

**Final Report**  
**Automotive Aftermarket Industry Association**  
**Extended Emissions Warranty Research**  
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## INTRODUCTION

The Automotive Aftermarket Industry Association (AAIA) and the Coalition for Auto Repair Equality (CARE) are currently reviewing the issues surrounding extended emissions warranties in the state of California. AAIA and CARE are concerned with the economic impact of such warranties on consumers and independent aftermarket service and parts companies.

In November of 1998, the California Air Resources Board (CARB) passed regulations that permit vehicle manufacturers to certify their vehicles to a super low emission vehicle (SULEV) category in return for credit toward meeting their zero emissions vehicle (ZEV) mandate. However, in order to obtain this credit, the vehicles would need to meet a 15 year/150,000 miles useful life and vehicle manufacturers would need to provide car owners with a 15 year/150,000 emissions warranty. The current emissions warranties are mandated by legislation to be 3 years/50,000 miles with a 7 year/70,000 mile warranty on repairs costing more than \$400. CARB maintains that the extended warranties are necessary to induce durability and improve in-use maintenance. CARB also believes that the warranty will provide free repairs for car owners therefore inducing them to better maintain their vehicle.

During hearings on the new regulations the independent service and parts industry testified that these warranties are an unnecessary intrusion into the marketplace, sending car owners back to the new car dealers for warranty repairs far longer than they would in a normal market. Past research has shown that 75% to 80% of motorists patronize independent repair shops over new car dealers once their warranty has expired. The aftermarket service groups further contended that the extended warranties are not a consumer "freebie" since the cost is added to the price of the new vehicle prior to purchase. Consumers further pay for the extended warranties through reduced competition in the repair market. Finally, the aftermarket raised the issues as to whether the presence of an extended warranty actually increase durability or is durability impacted by other factors such as recall authority and general competitive industry trends.

In July 2000, AAIA and CARE contracted with Thomas Penway Research Group, Inc. (TPRG) to conduct research on these issues. Specifically, the study objectives were to:

- Determine if the existence of an extended warranty provides positive or negative incentives for car owners to perform normal vehicle maintenance.
- Estimate the cost of the extended emission warranties to the car owner, and project overall costs to the population/market in total.
- Determine underlying consumer attitudes and probable behavior under an extended warranty situation with regard to where car owners will obtain normal vehicle repairs and maintenance (dealer or independent shops) that are not covered by the warranty.
- Estimate the economic impact on aftermarket due to lost service and maintenance opportunities, including lost direct repair opportunities and "drag-along" repair opportunities.
- Understand the impact of emissions warranty on vehicle durability.
- Identify the factors driving car companies (OEM's) to build more durable vehicles, including government regulations, competitive pressures, environmental issues, etc. Estimate the relative importance of each factor in determining/impacting durability.
- Determine the likely impact of certification requirements and threat of extended recall on car companies in terms of meeting the 15 year/150,000 durability goal.

A multi-faceted research approach was used to collect and analyze the data. Interviews were conducted with consumers in California, economic data and industry literature was researched, and interviews were conducted with representatives of the automobile manufacturing industry. For detailed information, please see the Methodology section near the end of this report.

The research findings are summarized in the pages that follow. Detailed data tables and other material have been provided under separate cover.

## CONCLUSIONS

The research shows that the implementation of the mandated 15 year/150,000 mile vehicle warranty will have a deleterious effect on the automotive aftermarket industry. Among the results are the following implications:

- Independent, or non-automotive dealers stand to lose a minimum of nearly \$500 million in the years 2003 through 2008 on primary repair and maintenance work.
- The revenue loss will equate to nearly 2,500 lost jobs and just under 700 business closures among the non-automotive dealer segment of the industry.
- Parts dealers serving the aftermarket stand to lose approximately \$134 million over the six year period.
- Consumers spending on vehicles will be driven significantly higher. Considering the new SULEV vehicles (only) that will be sold during the period, it is estimated that consumer spending will increase by over \$1.8 billion on warranty and repair costs alone. This does not include base vehicle cost or fuel cost increases.
- Consumers indicate that they are unfamiliar with the implications of having a vehicle covered under an imposed warranty. This includes what items are covered under such a warranty and the costs associated with having the warranty.
- Consumers assume to a large degree that they must use automotive dealers for even simple repair and maintenance tasks.
- When given a choice, consumers overwhelmingly indicate that they want a choice in vendors rather than have restrictions imposed.

# **CONSUMER RESEARCH**

## **Introduction**

Consumer research was conducted with adult vehicle maintainers in the state of California to examine consumer behavior and reaction to the mandated warranty. The research consisted of two segments. The first segment was conducted for exploratory purposes. A total of 100 personal interviews were conducted with adults during the month of July. These interviews were conducted in shopping malls, where respondents were intercepted by interviewers from professional marketing research firms.

The second segment of consumer research consisted of interviews conducted with over 600 residents of California via telephone. The interviews are a statistically representative sample based on distribution of population by county. Only adults aged 18 or over who made the maintenance decisions for their (primary) vehicle were interviewed. Those who leased their vehicle were not interviewed.

## **Preliminary/Exploratory Research Findings**

As indicated, the first phase of consumer research was conducted for purposes of exploring the attitudes and behaviors pertaining to vehicle maintenance, emissions, and extended warranties. The results were to be used to:

- Ensure that the project encompasses the pertinent issues.
- Develop the survey instrument for the statewide survey.

Several important outcomes were revealed in the survey data. These are summarized in the points below:

- Approximately half of all consumers claim to be under some type of warranty. A total of 37% of the Total Sample said their primary vehicle was covered by a manufacturers warranty, while 14% said they had a warranty purchased from a third party. As expected, owners of newer vehicles are more likely to be covered by a warranty.
- A total of 55% say that they Always or Regularly Maintain their vehicle and 33% claim to do so on a Fairly Regular basis. Typically, owners of newer vehicles (one to five years on the road) were more likely to indicate that they were more likely to maintain their vehicle than were owners of older vehicles. This suggests that there is an opportunity, as suggested by CARB, for vehicle maintenance behavior to be improved.
- When asked where they generally took their vehicles for routine maintenance and repairs, approximately 71% use independent repair shops and other non-auto dealers for routine maintenance. New car owners are significantly more likely to use auto dealers.

- Approximately 65% go to independent repair shops and other non-auto dealers for repairs. Again, dealer usage is highest among new car owners.
- Consumers are likely to choose non-auto dealers for reasons such as Saving Money/Less Expensive (54%), Trustworthiness (28%), Specialization (31%).
- Each respondent had the 15 year/150,000 miles emissions warranty explained to them, and were asked to consider what they would do if they had purchased a vehicle with such a warranty. A marked shift occurred in the percentage of consumers who say they would use a dealer as opposed to non-dealers for such items. This provides support for measuring such intent in the second phase of the project.

	Use Auto Dealer for Routine Maintenance	Use Auto Dealer for Repairs
Current Behavior	29%	35%
Behavior Under Warranty	46%	68%
Change +/-	+17 points	+33 points

- A number of respondents indicated that they currently, and would in the future, choose other outlets for certain repairs in addition to their primary vendor. It was determined from this that a more specific line of questioning needed to be included in the statewide survey.
- Approximately 50% of those surveyed said that vendors suggest additional maintenance items and repairs. About 80% of those respondents indicate that they Always, Usually, or Often authorize at least some of those suggested items. This supports the claim that the independent repair facilities face additional revenue loss from fewer drag-along repair opportunities.
- When asked what they would do if they were faced with some repairs that were covered by the mandated warranty and with some repairs that were not covered, a total of 51% of the Total Sample indicated that would authorize all repairs at the dealer versus having warranty work completed there and shopping elsewhere for non-warranty repairs. Among those who are currently not using automobile dealers and are likely not currently under warranty, 37% would have all repairs completed at the dealer. Again, the data suggest that non-dealers may face a revenue loss as a result of the warranty.
- Reasons given by these consumers for this decision include Convenience (51% said it is easier, simpler, and more convenient than going to another place) and Dealer Knowledge (39% believe that since the dealer covers the warranty they know more about the vehicle and the repairs).

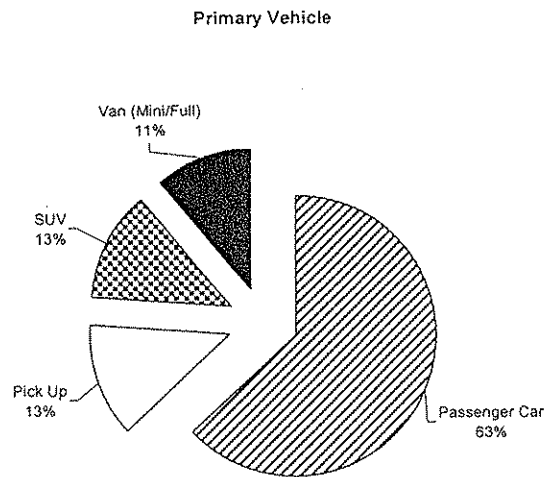
- Respondents were asked to predict if and how their vehicle maintenance behavior would change should they purchase a vehicle under the mandated warranty. The data indicate that consumers may be more likely to maintain their current level of vehicle maintenance. However, many of those who said they would be more likely to keep their vehicles maintained had earlier said that they *already* kept their vehicles properly maintained. When asked, a total of 31% felt that they already did enough to maintain the vehicle, and 24% felt that vehicles would last longer and would be more dependable.
- A surprising high percentage of respondents think that numerous maintenance and repair items which are unrelated to emissions control will be covered under the warranty. These include Oil Changes (32%), Regular Tune Ups (45%), and Radiator System Repair (47%).
- The vast majority of respondents prefer to be able to have vehicles maintained/repaired at a place of their choosing, but also perceive that they would not be able to do so.



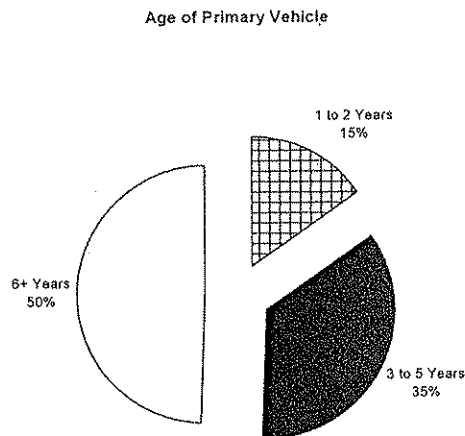
## Vehicle Status

Respondents were asked several questions about the primary vehicle they maintain. The responses to questions help to organize the respondents into groups for analysis purposes.

The majority of respondents report that their primary vehicle is a passenger car (63%), with roughly equal proportions of SUV's, pick up trucks, and mini-vans/full vans.



A total of 15% of those responding to the survey indicate that their vehicle is less than three years old (2001, 2000, or 1999 model year). Approximately 50% maintain vehicles which are 6 years or older, while 35% have vehicles in the three to five year range.



Slightly over half (54%) of those surveyed said that they purchased their vehicles as New, at 54%, while the remaining 46% purchased the vehicles as Used or Pre-Owned. As expected, those with late model vehicles are much more likely to have purchased them as new.

Current odometer mileage estimates provided by the respondents are roughly consistent with national figures, averaging approximately 12,000 miles per year driven. When asked to estimate the number of miles driven per year, respondents projected an average of 14,239 miles per year. Annual miles driven per year is negatively correlated with age of vehicle. As the age of the vehicle increases, miles driven decreases, as shown below.

<u>Age of Vehicle</u>	<u>Annual Miles Driven</u>
1-2 Years	16,187 Miles
3-5 Years	14,073 Miles
6+ Years	13,761

### Self-Classified Vehicle Maintenance Description

One of the important elements in determining the impact of the extended emissions warranty on consumer behavior is to first define current behavior. Respondents were asked to describe their level of vehicle maintenance by choosing one of five descriptions read to them by the interviewer. The five descriptions are as follows:

I see to it that my vehicle is ALWAYS regularly and properly maintained on a timely basis	5
I keep my car maintained on a fairly regular basis	4
I tend to fall behind on getting the vehicle maintained on a timely basis, but still pretty much keep up with it	3
I don't pay much attention to keeping my car maintained	2
I only get my vehicle maintained if I need to in order to operate the vehicle	1

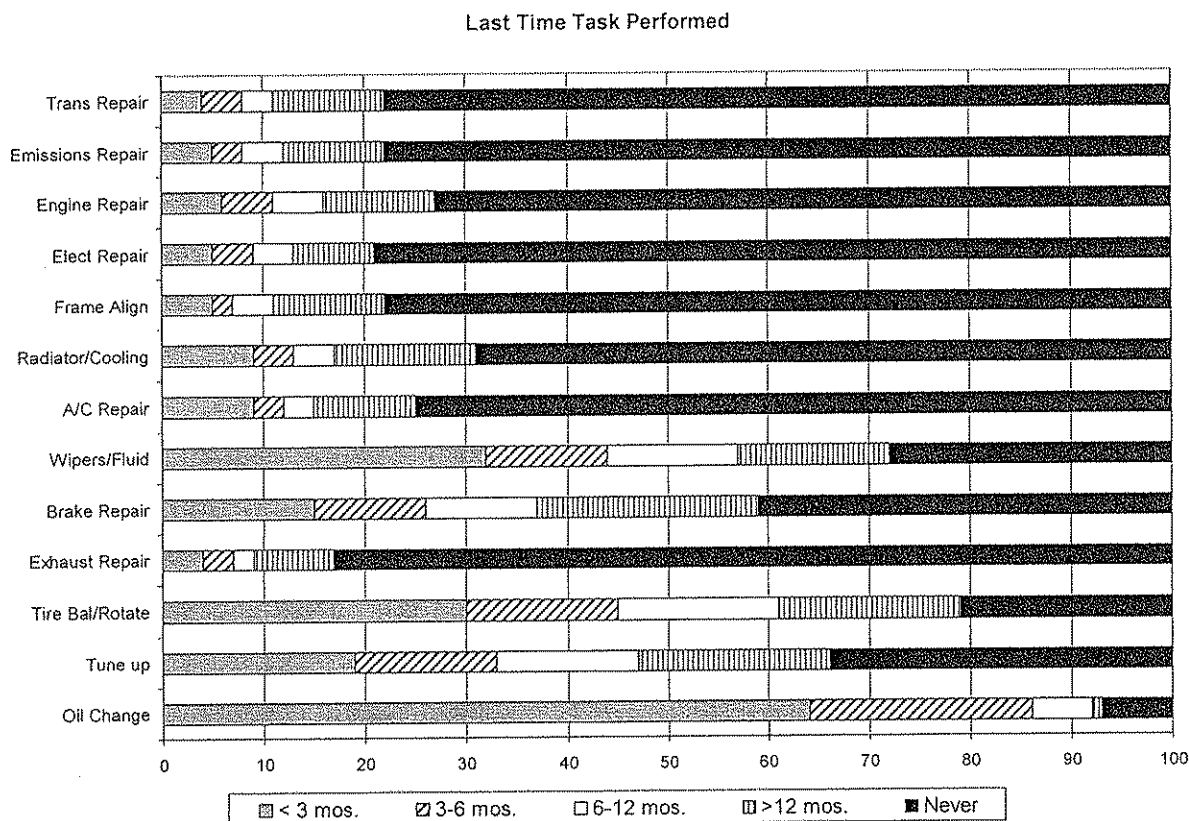
Consumers are generally likely to describe themselves in positive terms, and this area is no exception. A total of 49% of all respondents said that they Always Regularly and Properly Maintained their vehicles on a timely basis. Respondents with older vehicles are significantly less likely to claim that they properly maintain their vehicles:

**Self-Described Vehicle Maintenance Behavior**

	<b>Total Sample</b>	<b>Vehicle Age 1-2 Years</b>	<b>Vehicle Age 3-5 Years</b>	<b>Vehicle Age 6+ Years</b>
	N=602 A	N=92 B	N=213 C	N=297 D
I see to it that my vehicle is ALWAYS regularly and properly maintained on a timely basis	49%	62% D	54% D	40%
I keep my car maintained on a fairly regular basis	31	25	30	34
I tend to fall behind on getting the vehicle maintained on a timely basis, but still pretty much keep up with it	10	5	7	13 BC
I don't pay much attention to keeping my car maintained	2	2	1	2
I only get my vehicle maintained if I need to in order to operate the vehicle	8	5	8	11

## Vehicle Maintenance Behavior

Another approach to determining consumer vehicle maintenance behavior is to gather data on specific maintenance tasks. Respondents were asked to indicate when, if ever, they had performed specific maintenance and repair tasks, and which type of vendor they used. If they had not ever had the task performed, they were asked to identify the type of vendor they will choose when the need arises. The chart below summarizes the response to the first question by the total sample for each task identified.



Several observations can be made regarding these data:

- For many of the repair and maintenance tasks, the majority of respondents say that they have never had to have that task performed.
- Several of the items can be classified as "Regular Frequency" tasks while others are generally performed on an "As Needed" basis. Among the Regular Frequency tasks are:
  - Oil Changes. Approximately 64% have changed their oil in the past three months.
  - Tire Balancing and Rotating. Approximately 30% have performed this task in the past three months and an additional 31% have accomplished this task within the past year.
  - Windshield Wiper Replacement/Fluid. Approximately 32% have performed this task in the past three months.
  - Regular Engine Tune-up. Approximately 19% have had an Engine Tune-up in the past three months.

A deeper analysis of the data shows that two routine maintenance tasks appear to slightly correlate with the number of miles driven annually. Theoretically, the more miles driven per year, the more recent the completion of particular maintenance tasks. However, there are few statistically significant differences in the data. Those driving at abnormally high mileage rates are significantly more likely to have changed their vehicle's oil and balance/rotate their vehicle's tires. Completion of repair tasks appear to have no correlation to annual miles driven. The next table shows these data segmented by low to high mileage respondent groups.

**Past Three Month Completion of Tasks By Mileage Driven**

	Total Sample	Drive < 10k	Drive 10k – 15k	Drive 15k – 20k	Drive 20k +
<b>Past 3 Month Completion:</b>	N=602	N=159	N=220	N=99	N=123
Maintenance – Regular Frequency	A	B	C	D	E
Oil Changes	64%	58%	62%	68%	72%
Regular Engine Tune up	19	20	16	21	19
Tire Balance/Rotate	30	23	27	30	44
Windshield Wipers/Fluid	32	30	30	33	BCD
<u>Repair – As Needed</u>					36
Transmission Repair	4	4	2	5	5
Exhaust System Repair	4	3	4	3	4
Brake Repair	15	15	15	12	18
A/C System Repair	9	11	7	8	8
Radiator/Cooling System Repair	9	9	6	8	12
Frame Alignment	5	9	3	6	6
Electrical Repair	5	C	4	4	6
Engine Repair	6	6	3	7	7
Emissions System Repair	5	C	4	5	C
		8			6

A review of the data cross-tabulated by respondents' self-classified maintenance behavior shows that those who claim to maintain their vehicles more regularly tend to more frequently change their vehicle's oil and to a lesser degree, have the tires balanced/rotated.

Interestingly, those who claim to only have maintenance and repair items performed when needed are fairly likely to have had several tasks completed in the past three months relative to those in other groups:

- Tire Balancing and Rotating
- Emissions System Repair
- Radiator/Cooling System Repair
- Electrical Repair
- Transmission Repair

The next table displays these findings.

**Past Three Month Completion of Tasks By Maintenance Behavior Classification**

	<b>Always Maintain</b>	<b>Fairly Regular</b>	<b>Fall Behind But Keep Up</b>	<b>Not Much Attention</b>	<b>Only If Needed</b>
<b>Past 3 Month Completion:</b>	N=292	N=188	N=59	N=10	N=52
Maintenance – Regular Frequency	B	C	D	E	F
Oil Changes	68%	64%	61%	30%	50%
Regular Engine Tune up	EF	F	E		
Tire Balance/Rotate	21	16	14	--	27
Windshield Wipers/Fluid	32	28	25	10	35
<u>Repair -- As Needed</u>	E				E
Transmission Repair	35	30	29	30	23
Exhaust System Repair		6	--	--	12
Brake Repair	1	B			B
A/C System Repair	3	4	7	--	4
Radiator/Cooling System Repair	16	14	8	--	21
Frame Alignment	8	11	2	--	13
Electrical Repair	D	D			
Engine Repair	6	10	7	--	23
Emissions System Repair	4	5	7	--	BCD
					13
					15
					BC
					12
					19
					BCD

As indicated earlier, respondents were asked which type of vendor they used the last time their vehicle was in for each particular repair or maintenance task. If they had not ever had the task performed, they were asked to identify the type of vendor they will choose when the need arises. Respondents were not prompted for the type of location, and their responses were recorded by interviewers on a list provided on the questionnaire. In some cases, respondents could not identify the type of vendor used despite interviewer assistance. In other cases, respondents were unable to name a vendor type due to the fact that they had never faced a situation such as that posed by the interviewer (such as needed electrical repair). In these latter two cases, responses were classified as Other/Don't know.

The next two tables show the vendor types used most often for the most recent (or next) maintenance and repair task identified in the survey. As indicated, consumers patronize a variety of vendor types for various services. Independent repair shops and garages are selected by an average of 25% of the total sample, with a range of 13% (Wiper Blade/Fluid) to 30% (Emissions Systems). Selection of Auto Dealers averages 30%.

Also quite noticeable in the data are the percentages of respondents who are not sure what type of vendor they would use for specific types of repair and maintenance tasks (21% on average). In the vast majority of these cases, the participants providing these responses had not had the task performed on their vehicle. It could be assumed that these "uncommitted" patrons are prospects for all types of vendors.

**Type of Vendor Chosen for Various Maintenance/Repair Tasks**

	Oil Change	Engine Tune-up	Tire Rot/ Balance	Exhaust System	Wiper Blade/ Fluid	A/C System Repair	Radiator/ Cooling Repair
Auto Dealer	24%	35%	22%	29%	19%	32%	31%
Auto Parts Store	--	1	2	1	2	1	1
Independent Shop	18	29	19	28	13	26	28
Oil Change Outlet	25	1	1	--	6	--	1
Tire Store	2	1	34	3	1	--	--
Specialty Repair	2	4	3	7	2	6	5
Tune Up Chain	1	2	2	--	1	1	--
Do It Myself	20	12	5	15	43	5	9
Other/Don't Know	8	15	12	17	13	29	25

**Type of Vendor Chosen for Various Maintenance/Repair Tasks**

	Frame Align	Electric Repair	Engine Repair	Emissions System	Trans- mission	Brake Repair
Auto Dealer	29%	36%	37%	32%	34%	29%
Auto Parts Store	1	1	1	1	--	1
Independent Shop	23	26	28	30	25	28
Oil Change Outlet	--	--	--	1	1	--
Tire Store	6	--	--	--	--	4
Specialty Repair	7	--	4	5	9	7
Tune Up Chain	--	4	--	1	--	--
Do It Myself	3	7	7	5	5	15
Other/Don't Know	31	26	23	25	26	16

### **Drag Along Repair Behavior**

One area of the marketplace that is predicted to be affected by the mandated warranties is the "Drag Along" repair segment. A Drag Along repair is defined as a maintenance and repair opportunity that service technicians identify in addition to the primary item(s) for which the vehicle was initially brought into the shop.

Respondents were asked to recall the last time their vehicle was worked upon, and whether or not the vendor suggested other items which could be repaired or maintained. The result was somewhat different than what was found in the exploratory research. A total of 27% of the Total Sample responded affirmatively, while in the exploratory research the total was closer to half of all respondents. The former number is likely more realistic, since respondents were asked to indicate what happened on a specific occasion ("the last time") while the earlier research dealt with a more general approach (i.e., "does the shop ever suggest.."). For purposes of model building, the conservative number will suffice.

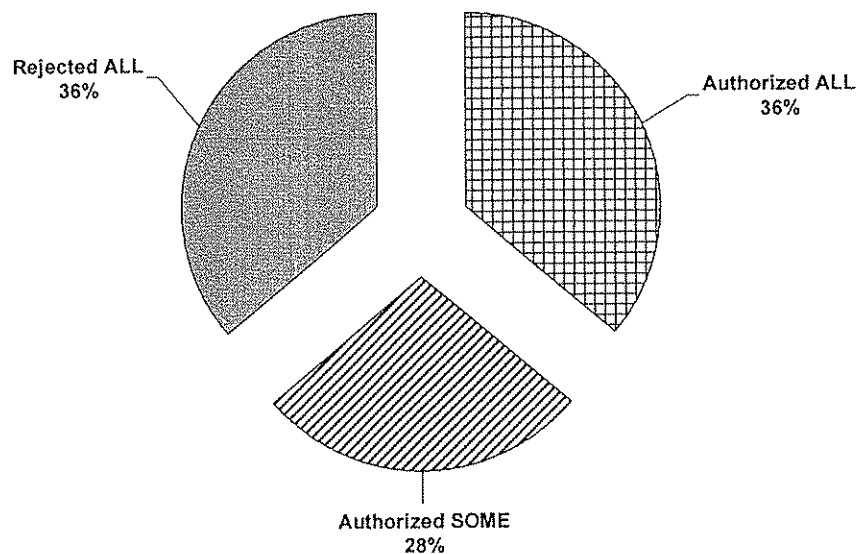
The data indicate a fairly logical pattern; those who say that they tend to fall behind on maintenance and those with older vehicles are more likely to indicate that the vendor suggested additional repair or maintenance items on their last visit. The next table shows the response to this question.

### Additional Drag Along Maintenance/Repair Items Suggested

Group	% Who Were Suggested Additional Items on Last Visit
Total Sample	27%
Vehicle Age 1-2 Years	14
Vehicle Age 3-5 Years	28
Vehicle Age 6+ Years	29
Always Maintain	24%
Fairly Regular	24
Fall Behind But Keep Up	49
Not Much Attention	30
Only If Needed	27

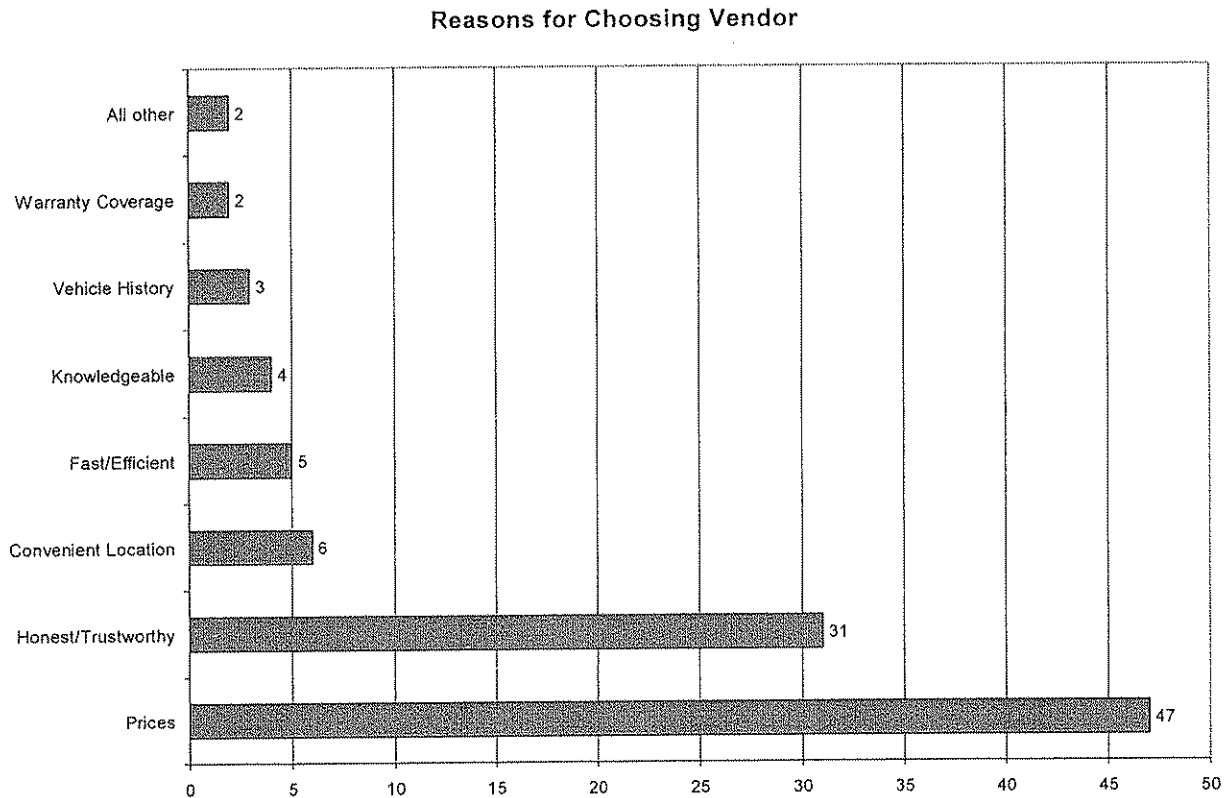
Those respondents who said that their service provider suggested additional items on their last visit were also asked if they authorized all or some of the suggested items or if they rejected all of the items. The chart below shows that slightly over two-thirds of respondents authorized at least some of the repair/maintenance items.

Response to Suggested Repair/Maintenance Items



## Reasons for Choosing Maintenance/Repair Vendor

Respondents were asked to provide the primary reason(s) they chose their maintenance and repair vendor(s). Interviewers recorded responses on a list developed from the exploratory research or recorded verbatim any responses not already on the list. Respondents were not provided with the response categories. The chart below shows the total mentions for each category. As indicated, consumers volunteer that their decisions are driven by Price and by Trust (in the vendor).



## Warranty Statement

Interviewers read the following warranty statement to each respondent:

"In 1998, the state government passed regulations that permit vehicle manufacturers to certify their vehicles as super low emission vehicles. To get the credit, vehicles would need to meet a 15 year/150,000 miles useful life standard and the manufacturers would need to provide car owners with a 15 year/150,000 emissions warranty. This warranty would cover any items that could impact emissions from your vehicle. This means that if your vehicle's emissions control system malfunctions during the 15 year, 150,000 mile period, it would be covered under the warranty."

After the statement was read, respondents were asked if they understood the statement or if they needed the interviewer to repeat the statement. A total of 97% of all respondents said they understood it after the first reading. The remaining 3% needed the statement repeated. There were no significant differences observed between various respondent groups in terms of understanding or not understanding the statement.

Respondents were asked to assume for the remainder of the survey questions that they had purchased a vehicle covered under such a warranty. They were reminded of this assumption at various times during the rest of the interview.



## Predicted Behavioral Reaction to Warranty

Respondents were asked to consider how their vehicle maintenance behavior might change should they purchase a vehicle covered under the mandated warranty, using the following scale:

Be Much More Likely to keep your vehicle properly maintained	5
Be Somewhat More likely to keep your vehicle properly maintained	4
Keep your vehicle maintained About the Same as you do now	3
Be Somewhat less likely to keep your vehicle properly maintained	2
Be Much Less likely to keep your vehicle properly maintained	1

A total of 32% of the Total Sample said that they would be Much More or Somewhat More Likely to keep their vehicle properly maintained. A total of 66% said that they would keep their vehicle maintained About the Same as they do currently. There is little difference between response by sub-samples of respondents.

**Change in Vehicle Maintenance Behavior Based on Warranty**

	Total Sample	Vehicle Age 1-2 Years	Vehicle Age 3-5 Years	Vehicle Age 6+ Years
	N=602	N=92	N=213	N=297
	A	B	C	D
Be Much More Likely to keep your vehicle properly maintained	24%	21%	23%	25%
Be Somewhat More likely to keep your vehicle properly maintained	8	4	8	10
Keep your vehicle maintained About the Same as you do now	66	75	67	63
Be Somewhat less likely to keep your vehicle properly maintained	1	--	1	2
Be Much Less likely to keep your vehicle properly maintained	1	--	1	--

On the surface, it appears that the extended emissions warranty will promote better vehicle maintenance:

**Predicted Maintenance Behavior Under Warranty versus Current Behavior**

	Current Behavior				
	High Current	Regular Current	Fall Behind Current	Poor Current	As Needed
Predicted Behavior					
Much More Now	21%	18%	22%	20%	64%
Somewhat More Now	4%	10%	19%	10%	13%
Same Now	74%	71%	56%	60%	21%
Somewhat Less Now	1%	1%	2%	10%	20%
Much Less Now	--	--	1%	--	--
	100%	100%	100%	100%	118%

However, further analysis shows that a large percentage of those who say they will better maintain their vehicles are respondents who are already properly maintaining their vehicles: In the following table, the percentages have been restated to reflect the distribution of the total sample among current and predicted behavior categories.

Classification of Total Sample

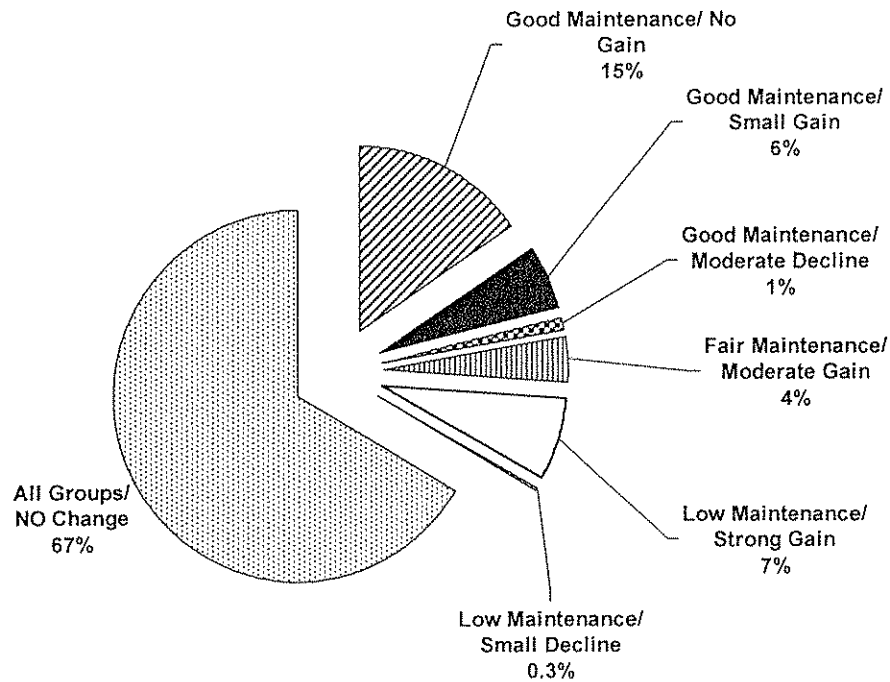
<u>NEW Behavior</u>	<u>Current Maintenance Behavior</u>				
	<u>High</u>	<u>Regular</u>	<u>Fall Behind</u>	<u>Poor</u>	<u>As Needed</u>
Much More	10.5%	5.6%	2.2%	0.3%	5.5%
Somewhat More	1.8%	3.2%	1.8%	0.2%	1.2%
Same	35.7%	22.3%	5.5%	1.0%	1.8%
Somewhat Less	0.3%	0.2%	0.2%	0.2%	0.2%
Much Less	0.2%	0.2%	0.2%	0.0%	0.0%

The data in the table above can be used to classify respondents based on their potential to improve their vehicle maintenance or actually have it decline as the warranty is applied. Those who are currently maintaining their vehicle have low potential to improve (and the highest potential for a decline). The opposite is true for those who are less than ideal vehicle maintainers. Respondents were grouped as follows:

<b>If Current Behavior is...</b>	<b>And Predicted Behavior is...</b>	<b>Their New Classification is:</b>
Always Properly Maintain Vehicle on Timely Basis	Much More or Somewhat More Likely to Keep Vehicle Properly Maintained	Good Maintenance/No Gain
Keep Vehicle Maintained on a Fairly Regular Basis	Much More Likely to Keep Vehicle Properly Maintained	Good Maintenance/Small Gain
Always Properly Maintain Vehicle, Keep Vehicle Maintained Fairly Regularly, or Keep up With Vehicle Maintenance but Sometimes Fall Behind	Somewhat Less or Much Less Likely to Keep Vehicle Properly Maintained	Good Maintenance/Moderate Decline
Keep up With Vehicle Maintenance but Sometimes Fall Behind	Much More or Somewhat More Likely to Keep Vehicle Properly Maintained	Fair Maintenance/Moderate Gain
Don't Pay Much Attention to Vehicle Maintenance or Only Maintain Vehicle When Needed	Much More or Somewhat More Likely to Keep Vehicle Properly Maintained	Low Maintenance/Strong Gain
Don't Pay Much Attention to Vehicle Maintenance or Only Maintain Vehicle When Needed	Somewhat Less or Much Less Likely to Keep Vehicle Properly Maintained	Low Maintenance/Small Decline
Any Category	No Change in Behavior	All Groups/NO Change

The chart on the next page shows these consumer segments. As indicated, approximately two-thirds of consumers indicate that they will not change their behavior. A total of 15% currently properly maintain their vehicle and thus have no real potential for improved maintenance behavior and an additional 6% good vehicle maintainers have some potential to improve. Approximately 11% of the population is projected as fair or low vehicle maintainers who have potential for moderate to strong improvement. The chance for any *decline* is very small.

#### Vehicle Maintenance Segments



#### Perceptions Regarding The Mandated Emissions Warranty

Respondents were read a list of statements regarding the extended emissions warranty and were asked to agree or disagree with each statement using the following scale:

**“A 10 means that you Completely Agree and a 1 means that you Completely Disagree”**

The grouped responses of 8, 9, or 10 are considered as a “Strongly Agree” rating. The percentage of Strongly Agree ratings are shown in the table on the next page. As indicated, only one statement generated a solid majority Strongly Agree response; 76% Strongly Agree that the warranty will not impact behavior due to the fact that they believe they already take good care of their vehicle. A slight majority (56%) of consumers Strongly Agree that their warranty will be voided if they do not have their vehicle properly maintained.

### Reaction to Warranty

	Total Sample	Vehicle Age 1-2 Years	Vehicle Age 3-5 Years	Vehicle Age 6+ Years
	N=602 A	N=92 B	N=213 C	N=297 D
UNDER THIS WARRANTY, I WILL HAVE TO GO TO THE DEALER FOR ALL REPAIRS NEEDED	36%	35%	40%	33%
I WILL NOT HAVE TO SPEND ANY MORE MONEY ON REPAIRS AND MAINTENANCE BECAUSE THE NEW WARRANTY COVERS EVERYTHING	41	46	42	39
THE WARRANTY WILL NOT IMPACT MY MAINTENANCE BEHAVIOR BECAUSE I ALREADY TAKE GOOD CARE OF MY VEHICLE	76	86 D	80 D	70
THE VEHICLE WILL LAST LONGER AND BE MORE RELIABLE THAN VEHICLES WITHOUT THE WARRANTY	40	39	39	40
UNDER THIS WARRANTY, I WILL HAVE TO GO TO THE DEALER FOR ALL ROUTINE MAINTENANCE NEEDED	33	40	35	31
THE AUTOMOBILE DEALER WHERE I PURCHASED THE VEHICLE WILL BE MORE KNOWLEDGEABLE ABOUT MAINTENANCE AND REPAIRS THE VEHICLE NEEDS THAN OTHER SERVICE PLACES	45	55 D	49 D	39
THE WARRANTY WILL BE VOIDED IF I DO NOT HAVE IT REGULARLY MAINTAINED	56	64	56	54
HAVING THE 15 YEAR, 150,000 MILE WARRANTY MEANS THE INITIAL PRICE OF THE VEHICLE WILL BE MUCH HIGHER THAN WITHOUT SUCH A WARRANTY	42	45	43	41

Interestingly, a third of all respondents indicated that they Strongly Agree that they believe they will have to go to the auto dealer for routine maintenance. A breakdown of these responses shows that those currently under a maintenance warranty are just as likely as those not currently under a warranty to Strongly Agree that they will have to go to the dealer for routine maintenance:

Perception That Warranty implies Auto Dealer Patronage	
Group	% Strongly Agrees That They Must Go To a Dealer for Routine Maintenance
Total Sample	33%
Under OEM Warranty	37
Under 3 <sup>rd</sup> Party Warranty	31
Not Under Warranty	32

Similarly, 36% Strongly Agree that they will have to go to auto dealers for all repair work under the mandated warranty. Again, no significant differences exist between those currently under a warranty and those not currently under a warranty.

## Predicted Maintenance Behavior Under Mandated Emission Warranty

Respondents were asked to assume that they had a vehicle covered under the mandated warranty, and were asked to identify the type of service provider they would use for the same specific set of repair and maintenance tasks used earlier in the survey.

The most notable observation in these data is that there is a marked shift in the percentage of consumers who will visit auto dealers for various repair and maintenance tasks:

- This is especially true for those who say that they currently are undecided about where to go for various repair and maintenance tasks.
- Those who currently use Independent Repair Shops and Garages also are more likely to use Auto Dealers under the warranty situation.

A detailed analysis of the projected shift to auto dealers is presented later in this section of the report. The percentages of the Total Sample which would go to each type of vendor for the items are listed in the next two tables.

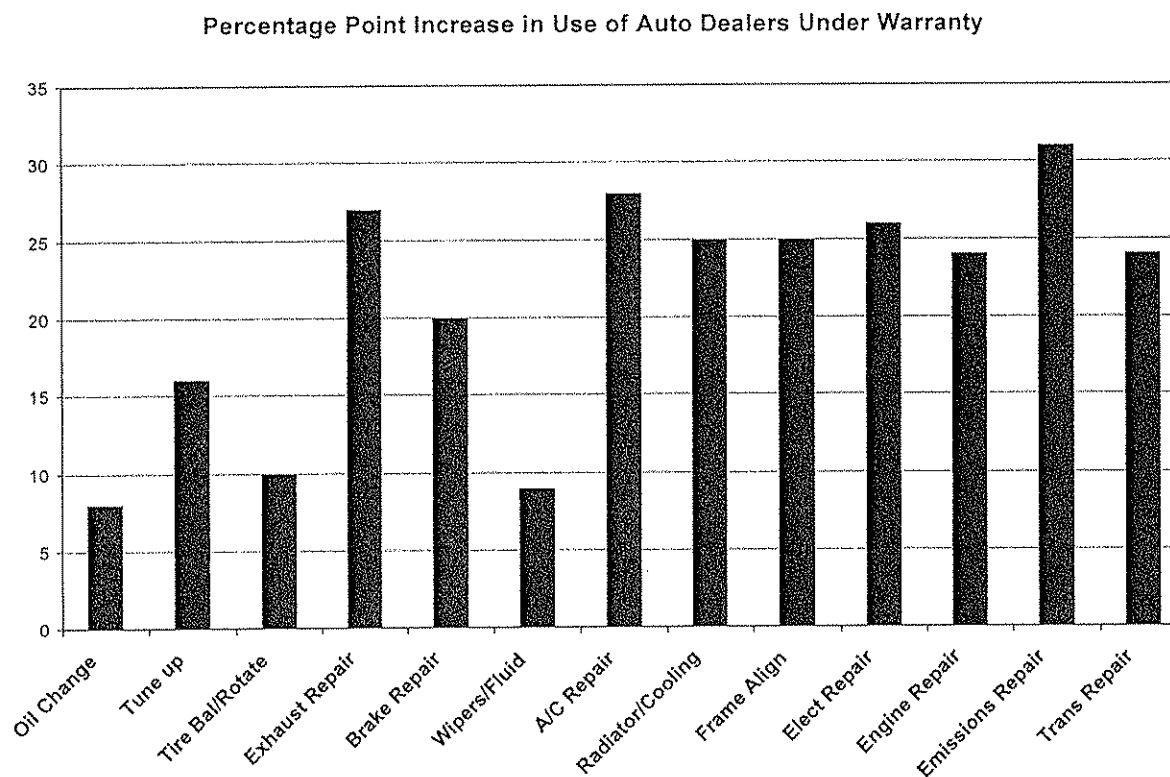
**Type of Vendor Chosen for Various Maintenance/Repair Tasks Under Warranty**

	Oil Change	Engine Tune-up	Tire Rot/ Balance	Exhaust System	Wiper Blade/ Fluid	A/C System Repair	Radiator/ Cooling Repair
Auto Dealer	32%	51%	32%	56%	28%	60%	56%
Auto Parts Store	1	1	1	2	1	2	1
Independent Shop	20	28	23	24	19	24	25
Oil Change Outlet	23	1	1	--	4	--	--
Tire Store	1	--	31	--	--	--	--
Specialty Repair	2	3	3	8	2	5	6
Tune Up Chain	1	3	--	--	1	--	--
Do It Myself	16	9	4	5	40	4	6
Other/Don't Know	4	4	5	5	5	5	6

**Type of Vendor Chosen for Various Maintenance/Repair Tasks Under Warranty**

	Frame Align	Electric Repair	Engine Repair	Emissions System	Trans- mission	Brake Repair
Auto Dealer	54%	62%	61%	63%	58%	49%
Auto Parts Store	2	2	1	1	1	1
Independent Shop	20	22	25	23	23	26
Oil Change Outlet	--	--	--	--	--	--
Tire Store	5	--	--	--	--	3
Specialty Repair	8	5	3	4	9	7
Tune Up Chain	--	--	--	1	--	--
Do It Myself	4	5	5	4	5	10
Other/Don't Know	7	4	5	4	4	4

The next chart shows the percentage point increase in the projected use of auto dealers for each type of repair and maintenance item, from current behavior to predicted behavior under the warranty.



Additional analysis reveals the source of the shifts in vendor preference. The next table and accompanying chart show the percentage of those who would use an auto dealer for specific repair and maintenance items if their vehicle was covered by the mandated warranty but had previously stated that they do *not* use a dealer for those tasks.

These data were generated by first isolating those respondents who indicated that they *would* use an auto dealer for specific maintenance tasks under the warranty situation, but had previously *not* indicated that they would use a dealer for the same task when asked about their current behavior. For each of these groups, a cross-tabulation was run which showed the vendor that is current used or would be used if faced with the task at hand. The resulting figures essentially show the shift from non-auto dealers to auto dealers under the warranty situation.

As indicated, quite large percentages of those who are currently unsure about which vendor to use for specific repair/maintenance tasks indicate that they will go to auto dealers if such an item is needed, averaging 40% of all "new users" of auto dealers under the warranty situation. An average of 33% of all new users of auto dealers currently use independent repair shops and garages.

These percentages in essence reflect the potential loss of current customers and potential customers by the independent vendors. The latter group of consumers, while not currently patronizing independent vendors, are "prospects" for which these repair shops and garages compete. The data suggest that these consumers will be less neutral in a warranty situation.

**Percentage of Current Non-Dealer Users who Would Use an Auto Dealer Under Warranty**

Composite of Dealer Usage	Total %	Auto Parts	Independent Shop	Oil Outlet	Tire Store	Specialty	Tune Chain	DIY	DK/Other
Oil Change	100	1	30	33	2	2	1	16	15
Tune up	100	2	40	4	2	5	4	11	32
Tire Bal/Rotate	100	2	26	0	42	3	2	3	22
Exhaust Repair	100	1	32	2	1	10	1	2	51
Brake Repair	100	1	39	1	2	11	0	16	30
Wipers/Fluid	100	5	19	7	2	1	0	42	24
A/C Repair	100	2	28	0	1	7	1	5	56
Radiator/Cooling	100	1	37	2	1	5	1	10	43
Frame Align	100	1	27	0	10	8	0	1	53
Elect Repair	100	2	33	0	1	5	0	6	53
Engine Repair	100	1	40	0	1	4	1	5	48
Emissions Repair	100	1	41	3	1	6	1	3	44
Trans Repair	100	1	32	1	1	10	0	2	53

← Note: Percentages add Horizontally to the Left

**Drag Along Repair Behavior**

Respondents were also asked to project their behavior regarding Drag Along repairs should they be faced with the following situation:

Now, assume that your vehicle needed some repairs. If you found out that some of the repairs were covered under the warranty, and some of the repairs were not covered under the warranty, would you... (READ LIST)

1. Go to the automobile dealer and authorize all repairs, including both those covered by the warranty as well as those not covered by the warranty
2. Get only the warranty repairs done at the automobile dealer and then purchase the non-warranty work at some other location
3. Or, would you pay for all the work done at some place other than an automobile dealer

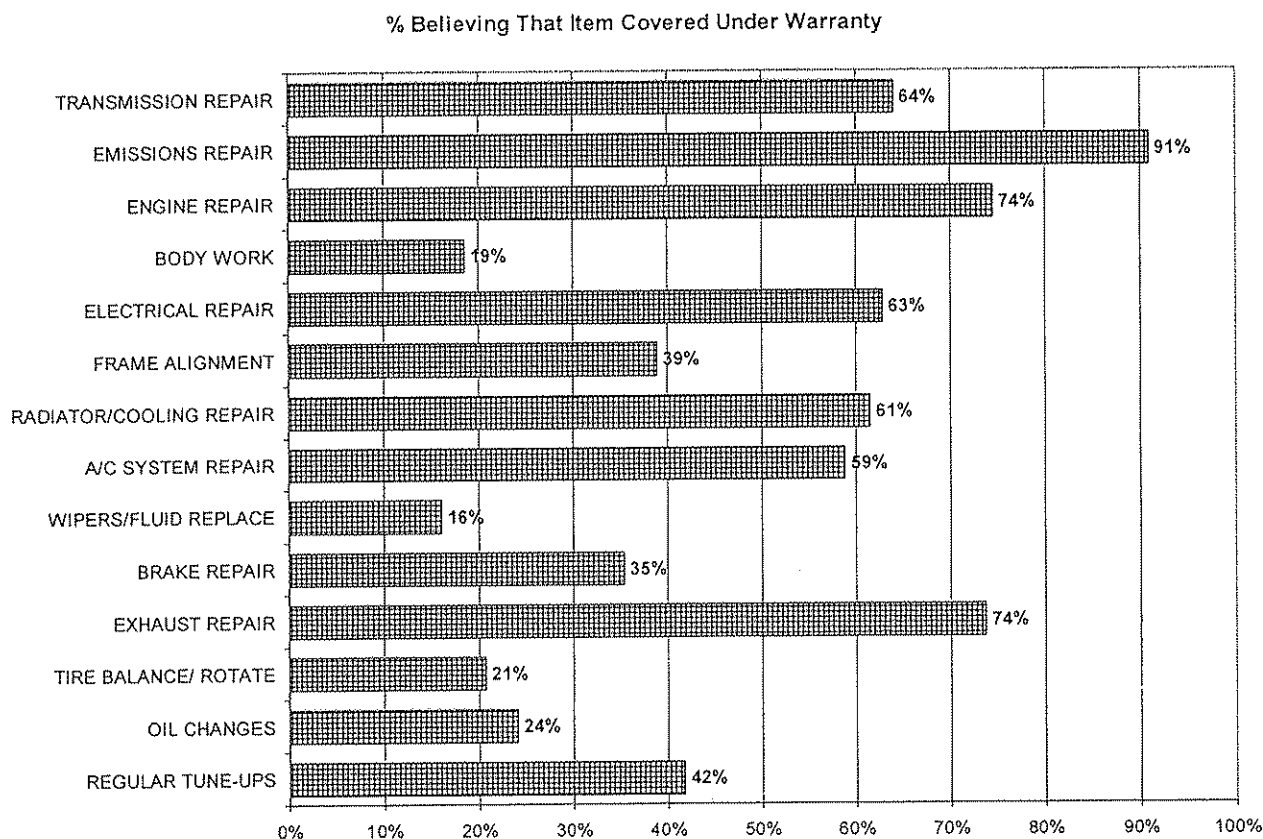
A total of 44% said that they would authorize all of the additional non-warranty repairs at the dealer, while 49% said that they would have the non-warranty work done at another location. The remaining 7% would search for an alternative vendor to perform all work. Those with newer vehicles are significantly more likely to use the dealer for all repairs:

**Respondent Authorization of Repairs Under Warranty**

	Total Sample	Vehicle Age 1-2 Years	Vehicle Age 3-5 Years	Vehicle Age 6+ Years
	N=602 A	N=92 B	N=213 C	N=297 D
Authorize all repairs at the dealer	44%	54% D	48% D	38%
Warranty work performed at dealer, other work performed elsewhere	49	41	46	53 B
All work performed at non-dealer	7	4	6	8

## Perceptions of Warranty Coverage

To further understand consumer perceptions of the mandated warranty, respondents were asked to indicate whether or not they believed that specific repair and maintenance items would be covered under the warranty. Surprisingly high percentages of respondents stated a belief that many of the items listed would indeed be covered by the warranty, including items that are (outwardly) unrelated to emissions and/or useful vehicle life.



## Preference For Repair and Maintenance Vendor Options

Finally, respondents were asked to state a preference for a) being able to use vendors of their own choosing or b) being required to go to an auto dealer for needed maintenance and repairs. The response was overwhelmingly greater for the former option for both maintenance and repair decisions.

Preference for Repair and Maintenance Vendor Options

	Total Sample	Vehicle Age 1-2 Years	Vehicle Age 3-5 Years	Vehicle Age 6+ Years
	N=602	N=92	N=213	N=297
	A	B	C	D
<b><u>Repairs</u></b>				
Prefer to Choose Vendor	80%	86%	76%	80%
Prefer to be Required to go to Dealer	20	14	24	20
<b><u>Maintenance</u></b>				
Prefer to Choose Vendor	82	79	81	83
Prefer to be Required to go to Dealer	18	21	19	17



## Respondent Demographics

As indicated in the Introduction, the respondent base is a representative sample based on population in the state of California. The following table summarizes the respondent demographics:

	Total Sample	Vehicle Age 1-2 Years	Vehicle Age 3-5 Years	Vehicle Age 6+ Years
	N=602	N=92	N=213	N=297
	A	B	C	D
Age 18 to 34	24%	23%	28%	22%
Age 35 to 54	49	<b>61</b> CD	45	47
Age 55 +	29	15	<b>26</b> B	<b>30</b> B
Average Age	44.2	41.8	43.5	<b>45.4</b> B
Male	55%	54%	55%	55%
Female	45	46	45	45
Income Under \$30k	16%	11%	12%	<b>21%</b> BC
Income \$30k to Under \$50k	24	17	18	<b>30</b> BC
Income \$50k to Under \$70k	20	23	23	18
Income \$70k to Under \$100k	21	23	<b>27</b> D	17
Income over \$100k	18	<b>25</b> D	21	14
Average Income	\$62,740	\$69,940	\$68,540	\$56,580

## **INDUSTRY AND ECONOMIC RESEARCH**

### **Introduction**

Research was conducted on the Automotive Aftermarket in California to gather data for modeling purposes. The key findings are summarized below.

### **California Vehicle Market Summary**

California is a very strong market for passenger cars and light trucks. The department of Motor Vehicles estimates that a total of 18,331,938 non-commercial passenger cars and light trucks were registered in 1999 (published in March, 2000). The department estimates that this is an increase of 2.3% over the prior year.

From these data, new vehicle registrations were projected for each year through 2008, using a conservative annual growth rate of 2%, which reflects most economic forecasts for the region. Years 2003 through 2008 are shown in the projections.

### **California Aftermarket Industry Summary**

The U.S. Census Bureau estimates that a total of 20,555 vehicle repair and maintenance shops were in existence in California in 1997 (the most recent year for which data was obtained). This count does not include car washes and auto body shops. Automobile dealers are generally classified under a different SIC code, and thus are assumed to be not included in this number.

The Automotive Service Association estimates that approximately 650,000 automotive technicians were employed in the United States in 1997. According to the U.S. Department of Commerce, a 12% annual attrition rate exists for this type of work (1997 figure). However, given the continued demand for motor vehicles, it is assumed that the number of technicians will *not* decline substantially over time.

A population coefficient was used to determine the number of technicians in the state of California. According to the U.S. Census Bureau, the 1999 estimate of households in California account for approximately 11.3% of the U.S. Total. Multiplying this percentage by the estimated number of automotive technicians yields an estimate of 73,481 technicians in California.

In the consumer survey, respondents were asked to indicate the frequency with which various maintenance and repair items were performed. Projected expenditures were calculated using industry cost estimates (see explanation below). The projections were multiplied by the total number of vehicles in the state of California to arrive at a projected total repair and maintenance revenue amount. The estimated total revenue amount for 2003 is calculated to be just over \$21.3 Billion.

To validate these figures, the projected annual revenues were divided by the estimated number of vehicle repair and maintenance shops and automotive technician jobs. The estimated revenue per repair and maintenance shops is approximately \$716,462 and the average revenue generated per automotive technician is approximately \$200,417.

These estimates are comparable to industry information obtained from outside sources. The Automotive Service Association has published the following estimates:

- Consumers spend approximately \$751 to \$1,116 per year on vehicle maintenance and repair (1999 estimate).
- Nationwide, independent repair and maintenance shops averaged \$1.07 million in annual sales in 1998. (The estimated California average in this report is lower than the national figure given the sound, yet conservative estimating procedures used).

### **Maintenance and Repair Estimates**

The consumer survey conducted with vehicle maintenance decision makers produced incidence rates for various types of maintenance and repair tasks. The incidence rate for each task is the percentage of all vehicles that will undergo each of the specified tasks during the course of a year. The following incidence rates were produced:

<b><u>Annual Incidence Estimates</u></b>		
Oil Change	3.75	From Motor Oil Company Proprietary Research
Regular Engine Tune Up	0.47	From AAIA Research Study
Tire Balance/Rotate	0.61	From AAIA Research Study
Exhaust System Repair	0.09	From AAIA Research Study
Brake Repair	0.38	From AAIA Research Study
Windshield Wiper/Fluid Replacement	0.57	From AAIA Research Study
A/C System Repair	0.15	From AAIA Research Study
Radiator/Cooling System Repair	0.17	From AAIA Research Study
Frame Alignment	0.11	From AAIA Research Study
Electrical Repair	0.13	From AAIA Research Study
Engine Repair	0.15	From AAIA Research Study
Emissions System Repair	0.12	From AAIA Research Study
Transmission Repair	0.11	From AAIA Research Study

As shown in the table, the Oil Change incidence rate was obtained from proprietary research conducted by a major motor oil manufacturer. All other data were obtained in the consumer research study.

Consumer costs for each maintenance and repair task were produced using professional automotive repair shop cost estimating software. This software package was developed with 28 years of labor study by ASE Certified Technicians, current year vehicle and parts information obtained from manufacturers (the software also includes vehicle information for the past 20+ years), and uses current year dealer prices for parts. Labor rates were set at \$60, and dealers suggested retail prices were used for the parts.

A randomly generated list of vehicle types was selected for the cost estimates. Tasks within each broad repair and maintenance category were selected to provide a range of situations ranging from simple to complex. A total of five repair and maintenance situations using the selected vehicles were created for each category, and costs were estimated for each situation. The average cost was then used for the revenue transfer models.

The following schedule (next two pages) displays the vehicle repair scenarios and the calculated costs used in the models:


## Vehicle Repair Estimates Worksheet

Note: All vehicles 1999 models, common features (i.e., not SHO or sport models)


Note: Estimate Source used is Quick-Quote, unless otherwise noted

Vehicle	Item	Amount	Average
TUNE UP			
Acura Integra	Tune Up and Plugs	\$65.42	\$87.48
Pontiac Sunbird	Tune Up and Plugs	\$83.13	
Ford Windstar	Tune Up and Plugs	\$83.13	
Toyota Camry	3000 Mile Service	\$81.50	
Volvo 900 Series	15,000 Mile Service	\$124.21	
OIL CHANGE			
BMW 740	Oil Change	\$31.68	\$29.25
Subaru xt	Oil Change	\$20.53	
Olds Achieva	Oil Change	\$28.56	
Plymouth Neon	Oil Change	\$31.51	
Nissan Maxima	Oil Change	\$33.96	
TIRE BALANCE/ROTATE			
Audi 90	Tire Balance/Rotate	\$26.40	\$34.18
Eagle Talon	Tire Balance/Rotate	\$32.58	
Mitsubishi Galant	Tire Balance/Rotate	\$38.52	
Pontiac Transport	Tire Balance/Rotate	\$35.00	
Chevrolet S 10	Tire Balance/Rotate	\$38.40	
EXHAUST			
Buick Regal	From Converter to back	\$358.00	\$294.00
Mercury Villager	From Converter to back	\$285.00	
Saturn SL	From Converter to back	\$249.00	
Toyota Corrolla	From Converter to back	\$258.00	
Ford Taurus	From Converter to back	\$320.00	
BRAKE REPAIR			
Chrysler Cirrus	Front Disc, Rear Drum	\$361.96	\$327.13
Chevrolet Celebrity	Front Disc, Rear Drum	\$361.83	
Ford Escort	Front Disc, Rear Drum, Flush, Hose	\$481.34	
VW Golf	Front Disc, Flush System	\$233.95	
Chevrolet Blazer	Rear Drum	\$196.55	
WIPER/FLUID			
Dodge Colt	Wiper Blades Replace	\$42.93	\$36.81
Ford Aerostar	Wiper Blades Replace	\$36.17	
Cadlliac Deville	Wiper Blades Replace	\$34.86	
Pontiac Grand Prix	Wiper Blades Replace	\$30.91	
Dodge Caravan	Wiper Blades Replace	\$39.17	
A/C SYSTEM REPAIR			
Ford Crown Victoria	A/C Recharge, Condenser, Hose	\$373.48	\$364.13
Isuzu Rodeo	A/C Recharge, Compressor	\$798.68	
Honda Accord	A/C Recharge	\$79.35	
Chevrolet Venture	A/C Recharge, Compressor Clutch	\$494.09	
Hundai Accent	A/C Recharge	\$75.05	
RADIATOR REPAIR			
Geo Storm	Radiator Repair, Flush, Hoses, H2O Pump	\$734.88	\$415.44
Ford Probe	Radiator Repair, Flush, Hoses	\$347.11	
Chevy Suburban	Radiator Repair, Flush, Thermostat	\$274.56	
Ford Aspire	Radiator Repair, Flush	\$231.29	
Pontiac Firebird	radiator system	\$489.38	


**FRAME ALIGNMENT**

Honda CRX	Front Align, Front Springs	\$460.04	<b>\$231.41</b> 
Cevrolet APV	Front Align, Rear Shocks	\$273.22	
Olds Cutlass	Front Align	\$60.00	
Ford Contour	Front & Rear Align, Sway Bar	\$243.81	
Mercury Sable	Front & Rear Align	\$120.00	


**ELECTRICAL WORK**

Hundai Elantra	Alternator Replace	\$315.03	<b>\$226.16</b> 
Chevrolet Corvette	Charging Gauge, Test	\$120.00	
Dodge Intrepid	Starter Replace	\$310.06	
Ford Explorer	Battery, Charging Test	\$140.12	
Saturn Wagon	Wiper Switch	\$245.58	


**ENGINE REPAIR**

Jaguar xj6	Timing Belt, Valve Adjust, Gasket, Seals	\$1,659.61	<b>\$939.45</b> 
Ford Mustang	Oil Pump, Pressure Gauge	\$509.39	
Chevy S10	Cam & lifters	\$1,212.75	
Mazda mx6	Headgasket	\$611.46	
Toyota Four Runner	Front/Rear Seal	\$704.04	

**EMISSIONS REPAIR**

Lexus Is 400	Computer ECM, Oxygen Sensor	\$252.27	<b>\$272.82</b> 
Acura Integra	Engine Scan, Injector Flush	\$184.10	
Buick Skylark	Cat Convert Comp ECM, Oxyg Sensor	\$365.48	
Honda Odyssey	Fuel Vapor Canister, ECM, Scan	\$226.96	
Chrysler T&C	Scan, Oxygen Sens, Fuel Filter	\$335.28	

**TRANSMISSION REPAIR**

Mazda 626	overhaul auto trans	\$1,560.15	<b>\$1,067.27</b> 
Chevy g10 truck	Service/Reseal	\$645.38	
Nissan Pickup	overhaul std trans	\$724.00	
Mercury Grand Marquis	Service/Reseal	\$646.64	
Olds Cutlass	overhaul auto trans	\$1,760.19	

**Maintenance and Repair Prices -- Automotive Dealer versus Independent Shops**

One area of impact the mandated warranty may have on the marketplace is consumer spending, should they gravitate toward automotive dealers. Anecdotaly, it is widely believed and assumed that these consumers will have to pay higher prices than what they would spend at non-dealer locations.

Objective data comparing prices for identical repair and maintenance tasks is difficult to find. However, data exist which indicate significant differences in cost incurred by vendors. Labor costs reported by the Automotive Service Association (1999) indicate that automotive technicians who work at non-dealer locations earn considerably less than their counterparts at dealer locations:

Dealer Automotive Technicians Hourly Wage	\$15.42
Non-dealer Automotive Technicians Hourly Wage	<u>\$12.47</u>
\$ Difference	\$ 2.95
% Difference	23.7%

Economics dictate that labor costs are passed along from buyer to seller. The consumer expenditure model presented in the next section assumes that this cost difference is included in automotive dealer prices.

It is also widely understood that prices for parts are higher at automotive dealers than if similar parts are purchased from the independent manufacturers. However, the argument can be made that the parts are not truly identical and thus comparisons are unfair. Other costs, such as real estate and equipment, tend to be consistent across the industry and vary only by size of the operation, not by industry segment.

### **Automotive Warranty Cost Summary**

Research was conducted with OEM representatives, automobile dealers, and third party extended warranty vendors. A total of 90 Warranty prices were obtained for various year and mileage levels across a variety of vehicle types. Where possible, prices were obtained for residents of California (not all sources distinguish between geographic locations). The initial research resulted in the following average costs:

**Automotive Warranty Costs Summary**

<b><u>Miles</u></b>	<b><u>3 Years</u></b>	<b><u>4 Years</u></b>	<b><u>5 Years</u></b>	<b><u>6 Years</u></b>	<b><u>7 Years</u></b>
60,000	\$820	\$853	\$1044	\$1360	\$1460
75,000	\$1300	\$1560	\$991	\$1073	\$1180
80,000	n/a	n/a	\$952	n/a	n/a
100,000	\$2400	\$2550	\$1353	\$1395	\$1318

In each case, the warranty period began after the initial three year OEM warranty period was exhausted. Costs thus reflect expenditures over and above the price of the vehicle.

The table on the next few pages shows the warranty data collected for the model.

# WARRANTY WORKSHEET

<u>Vehicle</u>	<u>Miles</u>	<u>Years</u>	<u>Cost</u>	<u>Source</u>
Any Chrysler Minivan	60000	3	820	OEM
Any Chrysler Minivan	75000	3	1300	OEM
Any Chrysler Minivan	100000	3	2400	OEM
Any Chrysler Minivan	60000	4	960	OEM
Toyota -- All 2 wd models	60000	4	670	1st Auto Warranty
Mercury -- All 2wd	60000	4	874	1st Auto Warranty
Models				
Oldsmobile -- All 2 wd	60000	4	874	1st Auto Warranty
Models				
Chrysler -- All 2 wd	60000	4	874	1st Auto Warranty
Models				
Saab -- All 2 wd Models	60000	4	974	1st Auto Warranty
Any Chrysler Minivan	75000	4	1560	OEM
Any Chrysler Minivan	100000	4	2550	OEM
Any Chrysler Minivan	60000	5	1130	OEM
Chevrolet Nova	60000	5	874	Eetna Automotive Service Contract
Toyota 4 Runner 2x	60000	5	974	Eetna Automotive Service Contract
Ford 4x4 Trucks/vans	60000	5	1074	Eetna Automotive Service Contract
BMW -- all Models	60000	5	1170	Eetna Automotive Service Contract
Any Chrysler Minivan	75000	5	1730	OEM
Buick Regal	75000	5	899	OEM
Pontiac Grand Prix	75000	5	899	OEM
Jeep Grand Cherokee	75000	5	974	OEM
Toyota -- All 2 wd models	75000	5	709	1st Auto Warranty
Mercury -- All 2wd	75000	5	902	1st Auto Warranty
Models				
Oldsmobile -- All 2 wd	75000	5	902	1st Auto Warranty
Models				
Chrysler -- All 2 wd	75000	5	902	1st Auto Warranty
Models				
Saab -- All 2 wd Models	75000	5	1002	1st Auto Warranty
Buick Regal	80000	5	924	OEM
Pontiac Grand Prix	80000	5	924	OEM
Jeep Grand Cherokee	80000	5	1009	OEM
Any Chrysler Minivan	100000	5	3000	OEM
Chevrolet Cavalier	100000	5	1295	OEM
Olds Intrigue	100000	5	1395	OEM
Olds Aurora	100000	5	1695	OEM
Toyota -- All 2 wd models	100000	5	784	1st Auto Warranty
Mercury -- All 2wd	100000	5	977	1st Auto Warranty
Models				
Oldsmobile -- All 2 wd	100000	5	977	1st Auto Warranty
Models				
Chrysler -- All 2 wd	100000	5	977	1st Auto Warranty
Models				
Saab -- All 2 wd Models	100000	5	1077	1st Auto Warranty
Any Chrysler Minivan	60000	6	1360	OEM
Any Chrysler Minivan	75000	6	1980	OEM
Toyota Camry	75000	6	795	OEM
Toyota -- All 2 wd models	75000	6	748	1st Auto Warranty
Mercury -- All 2wd	75000	6	946	1st Auto Warranty
Models				
Oldsmobile -- All 2 wd	75000	6	946	1st Auto Warranty
Models				
Chrysler -- All 2 wd	75000	6	946	1st Auto Warranty
Models				

Saab -- All 2 wd Models	75000	6	1046	1st Auto Warranty
Honda Accord	75000	6	949	Eetna Automotive Service Contract
VW Rabbit/GTI	75000	6	1049	Eetna Automotive Service Contract
Chrysler Newport	75000	6	1149	Eetna Automotive Service Contract
Acura Legend	75000	6	1245	Eetna Automotive Service Contract
Any Chrysler Minivan	100000	6	3160	OEM
Chevrolet Cavalier	100000	6	1395	OEM
Olds Intrigue	100000	6	1595	OEM
Olds Aurora	100000	6	1895	OEM
Buick Regal	100000	6	1144	OEM
Pontiac Grand Prix	100000	6	1144	OEM
Jeep Grand Cherokee	100000	6	1298	OEM
Toyota -- All 2 wd models	100000	6	843	1st Auto Warranty
Mercury -- All 2wd Models	100000	6	1042	1st Auto Warranty
Oldsmobile -- All 2 wd Models	100000	6	1042	1st Auto Warranty
Chrysler -- All 2 wd Models	100000	6	1042	1st Auto Warranty
Saab -- All 2 wd Models	100000	6	1142	1st Auto Warranty
Any Chrysler Minivan	60000	7	1460	OEM
Any Chrysler Minivan	75000	7	2220	OEM
Toyota -- All 2 wd models	75000	7	793	1st Auto Warranty
Mercury -- All 2wd Models	75000	7	991	1st Auto Warranty
Oldsmobile -- All 2 wd Models	75000	7	991	1st Auto Warranty
Chrysler -- All 2 wd Models	75000	7	991	1st Auto Warranty
Saab -- All 2 wd Models	75000	7	1091	1st Auto Warranty
Any Chrysler Minivan	100000	7	3350	OEM
Chevrolet Cavalier	100000	7	1595	OEM
Olds Intrigue	100000	7	1895	OEM
Olds Aurora	100000	7	2295	OEM
Buick Regal	100000	7	1193	OEM
Pontiac Grand Prix	100000	7	1193	OEM
Jeep Grand Cherokee	100000	7	1346	OEM
Toyota Camry	100000	7	995	OEM
Ford 4x4	100000	7	799	Platinum Warranty Corp
Mazda Sedan	100000	7	699	Platinum Warranty Corp
Nissan Sedan	100000	7	699	Platinum Warranty Corp
Toyota -- All 2 wd models	100000	7	968	1st Auto Warranty
Mercury -- All 2wd Models	100000	7	1186	1st Auto Warranty
Oldsmobile -- All 2 wd Models	100000	7	1186	1st Auto Warranty
Chrysler -- All 2 wd Models	100000	7	1186	1st Auto Warranty
Saab -- All 2 wd Models	100000	7	1286	1st Auto Warranty
Nissan Sentra	100000	7	1049	Eetna Automotive Service Contract
Chevy Blazer 2x	100000	7	1149	Eetna Automotive Service Contract
Plymouth Voyager	100000	7	1320	Eetna Automotive Service Contract
Oldsmobile Aurora	100000	7	1760	Eetna Automotive Service Contract
Acura 1.6 EL	100000	7	769	1st Source Auto Warranty
Ford F350 Pickup	100000	7	1071	1st Source Auto Warranty



## ECONOMIC IMPACT MODELING

### Introduction

The survey data and economic/industry data collected were used to develop predictive models of the consumer and industry impact of the mandated warranty.

### Revenue Transfer Projections – Repair and Maintenance

The model developed from the collected data indicates the following impact on revenue in the California vehicle aftermarket from 2003 through 2008:

- Revenue from sales of repair and maintenance services and parts by non-automotive dealers in the year 2003 will decline by over \$21 million by virtue of transfer to automotive dealers.
- This phenomenon will increase over time to nearly \$147 million in 2008, and will cumulatively account for nearly \$490 million over the period.

The model projects the costs associated with maintaining a vehicle, and takes account of consumer behavior such as places chosen for particular types of repair and maintenance tasks and typical prices charged. The consumer survey measured both current behavior and projected behavior under warranty conditions. The model is applied only to SULEV vehicles, rather than to all passenger cars and light trucks in the state of California.

The basic model is as follows:

<u>Task</u>
Number of Vehicles
* Annual Rate of Repair & Maintenance Tasks
* <u>Cost of Repair &amp; Maintenance Tasks</u>
= Total Spending
* <u>Non-Dealer (or Dealer) Market Share</u>
= Non-Dealer (or Dealer) Revenue
* <u>Shift in Market Share with Warranty</u>
= Revised Non-Dealer (or Dealer) Revenue

# REVENUE SHIFT MODEL -- REPAIR/MAINTENANCE

	2003	2004	2005	2006	2007	2008
<b>New Vehicle Registrations</b>	1,973,543	2,013,014	2,053,275	2,094,340	2,136,227	2,178,951
<b>SULEV Percent</b>	0.06	0.06	0.06	0.06	0.06	0.06
<b>New SULEV's</b>	118,413	120,781	123,196	125,660	128,174	130,737
<b>Cumulative</b>		239,193	362,390	488,050	616,224	746,961
<b>Average Price</b>						
Oil Change	\$30	\$31	\$32	\$32	\$33	\$34
Regular Engine Tune Up	\$91	\$93	\$95	\$97	\$98	\$100
Tire Balance/Rotate	\$36	\$36	\$37	\$38	\$38	\$39
Exhaust System Repair	\$306	\$312	\$318	\$324	\$331	\$338
Brake Repair	\$340	\$347	\$354	\$361	\$368	\$376
Windshield Wiper/Fluid Replacement	\$38	\$39	\$40	\$41	\$41	\$42
A/C System Repair	\$379	\$386	\$394	\$402	\$410	\$418
Radiator/Cooling System Repair	\$432	\$441	\$450	\$459	\$468	\$477
Frame Alignment	\$241	\$245	\$250	\$255	\$261	\$266
Electrical Repair	\$235	\$240	\$245	\$250	\$255	\$260
Engine Repair	\$977	\$997	\$1,016	\$1,037	\$1,058	\$1,079
Emissions System Repair	\$284	\$289	\$295	\$301	\$307	\$313
Transmission Repair	\$1,110	\$1,132	\$1,155	\$1,178	\$1,201	\$1,225
<b>Number of Annual Occasions</b>						
Oil Change	3.75	3.75	3.75	3.75	3.75	3.75
Regular Engine Tune Up	0.47	0.47	0.47	0.47	0.47	0.47
Tire Balance/Rotate	0.61	0.61	0.61	0.61	0.61	0.61
Exhaust System Repair	0.09	0.09	0.09	0.09	0.09	0.09
Brake Repair	0.38	0.38	0.38	0.38	0.38	0.38
Windshield Wiper/Fluid Replacement	0.57	0.57	0.57	0.57	0.57	0.57
A/C System Repair	0.15	0.15	0.15	0.15	0.15	0.15
Radiator/Cooling System Repair	0.17	0.17	0.17	0.17	0.17	0.17
Frame Alignment	0.11	0.11	0.11	0.11	0.11	0.11
Electrical Repair	0.13	0.13	0.13	0.13	0.13	0.13
Engine Repair	0.15	0.15	0.15	0.15	0.15	0.15
Emissions System Repair	0.12	0.12	0.12	0.12	0.12	0.12
Transmission Repair	0.11	0.11	0.11	0.11	0.11	0.11
<b>Annual Revenue From Specified Occasions</b>						
Oil Change	\$13,506,994	\$27,829,810	\$43,006,811	\$59,078,016	\$76,085,172	\$94,071,826
Regular Engine Tune Up	\$5,063,234	\$10,432,286	\$16,121,539	\$22,145,993	\$28,521,298	\$35,263,778
Tire Balance/Rotate	\$2,567,634	\$5,290,354	\$8,175,450	\$11,230,533	\$14,463,536	\$17,882,738
Exhaust System Repair	\$3,258,525	\$6,713,866	\$10,375,275	\$14,252,410	\$18,355,340	\$22,694,571
Brake Repair	\$15,308,404	\$31,541,436	\$48,742,574	\$66,957,175	\$86,232,554	\$106,618,064
Windshield Wiper/Fluid Replacement	\$2,583,737	\$5,323,532	\$8,226,723	\$11,300,965	\$14,554,244	\$17,994,890
A/C System Repair	\$6,726,343	\$13,858,956	\$21,416,945	\$29,420,238	\$37,889,625	\$46,846,792
Radiator/Cooling System Repair	\$8,697,465	\$17,920,256	\$27,693,077	\$38,041,696	\$48,992,996	\$60,575,017
Frame Alignment	\$3,134,827	\$6,458,997	\$9,981,415	\$13,711,368	\$17,658,544	\$21,833,052
Electrical Repair	\$3,620,650	\$7,459,988	\$11,528,296	\$15,836,302	\$20,395,197	\$25,216,653
Engine Repair	\$17,353,864	\$35,755,901	\$55,255,400	\$75,903,778	\$97,754,671	\$120,864,028
Emissions System Repair	\$4,031,675	\$8,306,863	\$12,837,015	\$17,634,077	\$22,710,508	\$28,079,308
Transmission Repair	\$14,457,695	\$29,788,635	\$46,033,882	\$63,236,272	\$81,440,492	\$100,693,151

<b>Auto Dealer Share/Current</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>
Oil Change	23.6%	23.6%	23.6%	23.6%	23.6%	23.6%
Regular Engine Tune Up	34.9%	34.9%	34.9%	34.9%	34.9%	34.9%
Tire Balance/Rotate	22.3%	22.3%	22.3%	22.3%	22.3%	22.3%
Exhaust System Repair	27.6%	27.6%	27.6%	27.6%	27.6%	27.6%
Brake Repair	29.1%	29.1%	29.1%	29.1%	29.1%	29.1%
Windshield Wiper/Fluid Replacement	19.0%	19.0%	19.0%	19.0%	19.0%	19.0%
A/C System Repair	32.1%	32.1%	32.1%	32.1%	32.1%	32.1%
Radiator/Cooling System Repair	31.1%	31.1%	31.1%	31.1%	31.1%	31.1%
Frame Alignment	28.7%	28.7%	28.7%	28.7%	28.7%	28.7%
Electrical Repair	36.4%	36.4%	36.4%	36.4%	36.4%	36.4%
Engine Repair	36.7%	36.7%	36.7%	36.7%	36.7%	36.7%
Emissions System Repair	31.7%	31.7%	31.7%	31.7%	31.7%	31.7%
Transmission Repair	33.9%	33.9%	33.9%	33.9%	33.9%	33.9%
<b>Non-Auto Dealer Share/Current</b>						
Oil Change	76.4%	76.4%	76.4%	76.4%	76.4%	76.4%
Regular Engine Tune Up	65.1%	65.1%	65.1%	65.1%	65.1%	65.1%
Tire Balance/Rotate	77.7%	77.7%	77.7%	77.7%	77.7%	77.7%
Exhaust System Repair	72.4%	72.4%	72.4%	72.4%	72.4%	72.4%
Brake Repair	70.9%	70.9%	70.9%	70.9%	70.9%	70.9%
Windshield Wiper/Fluid Replacement	81.0%	81.0%	81.0%	81.0%	81.0%	81.0%
A/C System Repair	67.9%	67.9%	67.9%	67.9%	67.9%	67.9%
Radiator/Cooling System Repair	68.9%	68.9%	68.9%	68.9%	68.9%	68.9%
Frame Alignment	71.3%	71.3%	71.3%	71.3%	71.3%	71.3%
Electrical Repair	63.6%	63.6%	63.6%	63.6%	63.6%	63.6%
Engine Repair	63.3%	63.3%	63.3%	63.3%	63.3%	63.3%
Emissions System Repair	68.3%	68.3%	68.3%	68.3%	68.3%	68.3%
Transmission Repair	66.1%	66.1%	66.1%	66.1%	66.1%	66.1%
<b>Auto Dealer Revenue/Current</b>						
Oil Change	\$3,191,703	\$6,576,184	\$10,162,509	\$13,960,135	\$17,978,926	\$22,229,172
Regular Engine Tune Up	\$1,769,094	\$3,645,041	\$5,632,866	\$7,737,810	\$9,965,342	\$12,321,164
Tire Balance/Rotate	\$572,582	\$1,179,749	\$1,823,125	\$2,504,409	\$3,225,369	\$3,987,851
Exhaust System Repair	\$900,005	\$1,854,370	\$2,865,651	\$3,936,516	\$5,069,745	\$6,268,240
Brake Repair	\$4,457,807	\$9,184,866	\$14,193,837	\$19,497,929	\$25,110,920	\$31,047,180
Windshield Wiper/Fluid Replacement	\$490,135	\$1,009,874	\$1,560,609	\$2,143,793	\$2,760,940	\$3,413,631
A/C System Repair	\$2,156,465	\$4,443,181	\$6,866,273	\$9,432,128	\$12,147,414	\$15,019,081
Radiator/Cooling System Repair	\$2,701,433	\$5,566,032	\$8,601,470	\$11,815,751	\$15,217,225	\$18,814,600
Frame Alignment	\$900,949	\$1,856,316	\$2,868,659	\$3,940,647	\$5,075,066	\$6,274,819
Electrical Repair	\$1,317,193	\$2,713,944	\$4,193,994	\$5,761,247	\$7,419,772	\$9,173,818
Engine Repair	\$6,370,603	\$13,125,991	\$20,284,257	\$27,864,277	\$35,885,740	\$44,369,185
Emissions System Repair	\$1,279,251	\$2,635,768	\$4,073,185	\$5,595,293	\$7,206,044	\$8,909,564
Transmission Repair	\$4,899,713	\$10,095,368	\$15,600,883	\$21,430,773	\$27,600,183	\$34,124,909

Non-Auto Dealer Revenue/Current	2003	2004	2005	2006	2007	2008
Oil Change	\$10,315,291	\$21,253,626	\$32,844,301	\$45,117,881	\$58,106,246	\$71,842,654
Regular Engine Tune Up	\$3,294,140	\$6,787,246	\$10,488,673	\$14,408,183	\$18,555,957	\$22,942,614
Tire Balance/Rotate	\$1,995,052	\$4,110,605	\$6,352,325	\$8,726,124	\$11,238,167	\$13,894,888
Exhaust System Repair	\$2,358,521	\$4,859,496	\$7,509,624	\$10,315,894	\$13,285,595	\$16,426,330
Brake Repair	\$10,850,597	\$22,356,570	\$34,548,736	\$47,459,245	\$61,121,634	\$75,570,884
Windshield Wiper/Fluid Replacement	\$2,093,602	\$4,313,658	\$6,666,114	\$9,157,172	\$11,793,304	\$14,581,260
A/C System Repair	\$4,569,877	\$9,415,775	\$14,550,672	\$19,988,110	\$25,742,211	\$31,827,710
Radiator/Cooling System Repair	\$5,996,032	\$12,354,225	\$19,091,607	\$26,225,945	\$33,775,772	\$41,760,417
Frame Alignment	\$2,233,878	\$4,802,682	\$7,112,756	\$9,770,721	\$12,583,479	\$15,558,233
Electrical Repair	\$2,303,458	\$4,746,044	\$7,334,302	\$10,075,055	\$12,975,424	\$16,042,835
Engine Repair	\$10,983,261	\$22,629,910	\$34,971,143	\$48,039,501	\$61,868,931	\$76,494,843
Emissions System Repair	\$2,752,425	\$5,671,096	\$8,763,830	\$12,038,784	\$15,504,464	\$19,169,744
Transmission Repair	\$9,557,982	\$19,693,267	\$30,432,999	\$41,805,500	\$53,840,309	\$66,568,242

**Projected Auto Dealer Share Under Mandated Warranty**

Oil Change	31.8%	31.8%	31.8%	31.8%	31.8%	31.8%
Regular Engine Tune Up	50.8%	50.8%	50.8%	50.8%	50.8%	50.8%
Tire Balance/Rotate	31.7%	31.7%	31.7%	31.7%	31.7%	31.7%
Exhaust System Repair	56.2%	56.2%	56.2%	56.2%	56.2%	56.2%
Brake Repair	48.5%	48.5%	48.5%	48.5%	48.5%	48.5%
Windshield Wiper/Fluid Replacement	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%
A/C System Repair	59.6%	59.6%	59.6%	59.6%	59.6%	59.6%
Radiator/Cooling System Repair	56.1%	56.1%	56.1%	56.1%	56.1%	56.1%
Frame Alignment	53.6%	53.6%	53.6%	53.6%	53.6%	53.6%
Electrical Repair	61.9%	61.9%	61.9%	61.9%	61.9%	61.9%
Engine Repair	61.2%	61.2%	61.2%	61.2%	61.2%	61.2%
Emissions System Repair	62.6%	62.6%	62.6%	62.6%	62.6%	62.6%
Transmission Repair	58.4%	58.4%	58.4%	58.4%	58.4%	58.4%

**Projected Non-Auto Dealer Share Under Mandated Warranty**

Oil Change	68.2%	68.2%	68.2%	68.2%	68.2%	68.2%
Regular Engine Tune Up	49.2%	49.2%	49.2%	49.2%	49.2%	49.2%
Tire Balance/Rotate	68.3%	68.3%	68.3%	68.3%	68.3%	68.3%
Exhaust System Repair	43.8%	43.8%	43.8%	43.8%	43.8%	43.8%
Brake Repair	51.5%	51.5%	51.5%	51.5%	51.5%	51.5%
Windshield Wiper/Fluid Replacement	72.1%	72.1%	72.1%	72.1%	72.1%	72.1%
A/C System Repair	40.4%	40.4%	40.4%	40.4%	40.4%	40.4%
Radiator/Cooling System Repair	43.9%	43.9%	43.9%	43.9%	43.9%	43.9%
Frame Alignment	46.4%	46.4%	46.4%	46.4%	46.4%	46.4%
Electrical Repair	38.1%	38.1%	38.1%	38.1%	38.1%	38.1%
Engine Repair	38.8%	38.8%	38.8%	38.8%	38.8%	38.8%
Emissions System Repair	37.4%	37.4%	37.4%	37.4%	37.4%	37.4%
Transmission Repair	41.6%	41.6%	41.6%	41.6%	41.6%	41.6%

Projected Auto Dealer Revenue Under Mandated Warranty	2003	2004	2005	2006	2007	2008
Oil Change	\$4,299,276	\$8,858,229	\$13,689,068	\$18,804,532	\$24,217,910	\$29,943,062
Regular Engine Tune Up	\$2,573,642	\$5,302,731	\$8,194,578	\$11,256,808	\$14,497,376	\$17,924,578
Tire Balance/Rotate	\$813,170	\$1,675,455	\$2,589,165	\$3,556,710	\$4,580,602	\$5,663,463
Exhaust System Repair	\$1,830,314	\$3,771,178	\$5,827,792	\$8,005,579	\$10,310,194	\$12,747,540
Brake Repair	\$7,424,576	\$15,297,596	\$23,640,148	\$32,474,230	\$41,822,789	\$51,709,761
Windshield Wiper/Fluid Replacement	\$722,155	\$1,487,927	\$2,299,369	\$3,158,620	\$4,067,911	\$5,029,572
A/C System Repair	\$4,006,882	\$8,255,780	\$12,758,074	\$17,525,636	\$22,570,850	\$27,906,634
Radiator/Cooling System Repair	\$4,876,668	\$10,047,888	\$15,527,508	\$21,329,979	\$27,470,373	\$33,964,412
Frame Alignment	\$1,679,640	\$3,460,731	\$5,348,042	\$7,346,551	\$9,461,448	\$11,698,149
Electrical Repair	\$2,241,182	\$4,617,732	\$7,136,015	\$9,802,671	\$12,624,627	\$15,609,108
Engine Repair	\$10,625,771	\$21,893,338	\$33,832,881	\$46,475,883	\$59,855,185	\$74,005,044
Emissions System Repair	\$2,524,635	\$5,201,758	\$8,038,539	\$11,042,459	\$14,221,320	\$17,583,263
Transmission Repair	\$8,443,294	\$17,396,563	\$26,883,787	\$36,929,983	\$47,561,247	\$58,804,800
<b>Projected Non-Auto Dealer Revenue Under Mandated Warranty</b>						
Oil Change	\$9,207,718	\$18,971,582	\$29,317,743	\$40,273,484	\$51,867,262	\$64,128,764
Regular Engine Tune Up	\$2,489,592	\$5,129,555	\$7,926,961	\$10,889,185	\$14,023,922	\$17,339,200
Tire Balance/Rotate	\$1,754,464	\$3,614,899	\$5,586,285	\$7,673,823	\$9,882,934	\$12,219,275
Exhaust System Repair	\$1,428,212	\$2,942,687	\$4,547,483	\$6,246,831	\$8,045,145	\$9,947,030
Brake Repair	\$7,883,828	\$16,243,840	\$25,102,425	\$34,482,945	\$44,409,765	\$54,908,303
Windshield Wiper/Fluid Replacement	\$1,861,583	\$3,835,605	\$5,927,354	\$8,142,345	\$10,486,333	\$12,965,319
A/C System Repair	\$2,719,460	\$5,603,176	\$8,658,871	\$11,894,602	\$15,318,775	\$18,940,158
Radiator/Cooling System Repair	\$3,820,796	\$7,872,369	\$12,165,569	\$16,711,717	\$21,522,623	\$26,610,605
Frame Alignment	\$1,455,187	\$2,998,267	\$4,633,373	\$6,364,817	\$8,197,096	\$10,134,903
Electrical Repair	\$1,379,468	\$2,842,255	\$4,392,281	\$6,033,631	\$7,770,570	\$9,607,545
Engine Repair	\$6,728,093	\$13,862,563	\$21,422,519	\$29,427,895	\$37,899,486	\$46,858,983
Emissions System Repair	\$1,507,040	\$3,105,106	\$4,798,476	\$6,591,618	\$8,489,188	\$10,496,045
Transmission Repair	\$6,014,401	\$12,392,072	\$19,150,095	\$26,306,289	\$33,879,245	\$41,888,351
<b>Revenue Shift From Non-Auto Dealer</b>						
Oil Change	-\$1,107,573	-\$2,282,044	-\$3,526,558	-\$4,844,397	-\$6,238,984	-\$7,713,890
Regular Engine Tune Up	-\$804,548	-\$1,657,690	-\$2,561,713	-\$3,518,998	-\$4,532,034	-\$5,603,414
Tire Balance/Rotate	-\$240,587	-\$495,706	-\$766,040	-\$1,052,301	-\$1,355,233	-\$1,675,613
Exhaust System Repair	-\$930,309	-\$1,916,809	-\$2,962,141	-\$4,069,063	-\$5,240,449	-\$6,479,300
Brake Repair	-\$2,966,769	-\$6,112,730	-\$9,446,311	-\$12,976,300	-\$16,711,869	-\$20,662,581
Windshield Wiper/Fluid Replacement	-\$232,020	-\$478,053	-\$738,760	-\$1,014,827	-\$1,306,971	-\$1,615,941
A/C System Repair	-\$1,850,417	-\$3,812,599	-\$5,891,802	-\$8,093,507	-\$10,423,436	-\$12,887,552
Radiator/Cooling System Repair	-\$2,175,236	-\$4,481,856	-\$6,926,039	-\$9,514,228	-\$12,253,148	-\$15,149,812
Frame Alignment	-\$778,691	-\$1,604,415	-\$2,479,383	-\$3,405,904	-\$4,386,382	-\$5,423,330
Electrical Repair	-\$923,990	-\$1,903,789	-\$2,942,021	-\$4,041,424	-\$5,204,854	-\$6,435,290
Engine Repair	-\$4,255,167	-\$8,767,347	-\$13,548,624	-\$18,611,606	-\$23,969,445	-\$29,635,860
Emissions System Repair	-\$1,245,384	-\$2,565,990	-\$3,965,354	-\$5,447,166	-\$7,015,276	-\$8,673,698
Transmission Repair	-\$3,543,581	-\$7,301,194	-\$11,282,904	-\$15,499,210	-\$19,961,065	-\$24,679,891
<b>Cumulative Revenue Shift From Non-Auto Dealer</b>						
Total Per Year	2003	2004	2005	2006	2007	2008
	-\$21,054,273	-\$43,380,223	-\$67,037,650	-\$92,088,933	-\$118,599,148	-\$146,636,172
Cumulative	2003	2004	2005	2006	2007	2008
Year	-\$21,054,273	-\$64,434,496	-\$131,472,146	-\$223,561,079	-\$342,160,227	-\$488,796,398

## Drag Along Repair Revenue Transfer

The revenue transfer model predicts activity for primary repair and maintenance tasks. However, an important revenue source for automotive repair vendors (both automotive dealers and non-dealers) is "drag-along repairs." This repair activity can be defined as additional repair and/or maintenance tasks, over and above the primary reason for visiting a vendor, that are identified by technicians and are sold to consumers as an add-on sale.

Previous research into this area shows that drag along incidence and sales volume is virtually impossible to quantify. An study conducted in 1988 by the Coalition for Auto Repair Choice identified drag along repairs as all repairs related to, but not directly under the emissions repair umbrella, such as ignition and fuel system repairs. This approach tends to overstate the size of the drag along market.

Another, more conservative approach is to define drag along sales as a percentage of common repair and maintenance expenditures. The model assumes that drag along repair work:

- Will account for approximately \$0.5 million to \$1.8 million in 2003 and \$3.2 million to \$9.7 million in 2008.
- Cumulatively, drag along repairs will account for approximately \$32.3 million over the period.

The model takes into account the percentages of consumers who will (or will not) authorize drag along repairs and the vendors they will choose to complete the authorized tasks. The data are weighted such that those who said that they would authorize all repairs will do so for 100% of the items needed, while those who indicated that they would authorize some of the repairs will do so for 50% of the items needed. When responses for the total sample are weighted, the estimate of the percent of authorized drag along repairs is 50%.

The table on the next page shows the model calculations and results.

# REVENUE SHIFT MODEL -- DRAG ALONG REPAIR

	2003	2004	2005	2006	2007	2008
New Vehicle Registrations	1,973,543	2,013,014	2,053,275	2,094,340	2,136,227	2,178,951
SULEV Percent	0.06	0.06	0.06	0.06	0.06	0.06
New SULEV's	118,413	120,781	123,196	125,660	128,174	130,737
Cumulative		239,193	362,390	488,050	616,224	746,961
<b>Post-Warranty Revenue Shift (Loss by Non-Dealers)</b>						
Total By Year	-\$21,054,273	-\$43,380,223	-\$67,037,650	-\$92,088,933	-\$118,599,148	-\$146,636,172
Cumulative	-\$21,054,273	-\$64,434,496	-\$131,472,146	-\$223,561,079	-\$342,160,227	-\$488,796,398
<b>Drag Along Repair Value Potential</b>						
By Year						
Estimated @ 10%	-\$2,105,427	-\$4,338,022	-\$6,703,765	-\$9,208,893	-\$11,859,915	-\$14,663,617
Estimated @ 20%	-\$4,210,855	-\$8,676,045	-\$13,407,530	-\$18,417,787	-\$23,719,830	-\$29,327,234
Estimated @ 30%	-\$6,316,282	-\$13,014,067	-\$20,111,295	-\$27,626,680	-\$35,579,744	-\$43,990,852
<b>Drag Along Behavior</b>						
% Authorize All Repairs	36%	36%	36%	36%	36%	36%
% Authorize Some Repairs	28%	28%	28%	28%	28%	28%
Weighted % Repairs Authorized	50%	50%	50%	50%	50%	50%
<b>Claimed Authorized Drag Along Expenditures</b>						
Estimated @ 10%	-\$1,052,714	-\$2,169,011	-\$3,351,882	-\$4,604,447	-\$5,929,957	-\$7,331,809
Estimated @ 20%	-\$2,105,427	-\$4,338,022	-\$6,703,765	-\$9,208,893	-\$11,859,915	-\$14,663,617
Estimated @ 30%	-\$3,158,141	-\$6,507,033	-\$10,055,647	-\$13,813,340	-\$17,789,872	-\$21,995,426
<b>Shift to Dealer for Drag Along Repairs</b>						
% Authorize Drag Along @ Dealer	44%	44%	44%	44%	44%	44%
<b>Drag Along Revenue Shift to Dealers by Year</b>						
Estimated @ 10%	-\$463,194	-\$954,365	-\$1,474,828	-\$2,025,957	-\$2,609,181	-\$3,225,996
Estimated @ 20%	-\$926,388	-\$1,908,730	-\$2,949,657	-\$4,051,913	-\$5,218,363	-\$6,451,992
Estimated @ 30%	-\$1,389,582	-\$2,863,095	-\$4,424,485	-\$6,077,870	-\$7,827,544	-\$9,677,987
<b>Drag Along Revenue Shift to Dealers -- Cumulative</b>						
Estimated @ 10%	-\$463,194	-\$1,417,559	-\$2,892,387	-\$4,918,344	-\$7,527,525	-\$10,753,521
Estimated @ 20%	-\$926,388	-\$2,835,118	-\$5,784,774	-\$9,836,687	-\$15,055,050	-\$21,507,042
Estimated @ 30%	-\$1,389,582	-\$4,252,677	-\$8,677,162	-\$14,755,031	-\$22,582,575	-\$32,260,562
	2003	2004	2005	2006	2007	2008

### Increased Cost of Warranty

Projections of the 15 year/150,000 mile warranty cost were developed based on the findings of the research. Two models were developed. The first is based on the average costs per mile and years, while the second is based on a regression model which predicts the cost per mile under the warranty. The regression model revealed that using years as an independent variable was less reliable than desired, so the mileage was the key factor used in this projection. The chart below shows the results. The models project that the extended warranty will cost consumers an additional \$2200 to \$3200 per vehicle over and above the initial cost of the vehicle.

Years	Miles	Projected Cost Using:		
		Miles Avg	Years Avg	Regression (miles)
	Factor	\$0.01438	\$213.24	[\$465+(miles * 0.0124)]
10	100000	\$1,438	\$2,132	\$1,699
11	110000	\$1,582	\$2,346	\$1,822
12	120000	\$1,726	\$2,559	\$1,946
13	130000	\$1,870	\$2,772	\$2,069
14	140000	\$2,014	\$2,985	\$2,193
15	150000	\$2,157	\$3,199	\$2,316

The results of this model were factored into the Consumer Cost Increase Model (next subsection).

### Projection of Cost Increase to Consumers

Consumers will be required to spend more on personal vehicles with the mandated warranty. The increased cost is due to the following factors:

- Increased price of new vehicle based on manufacturers' cost of issuing the 15 year/150,000 mile warranty
- Increased cost of repair and maintenance.

The model predicts that:

- Consumers will pay a total of \$2,455 more for a new vehicle under the mandated warranty during the first year.
- For SULEV vehicle purchases only, this will require a total of just under \$291 million in 2003.
- Cumulatively, this will account for an increase of over \$1.8 billion through 2008.



## IMPACT ON CONSUMER SPENDING

<b>Vehicle Cost w/o Warranty</b>		<b>Vehicle Cost w/ Warranty</b>		<b>Difference in Consumer Spending</b>	<b>\$2,455</b>
Example: \$15,000 Vehicle		Example: \$15,000 Vehicle		<b>Percentage Difference</b>	<b>15.75%</b>
Regular Price	\$15,000	Regular Price	\$15,000		
Warranty	\$0	Warranty	\$2,316		
Increase		Increase			
Maintenance	\$585	Maintenance	\$724		
Spending w/o Warranty		Spending w/ Warranty			
<b>Cost of Vehicle</b>	<b>\$15,585</b>	<b>Cost of Vehicle</b>	<b>\$18,040</b>		

<b>Cumulative Consumer Costs</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>
<b>New Vehicle Registrations</b>	1,973,543	2,013,014	2,053,275	2,094,340	2,136,227	2,178,951
SULEV Percent	0.06	0.06	0.06	0.06	0.06	0.06
New SULEV's	118,413	120,781	123,196	125,660	128,174	130,737
Cumulative		239,193	362,390	488,050	616,224	746,961
Increased Spending by Year	\$290,668,660	\$296,482,033	\$302,411,673	\$308,459,907	\$314,629,105	\$320,921,687
Cumulative Spending Increase	\$290,668,660	\$587,150,692	\$889,562,366	\$1,198,022,272	\$1,512,651,377	\$1,833,573,064

## Impact on Automotive Aftermarket

The changes in the automotive aftermarket that will occur will obviously impact the non-automotive dealer segment of the industry. A model was developed to predict the degree to which revenue loss (transfer) will affect vendors and technicians.

The model shows that:

- An equivalent of 31 independent repair shops will close and 100 jobs will be lost as a result of the mandated warranty in 2003.
- In 2008, this will increase to 201 shop closures and 718 jobs lost.
- Over the period, the cumulative job loss will be 2,470 and the shop closures will be approximately 691.

The model also shows a clear impact on non-dealer parts manufacturers. Assuming that parts account for approximately 49% of the average repair ticket, and that repair shops mark up the parts 2x for resale, the model shows that:

- Parts Dealers will lose approximately \$5.4 million in 2003, increasing to \$41 million in 2008.
- The cumulative loss over the period will be approximately \$133.5 million.

## **IMPACT ON AUTOMOTIVE AFTERMARKET**

	2003	2004	2005	2006	2007	2008
<b>New Vehicle Registrations</b>	1,973,543	2,013,014	2,053,275	2,094,340	2,136,227	2,178,951
SULEV Percent	0.06	0.06	0.06	0.06	0.06	0.06
New SULEV's	118,413	120,781	123,196	125,660	128,174	130,737
Cumulative	118,413	239,193	362,390	488,050	616,224	746,961
Projected SULEV Revenue -- Non-Dealer	\$69,304,115	\$142,794,198	\$220,667,084	\$303,128,115	\$390,391,493	\$482,680,652
Projected SULEV Revenue w/ Warranty	\$48,249,842	\$99,413,974	\$153,629,434	\$211,039,182	\$271,792,345	\$336,044,480
Projected SULEV Transfer Volume	-\$21,054,273	-\$43,380,223	-\$67,037,650	-\$92,088,933	-\$118,599,148	-\$146,636,172
Projected Drag Along Revenue Loss (20%)	-\$926,388	-\$2,835,118	-\$5,784,774	-\$9,836,687	-\$15,055,050	-\$21,507,042
Non-Automotive Dealer Shops	20,555	20,524	20,430	20,240	19,917	19,427

	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>
Non-Automotive Dealer Technician Jobs	73,481	73,372	73,036	72,354	71,199	69,448
Estimated Total Revenue	\$21,315,748,864	\$21,742,063,841	\$22,176,905,118	\$22,620,443,220	\$23,072,852,084	\$23,534,309,126
Estimated Non-Dealer Revenue	\$14,726,883,477	\$15,021,421,147	\$15,321,849,570	\$15,628,286,561	\$15,940,852,292	\$16,259,669,338
Total Revenue Per Non-Dealer Shop	\$716,462	\$731,884	\$749,950	\$772,165	\$800,379	\$836,974
Total Per Non-Dealer Job	\$200,417	\$204,731	\$209,784	\$215,999	\$223,891	\$234,128
Total Projected Job Loss from SULEV	110	226	347	472	597	718
Shop Loss/Closure from SULEV	31	63	97	132	167	201
Cumulative Job Loss	110	335	683	1,154	1,751	2,470
Cumulative Shop Closures	31	94	191	323	490	691
Cumulative Revenue Loss	\$21,980,661	\$68,196,002	\$141,018,426	\$242,944,046	\$376,598,244	\$544,741,457
Non-Automotive Dealer Parts Sales Loss	\$10,770,523.71	\$22,645,517.16	\$35,682,987.76	\$49,943,554.12	\$65,490,556.95	\$82,390,174.47
Annual Parts Distributor Sales Loss	\$5,385,262	\$11,322,759	\$17,841,494	\$24,971,777	\$32,745,278	\$41,195,087
Cumulative Parts Dealer Sales Loss	\$5,385,262	\$16,708,020	\$34,549,514	\$59,521,291	\$92,266,570	\$133,461,657

## METHODOLOGY

### Qualitative Phase

For the Qualitative Phase of the research a total of 100 in-person, One-on-One interviews were conducted. A total of 25 interviews were completed in four (4) shopping malls. These shopping malls were selected to represent a fairly wide range of consumers and were located in the following markets:

- Los Angeles
- San Francisco
- San Diego
- Sacramento

To qualify, respondents were required to be aged 18 or over and be responsible for the maintenance of a personal vehicle. Each person was intercepted while shopping at the mall and screened for qualification. Once qualified, he or she was asked to participate in the interview. If the respondent agreed, he/she was taken to an interviewing area where a professional interview administered the questionnaire.

The interview consisted of the following components, listed in order of presentation:

- Vehicle Ownership Information
- Current Vehicle Maintenance Behavior
- Presentation of the 15 year, 15,000 Mile Warranty Concept
- Reaction to the Warranty
- Predicted Vehicle Maintenance Behavior Under the Warranty

Each Respondent was paid \$2.00 for participating in the interview.

Once the interviews were collected, they were shipped to a central location for processing. All interviews were coded, keypunched, and checked for accuracy in keypunching. The analysis was conducted on the clean, processed data.

### Telephone Study (Quantitative Phase)

To obtain a representative sample of qualified consumers in the state of California, a telephone study of 602 respondents was conducted. Quotas were established by county based on household population in each county.

To qualify, respondents were required to be aged 18 or over and be responsible for the maintenance of a personal vehicle. Unlike the mall intercept study, respondents in the telephone study were disqualified if their primary personal vehicle was *leased*.

The questionnaire construction and flow was essentially the same as in the mall intercept study, although some of the wording changed and some questions were added or deleted.

As with the qualitative interviews, all telephone interviews were keypunched and checked for accuracy before processing.

As indicated, a total of 602 respondents participated in the study, and the sample was based on quotas established for each county in the state. This means that percentage of interviews completed in each county was proportionately equal to the number of households in that county relative to the total in the state. Therefore, the study results can be projected to the entire state with confidence.

While the results are reliable, there is nonetheless potential for sampling error. Fortunately, we can estimate the range of potential sampling error for this study. At the 95% level of confidence, the range of potential sampling error is +/- 3.99 percentage points. Another way to look at this is that the study could be replicated 20 times and that on 19 of those twenty occasions a particular response would not vary by more than +/- 3.99 percentage points from the response obtained in the current study.

Where applicable, tests of significance were performed on the data. These tests are performed to determine if the difference between the answers for two groups of respondents are statistically significant or if the difference is simply due to sampling error. All tests were performed at the 95% level of confidence. Significant differences between specific test results are indicated by showing the letter representing the columns which contain the significantly lower number under the *higher* of the two compared percentages or means.

In the example below, the mean score for Group 1 (Column B) is significantly higher than the score for Group 2 (C). Thus, the letter C is shown as a subscript in the B Column.

	<u>GROUP 1</u>	<u>GROUP 2</u>
	(B)	(C)
RATING	8.95	8.40
	C	

Detailed data tables have been provided under separate cover.

### Secondary/Market Research

Descriptions of data collected and steps taken for the other components of this project can be found in the Industry and Economic Research section of this report. In all cases, much effort and focus was placed on obtaining the most recent and accurate data available, from objective, third party sources.