

Automotive Refrigeration Products Market

Product Review Usage: Only. Performance Interim Consumer Buying Behaviors of R-134a Refrigerant for Light Vehicle Applications



September, 2006

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Background and Summary Findings

- To explore how DIYers complete an R-134a recharge we asked product users a set of detailed questions examining all aspects of the recharge process.
- One of the most important objectives of this research was to categorize product users to allow for overall estimates of can heel among do-it-yourselfers.
- Can heel measurements from the ‘*EPA Small Can Test*’ (June 2006, Universal Technical Institute, Avondale, Arizona) revealed that:
 - A) Agitating or periodically tipping the can during the recharge; or B) inverting the can during the recharge or inverting the can when the recharge seems to be complete; (or any such combination) results in can heel of less than 1.7 percent of the original liquid volume.
- In the present study, 3 categories of product users were defined:
 - Improper:** User held can in an upright position during the entire recharge (i.e., no agitation, no tipping or inverting upon completion).
 - Proper:** User agitated or periodically tipped can; or inverted can during the recharge or when the recharge seemed to be complete. Estimated can heel – less than 1.7 percent.
 - Don’t Recall:** Many respondents could not remember sufficient details concerning how they performed the recharge process to allow for accurate categorization.

Background and Summary Findings

- Although 90 percent of respondents from California indicated that they follow the instructions for recharging their vehicle, a very large proportion of respondents had difficulty reporting specific details.
 - About one-third of respondents (36%) failed to recall at least one aspect of the recharge process.
- It is well-known in consumer research and other forms of social science research that memory for specific details of relatively mundane events is particularly poor.
- We would argue, therefore, that while almost all the respondents did read and follow the product instructions many simply failed to remember all the specific details of what they did.
- Nonetheless, we advocate that the present data provide:
 - A reasonable measure of current product usage;
 - A reasonable basis for estimating the potential for improved product usage (i.e., reduced overall can heel) that may be accomplished by including more detailed product instructions on the packaging, posting detailed instructions on DIYer websites, providing educational materials to automotive retail service personnel or presenting these materials as part of the product displays at the point of sale or on the manufacturers' websites.

Background and Summary Findings

Take Home Message...

- The vast majority of respondents report following product instructions and three-quarters of the total sample were categorized as ‘Proper’ users.
 - Among respondents who could be categorized, the proportion increases to 90 percent.
- Although only a small proportion of respondents were categorized as ‘Improper’ users, there is, however, an enormous potential for improvement in product use.

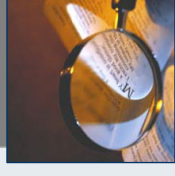
- Examining the pattern of results among respondents who provided sufficient information to allow categorization, about 1 in 10 respondents from California were classified as ‘Improper’ users (12%) and about 9 in 10 respondents were classified as ‘Proper’ users (88%).
- The pattern of results among respondents from the ‘National’ sample who provided sufficient information for categorization generally mirror those emerging from the Californian sample -- 9 percent ‘Improper’ users and 91 percent ‘Proper’ users.

Yet...there is room for improvement.

	Total	Sub-Samples	
		California	National
Base: All Respondents	1000	256	415
	(%)	(%)	(%)
Improper	8	9	8
Proper	75	71	78
Don't Recall	17	20	15

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Methodology

- Frost & Sullivan completed a brief survey to explore R-134a product usage.
- Eligibility was based on the following criteria:
 - U.S. residency;
 - Must own and be a decision-maker for the maintenance and repair of a light passenger vehicle (model years 1995-2005);
 - Must have personally performed refrigerant “recharge” on personal vehicle in the 12 months.
- The survey involved:
 - 400 end-users from California;
 - 600 end-users from a ‘National’ sample that included 150 respondents from each major geographic region (i.e., Northeast, South, Midwest and West) and excluded respondents from California.
 - Thus, the survey involved a total sample of 1,000 end-users.
- The sample was panel-based using equal-opportunity recruitment on the basis of the eligibility criteria detailed above.

The Online Panel

- The online panel used for this survey was systematically constructed to mirror the composition of the general US population.
- This online panel includes about 5 million individuals with an equal mix of males and females (57% married/common-law, 70% employed).
- Invitations to participate in this survey were sent in batches that were structured proportional to the composition of the online panel.
- That is to say, we let the composition of the online panel, which was designed to mirror the U.S. population overall, guide the recruitment process.
- No attempt was made to over-represent individuals from low-incomes or other minority groups.
- In this manner, each member of the panel who has completed an R-134a recharge should have had an equal opportunity to be recruited.
- However, the observed composition of the present survey is therefore driven not only by the composition of R-134a product users but also survey completion rates in response to our invitation...which would also be true of a CATI survey or postage mail survey.

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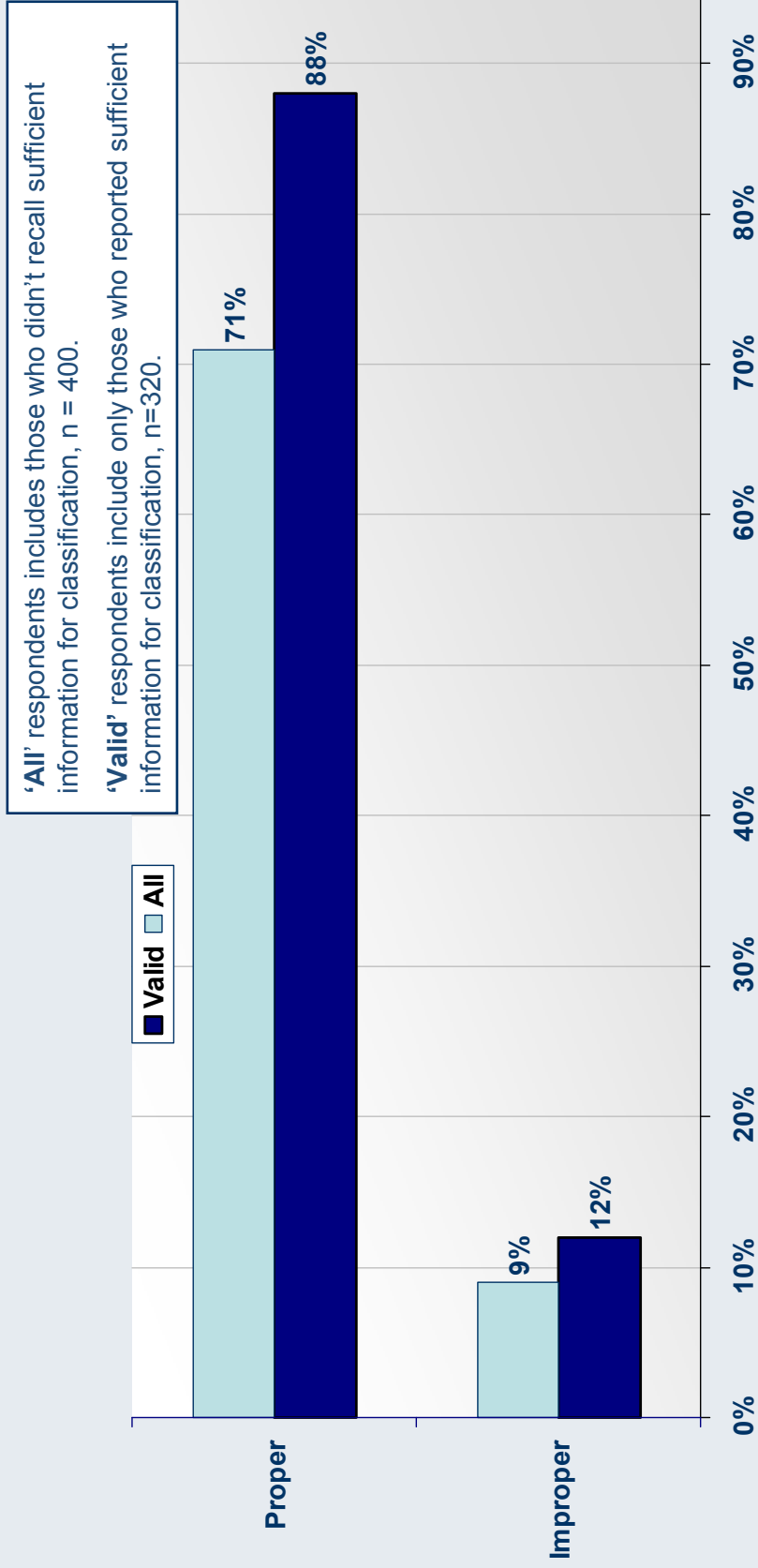
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R-134a Usage: Summary Findings

On the basis of the pattern of results among ‘Valid’ respondents the vast majority are categorized as ‘Proper’ users (88%). Nonetheless, there is potential for substantial improvement as about 1 in 10 respondents (12%) report ‘Improper’ usage techniques.

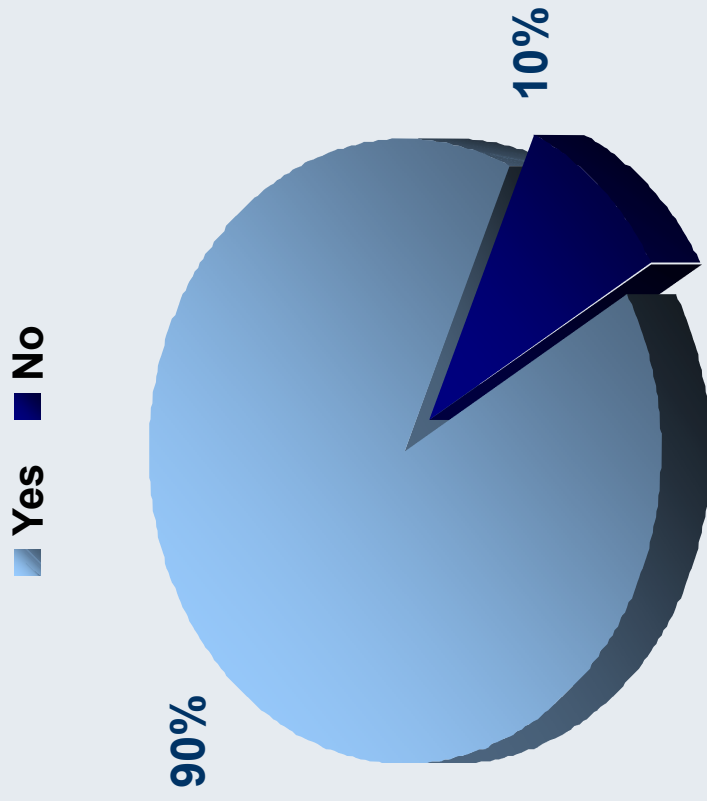
Improper User: Held can in an upright position during the entire recharge (i.e., no agitation, no tipping or inverting upon completion).

Proper User: Agitated or periodically tipped can; or inverted can during the recharge or when the recharge seemed to be complete. Estimated can heel – less than 1.7 percent.



Use of Product Instructions

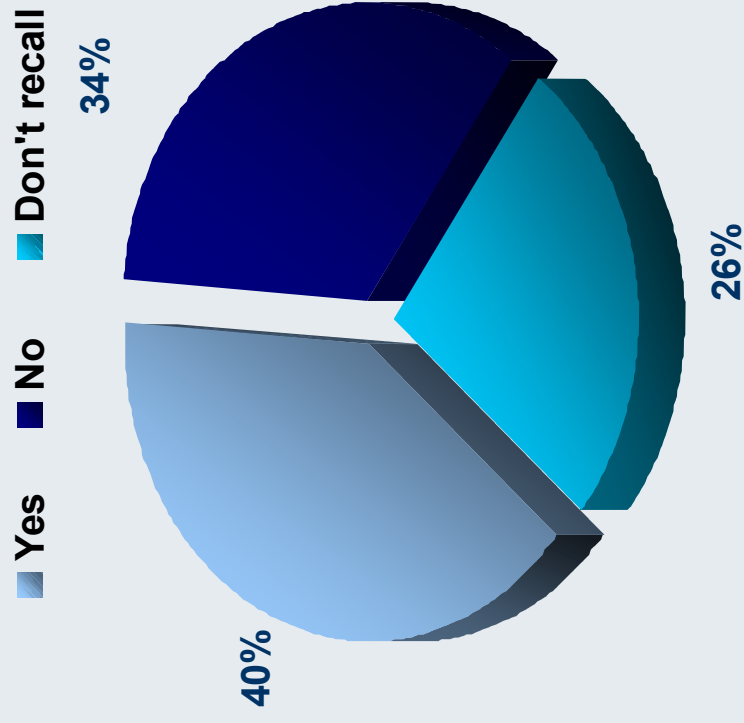
The vast majority of respondents (90%) report following product instructions.



Q21. Do you follow the instructions provided with R-134a products when you recharge your vehicle's air conditioning system? CA respondents n=400.

Recharge Process: Can Agitation

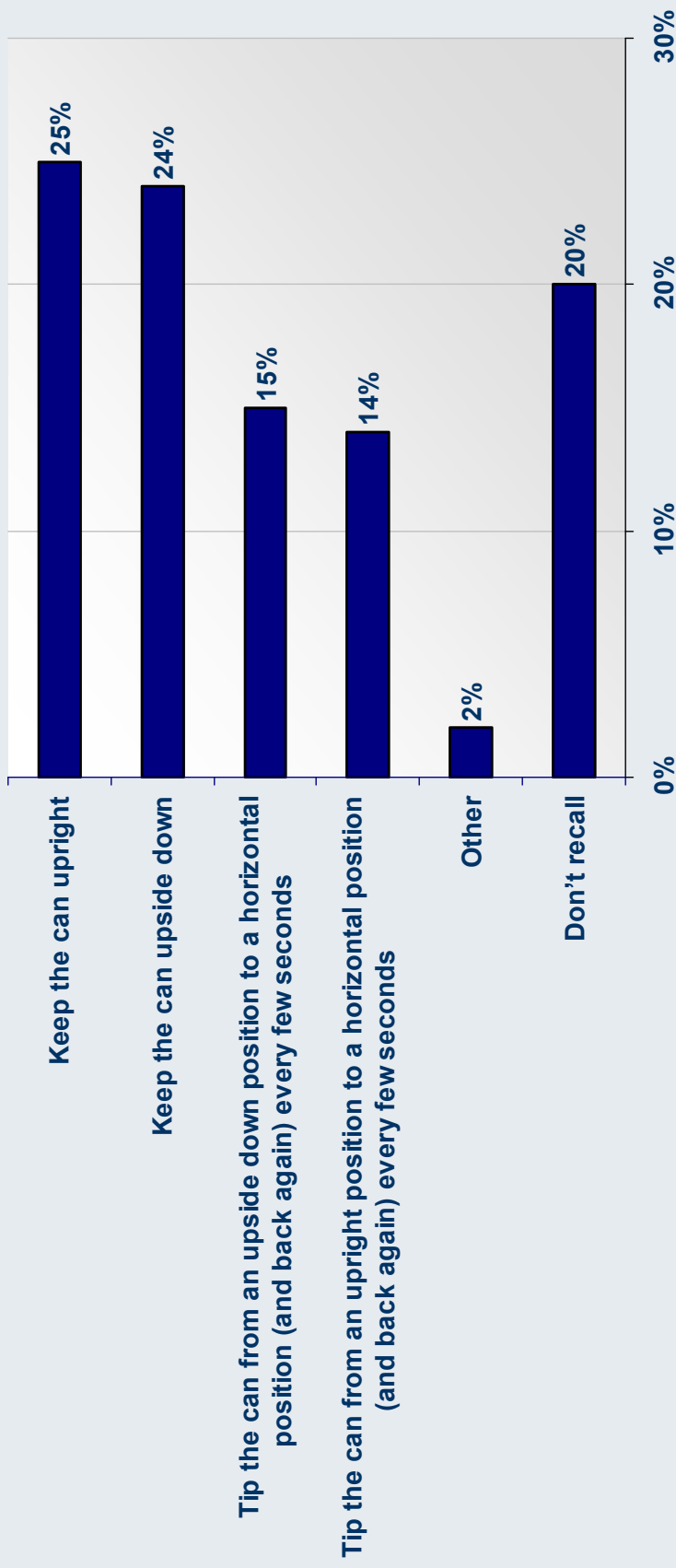
Forty percent of respondents report that they agitated or mixed the can during the recharge.



Q22a. Do you agitate, shake or mix the can of R-134a during the recharge? CA respondents n=400.

Recharge Process: Can Positioning

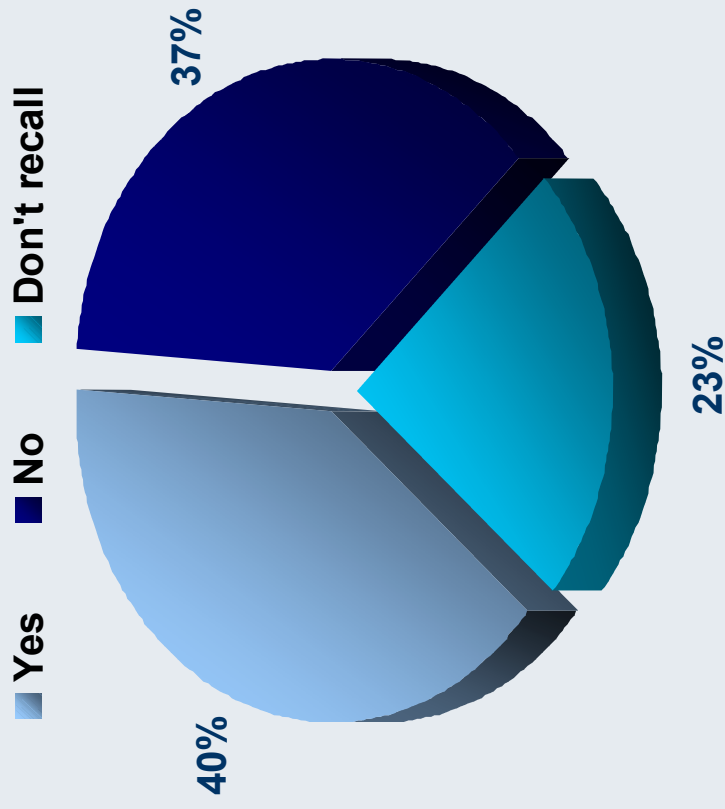
About 3 in 10 respondents (29%) reported tipping the can to and from a horizontal position every few seconds during the recharge.



Q22b. Which description best captures how you position the can of R-134a during the recharge? I try to... CA respondents n=400.

Recharge Process: Tip Can Upside Down Upon Completion

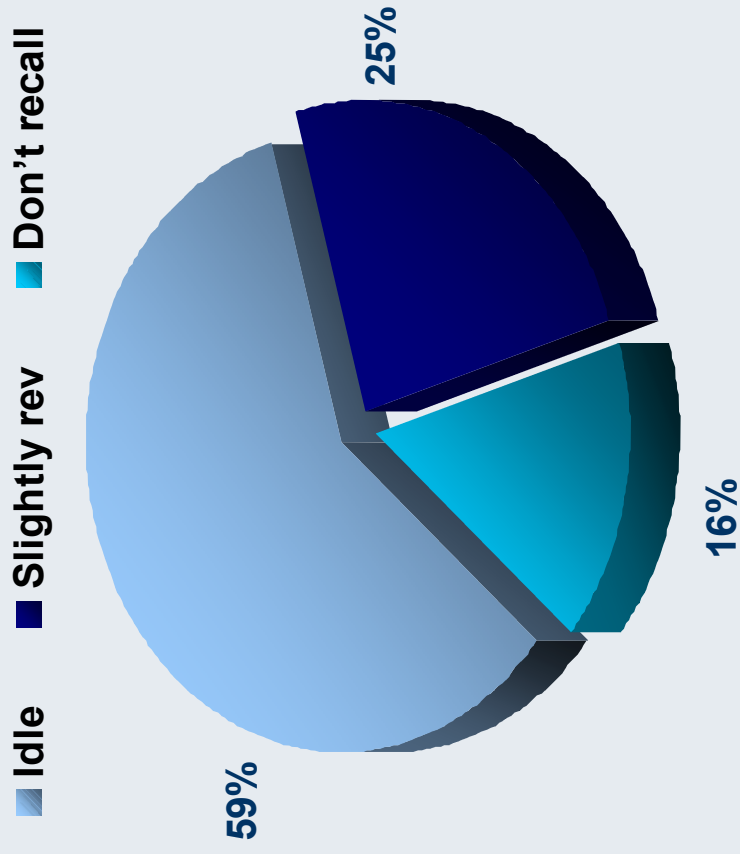
Four in 10 respondents reported inverting the can when they think the can is empty.



Q22c. As you finish the recharge, do you tip the can of R-134a upside down when you think the can is empty?
CA respondents n=400.

Recharge Process: Idle or Rev Engine

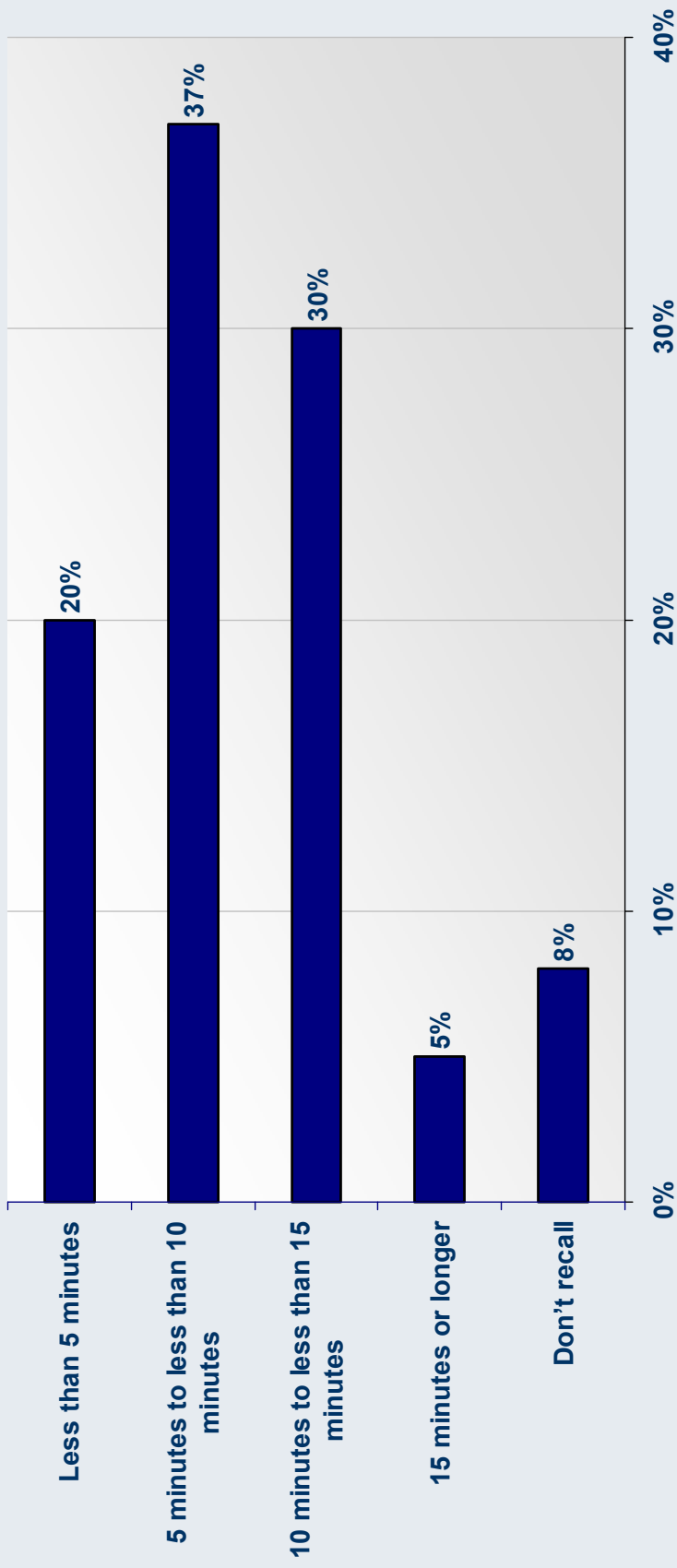
One-quarter of respondents reported that they slightly revved their engine during the recharge process.



Q22d. During the recharge process, do you let the engine idle or slightly rev the engine? CA respondents n=400.

Recharge Process: Duration

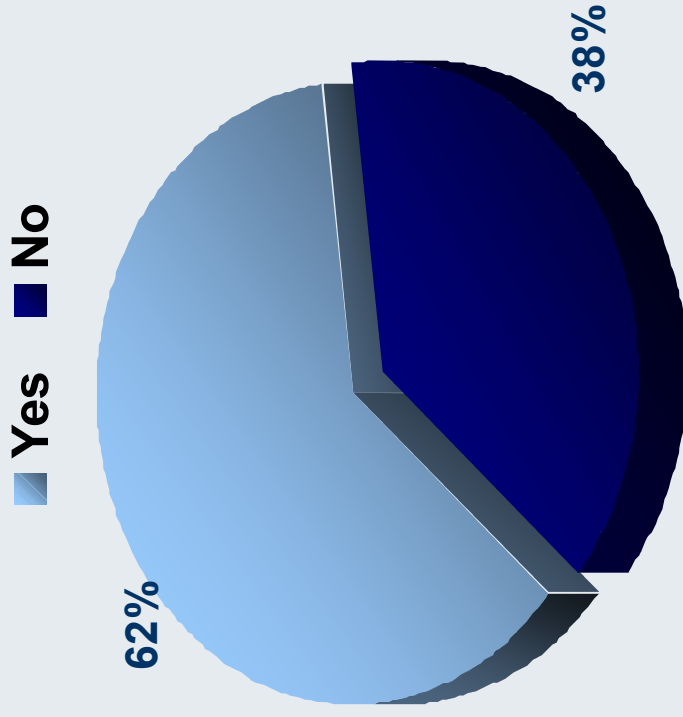
Over half the respondents (57%) reported that the entire recharge process took less than 10 minutes.



Q23. On the most recent occasion that you recharged your vehicle's air conditioning system, approximately how long did it take you to add the can of R-134a? CA respondents n=400.

Recharge Process: Use of Full Can

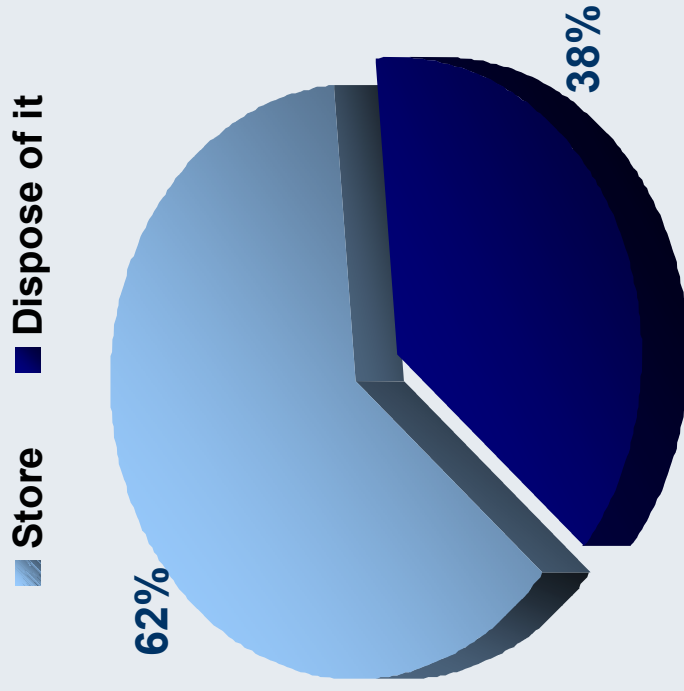
About 6 in 10 respondents (62%) reported that they would generally use the full can of R-134a.



Q24. Generally speaking, if you recharge your vehicle's air conditioning system starting with a full can of R-134a, would you empty the can? CA respondents n=400.

Partial Can Storage

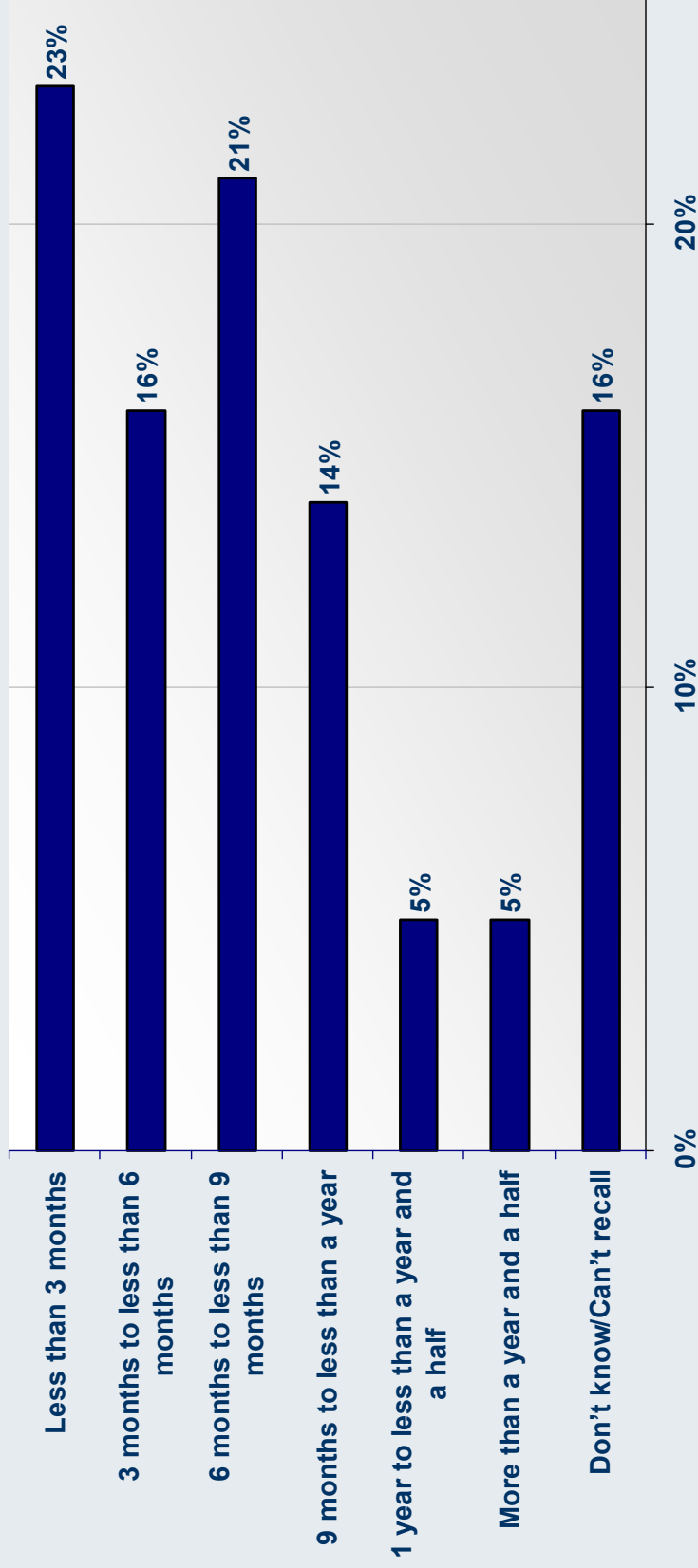
Among respondents who suggested that they would not empty the entire can of R-134 during a recharge, about 6 in 10 (62%) reported that they would store the partial can.



Q25. If you do not completely empty the can of R-134a, do you store it for later use or dispose of it? CA respondents n=152.

Partial Can Storage Period

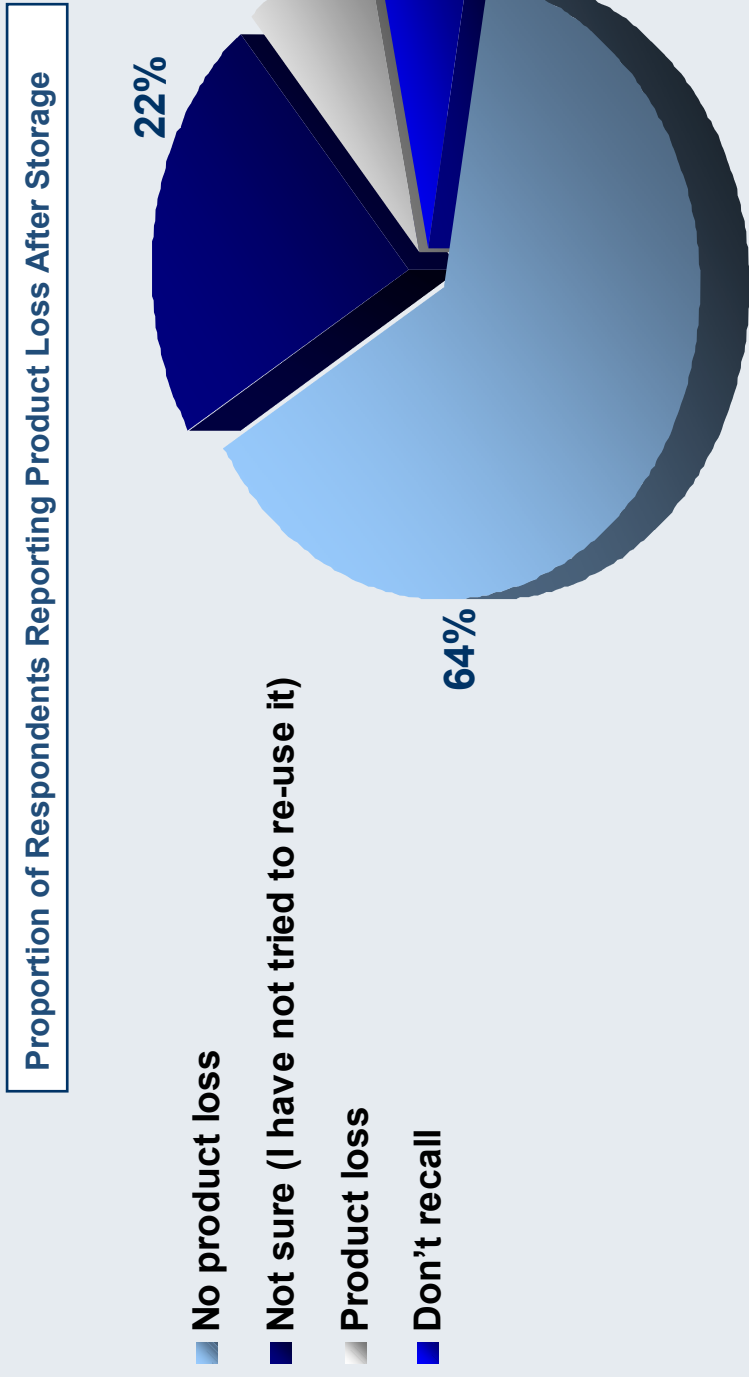
Six in 10 respondents reported that they would store a partial can of R-134a for no more than 9 months.



Q26. What is the longest time you have ever stored a partial can of R-134a? CA respondents n=95.

Partial Can Integrity

Almost two-thirds of respondents (64%) reported that the partial can retained its volume after storage.

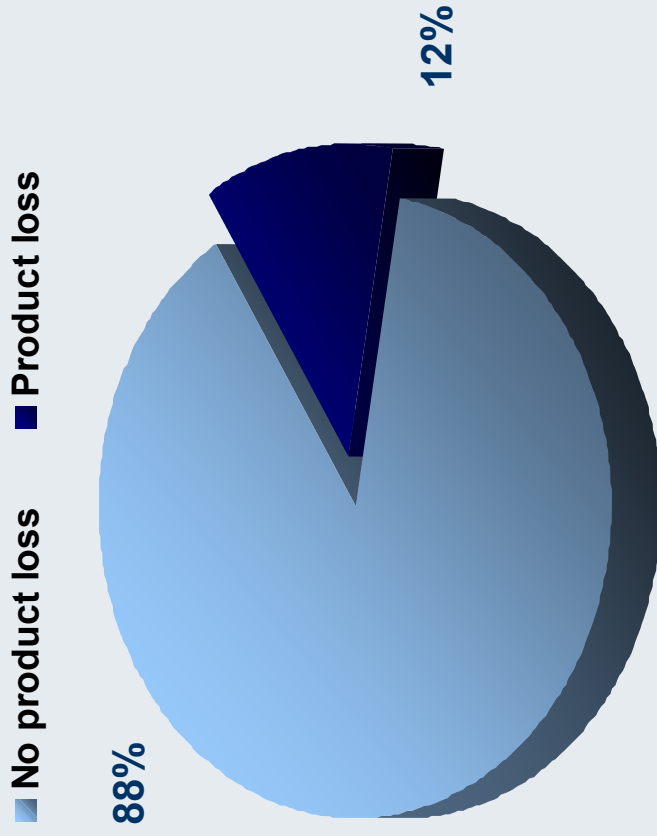


Q27. On the most recent occasion that you stored a partial can of R-134a, was it completely empty when you went to re-use it? CA respondents n=95.

Partial Can Integrity

About 9 in 10 respondents (88%) reported that the partial can retained its volume during storage.

Proportion of Respondents with Definite Outcomes who Report Product Loss After Storage



Q27. On the most recent occasion that you stored a partial can of R-134a, was it completely empty when you went to re-use it? CA respondents n=68.

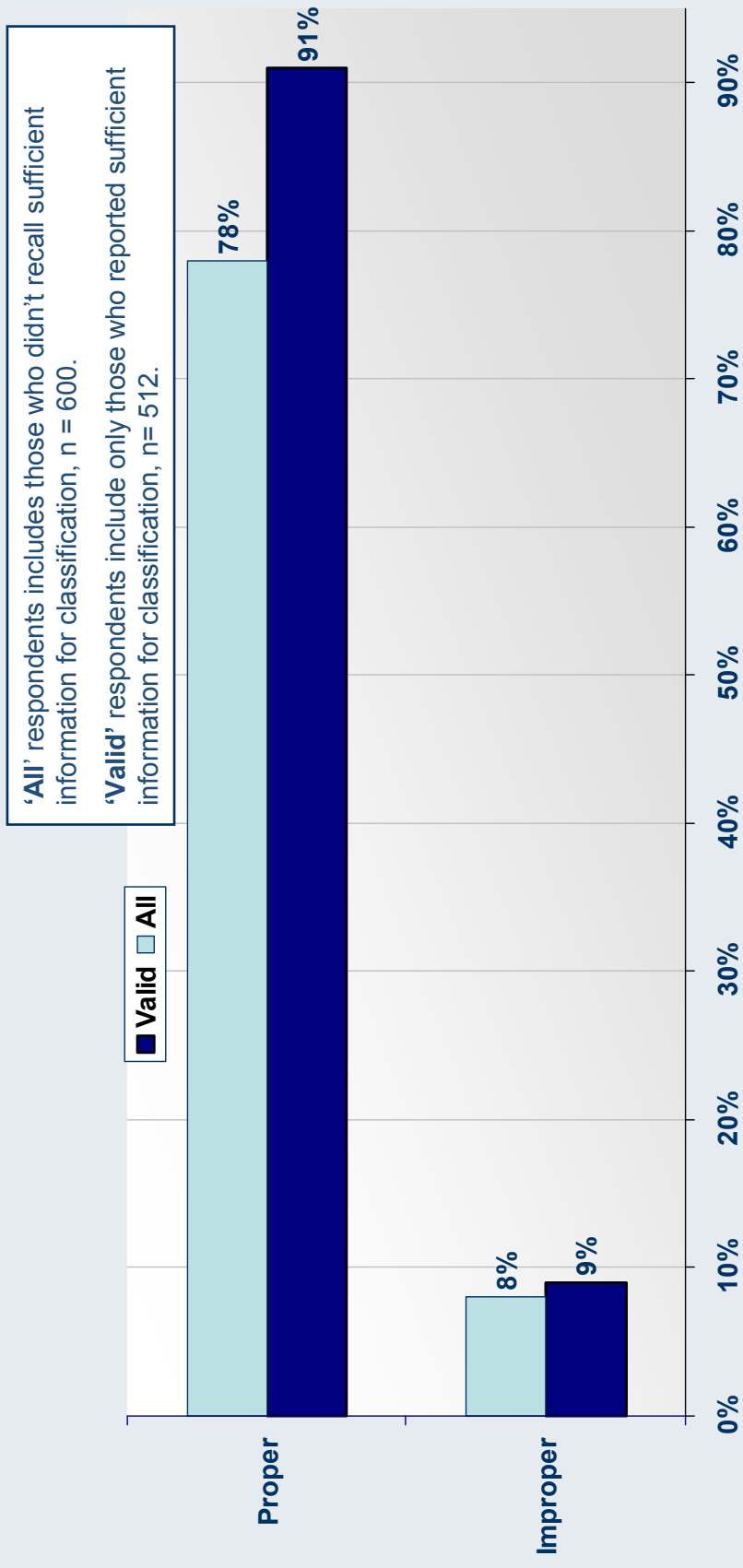
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R-134a Usage: Summary Findings

On the basis of the pattern of results among ‘Valid’ respondents from the National sample, the vast majority are categorized as ‘Proper’ users (91%). However, there is room for substantial improvement in product usage as about 1 in 10 respondents were categorized as ‘Improper’ users (9%).

Improper User: Held can in an upright position during the entire recharge (i.e., no agitation, no tipping or inverting upon completion).
Proper User: Agitated or periodically tipped can; or inverted can during the recharge or when the recharge seemed to be complete. Estimated can heel – less than 1.7 percent.

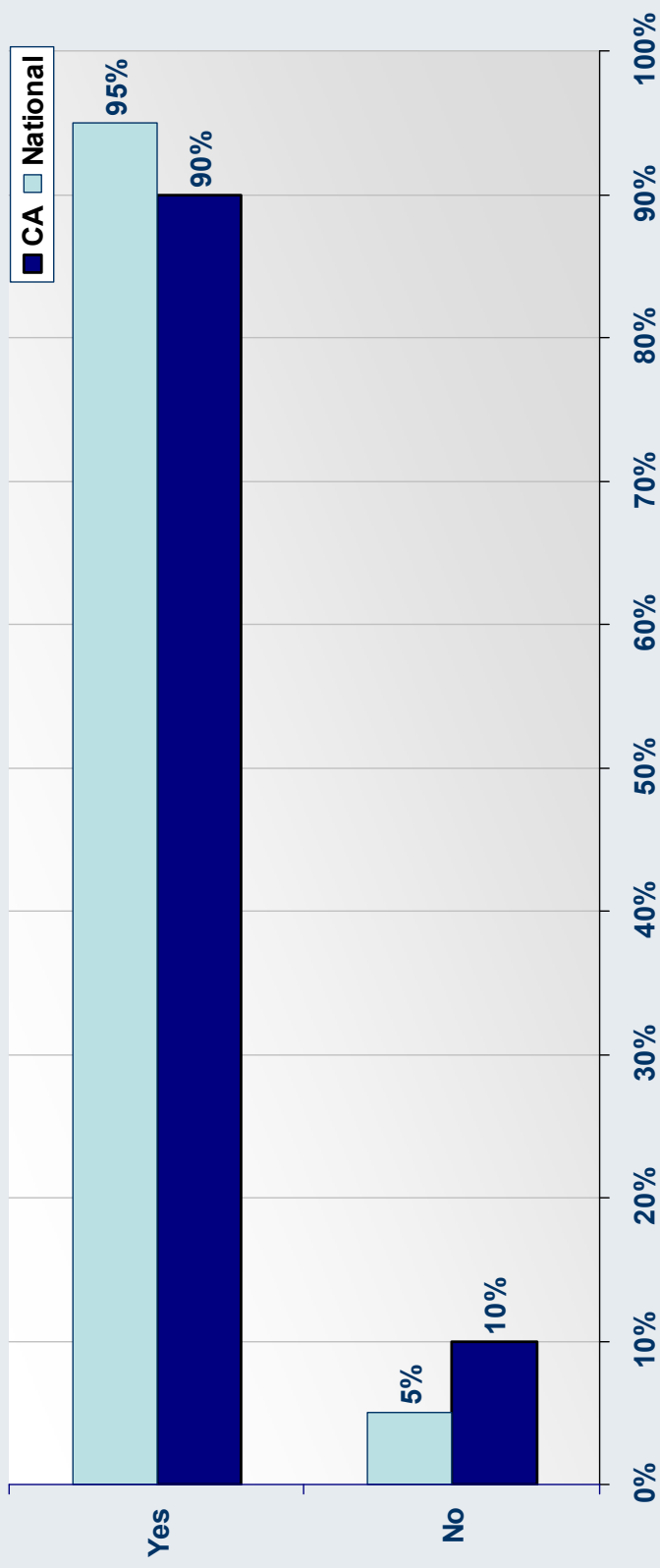


R-134a Usage: Summary Findings

The pattern of results from the National respondents generally mirror those emerging from the Californian sample. However, it appears that a reduced proportion of respondents who were unable to report complete details of the recharge process has contributed to a larger proportion of ‘Proper’ users.

	Total	Sub-Samples	
		California	National
<i>Base:</i>	1000	256	415
	(%)	(%)	(%)
Improper	8	9	8
Proper	75	71	78
Don't Recall	17	20	15

Use of Product Instructions



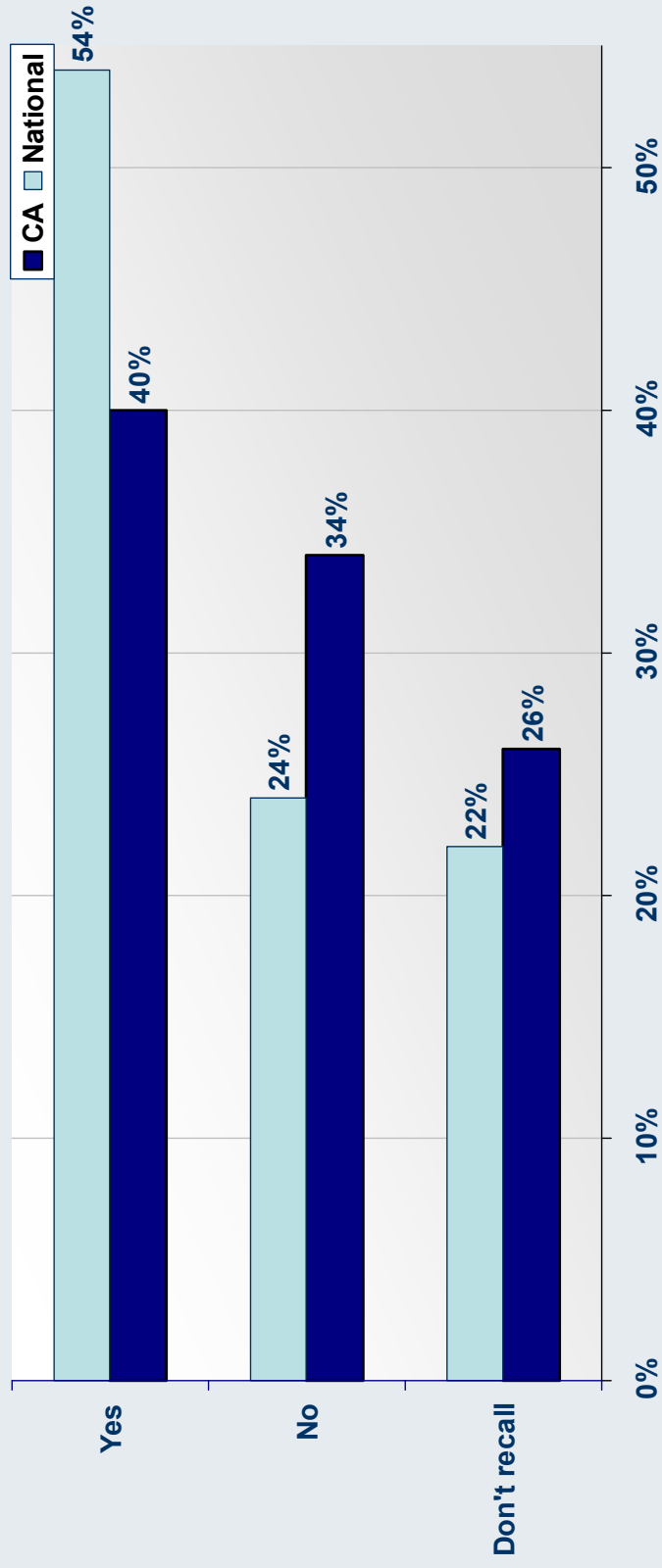
Q21. Do you follow the instructions provided with R-134a products when you recharge your vehicle's air conditioning system? National respondents n=600.

Use of Product Instructions

	Total	Sub-Samples		National by Region			
		California	National	Northeast	South	Midwest	West
Base:	1000	400	600	150	150	150	150
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Yes	93	90	95	93	95	93	97
No	7	10	5	7	5	7	3

Q21. Do you follow the instructions provided with R-134a products when you recharge your vehicle's air conditioning system? National respondents n=600.

Recharge Process: Can Agitation



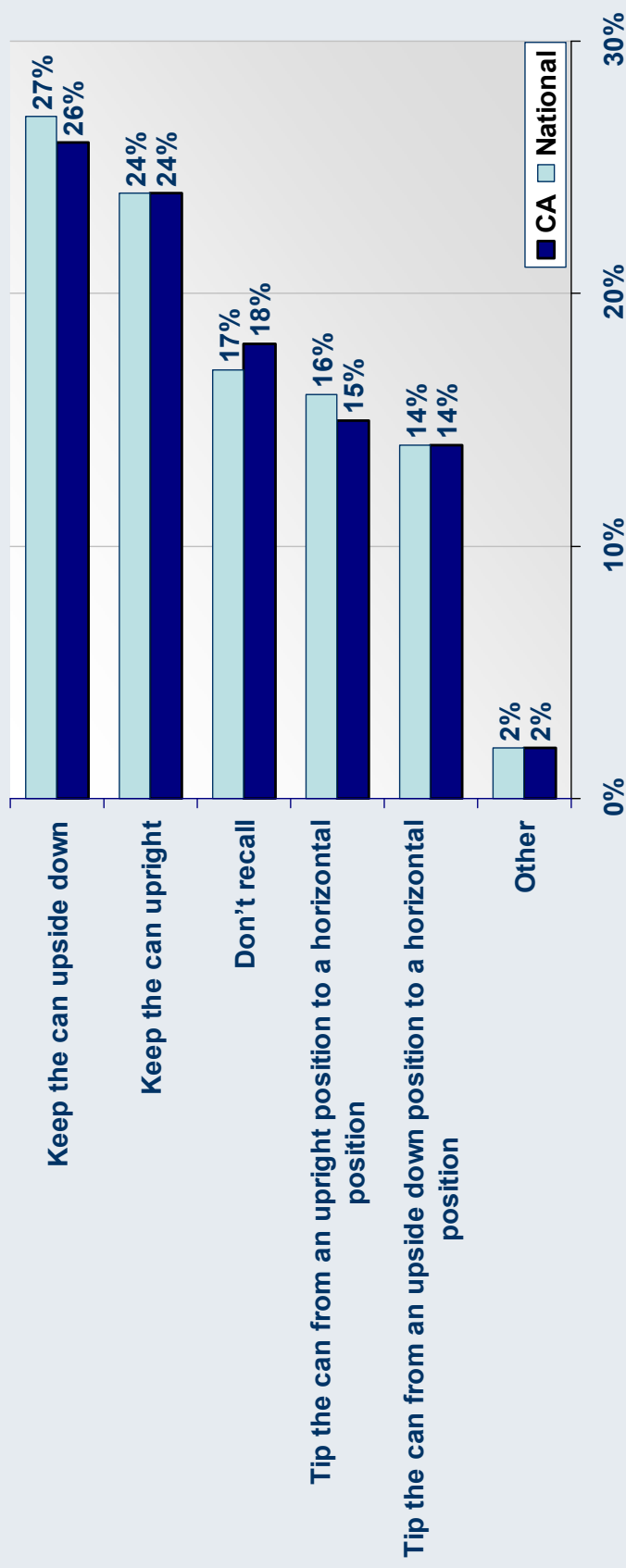
Q22a. Do you agitate, shake or mix the can of R-134a during the recharge? National respondents n=600.

Recharge Process: Can Agitation

	Total	Sub-Samples		National by Region			
		California	National	Northeast	South	Midwest	West
Base:	1000	400	600	150	150	150	150
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Yes	48	40	54	58	59	51	47
No	28	34	24	21	24	25	27
Don't recall	24	26	22	21	17	24	27

Q22a. Do you agitate, shake or mix the can of R-134a during the recharge? National respondents n=600.

Recharge Process: Can Positioning



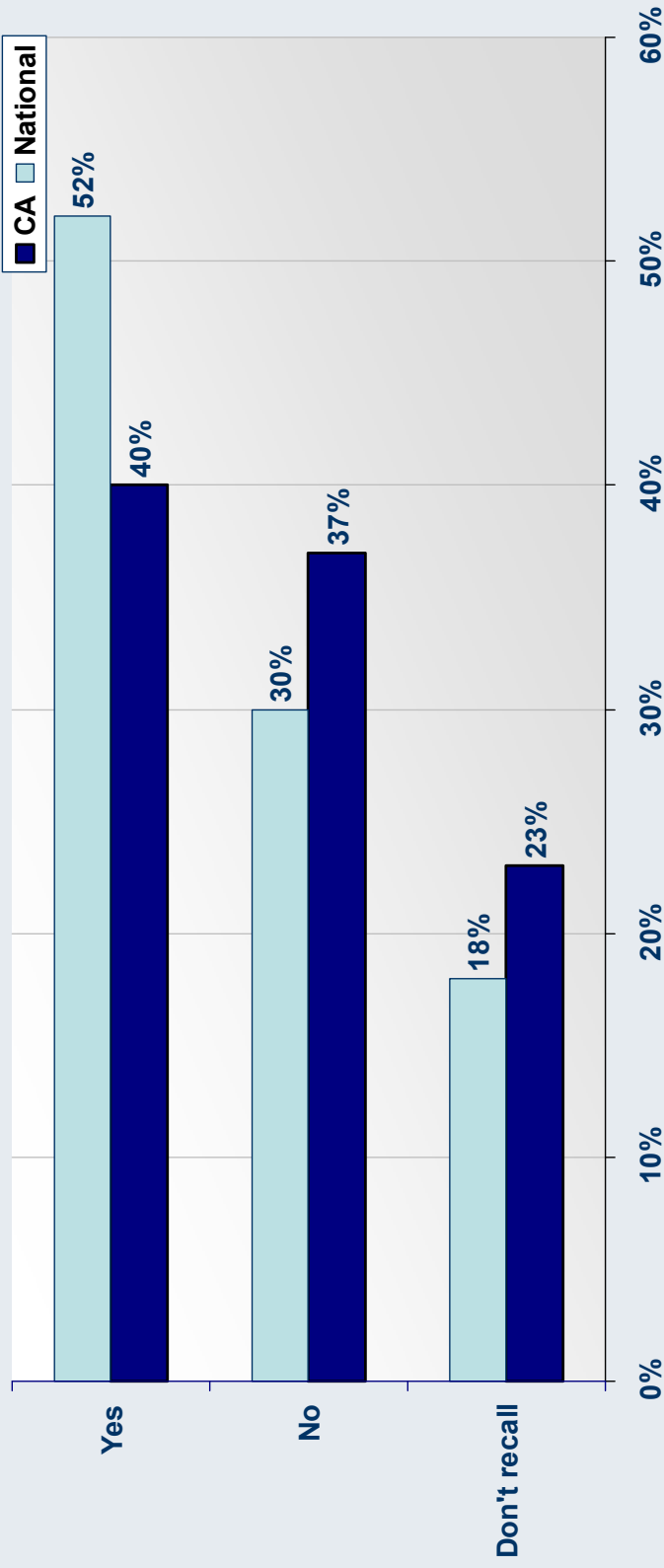
Q22b. Which description best captures how you position the can of R-134a during the recharge? I try to... National respondents n=600.

Recharge Process: Can Positioning

	Total	Sub-Samples		National by Region			
		California	National	Northeast	South	Midwest	West
Base:	1000	400	600	150	150	150	150
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Keep the can upright	24	25	24	22	22	24	27
Keep the can upside down	26	24	27	24	31	29	25
Don't recall	18	20	17	18	14	13	21
Tip the can from an upright position to a horizontal position	15	14	16	17	19	20	9
Tip the can from an upside down position to a horizontal position	14	15	14	16	13	11	16
Other	2	2	2	3	1	3	2

Q22b. Which description best captures how you position the can of R-134a during the recharge? I try to... National respondents n=600.

Recharge Process: Tip Can Upside Down Upon Completion



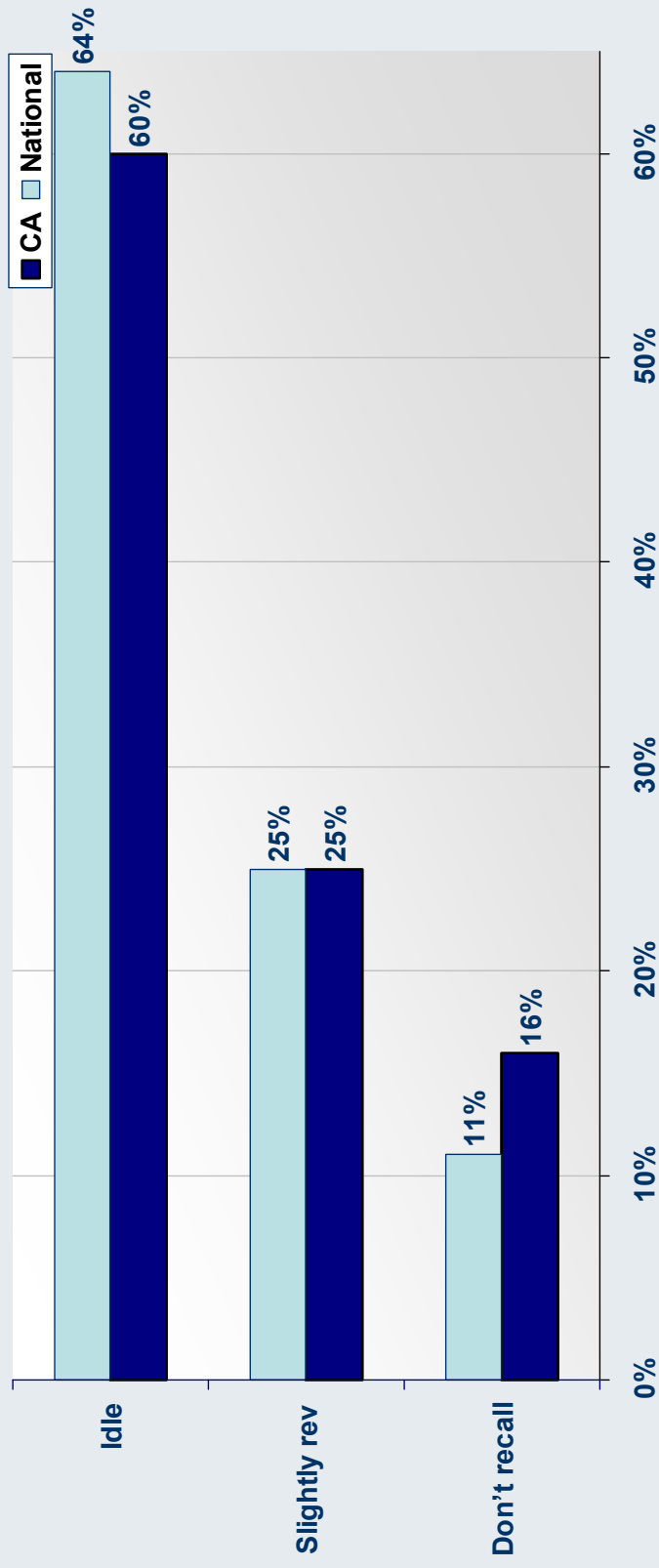
Q22c. As you finish the recharge, do you tip the can of R-134a upside down when you think the can is empty?
National respondents n=600.

Recharge Process: Tip Can Upside Down Upon Completion

	Total	Sub-Samples		National by Region			
		California	National	Northeast	South	Midwest	West
Base:	1000	400	600	150	150	150	150
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Yes	47	40	52	52	63	44	50
No	33	37	30	28	24	34	35
Don't recall	20	23	18	20	13	22	15

**Q22c. As you finish the recharge, do you tip the can of R-134a upside down when you think the can is empty?
National respondents n=600.**

Recharge Process: Idle or Rev Engine



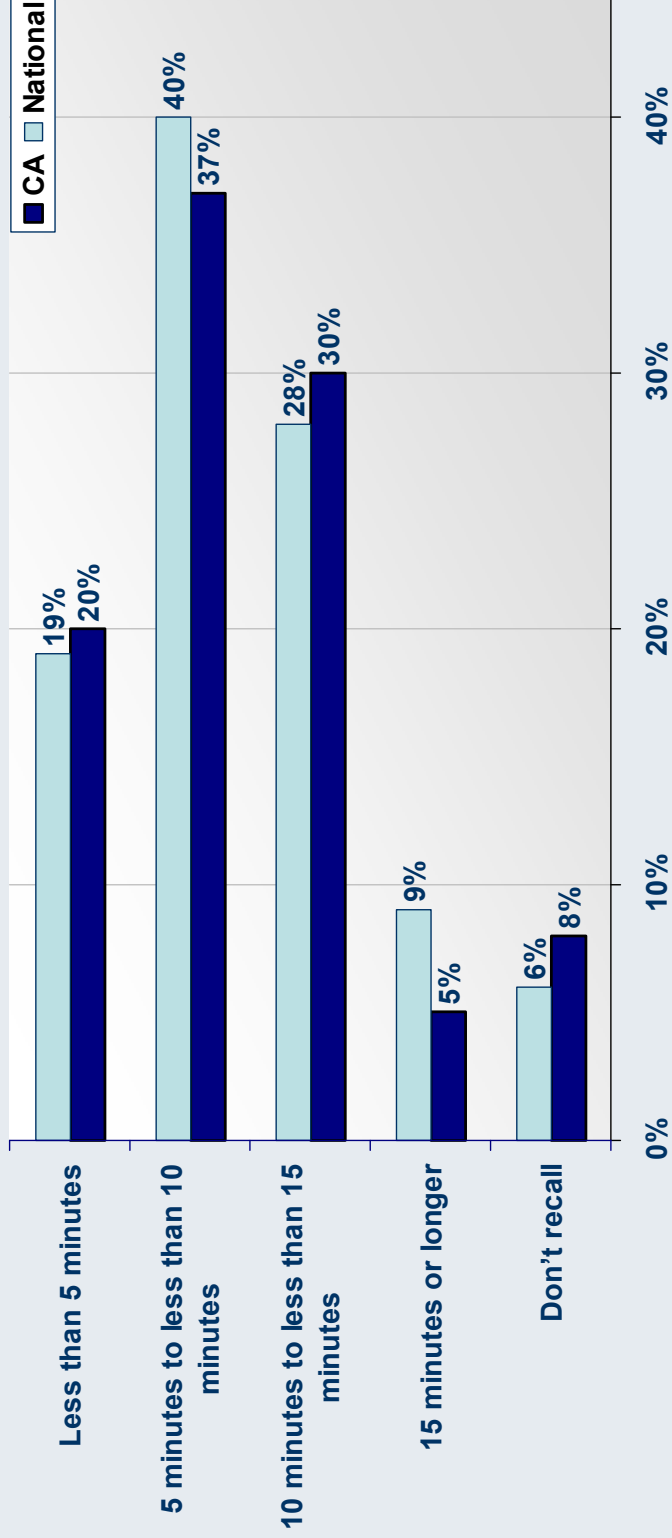
Q22d. During the recharge process, do you let the engine idle or slightly rev the engine? National respondents n=600.

Recharge Process: Idle or Rev Engine

	Total	Sub-Samples		National by Region			
		California	National	Northeast	South	Midwest	West
Base:	1000	400	600	150	150	150	150
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Idle	62	60	64	60	61	70	65
Slightly rev	25	25	25	27	31	19	24
Don't recall	13	16	11	13	7	11	11

Q. National respondents n=600.

Recharge Process: Duration



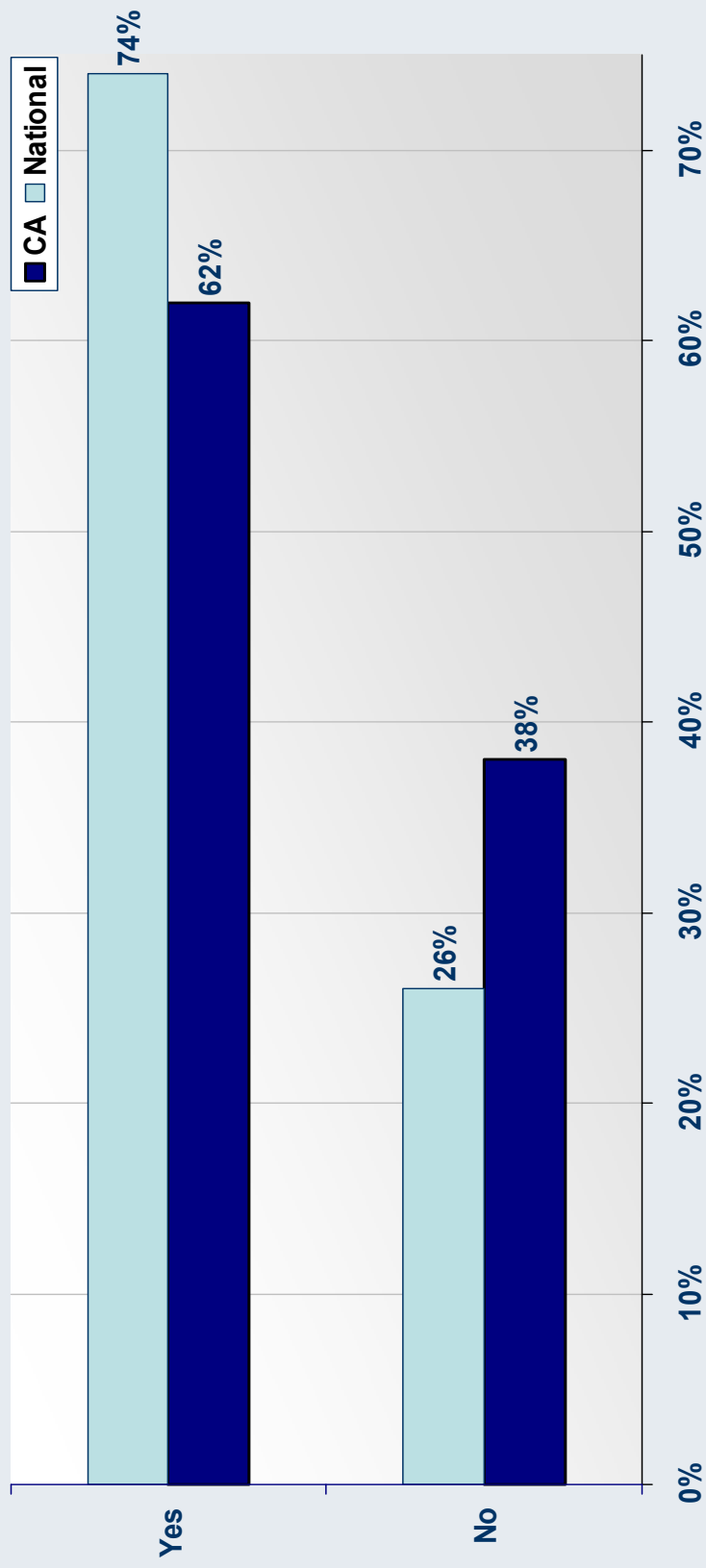
Q23. On the most recent occasion that you recharged your vehicle's air conditioning system, approximately how long did it take you to add the can of R-134a? National respondents n=600.

Recharge Process: Duration

	Total	Sub-Samples		National by Region			
		California	National	Northeast	South	Midwest	West
Base:	1000	400	600	150	150	150	150
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Less than 5 minutes	19	20	19	16	19	16	23
5 minutes to less than 10 minutes	39	37	40	36	42	42	39
10 minutes to less than 15 minutes	28	30	28	29	28	31	22
15 minutes or longer	7	5	9	11	7	5	11
Don't recall	7	8	6	8	3	6	5

Q23. On the most recent occasion that you recharged your vehicle's air conditioning system, approximately how long did it take you to add the can of R-134a? National respondents n=600.

Recharge Process: Use of Full Can



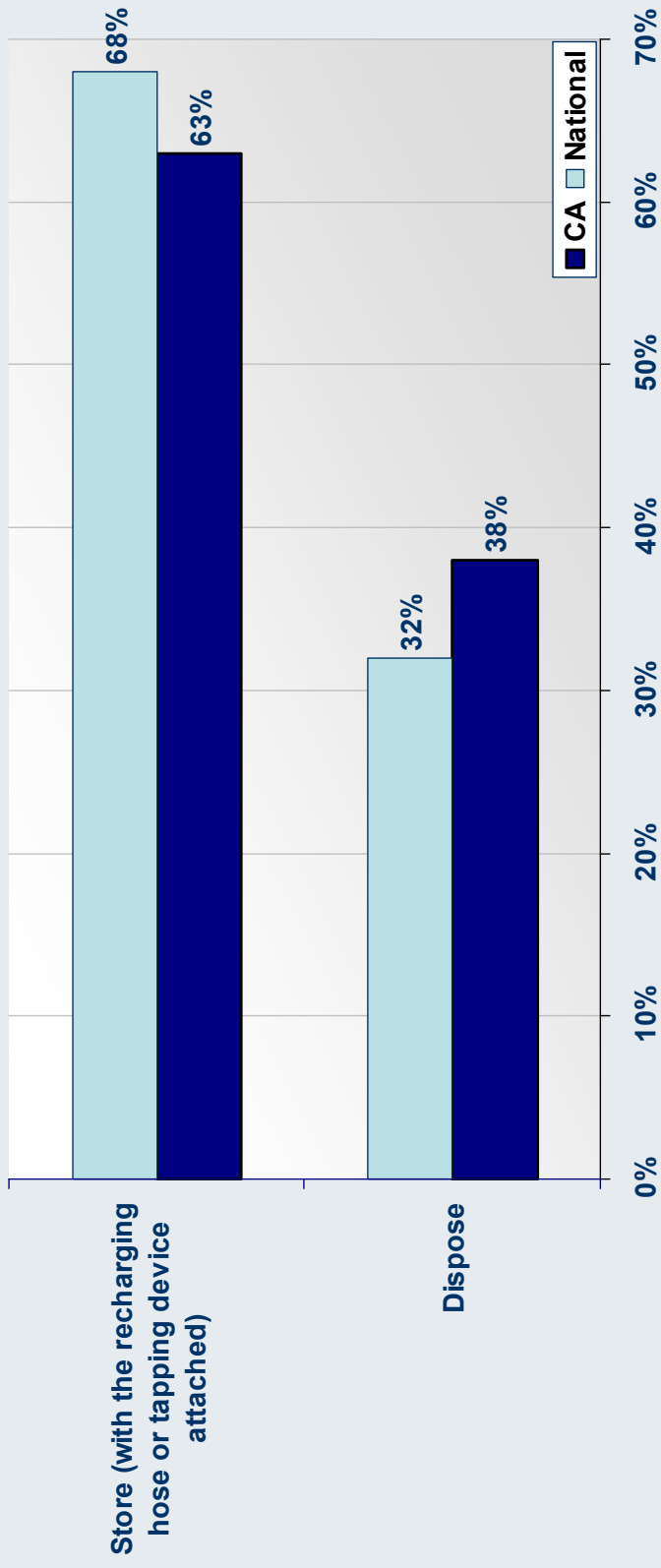
Q24. Generally speaking, if you recharge your vehicle's air conditioning system starting with a full can of R-134a, would you empty the can? National respondents n=600.

Recharge Process: Use of Full Can

	Total	Sub-Samples		National by Region			
		California	National	Northeast	South	Midwest	West
Base:	1000	400	600	150	150	150	150
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Yes	69	62	74	75	75	79	67
No	31	38	26	25	25	21	33

Q24. Generally speaking, if you recharge your vehicle's air conditioning system starting with a full can of R-134a, would you empty the can? National respondents n=600.

Partial Can Storage



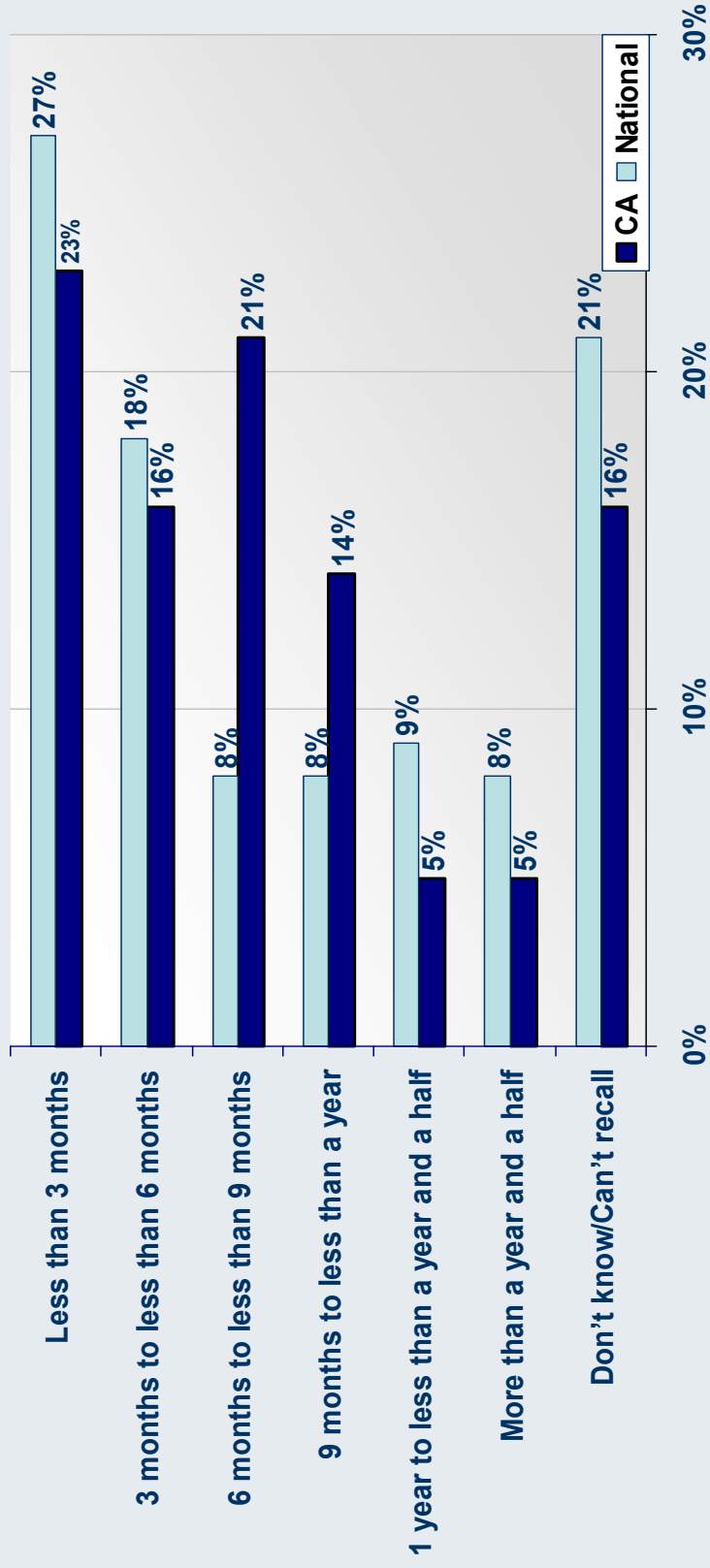
Q25. If you do not completely empty the can of R-134a, do you store it for later use or dispose of it?
National respondents n=600.

Partial Can Storage

	Total	Sub-Samples		National by Region			
		California	National	Northeast	South	Midwest	West
Base:	310	152	158	38	38	32	50
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Store (with the recharging hose or tapping device attached)	65	63	68	61	76	72	64
Dispose	35	38	32	39	24	28	36

**Q25. If you do not completely empty the can of R-134a, do you store it for later use or dispose of it?
National respondents n=600.**

Partial Can Storage Period



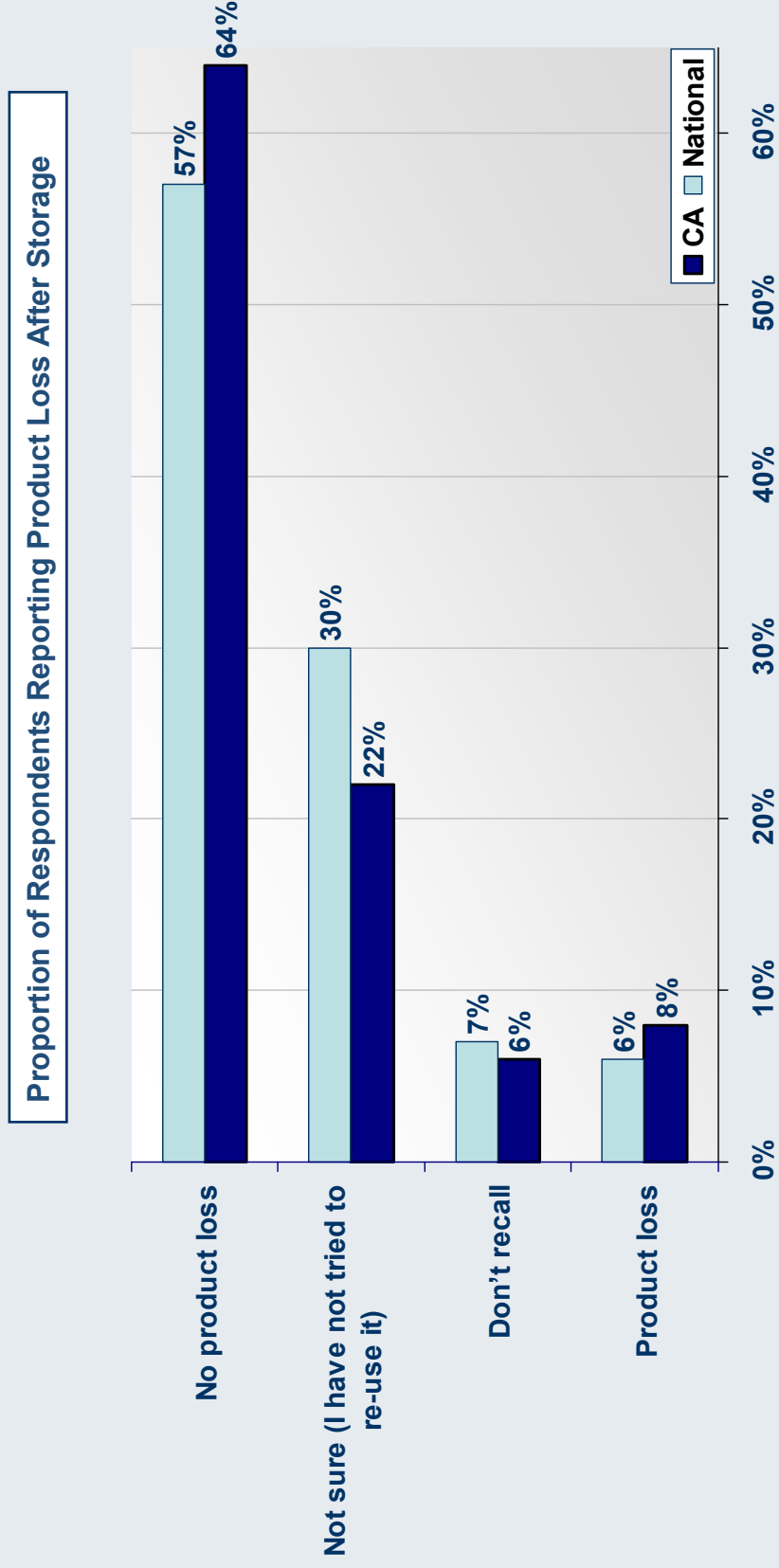
Q26. What is the longest time you have ever stored a partial can of R-134a? National respondents n=600.

Partial Can Storage Period

	Total	Sub-Samples		National by Region			
		California	National	Northeast	South	Midwest	West
Base:	202	95	107	23	29	23	32
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Less than 3 months	25	23	27	48	28	22	16
3 months to less than 6 months	17	16	18	4	24	13	25
6 months to less than 9 months	14	21	8	13	10	0	9
9 months to less than a year	11	14	8	13	10	0	9
1 year to less than a year and a half	7	5	9	0	7	17	13
More than a year and a half	7	5	8	0	10	9	13
Don't know/Can't recall	18	16	21	22	10	39	16

Q26. What is the longest time you have ever stored a partial can of R-134a? National respondents n=600.

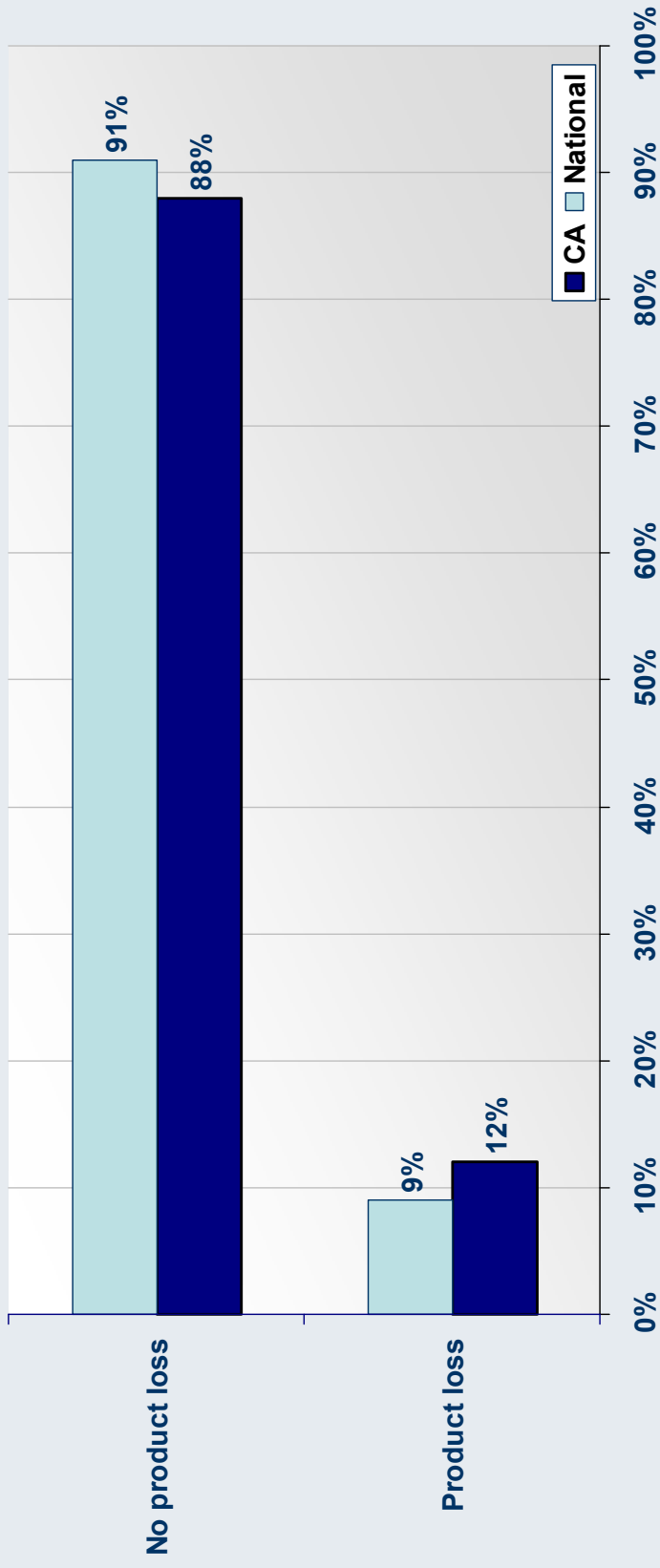
Partial Can Integrity



Q27. On the most recent occasion that you stored a partial can of R-134a, was it completely empty when you went to re-use it? **National respondents n=202.**

Partial Can Integrity

Proportion of Respondents with Definite Outcomes that Report Product Loss After Storage



Q27. On the most recent occasion that you stored a partial can of R-134a, was it completely empty when you went to re-use it? National respondents n=135.

Partial Can Integrity

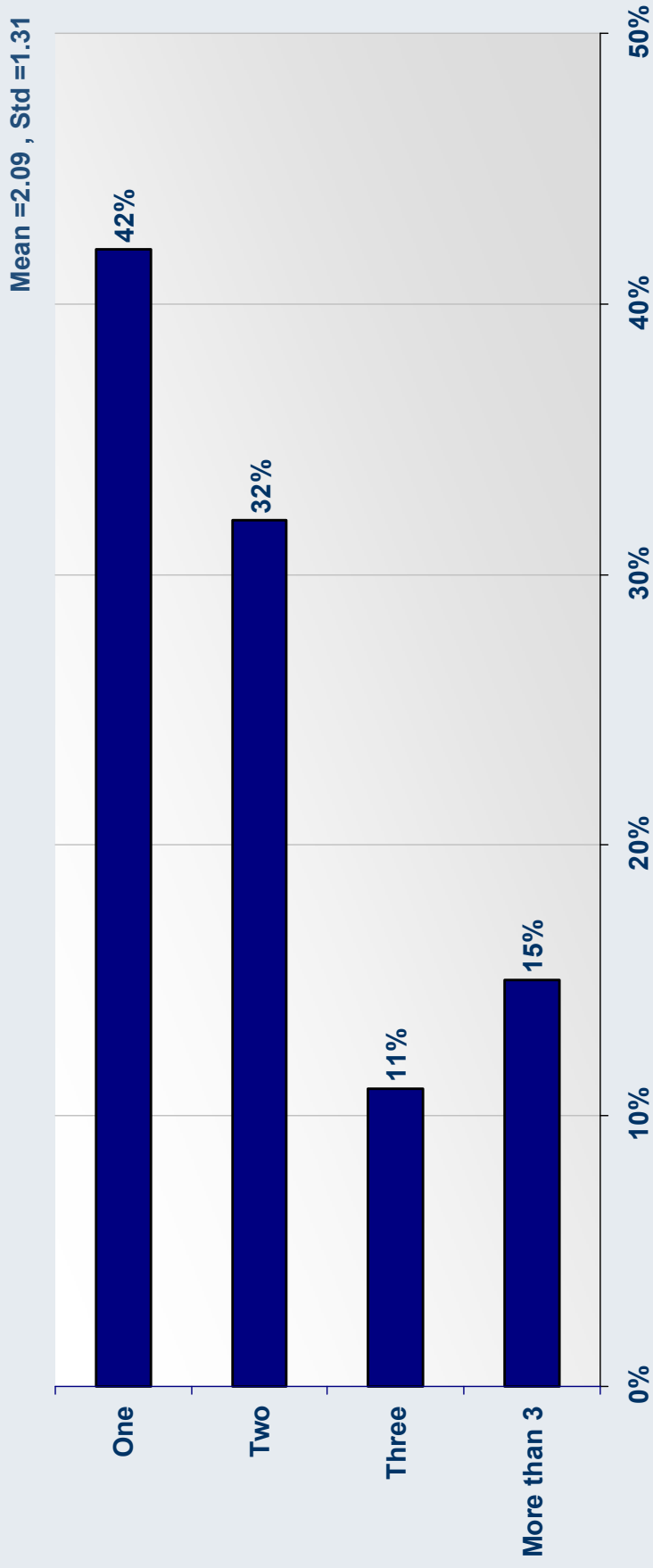
	Total	Sub-Samples		National by Region			
		California	National	Northeast	South	Midwest	West
Base:	202	95	107	23	29	23	32
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
No	60	64	57	61	62	39	63
Not sure (I have not tried to re-use it)	26	22	30	22	31	43	25
Yes	7	8	6	16	3	4	3
Don't recall	7	6	7	4	3	13	9

Q27. On the most recent occasion that you stored a partial can of R-134a, was it completely empty when you went to re-use it? National respondents n=202.

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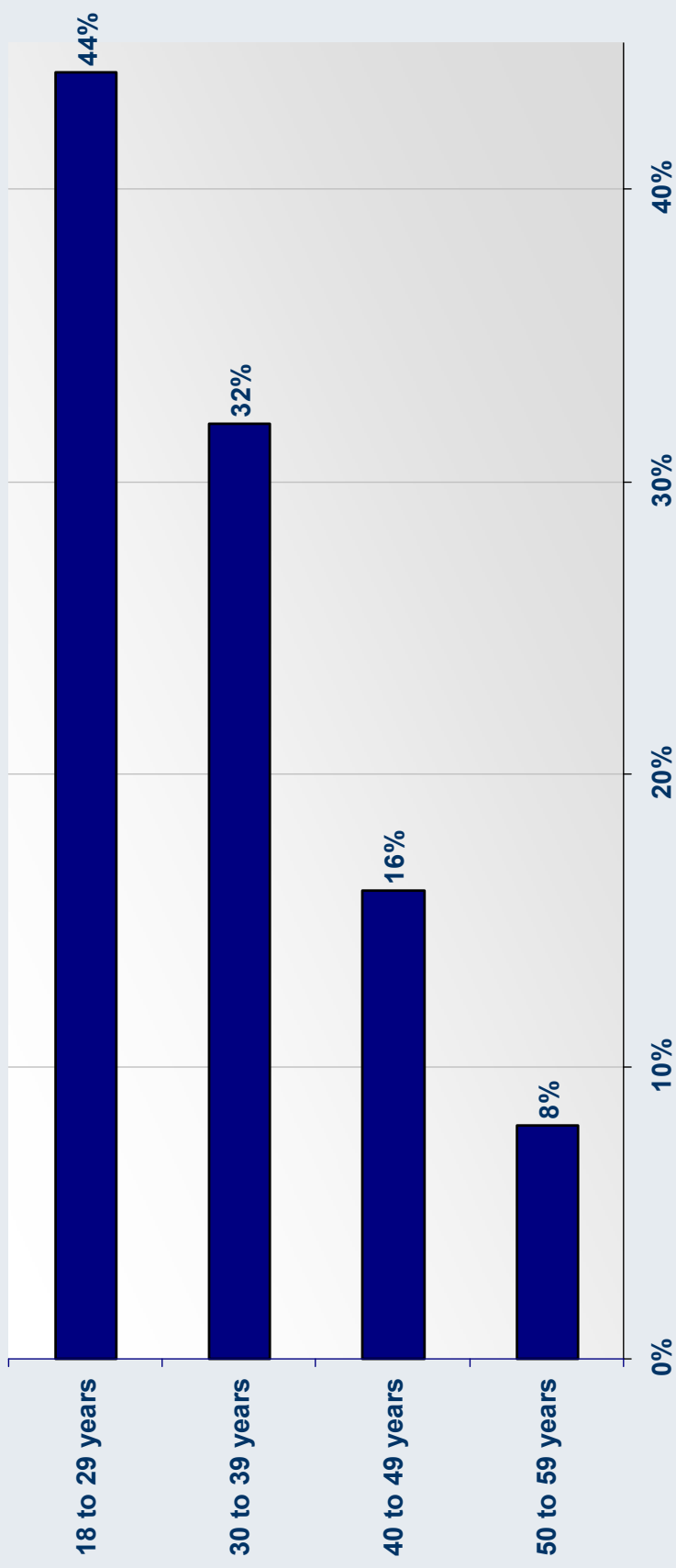
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Number of Recharges



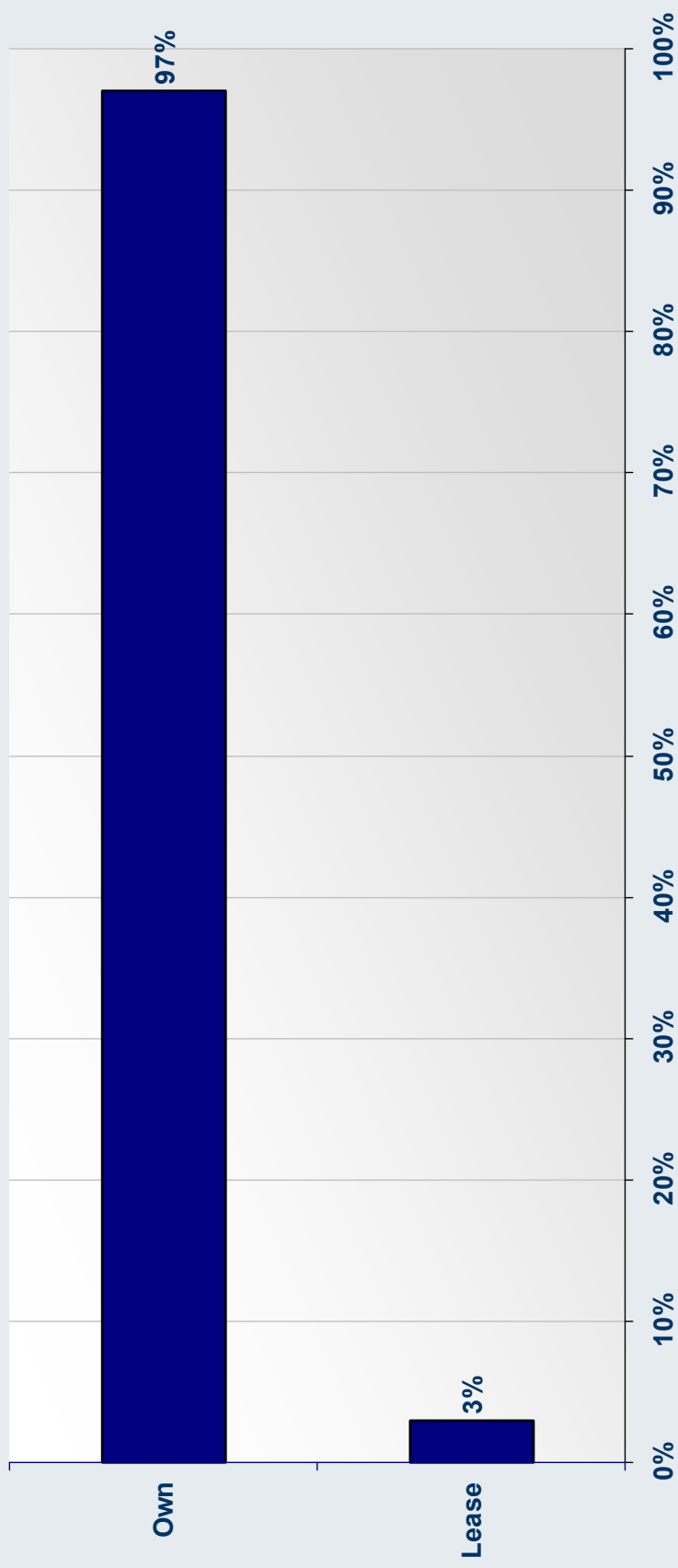
Q9. Including past and present vehicles, approximately how many times have you recharged your vehicle's R-134a refrigerant? CA respondents n=348.

Respondent Profile: Age



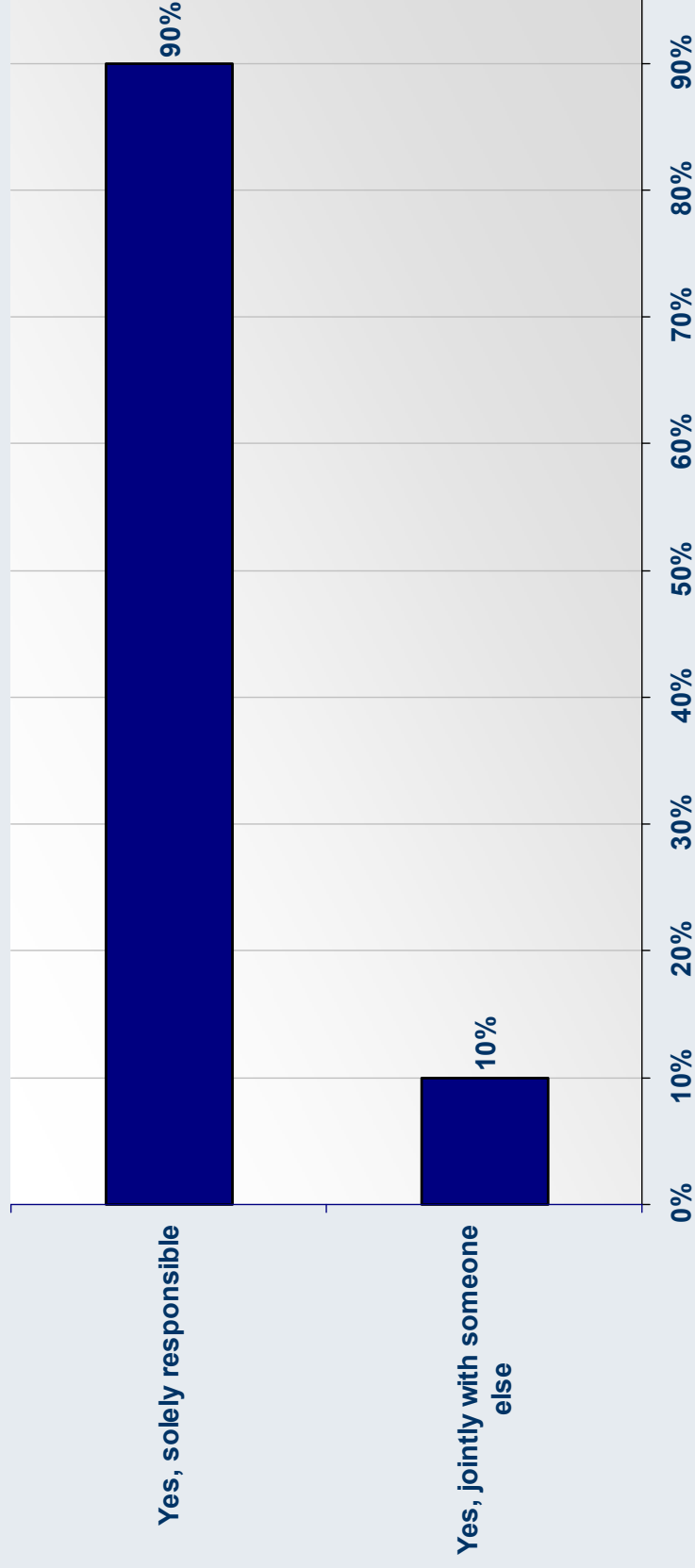
Q1. In which of these groups does your age fall? CA respondents n=400.

Respondent Profile: Vehicle Ownership



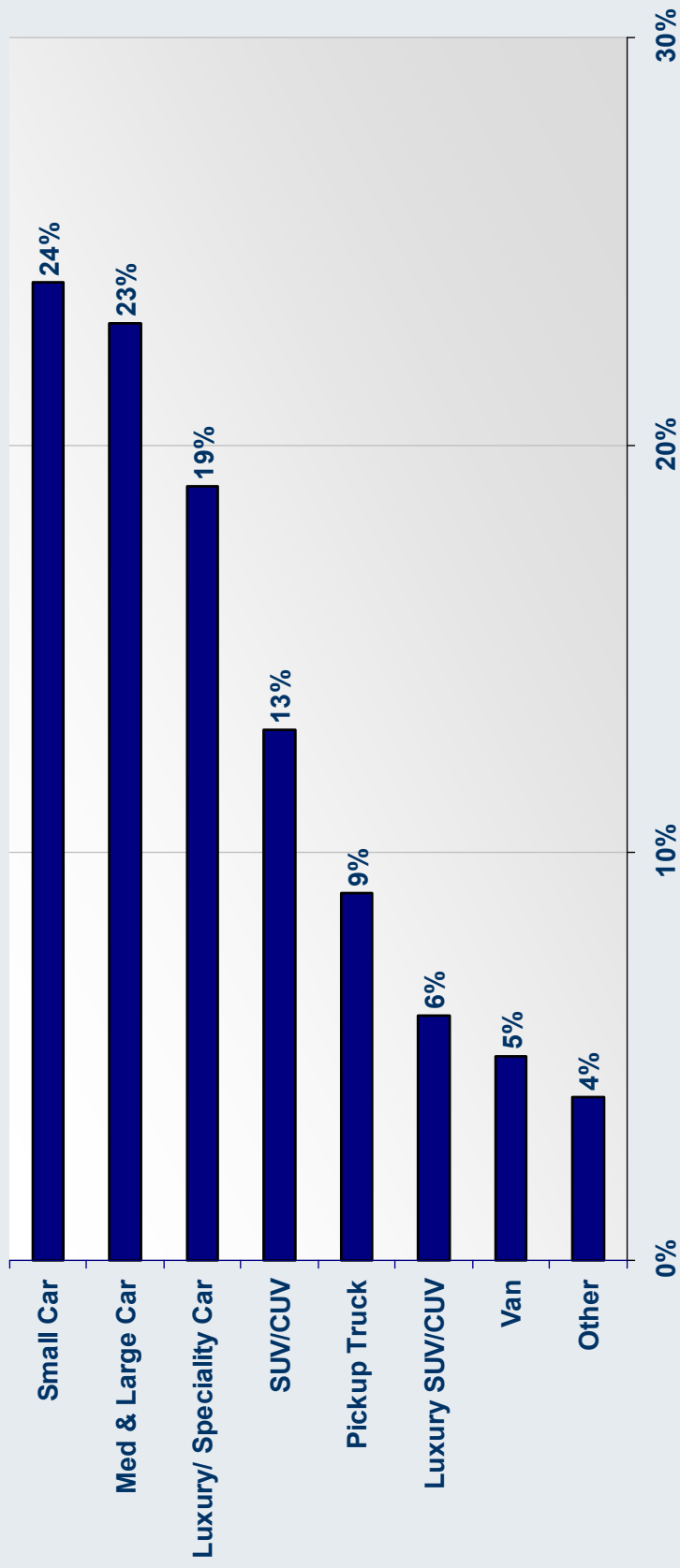
Q2. Do you own or lease a car? CA respondents n=400.

Respondent Profile: Responsibility for Vehicle



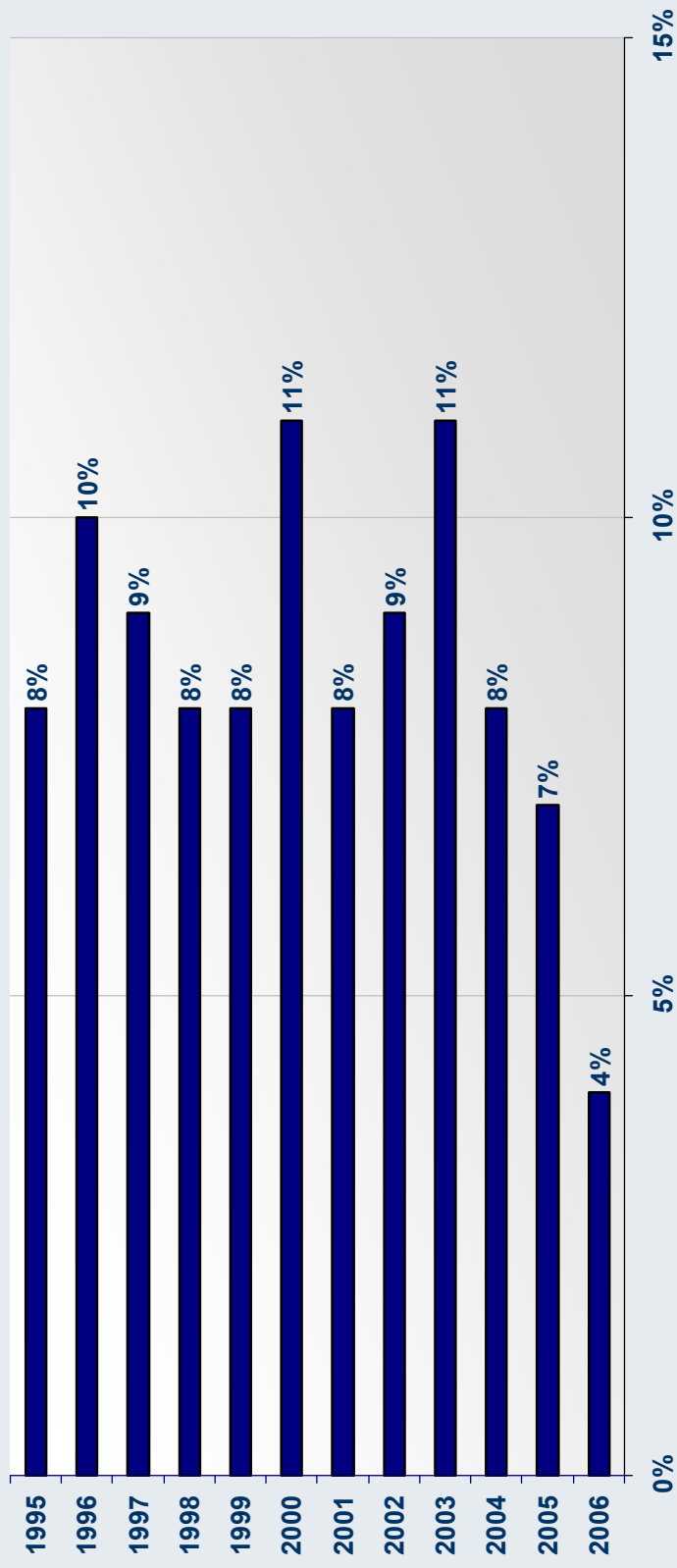
Q3. Are you responsible for making decisions about the maintenance and repairs for this vehicle? CA respondents n=400.

Respondent Profile: Vehicle Segment



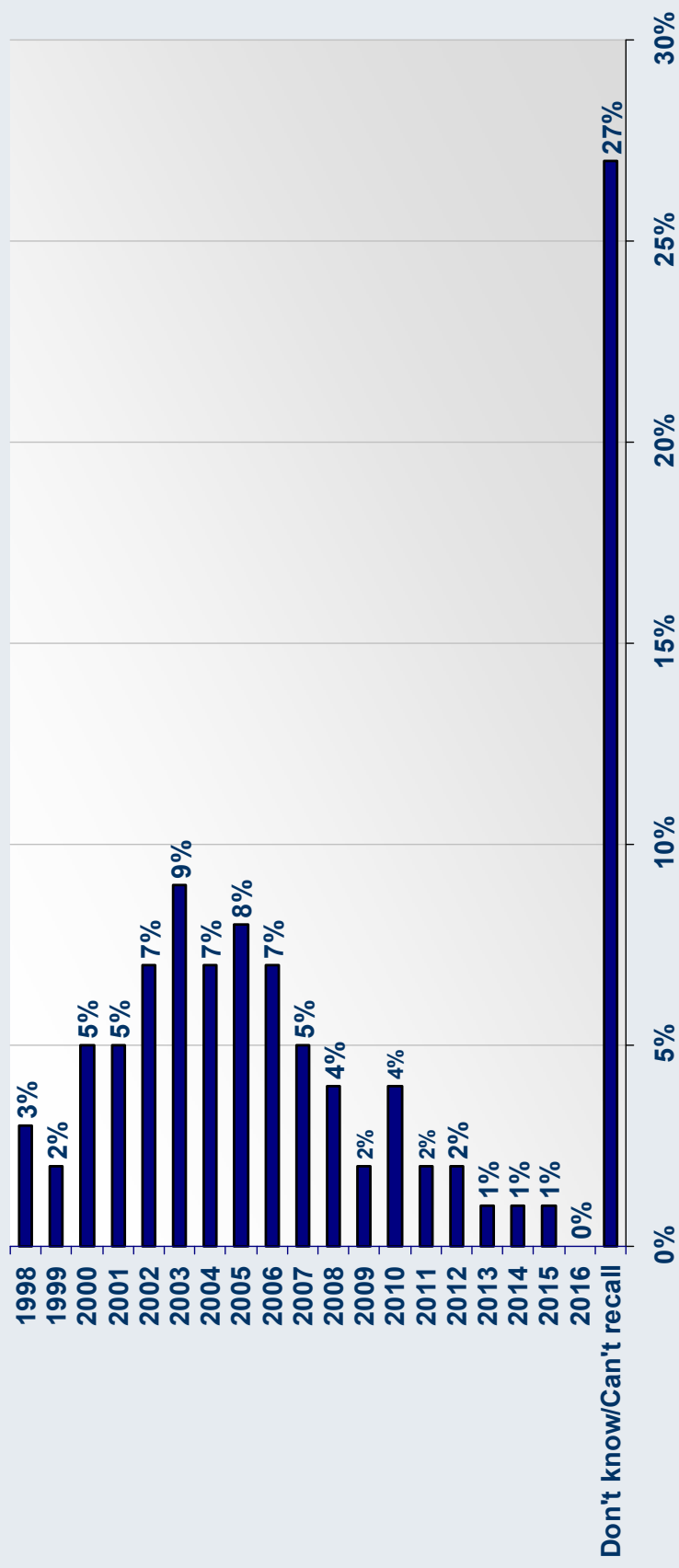
From Q7. You indicated that you recharged your vehicle's air conditioning refrigerant within in the past 12 months. What is the make, model and year of this vehicle? CA respondents n=400.

Respondent Profile: Vehicle Model Year



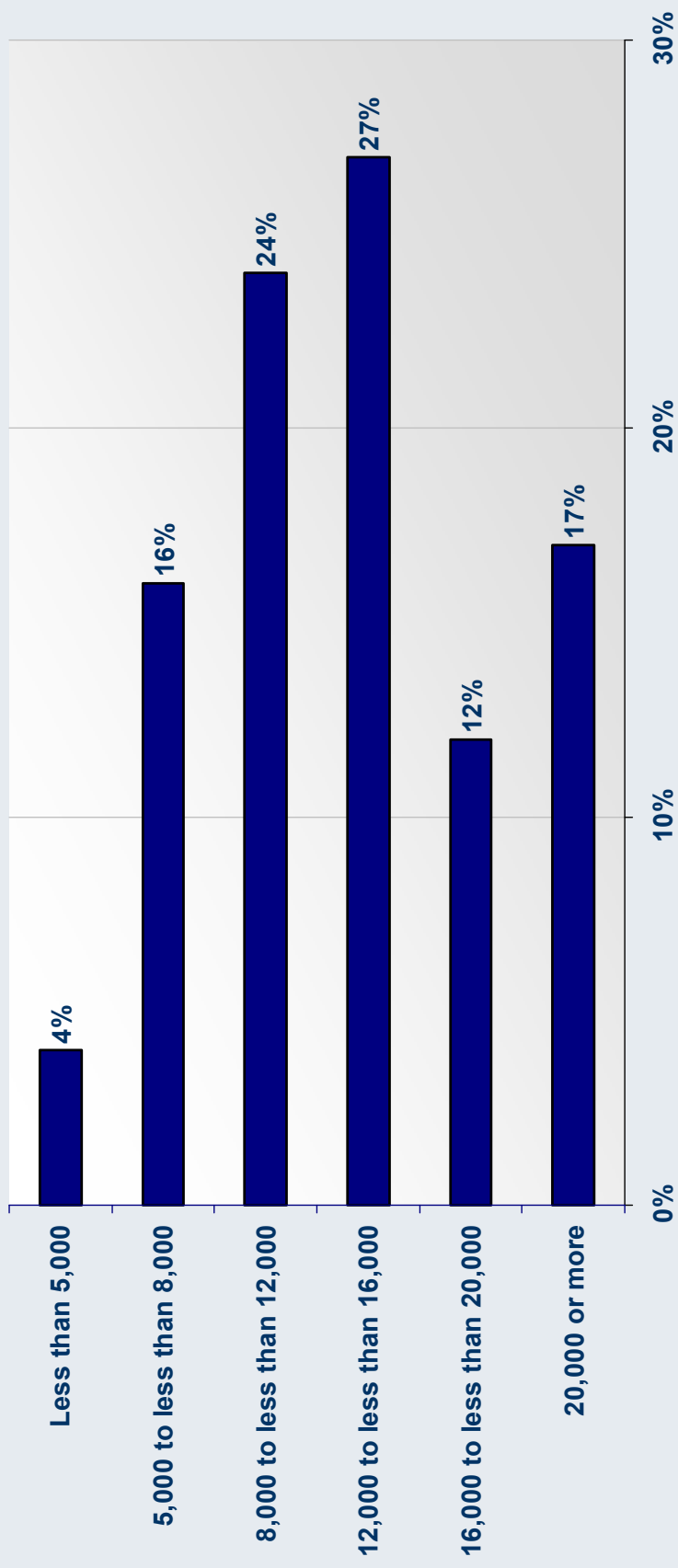
From Q7. You indicated that you recharged your vehicle's air conditioning refrigerant within in the past 12 months. What is the make, model and year of this vehicle? CA respondents n=400.

Respondent Profile: Warranty Expiration



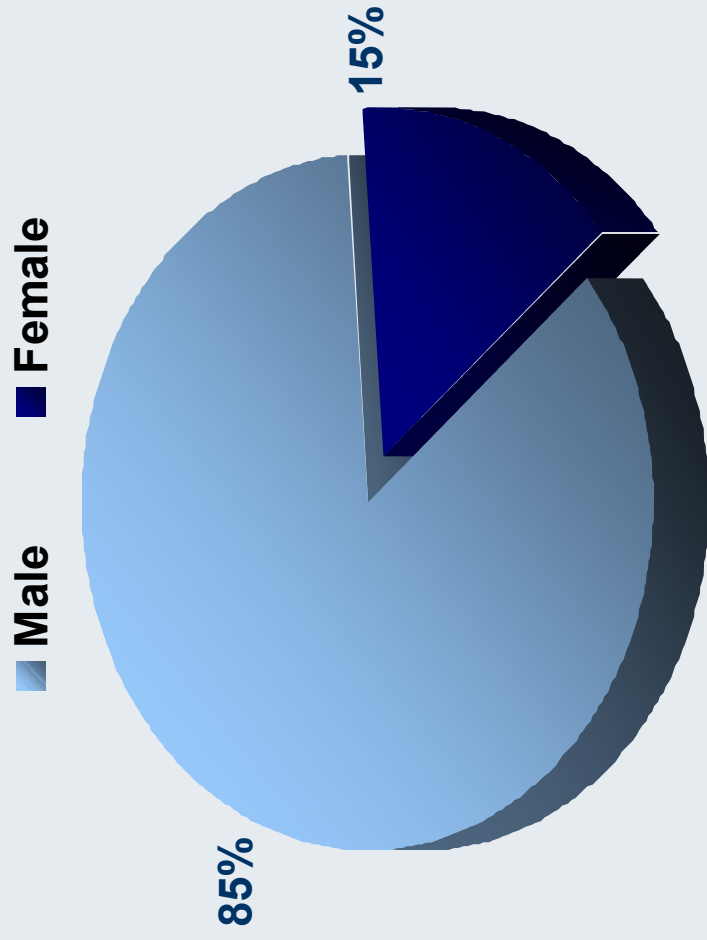
Q8a. For this vehicle, in which year did (or will) the manufacturer's warranty end? CA respondents n=400.

Respondent Profile: Annual Mileage



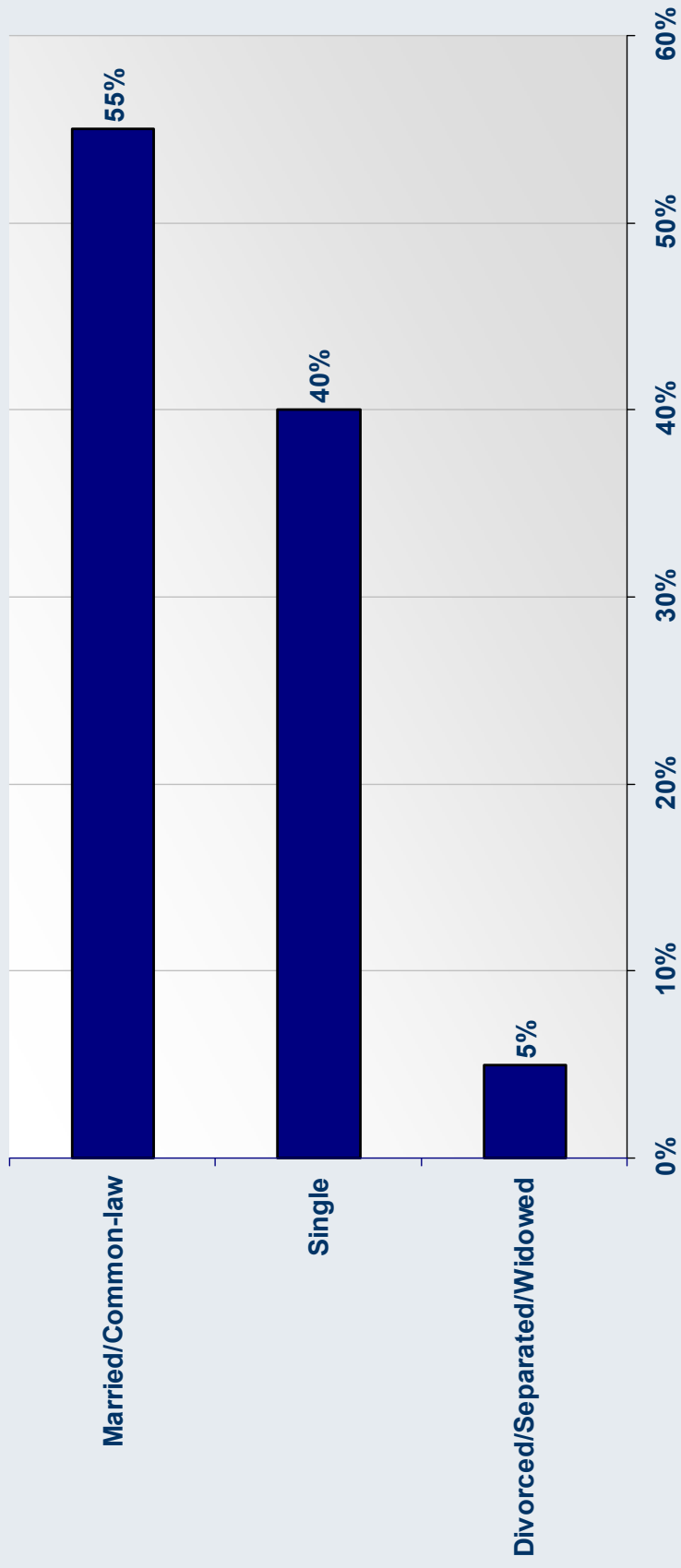
Q31. On average, how many miles do you drive in a year? CA respondents n=400.

Respondent Profile: Gender



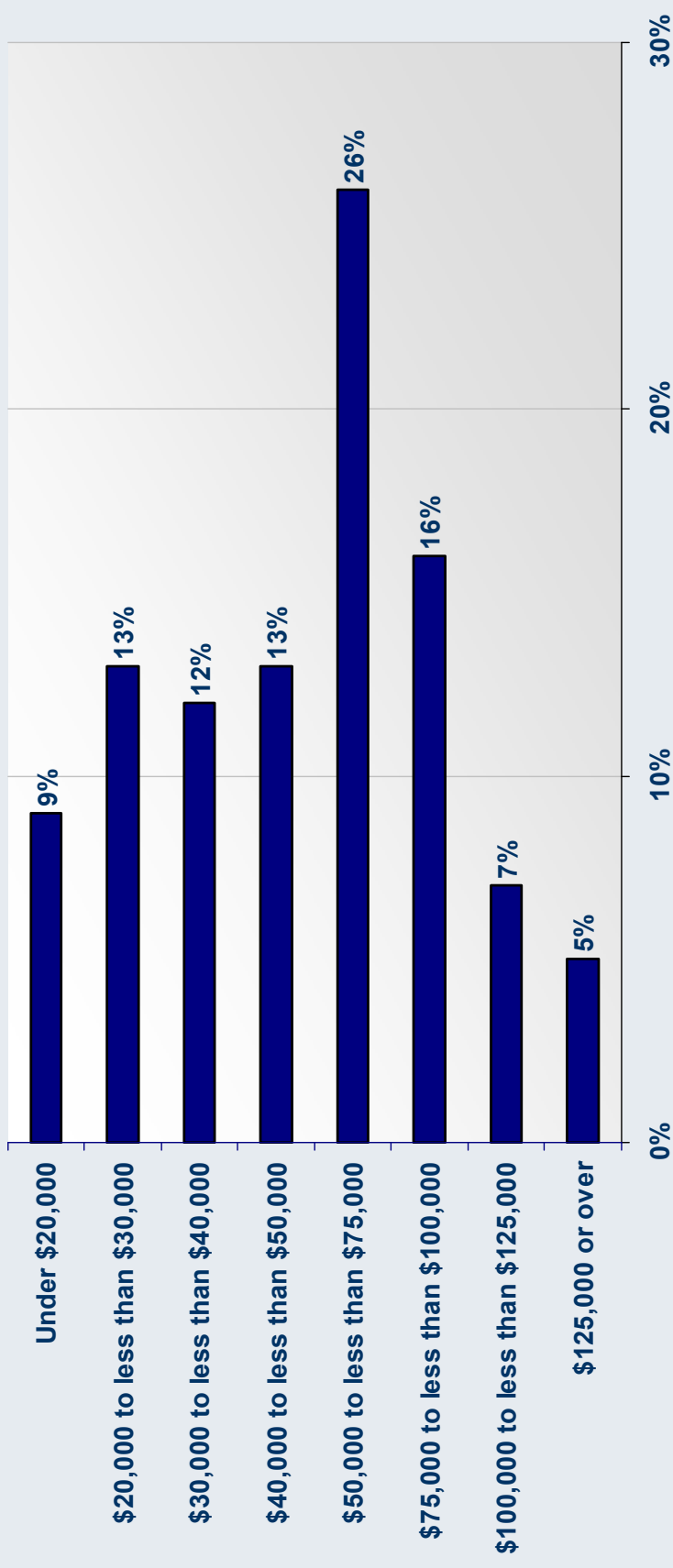
Q33. What is your gender? CA respondents n=400.

Respondent Profile: Marital Status



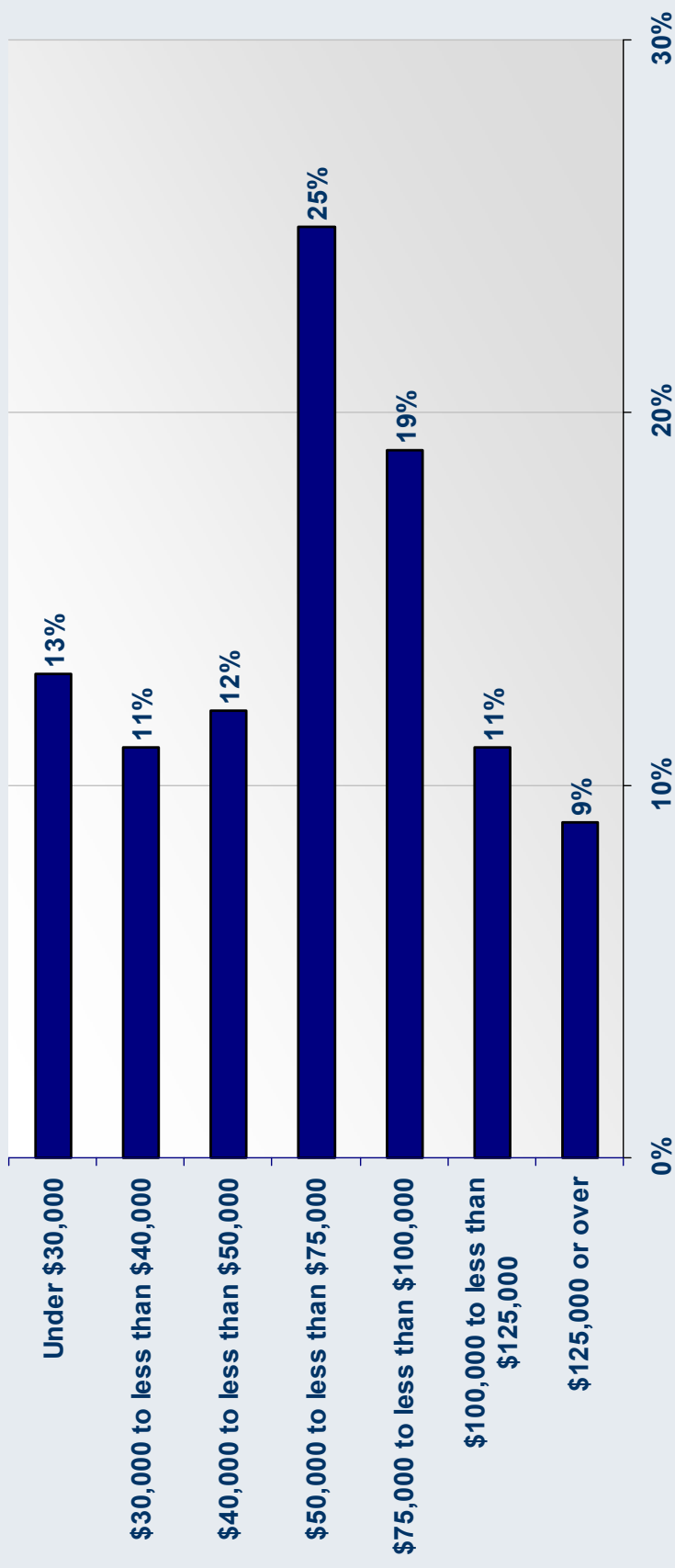
Q34a. What is your marital status? CA respondents n=400.

Respondent Profile: Personal Income 2005



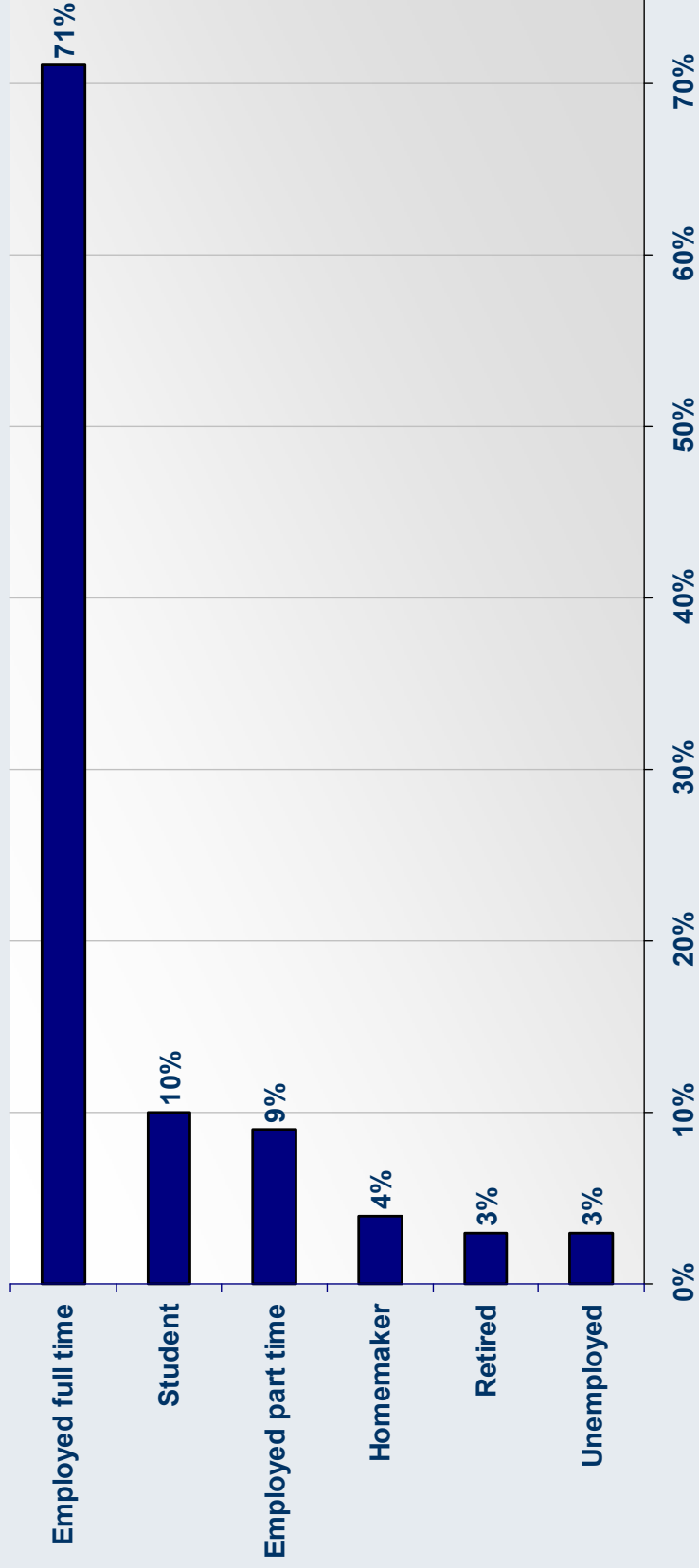
Q35a. Into which of the following categories did your personal income, before taxes, fall in 2005? CA respondents n=400.

Respondent Profile: Household Income 2005



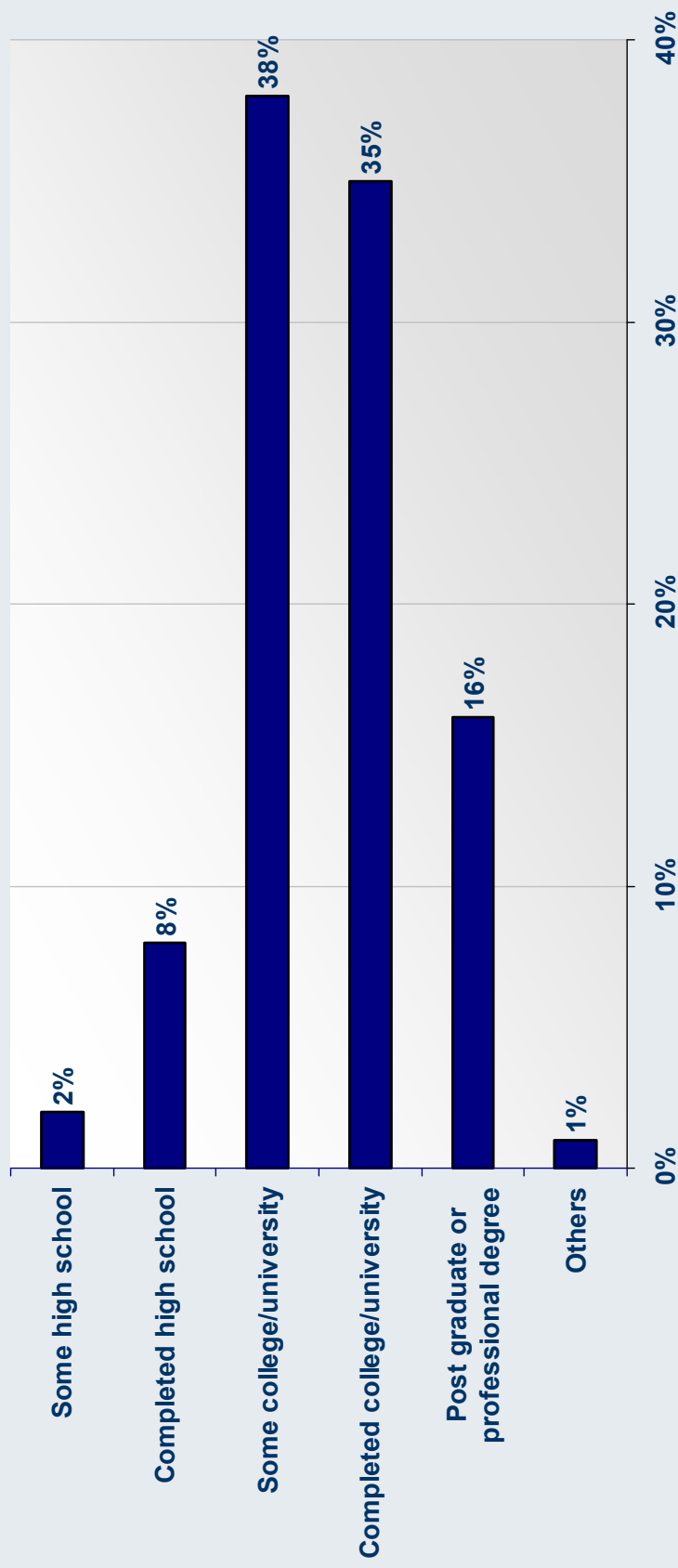
Q35b. Into which of the following categories did your household income, before taxes, fall in 2005? CA respondents n=400.

Respondent Profile: Employment Status



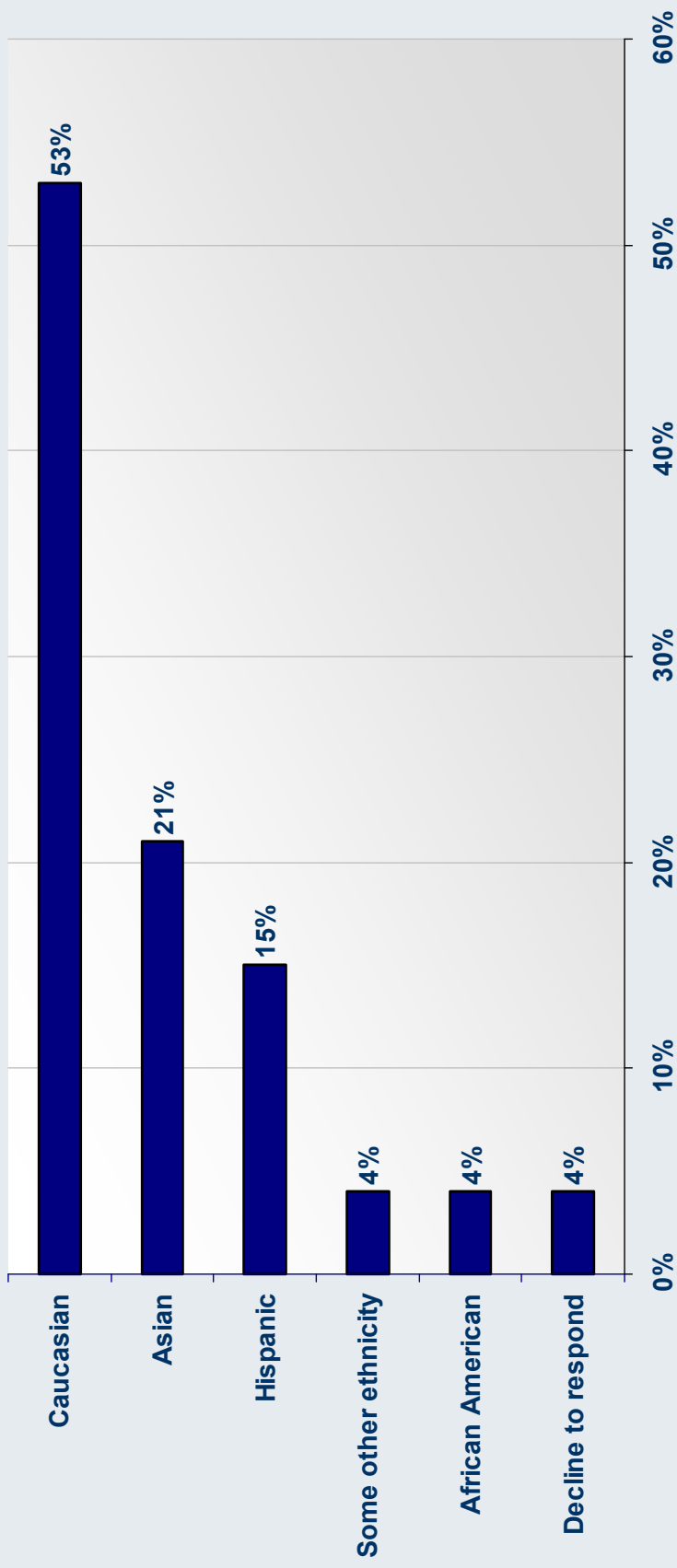
Q36. Which of the following best describes your current employment status? CA respondents n=400.

Respondent Profile: Education



Q37. What is the highest level of education that you have completed? CA respondents n=400.

Respondent Profile: Ethnicity

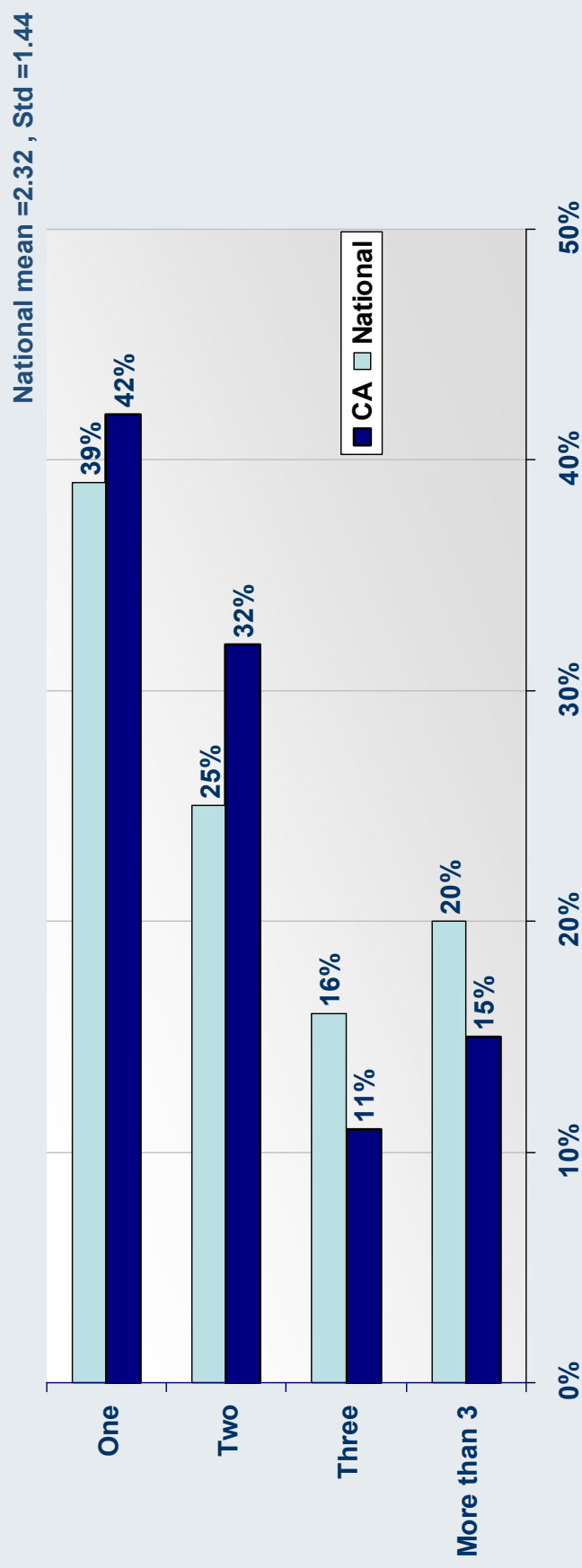


Q38. And are you ... ? CA respondents *n*=400.

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Number of Recharges



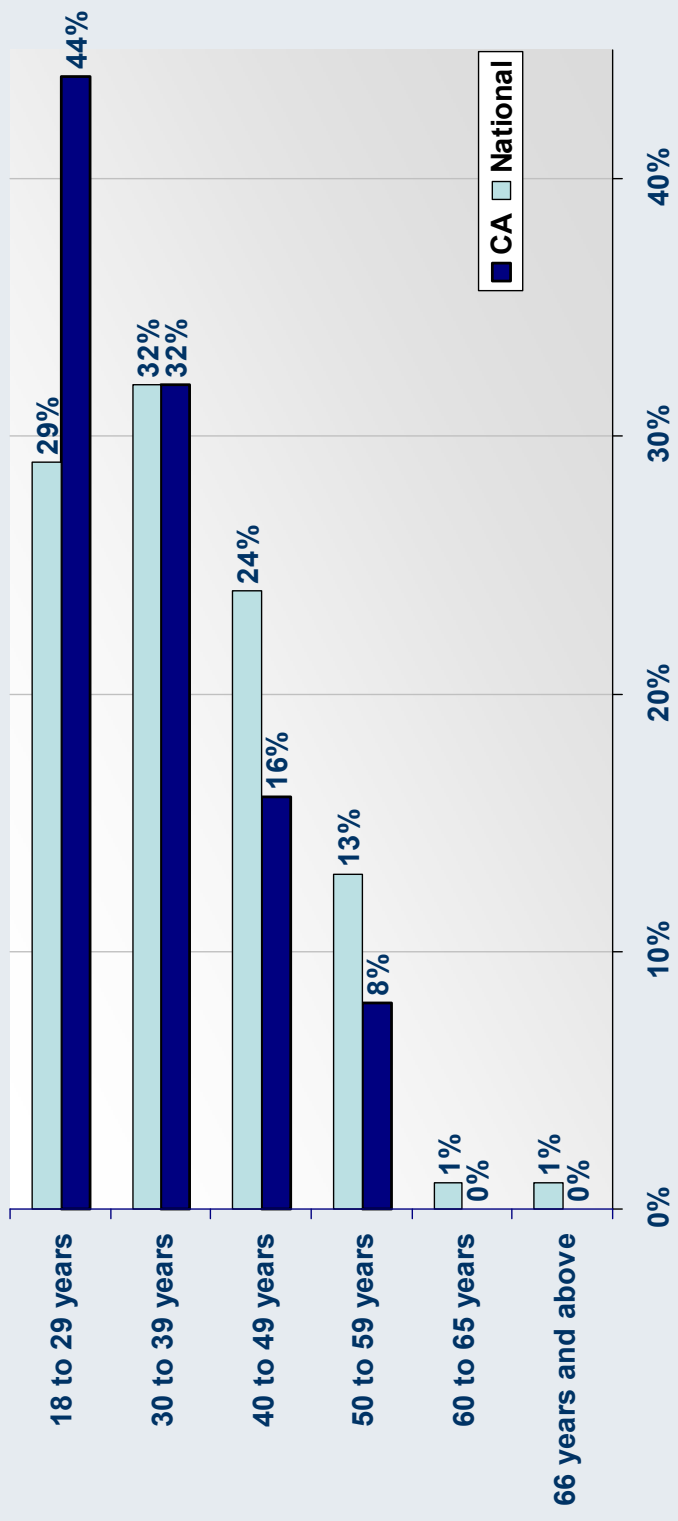
Q9. Including past and present vehicles, approximately how many times have you recharged your vehicle's R-134a refrigerant? National respondents n=475.

Number of Recharges

	Total	Sub-Samples		National by Region			
		California	National	Northeast	South	Midwest	West
Base:	1000	400	600	150	150	150	150
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
One	33	37	31	29	27	36	32
Two	23	28	20	19	17	23	21
Three	11	10	13	13	11	11	15
More than 3	32	26	37	39	45	30	32

Q9. Including past and present vehicles, approximately how many times have you recharged your vehicle's R-134a refrigerant? National respondents n=600.

Respondent Profile: Age



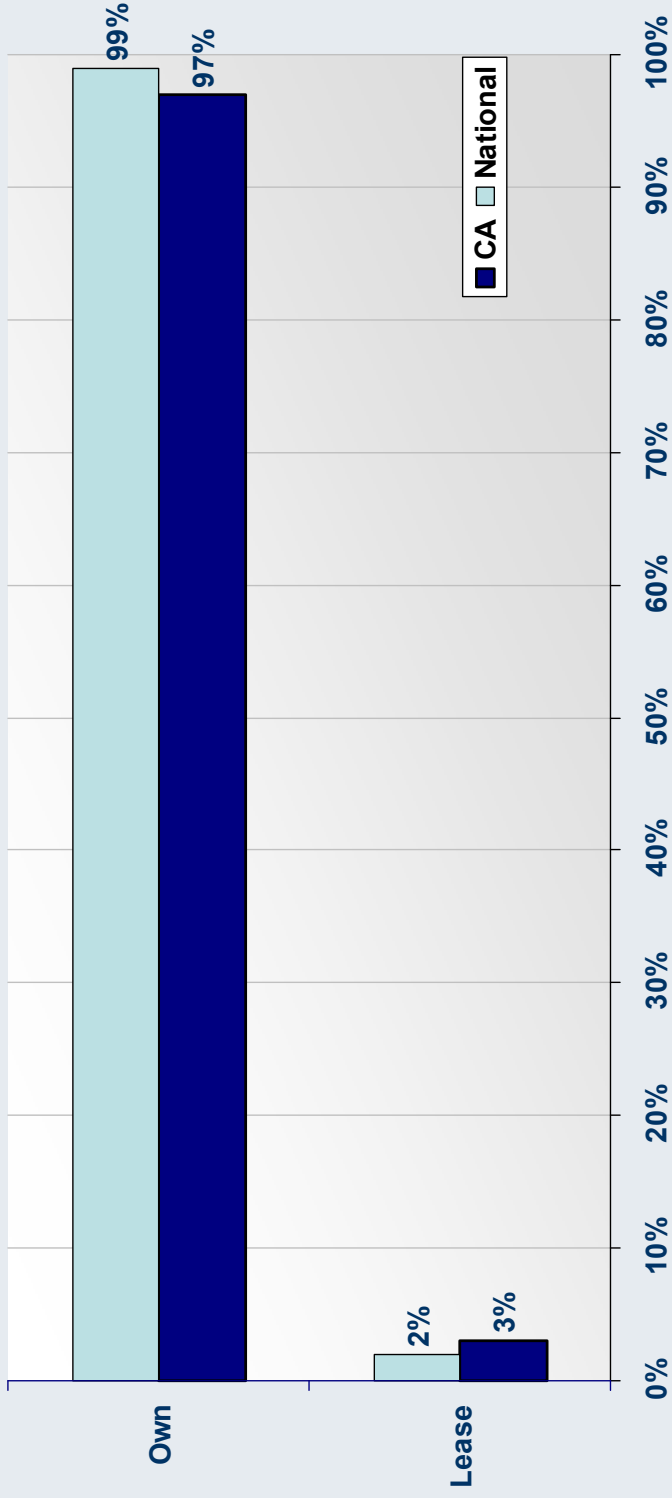
Q1. In which of these groups does your age fall? National respondents n=600.

Respondent Profile: Age

	Total	Sub-Samples		National by Region			
		California	National	Northeast	South	Midwest	West
Base:	1000	400	600	150	150	150	150
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Under 18 years	0	0	0	0	0	0	0
18 to 29 years	35	44	29	30	28	25	32
30 to 39 years	32	32	32	30	32	31	33
40 to 49 years	21	16	24	19	27	27	25
50 to 59 years	11	8	13	21	9	15	8
60 to 65 years	1	0	1	1	1	2	2
66 years and above	1	0	1	0	3	1	0

Q1. In which of these groups does your age fall? National respondents n=600.

Respondent Profile: Vehicle Ownership



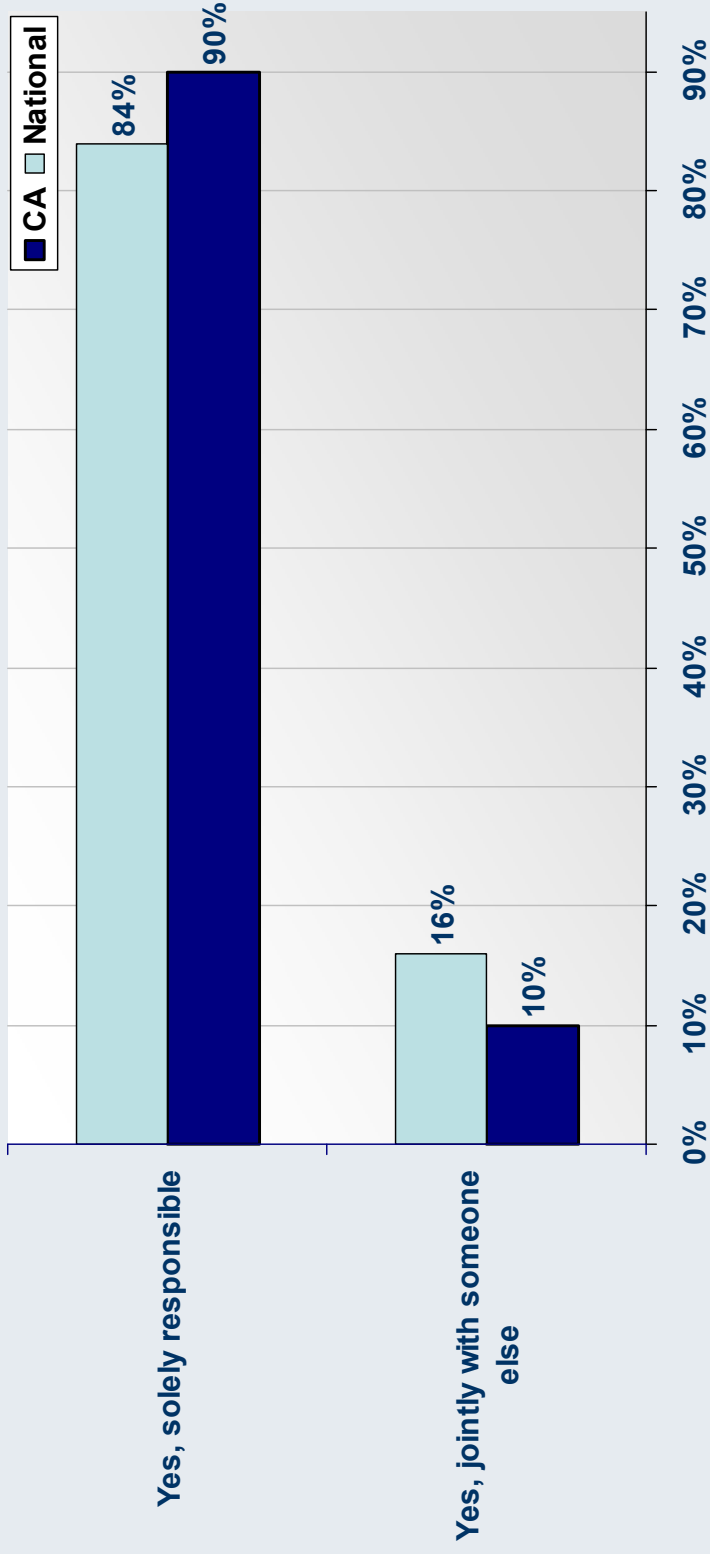
Q2. Do you own or lease a car? National respondents n=600.

Respondent Profile: Vehicle Ownership

	Total	Sub-Samples		National by Region			
		California	National	Northeast	South	Midwest	West
Base:	1000	400	600	150	150	150	150
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Own	98	97	99	99	99	98	99
Lease	2	3	2	1	1	2	1

Q2. Do you own or lease a car? National respondents n=600.

Respondent Profile: Responsibility for Vehicle



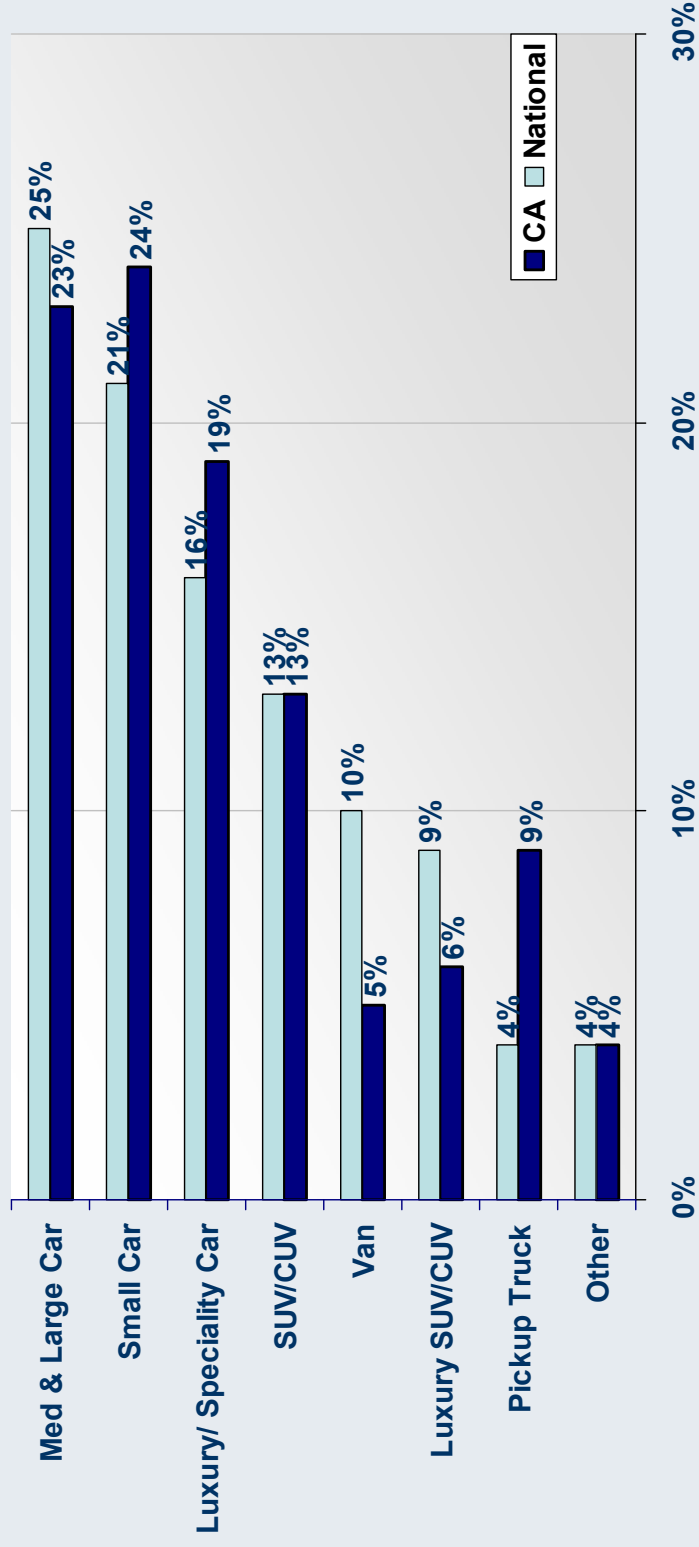
Q3. Are you responsible for making decisions about the maintenance and repairs for this vehicle? National respondents n=600.

Respondent Profile: Responsibility for Vehicle

	Total	Sub-Samples		National by Region			
		California	National	Northeast	South	Midwest	West
Base:	1000	400	600	150	150	150	150
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Yes, solely responsible	86	90	84	90	83	77	86
Yes, jointly with someone else	14	10	16	10	17	23	14

Q3. Are you responsible for making decisions about the maintenance and repairs for this vehicle? National respondents n=600.

Respondent Profile: Vehicle Segment



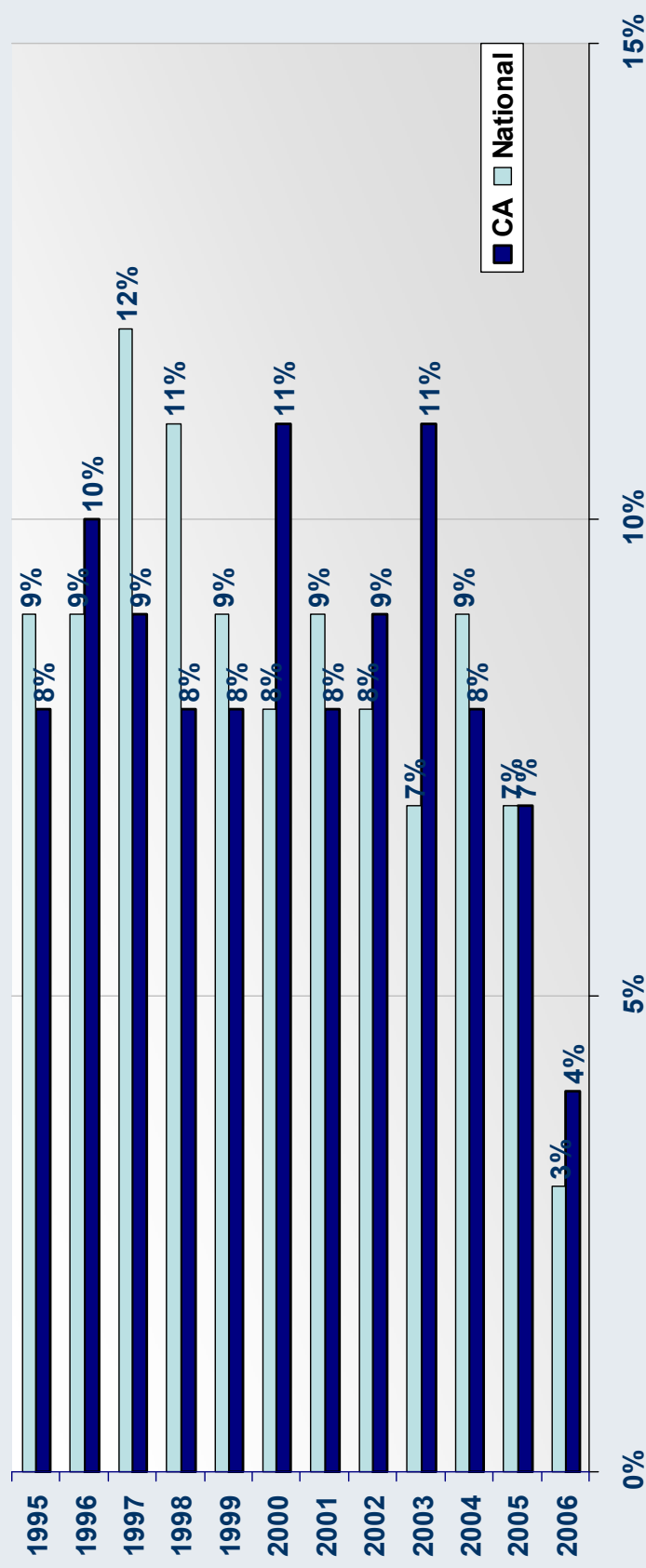
From Q7. You indicated that you recharged your vehicle's air conditioning refrigerant within in the past 12 months. What is the make, model and year of this vehicle? National respondents n=600.

Respondent Profile: Vehicle Segment

	Total	Sub-Samples		National by Region			
		California	National	Northeast	South	Midwest	West
Base:	1000	400	600	150	150	150	150
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Med & Large Car	24	23	25	27	23	25	24
Small Car	22	24	21	19	21	19	23
Luxury / Specialty Car	17	19	16	24	18	8	12
SUV/CUV	13	13	13	10	11	16	15
Van	8	5	10	8	7	13	10
Pickup Truck	9	9	9	6	14	10	7
Luxury SUV/CUV	5	6	4	5	2	5	4
Other	4	4	4	1	4	4	5

From Q7. You indicated that you recharged your vehicle's air conditioning refrigerant within in the past 12 months. What is the make, model and year of this vehicle? National respondents n=600.

Respondent Profile: Vehicle Model Year



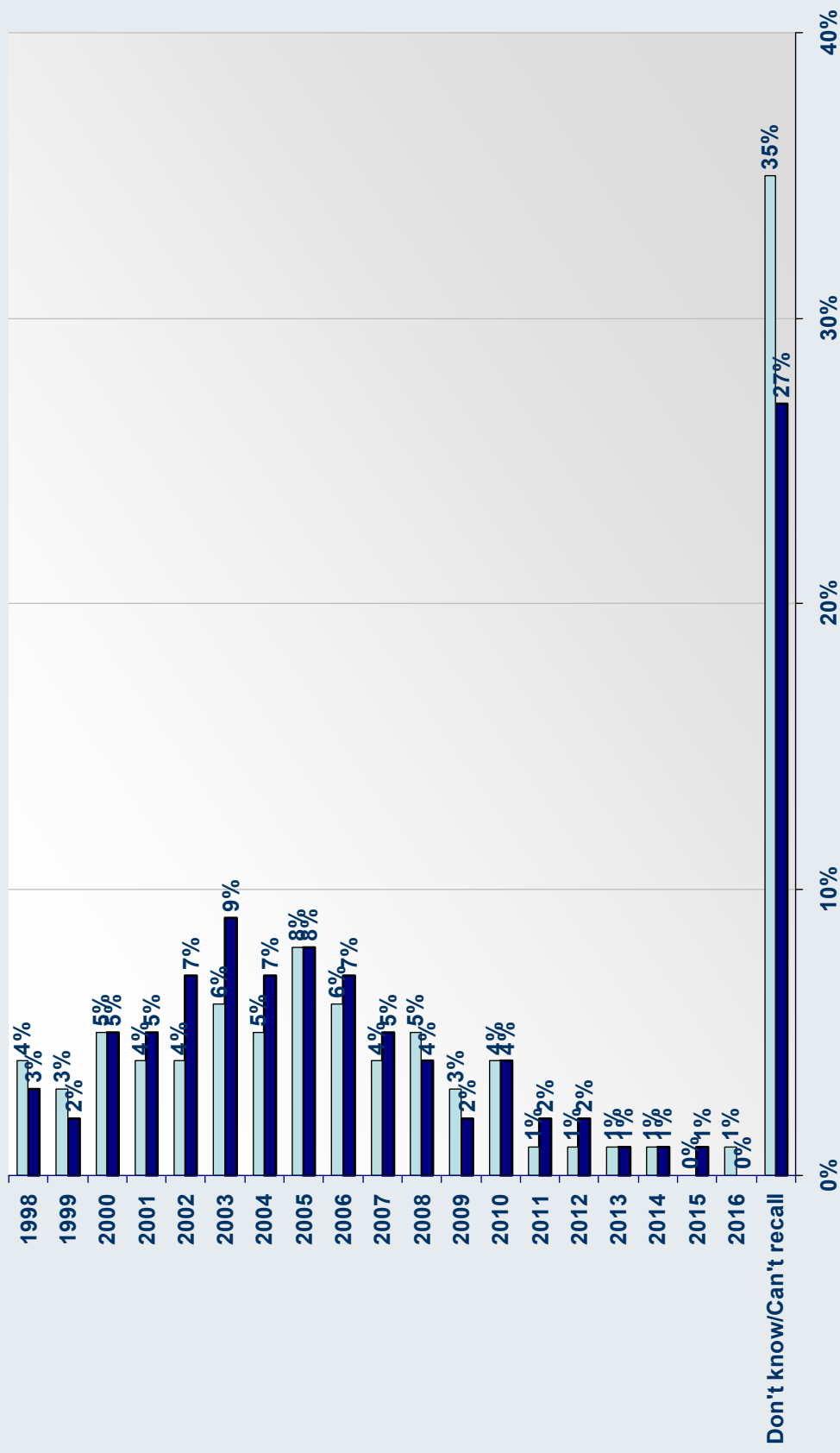
From Q7. You indicated that you recharged your vehicle's air conditioning refrigerant within in the past 12 months. What is the make, model and year of this vehicle? National respondents n=600.

Respondent Profile: Vehicle Model Year

	Total	Sub-Samples		National by Region			
		California	National	Northeast	South	Midwest	West
Base:	1000	400	600	150	150	150	150
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
1995	9	8	9	7	12	11	7
1996	9	10	9	5	11	9	13
1997	11	9	12	6	13	13	15
1998	10	8	11	10	11	11	11
1999	8	8	9	6	7	11	9
2000	9	11	8	7	7	11	7
2001	8	8	9	5	11	9	9
2002	9	9	8	9	10	7	8
2003	9	11	7	13	5	6	4
2004	9	8	9	16	7	7	8
2005	7	7	7	14	3	5	6
2006	3	4	3	3	3	2	3

From Q7. You indicated that you recharged your vehicle's air conditioning refrigerant within in the past 12 months. What is the make, model and year of this vehicle? National respondents n=600.

Respondent Profile: Warranty Expiration



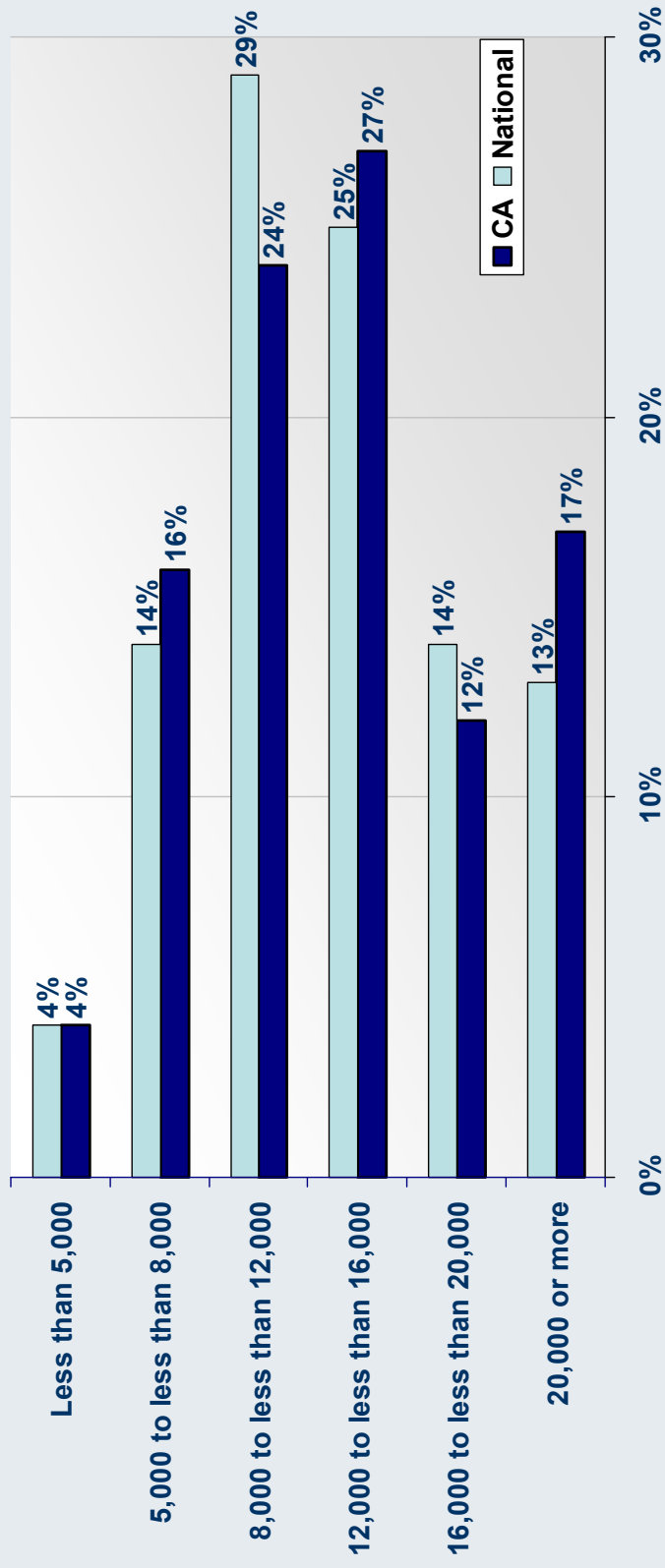
Q8a. For this vehicle, in which year did (or will) the manufacturer's warranty end? National respondents n=600.

Respondent Profile: Warranty Expiration

	Total	Sub-Samples		National by Region			
		California	National	Northeast	South	Midwest	West
Base:	1000	400	600	150	150	150	150
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
1998	4	3	4	2	4	4	7
1999	2	2	3	3	5	1	2
2000	5	5	5	4	6	4	6
2001	4	5	4	3	3	6	2
2002	6	7	4	3	5	5	4
2003	7	9	6	7	5	5	6
2004	6	7	5	3	7	5	5
2005	8	8	8	7	10	5	9
2006	7	7	6	5	9	6	5
2007	5	5	4	7	1	5	5
2008	5	4	5	6	3	5	7
2009	3	2	3	5	3	2	4
2010	4	4	4	7	3	3	1
2011	1	2	1	3	0	0	0
2012	1	2	1	2	0	0	0
2013	1	1	1	1	2	0	1
2014	1	1	1	1	0	1	1
2015	0	1	0	1	0	0	0
2016	1	0	1	1	1	1	0
Don't know/Can't recall	32	27	35	31	31	43	35

Q8a. For this vehicle, in which year did (or will) the manufacturer's warranty end? National respondents n=600.

Respondent Profile: Annual Mileage



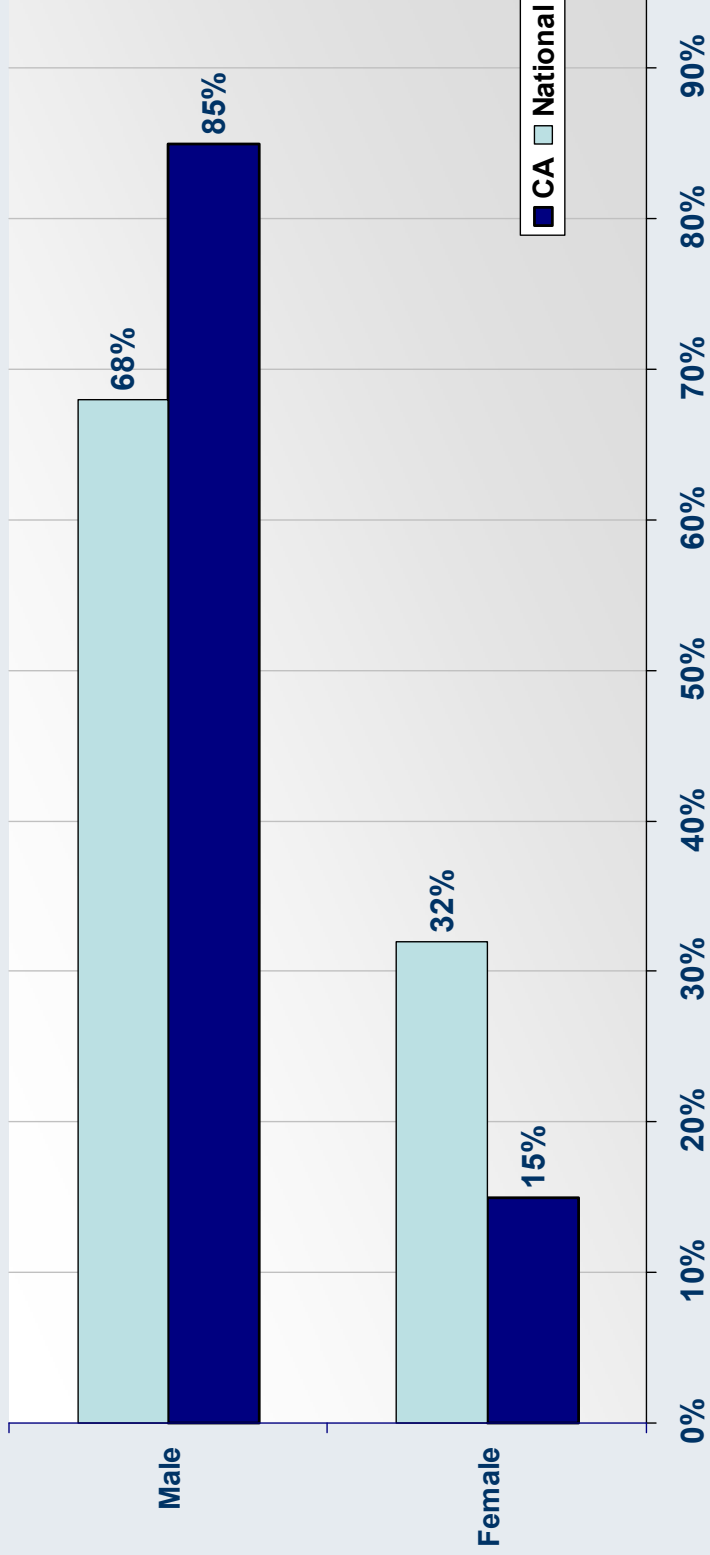
Q31. On average, how many miles do you drive in a year? National respondents n=600.

Respondent Profile: Annual Mileage

	Total	Sub-Samples		National by Region			
		California	National	Northeast	South	Midwest	West
Base:	1000	400	600	150	150	150	150
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Less than 5,000	4	4	4	5	6	2	3
5,000 to less than 8,000	15	16	14	9	16	16	16
8,000 to less than 12,000	27	24	29	34	25	31	26
12,000 to less than 16,000	26	27	25	33	22	21	24
16,000 to less than 20,000	13	12	14	11	12	13	20
20,000 or more	15	17	13	7	19	17	11

Q31. On average, how many miles do you drive in a year? National respondents n=600.

Respondent Profile: Gender



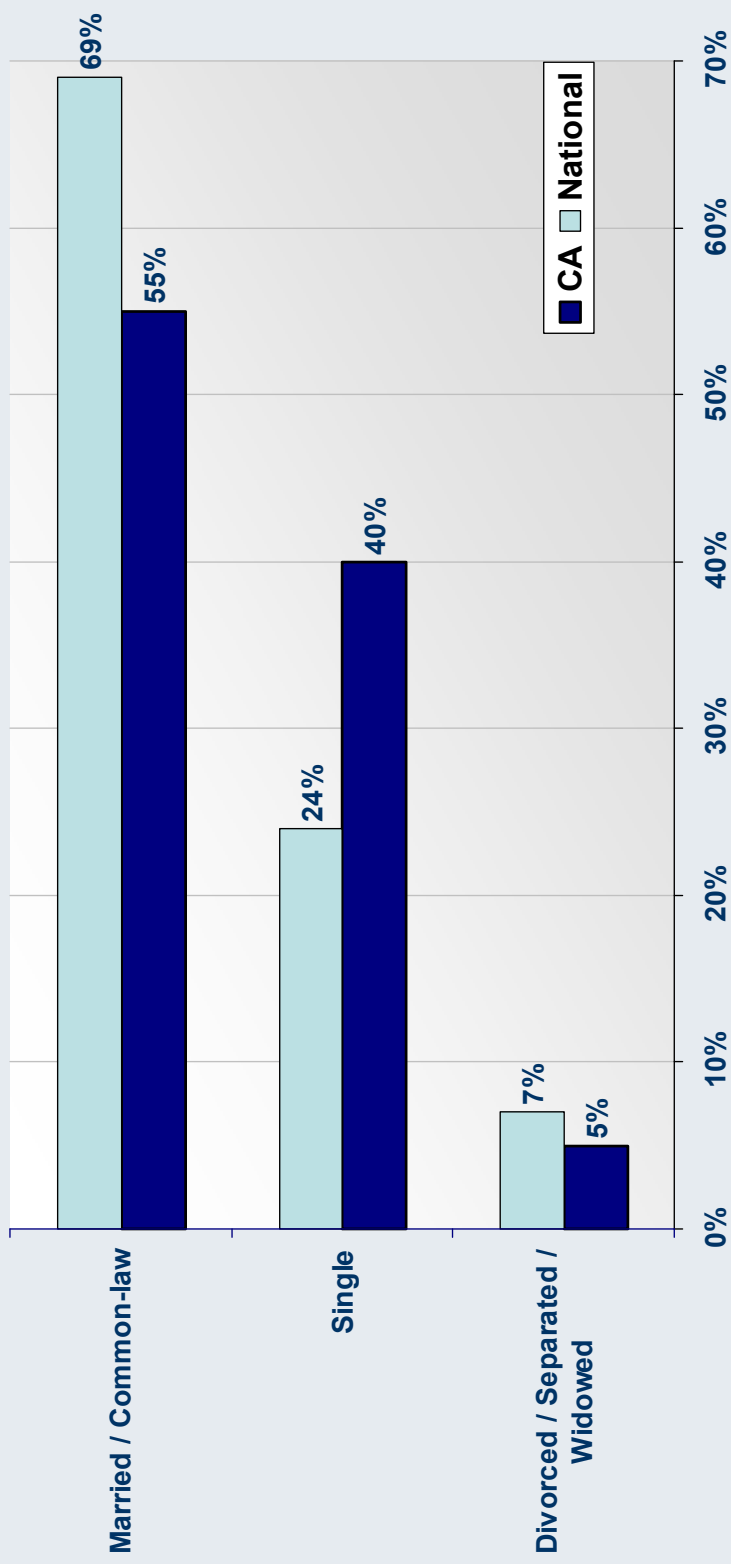
Q33. What is your gender? National respondents n=600.

Respondent Profile: Gender

	Total	Sub-Samples		National by Region			
		California	National	Northeast	South	Midwest	West
Base:	1000	400	600	150	150	150	150
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Male	75	85	68	64	59	61	86
Female	25	15	32	36	41	39	14

Q33. What is your gender? National respondents n=600.

Respondent Profile: Marital Status



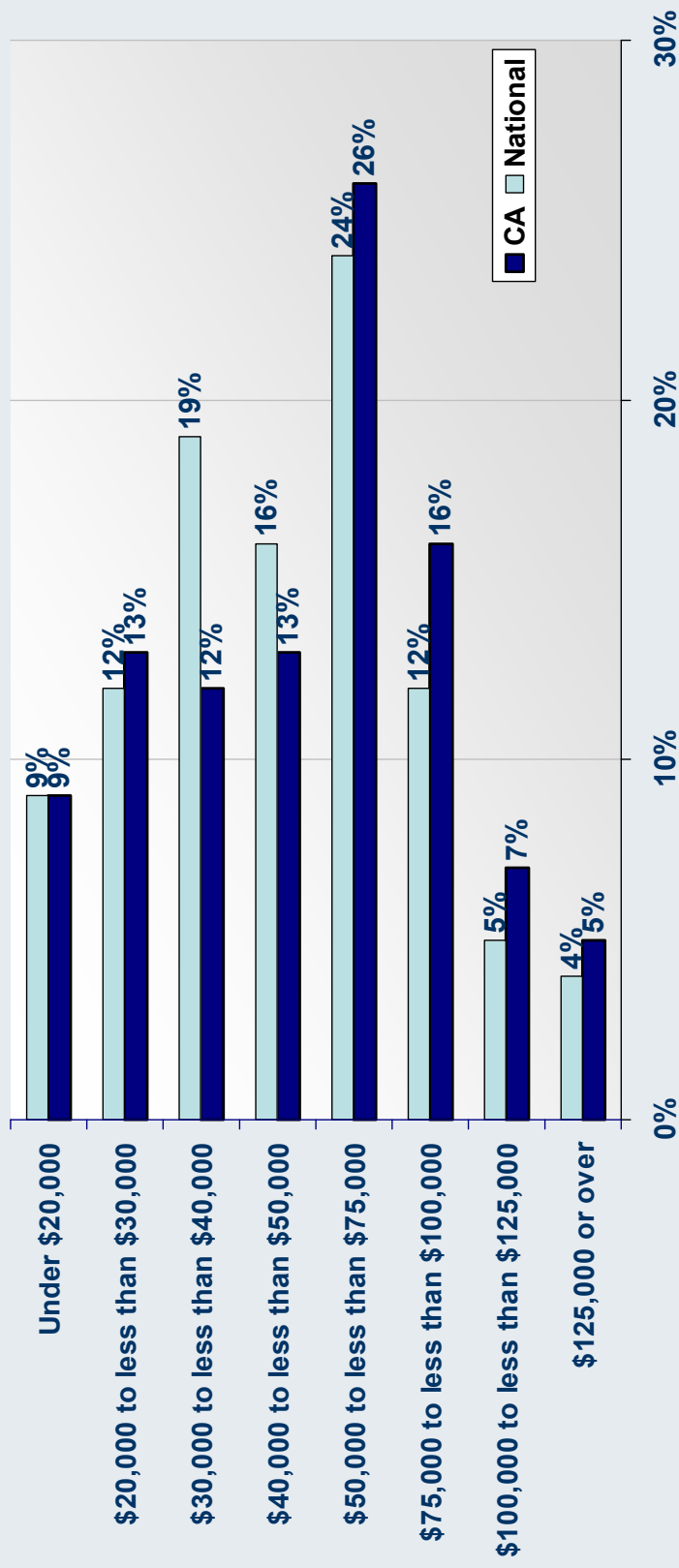
Q34a. What is your marital status? National respondents n=600.

Respondent Profile: Marital Status

	Total	Sub-Samples		National by Region			
		California	National	Northeast	South	Midwest	West
Base:	1000	400	600	150	150	150	150
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Married/Common-law	64	55	69	72	68	63	73
Single	30	40	24	23	24	26	21
Divorced/Separated/Widowed	6	5	7	5	8	11	5

Q34a. What is your marital status? National respondents n=600.

Respondent Profile: Personal Income 2005



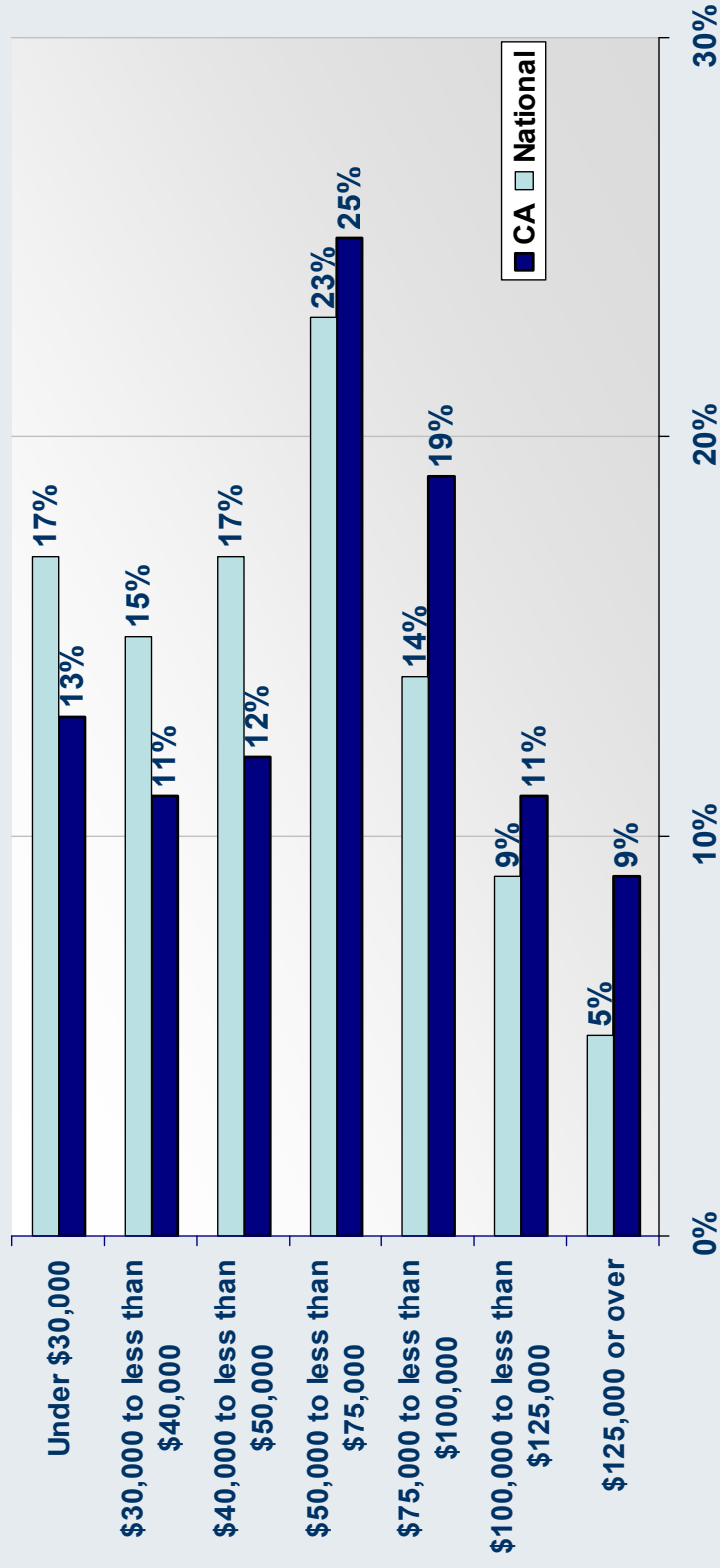
Q35a. Into which of the following categories did your personal income, before taxes, fall in 2005? National respondents n=600.

Respondent Profile: Personal Income 2005

	Total	Sub-Samples		National by Region			
		California	National	Northeast	South	Midwest	West
Base:	1000	400	600	150	150	150	150
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Under \$20,000	9	9	9	5	11	11	7
\$20,000 to less than \$30,000	12	13	12	8	9	18	13
\$30,000 to less than \$40,000	16	12	19	16	19	21	21
\$40,000 to less than \$50,000	14	13	16	15	18	13	17
\$50,000 to less than \$75,000	25	26	24	25	27	19	26
\$75,000 to less than \$100,000	13	16	12	19	9	10	8
\$100,000 to less than \$125,000	6	7	5	5	5	3	6
\$125,000 or over	5	5	4	7	2	5	3

Q35a. Into which of the following categories did your personal income, before taxes, fall in 2005? National respondents n=600.

Respondent Profile: Household Income 2005



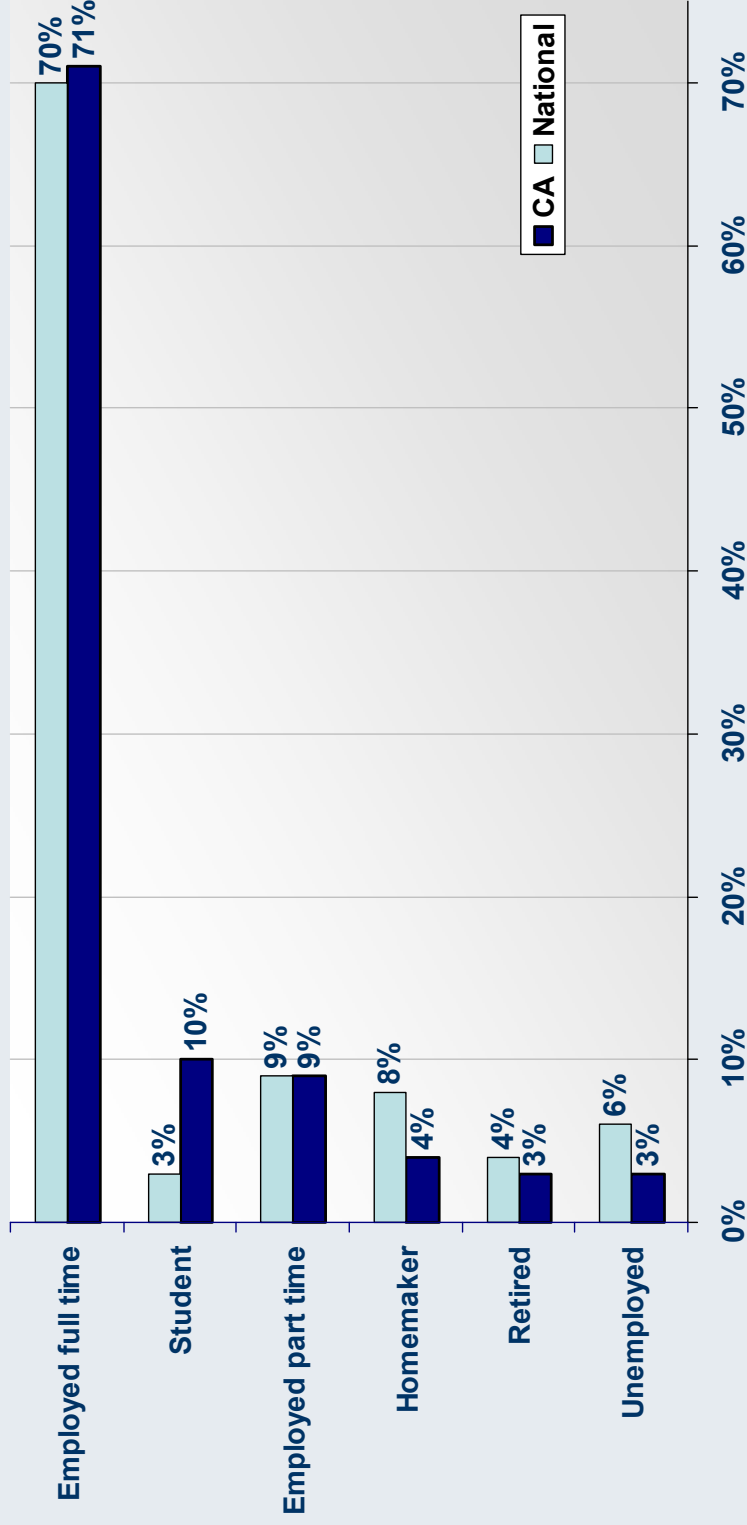
Q35b. Into which of the following categories did your household income, before taxes, fall in 2005? National respondents n=600.

Respondent Profile: Household Income 2005

	Total	Sub-Samples		National by Region			
		California	National	Northeast	South	Midwest	West
		400	600	150	150	150	150
<i>Base:</i>	1000						
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Under \$30,000	15	13	17	10	19	25	15
\$30,000 to less than \$40,000	14	11	15	12	16	17	17
\$40,000 to less than \$50,000	15	12	17	15	19	15	17
\$50,000 to less than \$75,000	24	25	23	19	21	20	31
\$75,000 to less than \$100,000	16	19	14	19	15	13	9
\$100,000 to less than \$125,000	10	11	9	15	8	5	7
\$125,000 or over	7	9	5	9	2	5	3

Q35b. Into which of the following categories did your household income, before taxes, fall in 2005? National respondents n=600.

Respondent Profile: Employment Status



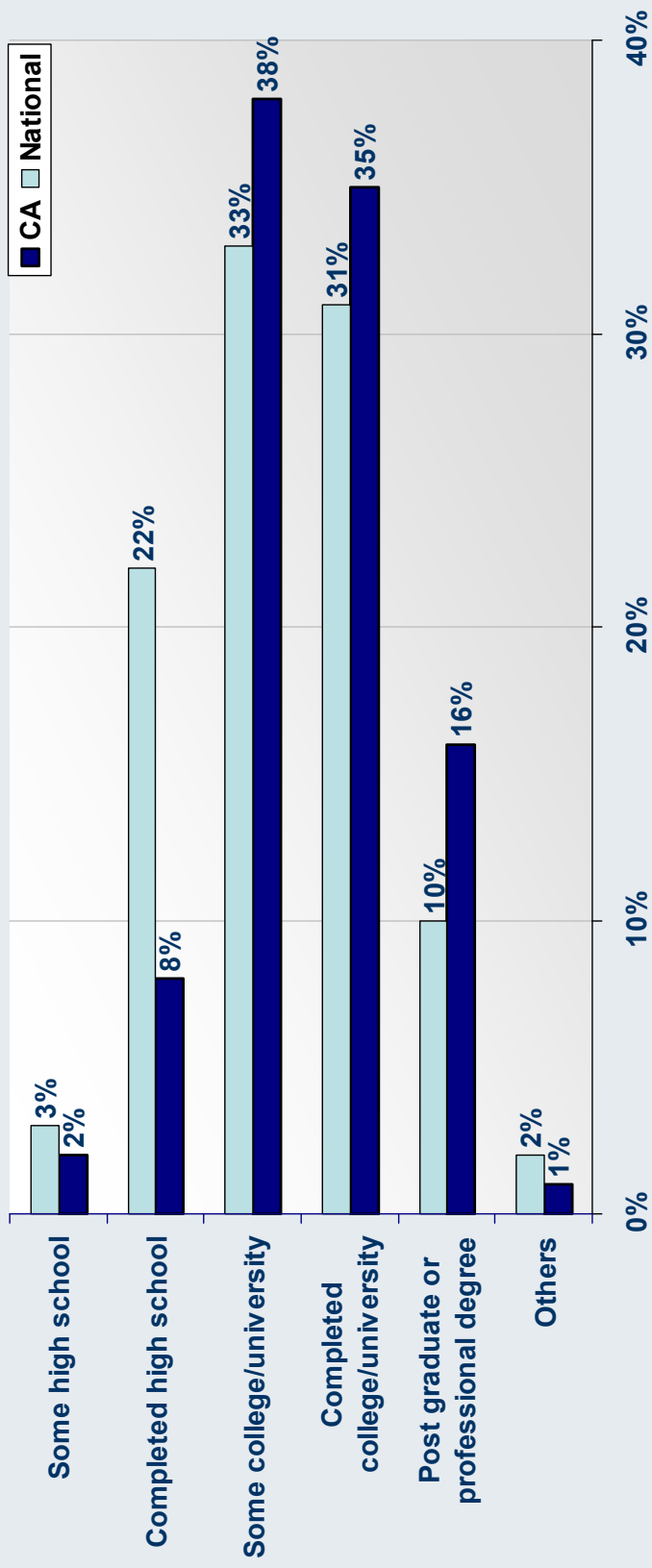
Q36. Which of the following best describes your current employment status? National respondents n=600.

Respondent Profile: Employment Status

	Total	Sub-Samples		National by Region			
		California	National	Northeast	South	Midwest	West
		400	600	150	150	150	150
Base:	1000						
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Employed full time	70	71	70	77	65	63	75
Employed part time	9	9	9	7	14	9	7
Homemaker	7	4	8	7	9	10	6
Student	6	10	3	2	2	3	4
Retired	4	3	4	3	4	6	4
Unemployed	5	3	6	5	5	9	4

Q36. Which of the following best describes your current employment status? National respondents n=600.

Respondent Profile: Education



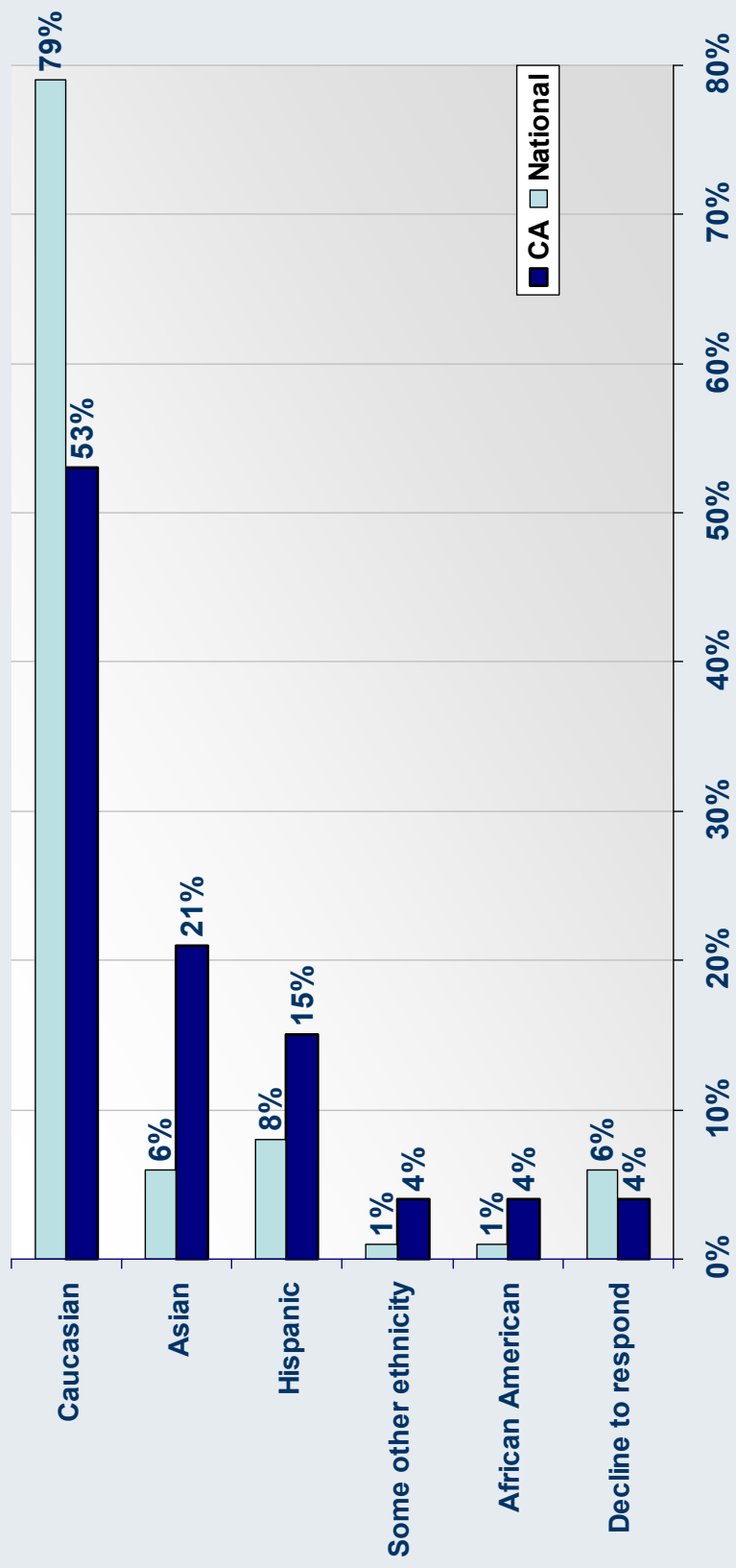
Q37. What is the highest level of education that you have completed? National respondents n=600.

Respondent Profile: Education

	Total	Sub-Samples		National by Region			
		California	National	Northeast	South	Midwest	West
<i>Base:</i>	1000	400	600	150	150	150	150
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Some high school	3	2	3	5	5	1	1
Completed high school	16	8	22	16	25	25	22
Some college/university	35	38	33	23	33	35	41
Completed college/university	33	35	31	41	24	29	29
Post graduate or professional degree	12	16	10	12	10	9	7
Other	1	1	2	3	2	1	1

Q37. What is the highest level of education that you have completed? National respondents n=600.

Respondent Profile: Ethnicity



Q38. And are you ... ? National respondents n=600.

Respondent Profile: Ethnicity

	Total	Sub-Samples		National by Region			
		California	National	Northeast	South	Midwest	West
Base:	1000	400	600	150	150	150	150
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Caucasian	69	53	79	71	79	85	80
Hispanic	11	15	8	11	8	5	9
Asian	12	21	6	8	6	3	5
African American	5	4	6	8	6	7	4
Some other ethnicity (Please specify) :	2	4	1	1	1	1	1
Decline to respond	2	4	1	1	0	0	1

Q38. And are you ... ? National respondents n=600.

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Guide to Reading Tabular Data: Dummy Data

Topic Line
Key findings

Motivation for DIY Recharge: Cost of Professional Recharge

The pattern of responses did not vary by personal income level. However, respondents who indicated that they would likely have to go without a fully functional AC system or find alternative means to acquire r-134a were significantly more likely to state that cost was the most important reason to start doing this job themselves compared to respondents who suggested that they would likely pay a professional if r-134a was banned.

	Reaction to Product Removal	
	Likely Pay Professional	Likely Go Without/ Find Alternatives
Total	184	191
	(%)	(%)
Base:		
It was the most important reason	24	41
It was one of the most important reasons	39	35
It influenced my decision but was not one of the most important reasons	22	12
It did not influence my decision at all	15	12

Q17. To what extent did the cost of having this work completed by a professional automotive technician influence your decision to start doing this type of work yourself? CA respondents n=375.

Relevant sample sizes

Response items

Profile / segmentation variables of interest. Group size (count) appears below.

Read: Respondents who indicated that they would likely have to go without a fully functional AC system or find alternative means to acquire R-134a were significantly more likely to state that cost was the most important reason to start doing this job themselves (41%) compared to respondents who suggested that they would likely pay a professional if R-134a was banned (24%) .

Question
Additional notes