

Consumers' Tire-Buying Habits and Their Knowledge of Tire Maintenance, Recycling, and Disposal

November 2003



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Table of Contents

Acknowledgments	iv
Executive Summary	1
Tables	3
A Review of Existing Literature	7
Chapter Summary	9
Introduction	11
Methodology.....	12
Search of Online Databases	12
Search on the Web	12
Personal Contacts.....	12
Findings	13
Consumers' Tire-Buying Behaviors and General Knowledge of Proper Tire Maintenance and Safety	13
What Do Consumers Know About Tire Recycling and Disposal?	15
Hazards and Environmental Concerns Related to Discarded Tires	16
Tire-Related Marketing Communication Efforts.....	17
Tire Recycling and Disposal Campaigns	17
Tire Safety and Maintenance Campaigns	19
Conclusion.....	21
Focus Group Findings.....	23
Chapter Summary	25
Introduction	27
Methodology.....	28
Interview plan	28
Findings	30
Recent Tire Purchase Information	30
Methods Used for Tire Shopping.....	32
Tire Purchasing Criteria.....	36
Consumer Knowledge and Behaviors: Tire Maintenance and Safety	38
Location of Tire Maintenance.....	42
Consumer Knowledge: Tire Recycling and Disposal	44
Knowledge of Retreaded Tires	45
General Attitude Toward Recycling	46
Limitations of the Findings.....	47
Conclusions	48
Findings from the Statewide Telephone Survey	51

Introduction	53
Methodology.....	53
Questionnaire Development.....	53
Findings	54
Demographic Characteristics of Survey Respondents	54
Languages of Drivers Surveyed.....	57
Knowledge and Behaviors Related to Tire Maintenance and Safety.....	63
Recent Tire Purchases by Consumers.....	73
Tire Purchasing Criteria.....	77
Knowledge, Beliefs, and Behaviors Regarding Tire Recycling and Disposal.....	97
Familiarity with Tire Recycling and Disposal Campaigns	106
Key Informant Interviews With Retail Tire Professionals.....	113
Chapter Summary	115
Introduction	116
Methodology and Sample	116
Results	117
Retailers’ Perceptions of Consumers’ Tire Knowledge.....	117
Questions Consumers Ask about Tires.....	117
Retailers’ Perceptions of the Primary Factors that Influence Tire-Buying Behaviors.....	118
Retailers’ Beliefs about the Relationship Between Tire-Buying Behaviors and Ethnicity.....	118
Retailers’ Beliefs about Consumers’ Tire Maintenance Practices.....	118
Retailers’ Communication to Consumers Regarding Tire Maintenance	119
Retailers’ Beliefs About the Influence of Tire Sales Personnel.....	120
Customers’ Tire Disposal and Recycling Questions and Knowledge	120
Tire Disposal and Recycling Information Provided by Retailer.....	121
Discussion and Recommendations	121
Limitations.....	122
Recommendations.....	123
Appendices.....	127
Appendix A: Key Online Resources.....	128
Appendix B: Personal Contacts.....	130
Appendix C: National and California’s Waste Tire Diversion and Disposal	132
Appendix D: Products Derived From Recycled Tires.....	133
Appendix E: Los Angeles Tire Amnesty Brochure	134
Appendix F: Tire Value—Miles Per Dollar Calculations	135
Appendix G: CIWMB Focus Group Questions.....	136
Appendix H: Purchasing Criteria.....	137
Appendix I: Consumer Knowledge and Behaviors: Tire Maintenance and Safety	138
Appendix J: Consumer Knowledge of Tire Recycling and Disposal	139

Appendix K: Familiarity with Tire Recycling/Disposal Campaigns	140
Appendix L: Focus Group Participation Survey.....	141
Appendix M: Telephone Survey Instrument	143
Appendix N: Key Informant Interview Guide.....	158
California Integrated Waste Management Tire Project	158
Introduction.....	158
Questions	158
After the Interview is Completed.....	160
Appendix O: Profile of Sample	161
Appendix P: Key Informant Responses.....	162
After the Interview Is Completed	173
References	174

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Executive Summary

The following report represents the culmination of approximately one year of research conducted by California State University, Chico, and IMC Productions under contract with the California Integrated Waste Management Board (CIWMB). The purpose of the research was twofold: 1) to explore consumers' tire purchase decision processes and behaviors; and 2) to determine consumers' general knowledge about tires, tire maintenance, recycling, and disposal.

The research began with a literature review that assessed the extent of existing information on the research topic. The findings from this stage of the research provided a framework for the second stage—five multi-language focus groups—where consumer purchasing behaviors and general tire knowledge were explored in greater depth. The third stage of the research—telephone surveys—examined the extent to which these purchasing behaviors and general tire knowledge were operational across a representative section of the consumer population in California. As a final stage of research, and complementing the previous three stages, key informant interviews were conducted with retail tire personnel across the state with the objective of gaining their perspective of consumer tire purchasing behavior and general tire knowledge. Each stage of the research is fully documented in this report.

As indicated in the literature review, there is little documented and reliable information about how consumers go about making tire-purchasing decisions. The body of data on consumer knowledge of tires, tire maintenance, recycling, and disposal is slim. Participants in the focus groups provided more insight into these topics. Their tire purchases were primarily prompted by concerns for wear and safety, and where they purchased their tires was most often a strategic choice related to price, convenience, and recommendations from family and friends. Brand name was the most consistent criteria used to select tires, as well as previous experience with a brand. Most participants were familiar with tire maintenance (for example, checking tire pressure, rotation), but the accuracy of their knowledge and the extent to which they engaged in maintenance varied.

Nearly all focus group participants were familiar with the ways tires can be recycled, with health/environmental hazards associated with discarded tires, and with the fees paid to dealers to dispose of used tires. Very few were familiar with the California Tire Recycling Act of 1989 or any kind of tire recycling and/or disposal campaigns.

Telephone surveys were completed during the spring of 2003 with a total of 1010 randomly selected California drivers, approximately 200 each in English, Spanish, Vietnamese, Mandarin and Tagalog (native language of the Philippines). A sample of 200 has an associated sampling error of +/-6.9 percent with 95 percent confidence that the sample represents the population from which it was selected. In addition to socio-demographics, telephone survey data were collected on five topics:

- a. Knowledge and behaviors related to tire maintenance and safety.
- b. Recent tire purchase information.
- c. Tire purchasing criteria.
- d. Knowledge of tire recycling and disposal.
- e. Familiarity with tire recycling and disposal campaigns.

Significant differences in the socio-demographics of the five language groups were found for years of driving experience, numbers and types of vehicles owned, average number of miles

driven each year, education levels, household income, and age. A multinomial logit (non-linear logistic regression analysis) performed on the data revealed that language was the independent variable that best explained the differences in responses to the questions on the survey. Responses to individual questions by survey respondents for all five of the survey topics were statistically different based on respondent language. Because of these differences, consumer education efforts should be developed and targeted on the basis of language.

The key informant interviews with retail tire professionals indicate some gaps between what they believe to be true about consumer tire knowledge and buying behavior and the results of the focus groups and surveys conducted for this research project. For example, while the interviewees accurately assessed consumers' tire purchases were influenced by price and brand name, they overestimated the impact of the salespeople on tire purchase decisions. The interviewees were accurate in their assessment that ethnicity has minimal impact on purchasing behaviors; however, the focus groups and surveys revealed that language barriers between consumers and tire retailers are a significant influence on both tire purchases and maintenance.

In summary, the four stages of this research project indicate:

- Consumers do consider a variety of factors when making tire-purchasing decisions (for example, price, brand name and reputation, previous experience with a brand, recommendations of friends/family), though their knowledge of the technical specifications of tires appears limited.
- Consumers are aware of the need to maintain their tires, but the methods and rigor with which they do so varies considerably.
- Consumers are familiar with how tires may be recycled, but are unfamiliar with tire recycling campaigns. The accuracy of their knowledge of retreaded tires is limited at best.
- Consumers and retailers have differing perspectives of one another, which influences the effectiveness of the relationship.

Based upon the research, it is suggested that CIWMB consider the development of a communications campaign in multiple languages that emphasizes proper tire maintenance and its relationship to tire safety and longevity. At a minimum, the State should attempt to have two communication contact points. One communication channel should be through a more general, mass media outlet and the second an appeal that occurs when tires are purchased (for example, mailings from the DMV and promotions at tire retailers). Any consumer education campaign should be tested to ensure that the message resonates with the intended audience.

Tables

Table 1. Languages of California drivers who responded to the 2003 CIWMB survey regarding attitudes, perceptions, beliefs and knowledge regarding tire care, maintenance, safety, purchase behaviors and environmental ramifications.....	54
Table 2. Number of years that California drivers who were surveyed have been driving (q1) cross-tabulated by language groups.....	55
Table 3. Number of cars owned or leased by drivers (q2a) cross-tabulated by language groups.....	56
Table 4. Number of vans owned or leased by drivers (q2b) cross-tabulated by language groups.....	56
Table 5. Number of trucks owned or leased by drivers (q2c) cross-tabulated by language groups.....	56
Table 6. Number of miles driven each year by drivers in their primary vehicles (q3) cross-tabulated by language groups.....	57
Table 7. Education levels of drivers (q37) cross-tabulated by language groups.....	58
Table 8. Household income levels of drivers (q38) cross-tabulated by language groups.....	59
Table 9. Ethnic backgrounds of drivers (q39) cross-tabulated by language groups.....	60
Table 10. Age groups of drivers (q40) cross-tabulated by language groups.....	61
Table 11. Northern versus southern California (zip code recoded) (cross-tabulated by language groups.....	62
Table 12. Gender of drivers (coded by telephone interviewers) cross-tabulated by language groups.....	62
Table 13. Internet access by drivers (q34) cross-tabulated by language groups.....	63
Table 14. Recycling by drivers surveyed and their family members (q36) cross-tabulated by language groups.....	63
Table 15. Opinions of drivers regarding the importance of their tires to the overall safety of their vehicles (q4) cross-tabulated by language groups.....	65
Table 16. Do the drivers personally check their tires for wear? (q5) cross-tabulated by language groups.....	66
Table 17. Methods utilized to check tires for wear (q5a) cross-tabulated by language groups.....	66
Table 18. Drivers who do and do not have someone else check their tires for wear (q6) cross-tabulated by language groups.....	66
Table 19. People who check drivers' tires for wear (q6a) cross-tabulated by language groups.....	67
Table 20. Frequency that drivers' tires are checked for wear (q7) cross-tabulated by language groups.....	67
Table 21. Are drivers' tires checked for wear and proper tire pressure when the oil in their vehicle is changed (q35) cross-tabulated by language groups?.....	68
Table 22. Frequency that drivers' tires are checked for proper air pressure (q8) cross-tabulated by language groups.....	68
Table 23. Methods utilized by the drivers to detect low tire pressure (q9) cross-tabulated by language groups.....	69

Table 24. Sources of information regarding proper tire pressure utilized by the drivers (q10) cross-tabulated by language groups.	70
Table 25. Opinions of drivers regarding who sets the recommended air pressure for the tires on their vehicles (q11) cross-tabulated by language groups.	70
Table 26. Times that the drivers surveyed typically have their tires rotated and balanced (q12) cross-tabulated by language groups.	71
Table 27. Usual frequency of tire rotation and balancing in months and/or miles (q13) cross-tabulated by language groups.	71
Table 28a. Opinions of drivers regarding the importance of rotating and balancing to the life of tires (q14a) cross-tabulated by language groups.	72
Table 28b. Opinions of drivers regarding the importance of a car's alignment to the life of tires (q14b) cross-tabulated by language groups.	72
Table 28c. Opinions of drivers regarding the importance of tire pressure to the life of tires (q14b) cross-tabulated by language groups.	73
Table 29. Number of months since the most recent tire purchases for primary vehicles made by the drivers surveyed or other members of their households (q15) cross-tabulated by language groups.	74
Table 30. Reasons for the most recent tire purchases made by drivers or other members of their households (q16) cross-tabulated by language groups.	74
Table 31. Number of tires most recently purchased by drivers or other members of their households (q17) cross-tabulated by language groups.	75
Table 32. Types of establishments from which the most recent tire purchases were made by drivers or other members of their households (q18) cross-tabulated by language groups.	75
Table 33. Stores where drivers or other members of their households made their most recent tire purchases (q19) cross-tabulated by language groups.	76
Table 34. Opinions of drivers regarding the importance of obtaining certain information prior to their most recent tire purchase (q20a–q20i) cross-tabulated by language groups.	81
Table 35. Importance of various information sources to the most recent tire purchase decisions made by California drivers (q21a–q21p) cross-tabulated by language groups.	85
Table 36. Importance of four types of information on tires that are usually available in tire stores to the most recent tire purchase decisions made by drivers (q21a.a–q21a.d) cross-tabulated by language groups.	89
Table 37. Number of stores and/or Web sites contacted by drivers prior to their most recent tire purchase (q21b) cross-tabulated by language groups.	91
Table 38. Did drivers intend to buy a specific brand of tire when they made their most recent purchase (q22) cross-tabulated by language groups.	92
Table 39. Importance of various criteria to the most recent tire purchase decisions of drivers (q23a–q23l) cross-tabulated by language groups.	93
Table 40. Do California drivers have any unmounted used tires around their residences (q24) cross-tabulated by language?	98

Table 40a. Number of tires not mounted on a vehicle around residences of California drivers (q24a Recoded) cross-tabulated by language groups.	99
Table 41. Opinions of California drivers regarding risks posed by discarded tires (q25) cross-tabulated by language groups.	99
Table 42. Opinions of California drivers regarding the types of environmental or health risks posed by discarded tires (q26) cross-tabulated by language groups.	100
Table 43. Opinions of California drivers regarding recycling of tires (q27) cross-tabulated by language groups.	101
Table 43a. Opinions of California drivers regarding uses for recycled tires (q27a) cross-tabulated by language groups.	102
Table 43b. Likelihood that California drivers will purchase tires with recycled content (q27b) cross-tabulated by language groups.	103
Table 44. Opinions of California drivers regarding the safety of retreaded or recapped tires (q28) cross-tabulated by language groups.	104
Table 45. Past purchases of retreaded tires by California drivers (q29) cross-tabulated by language groups.	104
Table 45a. Likelihood that California drivers will purchase retreaded tires in the future (q29a) cross-tabulated by language groups.	105
Table 46. How do California drivers typically dispose of old tires (q30) cross-tabulated by language groups.	105
Table 47. California drivers who have and have not dropped used tires off at a tire collection event (q31) cross-tabulated by language groups.	107
Table 48. Are California drivers aware of any recent campaigns about tire safety and maintenance (q32) cross-tabulated by language groups.	107
Table 48a. Information sources where drivers saw or heard campaigns to educate the public about tire safety and maintenance (q32a) cross-tabulated by language groups.	108
Table 49. Opinions of California drivers regarding the effectiveness of various information sources on tires and tire safety (q33) cross-tabulated by language groups.	109

A Review of Existing Literature

Chapter Summary

California has a significant waste tire challenge. As the most populated state of the nation, Californians generated approximately 33.3 million reusable and waste tires in 2001 (*Waste Tire Management Program: 2001 Staff Report*, California Integrated Waste Management Board, May 2003, Publication #620-03-003). Although nearly 75 percent of these tires were diverted from landfills for alternative uses, millions of waste tires continue to be legally and illegally dumped and stockpiled. The dump sites and stockpiles then pose significant public health and environmental problems. These dump sites and stockpiles are known habitats for mosquitoes, rats, and other vectors. With the discovery of the West Nile virus in Sacramento, California, the elimination of mosquito habitats becomes even more pressing.

To address California's growing number of discarded tires and waste-tire management challenges, the Legislature enacted the California Tire Recycling Act of 1989. This law authorized the creation of the Tire Recycling Program and the California Tire Recycling Management Fund, and it levied a \$.25 per tire surcharge on the purchase of new tires. In 2000, SB 876 (Escutia, Chapter 838, Statutes of 2000), broadened the regulatory, administrative, and funding actions of the Tire Recycling Act. Under SB 876, the tire fee increased to \$1 per tire.

The California Integrated Waste Management Board (CIWMB) uses these funds to help manage California's waste tires. In addition, PRC section 42885.5 requires that CIWMB submit a five-year plan to the Legislature. (For more details and an expanded legislative history, please see *Five-Year Plan for the Waste Tire Recycling Management Program*, 2003, CIWMB Publication #620-03-007.)

As part of the five-year plan, the CIWMB dedicated funding for the development of a marketing communications campaign to educate Californians about the waste-tire challenge the State faces; to inform consumers about proper tire maintenance, recycling, and disposal; and to educate Californians about the products derived from California waste tires.

As an initial step in this marketing effort, CIWMB has contracted with California State University, Chico, and IMC Productions to conduct research on consumers' tire-purchase decision processes and behaviors and their general knowledge about tires, tire maintenance, recycling and disposal. This research effort involves multiple steps including a literature review, interviews with experts who work in the field, multilingual focus groups with consumers, and finally, a multilingual telephone survey of California residents.

The research has three primary objectives. The first objective is to understand California residents' tire purchase behaviors and their awareness and knowledge of tire maintenance, recycling, and disposal issues. In addition, the research will provide information that will be used in a forthcoming marketing communications effort. Finally, the research will act as a baseline measure that can be used as a benchmark to assess the effectiveness of the marketing communications campaign.

The initial piece of the research project involves a literature review. This literature review investigates prior research and publications that relate to consumers' knowledge of tires, their purchase decision processes and behaviors, and what they may know about tire maintenance, recycling, and disposal. The objectives of the literature review are to provide knowledge to the research team, to uncover topics and issues that should be addressed in the next steps of the research project (for example, focus groups and survey), to aid in the development of a sound survey instrument, and to provide information that may be used in the forthcoming marketing communications efforts.

The literature review includes an extensive search for information using electronic databases (for example, ABI/INFORM, PsycINFO, Factiva, Lexis/Nexis) and Internet search engines (for example, Google.com, Dogpile.com, Alltheweb.com, Altavista.com). The search included an in-depth investigation of specific Web sites (for example, the Rubber Manufacturer's Association, the U.S. Environmental Protection Agency, and the CIWMB), and direct contact with experts who work in the field. The literature review is divided into sections that address consumers' general tire-buying habits and knowledge about proper tire maintenance and safety, followed by a section on tire recycling and disposal, the hazards and environmental concerns that discarded tires present, and then a final section on tire-related marketing communication campaigns.

The findings indicate that we know very little about consumers' tire-buying habits and their knowledge of tire maintenance and safety. Only a few large-scale public efforts have been put forth to understand how consumers go about deciding what tires to buy, and perhaps no systematic, scientific research has been conducted that focuses on what consumers know about tire recycling and disposal. Only a few studies available to the public have addressed consumers' knowledge about proper tire maintenance and safety. These studies have indicated that consumers know little about the proper maintenance of their tires and how this may affect their performance, safety, and life span.

According to an American Automobile Association (AAA) study, motorists do not appear to know where to get information on the recommended air pressure for their vehicle's tires. Forty-eight percent incorrectly consulted the tire's sidewall. And, 48 percent of the respondents were not checking the air pressure of their tires at the recommended frequency of at least once per month (Tire Safety Survey, 1999). Furthermore, a National Highway Traffic Safety Administration (NHTSA) study found that 33 percent of passenger cars and light trucks/sport utility vehicles (SUV) have at least one significantly under-inflated tire. Nine percent reported having a bald tire (Thiriez and Subramanian, 2001: *Tire Pressure Survey and Test Results*).

The results of this literature review did not reveal any research regarding consumers' attitudes, perceptions, and knowledge toward tire recycling and disposal. In addition, no reliable information could be found to suggest that residents know about the waste tire challenges in California and the nation. Nor do residents seem to know about the public health and environmental issues associated with discarded tires. Furthermore, no reliable information could be found to suggest that residents know of, or understand, the \$1 fee being levied on new tire purchases, or the role that CIWMB plays in managing California's waste.

Finally, the literature review investigated tire-related communications campaigns. Nearly all the significant campaigns are attempts to educate consumers about proper tire maintenance and safety. Although these campaigns are not intended to educate consumers about the nation's waste tire challenges, convincing consumers to take better care of their tires will lead to longer tire life, and thus fewer discarded tires.

Overall, the literature review clearly demonstrates the need for additional research in this area. In addition, the literature review has unearthed information that will facilitate the systematic development of focus group and survey questions. It will also provide guidance for the development of the marketing communications campaign.

Introduction

In 1902, the year after wheeled vehicles were required to be licensed, San Francisco licensed 117 motor vehicles. By 1905, 17,015 motor vehicles were registered in the city (a 14,443 percent increase). Today, the California Department of Motor Vehicles lists about 26 million vehicles registered, equaling 104 million tires on the state's roads. Of course, these tires do not last forever and are eventually discarded. In fact, the average life span for a tire is 43,000 miles (2000 Scrap Tire Recovery Report, Goodyear 2002), which equates to about three years on the road (average annual driving mileage estimated at 14,500 per year, U.S. Department of Transportation, highlights of the 2001 *National Household Travel Survey*).

What happens to all these tires when they have reached the end of their useful life on a vehicle? According to the CIWMB *Waste Tire Management Program: 2001 Staff Report* published in May 2003, Californians generated an estimated 33.3 million reusable and waste tires in 2001. About 24.9 million of these tires (75 percent) were diverted for alternative uses, while the other 8.4 million were disposed of in landfills (legal and illegal). An estimated 3 million waste tires are stockpiled throughout California, posing health, environmental, and safety risks to the public (*Overview of Tire Management in California*, 2002).

CIWMB has taken a multi-pronged approach to California's waste tire challenge, including funding research and development for alternative uses of waste tires. The Board has given financial support to businesses that use waste tires, supported entrepreneurial ventures that develop and use waste tires, and supported and developed markets for waste tires. These efforts have included conducting research on tire consumers and communicating with them. As part of the CIWMB five-year plan, the Board will dedicate funding for the development of a social marketing campaign to educate Californians about the waste tire challenge the state faces. Through this campaign, the CIWMB will inform consumers about proper tire maintenance, recycling and disposal; and educate Californians about the products derived from California waste tires.

As an initial step in this social marketing effort, CIWMB has contracted with California State University, Chico, and IMC Productions to conduct research on consumers' tire-purchase decision processes and behaviors and their general knowledge about tires, tire maintenance, and tire recycling and disposal. This research effort involves multiple steps, including preparing a literature review, conducting interviews with experts who work in the field, convening focus groups with consumers, and surveying California residents by telephone.

The ultimate objective of the research is to provide a baseline measure of residents' tire purchase behaviors and their awareness and knowledge of tire maintenance, recycling, and disposal issues. In addition, the research will provide information for a forthcoming social marketing effort. Following the social marketing effort, the telephone survey will be conducted again to measure the effectiveness of the communications campaign.

The initial piece of the research project, presented here, involves a literature review. This literature review investigates prior research and publications that relate to consumers' knowledge of tires, their purchase decision processes and behaviors, and what they may know about tire maintenance, recycling, and disposal. The objectives of the literature review are to provide knowledge to the research team, to uncover topics and issues that should be addressed in the next steps of the research project (for example, focus groups and survey), to aid in the development of a sound survey instrument, and to provide information that may be used in the forthcoming social marketing effort.

Methodology

The following methods were utilized to conduct the literature review:

Search of Online Databases

An extensive search was conducted using electronic databases, including the following:

- *ABI/INFORM* (1971–present, extensive database of articles from scholarly journals, trade journals, magazines, and newspapers).
- *EBSCO Host—Academic Search* (1990–present, covers 1,200 periodicals focusing on the social sciences, humanities, general sciences, multicultural studies, and education).
- *EBSCO Host—PsycINFO* (1887–present, 1,300 journals, books, book chapters, and technical reports).
- *Ingenta Library Gateway* (1988–present, large database with 11 million citations and more than 20,000 journals covering a variety of subjects).
- *Emerald Electronic Library* (1994–present, articles focusing on management, marketing, engineering, science, and technology).
- *Infotrac’s General Reference* (1980–present, 2000 titles including magazines, newspapers, and reference books).
- *Dow Jones Interactive* (1996–present, a database of more than 6,000 newswires, newspapers, magazines, and journals).
- *Factiva* (a database of 8,000 publications including newspapers, magazines, trade journals, and newsletters).
- *Lexis/Nexis* (a database of more than 5,600 newspapers, newswires, and reference publications).

Search on the Web

An extensive search for material on the Internet was conducted by using several search engines including Google.com, Dogpile.com, Alltheweb.com, Altavista.com, and Northernlight.com. In addition, specific sites were investigated with additional depth in order to uncover any relevant materials (for example, the Rubber Manufacturer’s Association and the U.S. Environmental Protection Agency). Please see Appendix A for a list of key online resources.

Personal Contacts

The main objective of a literature review is to find relevant published material; however, often valuable material is unpublished and available only by directly contacting people who work in the field. Hence, the research included personal contact with numerous individuals to uncover additional research and publications. Please see Appendix B for a detailed contact list. Researchers also posted an online request for information on a list server specific to scrap tires in use in 35 states.

Findings

The following chapter details the findings of the literature review. The first section addresses consumers' general tire-buying habits and knowledge about proper tire maintenance and safety, followed by a section on tire recycling and disposal, the hazards and environmental concerns that discarded tires present, and then a final section on tire-related marketing communications campaigns.

Consumers' Tire-Buying Behaviors and General Knowledge of Proper Tire Maintenance and Safety

Researchers conducted an extensive search of online databases and the Web, as well as conversations with individuals working in the field. Very little research has been conducted on what consumers know about tires and how they make a tire purchase decision. Only a few surveys could be found that specifically addressed consumers' tire-buying habits.

Tire-Buying Habits and General Knowledge

A 1992 study by the National Highway Traffic Safety Administration (NHTSA) investigated whether consumers knew about, understood, and used the Uniform Tire Quality Grading system (UTQG) and Federal Motor Vehicle Safety Standards (FMVSS) information (www.nhtsa.dot.gov/cars/rules/regrev/evaluate/807805.html). All tires are required by law to be stamped with the UTQG, which includes tread wear, traction, and temperature ratings. The law also requires an FMVSS label, which includes information on the tire's size, maximum inflation pressure, maximum load rating, cord material, number of plies, tube type, radial or not, a DOT certification symbol, manufacturer's name, brand name, and number.

The study included consumers who had recently purchased tires and those who were soon going to be purchasing tires. Some of the key NHTSA findings were as follows:

- 72 percent of *recent* consumers examined their old tires on their vehicle to get information to help in the purchase decision.
- More than 50 percent of *potential* and *recent* tire consumers rated the 10 FMVSS items as important in their tire purchase decision. Individual importance ratings of each item ranged from 52 percent of respondents stating the load range rating was important in their purchase decision, to 83 percent stating that the tire being a radial was important.
- More than 50 percent of *potential* consumers rated all three UTQG items as important in their tire purchase decision. Of the respondents surveyed, 54 percent said temperature resistance rating was important to their purchase decision; 79 percent said traction rating was important, and 83 percent said tread wear ratings were important.
- Less than 30 percent of consumers who had *recently* purchased a tire said the UTQG items were important in their purchase decision. Of the respondents surveyed, 12 percent said temperature resistance rating was important to their purchase decision, 27 percent said traction rating was important, and 29 percent said tread wear ratings were important.
- 74 percent had heard of tread wear rating, and 22 percent reported they would look for the information on the tires, 16 percent would look for it in brochures, and 5 percent would look on tire labels.

- 65 percent had heard of traction rating, and 26 percent reported they would look for the information on the tires; 12 percent would look for it in brochures, and 3 percent would look on tire labels.
- 38 percent had heard of temperature rating and 15 percent reported they would look for the information on the tires; 8 percent would look for it in brochures, and 3 percent would look on tire labels.
- 60 percent knew the difference between an “A” and “C” traction rating (ratings go from A to C, where A is the highest traction rating).

More recently, a customer satisfaction survey of tire consumers (sample size of 39,000) by J.D. Power and Associates indicated that five characteristics capture whether or not a consumer is satisfied with his/her tires. In order of importance, these include: product quality (for example, number of tires with problems, number of originals replaced), long-term performance (for example, length of warranty, freedom from pull), situational performance (for example, traction on wet roads, overall ride on highways), design (for example, quietness, style and appearance, and tread design), and winter traction. J.D. Power and Associates has also found that since the Bridgestone/Firestone recall, consumers have become much more aware of the brand of tires that are on their vehicles. When considering price, quality, and value, Michelin received the top rating, followed by Pirelli, and then Goodyear (J.D. Power and Associates Press Release, 2001).*

Another study that specifically investigated consumers’ tire-buying habits was conducted by *Tire Business* in 2002. The study claims to be a national survey, yet only has a sample size of 294, thus calling into question the reliability of the survey results. (If this is truly a random sample, assuming a 95 percent confidence level, a sample size of 294 has a margin of error of about plus/minus 5.8 percent.) This research found that when making a tire purchase, price was the most important decision criterion (59 percent of respondents) followed by brand name (47 percent of respondents).

Seventy-five percent of consumers said they usually buy brands on sale, have coupons, or buy because some kind of special offer is being made. In addition, only 11 percent of consumers said they chose a store due to advertising. A particularly noteworthy finding was that 36 percent of respondents said the tire dealer’s recommendation swayed their decision, indicating the important role in-store representatives may have on consumers’ tire purchase decisions. The survey also revealed that 47 percent of respondents made their purchase decision in one day, while 36 percent took between two days and a week. Fifty-seven percent of tire purchases were unplanned, with 44 percent of the respondents saying they were replacing worn tires. Twenty-seven percent said they were replacing a damaged tire or tires (*Tire Business*, 2002).

Reinforcing the importance of the in-store sales representative, a survey of tire dealers by *Tire Review* found that 40 percent of customers who walk into a store ask for a specific brand, yet 56 percent of these will switch to a different tire based on the salesperson’s suggestion (Gifford, Craig, 1999). Both the *Tire Review* and *Tire Business* research indicate that any tire outreach campaign should take steps to include in-store representatives as advocates.

* This information is based solely on the J.D. Power and Associates press release (2001). Additional details from the full report are not publicly available and the purchase of the report was beyond the budgetary scope of this project.

Consumers' Knowledge and Behaviors Related to Tire Maintenance and Safety

The American Automobile Association (AAA) Foundation for Traffic Safety contracted with Roper Starch Worldwide to conduct a nationally representative survey (sample size = 1,070) on the public's knowledge of various tire safety and maintenance issues (*Tire Safety Survey*, 1999). The survey revealed that slightly less than half of all drivers (48 percent) are checking their tire pressure at least once per month (the recommended frequency). Another problem revealed in the study was that 48 percent of motorists incorrectly consulted the tire sidewall to determine the proper tire pressure for their car, when in fact that number represents the maximum tire pressure.

Only 27 percent of the respondents checked the owner's manual for proper tire inflation information, and 18 percent used the tire information placard placed on the car by the manufacturer. (The information in the vehicle manual and the manufacturer placard supply the correct optimal tire pressure for the vehicle.) Significantly, the survey showed that a large majority of drivers (94 percent) said they check their tires for wear and tear. The study also revealed that 60 percent of the respondents had a flat tire within the last five years.

A more recent NHTSA study focused on tire pressure and tread depth (Thiriez and Subramanian, *Tire Pressure Survey and Test Results*, 2001). Data was collected from 11,530 vehicles at 336 gas stations. Nine percent of the passenger cars had at least one bald tire, and 27 percent of passenger cars and 33 percent of light trucks/SUVs had at least one significantly under-inflated tire. Of the vehicles with under-inflated tires, nearly 63 percent had at least one tire that was 30 percent or more below the recommended tire pressure. Under-inflated tires can lead to tire separations and blowouts, increases in fuel consumption, and reductions in the useful life of the tire. Largely due to this research, the NHTSA launched the campaign "Tire Safety: Everything Rides on It." (See page 12).

Corroborating prior research, a study conducted in February 2002 by **Frederick Polls** for the Rubber Manufacturer's Association (see Zielinski, www.rma.org) indicated that motorists are not doing a very good job of properly checking and maintaining their vehicle's tires. Motorists apparently don't fully appreciate the importance of proper tire pressure, and they are often uninformed about tire-related information for their vehicles.

Nearly half of all drivers said they believe that the proper tire pressure is set by the tire manufacturer, when in fact it is set by the vehicle manufacturer who prints it in the car's manual. The information is also printed on a placard attached to the vehicle. Sixty-six percent didn't know where to find the recommended tire pressure placard. The study concluded that only 11 percent of the respondents were properly checking their tires' pressure. ("Properly" meaning a driver checks the tire's pressure once a month, knows to use the vehicle manufacturer's recommended pressure, and checks the pressure when the tire is "cold.") In general, the survey found that a fair number of vehicle owners were not properly checking their tires' tread for wear, not rotating their tires at the suggested interval (every 8,000 miles) and not having their vehicle's wheels aligned on a periodic basis.

What Do Consumers Know About Tire Recycling and Disposal?

A significant gap exists in our knowledge about what consumers know about tire recycling and disposal. After an extensive search and numerous conversations with professionals knowledgeable about the tire industry, tire recycling, and disposal, not a single study could be found that focused on consumers' attitudes, perceptions, or knowledge about tire recycling and disposal. A handful of the professionals interviewed believed that perhaps a small amount of data had been collected

“here and there” at some tire amnesty days,* but no one could identify a large-scale, systematic effort to collect data on consumers’ attitudes and knowledge regarding tire recycling and disposal. Furthermore, some of these professionals suggested that consumers don’t fully understand how a state’s tire fee is utilized or how tire recycling and disposal is managed. However, this information regarding consumer lack of knowledge is purely anecdotal.

Although consumers may not know about or understand tire recycling and disposal, governmental groups, the waste tire industry, and related organizations have made great strides in cleaning up waste stockpiles and developing ways to reuse discarded tires. According to the Rubber Manufacturer’s Association, in 1990 only 10 percent of discarded tires in the nation were diverted from landfills, whereas today, nearly 76 percent are diverted for alternative uses per U.S. EPA 2001 report. California has also greatly reduced the number of tires being placed into landfills.

In 1990 it was estimated that 34 percent of California’s waste tires were diverted from landfills. By 1999, 64.5 percent were being diverted (*Five-Year Plan for the Waste Tire Recycling Management Program*, CIWMB, 2001) and approximately 75 percent were diverted in 2001 (*Waste Tire Management Program: 2001 Staff Report*, CIWMB, 2003). Tires are being burned to produce electricity, to fuel kilns in cement factories, and to provide drainage layers in large civil engineering projects. They are ground and mixed into asphalt and manufactured into a spongy material for resurfacing playgrounds. Recycled tires are used to produce rubber mats, and they are even chopped and dyed into an artificial bark that can be used as a long-lasting effective ground cover (RubberStuff Mulch, see www.americanrubber.com/main.htm). Please see Appendix C and D for a comprehensive list of end uses for scrap tires.

Another area of tire recycling and disposal believed to be overlooked is the determination of what attitudes and perceptions drivers have toward retreads. Increasing the number of retreads purchased by passenger car owners could have a significant impact on the number of waste tires and the environment. In California, only about 7 percent (or about 2.4 million tires) of waste tires are recycled into retreads. The use of retreads not only reduces the number of waste tires to dispose of, but also reduces the consumption of oil. Production of a new passenger car tire utilizes 7 to 8 gallons of oil, while retreading uses 2 to 3 gallons. In addition, a retread typically costs anywhere from 30 to 50 percent less than a new tire, yet typically offers the same warranty as a new tire (Tire Retread Information Bureau, 2002).

Hazards and Environmental Concerns Related to Discarded Tires

An issue that needs to be addressed is whether motorists understand why proper recycling and disposal of tires is important. Discarded tires that are not recycled can lead to serious hazards and environmental problems. One of the more pressing problems when discarded tires are not recycled is the buildup of tire piles (legal or illegal). Tire piles pose a multitude of problems, but the most severe is that of a tire pile catching fire.

Tire pile fires are extremely difficult to extinguish—often the best strategy is to simply let the fire burn. However, as the tire pile burns, it gives off dangerous, possibly toxic smoke. The oil and ash residues from a tire fire not only pose immediate environmental hazards as the fire burns, but is difficult and expensive to clean up after the fire has been extinguished. As of 2002, the

* Amnesty days are events directed at the public that allow people to drop off waste tires at a designated location. They promote the cleanup of small illegal tire piles. Typically, amnesty days are supported by local governments. To help fund these local government amnesty days, CIWMB awarded 68 amnesty day grants between 1992–2000 totaling \$1,131,737 (*Five-Year Plan for the Waste Tire Recycling Management Program*, 2001).

CIWMB had allocated \$11 million for the remediation of the Filbin waste tire site fire in Westley, and \$9 million for the Royster stockpile waste tire fire site in Tracy. It is estimated that these two fires burned more than 12 million waste tires (*Five-Year Plan for the Waste Tire Recycling Management Program*, 2001).

Tire piles also lead to other public health concerns since they are known habitats for mosquitoes, rats, and other vectors (U.S. EPA Newsroom, Emerging Issues, www.epa.gov/epahome/issues2_0705.htm, 2000). And, with the threat of the mosquito-borne West Nile virus in California becoming increasingly problematic, every effort needs to be taken to eliminate areas where mosquitoes can reproduce.

Since tires are not biodegradable, they also consume a lot of permanent space in our landfills. With landfills filling up and new space becoming increasingly rare and expensive, every effort needs to be made to keep recyclable materials out of the landfills. In fact, it is illegal to dump whole tires in California landfills. Tires must be disposed of at properly permitted waste-tire disposal facilities. The illegal dumping of tires is punishable by law, with fees in the thousands of dollars (contingent on the infraction); jail time may be included.

Furthermore, tires not recycled are a waste of oil. In all likelihood, most consumers understand that oil production is not very environmentally friendly and that our country is somewhat dependent on oil. But do consumers understand the relationship between tires and oil? Once again, no research could be found that has addressed whether consumers fully understand the environmental implications when purchasing or disposing of a tire. Tire production uses an immense amount of oil.

As mentioned earlier, 7 to 8 gallons of oil are required to produce a new passenger tire. And, it takes 22 gallons of oil to produce one truck tire, yet only 7 gallons of oil are needed to produce a retreaded truck tire. "Since re-treading requires only one third of the crude oil used to make a new tire, this saves approximately 370 million gallons (1.4 billion liters) of oil" (*Scrap Tire Recycling*, 2001). Scrap tires that get recycled as retreads reduce the total number of tires that need disposal; this saves oil.

Tire-Related Marketing Communication Efforts

Tire Recycling and Disposal Campaigns

The waste management and recycling community has reached out to the public with messages to recycle and/or properly dispose of paper products, cans, bottles, paint, oil, and more recently, computers and computer monitors (e-waste). However, it appears that fewer resources have been devoted to informing the public about the challenges of managing the nation's waste tires. Little information could be found on large-scale outreach campaigns that focus on the proper recycling and disposal of tires.

From 1992–2000, CIWMB awarded 68 grants to local governments for tire amnesty days and public education; 26 of these were in the 1999–2000 fiscal year. These grants help the local governments promote the amnesty days, organize and carry out the tire collection and disposal efforts, and produce educational materials about proper tire maintenance and disposal. Typically the educational materials take the form of a brochure that is passed out at the tire amnesty day events. In some cases it is distributed locally (for example, retail outlets and libraries). Rarely, if ever, does any data get collected at these events (for example, short surveys) to find out more

about the people who are dropping off the tires, their attitudes, and knowledge related to tire recycling and disposal, or how they heard about the amnesty day.

An example of an ongoing waste tire amnesty day program is the City of Los Angeles, Department of Public Works Amnesty Days. The city launched a series of waste tire amnesty days that allow residents to drop off and recycle their waste tires free of charge. The first amnesty day in November 1999 took place in the City of Torrance and resulted in collection of 500 tires. Subsequent events have taken place in July 2000 (2,100 tires collected from ten locations throughout the county), April 2001 (9,800 tires collected from the Antelope Valley region), and April 2002 (6,320 tires collected from the Antelope Valley region).

The last two events were partly funded by the CIWMB. Events have been promoted through the use of flyers and brochures that were distributed to local retailers, gas stations, convenience stores, and home improvement stores (both were English and Spanish—please see Appendix E). In addition, advertisements were run in local newspapers and on billboards, and press releases were distributed to various print and radio outlets. The city has contracted with the public relations firm Meyer Watkins Associates to organize and promote 10 more waste tire amnesty days during the next two years.

Although not specific to tires, the South Carolina Office of Solid Waste and Reduction has had an aggressive recycling outreach program since 1994. The campaign revolves around the “Recycle Guys,” seven animated characters, each being a letter from the word “RECYCLE.” The letter “C” is a tire character, and in fact, a small portion of the program discusses tire recycling and disposal. When the campaign was first launched, it was targeted primarily at K–12 students to educate them about recycling. Then in 1997, a recycling communications and outreach program was launched to the general public.

Currently the program has 22 fifteen-second public service announcement spots. When the program began, the office conducted focus groups and some research to get a sense for attitudes toward the campaign. These findings are not recent, but program manager Richard Chesley says that the program is very well known in South Carolina and has spread to many southern states. Furthermore, the program has been adapted for use by numerous other states around the country.

The search for information on current tire recycling and disposal campaigns also included an exploration of the Web sites of the major tire producers (Goodyear, Michelin, Bridgestone/Firestone, General Tire, and Continental Tire). Of all the major tire manufacturers, only Goodyear had any significant information posted on its Web site related to tire recycling and disposal.

Goodyear (www.goodyeartires.com/kyt/maintaningATire/index.html - 1) addresses tire recycling and disposal in a downloadable report, “Maintaining a Tire.” This publication was very informative, but it was located in a rather obscure location on the company’s Web site in a section on the environment. The only other information was posted on the Continental Tires site, which included one paragraph in an FAQ section stating the company’s support for tire recycling and proper disposal.

Most of the tire recycling and disposal marketing communication efforts appear to be very local and regional in nature. To date, a large majority of the tire recycling and disposal educational and outreach efforts have been targeted at individuals who work in the waste and scrap tire recycling and disposal community. These efforts are not directed at motorists. After an extensive search through electronic databases and the Internet, and after conducting numerous conversations with individuals who work in this field, the consensus appears to be that minimal resources have been

directed at educating residents about the problems, challenges, and opportunities associated with discarded tires, tire recycling, and disposal.

Tire Safety and Maintenance Campaigns

The greatest efforts to educate consumers about tires have revolved around proper tire maintenance and safety. Most of the larger tire distributors have information on their Web sites about tire safety and maintenance (for example, see the Information Center at www.discounttire.com, or Tips and FAQs at www.bigotires.com). However, very few of the largest tire manufacturers and larger automotive insurance companies provide any information to consumers about proper tire safety and maintenance.

Although a few tire maintenance and safety campaigns have been ongoing, after the Bridgestone/Firestone recall, many organizations and manufacturers put more resources into their consumer tire education and outreach efforts. The Rubber Manufacturer's Association (RMA), a national trade association with more than 100 member companies, including The Goodyear Tire and Rubber Company, Cooper Tire and Rubber Company, Continental Tire North America, Inc., Bridgestone/Firestone, Yokohama Tire Corporation, and Michelin North America, has initiated and organized many of the large-scale education campaigns.

A few example campaigns are:

Safe Trip (www.safetrip.org). As part of the \$51.5 million settlement reached with attorneys general from all 50 states and state consumer protection agencies, Bridgestone/Firestone devoted \$5 million for a national education campaign on tire safety and maintenance. The Safe Trip campaign features television and radio spots, the Safe Trip Web site, and events nationwide. The focus of the campaign is to educate consumers about the hazards of under-inflated tires. In particular, the campaign focuses on the hazards of overloaded vehicles traveling on hot roads during summer vacations with under-inflated tires. The combination of these variables puts great strain on the tires and can lead to tires that don't handle properly and blow out. A key slogan of the campaign was, "This summer, take care of your tires. They take care of you."

Be Tire Smart, Play Your PART (www.rma.org/tire_safety/). This ongoing, multiyear campaign was launched by the RMA in November 2000. The campaign has involved the distribution of millions of brochures by AAA offices, Sears Automotive Centers, and many of RMA's member companies. The campaign has included many events at member organizations that provide motorists with a free tire checkup, free tire gauges, and educational materials. A focal element of the campaign is the "Be Tire Smart, Play Your PART" slogan and brochure. The word "PART" is a mnemonic for **P**ressure, **A**lignment, **R**otation, **T**read. A few key elements from the brochure include:

Pressure—How a tire can lose up to half its air pressure and not appear flat. The correct air pressure for a vehicle's tire is prescribed by the vehicle manufacturer, not the tire manufacturer, and is usually posted on a placard somewhere on the car (for example, the door edge). Notes how under-inflation can lead to tire failure and improper wear.

Alignment—Notes how misalignment can cause uneven and rapid tread wear.

Rotation—Tires should be rotated every 6,000–8,000 miles.

Tread—Vehicle owners should do a periodic visual inspection of their tread and do the Lincoln head test by placing a penny into the tread with Lincoln's hair pointing into the tire. If at least part of Lincoln's head is covered by the tread, you are OK. Otherwise, you should get a new tire.

National Tire Safety Week. The RMA launched the first Tire Safety Week at the end of April 2002. The week-long campaign urged drivers to check their tires once a month and emphasized the importance of tire maintenance and safety. To get the message out to vehicle owners, the RMA distributed two million tire safety brochures to its campaign partners that included Big 10 Tires, Big O Tires, Discount Tire Co., Les Schwab, Merchant's Inc., National Tire and Battery (NTB), Tire Kingdom, the Tire Association of North America, and International Tire & Rubber Association that combined have 5,000 tire dealers who work directly with the tire-buying public. In addition, the RMA and its partners conducted "Tire Safety Day" events in which motorists were given free tire pressure and tread checks, free tire gauges, and brochures on tire maintenance and safety. National Tire Safety Week is part of the RMA's "Be Tire Smart, Play your Part" campaign.

Tire Care and Safety Guide Booklet. A comprehensive guide developed by the RMA addresses tire inflation pressure, tire inspection, the relation between good driving habits and tire safety, the importance of tire balancing, alignment, and rotation, how to read a tire sidewall, important purchase considerations, how weather affects tires, getting service for tires, and how to properly store tires.

Tire Safety: Everything Rides on It. This campaign was initiated in November 2001 by the National Highway and Traffic Safety Association (NHTSA) with the focus of informing consumers about the importance of proper tire pressure and getting motorists to check their tires on a monthly basis. In addition, the campaign urged motorists to check their vehicle's load limits and have adequate tread and proper tire pressure before starting a long trip. The campaign was launched with three public service announcements airing on 2,000 radio stations throughout the country, print advertisements in newspapers and magazines, and more than 500,000 flyers given out to consumers mainly through tire retail outlets. Flyers were in English and Spanish.

My Tire Safety (TireSafety.com, a Bridgestone/Firestone site). This site uses the slogan, Inflate (check pressure monthly), Rotate (every 5,000 miles), Evaluate (look for signs of wear and damage) to educate motorists of the importance of proper tire maintenance and safety. The site notes how a tire can lose one PSI (pounds per square inch) per month under normal conditions. It also reminds motorists that tires should be rotated every 5,000 miles and to do the Lincoln head test. In addition, the site allows visitors to sign up for a monthly e-mail reminder to check the tire air pressure on their car. The site is available in English, Spanish, and French.

Safety Zone (www.rbclick.com/microsites/cooper/index.php, a Cooper Tires Web site). Cooper Tires is the fourth-largest tire producer in the world. Cooper Tires has produced Safety Zone, which provides visitors with general information about tire maintenance and safety. The site has a section titled, "Don't be on the wrong side of the statistics," that informs visitors about the research conducted by the RMA (discussed earlier) that showed drivers were not properly maintaining their tires. The site also relies on the RMA "Be Tire Smart, Play Your Part" campaign.

Cooper Tire and Rubber. As one of the fastest-growing after-market tire manufacturers, Cooper has partnered with the National Safety Council (NSC) to undertake a three-year campaign to educate consumers on tire safety. Cooper and NSC have produced a brochure that is being distributed to Cooper dealers throughout the United States and Canada (www.coopertires.com/us/en/safety/tiresafety.asp, 2002).

It is important to note that these tire maintenance and safety outreach programs can have an extremely positive effect on the number of waste tires produced each year. If consumers maintain their tires properly, they will get longer life out of the tires, thus reducing the frequency with which they need to buy new tires. In fact, proper tire maintenance will increase the average life of

a tire by 15 percent, thus decreasing waste and scrap tire generation by the same amount (Minimizing Scrap Tire Generation, www.dep.state.pa.us/dep/subject/pubs/water/fs1930.pdf, 2003).

Conclusion

We know very little about consumers' tire-buying habits and their attitudes, perceptions, and knowledge regarding tire recycling and disposal. After an extensive search of the Web and online databases, and after conducting conversations with individuals experienced in the field, the researchers have determined that only a few large-scale public efforts have been made to learn how consumers choose tires to buy. Perhaps no studies have been conducted that focus on what consumers know about tire recycling and disposal.

Of course, some of the larger tire manufacturers most likely have proprietary survey data about their consumers' buying habits, but their data probably does not address tire recycling and disposal issues. Nearly all the major producers of tires provide information (on their Web sites and otherwise) to consumers about what variables should be considered when purchasing tires, the importance of proper tire maintenance, and information for proper care. Yet only Goodyear had any significant information regarding tire disposal and recycling.

The studies that have addressed consumers' knowledge about proper tire maintenance and safety have found that, largely, consumers don't seem to know much about the proper maintenance of their tires and how this may affect their tire's performance, safety, and life span. In particular, motorists do not appear to be keeping the air pressure at the correct level. Largely due to these studies and the Bridgestone/Firestone recall, the majority of significant tire marketing education campaigns focus on proper tire maintenance and safety. Although these campaigns are not intended to educate consumers about the nation's waste-tire challenges, convincing consumers to take better care of their tires will lead to longer tire life, and thus fewer discarded tires.

This literature review has also revealed how little information is available about what Californians know about the waste-tire challenges of state or the nation. The attitudes, perceptions, and knowledge residents have toward tire recycling and disposal are unknown. The relationship between consumer attitudes toward retread tires and tire recycling and the environment is also unknown. Retreads offer a significant tire-recycling outlet. Since they directly reduce the consumption of oil in the manufacturing process, retreads are environmentally friendly.

Another important task was to develop a better understanding of the value consumers place on the mileage warranty when purchasing tires. Past research has not focused on this topic. Consumers buying higher mileage tires could have a significant impact on the number of waste tires in the state. If a consumer buys an 80,000-mile warranty tire, as compared to the normally purchased 40,000-mile warranty tire, this would cut the number of waste tires by half. In general, the higher warranty tires are more expensive, but typically the "miles per dollar" is higher.

Thus, the higher-mileage tires are not only good for the environment; they are actually a better value for consumers. However, it should be noted that often due to the compounds used in the higher-mileage tires, some higher-mileage tires have slightly lower handling and performance ratings. Please see Appendix F for details on a small-scale data collection that appears to support the contention that higher-mileage warrantied tires are in fact a better "miles-per-dollar" value.

Furthermore, no reliable information could be found to suggest that residents know of, or understand, the \$1 surcharge being levied on new tire purchases and new vehicle purchases, or

the role that CIWMB plays in managing California's waste. In fact, anecdotal information from the in-person interviews suggests that, if anything, residents are confused about who manages California's waste.

Finally, we have found a gap in our knowledge regarding the potential differences that may exist in these tire-related attitudes, perceptions, knowledge, and behaviors, based upon ethnicity. California is the most ethnically diverse state in the nation. Fifty-nine percent of the population is Caucasian, 32 percent is Hispanic or Latino (mostly Mexican and South American), 11 percent is Asian (mostly Chinese and Filipino), and 7 percent is Black or African-American. A full understanding of the different attitudes, perceptions, knowledge, and/or behaviors existing among these diverse groups is imperative (State of California, Census 2000 California Profile).

Overall, the literature review clearly demonstrates the need for additional research in this area and has unearthed information that will facilitate the systematic development of focus groups and survey questions.

Focus Group Findings

Chapter Summary

The research reported here represents the second stage of the overall research project—focus groups—the questions for which were developed from the literature review findings. The five focus groups (one each conducted in English, Spanish, Mandarin, Vietnamese, and Tagalog) were held Wednesday, February 5, and Thursday, February 6, 2003, in Millbrae and Anaheim respectively. A total of 59 people participated in the focus groups (39 males and 20 females). The findings are grouped in this report in five topic areas, each of which is summarized below:

- Recent tire purchase information.
- Tire purchasing criteria.
- Knowledge and behaviors related to tire maintenance and safety.
- Knowledge of tire recycling and disposal.
- Familiarity with tire recycling and disposal campaigns.

For the majority of participants across these five focus groups, recent tire purchases had been prompted by concerns for wear and safety. Some purchases were planned with the knowledge that the timing was right, either because of miles driven on the tires or the passage of a certain amount of time since the tires were originally purchased. Other purchases were unplanned and the result of noticing, by chance, wear that heightened concern, or were the result of flat tires.

When considering where to purchase new tires, participants reported considering the place where they could get the best price, the convenience of a dealer location, and the recommendation of family and friends. Only a few participants reported “shopping around” for dealers and preferred to return to dealers where they had previously purchased tires. Brand name, reputation of the manufacturer, and experience with a particular brand seemed to override the need for most participants to conduct research on tires prior to purchase.

Dealer advertising had little impact on decisions to purchase, as did dealer salespeople. In fact, dealer salespeople were not trusted by many participants and were more likely to influence decisions not to buy. In general, the time needed to make a tire purchase decision was within one hour unless the purchase was planned in advance or involved a significant amount of research.

Participants were questioned about several criteria considered when purchasing tires: tire qualities/characteristics, tire life, and high-mileage and/or road hazard warranty. They most often mentioned brand name and associated reputation of the manufacturer, performance, design characteristics, and warranty when asked about tire qualities/characteristics that are important to them. Brand name was by far the most-often mentioned criteria.

Price, however, was inescapably linked to the overall discussion of important tire qualities/characteristics. Some participants were willing to pay higher prices to get the tires they wanted, while other participants worried that a low price—even a sale price—meant lower quality. At least a few acknowledged that living on a budget meant they had to settle for tires they would prefer not to buy. How long they expected the tires to last depended in some cases on the price of the tire and the warranty, but in other cases was expressed in years.

Participants acknowledged, however, that tire life was also linked to driving habits, driving conditions, and tire maintenance. They were divided in their opinion about the importance of high-mileage and/or road hazard warranty. In summary, participants described a “good value” on

a tire as getting as many of the characteristics they wanted as possible at a reasonable price, a price they could afford.

The majority of participants said they knew the recommended pressure for their tires. The three most commonly identified places this pressure could be located were: 1) on the side of the tire, 2) inside the frame of the driver's door, and 3) in the owner's manual. They were unsure who establishes the recommended pressure but they were confident that proper inflation was related to longevity of the tire and to safety.

Most participants reported checking their tire pressure, though some were more systematic in their approach to doing so than others. The frequency with which they reported checking their tire pressure varied considerably (ranging from every day to every four months) as did the method for determining the pressure (for example, tire gauge reading, visual calculation, change in vehicle performance). Participants acknowledged tire rotation and wheel alignment were important aspects of tire maintenance but were not in agreement about the frequency with which these services should be performed.

Most of the participants reported using some type of system to chart when tire maintenance should be performed. A few got reminders from the dealer where they purchased their tires. New car owners were more likely to get this maintenance done at the car dealership rather than a tire dealership. Few of the 59 participants were familiar with any kind of public information campaign regarding tires or brochures of this nature. Approximately half of the participants thought it was necessary to read the section of the vehicle owner's manual regarding tires prior to an emergency.

The majority of participants acknowledged dealers keep their old tires when they purchase new ones, but they were less clear about precisely what the dealer does with the old tires or the exact amount of the fee they pay the dealer to dispose of them. A few participants admitted to dumping old tires in the trash. The majority of participants were confident that tires are not biodegradable and saw them as posing severe environmental risks. They were relatively familiar with ways in which tires can be recycled, but had little knowledge or experience related to retreaded tires. Regardless, the majority opinion was that they could not trust the quality of retreaded tires and, therefore, would not purchase them. Only a few were even vaguely familiar with the California Tire Recycling Act of 1989. Only a few participants reported the possibility of having seen literature on tire recycling and/or disposal campaigns.

The above findings enhance the limited available knowledge about consumers' tire-buying habits and their knowledge of tire maintenance and safety cited in the earlier literature review associated with this project. In addition, they provide the first known documented look at consumers' knowledge and perceptions of tire recycling and disposal, and related environmental and health issues—all of which were highlighted in the earlier literature review as areas of need.

Limitations of the study are discussed in the report, along with cautionary notes about the generalizability of the findings. The purpose of the focus group stage of this research project was to fill the gap in knowledge uncovered by the earlier literature review and thereby provide a stronger foundation for the development of a telephone survey to be conducted in multiple languages. The above-described focus group research was successful in achieving this objective.

Introduction

The focus group research outlined in this report is part of a multi-stage, broad research project contract between CIWMB, California State University, Chico, and IMC Productions signed fall 2002. The purpose of the overall project was to conduct research exploring two areas: 1) consumers' tire purchase decision processes and behaviors; and 2) their general knowledge about tires, tire maintenance, recycling, and disposal. In addition, the research will provide information that will be used in a forthcoming marketing communications effort. Finally, the research will act as a baseline measure that can be used as a benchmark to assess the effectiveness of the marketing communications campaign.

As a precursor to the focus groups, a member of the CSU Chico research team compiled a literature review addressing the extent of available information in the two areas outlined above. Although the literature review was useful for preparing the focus group direction and content, it also demonstrated a clear dearth in the available literature and solidified the need for focus group research. Upon CIWMB's review and approval of the content of the report, it was used as a framework for the direction and content of the focus group interviews.

Briefly, focus groups represent a qualitative form of research conducted for clients interested in topic areas where breadth and depth of knowledge may be limited. The most common use of focus groups is to generate information for the purpose of developing surveys. The surveys are then used to gather public response on a large scale, one that allows for general adaptation of the findings to a larger population. As the literature review written for CIWMB indicated limited existing research in the areas of interest, focus groups were used to develop a strong understanding of the areas for survey development.

Typically, focus groups have anywhere from 5 to 15 participants, a size that allows for in-depth discussions of topic areas. The selection of potential focus group participants is generally random. The participants who are actually invited to attend are selected from the available random sample because they meet certain criteria that are in some way related to the topic of the focus groups. The criteria in the case of the CIWMB focus groups was responsibility for maintaining a vehicle and licensed driver in the state of California.

At the request of CIWMB, focus groups were conducted in five languages: English, Mandarin, Spanish, Tagalog, and Vietnamese. The rationale for conducting the focus groups in two locations in the state was that there might be differences in perspective from those residing in northern and southern California. In addition, some populations associated with the language groups studied tend to concentrate in one location or the other, thereby dictating participant recruitment efforts were more likely to be successful if attention was paid to those concentrations.

As with all forms of research, focus groups have distinct advantages and disadvantages. With regard to the most significant advantages, focus groups allow the opportunity to explore topics of interest in a depth that is not possible with surveys. A significant amount of information can be gained in the approximate three-hour duration of a focus group. In addition, while the discussion is planned, it also allows the opportunity for new information—outside the scope of questions asked but relevant to the topic—to emerge in the discussion. The information gained from focus groups, however, comes from such a small number of people that even if they are randomly selected, their comments cannot be generalized to the larger population. This last point is the most significant disadvantage of focus group research, but is neutralized when focus groups are used as a tool for developing surveys.

The remainder of this report is organized in four sections: methodology, findings, limitations, and conclusions. The discussion of findings is divided into the five topic areas addressed in the focus groups:

- Recent tire purchase information.
- Tire purchasing criteria.
- Consumer knowledge and behaviors: Tire maintenance and safety.
- Consumer knowledge: Tire recycling and disposal.
- Familiarity with tire recycling/disposal campaigns.

Methodology

Interview plan

The interview plan for the focus groups was developed primarily from the literature review completed in the earlier phase of this project. It was submitted to the CIWMB project manager for approval prior to use in the focus groups.

The plan consisted of introductory remarks about the nature of the project and miscellaneous comments about the operation of the focus groups. The interview plan also included questions on the five broad areas of interest to the CIWMB in later development of the telephone survey, namely:

- Recent tire purchase information.
- Tire purchasing criteria.
- Consumer knowledge and behaviors: Tire maintenance and safety.
- Consumer knowledge: Tire recycling and disposal.
- Familiarity with tire recycling/disposal campaigns.

A copy of the interview plan appears in Appendices G–L.

Selection of Participants

Participants for the focus groups were selected randomly. California State University at Fullerton recruited individuals for the Vietnamese and Tagalog groups and assisted with recruitment with the Spanish group. California State University at Chico recruited participants for the Mandarin, English, and Spanish groups. All recruitment began with a telephone sample purchased from Survey Sampling, Inc. However, when the recruiters encountered difficulty in finding sufficient numbers to attend some sessions, recruiters were authorized to offer individuals who might be interested in attending the focus groups the opportunity to bring a friend or colleague along who also met the established criteria. While the numbers of those opting to invite friends were small, they do indicate a slight deviation from a truly random sampling. In addition, several individuals were invited at the last minute to supplement attendance at groups with small numbers.

A total of 59 people participated in the focus groups: 10 English-speaking participants, 22 Mandarin-speaking participants, 6 Spanish-speaking participants, 5 Tagalog-speaking

participants, and 16 Vietnamese-speaking participants. Further demographic information about the participants in each group appears in Appendix L.

Selection of Recorders and Facilitators

Selection of recorders and facilitators occurred in three ways: 1) previous focus group experience with the Program for Applied Research and Evaluation at California State University, Chico (or its precursor, Survey Research Center); 2) previous focus group experience with the Social Sciences Research Center at California State University, Fullerton; and 3) referral by either facilitator or recorder with focus group experience at one of the two above-mentioned research centers.

Selection of Focus Group Locations

Sites were selected based on information provided on population concentrations for particular language samples. This information came from both the 2000 U.S. Census and from Survey Sampling, Inc. Once the population concentrations were identified, a concentrated effort was made to choose sites that were easily accessible to all population groups.

Training of Recorders and Facilitators

Training for all facilitators and recorders was conducted Tuesday, February 4, at the Millbrae location where the first focus group meetings took place the following day. The training lasted approximately two hours. All five facilitators and ten recorders attended the training. For those facilitators and/or recorders who had participated in these focus group roles previously, the training served both as a review and as an orientation to procedures required by the Program for Applied Research and Evaluation, California State University, Chico. For those facilitators and/or recorders who had no direct experience in focus groups, the training served as a knowledge and skill building session.

The training consisted of two major components: 1) introductory comments to orient the research team to the project, to each other, and to operating procedures of the focus groups; and 2) separate and specific training for facilitators with Dr. Ruth Guzley and for recorders with Joleen Barnhill and Mark Wasden. Dr. Ruth Guzley has developed focus groups interview plans and facilitated numerous focus groups for the Program for Applied Research and Evaluation and other clients since 1994. Joleen Barnhill serves as the Project and Fiscal Coordinator of the Program for Applied Research and Evaluation and has also recorded several focus groups for the program. Mark Wasden is a graduate student at California State University, Chico, who has been recording focus groups for the past two years for both the program and other clients. The recorder training included practice sessions.

Recording Procedures

Participant comments were recorded by two methods: 1) audio tape; and 2) the use of individuals recording comments either by hand or on a laptop computer. The use of both mechanical and human recording is a common practice that minimizes the loss of participant comment records in the event of mechanical failure. Every attempt was made to secure software in the various languages; however, only English and Tagalog were available. The recorders for both of these two groups had backup hard copies of the interview questions in the event the laptop computers failed to operate.

In each of the five focus groups, two research team members hand recorded participant comments following procedures outlined in the recorder training mentioned above. The two recorders were seated in different areas of the room to maximize opportunity for all participant comments to be

easily heard by at least one of them. The audio recorder was placed in the middle of the seating area for participants, approximately equal distance from all participants. Mechanical difficulty with the audio recorder in the Vietnamese group resulted in no audiotaped record of that session. However, two sets of human recorded participant comments were completed during the session.

Immediately following the focus groups, recorders reviewed notes to capture any incomplete thoughts. Within five days after the focus groups, recorders were required to “clean up” their notes to ensure they were understandable and orderly. The notes were then read by the respective facilitators to add any additional insights and to resolve any discrepancies in the two recorders’ notes. In a few groups, minor discrepancies were noted, in which case the facilitator resolved the discrepancy by reviewing the audiotaped version of the focus group. Within 7 to 10 days after facilitators received the focus group notes from their recorders, they were required to complete their review of the notes and forward them to the Program for Applied Research and Evaluation.

The research team (both facilitators and recorders) met immediately following the focus group meetings to debrief.

Findings

The report of the focus group findings is arranged by the topic areas explored:

- Recent tire purchase information.
- Tire purchasing criteria.
- Consumer knowledge and behaviors: Tire maintenance and safety.
- Consumer knowledge: Tire recycling and disposal.
- Familiarity with tire recycling/disposal campaigns.

For each of the subtopic areas within a broader topic area, a summary of findings is provided accompanied often by comments that provide a broader understanding of the findings. Some groups engaged in richer discussion than others, resulting in a higher number of descriptive comments. For example, in the Tagalog group there was more agreement in topic areas leading to less variety of comments. Hence, use of inclusion of specific comments from the Tagalog group is limited. In addition, some topic areas sparked more discussion in some groups than in others.

Participants often diverged somewhat from the discussion into related but not relevant areas. Thus, only those elements of participant comments relevant to the purpose of the focus groups are described here.

Recent Tire Purchase Information

Reasons for Recent Tire Purchase

In the Spanish-speaking and Vietnamese-speaking groups, a few participants had recently experienced flat tires that prompted their purchase. For most other participants across the five focus groups, however, wear and associated concerns for safety instigated recent tire purchases. Personal observations were the most common determinant of wear. The most frequent references to tire wear addressed the lack of tread left, indicating the tire was “worn out.” Methods of determining the extent to which a tire was worn out were somewhat varied. For example, participants in three of the five groups mentioned determining the extent of wear by referring to

the number of miles on the tire. Participants in one of these groups also mentioned determining wear by the number of years the tires had been on the car. Only participants in the English-speaking group mentioned using the “penny test” to determine wear on tires. In addition, this was the only group to mention car performance (for example, shaking) as an indicator that tires needed to be replaced.

Take a penny and you stick it in the tread and if you can see Lincoln’s head, then you know you don’t have too much tread, or if you start to shimmy on the road then you know it’s time. (English)

I took [my car] to L.A. and when I came back it started to shake, and my dad—a mechanic—told me to get new tires. (English)

For this last participant, and a few in other groups, wear was pointed out by friends/family and mechanics, and subsequently prompted new tire purchases.

A friend of mine knows how to maintain cars. I told him that my tires were brand new and asked him to take a look at them. Surprisingly, the inner side of the tires had already worn out and become very thin. You could not tell from the outer side. It was very dangerous. (Mandarin)

In one group, some participants noted they chose to replace tires because they were going on a long trip. New tires were seen as a way to ensure a safe and trouble-free trip.

I bought them before I made a trip. I saw they were wasted and knew they would not last. (Spanish)

In two other groups, however, there was some indication that participants were more willing to push the limits of the tire tread.

My philosophy is that when the tires have a hole and cannot be repaired, that’s when they need to be replaced and I would replace all four of them because [I try] to rotate and maintain the tires. So, I only buy tires when old ones cannot be repaired. (Mandarin)

I wait until they won’t last anymore. (Spanish)

In four of the five groups, however, participants linked the condition of the tire with concerns for safety.

Well, I realized that the tread was beginning to come off to such an extent that it was past the point of safety, and I really have tires that are “V” rated for high speeds, and so I needed more tread—especially in winter—so I got them changed in September. (English)

I bought a set of four from Costco last August. My van was a 98 model. It was not maintained properly. Tires are very important for the safety. So, I changed them. (Mandarin)

Tires were bad and were dangerous to drive. (Tagalog)

Noticed that old tires were worn out. Received Costco’s coupon so replaced all four tires for better safety. (Vietnamese)

As evidenced from the summary and sample comments above, recent tire purchases were both planned and unplanned. While most participants indicated they purchased a full set of tires, there were some who had purchased a partial set (that is, two tires), and in a few cases, participants had purchased only one tire.

Methods Used for Tire Shopping

For these five focus groups, price was a significant determining factor in where to buy tires. In some cases, participants purchased from the dealer they presumed (or were told) had the lowest price (that is, Costco). In other cases, participants shopped for the best price using personal visits to the dealers as well as phone calls made after using the Yellow Pages to identify dealers. A few contacted dealers via e-mail or checked prices on the Internet.

I knew what tire I wanted and who would give me the best price, I price-shopped...but it was who would give me the cheapest price. I did it through the phone, and everyone throws you off with different prices and numbers, but you can weed it out if you know what you are looking for. (English)

Get out the Yellow Pages and make a few phone calls. The last couple of times I e-mailed them. (English)

I was told that tires at Costco were both good and less expensive. (Mandarin)

Checked prices on Internet. Went to Costco's Web site and compared with other coupons. (Vietnamese)

A few participants mentioned convenience was also a factor in selecting where to buy tires. They either did not want to spend the time searching for the least expensive price or best deal, or did not feel they had the time to do so. Some mentioned they went to the dealer closest to their home or to the dealer where they would not have to wait a long time to get the tires installed. Convenience was also related, however, to having a variety of brand names in one place at low prices, thereby eliminating the need to “shop around” for the best price.

I look in the newspapers and other places, but I don't have time to go to all those places, so I end up going to the closest place near my house. (Spanish)

I just give in. I don't know anything about cars. I don't know anything about tires. I just go and tell them this is my type of car. I need tires. That's all I say. I don't even ask questions. I should, but I don't have time. (Spanish)

Service station told me to buy them. It was a matter of convenience [to buy from them]. (English)

I did not bother my friend [to go to Costco with me] because I was afraid of long lines. I just bought the tires from the tire dealer next to our company. (Mandarin)

I know that Costco has several brands, and so I usually go with them. (English)

I only went to Costco. He showed me five different prices and they all looked good to me. I am familiar with tires and I just picked one. (Mandarin)

When Costco started to sell tires, I bought most of my tires there. They are comparatively cheaper. I used to shop around and compare the prices, but now as Costco carries most tires and they are a lot cheaper, I just go there. (Mandarin)

While price and convenience emerged as important factors in selecting a tire dealer across all five focus groups, in three of the focus groups, participants reported dealers were also selected based on recommendations by family, friends, mechanics, or knowing someone who worked at the tire dealership.

I shopped around at Sears, Costco and my mechanic actually had a neighbor mechanic that sold tires and offered the best price and free services, and so I went with it. (English)

[I] have relative working at tire dealer. Asked friends for more information. (Vietnamese)

Last tires I bought from a shop near my house. I know someone at the shop. (Spanish)

Previous positive experience with a dealer enhanced the dealer's reputation and ensured that some participants would return to the dealer for tire purchases. The level of trust they felt for the dealer cemented the relationship.

Until I left Sacramento, there was one place I went to, and I can't remember who sent me to them, but they always treated me right. They knew that I was a repeat customer and that I recommended them to other people. (English)

We rotated the tires all the time—we trusted their judgment—and my late husband insisted on it and so we stayed with them. (English)

Purchased at the same reputable store patronized for years. (Tagalog)

Went to dealer of best reputation. Had bought at same dealer 10 years before. (Vietnamese)

Dealer Purchase Information

Most participants in three focus groups had returned to dealers where they had previously purchased tires and in whom they had trust. Only a few “shopped around.” In the Tagalog-speaking group, participants reported selecting dealers with whom they were very familiar, the same stores they had been buying from for years. In the Vietnamese-speaking group, participants reported that if they had previous good experiences with a dealer, they returned to that dealer for purchases. If they had no experience with dealers, however, they relied on recommendations from family, friends, and sometimes mechanics.

Pre-Purchase Tire Research

As indicated above, participants identified price as a significant determinant in selecting a tire dealer, but it appears to play less of a role in selecting a specific tire to purchase. Across the five focus groups, brand name, reputation of the manufacturer, and experience with a particular brand (or recommendation of a particular brand from someone they trust) precluded research on the tires themselves before purchasing. For example, in the Spanish-speaking group, most participants said they trust certain brands and consequently buy those brands. Other similar comments included:

I am trying to get the same brand that was on the car because it handled well and so my cousin referred me to a place as she uses the same brand that I do for her car. (English)

I like to know about the history of the company. Michelin has fantastic tires and history. They have outstanding tires going back to France, and like they were very secretive about how they made it and I always liked them for over eight years. (English)

I took my friend's advice and then I tried the tires myself. Tires are very crucial to me because I travel on the highway all the time. If tires are not good, I guess I will be in trouble. So, I don't mind paying a little bit more for them. (Mandarin)

Last time I changed my tires at a car dealer. The mechanic told me not to simply go by brand, but also to see what you use them for. As he does repair everyday, I think he is more reliable [than other sources of information about tires]. (Mandarin)

Sometimes family and friends have used the tires before so they know which ones are good to buy. (Vietnamese)

If there has been a problem with the brand I would not buy them. For example, like when Firestone had its problem. The tires are fine now, but I still would not buy them—they have had problems. (Spanish)

For some of the participants, performance was also a factor in selecting tires, but the research they did to determine performance varied. Participants in a few of the groups used the Internet to research performance factors. In the English-speaking group, one participant asked a dealer about the “V” rating, which he defined as “information about how fast you can go without the tire giving out on you . . . the lower the rating means that you are not going to be going as fast.” He believed the salesperson intentionally misled him in providing the “V” rating for a particular tire. Consequently, he went to the tire manufacturer’s web site, got the information about the “V” rating he needed, and went back to the salesperson to confront him. One participant from the Mandarin group commented, “It is better to check [tire] information from the Internet, but of course, it only works if your English is good.” For at least a few participants, performance was related to ensuring that the tires purchased were a good “match” to the car or to driving conditions.

I match the tires to the car depending upon which year. I may get a different brand depending upon the car. So I base it really upon performance and which cars handle best depending upon the tire...I buy new tires every 6-8 months for the old cars, depending upon trial and error—which ones work best. Now with the Saturn, the tires that came with it work very well and without any problems, and I replace them exactly with what they came with, even though they were Firestone and getting a lot of heat. (English)

I had to take into account my lifestyle, as I was going to Tahoe often. So I needed something that would perform well in the snow. (English)

I don’t know anything about tires. I asked for the tires that matched and [Costco] gave me the ones which cost \$109. (Mandarin)

A few participants in three of the groups also mentioned conducting research related to the mileage warranty associated with the various brands of tires, as well as service policies. This research was conducted by visiting the dealer, looking at the tire, and talking with the salespeople at the dealership. Other research sources mentioned—in addition to the Internet, as mentioned above—included newspaper ads, TV, Costco ads, and *Consumer Reports*. In summary, however, the participants in these five focus groups did not do a significant amount of research on the tires they intended to purchase. They relied instead on previous experience with a given brand of tire, reputation of the manufacturer, recommendations of family, friends, and mechanics, and finding a tire that matched their vehicle or their lifestyle.

Dealer Role in Purchase Decision

Only one source of advertising—Costco—appeared to have significant influence in purchasing decisions, and this influence was mentioned in only one of the focus groups (Mandarin). Some participants in this group remarked they had checked the tire prices in Costco’s newsletter, while others had checked the prices on the posted list in Costco. Across all focus groups, however, dealer advertising about tire quality and/or performance had little noticeable impact on purchasing decisions for the participants. This condition is understandable given their report of relying more on experience and recommendations from others they trusted when determining which tires to buy (as discussed above). For the few participants who acknowledged any influence dealers may have had on their decision making, the influence was generally confined to

the degree to which they trusted the dealer and/or the dealer offered them the best price. Only one participant mentioned checking dealer advertisements before purchasing, and even then the success of the advertisement depended on price.

Dealer Salesperson Influence

Only a few participants in two focus groups (Vietnamese-speaking and Tagalog-speaking) mentioned being influenced by the dealer salespeople. The influence seemed centered primarily in the salesperson's style as well as knowledge of tires. For example:

If dealer is nice and impressive, then I'd buy. (Vietnamese)

[I was] assisted by a dealer when purchased tires. Dealer [salesperson] role is very important because of his knowledge of different brands of tires. (Vietnamese)

In the Tagalog-speaking group another participant said he/she would seek the advice of a tire salesperson if the car was "special," like a sport utility vehicle.

However, in three of the five focus groups, participants indicated dealer salespeople are not to be trusted and are therefore more of an influence on the buyer's decisions NOT to purchase than to purchase. As mentioned earlier, one participant in the English-speaking group reported being misled by a salesperson about the "V" rating of tires. When asked the extent to which dealer salespeople influenced their purchasing decision, participants voiced these additional concerns about trust in tire salespeople:

[He cannot be trusted] because he is representing a company. (Spanish)

Sometimes it's noticeable that they don't know what they are talking about. You can tell by the way they are speaking to you. (Spanish)

It depends on the consumer. If you're a woman, they don't really tell you much (Spanish).

Should compare what friends say with what the salesperson advertise. (Vietnamese)

Cannot trust dealers [salespeople]. Friends with experience are the best. (Vietnamese)

Influence of Dealer Special Offers

With regard to the kinds of special offers from dealers that influenced purchasing decisions, free rotation was the only special offer mentioned. Aside from special offers, however, participants also mentioned the importance of good service, a good return policy, a good warranty, and attractive sales prices as influencing their decision to buy from a particular dealer.

Time Needed to Make A Purchase Decision

The amount of time it took to make a purchasing decision varied with the reason for buying tires. Participants indicated that if the purchase was based on an emergency (for example, flat tire), the decision was very quick. In addition, if they were purchasing the same tires that were currently on their vehicle, the decision was quick, particularly if they already knew where they could get the best price. On the other hand, if they knew the purchase was imminent (for example, necessary because of wear but not an emergency), some participants indicated they took more time—up to two weeks or even a month to make a decision. The most frequent time frames mentioned for non-emergency purchases was anywhere from five minutes to an hour.

A few participants in the Mandarin-speaking group indicated it took longer to make a decision the first time they bought tires because of the amount of research they conducted. For example, they checked the Internet for tire information, they "asked around" for information, they compared

prices, learned about tire specification, etc., so it took anywhere from a few hours to a week to make a decision. After they had done the research once, however, the next time they just purchased the same tires so it was a quick decision.

Tire Purchasing Criteria

Tire Qualities/Characteristics

As mentioned earlier, across the five focus groups, brand name, reputation of the manufacturer, and experience with a particular brand (or recommendation of a particular brand from someone they trust) precluded research on the tires themselves before purchasing. When asked about those specific tire qualities/characteristics that were important when purchasing, it is perhaps not surprising that the majority of participants agreed brand name and reputation of the manufacturer were very important factors in purchasing tires. In three of the five groups, participants equated tire quality with brand name. At least a few participants, however, preferred to conduct research to determine a manufacturer's reputation before purchasing. For example, one participant reported doing Internet research on tire manufacturers to determine their reputation. Another participant mentioned she watches newspaper and TV news programs for information about the manufacturer because she tries to deal with socially responsible companies.

As reported above, a few participants specifically researched tire performance when deciding which tires to purchase, and four of the five groups mentioned tire performance as a consideration when making a purchase decision. Tire performance was equated with V ratings, not sliding on the road at high speed, endurance, reliability, durability, and safety. Design characteristics were also mentioned as important in purchase decisions and included a quiet ride, matching the design to driving conditions (for example, rain, snow), and appearance. Appearance was articulated in a variety of ways, such as style to fit the car and size proportionate to the vehicle. A few participants defined appearance in a more general way (for example, "they should look nice on the car").

In some vehicles quiet [ride] matters, but in an SUV and my pickup it doesn't. If you've got a nice car then it might matter if you are traveling to enjoy the scenery. (English)

I've got a '64 Peugeot and the white walls are important to me. (English)

If you have an old '55 Cadillac, [the tires] must match the car, and so style to fit the car matters. (English)

Depends on how you want the car to look and the type of car. (Spanish)

They are all the same to me. Appearance does not matter. (Spanish)

In three of the five groups, warranty was referred to frequently as an important tire quality/characteristic, and it was alluded to in a fourth group where members discussed the importance of the amount of miles you could get on a tire. While mentioned frequently, it was more important to some participants than to others.

Warranty and tread life are factored into price for me because you are going to figure that for this price you will get this much wear. So if it is going to have a longer tread life then you'll make that investment up front. (English)

Other characteristics mentioned, though infrequently, were tread life, rolling diameter, and the number of reinforcement plies.

Other Purchasing Criteria

As mentioned earlier, participants tended to select a dealer where they could get the best price. In all five focus groups, price was also the most important factor in determining which tires to purchase, but it was not considered in isolation of other factors. For example, a few participants in the Vietnamese-speaking group said that price mattered, but one also had to consider that if the price was too low, the quality might also be low. In one group, participants also acknowledged that sacrificing quality for a cheaper price was sometimes a necessity to stay within their budget but still ensure some degree of safety.

In the English-speaking group, the majority said that special promotions (for example, coupons, free rotation) are a plus when available, but would not be enough to change their decision about which tires to purchase. In the other four groups, however, there was more agreement among participants that special promotions had at least some influence on their purchasing decisions.

Expectation of Tire Life

Answers to this question regarding expected tire life varied significantly. Some participants indicated they expected their tires to last at least to the warranty. Others indicated their expectation in the form of years (which ranged from one to nine years—the lower part of the range being associated with people who do an exceptional amount of driving) or miles (which ranged from 40,000 to 60,000 miles). At least a few participants commented that the life of the tire was directly linked to the price of the tire. One participant commented he/she really did not have an expectation of how long the tires would last, but they would not be replaced until they could be used no more.

In three of the five focus groups there was significant discussion about the life of the tire being associated with driving habits, driving conditions, and tire maintenance.

If you drive in the city, you often stop and turn. Tires wear out faster. If you drive on the highway, tires are fine with 50,000 or 60,000 on them. (Mandarin)

I think it has to do with the real situation, such as how long you have had the tires and how many miles you have on them. If you drive in the city a lot, braking frequently would definitely hurt the tires. It is important to check your tires' treads regularly. If the tires are thin, they last about three years. (Mandarin)

Also it depends on your attitude when you drive. It depends on whether you are on the freeway or driving locally, and how much you spent on your tires. If you get the ones for 100,000 miles and you are driving 30,000 miles a year, you should get new ones after three years. If you get the cheap street tires, and you are driving 30,000 miles a year, you have to change them every year. (Mandarin)

I think it is kind of ambiguous to think it's time to change tires by saying how long you have had those tires. I think their 30,000 to 40,000 miles are so different from my 10,000 miles. (Mandarin)

Depends on how you drive also. If you burn rubber your tires won't last that long. (Spanish)

Depends on how much you drive. (Spanish)

Meaning of “Good Value” in a Tire

In simple terms, a good value to these participants meant they got everything they wanted in a tire—reputable brand name, quality, performance, endurance, safety, service agreement, good warranty, appearance—at a reasonable or affordable price. At least a few participants indicated,

however, that a reasonable or affordable price did not necessarily mean “cheap” because you get what you pay for.

As many of those qualities listed as you can afford. It's like finding the balance between how much you can afford and how many of those [qualities] you can get. (English)

The price determines the value. (Mandarin)

Importance of High-Mileage and/or Road Hazard Warranty

The importance of high-mileage or road-hazard warranties varied across the five focus groups. One school of thinking was that high-mileage and/or road hazard warranties are not important in purchasing decisions because they were included in auto insurance policies (that is, roadside service). This group of participants also argued that the importance of these warranties really depends on the driving habits of each individual. The second school of thought was that these warranties were indeed important. There were two specific reasons given for this importance: 1) if you are going to pay a lot for tires, you should get the warranty because anything can happen; and 2) if you must drive on bad roads, mountain roads, or perhaps if you do off-road driving, you need the protection.

Consumer Knowledge and Behaviors: Tire Maintenance and Safety

Knowledge of Recommended Tire Pressure

Across the five focus groups, the majority of participants said they knew the recommended pressure for their tires. Whether they actually did know the recommended pressure, however, is perhaps open to question, as there was no mention of the recommended maximum pressure versus the recommended pressure. For example, in one group, they quoted the maximum pressure and looked to each other for agreement. In a second group, the answers ranged from 30 to 35 PSI but also included a response of 4.4 PSI. In a third group, specific pressures mentioned ranged from 32 to 70 with 35 being the most frequently mentioned pressure. A minimal number of participants remarked that the recommended pressure depended on your car, the type of tire, and perhaps the load you were carrying.

When asked how they knew the recommended pressure for their tires, a few participants had no idea where to locate it. The majority of the participants, however, had no trouble identifying sources for this information. The most common answers given were that the recommended pressure appeared on the side of the tire or inside the frame of the driver's door, or could be found in the owner's manual. A few participants across the groups had received the recommended pressure from either a mechanic or from a tire salesperson, and one participant reported learning the recommended tire pressure while attending traffic school. The answers to this question also revealed that a few participants modified the recommended tire pressure for one reason or another. For example:

My mechanic says to go a little bit lower than the door [given] his experience. (English)

I look at the maximum and then just decrease the pressure by a little. Let's say, maximum is 38, I don't do 38, I will only set it to 32. (Mandarin)

Overall, participants did not seem entirely sure who establishes the recommended tire pressure, but the majority of them believed it was established by either the tire manufacturer or the car manufacturer. A few participants, however, believed the government may also play a role in establishing the recommended tire pressure.

The manufacturer would have something to do with it because they determine the standards for each tire. (English)

It might be between the car and tire manufacturer. (English)

I guess it is the transportation department. It is because it depends on your speed and the condition of the highway. (Mandarin)

Relationship of Tire Inflation to Life Span and Safety

In all five of the focus groups, participants were confident in their responses that proper inflation of tires was definitely related to life span of the tire and to safety. They provided examples of how both over-inflation and under-inflation can be problematic:

Under or over the tires will wear unevenly, and so you might have tread left in the middle but the outer are worn down and it will lower the life of the tire. (English)

If the tires exceed the recommended pressure, they will get so hard like rocks. How are you supposed to drive in this way? On the contrary, if they are under recommended pressure, you cannot drive also. The tires are deflated and this will increase friction with the surface of the road and you can't drive that way. Tires have to be close to maximum pressure level, but not too much. Otherwise, you can't brake well and it would be dangerous. (Mandarin)

I think if you have low air in your tires, the tires get wasted more. There's a limit that you have to have or they get wasted faster. (Spanish)

It is dangerous if you're driving with low air because they can become punctured. (Spanish)

Checking Tire Pressure

Most participants indicated they regularly check their tire pressure either personally or by having someone else (for example, family member, mechanic) check it. Answers regarding how frequently they check their tire pressure varied considerably ranging from every day to every four months. For some participants, events are used as the marker for checking tire pressure, such as preparing for a long trip, taking their car somewhere to get an oil change, or after they've driven 2,000–3,000 miles. A few participants indicated that they don't have any kind of schedule for checking the pressure in their tires; they just check it when a tire "looks low" or they notice something is not right. Finally, a couple of participants indicate they never personally check their tire pressure or have anyone else check it.

Method of Checking Tire Pressure

Methods of determining tire pressure fell into predominantly three categories: visual, use of a tire gauge, and other. Overall, the most frequently cited method was visual; that is, looking for some change in the normal appearance of the tire. That change, however, was determined in a variety of ways.

How much the bottom part of the tires bulge out differently than the rest of it, especially with radials. I don't use the gauge all the time, but you can visually see. For a particular vehicle and a particular tire you get a feel [for] what's right. (English).

It looks round. (English)

From naked eye. I drive every day and I can tell. (Mandarin)

Stand a little farther and look at the tires from the side. (Mandarin)

If the tires don't look round, I know it's time [to inflate them]. (Vietnamese)

A second method of determining tire pressure for these participants was the use of a tire pressure gauge (either owned by the participant, or located at gas stations). In some cases, the gauge was used to verify visual suspicions of incorrect tire pressure. Mentioned as frequently as the tire pressure gauge, however, were a variety of other methods that involved some form of touch.

I use my hand and press against the tire. (Mandarin)

I use my hand to get the feel of the tire's pressure. (Vietnamese)

If I am going to drive long distance, for sure, I will use the gauge; otherwise, I check the pressure by kicking the tires with my foot. (Mandarin)

Some participants were prompted to check tire pressure using one of the above methods by some type of performance change in the vehicle attributed to tire pressure or a physical indicator that tire pressure may have been lost.

I can tell when I drive, if the pressure becomes low, I can hear the noise. (Mandarin)

If the steering wheel is too heavy to maneuver, then I know the tires are not right (Vietnamese)

[Inflation] also affects your gas mileage . . . [for example] your gas mileage starts dropping. (English)

I notice that my car gets sluggish and that's how I kinda know [I have to] take it in to have it checked. (English)

When you feel the [car] dragging while driving, you know the pressure is low. (Vietnamese)

When the car pulls sideways, then you know it. (Vietnamese)

If the cap is not there, then I know chances are air leaked out (Vietnamese)

Other Aspects of Tire Maintenance and Tire Life Span

When asked what other aspects of tire maintenance (besides checking tire pressure) relate to the life of a tire, participants mentioned the more obvious factors of tire rotation, alignment, and balancing, as well as the influence of maintaining the vehicle's shocks on tire life span. For at least a few of the participants, however, it appears tire maintenance was equated with driving habits as well as with service. For example, turning too fast, rubbing tires on the curb when parking, and avoiding problem areas such as construction sites were part of the discussion of how tire maintenance relates to the life span of a tire.

Tire Rotation

Responses to the question of how often tires should be rotated tended to follow two themes. One theme related to mileage on tires or time since last rotation as an indicator that it was time for rotation. The other theme related to including balancing along with other vehicle service (for example, oil change, alignment).

I do it every six months. (Mandarin)

When I have 7,000–8,000 miles on the tires. (Mandarin)

I rotate them with the oil change. (English)

Tires should always be checked, balanced and rotated every 10,000 miles; have rotation and alignment at the same time. (Tagalog)

I have driven for 19 years, and I rotate my tires every year. I think one should have wheels aligned when tires are rotated. It only costs you a little extra to do alignment when you do rotation. (Mandarin)

The participants' ideas about when tires should be rotated came from reviewing the owner's manual, noticing wear on the tires, and from listening to friends, family members, and mechanics.

A noticeable number of participants reported they do not rotate their tires.

I follow the [instructions in the] owner's manual. (Vietnamese)

[I rotated the tires] in compliance with the dealer's instruction to rotate at 5,000 miles. (Vietnamese)

[I rotated the tires because] I noticed that my front tires wore out badly. (Vietnamese)

I have a friend who is a mechanic at a repair shop. He said that tires would be more durable if they rotate once every six months, such as flipping them over as well as swapping the ones in the front with the ones in the rear. (Mandarin)

People say we should do every 5,000 miles or every six months. (Mandarin)

I actually don't rotate them. My father is a mechanic and said don't do it, it doesn't work. (English)

I don't think I have [rotated tires] since my first car. (English)

Never. I guess it is more than four years. (Mandarin)

Wheel Alignment

As with rotation, participants mentioned wheel alignment as a maintenance service they do with some regularity, either by charting the need in some way or because it was recommended by their mechanic. Similar to their comments regarding rotation, for some participants wheel alignment is a service that should be done when the tires are rotated. For others, however, the performance of the car was an indicator of when a wheel alignment was needed. As with participant comments regarding rotation, some participants do not see the need for regular wheel alignment.

Whenever you replace the tires [you should have the wheels aligned]. (Mandarin)

If I step on the brake and the car shimmies or it makes a right turn, then it's time. (English)

When I feel the pulling while driving [I have a wheel alignment]. (Vietnamese)

Usually when the wheels are impacted in a car accident, then you need alignment. (Mandarin)

I don't know if it's true, but I understand it's only one alignment needed. (Spanish)

I rotate my tires, but I don't align them. (Spanish)

I never have my wheels aligned. I thought as long as my car is going [in] a straight line when I let go of the steering wheel, I don't need it. (Mandarin)

I have not had my wheels aligned before, but rotation is a must. (Mandarin)

I don't think it [wheel alignment] should be a regular thing. (Mandarin)

Charting Tire Maintenance

In two of the five focus groups, members indicated they do not chart tire maintenance in any way. However, in the remaining three groups participants described a variety of personal techniques they use to remind themselves when tire maintenance is needed. The English-speaking participants were by far the most vocal on the topic of charting tire maintenance.

Every time I buy gas, I write the date, the odometer, how much I paid and how many gallons in a little 3 x 5 book, and I note when anything significant happens. There's nothing else to do while you pump gas, so that's why I do it, and it also reminds me of service and maintenance issues. (English)

I track it . . . the oil filter change and things like that. (English)

When I went to one place, I got a calendar from them. (English)

I put down in the owner's manual the dates for oil change, mileage, etc. (Mandarin)

Several other participants relied on someone (or something) else for reminders of tire maintenance.

I get a reminder from my mechanic—alignment, rotation, my other things. (English)

My [Honda] Accord would remind me . . . with lights in the car—reminder lights. (English)

My mechanic sort of . . . every time I take it in for an oil change we sort of remember together. (English)

The tire store sends me something. (English)

If you have a new car they give you a list. When you take it in to get serviced they'll tell you when to bring it back. They'll mark the date for you to come back. (Spanish)

Location of Tire Maintenance

Most participants indicated that they go to a car dealership for maintenance if they have a newer model car. Otherwise they are more likely to go to a tire dealer (for example, Firestone, Goodyear, Goodrich, Sears, Big O, Costco) for tire maintenance. The dealer where they bought their tires was a common choice, particularly when some type of maintenance was included free with their purchase. A few participants indicated they have a favorite mechanic who takes care of their tire maintenance. A few other participants indicated they shop around for the best prices for maintenance services. Across the groups, there were also a few participants who do their own tire maintenance or who have friends or family members take care of it for them.

When asked whether they would be more likely to rotate their tires regularly if free tire rotation was included with the purchase of the tires, the majority of those answering said yes; however, not many participants overall responded one way or another to this question.

Tire Maintenance Reminders

As mentioned above, only a few participants get reminders from the place where they purchased their tires. Those who did found the reminders useful. The remaining participants were confident in their own ability to chart their tire maintenance.

Familiarity with Public Education Campaigns Regarding Tires

In three of the focus groups, a few participants had seen a variety of commercials, web sites, pamphlets, etc., that in some way constituted education about tires but were not necessarily campaigns.

I see a lot of campaigns to disinform and beguile people to get them to buy tires, from mass media to commercial through sheer propaganda to make one-sided commercials. (English)

Have you ever seen a Michelin commercial that isn't emotional?

The [manufacturer's] Web site actually has the serial numbers that the mechanics have so that [the dealer] couldn't rip me off. They are very straightforward and they are not trying to deceive the consumer. Sure, there's fluff on the front page, but after that it is pretty clear. (English)

Farmer's Insurance has something that tells you about tires. (English)

There are reminders on TV to alert people how to maintain tires, but it is from the Chinese channel. It could be from the AAA, but I am not sure who is sponsoring the TV reminders. (Mandarin)

Tire Maintenance Brochure

Most participants had never seen such a brochure. Others thought they might have seen some, but weren't sure. A few thought perhaps one was included with the receipt when they purchased their tires, but they did not look at it (in one case this was because the brochure was written only in English). One participant reflected the lack of trust in dealers mentioned earlier. He/she said they would not give you that information because they wanted you to come back so they could charge you for the information.

Only one participant could remember specific information contained in the brochure.

Maintaining car of excess weight, when it rains not to drive fast because the road becomes slippery and other things in order for people to take precautions. (Spanish)

Familiarity with Vehicle Owner's Manual Section on Tire Maintenance

In two of the five groups (English and Tagalog), most participants reported they had read this section of the owner's manual. In the remaining groups, the consensus seemed to be that there was no need to read it unless you had trouble with your tires. A few commented on the general difficulty of reading the owner's manual saying it was too technical and boring. Another noted that he/she had not read anything in the manual because it was not written in his/her first language.

I think it's like the VCR manual. Some people read it and some don't—they just set up the VCR. Just the way in which manuals are made, they look so boring—nothing about them is interesting. I have skimmed through it but not read it. (Spanish)

When there's a malfunction and I have to fix something, I read it, but only the particular section that includes what I need to fix. Only if something were wrong with the tires or I was going to do something to them would I read the section on tires in the manual. (Spanish)

I think the majority of people don't read it [the manual]. Personally, I think it's something you do not need a manual for. Once your tires are on you know if they work or not. (Spanish)

Consumer Knowledge: Tire Recycling and Disposal

Disposition of Old Tires When New Ones Purchased

The majority of participants indicated that the dealers where they buy their new tires keep the old ones. Some participants acknowledged that they paid a fee for the dealer to perform this service (statements of the fee were \$.25, \$2, and \$5). What happens to the old tires once they are turned over to the dealer was less clear to participants, but they offered a variety of opinions.

I bought the new tires and they [the dealer] took care of the old ones for me. (Mandarin)

They all end up in the same place. They end up near the side of a lake, or in Daly City, or next to the bay in Foster City (English)

My waste management company takes care of that. They charge \$5 for collecting and disposing of old tires. (Mandarin)

Costco recycles old tires. (Mandarin)

The place where they are bought, you leave them there and they take care of that. I think they take it upon themselves to recycle them or many times they retread them and sell them again. (Spanish)

A few participants admitted to dumping old tires in the trash or in their own backyard. Others had seen established tire yards for dumping of tires in unauthorized areas.

Sometimes they have tire yards, and sometimes they are on fire. (English)

On Highway 80, they had tires on the side of the road—hundreds and hundreds of tires that were dumped. (English)

Knowledge of Tire Biodegradability

The majority of participants indicated without reservation that tires are not biodegradable. Only a few participants indicated they simply did not know whether tires were biodegradable. The remaining participants either expressed some degree of uncertainty or believed components of the tire might biodegrade over significant time.

You are talking about disintegrating naturally, not using any chemicals to help the process of disintegration? I don't think a tire can be disintegrated by itself in nature. They're pretty much like plastic products. (Mandarin)

It would take a few hundred years before they can be disintegrated. (Mandarin)

They are [biodegradable] but it takes thousands of years. (English)

Yes and no. [Tires are made of] Rubber, carbon and metal and the metal takes a lot longer [to biodegrade] than the other materials. (English)

Environmental Risks of Discarded Tires

Overall, the participants agreed there are environmental and health risks posed by discarded tires (only a few participants expressed a lack of knowledge on this topic). When asked to identify those risks, participants most frequently mentioned toxicity and air pollution associated with burning tires. This pollution was seen as a threat to all living things: humans, animals, and plants. However, other risks were mentioned as well.

[Discarded tires] are dusty and filthy. (Vietnamese)

Depends on where [the tires] are. They serve as a place that holds standing water and breeds mosquitoes. (English)

Obviously it's harmful. Rainwater will help it produce mosquitoes and other viruses. Bad weather will affect them and they will become harmful for our health. (Vietnamese)

[The toxicity] might drain into ground water table. (English)

Chemicals from them will be absorbed into the soil and cause pollution to water. (Vietnamese)

Knowledge of Tire Recycling

The majority of participants had at least some familiarity with ways in which tires are recycled or reused. The items they identified fell primarily in three categories: personal products, home/professional products, and public use products.

Home/Professional Products

Flooring
Mats
Various kinds of work mats
Doormats
Roofing felts
Table bases
Planters and rope swings
Artistic purposes

Public Use Products

Bumpers
Bumpers for boats at ferry pier
Boat docks
Road material
Retreaded tires
Patching material for old tires
Rubber (when melted under hot temperatures)
Substitute for coral reefs in the Philippines
Children's playgrounds

Personal Products

Purses
Jewelry
Shoes/Sandals
Soles for shoes/slippers in developing countries
Prosthetic purposes (shoe portion of a prosthetic leg)

Knowledge of Retreaded Tires

Only a few participants had previously purchased retreaded tires. One noted the tires were less expensive than new tires, and he never had any trouble with them. When asked whether he would purchase them again, he said yes, but qualified his response by saying he would purchase them for his pickup (an older model that he did not drive often), but not for the car he drove regularly. The other few participants who had purchased retreaded tires previously for the purpose of saving money indicated they were not satisfied with the quality of the tires. One commented the ride was bumpy and he/she felt unsafe.

While a few participants had never heard of retreaded tires, the rest had at least some familiarity with them and expressed varying opinions. For example, one opinion expressed by participants was that such tires were inexpensive and economical (that is, last the same amount of time as new tires for less money), and came with warranties, but they had no idea about the potential wear of retreaded tires. Participants believed many people use them. A second opinion expressed by only a few participants was that given the advances in technology, it was likely that retreaded tires

would be as good as the original ones. The third opinion, however, was the one more commonly held—that retreaded tires were unsafe and should be avoided.

When you see bald tire treads on freeway, they are usually retreaded tires. (English)

Recapped tires are put in a mold and they add rubber and fall off. (English)

I have seen them fall off of 18-wheelers—called gators. (English)

I won't purchase them. (English)

They are not safe. (Mandarin)

[Retreaded tires] can never be as good as the original ones. (Vietnamese)

With the exception of the one person who had a good experience with retreaded tires (mentioned above), in three of the five focus groups, the consensus was they would not purchase retreaded tires in the future. In the remaining two groups, while approximately half of the participants said they would not purchase retreaded tires, the remaining half said if their financial condition made it necessary for them to consider paying less than they normally would for tires, they would consider retreaded tires.

General Attitude Toward Recycling

Overall, participants had a positive to very positive attitude toward recycling on a general level, with only a few people offering negative views. One participant commented on the leniency of recycling in the Bay Area when compared to the East Coast and Europe.

The majority of participants currently engage in recycling, some having done so for ten years. Reasons for recycling tended to be either philosophical or practical, and in a few cases a necessity to avoid a government-imposed fine. For example:

I believe in it. (English)

[Recycle] to protect our environment. (Mandarin)

There won't be products just sitting in a landfill [if we recycle]. With so much trash that is produced each day, it will not continue to grow and things can be reused. (Spanish)

[I recycle] for charitable reasons, to increase income, to donate to churches. (Vietnamese)

When the city introduced the recycling containers, it became easy [to recycle] with the containers. (Spanish)

[Recycling] is also a business opportunity. More positions are created in this industry. (Mandarin)

By order of the government [I recycle]. (Vietnamese)

Current Recycling Habits

Participants reported recycling a variety of products such as glass, aluminum cans, paper, newspapers, foil, milk containers, plastics, and plastic bags.

While a number of participants commented they do purchase recycled products, when asked to name these products, they could only recall such things as water bottles, plastic boxes, paper, and beer cans.

Familiarity with California Tire Recycling Act of 1989

In all of the five focus groups, only a few thought they might have heard of the California Tire Recycling Act of 1989 but were unsure. One commented, “Yes, I have [heard of it] and it costs me more money because it is another bureaucracy established, and we have to pay for it, and therefore it costs more. It costs me 15–20 bucks more, and they do this by adding a direct or indirect fee to the tire.”

Most participants knew they paid some kind of fee, but did not remember the amount. Estimates of the fee ranged from \$.25 per tire to \$3.50 per tire. Some participants willingly acknowledged they did not pay attention to the fee.

While some participants were unsure of the purpose of the fee, others thought it had something to do with either installation of new tires or disposing of the old tires. One participant commented, “I think it’s for the, like the oil, they pay for someone to come and have them taken away to have them recycled and because it’s considered a hazardous waste material.” In addition to presuming the fee was for either installation or disposal purposes, participants indicated the fee might represent a tax or other government revenue used for maintenance of roads/freeways, salaries, campaign funds, recycling campaigns, or labor costs.

Familiarity with Tire Recycling/Disposal Campaigns

Roughly half the participants in only one of the five focus groups indicated they might have seen literature on tire recycling and/or disposal. For example:

I think I saw some in the archives of Sonoma State University, but nothing in general where you can find it, and they don’t provide it where I buy tires, but you’d think that they would. (English)

Perhaps [I have seen some literature] and I just looked and thought that it was boring and ignored it. (English)

Only one participant expressed familiarity with tire amnesty days. He/she said it was held Feb. 14, and no one was allowed to drive on that day. No one else had heard of these events/programs.

Limitations of the Findings

As mentioned earlier in the report, focus groups represent only small groups of individuals who in some way meet the criteria of possessing knowledge and opinions valuable to the client, in this case CIWMB. Even though the focus group participants in this study were for the most part randomly selected from a larger population, the results of their comments cannot be generalized to the larger population because of the small sample size (59) associated with these focus groups. Similarly, comments from within each of the five language groups cannot be taken to be indicative of the knowledge and opinions of the larger culture that group represents.

The focus group participant comments gathered in this study served only the original purpose: to provide more depth of information about the topic of interest in this project. That information, when added to the information gained in the earlier literature review associated with this project, provided a richer base from which to develop questions to meet the research objectives outlined by CIWMB in this phase of the research.

Conclusions

Several key findings came out of the five focus groups, each with major implications for education programs directed toward tire consumers. The following is a summary of these key findings and the related implications.

Recent tire purchases by some focus group participants were prompted by concerns for tire wear and safety. Some purchases were planned because the number of miles driven or the age of their existing tires necessitated the purchase of new tires. Others were unplanned and the result of a flat tire or, by chance, tire wear heightened their safety concerns. Tire education programs that reach drivers who plan their tire purchases would likely have some influence on their purchase decisions, assuming the programs contain information that is perceived to be relevant and credible. If these education programs stress the importance of tire maintenance and inspection on a regular basis, they may also help to reduce the number of unplanned tire purchases made by some drivers.

Brand name, reputation of the manufacturer, and experience with a particular brand of tire seemed to override the need for most focus group participants to conduct research on tires prior to making purchases. Dealer advertising had little impact on decisions to purchase, as did dealer salespeople. Tire education programs that discuss important information that should be considered when making tire purchases produced and provided by an independent third party, such as the CIWMB, is more likely to influence consumer decision making than is information produced and distributed by tire manufacturers and dealers.

The majority of focus group participants said they knew the recommended air pressure for their tires. They identified three places this pressure could be located: 1) on the side of the tire, 2) inside the frame of the driver's door, and 3) in the owner's manual. They were unsure who establishes the recommended tire pressure, but were confident that proper tire inflation is related to longevity of the tire and to safety. This finding indicates that most focus group participants were not clear regarding proper air pressure for their tires. Tire education programs need to emphasize who establishes recommended air pressure for vehicles and where the driver of a vehicle can find this information.

Most focus group participants reported checking their tire pressure, though some were more systematic than others. The frequency with which they reported checking their tire pressures varied from daily to every four months. Methods for determining tire pressures varied from tire gauges to visual inspections. Tire education programs should focus on educating drivers about the importance of routinely checking tire pressures with tire gauges to obtain accurate readings.

The focus group participants acknowledged tire rotation and wheel alignment are important tire maintenance activities, but did not agree about the frequency with which these activities should be performed. Tire education programs should provide information regarding how often these activities should be performed as well as their importance to tire safety and longevity.

Focus group participants knew that dealers keep their old tires when new ones are purchased and installed on their cars, but they know little about what the dealer does with the old tires or the exact amount of the fee they pay the dealer to dispose of their old tires. In addition, they are aware of some of the environmental risks posed by old tires that are not disposed of properly, but they are largely unwilling to purchase retreaded tires. Most were relatively familiar with ways that tires can be recycled, but only a few were even vaguely familiar with the California Tire Recycling Act of 1989.

Very few participants remembered having seen literature on tire recycling and/or disposal campaigns. Tire education programs should provide information on the California Tire Recycling Act and brief summaries of the related programs that have been implemented as a result of this legislation. The programs should include information on methods of disposing of old tires as well as methods of obtaining more information about tire recycling and disposal campaigns available near where they live or work.

Based on the focus group findings, it appears that California tire consumers possess a lot of incomplete and/or incorrect information about important tire purchase criteria, proper tire inflation and maintenance, tire recycling, and tire disposal. Tire education programs should provide California drivers with succinct information on each of these topics.

Findings from the Statewide Telephone Survey

Introduction

Findings from the literature review and focus groups were utilized to develop the third stage of this research—a telephone survey of California drivers conducted in the five languages. This report presents the findings from the telephone survey of drivers. These findings are grouped into five topic areas, each of which is summarized below:

1. Knowledge and behaviors related to tire maintenance and safety.
2. Recent tire purchase information.
3. Tire purchasing criteria.
4. Knowledge, beliefs, and behaviors regarding tire recycling and disposal.
5. Familiarity with tire recycling and disposal campaigns.

Methodology

Questionnaire Development

The draft questionnaire for the telephone survey was developed by Dr. Jim Fletcher, Dr. Kenneth Chapman, Dr. Ruth Guzley, and Joleen Barnhill of California State University, Chico, in consultation with Elena Yates and Linda Dickinson of the California Integrated Waste Management Board. Changes in the questionnaire were made in a meeting of these individuals, and then modified for pre-testing by the Social Sciences Research Center at California State University, Fullerton.

The English version of the questionnaire was pre-tested by California State University, Fullerton, and several changes were recommended by Dr. Gregory Robinson, Director of the Social Sciences Research Center. Changes were made with the approval of Elena Yates at CIWMB, and the questionnaire was finalized for data collection in English. The questionnaire was then translated into Mandarin, Spanish, Tagalog, and Vietnamese for data collection. A copy of the English version of the telephone questionnaire is included in Appendix M of this report.

All study samples for large populations have an associated sampling error based on the size of the sample. A total of 200 drivers (the sample size) from each of the five language groups were surveyed for this study. A sample of 200 has an associated sampling error of +/-6.9 percent with 95 percent confidence. In other words, the reader of this report can be 95 percent sure that the opinions and characteristics of the sample of drivers presented represent the population of drivers from which the sample was selected within +/-6.9 percent.

Findings

Interviews were completed with a minimum of 200 California drivers age 18 and over from each of the five language groups (English, Spanish, Vietnamese, Mandarin, and Tagalog) (see Table 1). These interviews were conducted during the spring and early summer of 2003.

Table 1. Languages of California drivers who responded to the 2003 CIWMB survey regarding attitudes, perceptions, beliefs and knowledge regarding tire care, maintenance, safety, purchase behaviors and environmental ramifications.

Languages of Drivers Surveyed	Number	Percent
English	203	20.1
Spanish	203	20.1
Vietnamese	201	19.9
Mandarin	200	19.8
Tagalog	203	20.1
Total	1010	100.0

Data were analyzed with the Statistical Package for the Social Sciences (SPSS) software by (1) running frequency counts on the data to determine the distribution of responses for each question, and (2) running cross-tabulations of responses to dependent variables (that is, perceptions regarding the importance of tire safety and maintenance, etc. by language groups—independent variable). The level of statistical significance for differences in response patterns for the cross-tabulations was set at .05 or less. The Pearson chi-square statistic was used to measure statistical differences in response patterns for each question on the survey. The statistical model for cross-tabulation requires a minimum of five expected responses in each table cell for a valid analysis. Tables with less than five responses in one or more cells reported here should be interpreted with caution. Data from table cells with less than five responses should not be generalized from the survey sample to the population represented by that sample.

The following is a summary of findings for each of the five language groups of California drivers.

Demographic Characteristics of Survey Respondents

Demographic characteristics are utilized to describe a study population and to test for differences in the study population that are important to issues being studied, such as differences in opinions regarding the importance of tire maintenance to vehicle safety or differences in the types of information that are consulted prior to purchasing tires. These demographics are also useful in verifying that the sample is representative of each study population within sampling tolerances. Survey respondents in this study were asked a series of ten demographic questions:

Number of years of driving experience (q1).

- There were significant differences among the five language groups in terms of years of driving experience. The mean (average) experience for English-speaking drivers was 28.5 years. In contrast, the mean for Mandarin-speaking drivers was 9.4 years. The means for the other three language groups varied from 13.6 years for Vietnamese-speaking drivers to 15.9 years for Spanish and 18.5 years for Tagalog (Table 2).

Table 2. Number of years that California drivers who were surveyed have been driving (q1) cross-tabulated by language groups.

Years of Driving Experience	Languages of Drivers Surveyed					
	English	Spanish	Vietnamese	Mandarin	Tagalog	Total
0–5 years	13 6.4%	43 21.2%	34 16.9%	73 36.5%	39 19.2%	202 20.0%
6–10 years	20 9.9%	47 23.2%	71 35.3%	70 35.0%	30 14.8%	238 23.6%
11–15 years	20 9.9%	38 18.7%	37 18.4%	30 15.0%	23 11.3%	148 14.7%
16–20 years	25 12.3%	23 11.3%	24 11.9%	14 7.0%	34 16.7%	120 11.9%
21–25 years	15 7.4%	15 7.4%	10 5.0%	5 2.5%	22 10.8%	67 6.6%
26–30 years	31 15.3%	16 7.9%	16 8.0%	4 2.0%	33 16.3%	100 9.9%
31 or more years	79 38.9%	21 10.3%	9 4.5%	4 2.0%	22 10.8%	135 13.4%
TOTAL	203 100.0%	203 100.0%	201 100.0%	200 100.0%	203 100.0%	1010 100.0%

Pearson chi-square significance = .000

Means: English = 28.5 years
 Spanish = 15.9 years
 Vietnamese = 13.6 years
 Mandarin = 9.4 years
 Tagalog = 18.5 years

Number and types of vehicles owned or leased (q2).

- Most drivers from all five language groups reported owning or leasing one or more cars. However, slightly more than one-fourth (26.1 percent) of Spanish-speaking drivers said they did not own or lease a car. In contrast, Tagalog speakers were significantly more likely to say they own or lease three or more cars (Table 3). Spanish and Tagalog-speaking drivers were significantly more likely to say they own or lease a van than drivers in the other three language groups (Table 4). English, Spanish, and Tagalog-speaking drivers were significantly more likely to say they own or lease a truck than Mandarin and Vietnamese-speaking drivers (Table 5).

Table 3. Number of cars owned or leased by drivers (q2a) cross-tabulated by language groups.

Number of Cars Owned or Leased	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
None	22 10.8%	53 26.1%	21 10.4%	8 4.0%	14 7.0%	118 11.7%
1	116 57.1%	128 63.1%	161 80.1%	112 56.3%	87 43.3%	604 60.0%
2	49 24.1%	18 8.9%	11 5.5%	60 30.2%	57 28.4%	195 19.4%
3 or more	16 7.9%	4 2.0%	8 4.0%	19 9.5%	43 21.4%	90 8.9%
Total	203 100.0%	203 100.0%	201 100.0%	199 100.0%	201 100.0%	1007 100.0%

Pearson chi-square significance = .000

Table 4. Number of vans owned or leased by drivers (q2b) cross-tabulated by language groups.

Number of Vans Owned or Leased	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
None	166 81.8%	146 72.3%	158 78.6%	164 82.4%	136 67.3%	770 76.5%
1 or more	37 18.2%	56 27.7%	43 21.4%	35 17.6%	66 32.7%	237 23.5%
Total	203 100.0%	202 100.0%	201 100.0%	199 100.0%	202 100.0%	1007 100.0%

Pearson chi-square significance = .001

Table 5. Number of trucks owned or leased by drivers (q2c) cross-tabulated by language groups.

Number of Trucks Owned or Leased	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
None	123 60.6%	124 61.4%	178 88.6%	193 97.0%	141 69.8%	759 75.4%
1 or more	80 39.4%	78 38.6%	23 11.4%	6 3.0%	61 30.2%	248 24.6%
Total	203 100.0%	202 100.0%	201 100.0%	199 100.0%	202 100.0%	1007 100.0%

Pearson chi-square significance = .000

Number of miles driven each year (q3).

- As shown in Table 6, the average number of miles driven per year by California drivers varied among the five language groups. For example, Mandarin-speaking drivers said they drive an average of 11,832 miles per year in their primary vehicles. In contrast, Spanish-speaking drivers said they drive an average of 14,905 miles per year in their primary vehicles. Spanish-speaking drivers were significantly more likely to say they drive 20,001 miles or more per year (48.3 percent) than were the drivers in the other four language groups (17.4 percent—23.6 percent).

Table 6. Number of miles driven each year by drivers in their primary vehicles (q3) cross-tabulated by language groups.

Miles Driven Per Year in Primary Vehicle	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
0–5,000	23 11.3%	20 9.9%	36 17.9%	22 11.0%	22 10.8%	123 12.2%
5,001–7,500	10 4.9%	7 3.4%	15 7.5%	15 7.5%	12 5.9%	59 5.8%
7,501–10,000	46 22.7%	35 17.2%	47 23.4%	73 36.5%	49 24.1%	250 24.8%
10,001–15,000	56 27.6%	30 14.8%	55 27.4%	28 14.0%	54 26.6%	223 22.1%
15,001–20,000	27 13.3%	13 6.4%	13 6.5%	17 8.5%	18 8.9%	88 8.7%
20,001 or more	41 20.2%	98 48.3%	35 17.4%	45 22.5%	48 23.6%	267 26.4%
Total	203 100.0%	203 100.0%	201 100.0%	200 100.0%	203 100.0%	1010 100.0%

Pearson chi-square significance = .000

Means: English = 14,117 miles
 Spanish = 14,905 miles
 Vietnamese = 12,782 miles
 Mandarin = 11,832 miles
 Tagalog = 11,977 miles

Highest level of education completed (q37).

- A significantly larger percentage of Tagalog speakers held a bachelor's degree than members of the other four language groups. In contrast, a significantly larger percentage of English and Mandarin speakers held master's degrees. More than two-thirds (68.1 percent) of Spanish speakers reported having a high school education or less. This is a significantly larger percentage with a high school education or less than reported for the other four language groups (Table 7).

Table 7. Education levels of drivers (q37) cross-tabulated by language groups.

Highest Level of Education Completed	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
Did not graduate high school	7 3.4%	63 32.5%	9 4.9%	7 4.0%	4 2.0%	90 9.5%
High school graduate	34 16.7%	69 35.6%	45 24.5%	25 14.5%	31 15.7%	204 21.5%
Some college but no degree	41 20.2%	37 19.1%	42 22.8%	8 4.6%	35 17.8%	163 17.1%
Associate degree	25 12.3%	10 5.2%	22 12.0%	7 4.0%	9 4.6%	73 7.7%
Bachelor's degree	49 24.1%	7 3.6%	58 31.5%	72 41.6%	109 55.3%	295 31.0%
Master's degree	33 16.3%	3 1.5%	5 2.7%	37 21.4%	8 4.1%	86 9.0%
Professional degree	6 3.0%	5 2.6%	3 1.6%	2 1.2%	1 .5%	17 1.8%
Doctorate degree	8 3.9%	0 0.0%	0 0.0%	15 8.7%	0 0.0%	23 2.4%
Total	203 100.0%	194 100.0%	184 100.0%	173 100.0%	197 100.0%	951 100.0%

Pearson chi-square significance = .000

Annual household income (q38).

- The highest median annual household income range for drivers in a language group was \$60,000 to \$69,999 for English speakers (Table 8), followed by Tagalog speakers at \$50,000 to \$59,999 and Mandarin speakers at \$40,000 to \$49,999. Vietnamese speakers with \$30,000 to \$39,999 and Spanish speakers with \$25,000 to \$34,999 reported the lowest median household incomes.

Table 8. Household income levels of drivers (q38) cross-tabulated by language groups.

Total Annual Household Income	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
Less than \$20,000 per year	8 4.5%	29 20.4%	27 19.9%	16 12.9%	9 5.8%	89 12.1%
\$20,000–\$29,999	15 8.5%	42 29.6%	16 11.8%	19 15.3%	17 11.0%	109 14.9%
\$30,000–\$39,999	12 6.8%	27 19.0%	26 19.1%	17 13.7%	13 8.4%	95 13.0%
\$40,000–\$49,999	29 16.5%	13 9.2%	15 11.0%	19 15.3%	23 14.8%	99 13.5%
\$50,000–\$59,999	19 10.8%	7 4.9%	16 11.8%	11 8.9%	17 11.0%	70 9.5%
\$60,000–\$69,999	19 10.8%	8 5.6%	9 6.6%	12 9.7%	14 9.0%	62 8.5%
\$70,000–\$79,999	15 8.5%	4 2.8%	3 2.2%	4 3.2%	9 5.8%	35 4.8%
\$80,000–\$89,999	13 7.4%	3 2.1%	1 .7%	2 1.6%	8 5.2%	27 3.7%
\$90,000–\$99,999	11 6.3%	3 2.1%	4 2.9%	5 4.0%	3 1.9%	26 3.5%
\$100,000–\$124,999	22 12.5%	6 4.2%	10 7.4%	7 5.6%	27 17.4%	72 9.8%
\$125,000–\$149,999	6 3.4%	0 0.0%	4 2.9%	3 2.4%	7 4.5%	20 2.7%
\$150,000–\$174,999	1 .6%	0 0.0%	2 1.5%	5 4.0%	5 3.2%	13 1.8%
More than \$175,000	6 3.4%	0 0.0%	3 2.2%	4 3.2%	3 1.9%	16 2.2%
Total	176 100.0%	142 100.0%	136 100.0%	124 100.0%	155 100.0%	733 100.0%

Pearson chi-square significance = .000

Median household incomes: English = \$60,000 - \$69,999
 Spanish = \$25,000 - \$34,999
 Vietnamese = \$30,000 - \$39,999
 Mandarin = \$40,000 - \$49,999
 Tagalog = \$50,000 - \$59,999

Racial or ethnic background (q39).

- A majority (58.6 percent) of the English-speaking drivers were White (non-Hispanic) (Table 9). Of the Spanish-speaking drivers, 85.0 percent said they were of Mexican descent.

Table 9. Ethnic backgrounds of drivers (q39) cross-tabulated by language groups.

Ethnicity	Language					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
Hispanic or Latino of Mexican descent	21 10.8%	164 85.0%	0 0.0%	0 0.0%	0 0.0%	185 18.7%
Other Hispanic or Latino	8 4.1%	20 10.4%	0 0.0%	0 0.0%	0 0.0%	28 2.8%
White (non-Hispanic)	119 61.3%	3 1.6%	0 0.0%	0 0.0%	4 2.0%	126 12.7%
Black or African American	3 1.5%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	3 .3%
Asian	9 4.6%	2 1.0%	201 100.0%	200 100.0%	189 94.0%	601 60.8%
Native Hawaiian or other Pacific Islander	1 .5%	0 0.0%	0 0.0%	0 0.0%	3 1.5%	4 .4%
American Indian or Alaska Native	1 .5%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	1 .1%
Some other race	5 2.6%	1 .5%	0 0.0%	0 0.0%	0 0.0%	6 .6%
Mixed	27 13.9%	3 1.6%	0 0.0%	0 0.0%	5 2.5%	35 3.5%
Total	194 100.0%	193 100.0%	201 100.0%	200 100.0%	201 100.0%	989 100.0%

Year of birth (q40).

- The median (middle) birth year for English-speaking drivers was 1956 (Table 10). This birth year was very similar to Tagalog-speaking drivers, whose median birth year was 1954. Spanish-speaking drivers were the youngest group of drivers. Their median birth year was 1969.

Table 10. Age groups of drivers (q40) cross-tabulated by language groups.

Years of Birth of Survey Respondents	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
1913–1939	33 16.7%	5 2.8%	12 7.1%	7 4.6%	19 10.1%	76 8.6%
1940–1949	34 17.2%	13 7.3%	25 14.8%	15 9.9%	48 25.4%	135 15.2%
1950–1959	42 21.2%	31 17.3%	35 20.7%	36 23.8%	47 24.9%	191 21.6%
1960–1969	41 20.7%	49 27.4%	41 24.3%	41 27.2%	32 16.9%	204 23.0%
1970–1979	35 17.7%	63 35.2%	46 27.2%	36 23.8%	29 15.3%	209 23.6%
1980–1985	13 6.6%	18 10.1%	10 5.9%	16 10.6%	14 7.4%	71 8.0%
Total	198 100.0%	179 100.0%	169 100.0%	151 100.0%	189 100.0%	886 100.0%

Pearson chi-square significance = .000

Median birth year: English—1957
 Spanish—1969
 Vietnamese—1964
 Mandarin—1963
 Tagalog—1954

Home zip code (q41).

Zip codes of survey respondents were grouped into northern and southern California. Southern California counties included Imperial, Kern, Los Angeles, Orange, Riverside, San Bernardino, San Diego, San Luis Obispo, Santa Barbara, and Ventura. The remaining 48 counties were grouped into northern California. A cross-tabulation of northern versus southern California residents by language groups revealed that a significantly larger percentage of Spanish speakers lived in southern California, and that a significantly larger percentage of Vietnamese speakers lived in northern California. Differences in the percentages of northern versus southern California respondents for the other three language groups were not statistically significant (Table 11).

Table 11. Northern versus southern California (zip code recoded) (cross-tabulated by language groups.

Language	County of Residence— Northern	County of Residence— Southern	Total
English	80	115	195
	23.1%	21.7%	22.3%
Spanish	51	117	168
	14.7%	22.1%	19.2%
Vietnamese	79	90	169
	22.8%	17.0%	19.3%
Mandarin	58	96	154
	16.7%	18.1%	17.6%
Tagalog	79	111	190
	22.8%	21.0%	21.7%
Total	347	529	876
	100.0%	100.0%	100.0%

Pearson chi-square significance = .035

Gender of survey respondents.

- More male than female drivers were interviewed in Spanish, Vietnamese, and Tagalog. In contrast, slightly more female than male drivers were interviewed in English and Mandarin (Table 12). However, these differences in the numbers of drivers interviewed by gender and language were not statistically significant.

Table 12. Gender of drivers (coded by telephone interviewers) cross-tabulated by language groups.

Gender	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
Male	97	122	120	93	110	542
	47.8%	60.1%	59.7%	46.7%	54.2%	53.7%
Female	106	80	80	105	93	464
	52.2%	39.4%	39.8%	52.8%	45.8%	46.0%
Unknown	0	1	1	1	0	3
	0.0%	.5%	.5%	.5%	0.0%	.3%
Total	203	203	201	199	203	1009
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Pearson chi-square significance = .053• Internet access (q34).

- Approximately three-fourths or more of English, Vietnamese, Mandarin and Tagalog speakers said they have Internet access (Table 13). In contrast, only 43.2 percent of Spanish speakers said they have access to the Internet. This difference is statistically significant.

Table 13. Internet access by drivers (q34) cross-tabulated by language groups.

Do You Have Internet Access?	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
Yes	171 85.1%	86 43.2%	150 77.7%	159 81.5%	148 74.7%	714 72.4%
No	30 14.9%	113 56.8%	43 22.3%	36 18.5%	50 25.3%	272 27.6%
Total	201 100.0%	199 100.0%	193 100.0%	195 100.0%	198 100.0%	986 100.0%

Pearson chi-square significance = .000

Recycling by families (q36).

- Most of the English and Spanish-speaking drivers said they or members of their families recycle on a regular basis (Table 14). However, a significantly lower percentage of Vietnamese, Mandarin, and Tagalog speakers said they recycle. In fact, less than half (40.2 percent) of Vietnamese speakers said they or members of their families recycle on a regular basis.

Table 14. Recycling by drivers surveyed and their family members (q36) cross-tabulated by language groups.

Does Your Family Recycle on a Regular Basis?	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
Yes	179 89.5%	163 82.3%	78 40.2%	125 65.1%	111 56.6%	656 66.9%
No	21 10.5%	35 17.7%	116 59.8%	67 34.9%	85 43.4%	324 33.1%
Total	200 100.0%	198 100.0%	194 100.0%	192 100.0%	196 100.0%	980 100.0%

Pearson chi-square significance = .000

The independent variables in this study included the ten demographic variables discussed above plus language. Multinomial logit analyses, which are non-linear regression statistical models, were applied to the data for the dependent variables (that is, questions related to knowledge and behaviors related to tire safety and maintenance, etc.) to statistically determine which independent variable or variables best explain differences in response patterns. Of the 11 independent variables included in the logit analyses, the only independent variable that consistently explained the differences in responses to the dependent variables was language. Therefore, language was cross-tabulated with data for each dependent variable in the study and reported in the following discussion.

Knowledge and Behaviors Related to Tire Maintenance and Safety

The California drivers surveyed were asked a series of questions about tire safety and maintenance (q4–q14) (dependent variables). They were first asked to rate the importance of their tires to the overall safety of their vehicle (q4). As shown in Table 15, 89.3 percent of all drivers

rated their tires as very important to vehicle safety. However, a significantly lower percentage of drivers who spoke Vietnamese (70.4 percent) rated their tires as very important to overall vehicle safety than drivers from the other four language groups.

Drivers were asked if they personally check their tires for wear (q5). As shown in Table 16, approximately 75 percent of drivers who spoke English, Spanish, Vietnamese and Tagalog said “yes.” In contrast, 57.7 percent of drivers who spoke Mandarin said they personally check their tires for wear. The most common method utilized for checking tire wear (q5a) was to check for wear lines (Table 17). However, a significantly smaller percentage of drivers who spoke English and Mandarin utilize this method than the drivers who spoke Spanish, Vietnamese, and Tagalog.

Next, drivers were asked if they have someone else check their tires for wear (q6). Most of the drivers in each of the five language groups answered “yes” (Table 18). However, a lower percentage of Tagalog-speaking drivers said they had someone else check their tires than did the drivers in the other four language groups. Drivers who did not check their own tires for wear were asked if they have someone else check their tires for wear (q6a). As shown in Table 19, a majority of English, Spanish, Vietnamese, and Tagalog-speaking drivers said the other person who checks their tires for wear is a family member or friend. In contrast, 78.2 percent of Mandarin speakers said this person is a mechanic or gas station attendant.

When drivers were asked how often they check their tires for wear (q7), a majority of all five language groups said they check them about once a month or more (Table 20). A significantly larger percentage of Tagalog-speaking drivers said they check their tires at least once a week or daily than did drivers in the other four language groups.

Drivers were also asked if their tires are checked for wear and proper tire pressure when the oil in their vehicles is changed (q35). A majority of drivers in all five groups said “yes” (Table 22). However, a significantly larger percentage of English and Tagalog-speaking drivers answered “yes” to this question than did the drivers in the other three language groups. Vietnamese drivers were the least likely to have their tires checked when the oil in their vehicle is changed.

When California drivers were asked how frequently they check their tires for proper air pressure (q8), about half of the English, Spanish, Vietnamese and Tagalog speakers said they check the air pressure in their tires about once a month or more (Table 22). In contrast, only 22.0 percent of Mandarin speakers said they check their tires this frequently. In fact, 18.8 percent of Mandarin speakers said they never check the air pressure in their tires.

Approximately half of the English and Spanish-speaking drivers surveyed said they check their tire pressure with a tire gauge (Table 23). Another 31.0 percent of the English speakers and 45.4 percent of the Spanish speakers said they can visually see if they are low. In contrast, 49.7 percent of the Vietnamese and 49.0 percent of the Tagalog speakers said they are able to visually see that their tires are low. A significantly higher percentage of Mandarin-speaking drivers (15.1 percent) said low tire pressure is noticed by their mechanic than did drivers in the other four language groups.

Drivers were asked how they determine the proper air pressure for their tires when they are low (q10). A majority of Spanish-speaking drivers (57.3 percent) said they check the recommended tire pressure on the sidewall of the tire (Table 24). About 40 percent of English, Mandarin, and Tagalog-speaking drivers use this as their information source. Another fourth (25.4 percent) of English-speaking drivers and a third (34.7 percent) of Tagalog-speaking drivers said they check the owner’s manual for their vehicle to obtain information about proper air pressure. In contrast, 39.9 percent of Vietnamese-speaking drivers use their own opinion and common sense for proper

air pressure, and 37.6 percent of Mandarin speakers rely on a mechanic or gas station attendant for this information.

When drivers were asked who sets the recommended air pressure for their tires, a majority of English, Spanish, Vietnamese, and Tagalog speakers said the tire manufacturer sets the recommended pressure (q11) (Table 25). In contrast, almost half (45.6 percent) of the Mandarin-speaking drivers said the vehicle manufacturer sets the recommended air pressure.

Drivers were asked when they typically have their tires rotated and balanced (q12). As shown in Table 26, there is no clear pattern for times that drivers in each language group have these services performed. Approximately one-fourth of Spanish, Vietnamese, Mandarin, and Tagalog speakers have these services performed when they detect other than normal tire wear. In addition, more Vietnamese (21.5 percent) and Mandarin-speaking drivers (37.7 percent) have these services performed when their mechanic recommends it. English-speaking drivers were significantly more likely to say they have these services performed when (1) they are recommended by the dealer or manufacturer or (2) when they get their oil changed.

When drivers were asked if they rotate and balance their tires based on months or miles driven (q13), a majority of English and Spanish-speaking drivers said “months” (Table 27). Vietnamese, Mandarin, and Tagalog-speaking drivers were more evenly split between months and miles. However, Vietnamese and Mandarin-speaking drivers were significantly more likely to say they do not have their tires rotated and balanced than were the drivers in the other three language groups.

Drivers who participated in the survey were asked to rate the importance of tire maintenance activities, including rotating and balancing, maintaining their car’s alignment, and maintaining recommended tire pressure, to the life of their tires (q14a – q14c). As shown in Table 28a, Table 28b, and Table 28c, most of the drivers in all five language groups rated all three of these maintenance activities as very important or somewhat important. However, importance ratings given by Vietnamese drivers were significantly lower than the ratings given by the other four language groups.

Table 15. Opinions of drivers regarding the importance of their tires to the overall safety of their vehicles (q4) cross-tabulated by language groups.

Importance of Tires to Overall Safety	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
Not at all important	0 0.0%	1 .5%	1 .5%	6 3.1%	0 0.0%	8 .8%
Not very important	3 1.5%	2 1.0%	6 3.1%	6 3.1%	4 2.0%	21 2.1%
Somewhat important	21 10.3%	23 11.4%	51 26.0%	16 8.4%	20 9.9%	131 13.2%
Very important	179 88.2%	176 87.1%	138 70.4%	163 85.3%	178 88.1%	834 83.9%
Total	203 100.0%	202 100.0%	196 100.0%	191 100.0%	202 100.0%	994 100.0%

Pearson chi-square significance = .000

Table 16. Do the drivers personally check their tires for wear? (q5) cross-tabulated by language groups

Does Driver Check Tires for Wear?	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
Yes	154 75.9%	150 73.9%	157 78.5%	112 57.7%	151 75.1%	724 72.3%
No	49 24.1%	53 26.1%	43 21.5%	82 42.3%	50 24.9%	277 27.7%
Total	203 100.0%	203 100.0%	200 100.0%	194 100.0%	201 100.0%	1001 100.0%

Pearson chi-square significance = .000

Table 17. Methods utilized to check tires for wear (q5a) cross-tabulated by language groups.

Methods for Checking Tire Wear	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
Check for wear lines	81 52.9%	113 76.9%	128 84.2%	60 54.5%	92 64.3%	474 67.2%
Do the penny or dime test	13 8.5%	7 4.8%	3 2.0%	5 4.5%	7 4.9%	35 5.0%
Measure the tread	29 19.0%	20 13.6%	15 9.9%	42 38.2%	38 26.6%	144 20.4%
Other method	30 19.6%	7 4.8%	6 3.9%	3 2.7%	6 4.2%	52 7.4%
Total	153 100.0%	147 100.0%	152 100.0%	110 100.0%	143 100.0%	705 100.0%

Pearson chi-square significance = .000

Table 18. Drivers who do and do not have someone else check their tires for wear (q6) cross-tabulated by language groups.

Does Someone Else Check for Wear?	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
Yes	47 95.9%	50 94.3%	35 81.4%	78 91.8%	40 76.9%	250 88.7%
No	2 4.1%	3 5.7%	8 18.6%	7 8.2%	12 23.1%	32 11.3%
Total	49 100.0%	53 100.0%	43 100.0%	85 100.0%	52 100.0%	282 100.0%

Pearson chi-square significance = .006

Table 19. People who check drivers' tires for wear (q6a) cross-tabulated by language groups.

Who Else Checks Tires for Wear?	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
Mechanic or gas station attendant	18 38.3%	15 30.6%	16 45.7%	61 78.2%	14 35.0%	124 49.8%
Family member or friend	26 55.3%	28 57.1%	18 51.4%	15 19.2%	23 57.5%	110 44.2%
Other person	3 6.4%	6 12.2%	1 2.9%	2 2.6%	3 7.5%	15 6.0%
Total	47 100.0%	49 100.0%	35 100.0%	78 100.0%	40 100.0%	249 100.0%

Pearson chi-square significance = .000

Table 20. Frequency that drivers' tires are checked for wear (q7) cross-tabulated by language groups.

How Often Are Tires Checked for Wear?	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
Daily	10 5.1%	15 7.7%	11 6.2%	7 4.4%	37 20.8%	80 8.9%
At least once a week	27 13.8%	48 24.7%	14 7.9%	12 7.5%	48 27.0%	149 16.5%
Twice a month	30 15.4%	28 14.4%	21 11.9%	5 3.1%	25 14.0%	109 12.1%
About once a month	81 41.5%	60 30.9%	55 31.1%	30 18.9%	59 33.1%	285 31.6%
Less than once a month	44 22.6%	41 21.1%	72 40.7%	102 64.2%	8 4.5%	267 29.6%
Never	3 1.5%	2 1.0%	4 2.3%	3 1.9%	1 .6%	13 1.4%
Total	195 100.0%	194 100.0%	177 100.0%	159 100.0%	178 100.0%	903 100.0%

Pearson chi-square significance = .000

Table 21. Are drivers' tires checked for wear and proper tire pressure when the oil in their vehicle is changed (q35) cross-tabulated by language groups?

Is Tire Pressure Checked When the Oil Is Changed?	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
Yes	163 87.2%	133 73.5%	107 59.1%	130 73.9%	172 89.6%	705 76.9%
No	24 12.8%	48 26.5%	74 40.9%	46 26.1%	20 10.4%	212 23.1%
Total	187 100.0%	181 100.0%	181 100.0%	176 100.0%	192 100.0%	917 100.0%

Pearson chi-square significance = .000

Table 22. Frequency that drivers' tires are checked for proper air pressure (q8) cross-tabulated by language groups.

Frequency That Tires Are Checked for Wear?	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
At least once a week	23 11.7%	49 25.7%	21 11.2%	11 7.1%	42 22.2%	146 15.9%
About once a month	77 39.1%	68 35.6%	66 35.3%	23 14.9%	53 28.0%	287 31.3%
About every other month	40 20.3%	26 13.6%	45 24.1%	22 14.3%	34 18.0%	167 18.2%
Three or four times per year	29 14.7%	25 13.1%	39 20.9%	36 23.4%	29 15.3%	158 17.2%
Once or twice a year	23 11.7%	14 7.3%	12 6.4%	33 21.4%	27 14.3%	109 11.9%
Never	5 2.5%	9 4.7%	4 2.1%	29 18.8%	4 2.1%	51 5.6%
Total	197 100.0%	191 100.0%	187 100.0%	154 100.0%	189 100.0%	918 100.0%

Pearson chi-square significance = .000

Table 23. Methods utilized by the drivers to detect low tire pressure (q9) cross-tabulated by language groups.

Methods to Detect Low Tire Pressure	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
I check it with a tire gauge.	105 52.5%	89 45.4%	51 26.4%	52 30.2%	73 38.0%	370 38.8%
I can visually see they are low.	62 31.0%	85 43.4%	96 49.7%	72 41.9%	94 49.0%	409 42.9%
I push on the tire with my finger.	3 1.5%	1 .5%	13 6.7%	6 3.5%	2 1.0%	25 2.6%
I kick the tire.	0 0.0%	2 1.0%	4 2.1%	3 1.7%	0 0.0%	9 .9%
Tap the tire with hand/finger.	1 .5%	2 1.0%	1 .5%	0 0.0%	1 .5%	5 .5%
When my car doesn't handle well.	4 2.0%	11 5.6%	13 6.7%	6 3.5%	10 5.2%	44 4.6%
Noticed by gas station attendant.	5 2.5%	3 1.5%	3 1.6%	7 4.1%	8 4.2%	26 2.7%
Noticed by mechanic.	11 5.5%	1 .5%	9 4.7%	26 15.1%	3 1.6%	50 5.2%
Other	9 4.5%	2 1.0%	3 1.6%	0 0.0%	1 .5%	15 1.6%
Total	200 100.0%	196 100.0%	193 100.0%	172 100.0%	192 100.0%	953 100.0%

Table 24. Sources of information regarding proper tire pressure utilized by the drivers (q10) cross-tabulated by language groups.

Sources of Information	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
Check the recommended tire pressure on the sidewalls of the tire.	79 40.9%	102 57.3%	58 32.6%	63 38.7%	70 40.5%	372 42.0%
Check the owners' manual.	49 25.4%	15 8.4%	18 10.1%	13 8.0%	60 34.7%	155 17.5%
Check the placard/sticker that is attached to the car.	18 9.3%	3 1.7%	2 1.1%	12 7.4%	7 4.0%	42 4.7%
Use own opinion and common sense.	8 4.1%	28 15.7%	71 39.9%	30 18.4%	15 8.7%	152 17.2%
Rely on mechanic/gas station attendant.	24 12.4%	27 15.2%	27 15.2%	45 27.6%	17 9.8%	140 15.8%
Other	15 7.8%	3 1.7%	2 1.1%	0 0.0%	4 2.3%	24 2.7%
Total	193 100.0%	178 100.0%	178 100.0%	163 100.0%	173 100.0%	885 100.0%

Table 25. Opinions of drivers regarding who sets the recommended air pressure for the tires on their vehicles (q11) cross-tabulated by language groups.

Who Sets the Recommended Air Pressure?	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
Tire manufacturer	98 55.4%	120 72.3%	127 78.4%	56 44.8%	92 52.0%	493 61.1%
Vehicle manufacturer	61 34.5%	33 19.9%	13 8.0%	57 45.6%	69 39.0%	233 28.9%
Someone else	18 10.2%	13 7.8%	22 13.6%	12 9.6%	16 9.0%	81 10.0%
Total	177 100.0%	166 100.0%	162 100.0%	125 100.0%	177 100.0%	807 100.0%

Pearson chi-square significance = .000

Table 26. Times that the drivers surveyed typically have their tires rotated and balanced (q12) cross-tabulated by language groups.

When Are Tires Rotated and Balanced?	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
When the car pulls in one direction.	13 7.3%	34 19.8%	21 12.9%	9 6.2%	23 13.1%	100 12.0%
When the car shakes at higher speeds.	7 3.9%	13 7.6%	11 6.7%	2 1.4%	29 16.5%	62 7.4%
When I detect other than normal tire wear.	15 8.4%	46 26.7%	41 25.2%	43 29.5%	42 23.9%	187 22.4%
When my mechanic recommends it.	18 10.1%	20 11.6%	35 21.5%	55 37.7%	19 10.8%	147 17.6%
When I get my oil changed.	25 14.0%	17 9.9%	10 6.1%	15 10.3%	25 14.2%	92 11.0%
Recommended by the dealer or manufacturer.	34 19.0%	28 16.3%	19 11.7%	2 1.4%	15 8.5%	98 11.7%
Other	67 37.4%	14 8.1%	26 16.0%	20 13.7%	23 13.1%	150 17.9%
Total	179 100.0%	172 100.0%	163 100.0%	146 100.0%	176 100.0%	836 100.0%

Pearson chi-square significance = .000

Table 27. Usual frequency of tire rotation and balancing in months and/or miles (q13) cross-tabulated by language groups.

Basis of Tire Rotations	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
Miles	65 36.3%	38 23.5%	59 36.9%	58 39.2%	74 49.3%	294 36.8%
Months	95 53.1%	121 74.7%	54 33.8%	46 31.1%	66 44.0%	382 47.8%
I don't have my tires rotated and balanced.	19 10.6%	3 1.9%	47 29.4%	44 29.7%	10 6.7%	123 15.4%
Total	179 100.0%	162 100.0%	160 100.0%	148 100.0%	150 100.0%	799 100.0%

Pearson chi-square significance = .000

Table 28a. Opinions of drivers regarding the importance of rotating and balancing to the life of tires (q14a) cross-tabulated by language groups.

Importance of Rotating & Balancing	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
Not very or not at all important	30 15.1%	13 6.4%	12 6.4%	17 9.5%	21 10.5%	93 9.7%
Somewhat important	63 31.7%	48 23.8%	101 53.7%	55 30.9%	39 19.6%	306 31.7%
Very important	106 53.3%	141 69.8%	75 39.9%	106 59.6%	139 69.8%	567 58.7%
Total	199 100.0%	202 100.0%	188 100.0%	178 100.0%	199 100.0%	966 100.0%

Pearson chi-square significance = .000

Table 28b. Opinions of drivers regarding the importance of a car's alignment to the life of tires (q14b) cross-tabulated by language groups.

How Important Is Your Car's Alignment to Your Tires?	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
Not very or not at all important	15 7.4%	11 5.4%	17 8.9%	15 8.9%	13 6.5%	71 7.3%
Somewhat important	52 25.7%	50 24.8%	100 52.4%	38 22.4%	59 29.5%	299 31.0%
Very important	135 66.8%	141 69.8%	74 38.7%	117 68.8%	128 64.0%	595 61.7%
Total	202 100.0%	202 100.0%	191 100.0%	170 100.0%	200 100.0%	965 100.0%

Pearson chi-square significance = .000

Table 28c. Opinions of drivers regarding the importance of tire pressure to the life of tires (q14b) cross-tabulated by language groups.

Importance of Tire Pressure	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
Not very or not at all important	12 5.9%	12 6.0%	13 6.8%	13 7.3%	13 6.5%	63 6.5%
Somewhat important	62 30.5%	56 28.0%	106 55.5%	46 25.8%	48 24.0%	318 32.7%
Very important	129 63.5%	132 66.0%	72 37.7%	119 66.9%	139 69.5%	591 60.8%
Total	203 100.0%	200 100.0%	191 100.0%	178 100.0%	200 100.0%	972 100.0%

Pearson chi-square significance = .000

Recent Tire Purchases by Consumers

California drivers were asked a series of questions about their most recent tire purchases for their primary vehicles (dependent variables). As shown in Table 29, a majority of English, Spanish, and Vietnamese-speaking drivers said they had purchased tires within the past 12 months (q15). In contrast, more than a third of Mandarin-speaking drivers (38.6 percent) and Tagalog-speaking drivers (37.4 percent) said they had never purchased tires for their primary vehicle. These differences in frequencies of tire purchases are statistically significant. Two-thirds or more of drivers in each of the five language groups said their most recent tire purchases were a planned replacement of tires (q16) (Table 30). However, a significantly larger percentage of Vietnamese and Mandarin-speaking drivers said they made emergency purchases than did the drivers in the other three language groups.

A majority of drivers in all five language groups said they purchased three or more tires during their most recent purchase (q17) (Table 31). However, a significantly larger percentage of Vietnamese and Mandarin-speaking drivers said they purchased one or two tires than did the drivers in the other three language groups.

Almost all of the drivers in each language group who reported having made recent tire purchases said they purchased their tires from a store (q18) (Table 32). In fact, only nine drivers (1.4 percent) who had made recent purchases said those purchases were made on the Internet. Overall, the five stores that were most frequently mentioned for recent tire purchases were Costco (25.2 percent), Sears (9.6 percent), independent tire dealers (8.3 percent), Pep Boys (7.3 percent), and automobile dealerships (5.5 percent) (q19) (Table 33).

Table 29. Number of months since the most recent tire purchases for primary vehicles made by the drivers surveyed or other members of their households (q15) cross-tabulated by language groups.

Number of Months Since Most Recent Tire Purchase	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
Never purchased new tires	37 18.8%	42 21.8%	50 26.6%	68 38.6%	70 37.4%	267 28.4%
1 month or less	23 11.7%	19 9.8%	30 16.0%	13 7.4%	25 13.4%	110 11.7%
2 to 6 months	59 29.9%	74 38.3%	46 24.5%	38 21.6%	34 18.2%	251 26.7%
7 to 12 months	42 21.3%	39 20.2%	27 14.4%	28 15.9%	32 17.1%	168 17.9%
13 months or more	36 18.3%	19 9.8%	35 18.6%	29 16.5%	26 13.9%	145 15.4%
Total	197 100.0%	193 100.0%	188 100.0%	176 100.0%	187 100.0%	941 100.0%

Pearson chi-square significance = .000

Mean: English = 10.5 months
 Spanish = 8.0 months
 Vietnamese = 10.4 months
 Mandarin = 7.3 months
 Tagalog = 10.6 months

Table 30. Reasons for the most recent tire purchases made by drivers or other members of their households (q16) cross-tabulated by language groups.

Reason for Tire Purchase	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
Emergency purchase	33 21.3%	27 18.0%	45 34.4%	37 35.2%	29 24.8%	171 26.0%
Planned replacement of tires	122 78.7%	123 82.0%	86 65.6%	68 64.8%	88 75.2%	487 74.0%
Total	155 100.0%	150 100.0%	131 100.0%	105 100.0%	117 100.0%	658 100.0%

Pearson chi-square significance = .003

Table 31. Number of tires most recently purchased by drivers or other members of their households (q17) cross-tabulated by language groups.

Number of Tires Most Recently Purchased	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
1–2 tires	46 29.5%	43 28.5%	50 37.6%	46 43.4%	34 29.8%	219 33.2%
3 or more tires	110 70.5%	108 71.5%	83 62.4%	60 56.6%	80 70.2%	441 66.8%
Total	156 100.0%	151 100.0%	133 100.0%	106 100.0%	114 100.0%	660 100.0%

Pearson chi-square significance = .056

Table 32. Types of establishments from which the most recent tire purchases were made by drivers or other members of their households (q18) cross-tabulated by language groups.

Where Tires Were Purchased	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
Store	156 99.4%	151 100.0%	130 97.0%	106 99.1%	110 97.3%	653 98.6%
Online	1 .6%	0 0.0%	4 3.0%	1 .9%	3 2.7%	9 1.4%
Total	157 100.0%	151 100.0%	134 100.0%	107 100.0%	113 100.0%	662 100.0%

Table 33. Stores where drivers or other members of their households made their most recent tire purchases (q19) cross-tabulated by language groups.

From What Store?	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
Costco	18 13.0%	15 13.4%	41 33.6%	32 34.8%	36 36.4%	142 25.2%
Sears	14 10.1%	17 15.2%	6 4.9%	7 7.6%	10 10.1%	54 9.6%
Independent tire store	10 7.2%	3 2.7%	20 16.4%	6 6.5%	8 8.1%	47 8.3%
Pep Boys	5 3.6%	22 19.6%	12 9.8%	2 2.2%	0 0.0%	41 7.3%
Automobile dealerships	5 3.6%	0 0.0%	5 4.1%	16 17.4%	5 5.1%	31 5.5%
Mechanic or auto repair shop	1 .7%	1 .9%	8 6.6%	15 16.3%	1 1.0%	26 4.6%
Discount Tire Co.	17 12.3%	3 2.7%	1 .8%	1 1.1%	3 3.0%	25 4.4%
A Firestone dealer	4 2.9%	4 3.6%	3 2.5%	4 4.3%	6 6.1%	21 3.7%
A Goodyear dealer	7 5.1%	3 2.7%	6 4.9%	3 3.3%	2 2.0%	21 3.7%
Wal-Mart	3 2.2%	6 5.4%	5 4.1%	0 0.0%	6 6.1%	20 3.6%
Big O Tires	6 4.3%	2 1.8%	1 .8%	0 0.0%	2 2.0%	11 2.0%
My local automotive store	0 0.0%	3 2.7%	3 2.5%	3 3.3%	1 1.0%	10 1.8%
Sam's Club	2 1.4%	1 .9%	6 4.9%	0 0.0%	1 1.0%	10 1.8%
Les Schwab Tire Center	5 3.6%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	5 .9%
My local gas station	1 .7%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	1 .2%
Other	40 29.0%	32 28.6%	5 4.1%	3 3.3%	18 18.2%	98 17.4%
Total	138 100.0%	112 100.0%	122 100.0%	92 100.0%	99 100.0%	563 100.0%

Tire Purchasing Criteria

Drivers were asked a series of questions about purchase criteria for their most recent tire purchases (q20–q23) (dependent variables). The first question focused on the importance of information that drivers attempted to obtain prior to their tire purchase (q20a–q20i). Table 34 presents the importance ratings for each question item for each of the five language groups. The items that received the highest overall ratings of “very important” across the five language groups (see the “Total” column in Table 34) were information about: (1) tire safety, (2) proper tire maintenance, (3) price, (4) availability of tires, (5) particular brands, (6) tire recycling, (7) proper disposal of used tires, (8) tire retailers, and (9) other. The following is a summary of the significant differences in response ratings for individual question items.

- Mandarin speakers rated information about a particular brand of tire (q20a) significantly lower in importance than drivers in the other four language groups.
- Information about tire safety (q29b) was rated high in importance by drivers in all five language groups. However, Vietnamese-speaking drivers did not rate information on tire safety as high in importance as did the drivers in the other four language groups.
- Though a majority of drivers in all five language groups rated information about tire safety “very important” (q20c), a significantly smaller percentage of Vietnamese-speaking drivers rated this information as “very important” when compared with the ratings given by drivers in the other four language groups.
- Spanish and Tagalog-speaking drivers rated information about proper tire maintenance significantly higher in importance than did the drivers in the other three language groups (q20d). English and Vietnamese-speaking drivers gave significantly lower importance ratings for this item than did Spanish and Tagalog, but their ratings were significantly higher than ratings given by Mandarin-speaking drivers.
- Tagalog-speaking drivers rated information about price (q20e) significantly higher in importance than the drivers in the other four language groups. English and Spanish-speaking drivers rated price significantly lower than Tagalog speakers, but significantly higher than Vietnamese and Mandarin speakers.
- Tagalog-speaking drivers rated tire availability (q20f) significantly higher in importance than drivers in the other four groups. However, English and Spanish speakers rated this item significantly higher in importance than did the Vietnamese and Mandarin speakers.
- A significantly larger percentage of Spanish and Vietnamese-speaking drivers rated information about how to properly dispose of used tires as “very important” or “somewhat important” (q20g) than did drivers in the other three language groups.
- Spanish-speaking drivers rated information about how to recycle tires (q20h) significantly higher in importance than did the drivers in the other four language groups.

When California drivers were asked to rate the importance of 16 information sources to their tire purchase decisions (Q21a – q21p), the 5 sources that received the highest overall ratings of “very important” were: (1) personal mechanics, (2) tire manufacturers, (3) friends and family, (4) car manufacturers and (5) tire stores (Table 35). Overall, a larger percentage of Spanish-speaking drivers tended to rate all of the information sources as “very important” than did the drivers in the other four language groups. There were several other significant differences in the importance ratings for the various information sources given by drivers in the five language groups. The following is a summary of those differences.

- A significantly larger percentage of Spanish-speaking drivers rated information from a car manufacturer (q21a) as “very important” than did the drivers in the other four language groups.
- A majority of Spanish-speaking drivers rated information from the tire manufacturer (q21b) as “very important.” About 40 percent of English and Tagalog-speaking drivers rated this item as “very important,” as compared with about 30 percent of Vietnamese and Mandarin speakers.
- A significantly larger percentage of Spanish-speaking drivers and a significantly smaller percentage of Mandarin-speaking drivers rated tire stores (q21c) “very important” as information sources than did the drivers in the other four language groups.
- Spanish-speaking drivers rated information from *Consumer Reports* (q21d) significantly higher in importance than did drivers in the other four language groups.
- A significantly lower percentage of Tagalog and English-speaking drivers rated other magazine articles (q21e) as “very important” than did the drivers in the other three language groups.
- More Spanish and Vietnamese-speaking drivers rated magazine ads (q21f) as “very important” information sources than did the drivers from the other three language groups.
- Though only a small percentage of the drivers in all five language groups rated the Internet (q21g) as a “very important” information source, a significantly larger percentage of Spanish-speaking drivers (22.4 percent) gave the Internet a rating of “very important” than did the drivers in the other four language groups.
- Only a small percentage of the English, Vietnamese, Mandarin and Tagalog-speaking drivers rated newspaper articles (q21h) as “very important” information sources for their most recent tire purchase decisions; almost a third (29.9 percent) of Spanish-speaking drivers rated this source as “very important.”
- A significantly larger percentage of Spanish and Vietnamese-speaking drivers rated television advertising (q21i) as “very important” than did the drivers in the other three language groups. Only 2.0 percent of Mandarin-speaking drivers rated this information source as very important in their most recent tire purchase decision.
- Radio (q21j) was rated significantly higher in importance by Vietnamese-speaking drivers than by the drivers in the other four language groups. A third (33.1 percent) of Vietnamese-speaking drivers rated this information source as “very important,” and just over a third (37.6 percent) rated it as “somewhat important” as an information source.
- A significantly larger percentage of Spanish (24.0 percent) and Vietnamese-speaking drivers (25.8 percent) rated direct mail (q21k) as “very important” to their tire purchase decisions than did English, Mandarin, and Tagalog-speaking drivers.
- More than 50 percent of the drivers in all five language groups rated TV news segments on tires (q21l) as “very important” or “somewhat important” to their most recent tire purchase decisions. A significantly larger percentage of Spanish-speaking drivers rated this information source as “very important” than did the drivers in the other four language groups.
- When drivers were asked to rate the importance of a government agency (q21m) as an information source for their most recent tire purchase decisions, a significantly larger

percentage of Spanish, Vietnamese, and Mandarin speakers said this source was “very important” than did English and Tagalog speakers.

- Though a small percentage of drivers in each of the five language groups rated the Yellow Pages (q21n) as a “very important” information source, a significantly larger percentage of Spanish-speaking drivers (22.4 percent) rated this item as “very important” than did the drivers in the other four language groups.
- A significantly larger percentage of Spanish (45.9 percent) and Vietnamese-speaking drivers (43.0 percent) rated friends and family (q21o) as a “very important” information source than did drivers in the other three language groups.
- About half of Spanish (51.0 percent) and Vietnamese-speaking drivers (49.3 percent) rated their auto mechanic (q21p) as a “very important” source of information for their most recent tire purchase decisions. A significantly lower percentage of English (39.1 percent), Mandarin (34.3 percent), and Tagalog-speaking drivers (40.5 percent) rated this information sources as “very important.”

Drivers were also asked to rate the importance of four types of information that are usually available in a tire store to their most recent tire purchase decisions (q21a.a–q21a.d). As shown in Table 36, there were significant differences in importance ratings among the five language groups for each of the four information types. The following is a summary of those differences.

- More than a third (39.3 percent) of Spanish-speaking drivers rated in-store advertising (q21a.a) as “very important” to their most recent tire purchase decisions. This is significantly higher than the percentages for the other four language groups.
- Just over a third (35.5 percent) of Spanish-speaking drivers rated in-store brochures (q21a.b) as “very important.” This is significantly higher than the percentages of drivers in the other four language groups who rated this type of information as “very important.”
- A significantly larger percentage Spanish-speaking drivers (43.9 percent) rated information posted about each tire brand (q21a.c) as “very important” than the drivers in the other four language groups. About a fourth of English and Tagalog-speaking drivers rated this information source as “very important.” These ratings were significantly less than Spanish-speaking drivers, and significantly higher than Vietnamese and Mandarin-speaking drivers.
- More than 40 percent of English and Spanish-speaking drivers rated information provided by salespersons (q21a.d) as “very important.” These percentages are significantly higher than the ratings given for this item by the drivers in the other three language groups.

When California drivers were asked how many stores they contacted prior to their most recent tire purchase (q21b), just over one-third (36.5 percent) of all drivers said they contacted one store, and 21.1 percent contacted two stores (Table 37). However, a significantly larger percentage of Tagalog-speaking drivers (49.6 percent) contacted only one store. In contrast, about a third of English, Spanish, and Vietnamese-speaking drivers contacted three or more stores, while 19.2 percent of Mandarin speakers and 23.9 percent of Tagalog speakers said they contacted three or more stores.

Drivers were asked if they intended to buy a specific brand of tires when they made their most recent purchase (q22). Just over half (51.2 percent) of all drivers said “yes” (Table 38). A significantly higher percentage of Vietnamese (60.8 percent) and Tagalog-speaking drivers (58 percent) said they intended to buy a specific brand. In contrast, a significantly lower percentage of Mandarin speakers (34.3 percent) intended to buy a particular brand.

Drivers were asked to rate the importance of 12 purchase criteria to their most recent tire purchase decisions (q23a–q23l). As shown in Table 39, the five criteria that were rated “very important” by the largest percentage of all drivers were (1) quality (68.3 percent), (2) performance (57.3 percent), (3) tire warranty (50.5 percent), (4) price of the tires (46.6 percent), and (5) reputation of the brand (43.3 percent). There were several statistically significant differences in importance ratings for individual criteria among the five language groups of drivers. The following is a summary of those differences:

- A significantly higher percentage of Spanish-speaking drivers (32.5 percent) rated appearance (q23a) of tires as “very important” than did drivers in the other four language groups.
- More Spanish and Tagalog-speaking drivers rated periodic servicing of tires after the purchase (q23b) as “very important” than drivers in the other three language groups.
- A significantly larger percentage of Spanish-speaking drivers (23.2 percent) rated information they saw in an advertisement (q23c) as “very important” than did drivers in the other four language groups.
- Though a very small percentage of drivers in all five language groups rated information they saw on a Web site (q23d) as “very important,” a significantly larger percentage of Spanish-speaking drivers (12.8 percent) rated this information as “very important” than the drivers in the other four language groups.
- More Spanish-speaking drivers rated information they saw at a tire or automotive retailer (q23e) as “very important” than drivers in the other four language groups.
- A significantly larger percentage of Tagalog, Spanish, and English-speaking drivers rated tire warranty (q23f) as “very important” than did Vietnamese and Mandarin speakers.
- A significantly smaller percentage of Vietnamese-speaking drivers (31.3 percent) said that performance of the tire (q23g) was “very important” to their most recent tire purchase decision than did drivers in the other four language groups. About 60 percent or more of English, Spanish, Mandarin, and Tagalog speakers rated this item as “very important.”
- About two-thirds (62.9 percent) of the Tagalog-speaking drivers rated price of the tires (q23h) as very important. This is significantly higher than the ratings given by drivers in the other four language groups. In contrast, only 28.8 percent of Vietnamese-speaking drivers rated price as “very important” to their most recent purchase decision.
- More than 70 percent of English, Spanish, Mandarin, and Tagalog-speaking drivers rated quality (q23i) as “very important” to their purchase decisions. A significantly lower percentage (45.1 percent) of Vietnamese speakers gave this item a rating of “very important.”
- About half of the Tagalog, English, and Spanish-speaking drivers rated reputation of the tire brand (q23j) as “very important” to their purchase decisions. In contrast, only 20.8 percent of Vietnamese speakers and 38 percent of Mandarin speakers said reputation was “very important.”
- A significantly larger percentage of Spanish-speaking drivers (42.7 percent) rated recycled content of the tire (q23k) as “very important” to their most recent purchase decision than did the drivers in the other four language groups.
- A special offer or sale was rated as “very important” by 44.1 percent of the Spanish-speaking drivers. This is significantly higher than the ratings of “very important” given by the drivers

in the other four language groups. Conversely, only 9.9 percent of the Vietnamese-speaking drivers rated a special offer or sale as “very important.” This is significantly lower than the ratings given by drivers in the other four groups.

Table 34. Opinions of drivers regarding the importance of obtaining certain information prior to their most recent tire purchase (q20a–q20i) cross-tabulated by language groups.

Item Rated VERY IMPORTANT	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
Particular brand of tire	54 34.6%	53 36.1%	44 34.1%	22 22.4%	46 40.7%	219 34.1%
Particular tire retailers	37 24.3%	41 29.3%	37 28.7%	21 21.2%	27 23.9%	163 25.8%
Tire safety	109 70.3%	109 74.7%	73 55.3%	86 83.5%	88 75.2%	465 71.2%
Proper tire maintenance	91 58.7%	108 73.5%	67 50.4%	38 39.6%	80 68.4%	384 59.3%
Price	86 54.8%	84 57.5%	50 37.6%	39 37.5%	83 71.6%	342 52.1%
Availability of tires	79 51.0%	75 52.1%	39 32.0%	33 33.7%	74 64.3%	300 47.3%
How to properly dispose of used tires	37 24.7%	50 35.2%	41 32.8%	23 28.0%	32 28.8%	183 30.0%
How to recycle tires	37 25.0%	60 44.1%	24 24.2%	28 33.7%	34 31.8%	183 31.9%
Importance in obtaining other information	20 21.1%	6 9.0%	15 23.4%	6 11.5%	11 21.2%	58 17.6%

Table 34. (cont.)

Item Rated SOMEWHAT IMPORTANT	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
Particular brand of tire	56 35.9%	57 38.8%	63 48.8%	38 38.8%	38 33.6%	252 39.2%
Particular tire retailers	63 41.4%	59 42.1%	57 44.2%	28 28.3%	45 39.8%	252 39.8%
Tire safety	22 14.2%	30 20.5%	47 35.6%	11 10.7%	25 21.4%	135 20.7%
Proper tire maintenance	38 24.5%	33 22.4%	51 38.3%	36 37.5%	29 24.8%	187 28.9%
Price	51 32.5%	46 31.5%	61 45.9%	39 37.5%	25 21.6%	222 33.8%
Availability of tires	50 32.3%	54 37.5%	52 42.6%	34 34.7%	31 27.0%	221 34.9%
How to properly dispose of used tires	40 26.7%	49 34.5%	54 43.2%	25 30.5%	33 29.7%	201 33.0%
How to recycle tires	38 25.7%	34 25.0%	38 38.4%	23 27.7%	25 23.4%	158 27.6%
Importance in obtaining other information	25 26.3%	8 11.9%	28 43.8%	5 9.6%	5 9.6%	71 21.5%

Table 34. (cont.)

Item Rated NOT VERY IMPORTANT	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
Particular brand of tire	24 15.4%	24 16.3%	19 14.7%	28 28.6%	21 18.6%	116 18.0%
Particular tire retailers	27 17.8%	25 17.9%	28 21.7%	38 38.4%	28 24.8%	146 23.1%
Tire safety	12 7.7%	2 1.4%	12 9.1%	3 2.9%	2 1.7%	31 4.7%
Proper tire maintenance	13 8.4%	1 .7%	12 9.0%	15 15.6%	4 3.4%	45 6.9%
Price	12 7.6%	11 7.5%	17 12.8%	25 24.0%	5 4.3%	70 10.7%
Availability of tires	10 6.5%	11 7.6%	22 18.0%	23 23.5%	9 7.8%	75 11.8%
How to properly dispose of used tires	32 21.3%	28 19.7%	19 15.2%	26 31.7%	25 22.5%	130 21.3%
How to recycle tires	30 20.3%	26 19.1%	23 23.2%	24 28.9%	28 26.2%	131 22.9%
Importance of obtaining other information	19 20.0%	29 43.3%	12 18.8%	32 61.5%	26 50.0%	118 35.8%

Table 34. (cont.)

Item Rated NOT AT ALL IMPORTANT	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
Particular brand of tire	22 14.1%	13 8.8%	3 2.3%	10 10.2%	8 7.1%	56 8.7%
Particular tire retailers	25 16.4%	15 10.7%	7 5.4%	12 12.1%	13 11.5%	72 11.4%
Tire safety	12 7.7%	5 3.4%	0 0.0%	3 2.9%	2 1.7%	22 3.4%
Proper tire maintenance	13 8.4%	5 3.4%	3 2.3%	7 7.3%	4 3.4%	32 4.9%
Price	8 5.1%	5 3.4%	5 3.8%	1 1.0%	3 2.6%	22 3.4%
Availability of tires	16 10.3%	4 2.8%	9 7.4%	8 8.2%	1 .9%	38 6.0%
How to properly dispose of used tires	41 27.3%	15 10.6%	11 8.8%	8 9.8%	21 18.9%	96 15.7%
How to recycle tires	43 29.1%	16 11.8%	14 14.1%	8 9.6%	20 18.7%	101 17.6%
Importance of obtaining other information	31 32.6%	24 35.8%	9 14.1%	9 17.3%	10 19.2%	83 25.2%

Pearson chi-square statistics for q20a–q20i:

Question Item	Chi-square
Particular brand of tire	.003
Particular tire retailers	.006
Tire safety	.000
Proper tire maintenance	.000
Price	.000
Availability of tires	.000
How to recycle tires	.000
Importance of obtaining other information	.000

Table 35. Importance of various information sources to the most recent tire purchase decisions made by California drivers (q21a–q21p) cross-tabulated by language groups.

Information Source Rated VERY IMPORTANT	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
Car manufacturer	30 19.4%	58 39.2%	39 31.2%	21 20.6%	25 21.9%	173 26.9%
Tire manufacturer	61 39.1%	76 51.4%	39 31.2%	31 30.4%	46 40.4%	253 39.2%
Tire stores	42 26.8%	56 37.8%	36 28.6%	12 11.9%	28 24.3%	174 26.9%
<i>Consumer Reports</i>	35 22.4%	47 32.9%	28 21.5%	25 25.3%	18 15.9%	153 23.9%
Other magazine articles	17 10.8%	33 23.1%	24 18.0%	14 14.6%	11 10.2%	99 15.5%
Magazine ads	5 3.2%	31 21.1%	23 17.3%	5 5.2%	11 9.7%	75 11.6%
The Internet	20 12.9%	32 22.4%	23 17.7%	6 6.3%	11 9.6%	92 14.4%
Newspaper articles	20 12.9%	44 29.9%	21 15.9%	9 9.0%	15 13.3%	109 16.8%
Television advertising	12 7.6%	45 30.6%	41 30.6%	2 2.0%	15 13.3%	115 17.7%
Radio	7 4.5%	28 19.0%	44 33.1%	3 3.0%	10 8.8%	92 14.2%
Direct mail	13 8.3%	35 24.0%	33 25.8%	2 2.0%	5 4.4%	88 13.6%
TV news segments on tires	34 21.7%	52 35.6%	34 26.0%	23 23.2%	21 18.6%	164 25.4%
Government agency	26 17.0%	41 29.5%	33 26.8%	25 25.3%	18 16.4%	143 22.9%
Yellow Pages	13 8.3%	32 22.4%	19 15.3%	9 9.0%	12 10.5%	85 13.3%
Friends and family	43 27.4%	67 45.9%	58 43.0%	24 23.5%	34 29.1%	226 34.4%
Auto mechanic	61 39.1%	75 51.0%	66 49.3%	36 34.3%	47 40.5%	285 43.3%

Table 35. (cont.)

Information Source Rated SOMEWHAT IMPORTANT	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
Car manufacturer	41 26.5%	42 28.4%	55 44.0%	41 40.2%	36 31.6%	215 33.4%
Tire manufacturer	61 39.1%	55 37.2%	61 48.8%	43 42.2%	52 45.6%	272 42.2%
Tire stores	71 45.2%	52 35.1%	55 43.7%	36 35.6%	46 40.0%	260 40.2%
<i>Consumer Reports</i>	36 23.1%	38 26.6%	61 46.9%	34 34.3%	45 39.8%	214 33.4%
Other magazine articles	39 24.8%	33 23.1%	58 43.6%	27 28.1%	39 36.1%	196 30.8%
Magazine ads	39 25.0%	41 27.9%	60 45.1%	25 26.0%	44 38.9%	209 32.4%
The Internet	28 18.1%	29 20.3%	52 40.0%	34 35.4%	35 30.7%	178 27.9%
Newspaper articles	47 30.3%	48 32.7%	63 47.7%	39 39.0%	52 46.0%	249 38.5%
Television advertising	33 21.0%	47 32.0%	51 38.1%	39 39.0%	50 44.2%	220 33.8%
Radio	35 22.6%	43 29.3%	50 37.6%	34 33.7%	34 30.1%	196 30.2%
Direct mail	27 17.3%	40 27.4%	43 33.6%	32 31.7%	45 39.5%	187 29.0%
TV news segments on tires	49 31.2%	44 30.1%	48 36.6%	39 39.4%	46 40.7%	226 35.0%
Government agency	39 25.5%	28 20.1%	43 35.0%	39 39.4%	39 35.5%	188 30.1%
Yellow Pages	27 17.2%	32 22.4%	44 35.5%	33 33.0%	43 37.7%	179 28.1%
Friends and Family	53 33.8%	35 24.0%	43 31.9%	56 54.9%	56 47.9%	243 37.0%
Auto mechanic	35 22.4%	31 21.1%	36 26.9%	52 49.5%	34 29.3%	188 28.6%

Table 35. (cont.)

Information Source Rated NOT VERY IMPORTANT	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
Car manufacturer	30 19.4%	25 16.9%	22 17.6%	24 23.5%	28 24.6%	129 20.0%
Tire manufacturer	16 10.3%	8 5.4%	21 16.8%	22 21.6%	14 12.3%	81 12.6%
Tire stores	28 17.8%	26 17.6%	27 21.4%	38 37.6%	31 27.0%	150 23.2%
<i>Consumer Reports</i>	28 17.9%	30 21.0%	24 18.5%	26 26.3%	29 25.7%	137 21.4%
Other magazine articles	35 22.3%	44 30.8%	33 24.8%	37 38.5%	33 30.6%	182 28.6%
Magazine ads	35 22.4%	40 27.2%	36 27.1%	43 44.8%	26 23.0%	180 27.9%
The Internet	25 16.1%	33 23.1%	30 23.1%	37 38.5%	38 33.3%	163 25.5%
Newspaper articles	25 16.1%	27 18.4%	31 23.5%	36 36.0%	30 26.5%	149 23.0%
Television advertising	30 19.1%	26 17.7%	32 23.9%	40 40.0%	32 28.3%	160 24.6%
Radio	28 18.1%	39 26.5%	30 22.6%	43 42.6%	44 38.9%	184 28.4%
Direct mail	27 17.3%	35 24.0%	36 28.1%	44 43.6%	37 32.5%	179 27.8%
TV news segments on tires	15 9.6%	23 15.8%	41 31.3%	23 23.2%	27 23.9%	129 20.0%
Government agency	13 8.5%	34 24.5%	38 30.9%	20 20.2%	33 30.0%	138 22.1%
Yellow Pages	26 16.6%	34 23.8%	41 33.1%	36 36.0%	36 31.6%	173 27.1%
Friends and family	12 7.6%	18 12.3%	26 19.3%	15 14.7%	13 11.1%	84 12.8%
Auto mechanic	12 7.7%	14 9.5%	22 16.4%	9 8.6%	22 19.0%	79 12.0%

Table 35. (cont.)

Information Source Rated NOT AT ALL IMPORTANT	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
Car manufacturer	54 34.8%	23 15.5%	9 7.2%	16 15.7%	25 21.9%	127 19.7%
Tire manufacturer	18 11.5%	9 6.1%	4 3.2%	6 5.9%	2 1.8%	39 6.0%
Tire stores	16 10.2%	14 9.5%	8 6.3%	15 14.9%	10 8.7%	63 9.7%
<i>Consumer Reports</i>	57 36.5%	28 19.6%	17 13.1%	14 14.1%	21 18.6%	137 21.4%
Other magazine articles	66 42.0%	33 23.1%	18 13.5%	18 18.8%	25 23.1%	160 25.1%
Magazine ads	77 49.4%	35 23.8%	14 10.5%	23 24.0%	32 28.3%	181 28.1%
The Internet	82 52.9%	49 34.3%	25 19.2%	19 19.8%	30 26.3%	205 32.1%
Newspaper articles	63 40.6%	28 19.0%	17 12.9%	16 16.0%	16 14.2%	140 21.6%
Television advertising	82 52.2%	29 19.7%	10 7.5%	19 19.0%	16 14.2%	156 24.0%
Radio	85 54.8%	37 25.2%	9 6.8%	21 20.8%	25 22.1%	177 27.3%
Direct mail	89 57.1%	36 24.7%	16 12.5%	23 22.8%	27 23.7%	191 29.6%
TV news segments on tires	59 37.6%	27 18.5%	8 6.1%	14 14.1%	19 16.8%	127 19.7%
Government agency	75 49.0%	36 25.9%	9 7.3%	15 15.2%	20 18.2%	155 24.8%
Yellow Pages	91 58.0%	45 31.5%	20 16.1%	22 22.0%	23 20.2%	201 31.5%
Friends and Family	49 31.2%	26 17.8%	8 5.9%	7 6.9%	14 12.0%	104 15.8%
Auto mechanic	48 30.8%	27 18.4%	10 7.5%	8 7.6%	13 11.2%	106 16.1%

Pearson chi-square statistics for q21a–q21p:

Question Item	Chi-square
Car manufacturer	.000
Tire manufacturer	.000
“Consumer Reports”	.000
Other magazine articles	.000
Magazine ads	.000
The Internet	.000
Newspaper articles	.000
Television advertising	.000
Radio	.000
Direct mail	.000
TV news segments on tires	.000
Government agency	.000
Yellow Pages	.000
Friends and family	.000
Auto mechanic	.000

Table 36. Importance of four types of information on tires that are usually available in tire stores to the most recent tire purchase decisions made by drivers (q21a.a–q21a.d) cross-tabulated by language groups.

Information Rated VERY IMPORTANT	Languages of Survey Respondents					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
In-store advertising	11 9.7%	42 39.3%	12 13.2%	1 2.1%	8 11.1%	74 17.2%
In-store brochures	15 13.3%	38 35.5%	9 10.0%	1 2.1%	14 19.4%	77 17.9%
Posted about each brand	28 24.8%	47 43.9%	13 14.4%	4 8.5%	19 27.1%	111 26.0%
Provided by sales persons	49 43.8%	50 46.7%	9 9.9%	4 8.5%	14 19.4%	126 29.4%

Table 36. (cont.)

Information Rated SOMEWHAT IMPORTANT	Languages of Survey Respondents					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
In-store advertising	39 34.5%	36 33.6%	39 42.9%	25 53.2%	27 37.5%	166 38.6%
In-store brochures	41 36.3%	41 38.3%	42 46.7%	27 57.4%	29 40.3%	180 42.0%
Posted about each brand	53 46.9%	37 34.6%	46 51.1%	27 57.4%	28 40.0%	191 44.7%
Provided by sales persons	38 33.9%	39 36.4%	45 49.5%	27 57.4%	29 40.3%	178 41.5%

Table 36. (cont.)

Information Rated NOT VERY IMPORTANT	Languages of Survey Respondents					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
In-store advertising	23 20.4%	14 13.1%	28 30.8%	18 38.3%	23 31.9%	106 24.7%
In-store brochures	25 22.1%	16 15.0%	27 30.0%	17 36.2%	18 25.0%	103 24.0%
Posted about each brand	12 10.6%	10 9.3%	23 25.6%	10 21.3%	16 22.9%	71 16.6%
Provided by sales persons	12 10.7%	11 10.3%	25 27.5%	12 25.5%	17 23.6%	77 17.9%

Table 36. (cont.)

Information Rated NOT AT ALL IMPORTANT	Languages of Survey Respondents					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
In-store advertising	40 35.4%	15 14.0%	12 13.2%	3 6.4%	14 19.4%	84 19.5%
In-store brochures	32 28.3%	12 11.2%	12 13.3%	2 4.3%	11 15.3%	69 16.1%
Posted about each brand	20 17.7%	13 12.1%	8 8.9%	6 12.8%	7 10.0%	54 12.6%
Provided by sales persons	13 11.6%	7 6.5%	12 13.2%	4 8.5%	12 16.7%	48 11.2%

Pearson chi-square statistics for q21a.a–q21a.d:

Question Item	Chi-square
In-store advertising	.000
In-store brochures	.000
Posted about each brand	.000
Provided by sales persons	.000

Table 37. Number of stores and/or Web sites contacted by drivers prior to their most recent tire purchase (q21b) cross-tabulated by language groups.

Number of Stores Contacted Prior to Purchasing Tires	Languages of Survey Respondents					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
None	21 13.5%	16 11.1%	13 10.0%	19 19.2%	11 9.7%	80 12.5%
1	57 36.8%	48 33.3%	45 34.6%	28 28.3%	56 49.6%	234 36.5%
2	25 16.1%	31 21.5%	27 20.8%	33 33.3%	19 16.8%	135 21.1%
3 or more	52 33.5%	49 34.0%	45 34.6%	19 19.2%	27 23.9%	192 30.0%
Total	155 100.0%	144 100.0%	130 100.0%	99 100.0%	113 100.0%	641 100.0%

Pearson chi-square significance = .002

Table 38. Did drivers intend to buy a specific brand of tire when they made their most recent purchase (q22) cross-tabulated by language groups.

Did Drivers Intend to Buy a Specific Brand of Tire?	Languages of Survey Respondents					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
Yes	82 52.2%	71 48.6%	79 60.8%	36 34.3%	65 58.0%	333 51.2%
No	75 47.8%	75 51.4%	51 39.2%	69 65.7%	47 42.0%	317 48.8%
Total	157 100.0%	146 100.0%	130 100.0%	105 100.0%	112 100.0%	650 100.0%

Pearson chi-square significance = .001

Table 39. Importance of various criteria to the most recent tire purchase decisions of drivers (q23a–q23I) cross-tabulated by language groups.

Criteria Rated VERY IMPORTANT	Languages of Survey Respondents					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
Appearance	20 12.6%	49 32.5%	10 7.8%	8 7.7%	18 15.7%	105 16.0%
Periodic servicing	48 30.4%	66 44.3%	21 15.8%	27 26.7%	44 37.6%	206 31.3%
Information from advertisement	14 8.8%	35 23.2%	3 2.3%	5 4.9%	10 8.8%	67 10.2%
Information from Web site	9 5.9%	19 12.8%	6 4.6%	5 5.0%	5 4.4%	44 6.8%
Information from retailer	20 12.7%	33 21.9%	10 7.6%	11 10.8%	8 7.1%	82 12.5%
Warranty	87 54.7%	91 60.3%	42 31.6%	39 38.2%	75 64.7%	334 50.5%
Performance	101 63.5%	101 66.9%	41 31.3%	59 58.4%	75 64.7%	377 57.3%
Price	72 45.6%	83 55.7%	38 28.6%	42 40.0%	73 62.9%	308 46.6%
Quality	123 77.8%	108 71.5%	60 45.1%	73 70.2%	89 76.1%	453 68.3%
Reputation of brand	81 50.9%	74 49.7%	27 20.8%	38 38.0%	63 54.3%	283 43.3%
Recycled content	21 14.1%	61 42.7%	18 15.0%	15 19.2%	25 24.3%	140 23.6%
Special offer or sale	48 30.4%	63 44.1%	13 9.9%	34 33.0%	36 32.4%	194 30.0%

Table 39. (cont.)

Criteria Rated SOMEWHAT IMPORTANT	Languages of Survey Respondents					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
Appearance	12 7.5%	45 29.8%	43 33.6%	18 17.3%	24 20.9%	142 21.6%
Periodic servicing	40 25.3%	44 29.5%	59 44.4%	33 32.7%	40 34.2%	216 32.8%
Information from advertisement	10 6.3%	45 29.8%	49 37.1%	33 32.0%	28 24.6%	165 25.0%
Information from Web site	9 5.9%	22 14.8%	40 30.5%	36 36.0%	22 19.5%	129 20.0%
Information from retailer	17 10.8%	39 25.8%	49 37.1%	39 38.2%	33 29.5%	177 27.1%
Warranty	33 20.8%	38 25.2%	57 42.9%	31 30.4%	31 26.7%	190 28.7%
Performance	26 16.4%	34 22.5%	57 43.5%	26 25.7%	33 28.4%	176 26.7%
Price	35 22.2%	44 29.5%	49 36.8%	40 38.1%	28 24.1%	196 29.7%
Quality	20 12.7%	31 20.5%	54 40.6%	25 24.0%	25 21.4%	155 23.4%
Reputation of brand	21 13.2%	38 25.5%	52 40.0%	33 33.0%	28 24.1%	172 26.3%
Recycled content	15 10.1%	29 20.3%	48 40.0%	16 20.5%	21 20.4%	129 21.8%
Special offer or sale	26 16.5%	35 24.5%	51 38.9%	30 29.1%	33 29.7%	175 27.1%

Table 39. (cont.)

Criteria Rated NOT VERY IMPORTANT	Languages of Survey Respondents					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
Appearance	50 31.4%	27 17.9%	30 23.4%	44 42.3%	34 29.6%	185 28.2%
Periodic Servicing	37 23.4%	24 16.1%	35 26.3%	26 25.7%	26 22.2%	148 22.5%
Information from advertisement	37 23.3%	31 20.5%	53 40.2%	33 32.0%	36 31.6%	190 28.8%
Information from Web site	23 15.0%	29 19.5%	47 35.9%	29 29.0%	25 22.1%	153 23.7%
Information from retailer	40 25.5%	30 19.9%	41 31.1%	28 27.5%	35 31.3%	174 26.6%
Warranty	20 12.6%	9 6.0%	19 14.3%	16 15.7%	8 6.9%	72 10.9%
Performance	16 10.1%	10 6.6%	18 13.7%	7 6.9%	4 3.4%	55 8.4%
Price	35 22.2%	14 9.4%	32 24.1%	18 17.1%	12 10.3%	111 16.8%
Quality	8 5.1%	11 7.3%	12 9.0%	2 1.9%	3 2.6%	36 5.4%
Reputation of brand	38 23.9%	24 16.1%	32 24.6%	18 18.0%	19 16.4%	131 20.0%
Recycled content	35 23.5%	17 11.9%	30 25.0%	35 44.9%	26 25.2%	143 24.1%
Special offer or sale	41 25.9%	24 16.8%	41 31.3%	28 27.2%	32 28.8%	166 25.7%

Table 39. (cont.)

Criteria Rated NOT AT ALL IMPORTANT	Languages of Survey Respondents					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
Appearance	77 48.4%	30 19.9%	45 35.2%	34 32.7%	39 33.9%	225 34.2%
Periodic Servicing	33 20.9%	15 10.1%	18 13.5%	15 14.9%	7 6.0%	88 13.4%
Information from advertisement	98 61.6%	40 26.5%	27 20.5%	32 31.1%	40 35.1%	237 36.0%
Information from Web site	112 73.2%	79 53.0%	38 29.0%	30 30.0%	61 54.0%	320 49.5%
Information from retailer	80 51.0%	49 32.5%	32 24.2%	24 23.5%	36 32.1%	221 33.8%
Warranty	19 11.9%	13 8.6%	15 11.3%	16 15.7%	2 1.7%	65 9.8%
Performance	16 10.1%	6 4.0%	15 11.5%	9 8.9%	4 3.4%	50 7.6%
Price	16 10.1%	8 5.4%	14 10.5%	5 4.8%	3 2.6%	46 7.0%
Quality	7 4.4%	1 .7%	7 5.3%	4 3.8%	0 0.0%	19 2.9%
Reputation of brand	19 11.9%	13 8.7%	19 14.6%	11 11.0%	6 5.2%	68 10.4%
Recycled content	78 52.3%	36 25.2%	24 20.0%	12 15.4%	31 30.1%	181 30.5%
Special offer or sale	43 27.2%	21 14.7%	26 19.8%	11 10.7%	10 9.0%	111 17.2%

Pearson chi-square statistics for q23a–q23l:

Question Item	Chi-square
Appearance	.000
Periodic servicing	.000
Information from advertisement	.000
Information from Web site	.000
Information from retailer	.000
Warranty	.000
Performance	.000
Price	.000
Quality	.000
Reputation of brand	.000
Recycled content	.000
Special offer or sale	.000

Knowledge, Beliefs, and Behaviors Regarding Tire Recycling and Disposal

Drivers who participated in the telephone survey were asked several questions about tire recycling and disposal (q24–q30) (dependent variables). First, they were asked if they have any used tires not mounted on a vehicle around their residence (q24). As shown in Table 40, 11.2 percent of the drivers report having unmounted tires around their residence. Language spoken was significantly related to whether or not a driver had unmounted tires around the residence. The English and Spanish-speaking drivers were slightly more likely to have unmounted tires around their households, while the Vietnamese-speaking drivers were significantly less likely to have unmounted tires around their residence.

Drivers who reported having unmounted tires around their residences were then asked how many unmounted tires they had on their premises (q24a). About 85 percent said they had four or fewer unmounted tires around their residences (Table 40a). The Spanish-speaking drivers were more likely than other respondents to report having 5 or more unmounted tires around their residence.

Drivers were asked if, in their opinion, discarded tires pose any risk to the environment or to public health (q25). As shown in Table 41, 81.2 percent of the drivers stated that they believed that discarded tires do pose risks to the environment or to public health. Differences on this question were found based upon the language spoken in the household. In particular, the Vietnamese-speaking drivers were less likely to believe that discarded tires pose a risk to the environment or to public health than drivers from the four other language groups. While 93.1 percent of the Mandarin speakers and 85.9 percent of the Spanish speakers believed tires pose environmental or public health risks, 62.8 percent of the Vietnamese-speaking drivers believed tires posed these risks (Table 41).

Next, drivers who believed tires do pose environmental or public health risks were asked to describe the environmental or health risks they thought discarded tires pose (q26). The four most frequently cited responses, in order, were: 1) risk of toxic smoke from burning tires, 2) fire hazards, 3) the risk that stagnant water in tires can be a breeding ground for mosquitoes and other diseases, and 4) that the tires get smelly (Table 42). Significant differences in opinions on this question were found based upon language spoken at home. The top two risks described by the English, Spanish, and Tagalog speakers were fire hazard and toxic smoke, while the Vietnamese speakers noted smelly tires and stagnant water risks as their top two concerns. The Mandarin speakers reported that toxic smoke and smelly tires were their top concerns (Table 42).

When drivers were asked if tires and tire components can be recycled or reused in any way (q27), 82.6 percent said “yes” (Table 43). Responses to this question differed based on language spoken. For example, 94.5 percent of the English speakers and 88.8 percent of the Mandarin speakers believed tires can be recycled or reused, while only 53.6 percent of the Vietnamese speakers believed this to be the case (Table 43).

Drivers were asked to name some ways that tires could be recycled or reused (q27a). The five most frequently stated ways in which tires can be reused or recycled included: retreads, shoes, sandals, asphalt, and playground equipment/climbing structures (Table 43a). The top two most cited use of recycled or reused tires by each language group included:

- English—asphalt and retreads.
- Spanish—shoes and hoses.
- Vietnamese—sandals and shoes.

- Mandarin—retreads and flooring.
- Tagalog—retreads and sandals.

Drivers were asked if they would be more likely, about as likely, or less likely to purchase tires with a small percentage of recycled content if performance, cost, and safety were comparable to new tires (q27b). As shown in Table 43b, 62.1 percent said they would be as likely or more likely to purchase tires with recycled content. Differences in purchase likelihoods were found based on language spoken. While 51.4 percent of the English speakers responded “More likely to buy” to the question, only 31.5 percent of the Tagalog and a mere 12.2 percent of the Vietnamese speakers stated they would be “More likely to buy” tires with recycled content, even if performance, cost, and safety were comparable to new tires.

Drivers were asked if retreaded or recapped tires are more safe, about as safe, somewhat less safe, or not nearly as safe as new tires (q28). As shown in Table 44, only 17.9 percent said they were as safe or more safe than new tires. Perceptions regarding the safety of retreads varied by language spoken. Nearly 52 percent of the English and 45.5 percent of the Tagalog speakers believed that retreads are not nearly as safe as new tires, while 33.5 percent of the Mandarin and 20.6 percent of the Spanish speakers felt retreads were not as safe as new tires (Table 44).

Drivers were asked if they had ever purchased retreaded/recapped tires (q29). A total of 20.1 percent of the drivers had purchased a retread (Table 45). English speakers were most likely to have purchased a retread (37.4 percent), followed by Spanish (29.5 percent), Tagalog (11.3 percent), and Vietnamese (10.8 percent). Mandarin speakers were the least likely (9.7 percent) to have purchased a retread.

When respondents were asked if they would be very likely, somewhat likely, or not at all likely to purchase retreaded/recapped tires in the future (q29a), 65.0 percent said they would be “not at all likely” (Table 45a). The English and Tagalog speakers were the least likely to respond that they would buy a retread in the future, while the Mandarin and Spanish speakers had slightly increased likelihoods of buying retreads in the future (Table 45a).

Survey respondents were asked how they typically dispose of their old tires when their tires are replaced (q30). The most common response (95.0 percent) was that the tire dealer keeps and disposes of the old tires (Table 46). No significant differences were found on this question based upon language spoken.

Table 40. Do California drivers have any unmounted used tires around their residences (q24) cross-tabulated by language?

Unmounted Tires at Home?	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
Yes	31 15.3%	28 13.8%	8 4.0%	23 12.0%	22 10.9%	112 11.2%
No	171 84.7%	175 86.2%	190 96.0%	168 88.0%	180 89.1%	884 88.8%
Total	202 100.0%	203 100.0%	198 100.0%	191 100.0%	202 100.0%	996 100.0%

Pearson chi-square significance = .004

Table 40a. Number of tires not mounted on a vehicle around residences of California drivers (q24a Recoded) cross-tabulated by language groups.

Number of Tires Not Mounted	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
1	6 19.4%	8 28.6%	1 14.3%	10 50.0%	3 14.3%	28 26.2%
2	6 19.4%	5 17.9%	3 42.9%	8 40.0%	4 19.0%	26 24.3%
3	5 16.1%	1 3.6%	0 0%	1 5.0%	2 9.5%	9 8.4%
4	10 32.3%	6 21.4%	3 42.9%	1 5.0%	8 38.1%	28 26.2%
5 or more	4 12.9%	8 28.6%	0 0%	0 0%	4 19.0%	16 15.0%
Total	31 100.0%	28 100.0%	7 100.0%	20 100.0%	21 100.0%	107 100.0%

Pearson chi-square significance = .030

Table 41. Opinions of California drivers regarding risks posed by discarded tires (q25) cross-tabulated by language groups.

Do Discarded Tires Pose Any Risk?	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
Yes	152 80.9%	165 85.9%	108 62.8%	162 93.1%	135 82.8%	722 81.2%
No	36 19.1%	27 14.1%	64 37.2%	12 6.9%	28 17.2%	167 18.8%
Total	188 100.0%	192 100.0%	172 100.0%	174 100.0%	163 100.0%	889 100.0%

Pearson chi-square significance = .000

Table 42. Opinions of California drivers regarding the types of environmental or health risks posed by discarded tires (q26) cross-tabulated by language groups.

Risks of Recycled Tires	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
Risk of toxic smoke when tires are burned	60 39.5%	60 39.7%	12 11.7%	57 44.2%	45 36.3%	234 35.5%
Fire hazard	61 40.1%	41 27.2%	28 27.2%	20 15.5%	72 58.1%	222 33.7%
Stagnant water	15 9.9%	19 12.6%	43 41.7%	18 14.0%	33 26.6%	128 19.4%
Smelly risk	12 7.9%	8 5.3%	52 50.5%	32 24.8%	23 18.5%	127 19.3%
Safety of small children	8 5.3%	17 11.3%	32 31.1%	23 17.8%	32 25.8%	112 17.0%
Chemicals drain into ground	30 19.7%	7 4.6%	12 11.7%	31 24.0%	14 11.3%	94 14.3%
Rodent risk	10 6.6%	9 6.0%	28 27.2%	14 10.9%	22 17.7%	83 12.6%
Chemicals drain into water	21 13.8%	12 7.9%	21 20.4%	20 15.5%	5 4.0%	79 12.0%
Other risk	30 19.7%	9 6.0%	4 3.9%	16 12.4%	11 8.9%	70 10.6%
Snake risk	11 7.2%	4 2.6%	25 24.3%	13 10.1%	11 8.9%	64 9.7%
Unable to come up with anything	8 5.3%	17 11.3%	8 7.8%	14 10.9%	6 4.8%	53 8.0%

Pearson chi-square statistics for q26.1–q26.11

Question Item	Chi-square
Risk of toxic smoke when tires are burned	.000
Fire hazard	.001
Stagnant water	.000
Smelly risk	.000
Safety of small children	.000
Chemicals drain into ground	.000
Rodent risk	.000
Chemicals drain into water	.000
Other risk	.000
Snake risk	.000
Unable to come up with anything	.146

Table 43. Opinions of California drivers regarding recycling of tires (q27) cross-tabulated by language groups.

Can tires be recycled?	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
Yes	173 94.5%	150 85.7%	81 53.6%	142 88.8%	140 86.4%	686 82.6%
No	10 5.5%	25 14.3%	70 46.4%	18 11.3%	22 13.6%	145 17.4%
Total	183 100.0%	175 100.0%	151 100.0%	160 100.0%	162 100.0%	831 100.0%

Pearson chi-square significance = .000

Table 43a. Opinions of California drivers regarding uses for recycled tires (q27a) cross-tabulated by language groups.

Uses for Recycled Tires	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
Retread	30 17.3%	12 10.2%	7 9.9%	18 20.9%	57 46.7%	124 21.8%
Shoes	21 12.1%	22 18.6%	30 42.3%	14 16.3%	34 27.9%	121 21.2%
Sandals	12 6.9%	3 2.5%	32 45.1%	11 12.8%	48 39.3%	106 18.6%
Asphalt	65 37.6%	10 8.5%	11 15.5%	7 8.1%	7 5.7%	100 17.5%
Other	33 19.1%	16 13.6%	5 7.0%	2 2.3%	19 15.6%	75 13.2%
Playground equipment	18 10.4%	6 5.1%	5 7.0%	8 9.3%	29 23.8%	66 11.6%
Playground covering	19 11.0%	4 3.4%	4 5.6%	7 8.1%	21 17.2%	55 9.6%
Bumpers	7 4.0%	10 8.5%	13 18.3%	5 5.8%	10 8.2%	45 7.9%
Flooring	11 6.4%	2 1.7%	8 11.3%	16 18.6%	4 3.3%	41 7.2%
Landscaping	7 4.0%	6 5.1%	2 2.8%	6 7.0%	15 12.3%	36 6.3%
Mats	12 6.9%	7 5.9%	12 16.9%	1 1.2%	3 2.5%	35 6.1%
Hoses	4 2.3%	21 17.8%	6 8.5%	2 2.3%	0 0.0%	33 5.8%
Boat Docks	7 4.0%	1 .8%	11 15.5%	4 4.7%	10 8.2%	33 5.8%
Roofing materials	6 3.5%	3 2.5%	2 2.8%	6 7.0%	7 5.7%	24 4.2%
Fill for construction	6 3.5%	1 .8%	4 5.6%	10 11.6%	3 2.5%	24 4.2%
Artistic purposes	8 4.6%	0 0.0%	5 7.0%	1 1.2%	10 8.2%	24 4.2%
Fuels	5 2.9%	2 1.7%	7 9.9%	6 7.0%	0 0.0%	20 3.5%

Uses for Recycled Tires	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
Replace dead coral reefs	4 2.3%	0 0.0%	2 2.8%	4 4.7%	6 4.9%	16 2.8%
Track covering	3 1.7%	0 0.0%	2 2.8%	7 8.1%	2 1.6%	14 2.5%
Jewelry	3 1.7%	1 .8%	0 0.0%	2 2.3%	1 .8%	7 1.2%
Purses	2 1.2%	0 0.0%	1 1.4%	3 3.5%	0 0.0%	6 1.1%
Unable to come up with anything	8 4.6%	29 24.6%	13 18.3%	20 23.3%	10 8.2%	80 14.0%

Table 43b. Likelihood that California drivers will purchase tires with recycled content (q27b) cross-tabulated by language groups.

Likely to Purchase Tires With Recycled Content?	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
More likely	95 51.4%	76 43.7%	22 12.2%	66 40.5%	52 31.5%	311 35.8%
About as likely	55 29.7%	53 30.5%	44 24.3%	43 26.4%	33 20.0%	228 26.3%
Less likely	35 18.9%	45 25.9%	115 63.5%	54 33.1%	80 48.5%	329 37.9%
Total	185 100.0%	174 100.0%	181 100.0%	163 100.0%	165 100.0%	868 100.0%

Pearson chi-square significance = .000

Table 44. Opinions of California drivers regarding the safety of retreaded or recapped tires (q28) cross-tabulated by language groups.

How Safe Are Retreaded or Recapped Tires?	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
More safe than new tires	2 1.2%	9 5.3%	2 1.1%	4 2.6%	11 6.7%	28 3.3%
As safe as new tires	16 9.3%	20 11.8%	26 14.9%	32 20.6%	28 17.0%	122 14.6%
Somewhat less safe than new tires	65 37.8%	79 46.7%	111 63.4%	67 43.2%	51 30.9%	373 44.6%
Not nearly as safe as new tires	89 51.7%	61 36.1%	36 20.6%	52 33.5%	75 45.5%	313 37.4%
Total	172 100.0%	169 100.0%	175 100.0%	155 100.0%	165 100.0%	836 100.0%

Pearson chi-square significance = .000

Table 45. Past purchases of retreaded tires by California drivers (q29) cross-tabulated by language groups.

Have You Ever Purchased a Retreaded Tire?	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
Yes	76 37.4%	54 29.5%	20 10.8%	17 9.7%	22 11.3%	189 20.1%
No	127 62.6%	129 70.5%	165 89.2%	159 90.3%	172 88.7%	752 79.9%
Total	203 100.0%	183 100.0%	185 100.0%	176 100.0%	194 100.0%	941 100.0%

Pearson chi-square significance = .000

Table 45a. Likelihood that California drivers will purchase retreaded tires in the future (q29a) cross-tabulated by language groups.

How Likely Are You to Purchase Retreaded Tires in the Future?	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
Not at all likely	155 79.1%	94 52.5%	110 62.9%	81 47.9%	149 79.7%	589 65.0%
Somewhat likely	34 17.3%	65 36.3%	60 34.3%	76 45.0%	35 18.7%	270 29.8%
Very likely	7 3.6%	20 11.2%	5 2.9%	12 7.1%	3 1.6%	47 5.2%
Total	196 100.0%	179 100.0%	175 100.0%	169 100.0%	187 100.0%	906 100.0%

Pearson chi-square significance = .000

Table 46. How do California drivers typically dispose of old tires (q30) cross-tabulated by language groups.

How Do You Typically Dispose of Old Tires?	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
Send them to a landfill with other refuse.	0 0.0%	5 2.6%	1 .5%	2 1.1%	1 .5%	9 .9%
Take them to a recycling center.	3 1.5%	3 1.5%	9 4.6%	6 3.4%	8 4.3%	29 3.0%
The tire dealer keeps and disposes of the old tires.	194 96.5%	187 95.4%	184 94.4%	171 95.5%	174 93.0%	910 95.0%
Another disposal method.	4 2.0%	1 .5%	1 .5%	0 0.0%	4 2.1%	10 1.0%
Total	201 100.0%	196 100.0%	195 100.0%	179 100.0%	187 100.0%	958 100.0%

Pearson chi-square significance = .055

Familiarity with Tire Recycling and Disposal Campaigns

When drivers were asked if they have ever disposed of an old tire or tires by dropping them off at an event that was designed to collect tires (q31), 6.9 percent of the drivers said “yes” (Table 47). Spanish speakers were the most likely group to have dropped old tires off at an event (10 percent of the drivers), followed by English (8.9 percent), Vietnamese (7.6 percent), and Tagalog (5.5 percent) speakers. On the other hand, a mere 2.1 percent of Mandarin speakers had dropped old tires off at a tire collection event.

Drivers who participated in the survey were next asked if they were aware of any recent campaigns to educate the public about tire safety and maintenance (q32). About 12 percent of the respondents were aware of a recent tire safety and maintenance educational campaign (Table 48). If drivers were aware of a campaign, they were next asked to recall where they had heard or seen information about the campaign (q32a). In order of frequency, the four most frequently recalled communication channels were: television advertisements, radio advertisements, newspaper advertisements, and brochures (Table 48a). Given the small sample size per cell in this table, an interpretation of the differences by language spoken is not meaningful nor statistically significant.

Drivers were asked the best ways to provide them with information about tires and tire safety (q33). More specifically, they were asked to rate the effectiveness of 16 information sources from not effective to very effective. As shown in Table 49 the top five communication channels rated “very effective” were Department of Motor Vehicles mailings, followed by television advertisements, Consumer Reports, information from auto insurance companies, and auto clubs. Significant differences were found on this question based on the language spoken. The top five “very effective” communication channels for each language spoken were as follows:

- English—Consumer Reports, auto clubs, auto insurance, the Department of Motor Vehicles, billboards.
- Spanish—Department of Motor Vehicles, television advertisements, brochures at tire shops, auto insurance companies, billboards.
- Vietnamese—television advertisements, radio advertisements, direct mailings, Department of Motor Vehicles, magazine advertisements.
- Mandarin—Department of Motor Vehicles, auto insurance companies, Consumer Reports, information directly from a government agency, auto clubs.
- Tagalog—Department of Motor Vehicles, brochures at tire shops, television advertisements, auto clubs, auto insurance companies, and Consumer Reports (both tied for the fifth most-effective rating).

On the other hand, the five least-effective communication channels (rated “not effective”) were e-mail/Internet, followed by insert in phone bill, insert in electric bill, magazine advertisements, and direct mailings (Table 49).

Table 47. California drivers who have and have not dropped used tires off at a tire collection event (q31) cross-tabulated by language groups.

Ever Dropped Used Tires Off at a Tire Collection Event?	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
Yes	18 8.9%	20 10.0%	13 7.6%	4 2.1%	11 5.5%	66 6.9%
No	185 91.1%	181 90.0%	158 92.4%	185 97.9%	188 94.5%	897 93.1%
Total	203 100.0%	201 100.0%	171 100.0%	189 100.0%	199 100.0%	963 100.0%

Pearson chi-square significance = .020

Table 48. Are California drivers aware of any recent campaigns about tire safety and maintenance (q32) cross-tabulated by language groups.

Are You Aware of Any Recent Campaigns About Tire Safety?	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
Yes	32 15.8%	10 5.0%	47 26.9%	6 3.1%	22 11.6%	117 12.1%
No	170 84.2%	190 95.0%	128 73.1%	190 96.9%	168 88.4%	846 87.9%
Total	202 100.0%	200 100.0%	175 100.0%	196 100.0%	190 100.0%	963 100.0%

Pearson chi-square significance = .000

Table 48a. Information sources where drivers saw or heard campaigns to educate the public about tire safety and maintenance (q32a) cross-tabulated by language groups.

Where Did You See or Hear the Campaign?	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
Auto club publication	0 0.0%	1 12.5%	0 0.0%	0 0.0%	1 5.6%	2 1.9%
Billboard	1 3.2%	1 12.5%	0 0.0%	1 16.7%	0 0.0%	3 2.8%
Brochure	0 0.0%	0 0.0%	5 11.4%	0 0.0%	2 11.1%	7 6.5%
Department of Motor Vehicles	0 0.0%	0 0.0%	0 0.0%	1 16.7%	0 0.0%	1 .9%
Insurance company	0 0.0%	0 0.0%	1 2.3%	0 0.0%	0 0.0%	1 .9%
Magazine ad	1 3.2%	0 0.0%	3 6.8%	0 0.0%	0 0.0%	4 3.7%
Newspaper ad	4 12.9%	2 25.0%	3 6.8%	0 0.0%	1 5.6%	10 9.3%
On the Internet	1 3.2%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	1 .9%
Radio ad	3 9.7%	1 12.5%	15 34.1%	0 0.0%	2 11.1%	21 19.6%
Sears	0 0.0%	0 0.0%	6 13.6%	0 0.0%	0 0.0%	6 5.6%
TV ad	13 41.9%	2 25.0%	8 18.2%	4 66.7%	4 22.2%	31 29.0%
Tire dealer	2 6.5%	1 12.5%	1 2.3%	0 0.0%	2 11.1%	6 5.6%
Other	6 19.4%	0 0.0%	2 4.5%	0 0.0%	6 33.3%	14 13.1%
Total	31 100.0%	8 100.0%	44 100.0%	6 100.0%	18 100.0%	107 100.0%

Table 49. Opinions of California drivers regarding the effectiveness of various information sources on tires and tire safety (q33) cross-tabulated by language groups.

Information Rated VERY EFFECTIVE	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
Insert in your electric bill	30 15.2%	88 44.9%	29 16.3%	35 18.5%	32 17.8%	214 22.8%
Insert in your phone bill	25 12.5%	80 41.0%	30 16.5%	34 18.2%	30 16.4%	199 21.0%
Auto insurance company	74 37.4%	107 55.7%	33 18.0%	53 28.8%	48 25.8%	315 33.4%
Auto club	79 39.5%	103 53.6%	27 15.0%	42 23.3%	53 29.0%	304 32.5%
Billboards	58 29.1%	106 54.1%	34 18.4%	32 16.9%	43 22.5%	273 28.4%
Brochures at tires shops	54 26.9%	118 60.2%	27 14.7%	25 13.4%	64 33.2%	288 30.0%
<i>Consumer Reports</i>	84 42.2%	104 53.3%	30 16.1%	50 26.5%	48 25.4%	316 33.0%
DMV mailing	67 33.5%	125 64.4%	42 22.7%	75 39.1%	69 36.7%	378 39.4%
E-mail or Internet	42 21.0%	79 41.1%	35 18.9%	21 11.4%	26 14.1%	203 21.4%
Magazine advertisements	28 14.0%	85 43.8%	38 20.7%	22 11.4%	27 14.1%	200 20.8%
Information directly mailed to you	48 24.0%	104 54.2%	51 27.6%	31 16.1%	40 21.1%	274 28.6%
Newspaper advertisements	36 17.9%	96 49.7%	33 17.8%	26 13.6%	35 18.2%	226 23.5%
Radio advertisements	35 17.4%	104 54.2%	90 48.4%	29 15.1%	35 18.2%	293 30.4%
Television advertisements	54 26.9%	124 64.6%	100 53.8%	38 19.9%	55 28.8%	371 38.6%
Government agency information	34 17.5%	72 40.9%	31 17.6%	49 27.2%	38 20.3%	224 24.5%
Other information	17 15.3%	6 7.5%	6 10.2%	13 15.3%	9 12.2%	51 12.5%

Table 49. (cont.)

Information Rated SOMEWHAT EFFECTIVE	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
Insert in your electric bill	82 41.6%	58 29.6%	99 55.6%	60 31.7%	86 47.8%	385 41.0%
Insert in your phone bill	75 37.5%	64 32.8%	95 52.2%	61 32.6%	92 50.3%	387 40.9%
Auto insurance company	73 36.9%	56 29.2%	104 56.8%	78 42.4%	95 51.1%	406 43.1%
Auto club	72 36.0%	49 25.5%	104 57.8%	71 39.4%	89 48.6%	385 41.2%
Billboards	65 32.7%	51 26.0%	108 58.4%	73 38.6%	91 47.6%	388 40.4%
Brochures at tires shops	92 45.8%	47 24.0%	105 57.1%	84 44.9%	92 47.7%	420 43.7%
<i>Consumer Reports</i>	54 27.1%	54 27.7%	104 55.9%	71 37.6%	91 48.1%	374 39.0%
DMV mailing	79 39.5%	43 22.2%	99 53.5%	79 41.1%	83 44.1%	383 39.9%
E-mail or Internet	44 22.0%	43 22.4%	78 42.2%	54 29.2%	67 36.2%	286 30.2%
Magazine advertisements	90 45.0%	59 30.4%	90 48.9%	76 39.4%	116 60.4%	431 44.8%
Information directly mailed to you	57 28.5%	45 23.4%	86 46.5%	87 45.3%	88 46.3%	363 37.9%
Newspaper advertisements	84 41.8%	54 28.0%	100 54.1%	79 41.4%	110 57.3%	427 44.4%
Radio advertisements	74 36.8%	50 26.0%	62 33.3%	85 44.3%	98 51.0%	369 38.3%
Television advertisements	76 37.8%	45 23.4%	55 29.6%	96 50.3%	104 54.5%	376 39.1%
Government agency information	66 34.0%	44 25.0%	94 53.4%	83 46.1%	96 51.3%	383 41.9%
Other information	11 9.9%	7 8.8%	25 42.4%	8 9.4%	18 24.3%	69 16.9%

Table 49. (cont.)

Information Rated NOT EFFECTIVE	Languages of Drivers Surveyed					Total
	English	Spanish	Vietnamese	Mandarin	Tagalog	
Insert in your electric bill	85 43.1%	50 25.5%	50 28.1%	94 49.7%	62 34.4%	341 36.3%
Insert in your phone bill	100 50.0%	51 26.2%	57 31.3%	92 49.2%	61 33.3%	361 38.1%
Auto insurance company	51 25.8%	29 15.1%	46 25.1%	53 28.8%	43 23.1%	222 23.5%
Auto club	49 24.5%	40 20.8%	49 27.2%	67 37.2%	41 22.4%	246 26.3%
Billboards	76 38.2%	39 19.9%	43 23.2%	84 44.4%	57 29.8%	299 31.1%
Brochures at tire shops	55 27.4%	31 15.8%	52 28.3%	78 41.7%	37 19.2%	253 26.3%
<i>Consumer Reports</i>	61 30.7%	37 19.0%	52 28.0%	68 36.0%	50 26.5%	268 28.0%
DMV mailing	54 27.0%	26 13.4%	44 23.8%	38 19.8%	36 19.1%	198 20.6%
E-mail or Internet	114 57.0%	70 36.5%	72 38.9%	110 59.5%	92 49.7%	458 48.4%
Magazine advertisements	82 41.0%	50 25.8%	56 30.4%	95 49.2%	49 25.5%	332 34.5%
Information directly mailed to you	95 47.5%	43 22.4%	48 25.9%	74 38.5%	62 32.6%	322 33.6%
Newspaper advertisements	81 40.3%	43 22.3%	52 28.1%	86 45.0%	47 24.5%	309 32.1%
Radio advertisements	92 45.8%	38 19.8%	34 18.3%	78 40.6%	59 30.7%	301 31.3%
Television advertisements	71 35.3%	23 12.0%	31 16.7%	57 29.8%	32 16.8%	214 22.3%
Government agency information	94 48.5%	60 34.1%	51 29.0%	48 26.7%	53 28.3%	306 33.5%
Other information	83 74.8%	67 83.8%	28 47.5%	64 75.3%	47 63.5%	289 70.7%

Pearson chi-square statistics for q33a—q33p:

Question Item	Chi-square
Insert in your electrical bill	.000
Insert in your phone bill	.000
Auto insurance company	.000
Auto club	.000
Billboards	.000
Brochures at tire shops	.000
<i>Consumer Reports</i>	.000
DMV mailing	.000
E-mail or Internet	.000
Magazine advertisements	.000
Information mailed directly to you	.000
Newspaper advertisements	.000
Radio advertisements	.000
Television advertisements	.000
Government agency	.000
Other information	.000

**Key Informant Interviews
With Retail
Tire Professionals**

Chapter Summary

Twenty-one interviews were conducted with retail tire professionals. These key informants included retail tire owners, managers, assistant managers, and salespeople. The main findings indicate that retailers believe tire-buying consumers:

- Lack basic knowledge about tires when making a purchase.
- Are mostly concerned about price and the tire's mileage warranty.
- Are mostly influenced by price, brand name, the retailer's service, the tire's mileage warranty, and advertising.
- Are not properly maintaining their tires.

The key informants also stated that:

- They typically provide a brochure or pamphlet on tire maintenance. However, less than half actually talk to customers about proper tire maintenance.
- Their salespeople have a significant influence on consumers, mainly because consumers are uninformed.
- No differences exist in tire-buying practices based upon the buyers' ethnicity.

In addition, the key informants were asked a couple of questions about tire disposal and recycling. The retailers stated that:

- Few of their customers ask about tire disposal and recycling (except for some questions about the tire disposal fee).
- They generally don't provide information about tire disposal and recycling (beyond addressing the disposal fee).

Overall, the key informants believe that the tire-buying public is not very well informed about tires, and that consumers undertake a very simplistic tire-buying decision process that is greatly influenced by in-store personnel. Furthermore, based on discussions with customers and visual inspections of customers' tires, the retailers overwhelmingly felt that customers do not properly maintain their tires. Although the key informants thought customers didn't know much about tires or how to take care of their tires, it appears that retailers could be doing more to help educate consumers.

If the State desires to have some degree of influence on customers' tire maintenance practices, retailers will need to take a more aggressive and active part in educating consumers. In-store personnel need to be trained to clearly communicate to customers the importance of tire maintenance to a tire's longevity and safety. The information should be conveyed verbally, and retailers should point out the importance of reading the provided literature and warranty.

Furthermore, since in-store influences may be a key element in educating tire buyers, it is also advisable to have other information touch points within the retail tire environment. This might include a display comparing a tire that has been cared for properly to one which has not been properly maintained. Another idea would be to have a kiosk in the stores with printed materials and videos about proper tire maintenance, tire disposal, and recycling. These additional in-store communication opportunities would increase the efficiency, effectiveness, and likelihood that tire salespeople would broach the issue of tire maintenance with their customers. In this way,

customers will have multiple opportunities and various learning mediums to become more informed about the importance of proper tire maintenance to their tires' longevity and safety.

Introduction

The California Integrated Waste Management Board (CIWMB) has contracted with California State University, Chico, and IMC Productions to conduct research on consumers' tire-purchase decision processes and behaviors, and their general knowledge about tires, tire maintenance, and tire recycling and disposal. This research effort involves multiple steps, including a literature review, conducting interviews with experts who work in the field, convening focus groups with consumers in five languages, and surveying 1,000 California residents in five languages using a random digital dial methodology over the telephone.

The research presented here reports on the findings from the key informant interviews. Key informant interviews are typically performed to gather insight from individuals considered to be well informed about an area under investigation. Key informant interviews are conversational in nature; thus the sample is relatively small, and the data generated is mostly qualitative. Given the objectives of this research, it was imperative to gather information from retail tire professionals who interact with the tire-buying public on a daily basis. Outside of customers themselves, no other individuals are likely to have a greater understanding of public knowledge about tires, tire maintenance, and tire recycling and disposal.

The primary objective of the key informant interviews was to get insight, from the retailers' perspective, into consumers' knowledge of tires, their purchase decision processes and behaviors, and what they may know about tire maintenance, recycling, and disposal. In addition, the information gathered gives a better understanding for what factors retailers believe influence consumers' tire-buying behaviors and knowledge. This information can then be used in the development of the forthcoming marketing communications efforts.

Methodology and Sample

An objective of the key informant interviews was to contact retail tire personnel across the State. Retail tire outlets were contacted in Sacramento, Northern California, San Francisco/Bay Area, San Diego, Los Angeles, and Lake Tahoe. Four interviews were conducted in each region, with the exception of the Lake Tahoe area, where one key informant interview was completed. Outlets were selected from the electronic yellow pages (www.411.com). Once at that site, the look-up was completed by city and type of business, and a list of possible interviewees was compiled. Of the five areas selected, the interviewers were instructed to attempt to complete a minimum of four interviews in any particular area. Two trained interviewers conducted the 21 key informant interviews from June 4–July 8, 2003. Interviewers followed a semi-structured interview guide that allowed for keeping a conversational tone throughout the interview (see Appendix N).

Interviews were conducted with 11 retail tire managers, 5 owners, 4 assistant managers, and 1 salesperson. All interviews were conducted over the telephone. Interviewers collected some basic descriptive information about each respondent (for example, position/title, years in business) and their business. Most of the key informants have significant experience working with tire customers. Six of the respondents have worked in the retail tire business for more than 20 years. On average, the key informants have 15.1 years of retail tire experience. Twenty of the tire retailers sold new tires, 13 sold used tires, and 2 sold retreaded tires. The outlets offered a variety

of brands ranging from one outlet carrying only 3 brands to one with 50 brands. Most of the retailers stocked 12–20 brands. Nineteen of the retailers interviewed sold passenger tires; 19, van pickup, and light truck tires; 16 carried four-wheel drive/off-road tires; and 14 sold tires for commercial vehicles.

The length of the interviews ranged from 9–30 minutes, with the average length of an interview lasting 14.1 minutes. (Please see Appendix O for additional details about the sample.) The interviews went reasonably well. Interviewers reported that the key informants were enthusiastic, fairly talkative, knowledgeable, and overall, the interviewers felt the interviews were productive.

Results

The following information summarizes the findings from the 21 interviews with the retail tire personnel. Detailed responses to each question can be found in Appendix P.

Retailers' Perceptions of Consumers' Tire Knowledge

Retail tire personnel were asked, “Do you think most people are pretty informed when making a tire purchase? Why do you think this?” The 21 tire professionals responded as follows:

- No—66.7 percent (14/21) of the retail tire personnel felt that consumers do **not** know what they are looking for when buying a tire. For example, one key informant stated, “No. By interacting with customers, it becomes evident that they lack the basic knowledge about what type of tire they need.”
- Yes—19.0 percent (4/21) of the key informants felt that consumers are well informed when making a tire purchase. For example, one key informant stated, “For the most part, people are well informed. They ask a lot of questions based on research done on the Internet.” In fact, 23.8 percent (5/21) of the key informants felt that customers were using the Internet to gather information prior to purchasing their tires.
- Somewhat—14.3 percent (3/21) of the key informants felt that consumers are somewhat well informed when making a tire purchase.

The key informants based their responses on the interactions they have had with their customers and by direct observation of their customers' tires. In most cases, the respondents believed that customers don't know what type of tire they want or need for their vehicle. A couple of the respondents felt that customers are only interested in getting the cheapest tire with the best mileage warranty.

Questions Consumers Ask about Tires

Retailers were asked, “When consumers come to buy tires, what are some of the main questions they typically ask?” Based on their interactions with customers, the retailers stated that customers primarily ask questions about:

- Price—85.7 percent (18/21) of the respondents stated that price is the primary question they are asked by customers.
- A tire's mileage warranty—71.4 percent (15/21) of the key informants stated that questions about the tire's mileage warranty were very common.

Price and mileage warranty were by far the most common questions asked by customers. Less frequently, customers asked questions about a tire's general warranty (23.8 percent, 5/21 of the respondents), treadwear (14.3 percent, 3/21 respondents), ratings (14.3 percent, 3/21 respondents), value (14.3 percent, 3/21 respondents), noise level (9.5 percent, 2/21 respondents), brand name (9.5 percent, 2/21 respondents), quality (9.5 percent, 2/21 respondents), and handling (9.5 percent, 2/21 respondents). Only one retailer (4.8 percent of the respondents) noted that customers ask specifically about performance or safety.

After respondents had given their initial response, interviewers were instructed to ask the respondents for additional information. A large majority of the retailers (85.7 percent) stated that customers don't ask any other questions beyond those already mentioned.

Retailers' Perceptions of the Primary Factors that Influence Tire-Buying Behaviors

In response to the question, "What do you think are the three main factors that influence a consumer to buy a particular tire, from a particular store?" retailers stated that customers are primarily influenced by:

- Price—57.1 percent (12/21) of the retailers mentioned price as a primary influence.
- A tire's brand name—42.9 percent (9/21) of the retailers mentioned brand name as a primary influence.
- Retailer's service—42.9 percent (9/21) of the retailers mentioned service as a primary influence.
- A tire's mileage warranty—28.6 percent (6/21) of the retailers mentioned mileage warranty as a primary influence.
- Advertising—23.8 percent (5/21) of the retailers mentioned advertising as a primary influence.

Retailers' Beliefs about the Relationship Between Tire-Buying Behaviors and Ethnicity

The retail tire professionals were asked, "Have you ever noticed any differences in buying behaviors of customers based on their ethnicity?" Every respondent (100 percent, 21/21) stated that they didn't think buying behaviors differed by ethnicity. When asked to elaborate, five of the respondents (23.8 percent, 5/21) stated that income seemed to have more of an influence on tire-buying behavior than ethnicity.

Retailers' Beliefs about Consumers' Tire Maintenance Practices

Through interaction with tire-buying customers and visual inspection of customers' old tires, the retail tire professionals have a good sense for how well people maintain their tires. In order to gain insight into consumers' tire maintenance practices, we asked the key informants, "Do you believe that most people properly maintain their tires? Why?"

- No, tires not properly maintained—90.5 percent (19/21) of the retail tire professionals stated that customers do not properly maintain their tires. The key informants felt that the main reasons customers do not properly maintain their tires is that customers just don't know what to do and are not informed (mentioned by 36.8 percent, 7/19 of the "No" respondents), followed by a belief that customers are negligent/lazy (mentioned by 26.3 percent, 5/19 of the "No" respondents), or are too busy (mentioned by 15.8 percent, 3/19 of the "No")

respondents). A few key informants noted that a visual inspection of a customer's old tires demonstrates that people are not rotating and balancing their tires, nor properly checking their tire's air pressure.

- Yes, tires properly maintained—9.5 percent (2/21) of the retail tire professions believed that customers do properly maintain their tires.

Retailers' Communication to Consumers Regarding Tire Maintenance

The key informants were asked a series of questions to better understand what, and how, they communicate tire maintenance issues to their customers. Retailers were asked, "What types of information does your company/organization provide consumers with about proper tire maintenance?" Tire retailers appear to provide consumers with basic tire maintenance information including:

- Tire Rotation—42.9 percent (9/21) of the respondents provide information on tire rotation.
- Proper tire air pressure—28.6 percent (6/21) of the respondents provide information on tire air pressure.
- Balancing—23.8 percent (5/21) of the respondents provide information on tire balancing.
- Visual inspections for wear and tear—9.5 percent (2/21) of the respondents provide information on conducting visual inspections for wear and tear.

In addition, the retail tire personnel were asked how they convey information about proper tire maintenance. The primary means of communicating tire maintenance issues to customers appears to be:

- A brochure/pamphlet—71.4 percent (15/21) of the key informants stated they give customers a brochure or pamphlet about tire maintenance.
- Verbally—42.9 percent (9/21) of the key informants stated they talk with customers about tire maintenance.
- Information in the warranty package—19.0 percent (4/21) of the key informants stated that information on tire maintenance is provided in the customers' tire warranty.
- Use of Web site—14.3 percent (3/21) of the key informants stated that tire maintenance is provided on the company's Web site.

Two respondents mentioned they used television or radio ads to reinforce proper tire maintenance behaviors. Furthermore, two respondents mentioned they used the "Be Tire Smart, Play Your PART" brochures produced by the Rubber Manufacturer's Association (RMA).

The key informants were then asked if they believed that people seemed interested in the tire maintenance information and if it affected their customers' behaviors. These were difficult items for the respondents to judge; however, the responses indicate that retailers believe that most customers are at least somewhat interested in the tire maintenance information provided. Nearly 86 percent (12/14 of the key informants that responded to the question) of the retail tire professionals indicated, "Yes, customers are interested." or "Customers are somewhat interested." in the tire maintenance information.

For example, one retailer stated, “Most people are interested in the tire information because it will help the longevity of their new tires.” However, the key informants acknowledged that they really don’t know if the information provided to customers influences their actual tire maintenance behaviors. Only a few retailers (14.3 percent, 3/21) believed that the tire maintenance information has a positive impact on their customers’ tire maintenance behaviors.

In an attempt to get respondents to elaborate further on how they communicate with their customers, interviewers then asked the follow-up questions, “Do you provide any information to a buyer about tire safety and maintenance? If so, what types of information?” The key informants didn’t give any information beyond what they had already mentioned.

Retailers’ Beliefs About the Influence of Tire Sales Personnel

In order to better understand the influence of sales personnel on customers’ tire buying process, the retail tire personnel were asked, “In your opinion, how much influence do salespeople have on customers when they come in to look at or to buy tires? Why?” The key informants said they believed the following:

- Salespeople have a significant influence—76.2 percent (16/21) of the key informants stated that salespeople have a significant influence. The following comment from one respondent reflects many of the key informants’ beliefs: “A lot. Over 75 percent of the people who come in to our store don’t know much about tires. The salesperson will dictate whether or not that customer stays and buys a tire or backs out of the store.” Overall, most of the key informants believed that salespeople have a significant influence on customers, in particular because customers lack knowledge about tires. However, many of the key informants qualified their statements by saying that the influence is only significant if the salesperson is well informed.
- Degree of influence depends—19.0 percent (4/21) of the key informants felt that a salesperson’s degree of influence on tire buyers depends on a few key factors. In particular, these respondents felt that if a customer is well informed, the salesperson is not as influential. In addition, if the salesperson is not well informed, his or her degree of influence is minimal.
- Salespeople have a minimal influence—4.8 percent (1/21) of the key informants stated that salespeople have minimal influence on customers’ tire purchase decisions.

Customers’ Tire Disposal and Recycling Questions and Knowledge

Based on their interaction with tire customers, the retail tire personnel are in a perfect position to report on customers’ tire disposal and recycling questions and knowledge. The key informants were asked, “Do consumers ever bring up tire disposal and recycling issues? In what ways? What do people seem to know about proper tire disposal and tire recycling?” The retail tire professionals stated that customers:

- Inquire about tire disposal and recycling—52.4 percent (11/21) of the respondents stated that customers do bring up tire disposal and recycling issues. However, the majority of these inquiries are to ask about the tire disposal fee, followed by asking about where old tires go. In addition, two key informants noted that customers often complain about the tire disposal fee.
- Don’t inquire about tire disposal and recycling—47.6 percent (10/21) of the respondents stated that customers typically never ask about tire disposal or recycling.

When asked to try and assess customers’ knowledge of tire disposal and recycling, most of the respondents didn’t have a sense for their customers’ knowledge. Four key informants (19.0 percent) noted that, in general, customers don’t seem to have much knowledge.

Tire Disposal and Recycling Information Provided by Retailer

The retail tire professionals were asked, “Do you provide any information to a buyer about proper tire disposal and tire recycling? (If YES) What types of information do you provide?” The key informants noted that when it comes to providing customers with information about tire disposal and recycling, they:

- Do not provide information—61.9 percent (13/21) of the respondents stated they do not provide any information to their customers about proper tire disposal or tire recycling.
- Do provide information—38.1 percent (8/21) of the respondents noted that they do provide some information to their customers about proper tire disposal and tire recycling. However, nearly all the communication was merely to explain the tire disposal fee. Three respondents noted that they explain to customers that their tires will be recycled, and only one respondent stated that he discusses the uses of recycled tires.

Discussion and Recommendations

Through a series of 21 telephone interviews with retail tire professionals, information has been gathered regarding their customers’ tire-purchase decision processes and behaviors, general knowledge about tires, tire maintenance, and tire recycling and disposal. Most of the key informants have significant experience working with the tire-buying public. Six of the informants have more than 20 years’ experience in the retail tire business.

In general, the retail tire professionals stated that they didn’t think consumers know much about tires. They felt consumers didn’t know what tire they wanted or needed for their car. Of the few key informants who felt consumers were knowledgeable about cars, they attributed this knowledge to consumers’ use of the Internet. In addition, based on discussions with customers and visual inspections of customers’ tires, the retailers overwhelmingly felt that customers do not properly maintain their tires. Consistent with the retailers’ belief that consumers don’t know much about tires, many of the key informants believed that consumers don’t properly care for their tires because they don’t know what proper tire maintenance entails.

Although the key informants thought customers didn’t know much about tires or how to take care of their tires, it appears that retailers could be doing more to help educate consumers. Most of the informants stated they simply give a brochure or pamphlet to customers about tire maintenance. Less than half of the retail tire professionals stated they actually talk to customers about tire maintenance. In order to have some degree of influence on customers’ tire maintenance practices, retailers will need to take a more aggressive and active part in educating consumers.

Assuming customers will read about tire maintenance in their warranty or learn it from a brochure is unrealistic. In-store personnel need to be trained to clearly communicate to customers the importance of proper tire maintenance to a tire’s longevity and safety. Although a majority of the retailers were providing the information indirectly through literature and the tires’ warranty, this needs to be complemented by direct verbal communication. Customers are more likely to take tire maintenance seriously if the information is conveyed in a personal manner.

A majority of the respondents felt that in-store sales personnel have a significant influence on customers’ buying behaviors. Once again, the retailers believe that it is because customers are uninformed that their salespeople can have such a large degree of influence, which reinforces the perspective that in-store tire personnel are likely to play a significant role in any attempt by the State to influence customers’ tire-buying behaviors and maintenance practices.

In addition, since in-store influences may be a key element of educating tire buyers, it is also advisable to have other information touch points within the retail tire environment. This might include a display comparing a tire that has been cared for properly to one that has not been properly maintained. Another idea would be to have a kiosk in the store that has a continuous loop video playing that addresses tire maintenance, safety, disposal, and recycling issues. Additionally, the kiosk can be a centerpiece to provide literature about proper tire maintenance. These additional in-store communication opportunities would increase the efficiency, effectiveness, and likelihood that tire salespeople will broach the issue of tire maintenance with their customers. In this manner, customers will have multiple opportunities and various learning mediums to become more informed about the importance of proper tire maintenance to their tires' longevity and safety.

The key informants stated that they don't get many questions about tire disposal and recycling. The main question (and complaint) received was related to the tire disposal fee. In addition, a majority of the retailers stated they don't provide any information to their customers about tire disposal or recycling. The State has an opportunity to increase the likelihood that Californians learn about tire disposal and recycling by providing retailers with materials they can bring to the attention of their tire customers (for example, disposal and recycling kiosk, brochures, example products).

Overall, retailers believe that the tire-buying public is not very well informed about tires and undertakes a very simplistic tire-buying decision process that is greatly influenced by in-store personnel. Given the degree to which retailers believe consumers are ignorant about tire maintenance, recycling and disposal, a multi-channel, multi-media educational campaign is likely warranted.

Limitations

Key informant interviews are a useful research method to get a better understanding from a specific group of well-informed individuals. However, the results reported here are based on a small convenience sample, and great caution should be used in generalizing the findings to the larger population of retail tire personnel. That is, these results should not be construed as representing how all retail tire personnel would respond. In order to produce findings that would represent the general sentiments of retail tire personnel, a much larger, random, scientifically-generated sample would be required.

Furthermore, the results reported here are merely the perceptions of the retail tire personnel regarding their customers. Often, the key informant was asked to project what they believed was going on in their customers' minds. Thus, the answers given are subject to the interpretation of the key informant. With the years of experience many of the key informants have with customers, their beliefs are likely well founded. Nevertheless, the results need to be interpreted cautiously, as tire customers themselves may have responded differently.

Recommendations

The research completed through the literature review, focus groups, and telephone survey indicates that many California drivers do not know or practice tire maintenance that will optimize tire safety and longevity. It is recommended that CIWMB consider the development of a communications campaign in multiple languages that emphasizes proper tire maintenance and its relationship to tire safety and longevity. A message focused on proper tire maintenance serves the interest of consumers and the State by arming drivers with the knowledge required to better assure safer tire maintenance and tire life, which should consequently lead to a decrease in the number of waste tires.

Some of the key themes that should be embedded in the communication effort include:

- Information on the importance of proper and regular tire maintenance, and its relationship to tire safety and longevity. This message should be similar to the Rubber Manufacturers “Be Tire Smart, Play your PART” or the “Tire Safety: Everything Rides on It” campaign launched by the National Highway and Traffic Safety Association (NHTSA).
- A clear message that drivers cannot rely on visual inspections to assess tire pressure.
- Knowledge of where to find proper inflation information for a particular vehicle’s tires.
- Strengthening tire mileage ratings as an important decision criterion for tire purchases.
- Messages that link tire maintenance with other forms of car maintenance (for example, oil changes).

The most effective strategy to communicate with California drivers would be a multi-channel strategy that includes: (1) television advertisements and television news segments; and, (2) mailings from the Department of Motor Vehicles, auto clubs and auto insurance companies. Another important communication contact point should be in-store personnel at tire retailers. The State needs to provide educational materials and training to tire retail personnel that will encourage them to emphasize proper tire maintenance practices after tires are purchased.

A key objective of the communications campaign should be to have multiple communication contact points with drivers. At a minimum, the State should attempt to have two communication contact points. One communication channel should be through a more general, mass media outlet and the second an appeal that occurs when tires are purchased (for example, mailings from the DMV and promotions at tire retailers). This two-pronged approach allows a consistent message to be delivered on a periodic basis that informs, reminds, and reinforces proper tire maintenance practices prior to tire purchases, while the second is communicated at the time of purchase when drivers should be most receptive to the information.

Given the magnitude of differences in the research findings based upon languages spoken, it is difficult to develop a single recommendation that will best target all groups. Just as companies often segment their markets and then target select groups with a customized message and product, the State would be wise to consider a similar strategy. In particular, the Vietnamese speakers were more likely than the other groups to have beliefs and behaviors that are likely leading to suboptimal tire maintenance, safety, and longevity. A targeted campaign for this group may have a larger benefit than to the other language groups. On the other hand, Vietnamese speakers do not represent a large percent of California’s population. Communicating with an audience as diverse as the one in California poses significant hurdles for the State, but at a minimum, all communications materials should be prepared in multiple languages and focus-tested to assure that message content is credible and understandable for each language group.

Appendices

Appendix A: Key Online Resources

Associations and Organizations Associated with Tire Recycling and Disposal:

Bureau of International Recycling: www.bir.org

Institute of Scrap Recycling Industries: www.isri.org

International Tire and Rubber Association: www.itra.com

North American Recycled Rubber Association: www.recycle.net/recycle/assn/narra

Rubber Division of American Chemical Society: www.rubber.org

Rubber Manufacturers Association: www.rma.org

Rubber Pavements Association: www.rubberpavements.org

Tire Industry Association: www.tireindustry.org/index.html

Tire Retread Information Bureau: www.retread.org (has an extensive link list)

California Integrated Waste Management Board: www.ciwmb.ca.gov and www.ciwmb.ca.gov/Tires/

Cooper Tires Safety Zone: www.rbclick.com/microsites/cooper/index2.php

Cooper Tires: www.coopertires.com/us/en/safety/tiresafety.asp

Department of Motor Vehicles: www.dmv.ca.gov

U.S. EPA Office of Solid Waste: www.epa.gov/epaoswer/osw

This Web site contains information of interest to those in the recycling and solid waste field, including a list of manufacturers and suppliers of park and recreation products containing recovered plastic and rubber, and a catalog related to the Comprehensive Procurement Guidelines on recycled products.

FIRST Program: wapwww.gov.bc.ca/epd/epdpa/ips/tires/

This British Columbia program pays people to recycle tires.

Goodyear Tires: www.goodyear.com

Pennsylvania's Waste Tire Management Program:

www.dep.state.pa.us/dep/deputate/airwaste/wm/Mrw/Tires/Tires.htm

Good Web site. Numerous links with information on what Pennsylvania is doing to solve their scrap tire problem.

Recycle Guys Campaign: www.p2pays.org/recycleguys/

Safe Trip.org: www.safetrip.org

Scrap Tire News: www.scraptirenews.com

This Web site is an online news source for scrap tire management. It offers many features that can be useful to those interested in scrap tires.

South Dakota Tire Cleanup: www.state.sd.us/denr/DFTA/WWFunding/tired.htm

Details the process South Dakota is going through to clean up their waste tire challenge. Offers legislation that helped promote cleanup and also has other useful information.

The Rubber Room: www.rubber.com/rubber/a/rb8010.html

Has links to many companies who deal with some aspect of the recycling of tires. Includes contacts for businesses that will dispose of tires and those that sell recycling equipment.

Waste Tire Collections: www.epa.state.il.us/land/tires/waste-tire-collections.html

A campaign by the Illinois Environmental Protection Agency to decrease the amount of discarded and waste tires in the state.

World Wise: www.worldwise.com/recyclingtires.html

Good general information on recycling and specific data on the recycling of tires. Explains differences between recycled, reused, and retread tires.

Appendix B: Personal Contacts

Allan Abbs—Solid Waste Director, Tehama County Sanitary Landfill Agency, (530) 528-1102. Last four tire amnesty days collected 18,000 tires. Used newspaper ads and one radio spot, but felt flyers in local papers were by far the most effective. He said many of his colleagues who work in rural areas felt that they were not that interested in the amnesty days due to the need to provide matching funds. Didn't know of any research that had been done on what residents know about tire recycling and disposal.

Shari Afshari—Engineer, Division of Public Works, Los Angeles, (626) 458-3572. Discussed the Los Angeles waste tire amnesty days. Program targeted at residents. She didn't know of any prior research related to the program or consumers' knowledge of tire recycling and disposal options.

Richard Chesley—Manager, Office of Solid Waste Reduction and Recycling, South Carolina, (803) 896-4209. Key figure in the development and implementation of the Recycle Guys campaign. Very knowledgeable. One of the better-implemented general programs on recycling. Many other states have requested videos and brochure materials and adapted them for their own use. Program has been ongoing since 1994. Program staff conducted outreach to K-12, then to the general public in 1997. Staff conducted focus groups and research and has continued to do limited research. No recent research available, but Chesley does believe the program is working. Program started with three 30-second public service announcements; now has 22 15-second spots.

George De La O—Civil Engineer, Division of Public Works, Los Angeles, (626) 458-5184. Key figure involved in the Los Angeles waste tire amnesty days. Discussion focused on outreach efforts. Used 5,000 flyers and brochures (English and Spanish). Dropped off at local stores, gas stations, and home improvement stores. Had six billboards, newspaper ads, and press releases for radio and print. Emphasized getting local groups involved. For example, developed the Environmental Pride Group that identifies and cleans up local sites. Have done four amnesty days, scheduled ten more over next two years. Collected some data from residents when they dropped off their tires. Wasn't aware of much other research being done on the topic.

Ben Finzel—Vice President, Fleishman-Hillard International Communications, (202) 828-8809. Worked on RMA "Be Tire Smart, Play Your Part" campaign. Launched campaign in November 2000. He conducted surveys revolving around safety issues. Developed marketing communications campaign that included Web site, outreach efforts directly to communities, brochures distributed through AAA, numerous tire retailers and dealers, and tire associations. Wasn't aware of any research related to consumers' knowledge of tire recycling and disposal.

Craig Gifford—Managing Editor, Tire Review (Business-to-Business focus, tire trade magazine), (330) 670-1234, Ext. 274. Very well-informed on the business-to-business side of the industry. Didn't know of any relevant material and thought that the consumer side of the tire recycling and disposal business was an area that needed some research and attention. Noted several people to contact in the RMA.

Christian Glander—Environmental Engineer, New York State Department of Environmental Conservation, Division of Solid and Hazardous Waste, (518) 402-8706. He was unaware of studies that have investigated the consumer side of tire recycling and disposal. Has impression that New York consumers are confused about a \$2-4 fee retailers charge for the disposal of tires. Many consumers believe the fee is imposed by the state, yet it is actually charged by the retailers and not required by the state.

Adrienne Priselack—Environmental Protection Specialist, Tire Specialist, Office of Solid Waste, U.S. Environmental Protection Agency Region 9 (west), (415) 972-3285. Ms. Priselack noted several times during the conversation that she receives calls four to five times per month from consumers asking her questions about tire fees and how to dispose of old tires. Ms. Priselack said, “We do get a lot of calls about tires.” She felt that consumers are aware of the tire fees. She thinks residents believe the fee and tire disposal problems are a U.S. EPA issue, and that they don’t realize that the California Integrated Waste Management Board oversees tire disposal. She mentioned that the Tire Recycling Management Association, (780) 990-1111, of Alberta, Canada, has a good consumer outreach program. Suggested looking into local city programs, especially Los Angeles.

Mike Sikora—Director of Marketing and Advertising, *Scrap Tire News*, (571) 258-0500. Mike noted that most research and outreach efforts within the tire industry have not been consumer focused, except for tire safety issues that largely evolved after the Bridgestone/Firestone recall fiasco. Mr. Sikora didn’t know of any research that examined what consumers know about tire recycling and disposal.

Pam Swingle—Environmental Scientist, U.S. EPA Region 4 (south), (404) 562-8482. Extremely knowledgeable. Didn’t know of any research that had been conducted that focused on what consumers know about tire recycling and disposal. Anecdotally, and based on calls directly from consumers, Ms. Swingle felt that consumers are very confused about the tire fees and how they are used. Gave a great list of additional contacts.

J. Taylor—Recycling Specialist II, San Diego County Department of Public Works, (858) 874-4020. Produced educational brochure on tire recycling and disposal for distribution at tire amnesty days. The brochure is also available at libraries, tire stores, and public safety offices. The county advertises in local papers for tire amnesty days. No information from residents or participants in the amnesty days. Wasn’t aware of any research on residents’ knowledge of tire recycling or disposal.

Jana White—South Carolina Office of Solid Waste Reduction and Recycling, (803) 896-4221, contacted via list server. She knew of only one small piece of relevant research on tire recycling: two questions about the state’s consumer tire fee had been asked in their telephone survey of 1,003 people in South Carolina. She felt consumers were confused about the nature of the fee and where the money went.

Dan Zielinski—Vice President, Communications, RMA, (202) 682-4800. Helped create RMA “Be Tire Smart, Play Your Part” campaign that focuses on tire maintenance and safety. Discussed campaign and research on tire maintenance and safety. Didn’t think much research had been conducted on the consumer side, as opposed to the trade side, related to tire recycling and disposal. He thought consumers probably didn’t know much about tire recycling and disposal options.

Appendix C: National and California's Waste Tire Diversion and Disposal

Table 1: Nationwide Waste Tire Diversion and Disposal

Diversion and Disposal Outlets	Millions of Tires Used
Tire-derived fuel (TDF) used in cement kilns, industrial boilers, pulp and paper mills	114
Retreads	30
Whole and chopped tires used for fill and cover materials (e.g., construction and landscaping jobs, playground and track resurfacing)	20
Chopped, ground, powdered, and blended into other products (e.g., floor mats, shoe soles, asphalt)	15
Cut, stamped, and punched into other products	8

Source: Adapted from Scrap Tire Recycling, EREC Brief, U.S. Department of Energy, 2001.

Table 2: California's Waste Tire Diversion and Disposal

Diversion and Disposal Outlets	Millions of Tires Used
Rubberized asphalt concrete (RAC) and crumb rubber products	7.7
Tire-derived fuel (TDF)	5.2
Reuse (tires resold that still have a legal tread depth)	4.1
Alternative daily cover (ADC)	3.1
Civil engineering projects	3.0
Exported tires	2.6
Retreads	2.4
Landfill gas collection wells, agriculture	1.1

Source: Adapted from "Waste Tire Management Program: 2001 Staff Report," California Integrated Waste Management Board, May 2003.

Appendix D: Products Derived From Recycled Tires

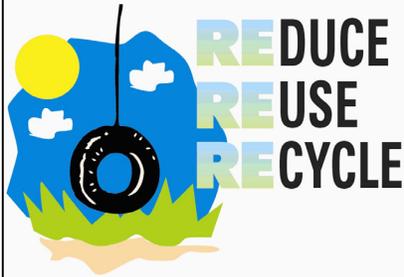
Scrap tires can be used in numerous ways. The following gives an extensive, although not exhaustive, list of end uses for scrap tires.

ADA ramps (threshold ramps)	Footwear and soles	Road mats
Air deflectors	Friction materials (brake pads)	Roofing materials
Anti-fatigue mats	Guard rails	Rubber sidewalks
Asphalt paving	Home and garden products	Runners
Backhoe pads	Hoses	Running tracks
Belts Building blocks	Indoor/outdoor equestrian footing	Soil amendments Sound barriers
Burial vaults	Lane dividers	Speed bumps
Carpet backing and cushion	Livestock feeders	Splash guards
Chips (landfill drainage)	Mud flaps	Swings
Climbing structures	Mulch applications	Tire-derived fuel (TDF)
Construction and blasting	Office products	Tires
Continuous roll flooring	Parking barriers	Top dressings
Door step pads (vans)	Parking lots	Traffic cones
Fire fighting/suppressants	Pet products	Trailer bumpers
Fishing/marine products	Plastic lumber	Truck bed liners
Floor mats Flooring products	Playground equipment Playground surfacing	Wheels and wheel chocks
Flooring tiles	Railroad crossings	

Sources: Adapted from Goodyear, Rubber Manufacturer's Association, Scrap Tire Management Council, EREC Brief, U.S. Department of Energy, and CIWMB Web site.

Appendix E: Los Angeles Tire Amnesty Brochure

**Make the
Right Choice . . .**



**. . . Recycle Your
Waste Tires!**



Resilient Surfacing at Outdoor Shelter
Earvin "Magic" Johnson Recreation Area,
Willowbrook, CA

Waste Tire Generation

WASTE - Approximately 10 million waste tires are generated each year in Los Angeles County alone.

HEALTH - Improperly discarded waste tires are an ideal breeding ground and habitat for rodents and mosquitos which carry and spread diseases.*

HAZARD - Tire stockpiles are a fire hazard which can cause air, water, and soil pollution.

* Illegal Dumping of Waste Tires is Punishable by Up to 6-Months in Jail and/or a Fine of Up to \$4000. (California Penal Code 374.3)

Recycle your Waste Tires for Beneficial Uses!

FUEL - As an alternate source of fuel for cement kilns and power plants.

SURFACES - Rubberized asphalt concrete is used in roadway construction and resurfacing.

STRUCTURAL SUPPORT - In engineering applications for impervious cover or cap material at landfills, waste containment, and erosion protection such as on steep slopes and retaining walls.

PADDING - Crumb rubber applications include carpet padding, tree rings, and floor mats.

At the Earvin "Magic" Johnson Recreation Area in Willowbrook, crumb rubber from recycled tires is used for a rubberized asphalt walking path, resilient surfacing at the shelter, and playground safety surfaces.



Safety Surface for Exercise Area



Rubberized Asphalt Walking Path

Proper Tire Maintenance

Proper tire maintenance helps you to get the most out of your tires and save money too!

*Remember "B.R.A.I.D." and
Extend the Life of Your Tires.*

Balance your tires when rotating them

Rotate your tires every 5,000 miles

Align your tires for even wear & precise steering

Inflate your tires properly twice a month

Drive using good driving habits

Be a Part of the Solution

Recycle Your Waste Tires!

For a listing of waste tire disposal and recycling facilities or for more information on waste tire management practices, please call:



1-888-CLEAN LA
or visit our website at
www.888CleanLA.com



Upon 72 hours, the Department of Public Works provides program information and publications in alternate formats or make other accommodations for people with disabilities. To request accommodations **ONLY**, or for more ADA information, please contact our departmental **ADA coordinator** at **(626) 458-4081** or **TDD (626) 282-7829**, Monday through Thursday, from 7:00 a.m. to 5:30 p.m.

Appendix F:

Tire Value—Miles Per Dollar Calculations

Tire Value—Miles Per Dollar Calculations

Mileage Warranty	Miles Per Dollar (# of tires included)	Average Price in Category (Dollars)
30,000–45,000 miles	889.31 (13)	48.53
50,000–60,000 miles	1,146.60 (50)	49.17
65,000–100,000 miles	1,344.52 (50)	54.41
Less than 60,000 miles	1,019.61 (42)	48.73
60,000 miles or more	1,313.99 (71)	53.00

Source: Data collected on 8/26/02 from www.etires.com.

Note: Tires were included from P175/70R13, P185/70R14, and P195/75R14 and represent a number of different brands. Prices and mileage warranty were collected for each tire and then miles per dollar was calculated. This was by no means a scientific data collection, and the results need to be interpreted with caution. The sample size is rather small, and the tire information was collected from only one outlet.

Appendix G:

CIWMB Focus Group Questions

Opening remarks describing the client, purpose of the focus group, etc.

Recent Purchase Information

- Think back to the last time you purchased tires. Why did you purchase them? (for example, was the purchase planned/unplanned?) Did you purchase a partial set or a full set?
- How did you go about shopping for tires?
- How did you determine where to buy tires? For example, did you look for newspaper ads? Did you call a friend or family member for advice? Did you look up dealers in the phone book? Did you just go to the most conveniently located dealer?
- What research, if any, did you do on tires themselves before purchasing? (for example, tread rating, traction rating, temperature rating) What research sources did you use? (for example, Internet, manufacturer Web sites, *Consumer Reports*) Did you ask for recommendations from family or friends? What are the most credible sources of information about tires?
- What role, if any, did a particular dealer play in your decision to purchase tires?
- To what extent did you rely on a dealer's advertising (for example, on TV or in the newspaper) about tire quality and/or performance when determining what tires to purchase?
- Did you make your tire purchase from a dealer with whom you were familiar? Was the dealer recommended to you? If so, by whom?
- How much influence did the salesperson at the tire dealership have in the decision you made? Did he/she persuade you to buy a particular tire? What information did he/she provide that you found persuasive?
- What else, if anything, influenced you to purchase your tires from a particular dealer? (for example, free tire rotation, balancing, alignment) Were these things offered by the dealer or did you request them?
- For your most recent tire purchase, how long did it take you to make a decision about which tires to purchase?

Appendix H: Purchasing Criteria

- What tire qualities/characteristics are important to you when purchasing? (List responses on a flip chart. Ask participants to explain each response. Possible prompts are design (for example, quietness, style, appearance), performance (for example, traction, overall ride), tread life, and warranty.
- Besides tire quality, what kinds of things did you consider when making your decision about which tires to purchase?
 - How important was price to you?
 - Did a tire sale, coupons, or special tire offer of some kind influence your decision?
 - To what extent was your purchase influenced by the brand name of the tire?
 - Reputation of the manufacturer?
- Typically, how long do you expect your tires to last (years or miles)?
- In your opinion, what constitutes a “good value” in a tire?
 - What combination of the qualities/characteristics, price, brand name and reputation, warranty etc. we’ve just discussed make a tire a “good value”?
 - How important is a high-mileage and/or road hazard warranty to a “good value”?

Appendix I: Consumer Knowledge and Behaviors: Tire Maintenance and Safety

- Do you know the recommended pressure for your tires? If so, how did you find out what that recommended pressure was? Who establishes recommended tire pressure?
- Is the proper inflation of tires related to their life span? To safety? If so, please explain.
- When was the last time you checked the pressure in your tires?
 - How often do you check your tire pressure, if at all?
 - Do you check your tire pressure personally or do you have someone else check it?
 - If someone else, who? (for example, mechanic.)
- How do you determine if the pressure in your tires is at the recommended level? For example, do you use a tire pressure gauge? Can you visually determine if the tire is low? If so, what indicators do you look for? What else, if anything, indicates to you that your tires may not be at recommended pressure?
- What other aspects of tire maintenance are related to the life of a tire?
 - When was the last time you had your tires rotated? Why did you have them rotated? How frequently should your tires be rotated?
 - When was the last time you had your wheels aligned? Why did you have them aligned? How frequently should your wheels be aligned?
- Do you chart the maintenance on your tires in any way (that is, flag your calendar for dates when maintenance is expected to be needed)?
 - Where do you go to get your tires maintained (that is, rotated, balanced, aligned)? For example, do you go to your new car dealer? Tire dealer? Local auto repair shop?
 - Are you more likely to rotate your tires regularly when free tire rotation is included with the purchase of the tires?
 - Does the place where you purchased your tires send you a reminder when it is time to rotate or balance your tires? If so, do you find this reminder useful? If you have not received such a reminder, would getting such a reminder encourage you to balance and rotate your tires more regularly?
- Are you familiar with any campaigns to educate the public about tires? If so, where did you see this campaign (for example, AAA, Sears Automotive, radio station, newspaper, tire Web site, notice from insurance company)?
- Have you seen any brochures focused on tire maintenance and/or safety? If so, where did you see the brochures (for example, tire store)? Did you pick up the brochure and read it? What specific information was contained in the brochure? How valuable was this information to you—that is, did you use it in some way?
- Have you read the section in your vehicle owner’s manual regarding the tires and their maintenance?

Appendix J: Consumer Knowledge of Tire Recycling and Disposal

- When you buy new tires, what happens to the old ones (assuming you don't keep them for some reason)?

Are tires biodegradable? What materials are involved in tire manufacturing? Can you dispose of used tires in landfills?

Are there environmental risks posed by discarded tires? Health risks? If so, please tell us what those are.

- Are you familiar with any ways that tires can be recycled or reused in some way? If so, what are these ways?

Prompts suggested by CIWMB:

Rubberized asphalt, tire derived fuel, recaps, mats.

- How much do you know about retreaded tires? For example, how well do they wear? Are they safe? How much do they cost in comparison to new tires? Do they come with a warranty? Where can you purchase them?

Have you ever purchased retreads? If so, how satisfied were you with them?

Do you plan to purchase retreads in the future?

- What is your general attitude toward recycling?

Discuss the connotation of the term "recycling" from your perspective. For example, on a scale of 1 to 7 (with 1 = negative and 7 = positive) what number most accurately represents the connotation of the term "recycling?"

Do you currently recycle any products? If so, which ones? How long have you been recycling?

Explain your reasons for choosing either to recycle or not to recycle.

What kind of recycled products do you purchase, if any?

- Tell me how familiar you are with the California Tire Recycling Act of 1989. Have you ever heard of it?

When you buy new tires, what additional charges/fees do you pay on those tires?

What is the purpose of these surcharges/fees? That is, where does it go and how is it used?

Appendix K: Familiarity With Tire Recycling/Disposal Campaigns

- Have you seen any literature on tire recycling and/or disposal?
If so, describe the literature. For example, did it provide you with tire recycle locations or procedures? How did you receive this literature?
- Are you familiar with any events or programs centered on tire recycling and/or disposal?
Have you heard of (or taken part in) a Tire Amnesty Day?

Appendix L: Focus Group Participation Survey

Thank you for agreeing to be a focus group participant. We appreciate your willingness to give us your time and your comments.

In addition to the questions you will be answering in the group this evening, we need just a little more information about you to help us interpret your answers. Please take a few moments to complete the brief survey below. Your responses to these questions are anonymous. Please do not put your name any place on this survey.

In what year were you born? _____

Are you: female or
 male

What is your highest level of education completed (check one):

- | | |
|---|--|
| <input type="checkbox"/> Did not graduate high school | <input type="checkbox"/> Bachelor's degree |
| <input type="checkbox"/> High school graduate | <input type="checkbox"/> Master's degree |
| <input type="checkbox"/> Some college but no degree | <input type="checkbox"/> Professional degree |
| <input type="checkbox"/> Associate degree | <input type="checkbox"/> Doctorate degree |

What is your current occupation? _____

Please check the income category below that best describes your total annual household income. That is the total combined incomes for all members of your household before taxes.

- | | |
|---|---|
| <input type="checkbox"/> Under \$20,000 | <input type="checkbox"/> \$75,000 to \$99,999 |
| <input type="checkbox"/> \$20,000 to \$34,999 | <input type="checkbox"/> \$100,000 to \$149,999 |
| <input type="checkbox"/> \$35,000 to \$49,999 | <input type="checkbox"/> \$150,000 to \$199,999 |
| <input type="checkbox"/> \$50,000 to \$74,999 | <input type="checkbox"/> \$200,000 or more |

How many years have you been driving? _____

Typically, how many miles do you drive each year? (please check one)

- | | | |
|--|--|---|
| <input type="checkbox"/> Under 10,000 | <input type="checkbox"/> 15,000–19,999 | <input type="checkbox"/> 25,000 or more |
| <input type="checkbox"/> 10,000–14,999 | <input type="checkbox"/> 20,000–24,999 | |

How many motorized vehicles (operational) do you currently own? _____

Vehicle #1: Year _____ Make _____ Model _____

Vehicle #2: Year _____ Make _____ Model _____

Vehicle #3: Year _____ Make _____ Model _____

Vehicle #4: Year _____ Make _____ Model _____

About how many times have you purchased tires since you started driving? _____

What was the approximate date of your last tire purchase? _____

Did you purchase (circle one): new tires used tires retreaded/recapped tires

How familiar are you with the Uniform Tire Quality Grading Standards (UTQG)? (circle one)

I am very familiar with
the UTQG

I have heard of the
UTQG but am not
knowledgeable about
them

I am not at all familiar
with the UTQG

How familiar are you with the Federal Motor Vehicle Safety Standards (FMVSS)?
(circle one)

I am very familiar with
the FMVSS

I have heard of the
FMVSS but am not
knowledgeable about
them

I am not at all familiar
with the FMVSS

What do you know, if anything, about the California Integrated Waste Management Board?

Appendix M:

Telephone Survey Instrument

SHELLO Hello, my name is _____. I'm calling from the Social Science Research Center at California State University, Fullerton conducting a survey for the California Integrated Waste Management Board, a part of the California Environmental Protection Agency. This is not a sales call. Have I reached [READ RESPONDENT'S TELEPHONE NUMBER]?

1. CONTINUE [SKIP TO SINTRO]
2. DISPOSITION SCREEN

SHELLO2 Hello, my name is _____. I'm calling from the Social Science Research Center at Cal State University, Fullerton conducting a survey for the California Integrated Waste Management Board, a part of the California Environmental Protection Agency.

1. CONTINUE

SINTRO This survey is being conducted to obtain your opinions about waste tire recycling and safety and maintenance of tires. It will take about 15 minutes to complete. You are not required to answer any question you do not wish to answer, and your responses will remain completely anonymous and confidential. No one will be contacting you as a result of your participation.

I should mention that this call may be monitored by my supervisor for quality control purposes only. If it is all right with you, I would like to ask you the survey questions now.

1. YES [SKIP TO IS18]
2. NO

CALLBAK2 Can you suggest a better time for us to call you back?
[PRESS ANY KEY FOR CALLBACK] [END]

IS18 I'd like to begin by asking if you are 18 years of age or older?

1. YES [SKIP TO Q1]
2. NO [SKIP TO NOT18]

NOT18 Thank you for your willingness to answer our survey, but we can only interview people who are at least 18 years of age. Is there another driver in your household who is at least 18 years of age?

1. YES [SKIP TO SHELLO2]
2. NO [SKIP TO NOTQUAL]

TRANS1 These next few questions ask about your vehicles and driving.

Q1 How many years have you been driving?

SPECIFY YEARS>

0. DOES NOT DRIVE [SKIP TO NODRIVE]

1. DRIVING LESS THAN 1 YEAR

777. DON'T KNOW/ NO RESPONSE [SKIP TO NODRIVE]

999. REFUSED [SKIP TO NODRIVE]

HAVECAR Do you currently own or lease a car, van or truck?

1. YES [SKIP TO Q2]

2. NO [SKIP TO NODRIVE.]

NODRIVE Thank you for your willingness to answer our survey, but we can only interview people who drive a car, van or truck. Is there another driver in your household who is at least 18 years of age?

1. YES [SKIP TO SHELL02]

2. NO

NOTQUAL Thank again for your willingness to participate. Good-bye.
[PRESS ANY KEY TO END]

Q2 How many of the following types of vehicles do you currently own or lease?

- Car
- Van
- Truck

SPECIFY NUMBER>

77. DON'T KNOW/ NO RESPONSE

99. REFUSED

Q3 For your primary vehicle, **that is the vehicle you drive most frequently**, about how many miles do you drive each year?

SPECIFY MILES>

77777. DON'T KNOW/ NO RESPONSE

99999. REFUSED

TRANS2 These next few questions ask about tire safety and maintenance.

Q4 How important are your tires to the overall safety of your vehicle?

1. Not at all important
2. Not very important
3. Somewhat important
4. Very important
7. DON'T KNOW/ NO RESPONSE
9. REFUSED

Q5 Do you personally check your tires for wear?

1. YES
2. NO [SKIP TO Q6]
7. DON'T KNOW/ NO RESPONSE
9. REFUSED

Q5a How do you typically check your tires for wear?

1. CHECK FOR WEAR LINES.
 2. DO THE PENNY OR DIME TEST.
 3. MEASURE THE TREAD.
 4. OTHER METHOD
 7. DON'T KNOW/ NO RESPONSE
 9. REFUSED
- [SKIP TO Q20]

Q6 Do you have someone else check your tires for wear?

1. YES
2. NO [SKIP TO Q8]
7. DON'T KNOW/ NO RESPONSE
9. REFUSED

Q6a Who typically checks your tires for wear?

1. MECHANIC OR GAS STATION ATTENDANT.
2. FAMILY MEMBER OR FRIEND.
3. OTHER PERSON
7. DON'T KNOW/ NO RESPONSE
9. REFUSED

- Q7 How often do you check your tires [have your tires checked] for wear?
1. Daily
 2. At least once a week
 3. Twice a month
 4. About once a month
 5. Less than once a month
 6. Never
 7. DON'T KNOW/ NO RESPONSE
 9. REFUSED
- Q8 Typically how often do you check, or have someone check, the air pressure in your tires?
1. Never
 2. Once or twice a year
 3. Three or four times per year
 4. About every other month
 5. About once a month
 6. At least once a week
 7. DON'T KNOW/ NO RESPONSE
 9. REFUSED
- Q9 Typically, how do you detect low tire pressure?
1. I CHECK IT WITH A TIRE GAUGE.
 2. I CAN VISUALLY SEE THEY ARE LOW.
 3. I PUSH ON THE TIRE WITH MY FINGER.
 4. I KICK THE TIRE.
 5. TAP THE TIRE WITH HAND/FINGER
 6. WHEN MY CAR DOESN'T HANDLE WELL
 7. NOTICED BY GAS STATION ATTENDANT
 8. NOTICED BY MECHANIC
 9. OTHER (SPECIFY)
 77. DON'T KNOW/ NO RESPONSE
 99. REFUSED

- Q10 When you decide your tires need air, how do you know the proper air pressure for your tires? [NO PROBE]
1. CHECK THE RECOMMENDED TIRE PRESSURE ON THE SIDEWALL OF THE TIRE
 2. CHECK THE OWNER'S MANUAL
 3. CHECK THE PLACARD/STICKER THAT IS ATTACHED TO THE CAR (TYPICALLY ON THE SIDE OF THE DOOR OR DOOR OPENING)
 4. USE OWN OPINION AND COMMON SENSE
 5. RELY ON MECHANIC/GAS STATION ATTENDANT
 6. OTHER
 7. DON'T KNOW/ NO RESPONSE
 9. REFUSED
- Q11 Who sets the recommended air pressure for the tires on your vehicle? Is it the tire manufacturer, the vehicle manufacturer, or someone else?
1. TIRE MANUFACTURER
 2. VEHICLE MANUFACTURER
 3. SOMEONE ELSE (SPECIFY)
 7. DON'T KNOW/ NO RESPONSE
 9. REFUSED
- Q12 When do you typically have your tires rotated and balanced?
1. WHEN THE CAR PULLS IN ONE DIRECTION.
 2. WHEN THE CAR SHAKES AT HIGHER SPEEDS.
 3. WHEN I DETECT OTHER THAN NORMAL TIRE WEAR.
 4. WHEN MY MECHANIC RECOMMENDS IT.
 5. WHEN I GET MY OIL CHANGED.
 6. RECOMMENDED BY THE DEALER OR MANUFACTURER.
 7. OTHER (SPECIFY)
 77. DON'T KNOW/ NO RESPONSE
 99. REFUSED
- Q13 In general, how often do you have your tires rotated and balanced? That is, how many miles do you drive or how many months do you wait between tire rotations?
1. SPECIFY MILES>
 2. SPECIFY MONTHS>
 3. I DON'T HAVE MY TIRES ROTATED AND BALANCED. [SKIP TO Q26]
 7. DON'T KNOW/ NO RESPONSE [SKIP TO Q26]
 9. REFUSED
- TRANS3 I've asked you several questions about tire maintenance. Now I'd like to ask you about the importance of tire maintenance to the life of your tires.

- Q14 How important are the following to the life of your tires?
- a. rotating and balancing your tires
 - b. maintaining your car's alignment
 - c. maintaining recommended tire pressure
1. Not at all important
 2. Not very important
 3. Somewhat important
 4. Very important
 7. DON'T KNOW/ NO RESPONSE
 9. REFUSED
- TRANS4 Now, I'd like to ask you a few questions about the most recent tire purchase for your **primary** vehicle.
- Q15 About how many months has it been since you or someone in your household purchased tires for your primary vehicle?
- SPECIFY MONTHS>
0. NEVER PURCHASED NEW TIRES FOR PRIMARY VEHICLE. [SKIP TO Q19]
 1. 1 MONTH OR LESS SINCE PURCHASE OF NEW TIRES
 777. DON'T KNOW/ NO RESPONSE
 999. REFUSED
- Q16 Was this an emergency purchase or a planned replacement of tires?
1. EMERGENCY PURCHASE
 2. PLANNED REPLACEMENT OF TIRES
 7. DON'T KNOW/ NO RESPONSE
 9. REFUSED
- Q17 How many tires were purchased for your primary vehicle the last time tires were purchased?
- SPECIFY NUMBER OF TIRES>
77. DON'T KNOW/ NO RESPONSE
 99. REFUSED
- Q18 Were these tires purchased on-line using the Internet, or were they purchased from a store?
1. STORE
 2. ON-LINE [SKIP TO Q9B]
 7. DON'T KNOW/ NO RESPONSE
 9. REFUSED
- Q19 From what store were the tires for your primary vehicle purchased?
1. AUTOMOBILE DEALERSHIPS

2. BIG O TIRES
 3. COSTCO
 4. DISCOUNT TIRE CO.
 5. A FIRESTONE DEALER
 6. A GOODYEAR DEALER
 7. INDEPENDENT TIRE STORES
 8. LES SCHWAB TIRE CENTERS
 9. MOUNTAIN VIEW TIRE
 10. MY LOCAL AUTOMOTIVE STORE
 11. MY LOCAL GAS STATION
 12. MY MECHANIC OR AUTO REPAIR SHOP
 13. PEP BOYS
 14. SAM'S CLUB
 15. SEARS
 16. WAL-MART
 17. OTHER (SPECIFY)
 77. DON'T KNOW/ NO RESPONSE
 99. REFUSED
- [SKIP ALL TO Q10]

TRANS5 Now, I'd like to ask you some questions about this most recent tire purchase. Please think back to when you purchased these tires.

Q20 When you attempted to get information prior to your tire purchase, how **important** were each of these types of information? Would your say information about ... was...

- a. particular brands
- b. particular tire retailers
- c. tire safety
- d. proper tire maintenance
- e. price
- f. availability of the tires you needed
- g. how to properly dispose of your used tires
- h. how to recycle your tires
- i. [Other Information]

1. Very Important,
2. Somewhat Important,
3. Not Very Important, or
4. Not At All Important?
7. DON'T KNOW/ NO RESPONSE
9. REFUSED

Q21

How important were each of the following information sources to your tire purchase decision?

- a. Car Manufacturer
- b. Tire Manufacturer
- c. Tire stores
- e. Consumer Reports' Magazine
- f. Other Magazine articles
- g. Magazine ads
- h. The Internet
- i. Newspaper articles
- j. Television advertising
- k. Radio
- l. Direct mail
- m. TV news segments on tires
- n. Government Agency
- o. Yellow Pages
- p. Friends and Family
- q. Your mechanic

- 1. Very Important
- 2. Somewhat Important
- 3. Not Very Important
- 4. Not At All Important
- 7. DON'T KNOW/ NO RESPONSE
- 9. REFUSED

[IF Q12c IS GREATER THAN OR EQUAL TO 3 SKIP TO Q13]

Q21a

For each of the following types of information that are usually available in a tire store, please tell me if each was not at all important as a source of information, not very important, somewhat important, or very important as a source of information for your most recent tire purchase decision:

- a. In-store advertising
- b. In-store brochures
- c. Information posted about each brand
- d. Information provided by the salesperson

- 1. Not At All Important
- 2. Not Very Important
- 3. Somewhat Important
- 4. Very Important
- 7. DON'T KNOW/ NO RESPONSE
- 9. REFUSED

- Q21b Approximately how many stores and/or Web sites did you contact prior to purchasing your tires?
SPECIFY>
777. DON'T KNOW/ NO RESPONSE
999. REFUSED
- Q22 When you purchased your most recent set of tires, did you intend to buy a specific brand?
1. YES
2. NO
7. DON'T KNOW/ NO RESPONSE
9. REFUSED
- Q23 For the following, please tell me how important each was to your decision to purchase your most recent set of tires.
a. Appearance
b. Periodic servicing of tires after the purchase.
c. Information I saw in an advertisement
d. Information I saw on a website
e. Information I saw at a tire or automotive retailer
f. Tire warranty
g. Performance of the tire (tread wear rating, traction rating, temperature rating, tire size, load rating, number of plies, radial)
h. Price of the tires
i. Quality
j. Reputation of the brand
k. Recycled content of the tire
l. A special offer or sale
1. Not at All Important,
2. Not Very Important,
3. Somewhat Important, or
4. Very Important?
7. DON'T KNOW/ NO RESPONSE
9. REFUSED

- TRANS6 Next I have some questions about tire recycling and disposal.
- Q24 Do you have any used tires not mounted on a vehicle around your residence?
1. YES
 2. NO [SKIP TO Q30]
 7. DON'T KNOW/ NO RESPONSE [SKIP TO Q30]
 9. REFUSED
- Q24a How many?
- SPECIFY NUMBER>
777. DON'T KNOW/ NO RESPONSE
 999. REFUSED
- Q25 In your opinion, do discarded tires pose any risk to the environment or to public health?
1. YES
 2. NO [SKIP TO Q32]
 7. DON'T KNOW/ NO RESPONSE [SKIP TO Q32]
 9. REFUSED
- Q26 Could you briefly describe that environmental or health risk?
- [ONE PROBE WHEN NECESSARY (ROTATE PROBE)]
1. CHEMICALS DRAIN INTO GROUND
 2. CHEMICALS DRAIN INTO WATER TABLE
 3. FIRE HAZARD
 4. SAFETY HAZARD FOR SMALL CHILDREN
 5. STAGNANT WATER, WHICH IS A POTENTIAL BREEDING GROUND FOR MOSQUITOES AND OTHER DISEASES
 6. THEY GET SMELLY
 7. TIRES ARE A PLACE WHERE RODENTS CAN BREED AND LIVE
 8. TIRES ARE A PLACE WHERE SNAKES CAN BREED AND LIVE
 9. TOXIC SMOKE FROM BURNING
 10. OTHER (SPECIFY)
 11. CAN'T COME UP WITH ANYTHING
 77. DON'T KNOW/ NO RESPONSE
 99. REFUSED
- Q27 To the best of your knowledge, can tires and tire components be recycled or reused in any way?
1. YES
 2. NO [SKIP TO Q33]
 7. DON'T KNOW/ NO RESPONSE [SKIP TO Q33]
 9. REFUSED

Q27a

What are some ways that tires can be recycled or reused?

[ONE PROBE WHEN NECESSARY (ROTATE PROBE)]

1. ARTISTIC PURPOSES
2. ASPHALT
3. BOAT DOCKS
4. BUMPERS
5. FILL FOR CONSTRUCTION PROJECTS
6. FLOORING
7. FUELS
8. HOSES
9. JEWELRY
10. MATS
11. PLAYGROUND COVERINGS/RESURFACING
12. PLAYGROUND EQUIPMENT/CLIMBING STRUCTURES
13. PURSES
14. RETREADS
15. ROOFING MATERIALS
16. RUNNING TRACK COVERING/RESURFACING
17. SHOES
18. SANDALS
19. TIRES USED TO REPLACE DEAD CORAL REEFS
20. USED FOR LANDSCAPING PROJECTS
21. OTHER (SPECIFY)
22. CAN'T COME UP WITH ANYTHING
77. DON'T KNOW/ NO RESPONSE
99. REFUSED

Q27b

If performance, cost and safety were comparable, would you be more likely, about as likely, or less likely to purchase tires with a small percentage of recycled content?

1. MORE LIKELY
2. ABOUT AS LIKELY
3. LESS LIKELY
7. DON'T KNOW/ NO RESPONSE
9. REFUSED

Q28

Compared to new tires, how would you rate the safety of retreaded or recapped tires? Would you say they are more safe than new tires, as safe as new tires, somewhat less safe than new tires, or not nearly as safe as new tires?

1. MORE SAFE THAN NEW TIRES
2. AS SAFE AS NEW TIRES
3. SOMEWHAT LESS SAFE THAN NEW TIRES
4. NOT NEARLY AS SAFE AS NEW TIRES
7. DON'T KNOW/ NO RESPONSE
9. REFUSED

Q29 Have you ever purchased retreaded/recapped tires?

1. YES
2. NO
7. DON'T KNOW/ NO RESPONSE
9. REFUSED

Q29a How likely are you to purchase retreaded/recapped tires in the future?

1. Not at all likely
2. Somewhat likely
3. Very likely
7. DON'T KNOW/ NO RESPONSE
9. REFUSED

Q30 When you replace your tires, how do you typically dispose of the old tires?

1. Send them to a landfill with other refuse.
2. Take them to a recycling center.
3. The tire dealer keeps and disposes of the old tires.
4. Another disposal method (SPECIFY)
7. DON'T KNOW/ NO RESPONSE
9. REFUSED

Q31 Have you ever disposed of an old tire or tires by dropping them off at an event that was designed to collect tires?

1. YES
2. NO
7. DON'T KNOW/ NO RESPONSE
9. REFUSED

Q32 Are you aware of any recent campaigns to educate the public about tire safety and maintenance?

1. YES
2. NO [SKIP TO Q38]
7. DON'T KNOW/ NO RESPONSE [SKIP TO Q38]
9. REFUSED

Q32a To the best of your recollection, where did you see or hear the campaign?

1. AUTO CLUB PUBLICATION (SUCH AS AAA)
2. BILLBOARD
3. BROCHURE
4. DEPARTMENT OF MOTOR VEHICLES
5. INSURANCE COMPANY
6. MAGAZINE AD
7. NEWSPAPER AD
8. ON THE INTERNET
9. RADIO AD
10. SEARS
11. TV AD
12. TIRE DEALER
13. OTHER _____
77. DON'T KNOW/ NO RESPONSE
99. REFUSED

Q33

We'd like to know the best ways to provide you with information about tires and tire safety. For each of the following sources of information, please tell me if the source would be very effective, somewhat effective, or not effective for providing you with information about tires and tire safety.

- a. An informational insert in your electric (PG&E) bill
- b. An informational insert in your phone bill
- c. Auto insurance company
- d. Auto clubs (i.e., AAA)
- e. Billboards along the highways
- f. Brochures at tire and automotive shops
- g. Consumer Reports
- h. DMV mailing
- i. Email or Internet
- j. Magazine advertisements
- k. Mailing information directly to you
- l. Newspaper advertisements
- m. Radio advertisements
- n. Television advertisements
- o. Government agency
- p. Other (SPECIFY)

1. Very effective
2. Somewhat effective
3. Not effective
7. DON'T KNOW/ NO RESPONSE
9. REFUSED

- Q34 Do you have Internet access?
1. YES
 2. NO
 7. DON'T KNOW/ NO RESPONSE
 9. REFUSED
- Q35 To the best of your knowledge, are your tires checked for wear and proper tire pressure when your oil is changed?
1. YES
 2. NO
 7. DON'T KNOW/ NO RESPONSE
 9. REFUSED
- Q36 Do you or your family recycle on a regular basis?
1. YES
 2. NO
 7. DON'T KNOW/ NO RESPONSE
 9. REFUSED
- TRANS7 These last few questions are for classification purposes only. All of your answers remain confidential and will be combined with those of other survey participants for reporting as averages.
- Q37 First, what is the highest grade or level of education you have completed?
1. Did not graduate high school
 2. High school graduate
 3. Some college but no degree
 4. Associate degree
 5. Bachelor's degree
 6. Master's degree
 7. Professional degree
 8. Doctorate degree
 77. DON'T KNOW/NO RESPONSE
 99. REFUSED
- Q38 Which of the following categories best describes your total annual household income. That is the total combined incomes for all members of your household before taxes? Please stop me when I read the category that best describes that income. Is it...

1. Less than \$20,000 per year
2. \$20,000 - \$29,999
3. \$30,000 - \$39,999
4. \$40,000 - \$49,999
5. \$50,000 - \$59,999
6. \$60,000 - \$69,999
7. \$70,000 - \$79,999
8. \$80,000 - \$89,999
9. \$90,000 - \$99,999
10. \$100,000 - \$124,999
11. \$125,000 - \$149,999
12. \$150,000 - \$174,999
13. More than \$175,000
77. DON'T KNOW/ NO RESPONSE
99. REFUSED

Q39 Which of the following racial or ethnic backgrounds best describes your household? Is it...?

1. Hispanic or Latino of Mexican Descent
2. Other Hispanic or Latino, e.g., Guatemalan
3. White (non-Hispanic)
4. Black or African American
5. Asian
6. Native Hawaiian or Other Pacific Islander
7. American Indian or Alaska Native
8. Some other race
9. MIXED
77. DON'T KNOW/ NO RESPONSE
99. REFUSED

Q40 In what year were you born?

SPECIFY YEAR>

7777. DON'T KNOW/ NO RESPONSE
9999. REFUSED

Q41 What is your ZIP code at your home?

SPECIFY ZIP>

77777. DON'T KNOW/ NO RESPONSE
99999. REFUSED

CONCLUD That concludes our survey. Thank you for your patience and cooperation.

Interview, code gender of the respondent.

Appendix N: Key Informant Interview Guide

California Integrated Waste Management Tire Project

Key Informant Interview

- _ Interviewer Name: _____
- _ Date: _____
- _ Time Started: _____
- _ Time Ended: _____
- _ Name of Person Being Interviewed: _____
- _ Company/Affiliation: _____
- _ Position/Title: _____
- _ Years in business: _____
- _ Phone Number: _____

Introduction

Interviewer: Hello, my name is _____. I'm a researcher with California State University, Chico working on a project for the California Integrated Waste Management Board regarding what consumers know about tires and how they go about making a tire purchase. Based on your experience working with tire buying customers, I would like to get your opinions regarding how people go about buying tires and the kinds of information they have about tires. The interview will last about 10–15 minutes. All your information will remain confidential.

Is now a good time for you?

→ Yes (Start Interview)

→ No, Not interested

Interviewer – Thank you

→ No, Don't have time right now

Interviewer—When would be a good time to call you back?

Note Time for Call Back: _____

Questions

Interviewer: Do you think most people are pretty informed when making a tire purchase? Why do you think this?

Response:

Interviewer: When consumers come to buy tires, what are some of the main questions they typically ask?

Response:

Interviewer (Probe): Do they ask any other questions about tires?

Response:

Interviewer: What do you think are the three main factors that influence a consumer to buy a particular tire, from a particular store?

Response:

Interviewer: Have you ever noticed any differences in buying behaviors of customers based on their ethnicity? (*Elaborate if necessary*—That is, do you think that Caucasians, Hispanics, Blacks, and Asians, look for different things in tires and rely on different kinds of information to make the tire purchase decision?)

Response:

Interviewer: Do you believe that most people properly maintain their tires? Why?

Response:

Interviewer: What types of information does your company/organization provide consumers with about proper tire maintenance? By what means (e.g., brochures, radio commercials, web site)? Do you find that people are interested in the information?? In your opinion, how does this affect their behavior?

Response:

Interviewer: Do you provide any information to a buyer about tire safety and maintenance? If so, what types of information?

Response:

Interviewer: In your opinion, how much influence do sales personnel have on customers when they come in to look at or to buy tires? Why?

Response:

Interviewer: We are also interested in what people know about proper tire disposal options and tire recycling. Do consumers ever bring up tire disposal and recycling issues? In what ways? What do people seem to know about proper tire disposal and tire recycling?

Response:

Interviewer: Do you provide any information to a buyer about proper tire disposal and tire recycling? (If YES) What types of information do you provide?

Response:

Interviewer: How long have you been in the tire retail business?

Response: _____ years

Interviewer: Which of the following do you sell? (Check all that apply.)

New tires Retreaded tires Used tires

Interviewer: How many brands do you sell?

Response: _____ (Enter number)

Interviewer: Which of the following types of tires do you sell? (Check all that apply.)

Passenger tires

Van, pickup and light truck

Four wheel drive/offroad tires

Tires for commercial vehicles

Interviewer: Any other final comments you would like to make regarding people's tire purchase and use behaviors?

Response:

Interviewer: Thank you for your help. We sincerely appreciate it. Have a nice day.

After the Interview Is Completed

Interviewer: Upon completion, please immediately review your notes and make additional comments or corrections as necessary. Remember to put in the completion time.

In addition, please answer the questions below regarding your assessment about the general nature of the interview:

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Interviewee was enthusiastic	<input type="checkbox"/>				
Interviewee was talkative	<input type="checkbox"/>				
Interviewee seemed knowledgeable	<input type="checkbox"/>				
This was a productive interview	<input type="checkbox"/>				

Interviewer: If you have any final comments about the interview, please note them here.

Appendix O: Profile of Sample

Location	Company	Key Informant's Number of Years in the Tire Business
Los Angeles	Marina Tire—Goodyear	8
Los Angeles	American Tire Depot	14
Los Angeles	Fairmont Tire and Rubber Co.	23
Los Angeles	Pacific Coast Tires	14
Northern California	Bob's Tire Center	40
Northern California	Car Care	34
Northern California	America's Tire Company	5
Northern California	Quality Used Tires	18
San Francisco-Bay Area	Tires Only	.25
San Francisco-Bay Area	Firestone Tire and Auto Center	9
San Francisco-Bay Area	Skip's Tire and Auto Center	.25
San Francisco-Bay Area	Roy's Tire and Battery Inc.	25
San Diego	Smitty's Tire and Auto Center	10
San Diego	Express Tire	8
San Diego	Evan's Tire and Service Center	10
San Diego	Big O	3
Sacramento	Firestone Tire and Service Center	15
Sacramento	GCR Truck Tire Center	42
Sacramento	Ramos Tires	7
Sacramento	Winston Tire Co.	24
Tahoe Area	Tire Plus Total Car Care	7

Appendix P: Key Informant Responses

Interviewer: Do you think most people are pretty informed when making a tire purchase? Why do you think this?

1. No, too busy. Too much information out there.
2. Yes, about 60 percent are informed, especially younger males. I think they learn about tires and performance over the Internet.
3. 50 percent. The half that don't know are ill-informed or just don't care. The other half that do care or are informed because of the Internet.
4. No. People come in and want the cheapest tires. They don't know the difference between a Michelin and a lesser tire. They just want the cheapest.
5. About 50 percent of the customers are. Can distinguish the informed customer from the uninformed by the questions they ask.
6. No. Some consumers are more informed than they used to be, and this is partially due to *Consumer Digest*.
7. Most are well informed. Some do research online before they come in and buy a particular tire.
8. Not at all. They do not know about basic things about kind/type of tire they are looking for.
9. No. Based on the type of questions they ask.
10. For the most part, people are well informed. They ask a lot of questions based on research done on the Internet.
11. No. 60 percent are not informed. We have to give them the parameters, and then they make the decision off of that. They should know more, but instead they rely on us to inform them. It's like they don't want to do the research. They rely on the seller.
12. No. A lot of our customers are female, and in general, they are not informed about tires. Men are almost as bad. They don't know about speed or tread ratings. They just aren't informed.
13. No. I think they have a brand name in mind, usually Michelin or Goodyear, but beyond that, they really don't know too much about tires.
14. No. I think most consumers aren't informed regarding tires in general. They're primarily concerned with price and longevity.
15. No. Some people are ignorant about the tire they need or want. They don't know what type of tire they need or want when they come in the store.
16. No. By interacting with customers, it becomes evident that they lack the basic knowledge about what type of tire they need.
17. Somewhat. Most people do not know what type of tire they need.

18. No. Most people are somewhat ignorant about the type of tire they need. Although people have become more informed about tires by doing research on the Internet and through *Consumer Reports*.
19. No. Most people are not educated about the tire they need for their vehicle.
20. No. A lot of customers do not have any idea of the type of tire they want or need.
21. The majority of customers are, based on the fact that most customers know what type of tire they need when they come in to make a purchase.

Interviewer: When consumers come to buy tires, what are some of the main questions they typically ask?

1. Price, mileage, warranty.
2. Price, longevity, ratings—high performance, weather, tread, etc.
3. Price, mileage, warranty.
4. Will tire blow out, price, best tire for least amount of money (value).
5. Longevity, handling, safety.
6. Longevity, treadwear, handling, noise level, price.
7. Price, longevity, quality.
8. Treadlife, noise level.
9. Quality, price.
10. Cost, mileage warranty, performance.
11. What the manufacturer recommends for their car and if it is correct. Warranty, price, U.S. made.
12. What is the cheapest tire? Want good tires at good cost. Warranty.
13. Mileage warranty, cheapest tires. Truck drivers generally want a stronger tire- the “load range.”
14. Price, longevity, that is about it.
15. They mainly ask questions about price and mileage warranty.
16. They mainly ask questions about the tires’ longevity (mileage rating), the brand, and the speed rating.
17. How much they cost, and they inquire about the mileage of the tire.
18. Consumers mainly ask questions about price, brand name, and about getting the best value for their money. For instance, they want to know how much the mileage warranty is for a specific tire and ask how much more the mileage warranty is for the next highest priced tire.
19. They mainly ask questions about the price and mileage warranty.
20. Mileage warranty, cost, and tread wear of tire.

21. Customers typically ask about cost of the tire, mileage and speed rating.

Interviewer (Probe): Do they ask any other questions they ask about tires?

1. No.
2. Sometimes they'll ask about warranties—flood and road hazard.
3. Not really.
4. No.
5. When to rotate, proper tire pressure.
6. None.
7. None.
8. None.
9. No.
10. None.
11. Not really. Warranty gives them most of the information.
12. Not really.
13. Sometimes. They want a quiet tire, so they don't hear a lot of noise.
14. Not really.
15. None.
16. No.
17. None.
18. No.
19. None.
20. No.
21. No.

Interviewer: What do you think are the three main factors that influence a consumer to buy a particular tire, from a particular store?

1. Price, reputation of seller.
2. Price, availability, customer service.
3. Advertising, especially on TV, word of mouth, reputation.
4. Service—that's it. Good service will bring the customers in.
5. Brand name, warranty, service.
6. Brand name, price, appearance of tire.

7. Brand name, quality, had good experience with a particular brand and wants to buy same tire (brand loyalty).
8. Treadlife, longevity.
9. Price, quality, service.
10. Cost, appearance, longevity.
11. Advertising, price, warranty and service.
12. Advertising, reputation, quality.
13. Brand, price, value. Advertising has a great influence on customer brand requests. Michelin and Goodyear spend the most on advertising, so people ask for them the most.
14. Advertising, customer service, reputation.
15. Price, mileage warranty, brand name.
16. Brand name, price, handling of the tire.
17. Cost, quality, salesperson.
18. Price, brand name, serviceability—being able to take their tires to the same tire retailer in other areas to get their tire serviced.
19. Price, mileage warranty, service.
20. Price, brand name, warranty.
21. Speed, service, brand name.

Interviewer: Have you ever noticed any differences in buying behaviors of customers based on their ethnicity? (Elaborate if necessary—That is, do you think that Caucasians, Hispanics, Blacks, and Asians, look for different things in tires and rely on different kinds of information to make the tire purchase decision?)

1. Income level is more of a factor.
2. No, based on income level. Low-income people buy cheaper tires; wealthier people buy higher performance tires.
3. Nope, it is more based on income level of the customer.
4. No, it's based on income level. They buy what they can afford.
5. Not really.
6. None.
7. None.
8. None.
9. None.
10. None.
11. No. It's more a factor based on the income level of the customer.

12. No.
13. Not really.
14. No.
15. None.
16. None.
17. None.
18. No.
19. No.
20. None.
21. None.

Interviewer: Do you believe that most people properly maintain their tires? Why?

1. Yes.
2. If we tell them to. If they buy the tires from us, we inform them as to how to maintain their tires. On their own, they don't. The reason they don't maintain their tires on their own is because they are too busy.
3. Absolutely Not—they don't rotate or check the tire pressure. Everyone is just too busy.
4. No. Once they buy their tires, they think that's it. They think tires last forever. They are just not informed.
5. About 20 percent do. This is based on inspection of customers' tires when they come in to buy new ones.
6. No. Can tell by the appearance of the customers' tires when they come in to buy new ones.
7. No. Can tell by inspecting customers' old tires that they have not been rotated and/or balanced regularly.
8. No. Can tell by looking at the old tire of the customers.
9. No. Can tell by condition of the customers' old tires.
10. No. They lack the knowledge and information.
11. No. Probably because people are busy and don't have the time. Also, many people are just negligent.
12. No! They neglect their tires in general. I don't know exactly why.
13. No. They're not real informed as to how to properly maintain their tires.
14. No. I think people are not informed, and they are lazy.
15. No. Most people are too lazy or they do not know how to properly maintain their tires.

16. No. They lack the proper knowledge about proper tire maintenance, and you can usually tell by looking at the customers' old tires.
17. Not really. Can usually tell by looking at the customers' old tires if they properly maintain their tires.
18. No. People are not educated as to how they should maintain their tires. But believes some are getting better and more informed.
19. No. They do not worry about their tires until they get a flat. Do not bother to check if they are properly inflated.
20. No. Based on his observations of the customers' old tires. Can tell they have not been properly inflated, rotated and balanced.
21. Most do. Overall, customers today are more informed about the types of things they need to do to maintain their tires. Based on his interaction and conversations he has with customers.

Interviewer: What types of information does your company/organization provide consumers with about proper tire maintenance? By what means (e.g., brochures, radio commercials, web site)? Do you find that people are interested in the information? In your opinion, how does this affect their behavior?

1. We have a brochure that goes out with our warranty. It covers all the basics—tire pressure, rotation and balance.
2. We use a brochure. When we give the warranty, we include an information brochure. We also have a Web site, but not too many use the Web site.
3. We have brochures. We also have TV ads plus a Web site. But as far as actual information regarding specific tire maintenance, only our brochures cover that. We tell them the basics—when to balance, rotate, align—what to look for regarding wear and tear.
4. Just word of mouth. We tell them what to do—rotations, balancing, etc., but they don't listen.
5. Provide informational sheets with information on rotating tires and proper tire pressure. Somewhat interested in the information, but not sure how it affects their behavior.
6. We offer a tire maintenance program through Goodyear and pamphlets. About 50 percent of the people are interested in the information. Hard to tell how it affects their behavior.
7. Provide pamphlets that inform customers about tire rotation, balancing, and proper tire pressure. Pamphlet is called "Be Tire Smart."
8. Verbally informs customer about proper tire maintenance. Some people seem interested. Not sure how it will affect behavior.
9. Offer some pamphlets about tire maintenance. Some are interested in information. Not sure how it affects behavior.
10. Provide a 50-page booklet that informs the customer about tire maintenance. Included information about tire rotation, air pressure, alignment, etc. People are interested in the information. The consumer becomes more confident in his/her tire knowledge.

11. We give each customer a brochure regarding maximum inflation of the tire, when to have tires rotated and balanced, or what to look for regarding tread separation. Also, we inform the customer when to have shock inspection, alignment and suspension inspections. We are a small business, so we don't have radio and TV commercials. We rely on word of mouth.
12. We have pamphlets regarding tire maintenance and warranties. Plus, we inform the buyer when they purchase the tires.
13. We have a Web site. We inform customers to maintain their tires, to come back every 5–6,000 miles for rotation. Also, check tire inflation once a month. We also have radio and TV commercials and pamphlets that touch on maintenance issues.
14. Brochures in the store. When we sell tires we give the customer additional information. Word of mouth. Also, we give info with the warranty information. People not interested. They have to come back prematurely because they did not pay attention.
15. Verbally informs customer about proper tire maintenance, gives them a tire pressure gauge. Also have pamphlets about tire maintenance. Some people are interested.
16. Yes. Provides a pamphlet called "Complete Tire Safety Guide," that informs consumers about proper tire maintenance such as air pressure and tire rotation, as well as tire safety considerations. Customers seem to be interested in the information so they can make their tires last longer. Not sure how it affects behavior.
17. Verbally informs them about proper tire maintenance. Some customers are interested. Not certain how it affects behavior.
18. Provides pamphlets that inform customers about proper tire maintenance and safety. Most people are interested in the tire information because it will help the longevity of their new tires. Believes that in some people, it has a positive affect by becoming more informed.
19. Provides a pamphlet that discusses proper tire maintenance. Some people are interested. Most peoples' behavior is not affected, and they continue to neglect their tires.
20. Mostly verbally communicates to the customer about proper tire maintenance and safety. Some customers appear to be interested. Not sure how it affects behaviors.
21. Provides pamphlet called "Be Tire Smart." Includes information about tire maintenance and safety. Most people are interested in the information. Believes it has a positive impact on customers and leads them to properly maintain their tires.

Interviewer: Do you provide any information to a buyer about tire safety and maintenance? If so, what types of information?

1. Not really.
2. Yes. It's printed on the warranty. Free rotation every 6,000 miles. Check suspension every 6 months. Check balance and alignment once a year.
3. Yes.
4. Yes. I tell them to check tire pressure and watch for wear and tear.
5. Mainly information about tire pressure.
6. Pamphlets and tire maintenance program.

7. All is contained in the "Be Tire Smart" pamphlet.
8. Verbally about proper tire pressure and rotation of tires.
9. Mostly verbal and in the pamphlets about tire maintenance.
10. All in 50-page booklet. Also verbally informs customer about tire pressure.
11. Yes, same as before.
12. Rotation and balance every 6,000 miles or every oil change.
13. Inflation, rotation, balance. Any additional mechanical problems regarding tires and brakes. A free safety check.
14. Alignment, tire pressure, rotation and balance.
15. All included in pamphlet.
16. All contained in pamphlet.
17. No.
18. All in pamphlet.
19. All in pamphlet.
20. Just verbally.
21. All in pamphlet.

***Interviewer:* In your opinion, how much influence do sales people have on customers when they come in to look at or to buy tires? Why?**

1. A lot. Over 75 percent of the people who come in to our store don't know much about tires. The salesperson will dictate whether or not that customer stays and buys a tire or backs out of the store.
2. Salespeople don't have that much influence. The information sells tires. Education is key. Salespeople can be misinformed themselves. It helps if the consumer is educated. We train and educate our salespeople so they are ready to deal with an uninformed customer.
3. Yes. Our salespeople are very informed, and they influence customers greatly. About 60 percent.
4. Yes. A great deal. People don't know about tires.
5. Depends if the customer is a repeat customer, how good the salesperson is, and how much knowledge they have.
6. Depends on how informed the customer and salesperson is. A salesperson will have less influence on a well-informed customer, and less influence if the customer knows more than the salesperson.
7. Have a big influence. A lot of customers do not have much knowledge, and salespeople can influence a customer a great deal.
8. Can have a lot of influence on the customer if the salesperson is knowledgeable and knows what they are talking about when customers ask questions.

9. They can influence customers if the salesperson knows a lot about the tire.
10. Salespeople have a lot of influence. The salespeople set the atmosphere for the customers' tire-purchasing experience.
11. A very high influence. The customer relies on the first person they come in contact with to help them and give them information. Some people are influenced by advertising, and if they come in wanting a particular tire, it doesn't matter what we say. They're going to buy that tire.
12. A lot. 75 percent—at least.
13. It depends on the customer. If they come in with a preconceived notion about a tire, they won't listen to advice. If they come in with an open mind, the salesperson will have more influence.
14. I think salespeople influence customers a great deal. Maybe 90 percent.
15. Have the most influence when a customer does not know what kind of tire they need or want.
16. They have about an 80 percent influence on customers. The more knowledge a salesperson has, the more influence they will have on the customer. Consumers will not buy tires from a salesperson if they customer is more knowledgeable than the salesperson.
17. Have about an 80 percent impact on customers. Depends on how much knowledge the customer has about the tires they are looking for.
18. Salespeople can have a significant amount of influence. A salesperson will lose credibility with a customer if he or she is not well informed about the tire the customer is interested in buying.
19. They have a lot of influence. Salespeople often determine the type of tire a person will need once the customer informs the salesperson of the type of driving they do.
20. Salespeople can have a significant amount of impact if they know about the tires that they are selling. If they do not, then customers will not buy tires from them.
21. Have a significant influence on customers. If the salesperson is not knowledgeable about the tire a customer is interested in, they are not likely to buy that tire.

Interviewer: We are also interested in what people know about proper tire disposal options and tire recycling. Do consumers ever bring up tire disposal and recycling issues? In what ways? What do people seem to know about proper tire disposal and tire recycling?

1. Yes. Customers ask why they have to spend money to dispose of their tires. We offer the service here, but they still complain that we charge for the service.
2. Not really. They really don't care what happens to the tire after it's no longer useable.
3. No. They just bitch about the \$2.00 they have to pay for the California tire fee.
4. Yes. Our company offers tire disposal. A lot of customers come into our store for tire disposal. We charge a fee for disposal based on the customer.

5. Not too much, not much.
6. Rarely.
7. At times. Want to know where old tires go.
8. At times. Asks what we do with old tires. Only seems to know that tires are sometimes recycled.
9. No.
10. They ask about the disposal fees that are charged. They do not seem to know much about tire disposal and tire recycling.
11. Yes. Some people can't take their tires to the landfill because it is too expensive. They want to know what to do with their tires. We recycle tires so they bring the tires to us at less cost.
12. They ask why there is a charge for tire disposal. They generally know "nothing" about tire recycling or disposal.
13. They are, in general, aware that you just can't throw tires on the side of the road. They don't bring it up during purchase. Some do if they read about tire disposal, but most don't. In general, I think people are more aware of hazardous materials than they were previously.
14. They never bring it up. We never talk about it.
15. Only ask about the tire disposal fee.
16. Not really. They only ask about the disposal fee.
17. No.
18. Mostly ask about the tire disposal fee that is charged.
19. No.
20. Mainly ask about the tire disposal fee.
21. Asks about the tire disposal fee.

Interviewer: Do you provide any information to a buyer about proper tire disposal and tire recycling? (If YES) What types of information?

1. No.
2. No. We do emphasize to the buyer that we will recycle their tires, but that's about it.
3. No.
4. No.
5. No.
6. No.
7. Just that the company recycles the old tires.

8. Verbally informs customer that he will dispose of tires and some of their uses after they are recycled.
9. No.
10. Verbally informs customer about what the disposal fee is used for.
11. I tell them they have two choices. Take the tires to the landfill or bring them to us.
12. No.
13. Yes. Word of mouth. If they have questions regarding tire disposal, we inform them.
14. No.
15. Only informs them about the purpose of the tire disposal fee.
16. Basically let them know what the tire disposal fee is for.
17. No.
18. Only explains the tire disposal fee.
19. No.
20. Only explains the tire disposal fee.
21. No. Just informs customer of the tire disposal fee.

Interviewer: How long have you been in the tire retail business?

8 years, 14 years, 23 years, 14 years, 40 years, 34 years, 5 years, 18 years, .25 years, 9 years, 10 years, 8 years, 10 years, 3 years, 7 years, .25 years, 25 years, 15 years, 42 years, 7 years, 24 years.

Interviewer: Which of the following do you sell? (Check all that apply.)

New tires: 20 responses

Retreaded tires: 2 responses

Used tires: 13 responses

Interviewer: How many brands do you sell?

12, 15, 9, 4, 50, 12, 12, 5, 15–20, 10–15, 12, 4, 20+, 30, 12, 9, 20, 15+, 3, 25, 20

Interviewer: Which of the following types of tires do you sell?

Passenger tires: 19 responses

Van, pickup, and light truck: 19 responses

Four-wheel-drive/off-road tires: 16 responses

Tires for commercial vehicles: 14 responses

Interviewer: Any other final comments you would like to make regarding people's tire purchase and use behaviors?

(13) We try to educate the consumer as to tire safety and maintenance. That way, they are safer on the road. We try to give them info up front so that they can make an educated purchase.

(14) Tell people to keep driving like hell so we can stay in business.

After the Interview Is Completed

Interviewer: Upon completion, please immediately review your notes and make additional comments or corrections as necessary. Remember to put in the completion time.

In addition, please answer the questions below regarding your assessment about the general nature of the interview:

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Interviewee was enthusiastic	11	7	1	1	
Interviewee was talkative	10	3	1	5	2
Interviewee seemed knowledgeable	14	7			
This was a productive interview	12	6	2		

Interviewer: If you have any final comments about the interview, please note them here.

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