
10,000	\$100,000	±1.0%
5,000	\$50,000	±1.4%
2,500	\$25,000	±1.96%
1,000	\$10,000	±3.1%
500	\$5,000	±4.4%

Unit 6: Data Collection, Analysis, and Interpretation

Chapter 15: Descriptive Analysis

The data set for the AAC survey is now available for analysis. Conduct the proper descriptive analysis with SPSS in order to answer the following questions.

****Each of the following data sets contain no missing data. They were purchased from a consumer panel company that guarantees a 100% response, being as the respondent was qualified to answer the specific question.****

Demographic composition

What is the demographic composition of the sample?

Based on the following frequency distribution, we can conclude the demographic composition of the sample as follows:

- A hometown size of 1500 is the largest hometown size represented, with 267 respondents selecting it, or 26.7% of the total 100%.
- The Male gender is the largest gender size represented, with 505 respondents selecting it, or 50.5% of the total 100%.
- Married is the largest marital status represented, with 513 respondents, or 51.3% of the total 100%.
- The total number of people in a household had the largest representation of “1”, with 395 respondents selecting it, or 39.5% of the total 100%.
- The most common age group was 42 years old, with 256 respondents selecting it, or 25.6% of the total 100%.
- The most common education level among the sample was high school, with 298 respondents selecting it, or 29.8% of the total 100%

- The most common job category among the sample was sales and office jobs, with 285 respondents selecting it, or 28.5% of the total 100%
- The most common income level among the sample was \$37,500, with 343 respondents selecting it, or 34.3% of the total 100%
- The most common dwelling type among the sample was simple family, with 452 respondents selecting it, or 45.2% of the total 100%

After careful analysis, it was determined that there were two categories in particular that had extremely close frequencies. At a frequency level of 50.5%, the gender category has almost an equal amount of males and females; therefore, it would be challenging to select only one gender to target. Likewise, the marital status category has a 51.3% frequency level. This leaves almost an equal amount of respondents being single compared to married; therefore, it would be challenging to select only one status to target.

	Frequency	Percentage	Mode
Hometown Size	267	26.7%	1500
Gender	505	50.5%	Male
Marital Status	513	51.3%	Married
# of People in Family	395	39.5%	1 Person
Age Category	256	25.6%	42 Years Old
Education Category	298	29.8%	High School
Job Type Category	286	28.6%	Sales and Office Jobs
Income Category	343	34.3%	\$37,500
Dwelling Category	452	45.2%	Single Family

Automobile Ownership Profile

What is the automobile ownership profile of the respondents in the survey?

The automobile ownership profile includes the primary vehicle price category, primary vehicle type, and type of commuting. “Economy” received the highest frequency in the primary vehicle category, with 455 respondents selecting it, or 45.5% of the total 100%. “Car” received the highest frequency in the primary vehicle type, with 432 respondents selecting it, or 43.2% of the total 100%. “Single-occupancy” received the highest frequency of the type of commuting category, with 588 respondents selecting it, or 58.8% of the total 100%.

	Frequency	Percentage	Mode
Primary Vehicle Price Category	455	45.5%	Economy
Primary Vehicle Type	432	43.2%	Car
Type of Commuting	588	58.8%	Single-occupancy

Feelings about global warming and the use of gasoline

How do respondents feel about (1) global warming and (2) the use of gasoline?

Given all the options for how respondents feel about global warming, “I am worried about global warming” attained the highest mean value of 6.10 on a scale of 1-7, with 7 being the highest. The standard deviation for this statement is 1.459, indicating that there remains little variance among the respondents. Given all the options for how respondents feel about the use of gasoline, “We should be looking for gasoline substitutes” attained the highest mean value of 5.07 on a scale of 1-7, with 7 being the highest. The standard deviation for this field is 2.159, indicating that there is a high variance, or much disagreement among respondents.

	Mean	Std. Dev.
I am worried about global warming.	6.10	1.459
We should be looking for gasoline substitutes.	5.07	2.159

Opinions about the effects of hybrid vehicles

What are the respondents' opinions about the effects of the use of various kinds of hybrid vehicles?

Among the three options provided, "Hybrid autos that use alternative fuels will keep gas prices down" has the highest mean value of 5.77 on a scale of 1-7, with 7 being the highest. The standard deviation is 2.157, indicating that, while the mean is positive, there remains some disagreement among respondents.

	Mean	Std. Deviation
Hybrid autos that use alternative fuels will reduce fuel emissions.	5.10	2.052
Hybrid autos that use alternative fuels will keep gas prices down.	5.77	2.157
Hybrid autos that use alternative fuels will slow down global warming.	4.06	2.133

The vehicle consumers think will have the most positive effects

What size of "new" automobile (very small with very high mph, and hybrid using alternative fuels) do people in the sample believe are likely to have the most positive effects?

Based on the mean value of 5.77 on a 1-7 scale, with 7 being the highest, respondents believed “Hybrid autos that use alternative fuels will keep gas prices down” is likely to have the most positive effects. The standard deviation of this response was 2.157, indicating that there remains some disagreement among respondents. Given the high variance, researchers should use a method other than the mean value to determine which option respondents feel is likely to have the most positive effects

	Mean	Std. Deviation
Very small autos with very high mpg's will reduce fuel emissions.	4.83	2.079
Very small autos with very high mpg's will keep gas prices stable.	4.50	2.343
Very small autos with very high mpg's will slow down global warming.	3.46	2.197
Small autos with high mpg's will reduce fuel emissions.	3.95	2.247
Small autos with high mpg's will keep gas prices stable.	4.91	2.523
Small autos with high mpg's will slow down global warming.	4.47	2.296
Hybrid autos that use alternative fuels will reduce fuel emissions.	5.10	2.052
Hybrid autos that use alternative fuels will keep gas prices down.	5.77	2.157
Hybrid autos that use alternative fuels will slow down global warming.	4.06	2.133

Likelihood to purchase: most likely VS. least likely

What type of hybrid automobile is the most attractive to people in the sample in terms of likelihood of purchase in the next 3 years? What type is the least attractive?

On a scale of 0-100%, “Probability of buying a standard size synthetic fuel auto within 3 years” (highlighted below in yellow) has the highest mean value of 40.17, indicating that it was the most attractive hybrid automobile in terms of likelihood of purchase in the next 3 years. The

standard deviation of this field is relatively high, at 21.465; indicating that there remains much variation in the responses. The least attractive option (highlighted below in green) is “Probability of buying a very small (1 seat) hybrid auto within 3 years” with a mean value of 13.78. The standard deviation of this field is 23.088, indicating that there is a high amount of variation among the responses.

	Maximum	Mean	Std. Deviation
Probability of buying a very small (1 seat) hybrid auto within 3 years	100	13.78	23.088
Probability of buying a small (2 seat) hybrid auto within 3 years	90	20.59	19.285
Probability of buying a standard size hybrid auto within 3 years	100	30.12	21.205
Probability of buying a standard size synthetic fuel auto within 3 years	100	40.17	21.465
Probability of buying a standard size electric auto within 3 years	100	34.64	22.090

Chapter 16: Generalization Analysis

Current vehicle ownership as a percentage of the sample

What percentage of the American public owns the following: (1) SUV or van (2) luxury vehicle (3) standard vehicle?

Of the total 100%, 25.8% of Americans in the sample, or 258 respondents, indicated that they own an SUV or van. This was the highest frequency of all the options; stating that the majority of the sample owns an SUV or van. With that, 174 of the respondents indicated that they own a luxury vehicle. This represents 17.4% of the population. Standard vehicle ownership is just behind SUV or van ownership, with 21.7% of respondents selecting this vehicle type. In addition, 10% of the sample reported that they did not own a vehicle.

Hybrid Model	Frequencies	Percent
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No Vehicle	100	10.0%
Standard	217	21.7%
Luxury	174	17.4%
SUV or van	258	25.8%

American beliefs about hybrid vehicles

How does the American public feel about the following statements:

“Hybrid autos that use alternative fuels will reduce fuel emissions.”

Americans somewhat agreed that hybrid autos would reduce fuel emissions. This is proven by a mean value of 5.10 on a 1-7 scale, with 7 being the highest. However, with a standard deviation of 2.052, it appears that there was some amount of variance among the responses.

“Hybrid autos that use alternative fuels will keep gas prices down.”

A majority of the population sampled indicated that they felt in the most agreement with the statement of “Hybrid autos that use alternative fuels will keep gas prices down” (highlighted below) versus the remaining options. A mean value of 5.77 on a 1-7 scale, with 7 being the highest, proves that this field had the most agreement among the respondents. However, given a standard deviation of 2.157, there remains to be the most variance in this data set among the three.

“Hybrid autos that use alternative fuels will slow down global warming.”

Given a mean value of 4.06, respondents seemed to be less agreeable with the statement “Hybrid autos that use alternative fuels will slow down global warming” when compared to the other two fields. With that, a standard deviation of 2.133 indicates that there was much disagreement among the responses.

Hybrid Model	Mean	Standard Deviation
Hybrid autos that use alternative fuels will reduce fuel emissions.	5.10	2.052
Hybrid autos that use alternative fuels will keep gas prices down.	5.77	2.157
Hybrid autos that use alternative fuels will slow down global warming.	4.06	2.133

Testing hypotheses: probability to purchase

Listed below is a prediction by senior executives of the probability of the American public to purchase the various hybrid vehicle types within the next three years:

Probability of buying a very small (1 seat) hybrid auto within 3 years will be 5%.

Being as a significance level of .05 or lower renders the difference as significant; we reject the null hypothesis and accept the alternate. The actual probability of purchase in this field is 13.78% and the hypothesized probability is 5%.

Probability of buying a small (2 seat) hybrid auto within 3 years will be 5%.

Being as a significance level of .05 or lower renders the difference as significant; we reject the null hypothesis and accept the alternate. The actual probability of purchase in this field is 20.59% and the hypothesized probability is 5%.

Probability of buying a standard-size hybrid auto within 3 years will be 15%.

Being as a significance level of .05 or lower renders the difference as significant; we reject the null hypothesis and accept the alternate. The actual probability of purchase in this field is 30.12% and the hypothesized probability is 15%.

Probability of buying a standard-size synthetic fuel auto within 3 years will be 15%.

Being as a significance level of .05 or lower renders the difference as significant; we reject the null hypothesis and accept the alternate. The actual probability of purchase in this field is 40.17% and the hypothesized probability is 15%.

Probability of buying a standard-size electric auto within 3 years will be 20%.

Being as a significance level of .05 or lower renders the difference as significant; we reject the null hypothesis and accept the alternate. The actual probability of purchase in this field is 34.64% and the hypothesized probability is 20%.

Hybrid Model	Mean	Significance	Standard Deviation	Std. Error Mean
Probability of buying a very small (1 seat) hybrid auto within 3 years	13.78	.000	23.088	.730
Probability of buying a small (2 seat) hybrid auto within 3 years	20.59	.000	19.285	.610
Probability of buying a standard-size hybrid auto within 3 years	30.12	.000	21.205	.671
Probability of buying a standard-size synthetic fuel auto within 3 years	40.17	.000	21.465	.679
Probability of buying a standard-size	34.64	.000	22.090	.699

electric auto within 3 years

Estimated expected purchase quantity

Using the findings from the survey, estimate the number of vehicles of each of the following hybrid types that are expected to be purchased over the next 3 years:

Very Small (1-seat) hybrid auto

Over the next three years, 5,580,801 Very Small (1-seat) hybrid automobiles are expected to be purchased by Americans.

Small (2-seat) hybrid auto

Over the next three years, 5,580,801 Small (2-seat) hybrid automobiles are expected to be purchased.

Standard-size hybrid auto

Over the next three years, 16,742,610 Standard-size hybrid automobiles are expected to be purchased.

Standard-size electric auto

Over the next three years, 16,742,610 Standard-size hybrid automobiles are expected to be purchased.

Standard-size synthetic auto

Over the next three years, 22,323,480 Standard-size synthetic automobiles (highlighted below) represent the largest amount of the five types expected to be purchased.

Type of hybrid vehicle	# Expected to be Purchased
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Very Small (1-seat) hybrid auto	5,580,801
Small (2-seat) hybrid auto	5,580,801
Standard-size hybrid auto	16,742,610
Standard-size electric auto	16,742,610
Standard-size synthetic auto	22,323,480

Chapter 17: Differences Analysis

Target market descriptions for hybrid models

Apply appropriate differences analysis for each data set to determine the target market descriptions for each of the five hybrid models.

Gender demographic analysis:

Being as the significance level is below .05 for Super Cycle one-seater and Standard four-seater, it might be beneficial for the company to consider targeting consumers based upon gender for these models. The male mean of 3.50 for the Super Cycle one-seater model was significantly different than the female mean of 3.09. However on a scale of 1 to 7, with 7 being the highest; the male mean of 3.50 is not a positive value. Therefore, gender should not be included in the target market for the Super Cycle one-seater. Also, the significant gap in the mean values of the Standard four-seater model suggests that this model does not typically appeal to the male demographic.

As for the remaining models, Runabout Sport two-seater, Runabout with Luggage two-seater, and Economy four-seater, there is no significant difference among the male and female means for each model. The Super Cycle one-seater, Runabout Sport two-seater, Runabout with

Luggage two-seater, and Economy four-seater do not have a positive mean so it would not be beneficial to target either demographic based on age for these models. There does not appear to be a significant difference between the two demographics. Also, the Standard four-seater model is more appealing to the female demographic. It would not be beneficial for the company to target a specific gender for the following models, the Runabout Sports two-seater, Runabout with Luggage two-seater, or the Economy four-seater because there does not seem to be a larger preference between the models based on gender.

Gender			
Hybrid Model	Male Mean	Female Mean	Significance
Super Cycle one-seater	3.50	3.09	.000
Runabout Sport two-seater	4.24	4.29	.649
Runabout with Luggage two-seater	3.85	3.72	.293
Economy four-seater	3.54	3.45	.449
Standard four-seater	4.82	5.10	.007

Marital demographic analysis:

Being as the significance level is below .05 for Super Cycle one-seater, Runabout Sport two-seater, Runabout with Luggage two-seater, and Standard four-seater, it would be beneficial for the company to consider targeting consumers based upon marital status for these models. The unmarried mean of 4.09 for the Super Cycle one-seater model was significantly different than the married mean of 2.54. With this being said, the unmarried demographic should be targeted more

than the married for this model. The unmarried mean of 4.72 for the Runabout Sport two-seater model was significantly different than the married mean of 3.83. The unmarried mean of 3.53 for the Runabout with Luggage two-seater model was significantly different than the married mean of 4.03. The unmarried mean of 4.55 for the Standard four-seater model was significantly different than the married mean of 5.53. As for the remaining model, Economy four-seater, there is no significant difference among the unmarried and married means for each model. Therefore, it would not be beneficial for the company to target consumers a specific marital status.

Hybrid Model	Marital Status		
	Unmarried Mean	Married Mean	Significance
Super Cycle one-seater	4.09	2.54	.000
Runabout Sport two-seater	4.72	3.83	.000
Runabout with Luggage two-seater	3.53	4.03	.000
Economy four-seater	3.43	3.56	.285
Standard four-seater	4.55	5.53	.000

Age demographic analysis:

As for the age category, Super Cycle one-seater, Runabout Sport two-seater, Runabout with Luggage two-seater, Economy four-seater, and Standard four-seater all have significance levels below .05, indicating that there is a significant difference among the mean values. More specifically: for the Super Cycle one-seater model the mean values range from 2.55-4.94; the Runabout Sport two-seater model's mean values range from 3.42-5.73; the Runabout with Luggage two-seater model's mean values range from 3.43-4.67; the Economy four-seater

model's mean values range from 1.82-4.58; and the Standard four-seater model's mean values range from 4.16-5.56. Therefore, it would be beneficial for the company to utilize the age demographic when targeting consumers.

The Super Cycle one-seater and the Runabout Sport two-seater should target customers in the age category of 21. The age category of 30 had the strongest preference towards the Runabout with Luggage two-seater. The Economy four-seater would benefit most from target consumers in the age category of 47. Lastly, the Standard four-seater had the strongest preference within the age category of 42.

	Age Category					
Hybrid Model	70	57	42	30	21	Significance
Super Cycle one-seater	3.28	2.55	3.21	3.33	4.94	.000
Runabout Sport two-seater	4.37	3.42	4.34	4.17	5.73	.000
Runabout with Luggage two-seater	3.51	3.43	3.52	4.67	4.25	.000
Economy four-seater	4.00	4.58	3.55	2.48	1.82	.000
Standard four-seater	4.80	5.34	5.56	4.30	4.16	.000

Education demographic analysis:

In terms of the education category, Super Cycle one-seater, Runabout Sport two-seater, Runabout with Luggage two-seater, Economy four-seater, and Standard four-seater all have significance levels below .05, indicating that there is a significant difference among the mean values. More specifically: for the Super Cycle one-seater model the mean values range from 1.93-3.65; the Runabout Sport two-seater model's mean values range from 3.29-4.73; the

Runabout with Luggage two-seater model's mean values range from 3.15-4.63; the Economy four-seater model's mean values range from 2.66-4.83; and the Standard four-seater model's mean values range from 4.08-5.68. Therefore, it would be beneficial for the company to utilize the education category when targeting consumers.

The Super Cycle one-seater and the Runabout two-seater models appeal most to the education categories' of 9 to 14. The Runabout with Luggage two-seater is preferred most by the education categories of 14 and 19. The Economy four-seater and the Standard four-seater are mostly preferred by the education categories of 16 and 18. The education categories should all be kept in mind when developing the marketing strategy for each hybrid auto model.

Hybrid Model	Education Category					Significance
	9	12	14	16	18	
Super Cycle one-seater	3.63	3.65	3.58	2.69	1.93	.000
Runabout Sport two-seater	4.73	4.61	4.56	3.43	3.29	.000
Runabout with Luggage two-seater	3.32	3.22	4.63	4.35	3.15	.000
Economy four-seater	2.70	2.66	3.62	4.83	4.60	.000
Standard four-seater	4.08	4.87	4.93	5.68	5.61	.000

Income level analysis:

Based on income level chosen by respondents, Super Cycle one-seater, Runabout Sport two-seater, Runabout with Luggage two-seater, Economy four-seater, and Standard four-seater all have significance levels below .05, indicating that there is a significant difference among the mean values. More specifically: for the Super Cycle one-seater model the mean values range

from 1.80-2.57; the Runabout Sport two-seater model's mean values range from 2.64-5.09; the Runabout with Luggage two-seater model's mean values range from 2.34-4.71; the Economy four-seater model's mean values range from 2.68-5.50; and the Standard four-seater model's mean values range from 4.94-5.67. Therefore, it would be beneficial for the company to utilize the age demographic when targeting consumers.

The Super Cycle one-seater and the Runabout sports two-seater is preferred most by those in the income level of \$20,000. The Runabout with Luggage two-seater is preferred by the respondents who selected the income level of \$62,500. The Economy four-seater is preferred most by those who selected an income level of \$10,000. Lastly, the Standard four-seater is preferred by the respondents who selected \$150,000 as their income level. Each income level has a stronger preference so one hybrid model and this relationship should be considered when implementing the models marketing strategy.

Hybrid Model	Income Level					Sig.
	\$20,000	\$37, 500	\$62,500	\$100,000	\$150,000	
Super Cycle one-seater	4.25	3.57	2.57	2.62	1.80	.000
Runabout Sport two-seater	5.09	4.67	3.61	3.47	2.64	.000
Runabout with Luggage two-seater	3.07	4.71	4.45	2.61	2.34	.000
Economy four-seater	2.68	2.86	3.64	5.50	5.24	.000
Standard four-seater	4.49	4.87	5.23	5.31	5.67	.000

Hometown size analysis:

Based on the hometown size indicated by the respondents, Super Cycle one-seater, Runabout Sport two-seater, Runabout with Luggage two-seater, Economy four-seater, and

Standard four-seater all have significance levels below .05, indicating that there is a significant difference among the mean values. More specifically: for the Super Cycle one-seater model the mean values range from 2.38-4.25; the Runabout Sport two-seater model's mean values range from 3.23-5.26; the Runabout with Luggage two-seater model's mean values range from 2.32-5.08; the Economy four-seater model's mean values range from 2.56-4.24; and the Standard four-seater model's mean values range from 3.64-5.46. Therefore, it would be beneficial for the company to utilize the age demographic when targeting consumers.

The Super Cycle one-seater and the Runabout with Luggage two-seater both appeal to the respondents who selected the hometown size category of 1500. The Runabout Sport two-seater was preferred by those who selected a hometown size of 300. Lastly, The Economy four-seater and the Standard four-seater is preferred by those respondents who selected 750 as their hometown size. Based on the data below there does appear to be a significant difference in the mean values, meaning there is a definite preference for each model and hometown size.

Hybrid Model	Hometown Size					Significance
	5	55	300	750	1500	
Super Cycle one-seater	2.38	2.58	3.22	3.42	4.25	.000
Runabout Sport two-seater	3.23	3.51	5.26	4.41	5.25	.000
Runabout with Luggage two-seater	3.21	3.22	2.32	4.23	5.08	.000
Economy four-seater	3.38	3.53	4.06	4.24	2.54	.000
Standard four-seater	5.42	5.44	5.43	5.46	3.64	.000

Conclusion

Based on the significance levels and mean values produced in the statistical analysis, we can assign certain demographic profiles that would be beneficial to each of the hybrid models in determining the appropriate marketing strategy and target market. The demographic profiles for each model are as follows:

Super Cycle one-seater:

- Marital status
- Age
- Education
- Income level
- Hometown size

Runabout Sport 2-seater:

- Marital status
- Age
- Education
- Income level
- Hometown size

Runabout Luxury 2-seater:

- Marital status
- Age
- Education
- Income level

- Hometown size

Economy 4-seater:

- Age
- Education
- Income level
- Hometown size

Standard 4-seater:

- Gender
- Marital status
- Age
- Education
- Income level
- Hometown size

Chapter 18: Associative Analysis

Use each unique hybrid model demographic profile to determine whether or not statistically significant associations exist, and if they do, recommend the specific media vehicles for television, radio, magazine, and newspaper section.

Favorite Type of Television Show

See table on page 78 for all values explained below.

Marital Status & Hometown Size

Being as the Pearson Chi-Square significance level is above .05 for marital status and hometown size, there is no significant association among favorite type of television and marital

status or favorite type of television and hometown size in this survey. However, the most popular types of television shows indicated by these demographics were comedy, drama, and movies/mini-series.

The significance level for age, education level, and income level were all calculated through the Pearson Chi-Square test at .000. This indicates that these three demographic categories have a significant association with respondents' favorite type of television show.

Age Category

As you can see from the table below, the youngest age group favored science-fiction, reality, and comedy, respectively. The science-fiction category, at 38%, had the highest number of respondents from the age group of 21 selecting it. Based on the findings from the age demographic analysis conducted in chapter 17, respondents in this age group also indicated that they would prefer a super cycle 1-seater model; therefore, AAC should choose to market this model on science-fiction channels if they plan to target this age group.

The middle-age groups, between 30-57 years old, favored movies/mini-series, comedy, and drama, respectively. The movies/mini-series category, calculated at 18.4% for the 30 year group, 24.6% for the 42 year group, and 22.2% for the 57 year group, had the highest number of respondents from these age groups selecting it. Based on the findings from the age demographic analysis conducted in chapter 17, respondents in the age groups 42 and 57 also indicated that they would prefer a standard 4-seater model and respondents in the age group of 30 indicated they would prefer a runabout with luggage two-seater model; therefore, AAC should choose to market these models on movies/mini-series channels if they plan to target these age groups.

Lastly, the oldest age group favored movies/mini-series, news/documentary, and comedy, respectively. The categories of movies/mini-series, calculated at 19.5%, and news/documentary,

calculated at 19%, were favored by the highest number of respondents from the age group of 70. Based on the findings from the age demographic analysis conducted in chapter 17, respondents in this age group also indicated that they would prefer a standard 4-seater model; therefore, AAC should choose to market this model on television channels featuring movies/mini-series and news/documentaries if they plan to target this age group.

Level of Education

Each education level listed in the table appears to have one dominantly favored type of television show; compared to the age category, which had percentages spread throughout the board. Given that there is, indeed, a significant association among education and favorite type of television show, we have gathered the following:

41.8% of respondents who selected an education level of 9 also indicated that they favored reality television above all others listed. Based on the findings from the level of education demographic analysis conducted in chapter 17, respondents in this category also indicated that they would prefer a runabout sport two-seater model; therefore, AAC should choose to market this model on reality television channels if they plan to target this education level.

44.3 % of respondents who selected an education level of 12 also indicated that they favored movies/mini-series types of television shows above all other listed. 59.3 % of respondents who selected an education level of 14 also indicated that they favored comedy types of television shows above all others listed. 49.5% of respondents who selected an education level of 16 also indicated that they favored drama types of television shows above all other listed. 43.1% of respondents who selected an education level of 18 also indicated that they favored news/documentary types of television shows above all other listed.

Based on the findings from the level of education demographic analysis conducted in chapter 17, respondents that selected an education level of 12, 14, 16, or 18 also indicated that they would prefer a standard four-seater vehicle model. Given this information, we can determine that it would be beneficial for AAC, if they plan to target these education levels, to market the standard four-seater model on any, or all, of the following television show types: comedy, drama, movies/mini-series, and news/documentary.

Income Level

A significant relationship exists among respondents' income level and their preference of television show type. This relationship allows us to conclude the following:

41.4% of respondents who indicated an income level 20, or \$20,000, also indicated that they favored reality and science-fiction television equally. Based on the findings from the income level demographic analysis conducted in chapter 17, respondents who selected an income level of \$20,000 also indicated that they would prefer a runabout sport two-seater vehicle model; therefore, it would be beneficial for AAC to market this model on reality and/or science fiction channels if they plan to target this income level.

23% of respondents who indicated an income level of 37.5, or \$37,500, also indicated that they favored movies/mini-series television. Based on the findings from the income level demographic analysis conducted in chapter 17, respondents who selected an income level of \$37,500 also indicated that they would prefer a Standard four-seater vehicle model; therefore, it would be beneficial for AAC to market this model on movies/mini-series channels if they plan to target this income level.

24.7% of respondents who indicated an income level of 62.5, or \$62,500, also indicated that they favored comedy television. Based on the findings from the income level demographic

analysis conducted in chapter 17, respondents who selected an income level of \$62,500 also indicated that they would prefer a Standard four-seater vehicle model; therefore, it would be beneficial for AAC to market this model on comedy channels if they plan to target this income level.

23.4% of respondents who indicated an income level of 100, or \$100,000, also indicated that they favored drama television. Based on the findings from the income level demographic analysis conducted in chapter 17, respondents who selected an income level of \$100,000 also indicated that they would prefer an economy four-seater vehicle model; therefore, it would be beneficial for AAC to market this model on drama channels if they plan to target this income level.

41.4% of respondents who indicated an income level of 150, or \$150,000, also indicated that they favored the easy listening genre. Based on the findings from the income level demographic analysis conducted in chapter 17, respondents who selected an income level of \$150,000 also indicated that they would prefer a standard four-seater vehicle model; therefore, it would be beneficial for AAC to market this model on easy listening stations if they plan to target this income level.

Favorite Type of Television Show

Demographic		Comedy	Drama	Movies/ Mini- Series	News/ Documentary	Reality	Science- Fiction	Sports
Marital Status		19.1%	15.6%	19.7%	9.8%	14.1%	11.0%	10.7%
Hometown size		19.1%	15.6%	19.7%	9.8%	14.1%	11.0%	10.7%
	21	11.6%	7.4%	6.6%	2.5%	24.8%	38.0%	9.1%
	30	17.8%	17.8%	18.4%	2.3%	12.1%	6.3%	25.3%
	42	24.6%	19.1%	24.6%	7.8%	11.3%	6.6%	5.9%
	57	20.5%	17.6%	22.2%	13.0%	12.6%	6.3%	7.9%
Age	70	16.2%	11.9%	19.5%	19.0%	14.8%	10.0%	8.6%
	9	13.4%	7.7%	5.7%	6.7%	41.8%	15.5%	9.3%
	12	6.0%	7.0%	44.3%	4.7%	13.4%	16.4%	8.1%
Education	14	59.3%	3.7%	13.6%	7.5%	2.8%	6.1%	7.0%
	16	6.8%	49.5%	8.6%	10.8%	3.6%	4.5%	16.2%
	18	6.9%	2.8%	8.3%	43.1%	8.3%	11.1%	19.4%
	20	13.7%	11.3%	18.0%	6.3%	20.7%	20.7%	9.4%
Income	37.5	21.0%	13.1%	23.0%	6.7%	14.6%	8.5%	13.1%
Level	62.5	24.7%	19.6%	22.2%	9.3%	9.8%	5.2%	9.3%
	100	17.5%	23.4%	15.3%	16.8%	9.5%	8.0%	9.5%
	150	17.1%	17.1%	11.4%	25.7%	8.6%	10.0%	10.0%

Favorite Radio Genre

See table on page 83 for all values mentioned.

Marital Status & Hometown Size

Being as the Pearson Chi-Square significance level is above .05 for marital status and hometown size, there is no significant association among favorite radio genre and marital status or favorite radio genre and hometown size in this survey. However, the most popular radio genres indicated by these demographics were country, easy listening, and Jazz & Blues.

The significance level for age, education level, and income level were all calculated through the Pearson Chi-Square test at .000. This indicates that these three demographic categories have a significant association with respondents' favorite radio genre.

Age Category

As you can see from the table below, the youngest age group dominantly favored the pop & chart genre, with 71.9% of respondents in the age group of 21 selecting it. Based on the findings from the age demographic analysis conducted in chapter 17, respondents in this age group also indicated that they would prefer a Runabout Sport two-seater; therefore, AAC should choose to market this model on pop & chart stations if they plan to target this age group.

The 30 year old age group identified their favorite radio genre as talk radio, with 40.2% of respondents in this age group selecting it. . Based on the findings from the age demographic analysis conducted in chapter 17, respondents in this age group also indicated that they would prefer a Runabout with Luggage two-seater; therefore, AAC should choose to market this model on talk radio stations if they plan to target this age group.

The 42 year old age group identified their favorite radio genre as country radio, with 37.5% of respondents in this age group selecting it. . Based on the findings from the age

demographic analysis conducted in chapter 17, respondents in this age group also indicated that they would prefer a Standard four-seater; therefore, AAC should choose to market this model on country radio stations if they plan to target this age group.

The two oldest age groups in the sample indicated that they favored the easy listening genre, with 35.6% of respondents from the 57 year old and 47.6% of respondents from the 70 year old age group selected the easy listening genre. Based on the findings from the age demographic analysis conducted in chapter 17, respondents in the age groups of 70 and 57 also indicated that they would prefer a standard 4-seater model; therefore, AAC should choose to market this model on easy listening stations if they plan to target these age groups.

Level of Education

Given that there is, indeed, a significant association among education and favorite radio genre, we have gathered the following:

30.4% of respondents who selected an education level of 9 and 24.3% of respondents who selected an education level of 16, also indicated that they favored the easy listening genre. Based on the findings from the level of education demographic analysis conducted in chapter 17, respondents in the education category of 9 indicated that they would prefer a Runabout Sport two-seater model and respondents in the education category of 16 indicated that they would prefer a Standard four-seater model; therefore, AAC should choose to market these models on easy listening radio stations if they plan to target these education levels.

26.2% of respondents who selected an education level of 12 and 23.8% of respondents who selected an education level of 14, also indicated that they favored the country genre. Based on the findings from the level of education demographic analysis conducted in chapter 17, respondents in the education category of 12 and 14 indicated that they would prefer a Standard

four-seater model; therefore, AAC should choose to market this model on country radio stations if they plan to target these education levels.

34.7% of respondents who selected an education level of 18 also indicated that they favored the jazz and blues genre. Based on the findings from the level of education demographic analysis conducted in chapter 17, respondents in this education category indicated that they preferred the standard four-seater model; therefore, AAC should choose to market this model on jazz and blues radio.

Income Level

A significant relationship exists among respondents' income level and their preference of radio genre. This relationship allows us to conclude the following:

31.3% of respondents who indicated an income level 20, or \$20,000, also indicated that they favored the pop & chart genre. Based on the findings from the income level demographic analysis conducted in chapter 17, respondents who selected an income level of \$20,000 also indicated that they would prefer a runabout sport two-seater vehicle model; therefore, it would be beneficial for AAC to market this model on pop & chart stations if they plan to target this income level.

22.7% of respondents who indicated an income level of 37.5, or \$37,500, also indicated that they favored the country genre. Based on the findings from the income level demographic analysis conducted in chapter 17, respondents who selected an income level of \$37,500 also indicated that they would prefer a Standard four-seater vehicle model; therefore, it would be beneficial for AAC to market this model on country stations if they plan to target this income level.

26.8% of respondents who indicated an income level of 62.5, or \$62,500, and 30.7% of respondents who indicated an income level of 100, or \$100,000, also indicated that they favored the jazz and blues genre. Based on the findings from the income level demographic analysis conducted in chapter 17, respondents who selected an income level of \$62,500 also indicated that they would prefer a Standard four-seater vehicle model and respondents who selected an income level of \$100,000 also indicated that they would prefer an economy four-seater vehicle model; therefore, it would be beneficial for AAC to market these models on jazz and blues radio if they plan to target these income levels.

25.7% of respondents who indicated an income level of 150, or \$150,000, also indicated that they favored the easy listening genre. Based on the findings from the income level demographic analysis conducted in chapter 17, respondents who selected an income level of \$150,000 also indicated that they would prefer a standard four-seater vehicle model; therefore, it would be beneficial for AAC to market this model on easy listening radio if they plan to target this education level.

Favorite Type of Radio Genre

Demographic	Classic		Easy listening	Jazz & Blues	Pop & Chart	Talk	Classic Pop & Rock	
	Pop & Rock	Country						
Marital Status	7.4%	19.1%	22.9%	19.1%	18.5%	13.0%	7.4%	
Hometown size	7.4%	19.1%	22.9%	19.1%	18.5%	13.0%	7.4%	
Age	21	.8%	10.7%	3.3%	3.3%	71.9%	9.9%	.8%
	30	5.2%	19.0%	9.2%	6.9%	19.5%	40.2%	5.2%
	42	4.7%	37.5%	9.4%	32.4%	10.5%	5.5%	4.7%
	57	10.9%	12.6%	35.6%	21.8%	12.6%	6.7%	10.9%
	70	12.4%	9.0%	47.6%	19.0%	3.3%	8.6%	12.4%
Education	9	5.7%	14.9%	30.4%	19.1%	22.2%	7.7%	5.7%
	12	4.4%	26.2%	20.5%	15.4%	21.5%	12.1%	4.4%
	14	10.3%	23.8%	16.4%	17.3%	15.4%	16.8%	10.3%
	16	9.5%	12.2%	24.3%	20.7%	14.9%	18.5%	9.5%
	18	9.7%	8.3%	27.8%	34.7%	16.7%	2.8%	9.7%
Income Level	20	5.1%	13.7%	25.8%	10.9%	31.3%	13.3%	5.1%
	37.5	6.4%	22.7%	17.8%	14.6%	21.3%	17.2%	6.4%
	62.5	11.9%	18.0%	22.2%	26.8%	7.2%	13.9%	11.9%
	100	9.5%	27.0%	21.9%	30.7%	6.6%	4.4%	9.5%
	150	4.3%	8.6%	41.4%	27.1%	12.9%	5.7%	4.3%

Favorite Type of Magazine

See table on page 88 for all values mentioned.

Marital Status & Hometown Size

Being as the Pearson Chi-Square significance level is above .05 for marital status and hometown size, there is no significant association among favorite type of magazine and marital status or favorite type of magazine and hometown size in this survey. However, the most popular magazine types indicated by these demographics were Music & Entertainment and Family & Parenting.

The significance level for age, education level, and income level were all calculated through the Pearson Chi-Square test at .000. This indicates that these three demographic categories have a significant association with respondents' favorite magazine type.

Age Category

As you can see from the table below, music & entertainment magazines were favored by the following age groups:

- 21, with 36.4% of the group selecting it
- 57, with 22.6% of the group selecting it
- 70, with 37.6% of the group selecting it

Based on the findings from the age demographic analysis conducted in chapter 17, respondents in the age group of 21 also indicated that they would prefer a Runabout Sport two-seater and respondents in the age groups of 57 and 70 indicated that they would prefer a standard

4-seater; therefore, AAC should choose to market these two models in music & entertainment magazines if they plan to target these age groups.

The 30 and 42 year old age groups identified their favorite magazine type as family & parenting, with 35.6% of respondents in the 30 year age group selecting it and 33.2% of respondents in the 42 year old age group selecting it. Based on the findings from the age demographic analysis conducted in chapter 17, respondents in the age group of 30 indicated that they would prefer a Runabout with Luggage two-seater and respondents in the age group of 42 indicated that they would prefer a Standard four-seater; therefore, AAC should choose to market these models in family & parenting magazines if they plan to target these age groups.

Level of Education

Given that there is, indeed, a significant association among education and favorite magazine type, we have gathered the following:

Music & entertainment was most favored by 40.2% of respondents with an education level of 9 and 45.3% of respondents with an education level of 12 also indicated that they favored the easy listening genre. Based on the findings from the level of education demographic analysis conducted in chapter 17, respondents with an education level of 9 indicated that they would prefer a Runabout Sport two-seater model and respondents in the education category of 12 indicated that they would prefer a Standard four-seater model; therefore, AAC should choose to market these models in music & entertainment magazines if they plan to target these education levels.

Family & parenting magazines were most favored by 24.8% of respondents with an education level of 14, 31.1% of respondents with an education level of 16, and 26.4% of respondents with an education level of 18. Based on the findings from the level of education

demographic analysis conducted in chapter 17, respondents in the education categories of 14, 16, and 18 indicated that they would prefer a Standard four-seater model; therefore, AAC should choose to market this model in family & parenting magazines if they wish to target these education levels.

Income Level

A significant relationship exists among respondents' income level and their preference of radio genre. This relationship allows us to conclude the following:

Music & entertainment magazines were most favored by 42.2% of respondents who indicated an income level 20, or \$20,000, and 36.4% of respondents who indicated an income level of 37.5, or \$37,500. Based on the findings from the income level demographic analysis conducted in chapter 17, respondents who selected an income level of \$20,000 also indicated that they would prefer a runabout sport two-seater vehicle model and respondents who selected an income level of \$37,500 also indicated that they would prefer a Standard four-seater vehicle model; therefore, it would be beneficial for AAC to market these models in music & entertainment magazines if they wish to target these income levels.

Family & parenting magazines were most favored by 33.5% of respondents who indicated an income level of 62.5, or \$62,500. Based on the findings from the income level demographic analysis conducted in chapter 17, respondents who selected an income level of \$62,500 also indicated that they would prefer a Standard four-seater vehicle model; therefore, it would be beneficial for AAC to market this model in family & parenting magazines if they wish to target this income level.

Business & money were most favored by the two highest income categories: calculated at 26.3% of respondents with an income level of 100, or \$100,000, and 44.3% of respondents with

an income level of 150, or \$150,000. Based on the findings from the income level demographic analysis conducted in chapter 17, respondents who selected an income level of \$100,000 also indicated that they would prefer a standard four-seater vehicle model and respondents who selected an income level of \$150,000 also indicated that they would prefer an economy four-seater vehicle model; therefore, it would be beneficial for AAC to market these models in business & money magazines if they wish to target these income levels.

Favorite Type of Magazine

Demographic	Business & Money	Music & Entertainment	Family & Parenting	Sports & Outdoors	Home & Garden	Cooking Food & Wine	Trucks Cars & Motorcycles
Marital Status	9.8%	28.1%	18.3%	8.7%	8.9%	8.7%	9.8%
Hometown size	9.8%	28.1%	18.3%	8.7%	8.9%	8.7%	9.8%
	21	.0%	36.4%	8.3%	21.5%	.0%	27.3%
	30	4.0%	30.5%	35.6%	4.0%	5.2%	7.5%
	42	3.9%	19.9%	33.2%	9.4%	9.0%	5.5%
	57	20.9%	22.6%	5.4%	7.1%	20.5%	10.0%
Age	70	14.8%	37.6%	6.2%	6.2%	3.8%	6.7%
	9	8.8%	40.2%	11.9%	12.4%	7.7%	8.2%
	12	11.4%	45.3%	6.4%	10.4%	3.7%	12.1%
Education	14	1.9%	17.8%	24.8%	7.9%	12.1%	14.5%
	16	14.0%	8.6%	31.1%	6.3%	13.1%	4.1%
	18	16.7%	15.3%	26.4%	1.4%	11.1%	8.3%
	20	2.7%	42.2%	10.5%	11.7%	4.3%	16.0%
Income	37.5	4.1%	36.4%	17.5%	10.5%	7.0%	9.3%
Level	62.5	5.2%	17.0%	33.5%	6.7%	17.0%	5.7%
	100	26.3%	8.0%	20.4%	5.1%	13.1%	8.0%
	150	44.3%	5.7%	4.3%	1.4%	4.3%	4.3%

Favorite Newspaper Section

See table on page 92 for all values mentioned.

Marital Status & Hometown Size

Being as the Pearson Chi-Square significance level is above .05 for marital status and hometown size, there is no significant association among favorite newspaper section and marital status or favorite newspaper section and hometown size in this survey. However, the most popular newspaper sections indicated by these demographics were local news, sports, and entertainment, respectively.

The significance level for age, education level, and income level were all calculated through the Pearson Chi-Square test at .000. This indicates that these three demographic categories have a significant association with respondents' favorite newspaper section.

Age Category

The local news section of the newspaper was most favored by the following age groups:

- 42, with 29.3% of the group selecting it
- 57, with 26.4% of the group selecting it
- 70, with 30.0% of the group selecting it

Based on the findings from the age demographic analysis conducted in chapter 17, respondents in the age groups of 42, 57, and 70 indicated that they would prefer a standard 4-seater; therefore, AAC should choose to market these two models in music & entertainment magazines if they plan to target these age groups.

The 21 and 30 year old age groups identified sports as their favorite newspaper section, with 41.3% of respondents in the 21 year age group selecting it and 39.1% of respondents in the 30 year old age group selecting it. Based on the findings from the age demographic analysis

conducted in chapter 17, respondents in the age group of 21 indicated that they would prefer a Runabout Sport two-seater and respondents in the age group of 30 indicated that they would prefer a Runabout with Luggage two-seater; therefore, AAC should choose to market these models in the sports section of newspapers if they plan to target these age groups.

Level of Education

Given that there is, indeed, a significant association among education and favorite newspaper section, we have gathered the following:

The entertainment section was most favored by the education level of 9, with 48.5% of respondents in this category selecting it. . Based on the findings from the level of education demographic analysis conducted in chapter 17, respondents with an education level of 9 indicated that they would prefer a Runabout Sport two-seater model; therefore, AAC should choose to market this model in the entertainment section of newspapers if they wish to target this education level.

The sports section was most favored by the education level of 12, with 28.5% of respondents in this category selecting it. Based on the findings from the level of education demographic analysis conducted in chapter 17, respondents in the education category of 12 indicated that they would prefer a Standard four-seater model; therefore, AAC should choose to market this model in the sports section of newspapers if they wish to target this education level.

The local news section was most favored by the education level of 14, with 38.3% of respondents in this category selecting it. Based on the findings from the level of education demographic analysis conducted in chapter 17, respondents in the education category of 14 indicated that they would prefer a Standard four-seater model; therefore, AAC should choose to market this model in the sports section of newspapers if they wish to target this education level.

The national news section was most favored by the education level of 16, with 27% of respondents in this category selecting it, and the education level of 18, with 54.2% of respondents in this category selecting it. Based on the findings from the level of education demographic analysis conducted in chapter 17, respondents in the education categories of 16 and 18 indicated that they would prefer a Standard four-seater model; therefore, AAC should choose to market this model in the national news section of newspapers if they wish to target these education levels.

Income Level

A significant relationship exists among respondents' income level and their preference of newspaper section. This relationship allows us to conclude the following:

The sports section of the newspaper was most favored by an income level 20, or \$20,000, with 29.7% of respondents selecting it, and an income level of 37.5, or \$37,500, with 24.8% of respondents selecting it. Based on the findings from the income level demographic analysis conducted in chapter 17, respondents who selected an income level of \$20,000 also indicated that they would prefer a runabout sport two-seater vehicle model and respondents who selected an income level of \$37,500 also indicated that they would prefer a Standard four-seater vehicle model; therefore, it would be beneficial for AAC to market these models in the sports sections of the newspaper if they wish to target these income levels.

The local news section of the newspaper was favored by the following income levels:

- 62.5, or \$62,500, with 29.9% selecting it
- 100, or \$100,000, with 25.5% selecting it
- 150, or \$150,000, with 31.4% selecting it

Based on the findings from the income level demographic analysis conducted in chapter 17, respondents who selected income levels of \$62,500 and \$100,000 also indicated that they would prefer a Standard four-seater vehicle model and respondents who selected an income level of \$150,000 also indicated that they would prefer an economy four-seater vehicle model; therefore, it would be beneficial for AAC to market these models in the local news section if they wish to target these income levels.

Favorite Newspaper Section

		Editorial	Business	Local news	National news	Sports	Entertainment
Marital Status		7.8%	9.7%	24.9%	18.1%	21.3%	18.2%
Hometown size		7.8%	9.7%	24.9%	18.1%	21.3%	18.2%
	21	3.3%	7.4%	19.0%	13.2%	41.3%	15.7%
	30	5.7%	6.9%	14.4%	16.7%	39.1%	17.2%
	42	8.2%	9.8%	29.3%	25.4%	11.3%	16.0%
	57	10.5%	13.8%	26.4%	16.3%	11.7%	21.3%
Age	70	8.6%	8.6%	30.0%	15.2%	18.1%	19.5%
	9	5.7%	.0%	12.4%	9.8%	23.7%	48.5%
	12	7.0%	11.4%	24.8%	15.1%	28.5%	13.1%
Education	14	8.9%	12.1%	38.3%	8.4%	25.7%	6.5%
	16	9.5%	14.0%	25.7%	27.0%	10.4%	13.5%
	18	8.3%	8.3%	16.7%	54.2%	5.6%	6.9%
	20	7.8%	7.8%	20.7%	12.5%	29.7%	21.5%
Income	37.5	6.4%	11.1%	23.6%	16.3%	24.8%	17.8%
Level	62.5	8.8%	7.7%	29.9%	23.2%	13.4%	17.0%
	100	10.9%	10.2%	25.5%	21.9%	13.9%	17.5%
	150	5.7%	14.3%	31.4%	25.7%	10.0%	12.9%

Lifestyles of possible target markets***Super Cycle one-seater; 120+ mpg city:***

Based on the correlations we were able to discover that there remains a direct or positive relationship among the Super Cycle one-seater and the Novelist, Innovator, and Trendsetter lifestyles. In other words, these three lifestyles have a higher preference for this model. In contrast, the lifestyle choices of Forerunner, Mainstream, and Classic were all inversely related to the preference of this model. Therefore, these three lifestyle choices are very unlikely to show a preference for this model. The lifestyle category of a Novelist has the highest correlation to the Super Cycle one-seater model, with a correlation value of .788.

Runabout Sport two-seater; 90 mpg city, 80 mpg highway:

Based on the correlations we were able to conclude that there is a direct or positive relationship among the Runabout Sport two-seater and the Novelist, Innovator, and Trendsetter lifestyles. In other words, these three lifestyles have a higher preference for this model. In contrast, the lifestyle choices of Forerunner, Mainstream, and Classic were all inversely related to the preferences of this model; meaning these three lifestyles are unlikely to show a preference for this model. The lifestyle category of an Innovator has the highest correlation to the Runabout Sport two-seater model, with a correlation value of .731.

Runabout with Luggage two-seater; 80 mpg city, 70 mpg highway:

Based on the correlations we were able to conclude that there is a direct or positive relationship among the Runabout Sport two-seater and the Novelist, Innovator, and Trendsetter lifestyles. In other words, these three lifestyles have a higher preference for this model. In contrast, the lifestyle choices of Forerunner, Mainstream, and Classic were all inversely related

to the preferences of this model. The lifestyle category of a Trendsetter has the highest correlation to the Runabout with Luggage two-seater model, with a correlation value of .719.

Economy four-seater; 70 mpg city, 60 mpg highway:

The correlation for the Economy four-seater model is linked to an inverse relationship among the Novelist, Innovator, and Trendsetter lifestyles, which indicates that this portion of the population does not prefer this model. The positive correlation associated with the Forerunner, Mainstreamer, and Classic lifestyles indicates their preference for this specific model. The lifestyle choice of a Forerunner has the highest correlation to the Economy four-seater model, with a correlation of .731.

Standard four-seater; 60 mpg city, 50 mpg highway:

The correlation for the Economy four-seater model is linked to an inverse relationship among the Novelist, Innovator, and Trendsetter lifestyles, which indicates that this portion of the population does not prefer this model. The positive correlation associated with the Forerunner, Mainstreamer, and Classic lifestyles indicates their preference for this specific model. The Mainstreamer lifestyle category has the highest correlation to the Standard four-seat model, with a correlation value of .746.

	Novelist	Innovator	Trendsetter	Forerunner	Mainstreamer	Classic
Super Cycle one-seater	.788	.495	.195	-.315	-.417	-.378
Runabout	.547	.731	.218	-.331	-.403	-.303
Sport two-seater						

Runabout with	.119	.140	.719	-.228	-.195	-.070
Luggage two-seater						
Economy four-seater	-.352	-.306	-.179	.731	.366	.227
Standard four-seater	-.424	-.372	-.173	.346	.746	.280

Chapter 19: Segmentation Analysis

Analysis of independent variables relative to each hybrid model

In summary form, list statistically significant independent variables, interpret these findings in regards to each hybrid model concerned, identify relative importance, and assess strength of the independent variables as they join to predict the preferences for each hybrid model concerned.

Super Cycle one-seater summary

Based on the regression analysis we have determined that the significant independent variables include marital status, income level, hometown size, age, number of people in household, level of education, and gender for the Super Cycle one-seater model. The calculated adjusted r for this model is 0.6, which means that the model can explain 60% of the variance in the dependent variable. An r score of 0.6 indicates that the strength of the overall linear relationship for this model is somewhat strong. The only variable that is directly related to the dependent variable is the hometown size. The most important independent variable, in terms of a beta value of .341, was hometown size for this model.

The remaining six independent variables, in terms of importance, are; gender, marital status, level of education, income level, age, and number of people per household, respectively.

Runabout Sport two-seater summary

Based on the regression analysis we have determined that the significant independent variables include income level, hometown size, number of people in the household, age, level of education, “gasoline emissions contribute to global warming”, and marital status for the Runabout Sports two-seater. The calculated adjusted r square for this model is .564, which means that the model can explain 56.4% of the variance in the dependent variable. An r score of .567 indicates that the strength of the overall linear relationship for this model is somewhat strong. Marital status, income level, gender, level of education, number of people in household, “gasoline emission contributes to global warming “and age are all negative values which means that they are inversely related to the dependent variable. The only variables that are directly related to the dependent variable are the hometown size and marital status. For the Runabout Sport two-seater, the most important independent variable, in terms of beta value of .378, was hometown size. The remaining six independent variables, in terms of importance, are; “gasoline emission contributes to global warming”, marital status, the believe that gasoline emissions contribute to global warming, education level, income level, age, hometown size, and the number of people per household, respectively.

Runabout with Luggage two-seater summary

Based on the regression analysis we have determined that the significant independent variables include hometown size, education level, and marital status, number of people per household, “hybrid automobiles that use alternative fuels will reduce fuel emissions”, and “Americans use too much gasoline” for the Roundabout with Luggage two-seater. The

calculated adjusted r square for this model is .394, which means that the model can explain 39.4% of the variance in the dependent variable. An r score of .399 indicates that the strength of the overall linear relationship for this model is weak. The variables that are directly related to the dependent variable are the hometown size, marital status, education, and “Americans use too much gasoline”, respectively. The remaining independent variables all possess negative values, making them inversely related to the dependent variable. For the Runabout with Luggage two-seater, the most important independent variable, in terms of beta value of .494, was hometown size.

Economy four-seater summary

Based on the regression analysis we have determined that the significant independent variables include income level, level of education, age, size of hometown, and “hybrid autos that use alternative fuels will keep gas prices down” for the Economy four-seater. The calculated adjusted r square for this model is .565, which means that the model can explain 56.5% of the variance in the dependent variable. An r score of .567 indicates that the strength of the overall linear relationship for this model is somewhat weak. The variables that are directly related to the dependent variable are age, education level, income level, and “hybrid autos that use alternative fuels will keep gas prices down.” The remaining independent variable, hometown size, possesses a negative value, making it inversely related to the dependent variable. For the Economy four-seater, the most important independent variable, in terms of beta value of .371, was age.

Standard four-seater summary

Based on the regression analysis we have determined that the significant independent variables include hometown size, level of education, number of people per household, age, income level, gender, “we should be looking for gasoline substitutes”, and “gasoline prices will

remain high in the future” for the Standard four-seater model. The calculated adjusted r square for this model is .471, which means that the model can explain 47.1% of the variance in the dependent variable. An r score of .476 indicates that the strength of the overall linear relationship for this model is somewhat weak. The only variable that is indirectly related to the dependent variable is the hometown size. The remaining variables are all directly related to the dependent variable and the most important independent variable, in terms of a beta value of .400, was the number of people per household.

Beta Values for Independent Variables					
	Super Cycle one-seater	Runabout Sport two-seater	Runabout with Luggage two-seater	Economy four-seater	Standard four-seater
Gender	-.106	NA	NA	NA	.071
Marital Status	-.195	.076	.291	NA	NA
Income Level	-.280	-.313	-.233	.340	.076
Hometown size	.341	.378	.494	-.208	-.405
Age	-.320	-.325	-.207	.371	.292
# of people in household	-.342	-.484	-.149	NA	.400
Education	-.217	-.188	.237	.354	.317
Gasoline emission contribute to global warming	NA	-.071	NA	NA	NA
Hybrid autos that use alternative fuels will reduce fuel emissions	NA	NA	-.060	.120	NA
Americans use too much gasoline.	NA	NA	.057	NA	NA

We should be looking for gasoline substitutes.	NA	NA	NA	NA	.050
Gasoline prices will remain high in the future.	NA	NA	NA	NA	-.046

Discussion

The issues of automobiles and global warming have rapidly become a growing issue that car manufactures are dealing with daily. Advanced Auto Concepts, a new division of a large and multinational automobile manufacturer, ZEN Motors, headquartered in the United States has been selected to help reengineer existing models or develop complete new models of automobiles.. The large majority of automobiles facing elevated sales is small and fuel efficient automobiles that are being imported into the United States. The need for marketing research is quickly apparent and the need for a hybrid or alternative fuel automobile is needed in the ZEN Motors lineup.

After deciding that marketing research is needed, we defined which research objectives would be useful to answer his problem of why Americans are straying from the larger Automobiles ZEN Motors is manufacturing. A broad selection of hybrid and alternative fuel models are formed, ranging from very small to large. Next, consumer's opinions on the potential models through conducting focus groups, surveys, and then analyze the data he has received to determine if his efforts will be sufficient in revamping ZEN Motors should be gathered. Different types of research design, such as exploratory, descriptive, and casual research, were utilized throughout the project to gain more knowledge about the consumers' attitudes towards automobiles and global warming. Also, consumers' actual intents to purchase a hybrid or fuel efficient automobile and what would ultimately make them choose a ZEM Motors model over

their competitors must be determined. With this being said, exploratory research would be helpful in this situation to gather further background information about their prospective consumers.

The focus group aimed to determine their overall opinion on the correlation between global warming and automobiles, and their general automobile preferences. Important information regarding the planning and implementation of the focus group was constructed in a planning document for the focus group. The planning document contained the participant profile, recruitment protocol, potential screening questions, logistics for the focus group session, and the moderator's guide. The planning document ensures that the focus group session will run smoothly and effectively gather the information needed. The participant profile aids in identifying the type of individual that would be useful to target in order to answer the research question at hand. The participant profile that was constructed aimed to target both male and females in the age range of twenty-five to thirty-five who are married with no children and enjoy the same type of leisure activities. Also, they are currently employed, have a college education, and are not current owners of a hybrid or alternative fuel automobile. After the participant profile was developed, Nick must determine the recruitment process that will result in the findings of these particular participants. Screening surveys must be handed out at grocery stores, fitness centers, and shopping centers. A magazine mailing list would also be useful to identify participants that share the same leisure activities. Screening questions were drafted to implement the screening process. The moderator's guide overs a step-by-step script for the moderator. All aspects of this planning document are essential to successfully answer the question at hand.

After the completion of the focus group planning document, we must determine which types of survey methods would be useful, draft a survey, and recommend scale formats for the

constructs. It is concluded that it would be most beneficial to implement an online survey because it would be most convenient for the participants. Convenience is important to keep in mind when conducting surveys. The more convenient it is to complete, the more responses you are likely to receive. An online survey is not just convenient for the participants' but also for those analyzing the information that is retrieved. When drafting the survey, it is crucial that the ability to measure the responses in kept in check.

All American households was declared as the population for ZEN Motors should strive to survey. The sampling selection step is critical to ensure that an accurate representation is constructed. Sample frames were analyzed to determine which method would gather the most accurate representation of all American households. With the population size being roughly 111 million, a probability online panel would be ideal if funds permitted. Determining the cost associated with conducting an online survey was completed and the lower the sample size and error, the higher the expected costs were.

In order to summarize basic findings for the sample, a descriptive analysis of the survey was conducted. Using the frequency concept we were able to obtain a frequency distribution and a mode of each category in the survey; resulting in definition of a demographic composition of the sample, the automobile ownership profile, and current vehicle ownership. In the demographic composition we calculated the percentages of male/female respondents, married/unmarried respondents, hometown size of respondents, total number of people in a household indicated by respondents, age groups indicated by respondents, income level indicated by respondents, education level indicated by respondents, job category indicated by respondents, and dwelling type indicated by respondents. With this information, we were able to establish the most common answers among respondents for each category. The same analysis was conducted to

establish the automobile ownership profile of respondents in the survey. The variables included in this output were primary vehicle price category, primary vehicle type, and type of commuting, and a mode, or highest percentage, for each category was indicated. The percentages used to interpret current vehicle ownership were from respondents who indicated they own an SUV or van, luxury vehicle, or standard vehicle. Utilizing the descriptive statistics of the survey, we were also able to interpret how respondents feel about global warming and the use of gasoline, opinions about the effects of the use of various kinds of hybrid models, what size of new vehicles people believe are likely to have the most positive effects, which type of hybrid vehicle is most/least attractive to respondents, and feelings about hybrid vehicles. The mean value for each category helped us to determine how the overall population feels about each corresponding statement or variable. The standard deviation allowed us to determine the amount of variance among respondents in each corresponding statement or variable.

Based on the findings from the survey combined with the estimated probabilities established by senior management for purchase quantity, we were able to conduct a one sample t-test and interpret the output by accepting or rejecting the null hypothesis and indicating the actual probability of purchase in each field. With this information, we were able to calculate the estimated number of vehicles of each hybrid model to be purchased over the next three years.

Using an independent samples T-test, we were able to apply appropriate differences analysis and interpret each category's significance level and mean value to determine the target market descriptions for each of the five possible hybrid models. The independent variables include: gender, marital status, age, education, income, and hometown size.

In our findings, we used each hybrid vehicle's unique demographic profile to determine if statistically significant associations exist, and if they did we recommended specific media

vehicles for radio, television, newspaper, and magazines for each. In order to gather this information we conducted a cross-tabulations (with chi-square) analysis and interpreted the output provided. We were also able to interpret what significant associations existed among automobile preference and lifestyle indicated by respondents in order to establish what advertising message would be most appropriate for each vehicle.

Based on the multiple regression analysis, we were able to form a summary analysis of each hybrid model. The summary analysis includes the following: list of statistically significant independent variables, interpreted findings in regards to each hybrid model concerned, identification of relative importance per independent variable, and assessment of the strength of independent variables as they join to predict the preferences for each hybrid model concerned.

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