



DOT HS 812 410 October 2017

2011 Tire Pressure Monitoring Systems Special Study User's Coding Manual

DISCLAIMER

This publication is distributed by the U.S. Department of Transportation, National Highway Traffic Safety Administration, in the interest of information exchange. The opinions, findings, and conclusions expressed in this publication are those of the authors and not necessarily those of the Department of Transportation or the National Highway Traffic Safety Administration. The United States Government assumes no liability for its content or use thereof. If trade or manufacturers' names or products are mentioned, it is because they are considered essential to the object of the publication and should not be construed as an endorsement. The United States Government does not endorse products or manufacturers.

Suggested APA Format Citation:

Barron, P., Doyle, C., Radja, G., & Kindelberger, J. (2017, October). 2011 Tire Pressure Monitoring Systems Special Study, User's Coding Manual (Report No. DOT HS 812 410). Washington, DC: National Highway Traffic Safety Administration.

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
DOT HS 812 410		
4. Title and Subtitle Report Title	,	5. Report Date
		October 2017
2011 Tire Pressure Monitoring	g Systems Special Study, User's Coding Manual	6. Performing Organization Code
7. Authors		8. Performing Organization Report
Paul Barron; Charlene Doyle; (Greg Radja; John Kindelberger	No.
9. Performing Organization Name And Ad	dress	10. Work Unit No.
National Center for Statistics a	nd Analysis	
National Highway Traffics Safe	•	11. Contract or Grant No.
1200 New Jersey Avenue SE.		
Washington, DC 20590		
12. Sponsoring Agency Name and Addres	es	13. Type of Report and Period
National Center for Statistics a	nd Δnalveis	Covered
National Highway Traffics Safe	•	2011 TPMS-SS Study
1200 New Jersey Avenue SE.	ty Administration	Data collection August 2010 to
Washington, DC 20590		April 2011
vvasinigion, DC 20090		14. Sponsoring Agency Code

15. Supplementary Notes

16. Abstract

The primary objective of the Tire Pressure Monitoring Systems Special Study (TPMS-SS) is to determine the effectiveness of TPMS in promoting proper tire inflation. This manual is in support of this project and the release of the project data.

The TPMS-SS provides data on effectiveness of TPMS in promoting proper tire inflation in the tires of passenger vehicles automobiles, SUVs, vans, and light trucks). Personnel from NHTSA's National Automotive Sampling System - Crashworthiness Data System (NASS CDS) collected data from August 2010 to April 2011 at fuel stations located in the NASS-CDS 24 Primary Sampling Units. Data includes 6,103 complete vehicle observations with tire pressure of all four tires, with sampling weights included for national representation. The survey also collected some supplementary data on tires and fueling.

A previously released report, *Evaluation of the Effectiveness of TPMS in Proper Tire Pressure Maintenance* (DOT Report No. HS 811 681), provided an effectiveness evaluation of the survey results. This manual is being released concurrently with the survey data.

17. Key Words		18. Distribution Stater	nent	
2011 TPMS-SS Manual; NHTSA; TPMS; Tire Pressure Monitoring System; inflation; FMVSS 138		No restrictions; Document is available to the public from the National Technical Information Service, www.ntis.gov		•
19. Security Classif. (of this report)	20. Security Classi	f. (of this page)	21. No. of Pages 378	22. Price N/A

D-4- C:!!: ''		
	ontes	
1.1. Sn 1.1.1.	Sample Design	
1.1.2.	Site Cooperation	
	iteria for Participating	
1.2.1.	Vehicles	
1.2.1		
1.2.1 1.2.2.	L.2. Other Vehicle Characteristics	
	ocedures	
1.3. Pr	Data Collection Teams	
_		
1.3.2.	Data Collection Schedule	
	2.1. Overall	
1.3.2 1.3.3.	2.2. Daily	
	orms and Variables	
	Observational Data	
	Inspection Data	
1.4.2.		
1.4.3.	Interview Data	
_	uality Control Procedures	
1.5.1.	Development and Pilot Testing of Data Collection Forms	
1.5.2.	Field Staff	
1.5.3.	Training and Pilot Testing of the Data Collection Protocols	1
1.5.4.	Unannounced Site Visits	
Data		1
	ata Entry	
2.2. Da	ata Editing	تـ
2.3. Im	putation	í
2.4. We	eighting and Estimation	
File Struct	ure	
2.4.1.	Data Set Organization	
2.4.2.	Data Not Included	
2.4.3.	Missing Data	

OBSERVATION Data Set	16
Question 1 – Primary Sampling Unit Number	17
Question 2 – Site Number	18
Question 3 – Observation Number	19
Question 4 – Date of Observation	20
Observation Data: Question 5 – Interview In	21
Observation Data: Question 6 – Observations	22
Response 6.0 – Interview Category	23
Response 6.4 – Body Type	24
Response 6.5 – Sex	25
Response 6.6 – Age	26
Response 6.7 – # in vehicle	27
Interview Data: Question 18 or 19 – What is your home ZIP Code	28
Interview Data: Question 19 or 20 – How old are you	29
Interview Data: Question 20 or 21 – What is the highest grade or year of school you completed	30
Daily Site Form Tallies and Inspections (DST 1060)	31
Question 1 – Primary Sampling Unit Number	33
Question 2 – Site Number	34
Question 3 – Researcher 1	35
Question 4 – Researcher 2	36
Question 5 – Date of Observation	37
Question 6 - Area	38
Question 7 - ZIP Code	39
Question 8 – Spanish Speaker Available	40
Question 9 – Time Period	41
Response 9.1 - Time Period - From	42
Response 9.2 - Time Period - To	43
Question 10 – Vehicle Body Types	44
Question 11 – Vehicle Body Type Count Tallies	45
Question 12 – Tally Total	46
Question 13 – Inspection Total	47
Question 14 - Refusal Total	48
Question 15 – Totals for the Day – Tally Total	49
Question 15.1 – Totals for the Day – Tally Total	50

Question 15.2 – Totals for the Day – Inspection Total	51
Question 15.3 – Totals for the Day – Refused Total	52
Daily Site Form – Refueling (DSR 1061)	53
Question 1 – Primary Sampling Unit Number	55
Question 2 - Site Number	56
Question 3 – Date of Observation	57
Question 4 – Station Characteristics	58
Response 4.1 – Cash Only	59
Response 4.2 – Pay-at-pump	60
Response 4.3 – Cash Window	61
Response 4.4 - Store	62
Response 4.5 – Car Wash	63
Response 4.6 – Auto repair	64
Question 5 – Body Type	65
Question 6 – Time In	66
Question 7 - Time Out	67
Question 8 – Activities	68
Response 8.1 – Pay and Leave	69
Response 8.2 – Store	70
Response 8.3 – Auto-Related	71
Response 8.4 – Auto-Related	72
Tire Inspection Form (TIR 1062)	73
Question 1 – Primary Sampling Unit Number	75
Question 2 - Site Number	76
Question 3 – Observation Number	77
Question 4 – Date of Observation	78
Question 5 – Time of Day	79
Question 6 – Vehicle Model Year	80
Question 7 – Vehicle Make	81
Question 8 – Vehicle Model	82
Question 9 – Ambient Air Temperature	83
Question 10 - Weather	84
Question 11 – Tire	85
Ouestion 12 - Tire Manufacturer	86

Response 12.1 – Tire Manufacturer - LF	87
Response 12.2 – Tire Manufacturer - LR	88
Response 12.3 – Tire Manufacturer - RR	89
Response 12.4 – Tire Manufacturer - RF	90
Question 13 – Tire Model	91
Response 13.1 – Tire Model - LF	92
Response 13.2 – Tire Model - LR	93
Response 13.3 – Tire Model - RR	94
Response 13.4 – Tire Model - RF	95
Question 14 – Tire Size	96
Response 14.1 – Tire Size - LF	97
Response 14.2 – Tire Size - LR	98
Response 14.3 – Tire Size - RR	99
Response 14.4 – Tire Size - RF	100
Question 15 – Maximum Pressure	101
Response 15.1 – Maximum Pressure - LF	102
Response 15.2 – Maximum Pressure - LR	103
Response 15.3 – Maximum Pressure - RF	104
Response 15.4 – Maximum Pressure - RR	105
Question 16 – Measured Pressure	106
Response 16.1 – Measured Pressure - LF	107
Response 16.2 – Measured Pressure - LR	108
Response 16.3 – Measured Pressure - RF	109
Response 16.4 – Measured Pressure - RR	110
Question 17 – Tire Temperature	111
Response 17.1 – Tire Temperature LF	112
Response 17.2 – Tire Temperature LR	113
Response 17.3 – Tire Temperature RF	114
Response 17.4 – Tire Temperature RR	115
Question 18 – Measured Tread Depth	116
Response 18.1 – Measured Tread Depth LF	117
Response 18.2 – Measured Tread Depth LR	118
Response 18.3 – Measured Tread Depth RF	119

Vehicle Inspection Form (VEH 1063)	
Question 1 – Primary Sampling Unit Number	123
Question 2 - Site Number	124
Question 3 – Observation Number	125
Question 4 - Date of Observation	126
Question 5 – Vehicle Model Year	127
Question 6 – Make	128
Question 7 - Model	129
Question 8 – Vehicle Mileage	130
Question 9 – Vehicle Body Type Category	131
Question 10 – Vehicle Identification Number	132
Question 11 – TPMS Display	133
Response 11.1 – Display Only	135
Response 11.2 – Tire Specific Warning Icon	136
Response 11.3 – Tire Specific psi	137
Response 11.3.1 - LF Tire psi	138
Response 11.3.2 - LR Tire psi	139
Response 11.3.3 - RF Tire psi	140
Response 11.3.4 - RR Tire psi	
Question 12 – GVWR	
Question 13 – Manufacturer's Recommended Tire Size	
Question 14 – Manufacturer's Recommended Cold Tire Pressure (front)	
Question 15 – Manufacturer's Recommended Cold Tire Pressure (rear)	145
nterview Form - Tire Pressure (INT 1064)	145
Question 1 – Primary Sampling Unit Number	149
Question 2 – Site Number	150
Question 3 – Observation Number	151
Question 4 – Date of Observation	152
Question 5 – Interview In	153
Question 6 - Observations	154
Response 6.0 – Interview Category	155
Response 6.1 – Time of Day	156
Response 6.2 – Ambient Air Temperature	157
Response 6.3 – Weather	158
Response 6.4 – Body Type	159

Response 6.5 – Sex	160
Response 6.6 – Age	161
Response 6.7 – # in vehicle	162
Question 7 – Who is the owner of this vehicle	163
Question 8 – How long have you had this vehicle	164
Question 9 – Was this vehicle new when you obtained it	165
Question 10 – Have any of the original tires been replaced? If so, which ones and when?	166
Response 10.A.1 to 10.A.6 – Tires Replaced	167
Response 10.B.1 – 10.B.6 – When Tires Replaced	168
Question 11 – What reasons are important to you for keeping tires properly inflated	169
Response 11.1 – Improved safety	170
Response 11.2 – Improved vehicle performance/handling	171
Response 11.3 – Improved fuel economy	172
Response 11.4 – Longer lasting tires	173
Response 11.5 – Other	174
Response 11.6. – Specify	175
Question 12 – Where do you primarily turn for information on what pressure to set your tires	176
Response 12.1 – (Intuition/prior knowledgeother)	177
Response 12.2 - Specify	178
Question 13 – Whose responsibility is it to check the tire pressure	179
Response 13.1 – (SelfOther)	180
Response 13.2 - Specify	181
Question 14 - When do you have the tire pressure checked, either by yourself or someone else?	182
Response 14.1 – Never	183
Response 14.2 – Before a long trip	184
Response 14.3 – When tires look or feel low	185
Response 14.4 – When tire pressure warning light comes on	186
Response 14.5 – When car is serviced	187
Response 14.6 – When the load being carried is changed	188
Response 14.7 – Tire pressure is checked on a regular basis	189
Response 14.8 – By OnStar or other automatic system	190
Response 14.9 – Don't know	191
Response 14.10 – Other	192
Response 14.11 - Specify	193

	Question 15 - When was the last time you, or someone else, checked the tire pressure	194
	Question 16 - When was the last time you, or someone else, put air in the tires	195
	Question 17 - The last time air was put in the tires on this vehicle - how was it done	196
	Question 18 – Does this vehicle have a Tire Pressure Monitoring System	197
	Question 19 – What is your home ZIP Code	198
	Question 20 - How old are you	199
	Question 21 – What is the highest grade or year of school you completed	200
In	terview Form – Refueling (INR 1065)	201
	Question 1 – Primary Sampling Unit Number	203
	Question 2 – Site Number	204
	Question 3 – Observation Number	205
	Question 4 – Date of Observation	206
	Question 5 – Interview In	207
	Question 6 – Observations	208
	Response 6.0 – Interview Category	209
	Response 6.1 – Time of Day	210
	Response 6.2 – Ambient Air Temperature	211
	Response 6.3 – Weather	212
	Response 6.4 – Body Type	213
	Response 6.5 - Sex	214
	Response 6.6 – Age	215
	Response 6.7 – # in vehicle	216
	Question 7 – Did you go out of your way to get to this gas station, if so, how far	217
	Question 8 – Did it take extra time to get to this gas station, if so, how long	218
	Question 9 – Before filling up your tank, where was the gas gauge	219
	Question 10 - How many persons total are in this vehicle	220
	Question 11 – How many of them are under the age of 16	221
	Question 12 – For each of the persons in the vehicle, what is his/her primary reason for traveling	222
	Response 12.A.1 – Count of drivers traveling to or from work	223
	Response 12.B.1 – Count of drivers traveling on work time	224
	Response 12.C.1 – Count of drivers traveling for other reasons	225
	Response 12.A.2 – Count of other adult occupants traveling to or from work	226
	Response 12.B.2 – Count of other adult occupants traveling on work time	227
	Response 12.0.2 – Count of other adult occupants traveling for other reasons	228

	Response 12.A.3 – Count of children under 16 traveling to or from work	229
	Response 12.B.3 – Count of children under 16 traveling on work time	230
	Response 12.C.3 – Count of children under 16 traveling for other reasons	231
	Question 13 – How many gallons of gas did you put in your vehicle	232
	Question 14 – After adding gas to your tank, where was the gas gauge	233
	Question 15 – If Full: Do you always fill up your tank	234
	Question 16 – What is the primary reason you stopped for gas today	235
	Response 16.1 – (Gas tank lowOther)	236
	Response 16.2 – Specify	237
	Question 17 – Does the vehicle have a Tire Pressure Monitoring System	238
	Question 18 – What is your home ZIP Code	239
	Question 19 – How old are you	240
	Question 20 – What is the highest grade or year of school you completed	241
lr	nterview Form - Supplemental (1066)	242
	Question 1 – Primary Sampling Unit Number	
	Question 2 – Site Number	246
	Question 3 – Observation Number	247
	Question 4 – Date of Observation	248
	Question 5 – SUP ID	249
	Question 6 – Does your TPMS have a warning lamp or a combined warning/malfunction lamp?	250
	Question 7 – Do you know where your TPMS warning/combined lamp is located? If yes, where?	251
	Response 7.1 – Noyes, other	252
	Response 7.2 - Specify	253
	Question 8 – How many times has your TPMS warning lamp come on beyond on/off cycles?	254
	Question 9 – When was the last time the warning/combined lamp illuminated on this vehicle?	255
	Question 10 – What actions were taken the last time the TPMS warning/combined lamp illuminated?	256
	Response 10.1 – Checked tire pressure	257
	Response 10.2 – Reset the TPMS	258
	Response 10.3 – Took vehicle to the dealer or a service facility	259
	Response 10.4 – Added air	260
	Response 10.5 – Did nothing	261
	Response 10.6 – Other	262
	Response 10.7 – Specify	263
	Ouestion 11 – How long after you first noticed the lamp illuminated did you take action?	264

Question 12 – Did any of the tires need air? If yes, how many?	265
Question 13 – Approximately how much air was needed in each tire?	266
Question 14 – If the warning lamp was not working correctly, what was found to be the reason	267
Response 14.1 – No, did not check it	268
Response 14.2 – Yes, needed reset	269
Response 14.3 – Yes, sensors or other part in the tire not working	270
Response 14.4 – Yes, batteries needed to be changed	271
Response 14.5 – Yes, light bulb needed to be replaced	272
Response 14.6 – Yes, general problem with TPMS system	273
Response 14.7 – Yes, don't know	274
Response 14.8 – Yes, other	275
Response 14.9 – Specify	276
Question 15 – Do you know how to reset (calibrate) your TPMS	277
Response 15.1 - Noyes, other	278
Response 15.2 - Specify	279
Question 16 – When should your TPMS be reset	280
Response 16.1 – Never	281
Response 16.2 - When the tire pressure is checked	282
Response 16.3 – When the tire pressure is changed	283
Response 16.4 – When a tire is changed	284
Response 16.5 – When the tires are rotated	285
Response 16.6 – Don't know	286
Response 16.7 – Other	287
Response 16.8 - Specify	288
Question 17 – How easy or difficult is it to reset your TPMS	289
Question 18 - To what extent do you rely on your TPMS to tell you when your tires need air	290
Question 19 – Does your TPMS have a malfunction lamp	291
Question 20 – Do you know where your TPMS malfunction lamp is located? If yes, where?	292
Response 20.1 - Noyes, other	293
Response 20.2 - Specify	294
Question 21 – How many times has your TPMS malfunction lamp come on beyond on/off cycles	295
Question 22 – When was the last time the malfunction lamp illuminated on this vehicle	296
Question 23 – What actions did you take the last time the TPMS malfunction lamp illuminated	297
Response 23.1 – Did nothing – it often illuminates	298
Response 23.2 – Did nothing – other reasons	299

Response 23.3 – Reset the TPMS	300
Response 23.4 – Took vehicle to the dealer or a service facility	301
Response 23.5 – Self or other worked on vehicle	302
Response 23.6 - Other	303
Response 23.7 - Specify	304
Question 24 – If the warning lamp was not working correctly, what was found to be the reason	305
Response 24.1 – No, did not check it	306
Response 24.2 - Yes, needed reset	307
Response 24.3 – Yes, sensors or other part in tire not working	308
Response 24.4 – Yes, batteries needed to be changed	309
Response 24.5 – Yes, light bulb needed to be replaced	310
Response 24.6 – Yes, general problem with TPMS system	311
Response 24.7 – Yes, don't know	312
Response 24.8 - Yes, other	313
Response 24.9 - Specify	314
Appendix A – List of Vehicle Makes	A-1
Appendix B - List of Vehicle Models	B-1
Appendix C – List of Tire Manufacturers	C-1

Introduction

Improperly inflated tires pose a safety risk, increasing the chance of skidding, hydroplaning, longer stopping distances, and crashes due to flat tires and blowouts. Congress passed the Transportation Recall Enhancement, Accountability, and Documentation (TREAD) Act on November 1, 2000, as a direct consequence of hearings before the Committee on Energy and Commerce on the safety of Firestone tires and related matters. Section 13 of the TREAD Act directs NHTSA to conduct rulemaking actions to revise and update the Federal motor vehicle safety standards for tires, to improve labeling on tires, and to require a system in new motor vehicles that warns the operator when a tire is significantly underinflated.

In response to Section 13 of the TREAD Act, NHTSA's National Center for Statistics and Analysis (NCSA) conducted the Tire Pressure Special Study (TPSS) in February 2001. The TPSS was designed to assess to what extent passenger vehicle operators are aware of the recommended tire pressures for their vehicles, the frequency and the means they use to measure their tire pressure, and how significantly the actual measured tire pressure differed from the manufacturer's recommended tire pressure. The TPSS found that 26 percent of the cars and 29 percent of LTVs had at least one tire more than 25 percent below the pressure recommended by the manufacturer, as specified on the placard located on the inside of the driver side door.

In an effort to decrease the number of vehicles with improperly inflated tires, Tire Pressure Monitoring Systems (TPMS) were mandated in Federal Motor Vehicle Safety Standard (FMVSS) No. 138, so that drivers are warned when the pressure in one or more of the vehicle's tires has fallen to 25 percent or more below the placard pressure, or a minimum level of pressure specified in the standard, whichever pressure is higher. To meet FMVSS No. 138, TPMS systems must indicate which of the four tires are underinflated. As of September 1, 2007, TPMS was required on all new light vehicles (i.e., passenger cars, trucks, multipurpose passenger vehicles, and buses with a gross vehicle weight rating of 10,000 pounds or less, except those vehicles with dual wheels on an axle). A phase-in period began on October 5, 2005, requiring that 20 percent of MY 2006 light vehicles be equipped with TPMS. This phase-in was stepped up to 70 percent for MY 2007, leading to 100 percent for MY 2008.

Prior to the complete phase-in of the mandate, manufacturers voluntarily equipped some vehicles with either direct-system or indirect-system TPMS. The direct-system TPMS identified which tire was underinflated by using a pressure sensor inside each tire and a wireless transmitter to communicate the pressure from inside the tire to a central receiver module. The indirect-system TPMS identified that one or more tires was underinflated by using the vehicle's antilock braking system (ABS) to determine changes in tire rotation speed. While indirect-system TPMS were only added to vehicles equipped with ABS, direct-

system TPMS were primarily added to SUV's and high-end cars. After the phase-in, manufacturers initially used only direct-system TPMS that met the standard's requirements, but later indirect systems or hybrid systems were developed that were able to be compliant with the standard.

As required by Executive Order 12866, which requires Federal agencies to evaluate their existing regulations and programs and measure their effectiveness in achieving their objectives, the purpose of this survey, Tire Pressure Monitoring System - Special Study (TPMS-SS), was to evaluate whether the frequency of underinflated tires had decreased in vehicles with TPMS in comparison to vehicles of the same age without TPMS. In addition, the survey collected data on the drivers' familiarity with the type of warning given by their TPMS and the actions that they took after the warning had been given. An evaluation using the survey data was published in the report *Evaluation of the Effectiveness of TPMS in Proper Tire Pressure Maintenance* (Report No. DOT HS 811 681), available at https://crashstats.nhtsa.dot.gov/Api/Public/Publication/811681.

The TPMS-SS also collected some supplementary data on refueling to assist a regulatory impact analysis for Corporate Average Fuel Economy regulations (www.regulations.gov, Docket No. NHTSA-2010-0131-0417).

Data Collection

1.1. Sites

1.1.1. Sample Design

The 24 Primary Sampling Units (PSUs) ¹ in the National Automotive Sampling System - Crashworthiness Data System (NASS CDS) were used for this study. Data was collected from August 2010 to April 2011 at one site type—gas stations. Selection of these gas stations was made using following three-stage process.

- 1. First Stage—PSU: The 24 PSUs in the NASS CDS design were used.
- Second Stage—ZIP Code: In order to collect nationally representative data, seven ZIP Code areas in each of these 24 PSUs (i.e., a total of 208 ZIP Code areas) were selected using the following process.
 - a. Staff in the zone centers and the PSUs randomly selected 15 ZIP Codes for each of the 24 PSUs.
 - b. These 15 ZIP Code areas were then screened to ensure that they met the following criteria:
 - i. more than 2 gas stations that had multiple islands with a canopy over the islands, and
 - ii. at least 2 miles between the qualifying gas stations.
 - c. Those ZIP Code areas that did not qualify were discarded and zone center staff assigned additional ZIP Codes to make up the difference. This process of screening and, when necessary, adding additional ZIP Code areas was repeated until 7 qualified ZIP Code areas were obtained for each of the 24 PSUs.²
- Third Stage—Gas Station. In order to collect sufficient data, 14 gas stations per PSU or two per ZIP Code area were selected using the following process.
 - a. An initial list of gas stations within the eligible ZIP Code areas was constructed from phone book listings, internet searches, and zone center and PSU staff members' knowledge of gas stations in the eligible ZIP Code areas.

¹ Additional information about the NASS CDS PSUs can be found in Appendix F of the 2014 NASS CDS Analytical User's Manual (Report No. DOT HS 812 198) at https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812198.

² For example, if only 5 of the 15 initially selected ZIP Code areas were qualified, the Zone Center then assigned 2 additional ZIP Codes to make up the difference.

b. Three gas stations per ZIP Code were randomly selected with the final selection of the gas stations varying according to PSU and ZIP Code (e.g., based on size and ease of travel for the researchers, availability of cooperating gas stations).

1.1.2. Site Cooperation

Within each of the 24 NASS-CDS PSUs, data was collected exclusively at gas stations for 14 days, from August 2010 to April 2011. Cooperation of the owners of the gas stations at the different data collection sites was established prior to the commencement of the study mostly via in-person visits by NASS researchers. In addition, a letter explaining the scope of the survey was provided to the managers of the participating gas stations on the day of data collection. If the researchers were unable to collect data at a pre-authorized site due to unexpected circumstances, the next gas station listed for that ZIP Code was substituted as an alternate site. At the conclusion of the data collection for the day, managers of the gas station were thanked and given a copy of the informational hand-outs that had been provided to the participants. Later, a thank you letter was sent to the managers of the gas stations that participated in the study.

1.2. Criteria for Participating

1.2.1. Vehicles

1.2.1.1. Model Year 2004 or later

The primary population for observation was model year 2004 or later vehicles that were entering the gas station for refueling. The Tire Pressure Interview Form or the Refueling Interview Form was used to screen and confirm that the vehicle's model year was 2004 or later. If the vehicle was not, the driver was thanked and the interview was ended.

1.2.1.2. Other Vehicle Characteristics

A vehicle's body type had to fall within one of four body types (i.e. passenger cars, utility vehicles, vans, and pickup trucks) with the gross vehicle weight rating being less than 10,000 pounds. Vehicles without VINS or those with dual wheels on an axle were excluded. If two qualified vehicles entered the gas station at the same time, the vehicle type, for which the fewest interviews had already been obtained, was to be selected.

1.2.2. Other Criteria

To be included in the study, the driver needed to agree to participate in the study and the data collection team needed to be available to begin a new interview (e.g., data collection with another case was completed).

Some factors that did not affect whether a vehicle was selected for inclusion in the study were whether the driver: (1) drove a vehicle with TPMS, (2) was the vehicle's primary driver or (3) was the person responsible for the vehicle's maintenance. on the other hand, only drivers of vehicles who were aware that their vehicle had TPMS were asked to answer the questions in the Supplemental Form.

1.3. Procedures

1.3.1. Data Collection Teams

Field data collection was conducted through the infrastructure of the NASS CDS. Each PSU had two or more staff members who participated in the study in teams of two: one who conducted the interview (the interviewer) and one who completed the vehicle inspection (the inspector).

Each team brought required materials to the data collection sites. These materials included the interview forms, hand-outs for the participants, large signs with information about the survey, special equipment (e.g., depth indicators, pyrometers, analog air pressure gauges), DOT identification badges, the procedures manual, and miscellaneous items needed to obtain and record data such as clip boards, watches, and digital cameras.

■ 1.3.2. Data Collection Schedule

1.3.2.1. Overall

Data collection was during the day, normally between the hours of 8 a.m. and 5 p.m., but some data was collected as early as 7 a.m. or as late as 6 p.m. Data was mostly collected on Tuesday through Friday, but some data was collected on the weekends. The majority of the day was spent collecting data via interviews with the drivers and inspections of the vehicles; however, each day there was a 45-minute lunch break as well as five 15-minute breaks, spaced evenly throughout the day, during which time the researchers collected observational data on the vehicles that entered the gas station to obtain gasoline.

1.3.2.2. Daily

At the start of the day, the team would develop an overall strategy for collecting data at this site, including: setting up a command center where extra survey forms and material were kept and positioning the two 3-ft by 5-ft signs prominently so drivers were alerted to the fact that a tire pressure study was being conducted that day at the gas station.

If the data collection team judged a vehicle to meet the criteria, one staff member approached the vehicle after it had stopped at the gas pump. This person would give the driver a letter of introduction and ask the driver to participate in the study. Once a driver agreed to participate, the interview would begin with the interviewer recording information on one of the two interview forms, while the second staff member inspected the vehicle and

recorded data on the Vehicle Inspection Form and the Tire Inspection Form. Only drivers who knew that their vehicle had TPMS were asked the questions on the Supplemental Form. Spanish language data collection forms were available, in case the interview could not be conducted in English. At some sites, Spanish speaking interviewers were also available.

Several brochures, with additional information about tire safety, and a Courtesy Card were given to participants at the conclusion of each interview. The Courtesy Card listed the air pressure measured on each tire, the vehicle manufacturer's recommended cold tire pressure, and several tire safety tips, as well as contact information (i.e., a TPMS study email address, DOT hotline telephone number) so that the drivers had someone to contact in case they had any further questions once they left the study site.

1.3.3. Special Equipment

Special Equipment used for data collection included an air pressure gauge to measure tire pressure, a tread depth indicator to measure tread depth, and a pyrometer to measure tire sidewall temperature and ambient air temperature.

The air pressure gauges were tested when received by the Zone Centers. In addition, they were tested at least 2 days prior to data collection and again at the beginning of each day's data collection. The test was conducted using the two air pressure gauges assigned to each team on the same tire of a vehicle. If the pressures were not within a 1 pound per square inch (psi) tolerance, they were to notify their Zone Center for immediate replacement. If the researcher could not determine which gauge was inaccurate, both gauges were to be replaced. If replacement gauges could not be obtained in time for a scheduled day of data collection, data collection was to be postponed for that day and rescheduled for another day in the same week.

The pyrometers used in the study were checked against each other prior to each data collection day. If the pyrometers did not measure the same ambient air temperature (within a tolerance of one degree), the researchers noted the discrepancy on the Daily Site Form and notified the zone center for further direction.

No problems were noted with any of the equipment used in the study.

1.4. Forms and Variables

Data collected during the TPSS-SS included information on the sites at which data was collected, the vehicles that stopped to re-fuel at these sites, and the drivers and passengers of these vehicles. This data was collected via observation, inspection and interview. They were recorded on the following seven data collection forms, which were approved by the Office of Management and Budget (OMB) under OMB control number 2127-0626.

Name	NHTSA Form #	Data Type
Daily Site Form—Tallies and Inspections	1060	Observation
Daily Site Form—Refueling	1061	Observation
Tire Inspection Form	1062	Inspection
Vehicle Inspection Form	1063	Inspection
Interview Form-Tire Pressure	1064	Interview; Observation
Interview Form-Refueling	1065	Interview; Observation
Supplemental Form	1066	Interview

1.4.1. Observational Data

The observational data was mainly collected on the two daily site forms: Daily Site Form-Tallies & Inspections (NHTSA 1060) and Daily Site form—Refueling (NHTSA 1061). Additional observational data was collected on the two interview forms: Interview Form--Tire Pressure (NHTSA 1064) and Interview Form—Refueling (NHTSA 1065).

The daily site forms did not require any interaction with the drivers of the vehicles. Instead, every two hours, beginning at the initial time of data collection for the day, the data collectors observed, for a period of 15 minutes, the 2004-2011 passenger cars and light trucks that entered the gas station to obtain gasoline.

One data collector would log, by body type category, the start and end times for vehicles refueling, as well as the other activities in which the drivers engaged, such as going into the gas station store or putting oil into the vehicle. If the 15-minute observation period ended before all drivers completed refueling, the data collector was instructed to enter "99:993" for those vehicles, unless there was a delay in beginning data collection or the data collector happened to notice the time that one of those vehicles was leaving. In such cases, the data collector was instructed to enter a specific "Time Out" for that vehicle, instead of the 99:99. This observational data was recorded in the Daily Site Form—Refueling and was used to better understand the behavior of drivers who were refueling their vehicles.

The other data collector would tally, by body-type category (i.e., small or large auto, utility vehicles, van-based light trucks, and light convenience trucks) and by time period, the number of vehicles entering the station to refuel. This observational data was recorded in the Daily Site Form-Tallies & Inspections, was entered into the DAILY and the DAILY_TALLY datasets, and was available for use to adjust estimates of eligible vehicles that were at the site but did not participate in the survey.

Before beginning the 15-minute observation period of time, the data collectors were instructed to fill out the top portion of the daily site forms. With the Daily Site Form—

³ The 99:99 was entered in the SAS database as the "9999" code for missing data.

Refueling form, observational information was collected about that station's characteristics, such as type of payment used and additional services offered (e.g., car wash, auto repair), With the Daily Site Form-Tallies & Inspections, the area around the gas station was characterized by the observer as being urban, suburban or rural in nature.

There is a section to record observational data (e.g., auto body type, age category of the driver) at the beginning of the interview forms (i.e., certain elements of Questions 5 and 6 of the Tire Pressure Interview Form and the Refueling Interview Form). As the interviewer approached the vehicle to request the driver's participation in the survey, the interviewer or the inspector would complete as much of this section as possible, whether or not the driver agreed to participate in the survey. This data was recorded in either one or the other interview form, was entered into the OBSERVATION data set, and was available for use to adjust estimates of eligible vehicles/drivers that were at the site but did not participate in the survey.

1.4.2. Inspection Data

The inspection data was collected on two inspection forms: the Vehicle Inspection Form (NHTSA 1062) and the Tire Inspection Form (NHTSA 1063). Both forms were completed by one staff member while another conducted an in-person interview with the driver.

Once cooperation of the driver was obtained, the Vehicle Inspection Form was used to obtain information about the vehicle (e.g., make, model, and model year) and the type of display (i.e., warning light only, tire specific warning icons, or tire specific display of psi) that was used to provide TPMS information to the driver. In addition, the tire-specific psi values seen in the TPMS displays, as well as information from the vehicle placard (i.e., recommended tire size, recommended air pressure, and the Gross Axle Weight Rating) were recorded on this form.

The Tire Inspection Form was used to obtain information about all four of the vehicle's tires, including specifics about the tires (i.e., manufacturer, model, size, and recommended maximum pressure) and details about the condition of the tires at the time of the observation (i.e., measured temperature, pressure, and tread depth). In addition, the ambient air temperature and general weather conditions were recorded on the form.

1.4.3. Interview Data

Interview data was collected on three interview forms: the Tire Pressure Interview Form (NHTSA 1064), the Refueling Interview Form (NHTSA 1065), and the Supplemental Form (NHTSA 1066). Drivers of eligible vehicles were asked the questions on the interview forms, while only drivers of vehicles with TPMS were asked to answer the questions in the Supplemental Form. The interview data was collected by one staff member while the other staff person inspected the vehicle. The interviewers were instructed to collect data using

either the Tire Pressure Interview Form or the Refueling Interview Form, alternating which form was used. However, if the inspection of the vehicle was requiring more time than the interview of the driver⁴, the interviewers would administer the other interview form so that the driver was engaged until the vehicle inspection was completed.

The Tire Pressure Interview Form was used to obtain information regarding the history of the vehicle and its tires, as well as how air is added to the vehicle's tires (e.g., by whom, when, for what reasons). In addition, driver profile data was recorded, driver knowledge about how to keep proper tire pressure, and where/how the driver obtained information about tire care and tire pressure.

The Refueling Interview Form was used to obtain information regarding the driver's refueling habits, as well as characteristics of vehicle's occupants (e.g., number, reason for traveling). In addition, driver profile data was recorded.

The Supplemental Form was used to obtain information regarding the drivers' knowledge of their TPMS (e.g., location and purpose of the warning lamp and the malfunction lamp, how to reset the lamps, and what maintenance, if any, service has been required of the TPMS). Drivers could select one of four ways to complete the questions in the Supplemental Form (i.e., an on-site interview, a mail-back questionnaire, an on-line questionnaire, and a call-back interview) but almost all drivers who agreed to participate selected to do the on-site interview.

1.5. Quality Control Procedures

1.5.1. Development and Pilot Testing of Data Collection Forms

Data collection forms were developed in consultation with NHTSA subject matter specialists for tires, tire pressure, and fuel economy. Initial testing of the survey forms was completed informally within the agency, with later testing completed by the NASS Zone Centers during May 2010 pre-pilot testing.

1.5.2. Field Staff

Field data collection was conducted through the infrastructure of the NASS CDS, which had teams of researchers located at PSUs throughout the United States. Members of the TPMS-SS data collection teams were selected from these researchers, many of whom had experience conducting the prior tire pressure studies—the 2001 Tire Pressure Special Study and the 2004 Tire Pressure Monitoring System Study. Each PSU had two or more staff people who participated in the study in teams of two researchers. One of the researchers, normally the most experienced staff member at the PSU, served as the team leader, and

⁴ Drivers who knew they had TPMS would be administered the Supplemental Form before the second interview form was administered.

was able to use prior experience to assist other staff members in their data collection. After the data collection on each participant was completed, the team leader was responsible for the survey forms being complete, accurate and legible. In addition, the team leaders were responsible for reviewing collected data against the digital images taken (e.g., the VIN).

1.5.3. Training and Pilot Testing of the Data Collection Protocols

A PowerPoint preview of the TPMS-SS study was presented to the NASS Zone Centers and PSU staff at the NASS annual training in December of 2009.

In 2010 they participated in two different webinar trainings: (1) June training on the application that had been developed for use in entering the TPMS-SS survey data, and (2) July training on the survey forms and data collection protocols.

After training was completed, a pilot test of the TPMS-SS survey forms and data collection protocols was conducted in each PSU. Revisions, as necessary, were made to survey forms and data collection protocols. Data obtained from the pilot tests were entered into a software program (i.e., the data entry application), which had been designed to convert and store the TPMS-SS data in an electronic format. Data from the pilot study was entered into the data entry software program to double-check the data entry application and the survey forms, as well as provide staff with experience with entering the survey data into the data entry application.

In addition, a data collection procedures manual was distributed for reference. Since data collection continued into 2011, another PowerPoint presentation on TPMS-SS was made at the NASS annual training in December 2010.

■ 1.5.4. Unannounced Site Visits

Zone center staff paid unannounced site visits to monitor the quality of data collection in the PSUs.

Data

2.1. Data Entry

Data from the seven paper forms used in the survey were entered manually by the data collectors into an application developed specially for the TPMS-SS survey. This data application contained automated edit checks, skip patterns and other features to help insure that the data was entered correctly. In addition, staff at the Zone Centers checked the data that was entered, including checking the images that had been taken for use in quality control efforts.

2.2. Data Editing

After the data was entered, checks were run to identify outliers, discrepancies between two similar variables, and other such inconsistencies via automated logic checks and data runs. While information about data elements that flagged these edit checks was sent to the Zone Centers to be reviewed and, if necessary, corrected, no statistical editing was performed to alter the recorded values of outliers.

After data reconciliation, a final file was translated into SAS data sets. In addition, database reconciliation of these final SAS data sets was conducted.

2.3. Imputation

No data imputation was conducted for the TPMS-SS data.

2.4. Weighting and Estimation

Based on the sample design described in Section 1.1.1, sampling weights were developed to enable national representation for the TPMS-SS data. The final sampling weights appear as the variable WEIGHT in the datasets TIRE, VEHICLE, and TIRE_INFO. These three datasets, when merged, are most appropriate for weighted analysis because they each have an observation for every one of the 6503 vehicles surveyed; the three data sets may be merged by the variables PSU, DATE and OBSERVID (SITEID may also be included but isn't necessary). For details on how the weights were calculated and their proper interpretations, see *Evaluation of the Effectiveness of TPMS in Proper Tire Pressure Maintenance* (DOT Report No. HS 811 681).

For weighted analyses based on the TPMS-SS datasets TIRE, VEHICLE, and TIRE_INFO using SAS survey procedures such as PROC SURVEYMEANS, SURVEYFREQ, etc., the user should first create a stratum variable called PSUSTRAT as follows.

```
if psu in (3,6) then PSUSTRAT = 1;
else if psu in (5,8) then psustrat = 2;
else if psu in (2,4) then psustrat = 3;
else if psu in (72,74) then psustrat = 4;
else if psu in (12,73) then psustrat = 5;
else if psu in (11,13) then psustrat = 6;
else if psu in (41,49) then psustrat = 7;
else if psu in (9,45) then psustrat = 8;
else if psu in (43,48) then psustrat = 9;
else if psu in (79,82) then psustrat = 10;
else if psu in (75,81) then psustrat = 11;
else if psu in (76,78) then psustrat = 12;
```

The following statements specify the parameters commonly used in SAS SURVEY procedures.

strata psustrat; cluster psu; weight weight;

For NHTSA's TPMS evaluation in DOT Report No. HS 811 681, vehicles missing tire pressure or missing manufacturer's recommended cold tire pressure were excluded, resulting in 6,103 vehicles for analysis. This can be replicated by deleting observations where any of the following variables equals .U: MSPRF, MSPLF, MSPRR, MSPLR, MANUFFRNTC, MANUREARC.

File Structure

2.4.1. Data Set Organization

From the TPMS-SS response data, a SAS database was developed consisting of 12 data sets. These data sets are shown in the table below, along with the unique identifiers that can be used for identifying an observation or merging data sets.

Data Sets	One Record for Each	Unique Identifiers	Number observations
DAILY	Day at a gas station	PSU SITEID DATE	338
DAILY_TALLY	Vehicle body type (5 types) observed by day at a fuel station (338*5)	PSU SITEID DATE BODYTYPE	1,690
DAILY_FUEL	Refueling observation	No unique identifying combination, but PSU SITEID DATE available for merging	6,889
OBSERVATION	Vehicle approached (whether agreed to survey or not)	PSU SITEID DATE OBSERVID	10,890
INT_FUEL	Refueling Interview	PSU SITEID DATE OBSERVID	4,255
INT_TIRE	Tire Pressure Interview	PSU SITEID DATE OBSERVID	2,508
INT_RESPONSE	Tire Pressure Interview	PSU SITEID DATE OBSERVID	2,508
SUP	Supplemental Interview	PSU SITEID DATE OBSERVID	1,402
SUP_RESPONSE	Supplemental Interview	PSU SITEID DATE OBSERVID	1,402
TIRE	Vehicle inspected	PSU SITEID DATE OBSERVID	6,503
TIRE_INFO	Vehicle inspected	PSU SITEID DATE OBSERVID	6,503
VEHICLE	Vehicle inspected	PSU SITEID DATE OBSERVID	6,503

The data sets were organized so each data set had related information, as further outlined in the table below.

Data Sets	Data Type	Data included
DAILY	Observation	Area and station characteristics; Spanish speaker
		available
DAILY_TALLY	Observation	Tallies of vehicles by body type and observation periods
DAILY_FUEL	Observation	Refueling times, body types, and other activities
OBSERVATION	Observation, Interview	Driver and vehicle observational data for all vehicles
		approached ⁵ .
		Demographic data from interviews for all completed cases
INT-FUEL	Interview	Refueling habits and reasons for traveling data
INT-TIRE	Interview	Driver's knowledge/opinions about tire pressure
INT_RESPONSE	Interview	Answers to "Check All" Tire Pressure Questions
SUP	Interview	Driver's knowledge/opinions about TPMS
SUP_RESPONSE	Interview	Answers to "Check All" TPMS Questions
TIRE	Inspection	Tire characteristics by position
TIRE_INFO	Inspection	General vehicle and weather data
VEHICLE	Inspection	Vehicle characteristics

⁵ The OBSERVATION data set has two main differences from the other data sets: (1) There was not a separate survey form used to collect the data for the OBSERVATION data set; instead, data collected with the Tire Pressure Interview form and with the Refueling Interview form were used; and (2) The OBSERVATION data set includes data from all vehicles approached, rather than only from completed interviews.

2.4.2. Data Not Included

Not all of the collected data was included in the data sets. Some data was used during data collection and/or later quality control procedures, but was not included in any of the data sets (e.g., names of staff people). The table below shows the data items that were collected on each of the survey forms, along with the data items that were not included in the data sets.

Form Name	Form Number	Item Numbers	Data Sets	Items Not Included	Content Not Included
Daily Site Form- Tallies & Inspections	1060	1-16	DAILY_TALLY, DAILY	3, 4, 7, & 16	NASS Staff, ZIP Codes, Notes
Daily Site Form- Refueling	1061	1-8	DAILY_FUEL, DAILY	N/A	N/A
Tire Inspection Form	1062	1-18	TIRE_INFO, TIRE	N/A	N/A
Vehicle Inspection Form	1063	1-15	VEHICLE	10	Last 5 digits of the 17-digit VIN
Interview Form- Tire Pressure	1064	1-27	INT-TIRE, INT_RESPONSE,	27	SUP ID
Interview Form- Refueling	1065	1-26	INT-FUEL, INT_RESPONSE,	26	SUP ID
Supplemental Form	1066	1-24	SUP SUP_RESPONSE	5	SUP ID

2.4.3. Missing Data

Data values were not always obtained for every variable for all respondents.

- For inspection items, the information might not be available or might not be visible.
- For interview items, the interviewer might skip an item that should be asked or the driver might decide to leave before the interview is completed.
- For observation items, the observer's view might be obstructed due to: (1) tinted glass or some other blockage; (2) the vehicle quickly leaving the parking area. In addition, a data collector might neglect to record some observation data on a form for which such data was being collected.

If character data (e.g., time, additional information provided when asked to specify an "other" response) was missing, it was replaced with several different types of entries, including "99:99" for time and "No Response" or "Not Recorded" for other items. If numerical data was missing, the SAS codes, as shown in the following table, were available for use. If a dot with no letter appears, it may be a result of a skip pattern (question was never asked because did not apply); otherwise it may be considered a generic missing or unknown.

SAS Code	Type of Missing Data
.L	Older Model Year
.N	No Response
.R	Refused
.U	Unknown
-	Generic Skipped, Missing or Unknown

OBSERVATION Data Set

The OBSERVATION dataset contains information about all drivers that were asked to participate in the survey, including those that did not appear in the final survey cases due to refusal or ineligibility. This information was collected to allow comparison of respondents to non-respondents by some basic categories.

Data used to populate the OBSERVATION data set were taken from the Tire Pressure Interview Form or the Refueling Interview Form, whichever form was administered to a specific driver. If both forms were administered, data was taken from the Tire Pressure Interview Form.

Three types of data are included in the OBSERVATION data set: administrative, observation, and interview. The included administrative data (PSU, DATE, OBSERVID, SITEID) are identification variables. The included observation data (INTVCAT, LANGUAGE, OBSERAGE, OBSERNUM, OBSERSEX, and OBSERTYPE) were collected from certain elements of Question #5 and Question #6 of the appropriate interview form. The included interview data (AGE, ZIP, and SCHOOLYR) are the only interview variables that exist on both the Tire Pressure Interview form (Questions 19 to 21) and the Refueling Interview form (Questions 18 to 20); they are included in the OBSERVATION data set for the convenience of having them in one data set along with the observation variables. Since AGE, ZIP, and SCHOOLYR are interview variables, they have non-missing values only for cases that became final survey cases.

Question 1 - Primary Sampling Unit Number

Data Set: OBSERVATION

SAS Name: PSU

Label Name: Primary Sampling Unit

Range: 02 - 82

Remarks:

TPMS-SS used NHTSA's NASS-CDS sites for data collection. The NASS-CDS consists of 24 statistically representative PSUs located throughout the country.⁶ The PSUs have been assigned two-digit identifying numbers that range from 02 to 82.

SAS Variable Type: Numeric

⁶ Additional information about the NASS CDS PSUs can be found in Appendix F of the 2014 NASS CDS Analytical User's Manual at https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812198. Demographic data on the 24 PSUs have been included in Appendix F to give researchers supplementary information on the nature of the PSUs.

Observation Data Set Site Number

Question 2 - Site Number

Data Set: OBSERVATION

SAS Name: SITEID

Label Name: Site ID

Range: 2701 – 31375

Remarks:

The gas station sites were selected based upon the sample design, as described in the Sample Design section of this coding manual. Each site was assigned a two-digit site number, which identified the ZIP Code and the gas station at which data was being collected. While this site number was used during data collection, this number is not included in the SAS database; instead, a site-specific unique five-digit SITEID was created for use in the SAS database. There is no correlation between the components of the Site Number (e.g., ZIP Code and station number) and the SITEID variable.

SAS Variable Type: Numeric

SAS Field Length: 5

-

⁷ The first digit of the site number identifies the ZIP Code while the second digit identifies the refueling station at which that day's data collection was being conducted. For example, for Day 10 where the sampling instructions state to use the third ZIP Code and the second refueling station, the Site Number would be 32. If the team was refused and went to the third alternate station, the appropriate code would be 33.

Observation Data Set Observation Number

Question 3 – Observation Number

Data Set: OBSERVATION

SAS Name: OBSERVID

Label Name: Observation ID

Attribute Codes:

Range: 1 – 71

Remarks:

Interviewers were instructed to start with the number (1) and record sequentially for each observation throughout the session. This process was repeated whenever the Site Number was changed. For each observation, this number was to be consistent with the Observation Number documented on all other interview, inspection, and supplemental forms.

SAS Variable Type: Numeric

Observation Data Set Date of Observation

Question 4 - Date of Observation

Data Set: OBSERVATION

SAS Name: DATE

Label Name: Date

Range: 08102010 - 04152011

Remarks:

This is the date the observation was made. The first two digits specify the month, the second two digits indicate the date, and the last four digits designate the year that the inspection was conducted.

SAS Variable Type: Character

Observation Data Set Interview Language

Observation Data: Question 5 - Interview In

Data Set: OBSERVATION

SAS Name: LANGUAGE

Label Name: Interview Language

Attribute Codes:

SAS	Description
1	English
2	Spanish

Remarks:

This is the language in which the interview was completed.

SAS Variable Type: Numeric

Observation Data Set Observations

Observation Data: Question 6 - Observations

Data Set: OBSERVATION

Remarks:

As the interviewers initially approached the vehicles of potential participants, they were instructed to collect observational data from all vehicles approached, including those that were out of scope (i.e., <2004) and those that were driven by drivers who did not agree to be interviewed. The observational data that was collected in Question 6 is described in the following five variables (6.0 - 6.7)

6.0: Interview category

6.4: Body type

6.5: Sex

6.6: Age

6.7: Number of people in vehicle

Observation Data Set Observations

Response 6.0 – Interview Category

Data Set: OBSERVATION

SAS Name: INTVCAT

Label Name: Interview Categories

Attribute Codes:

SAS	Description
1	Interviewed
2	Refused
3	<2004

Remarks:

This variable reports what happened when the interviewers requested cooperation from the vehicles' drivers—whether the: (1) Interview was obtained, (2) Participant declined to participate in the survey, or (3) Vehicle was out of scope because its model year was 2003 or older.

SAS Variable Type: Numeric

Response 6.4 – Body Type

Data Set: OBSERVATION

SAS Name: OBSERTYPE

Label Name: Observed – Body Type

Attribute Codes:

SAS	Description
1	Automobiles (Small)
2	Automobiles (Large)
3	Utility Vehicles (SUV)
4	Van-based Light Trucks (VAN)
5	Light Conventional Trucks (PU)

Remarks:

Using the following categories, the interviewers recorded the body type of the vehicle that was approached:

Auto (Small): Small autos are defined as 2- or 3-door automobiles

Auto (Large): Large autos are defined as 4- (or more) door automobiles

SUV: Sports Utility Vehicle

Van: Van-based Light Trucks

PU: Pickup

SAS Variable Type: Numeric

Response 6.5 – Sex

Data Set: OBSERVATION

SAS Name: OBSERSEX

Label Name: Observed – Sex

Attribute Codes:

SAS	Description
1	Male
2	Female

Remarks:

The interviewer recorded the sex of the vehicle's driver, as based upon observation by the interviewer.

SAS Variable Type: Numeric

Response 6.6 – Age

Data Set: OBSERVATION

SAS Name: OBSERAGE

Label Name: Observed – Age Category

Attribute Codes:

SAS	Description
1	Young adult
2	Adult
3	Senior

Remarks:

Using the following categories, the interviewer recorded the approximate age category of the vehicle's driver, as based upon the interviewer's best estimate.

Young Adult: If the driver appears to be 16 to 24 years old

Adult: If the driver appears to be 25 to 69 years old

Senior: If the driver appears to be 70 years old or older

SAS Variable Type: Numeric

Response 6.7 – # in vehicle

Data Set: OBSERVATION

SAS Name: OBSERNUM

Label Name: Observed # of Persons in Vehicle

Range: 0 – 9

Attribute Codes:

SAS	Description
#	Recorded number of people in vehicle
.U	Unknown

Remarks:

This variable contains the number of people who were in the vehicle at the time that the vehicle's driver was approached to solicit participation in the study, as based upon observation by the interviewer.

SAS Variable Type: Numeric

Interview Data: Question 18 or 19 - What is your home ZIP Code

Data Set: OBSERVATION

SAS Name: ZIP

Label Name: Home ZIP Code

Attribute Codes:

Range: [List of applicable ZIP Codes]

SAS	Description
#	Entered ZIP Code
9996	Not a U.S. resident
9999	Don't know

Remarks:

The interviewers recorded the home ZIP Code of the participant.

SAS Variable Type: Character

Observation Data Set How old are you

Interview Data: Question 19 or 20 - How old are you

Data Set: OBSERVATION

SAS Name: AGE

Label Name: Driver Age

Range: 16 – 93 years

Attribute Codes:

SAS	Description
#	Recorded age of participant
.U	Unknown

Remarks:

The interviewers were instructed to record the age of the participant to the nearest year.

SAS Variable Type: Numeric

Interview Data: Question 20 or 21 - What is the highest grade or year of school you completed

Data Set: OBSERVATION

SAS Name: SCHOOLYR

Label Name: Educational attainment

Attribute Codes:

SAS	Description
1	Less than high school
2	High school/GED
3	Some college
4	College graduate
5	Higher degree
6	(Vol) Refused
.N	No response

Remarks:

The interviewers recorded the highest grade or year of school the participant completed.

If they

SAS Variable Type: Numeric

Daily Site Form Tallies and Inspections (DST 1060)

S. Department of Trans ational Highway Traffic dministration	oortation Safety			LY SITE FOR S & INSPEC		N:	Expira Expiral Automotive	M.B. No. 2127-0628 tion Date: 06/30/13 e Sampling System stem-Special Study
. Primary Samplin	g Unit Number: _	±1		2. Site Nur	mber:			**
8. Researcher 1: _		-35		4. Research				
Date of Observat		/2010/201		3000 20003000	Urban, DSuburbar		ip Code	
. Spanish Speaker	Availaole: ☐ No	☐ Yes, all day ☐		9. Time Pe	riod: From	То		
10. VEHICLE BODY TYPES	PERIOD 1 (08:00 - 08:15)	11. VEHICLE PERIOD 2 (10:00 - 10:15)	PERIOD 3 (12:00 - 12:15)	UNT TALLIES PERIOD 4 (02:00 - 02:15)	PERIOD 5 (04:00 - 04:15)	12. TALLY TOTAL	13. INSP. TOTAL	14. REFUSAI TOTAL
MALL AUTOS			50 287 0	255 25.3	- 60 ets			
LARGE AUTOS								
UT ILITY VEHICLES								
VAN BASED JIGHT TRUCKS								
LIGHT CONV. TRUCKS								
			· · · · · · · · · · · · · · · · · · ·	15. TOTALS	FOR THE DAY			

The Daily Site Form – Tallies and Inspections (DAST) was used by the data collectors to record the number of vehicles entering the gas station to refuel during five 15-minute data collection time periods (08:00 – 08:15 a.m., 1000 – 10:15 a.m., 12:00 – 12:15 p.m., 2:00 – 2:15 p.m., and 4:00 – 4:15 p.m.). These time periods were to last the full 15 minutes, unless a weather-related reason or cooperation issues resulted in the need to prematurely suspend data collection at that site. Researchers could vary the start time of the work day, as long as they marked the start time in this form, started their work day on the hour (if possible), and did counts every two hours. During the assigned time periods, the data collectors were instructed to suspend vehicle inspections and interviews so that one data collector could collect data on this form, the Daily Site Form – Tallies and Inspections, and the other data collector could collect data on the Daily Site Form – Refueling.

The top section (Question's 1 to 9) of this form was site/location specific and provided general information on the following:

- 1. **PSU Number:** This is the two-digit number of the PSU at which the session was conducted.
- 2. **Site Number:** This is the two-digit, statistically generated unique ID given to the site where the observations took place.
- 3. **Researcher 1:** This was the team member who participated in the survey.
- 4. **Researcher 2:** This was the second team member who participated in the survey.
- 5. **Date of Observation:** This was the date when the data was collected.
- 6. **Area:** This described the demographic type of area (i.e., Urban, Suburban, Rural), as characterized by the data collector, that was around the gas station at which data was being collected.
- 7. **ZIP Code:** This is the five-digit ZIP Code where the site is located.
- 8. **Spanish Speaker Available:** This item documents whether the team had a Spanish speaking individual present to interview those who spoke Spanish.
- 9. **Time Period:** This is the time that that tallies began and ended, usually in 15-minute increments.

The middle section of the form is comprised of a chart on which a tic mark was made every time the data collector saw a vehicle entering the gas station to fuel. The tic marks would be put into the appropriate cell of the chart, with the cells being defined based upon the body type of the vehicle (Q10) and the period of time during which the vehicle was seen (Q11). After data entry, these tic marks were summed and a total was entered for each of the cells.

At the right side of this chart was an area where the data collectors could enter rough counts to keep track of their progress toward reaching daily production goals. After data collection was completed, these draft numbers were replaced with the official counts, which were prepared electronically by summing the sub-totals.

- 1. Total number of eligible vehicles that entered the site by vehicle body types (Q10): small autos, large autos, utility vehicles, van-based light trucks, and light conventional trucks.
- 2. Categorized totals (Q11 14): Tally totals, inspection totals, and refusal totals.
- 3. The sums of the three tally categories (Q15).

The last section (Q16) was an area for any notes or special instructions. This information was not included in the database.

Question 1 - Primary Sampling Unit Number

Data Set: DAILY

SAS Name: PSU

Label Name: Primary Sampling Unit

Attribute Codes:

Range: 02 - 82

Remarks:

TPMS-SS used the NASS-CDS sites for data collection. The NASS-CDS consists of 24 statistically representative PSUs located throughout the country.⁸ The PSUs have been assigned two-digit identifying numbers that range from 02 to 82.

SAS Variable Type: Numeric

⁸ Additional information about the NASS CDS PSUs can be found in Appendix F of the 2014 NASS CDS Analytical User's Manual at https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812198. Demographic data on the 24 PSUs have been included in Appendix F to give researchers supplementary information on the nature of the PSUs.

Question 2 - Site Number

Data Set: DAILY

SAS Name: SITEID

Label Name: Site ID

Attribute Codes:

Range: 2701 – 31375

Remarks:

The gas station sites were selected based upon the sample design, as described in the Sample Design section of this coding manual. Each site was assigned a two-digit site number, which identified the ZIP Code and the gas station at which data was being collected. While this site number was used during data collection, this number is not included in the SAS database; instead, a site-specific unique five-digit SITEID was created for use in the SAS database. There is no correlation between the components of the Site Number (e.g., ZIP Code and station number) and the SITEID variable.

SAS Variable Type: Numeric

⁹ The first digit of the site number identifies the ZIP Code while the second digit identifies the refueling station at which that day's data collection was being conducted. For example, for Day 10 where the sampling instructions state to use the third ZIP Code and the second refueling station, the Site Number would be 32. If the team was refused and went to the third alternate station, the appropriate code would be 33.

Question 3 - Researcher 1

Data Set: N/A

SAS Name: N/A

Label Name: N/A

Attribute Codes:

Range: [List of active researchers]

Remarks:

This variable contains the name of the data collectors who worked on the project. This information was not included in the database.

SAS Variable Type: N/A

SAS Field Length: N/A

Question 4 - Researcher 2

Data Set: N/A

SAS Name: N/A

Label Name: N/A

Attribute Codes:

Range: [List of active researchers]

Remarks:

This variable recorded the name of the second data collector who worked on the project. This information was not included in the database.

SAS Variable Type: N/A

SAS Field Length: N/A

Question 5 - Date of Observation

Data Set: DAILY

SAS Name: DATE

Label Name: Date

Attribute Codes:

Range: 08102010 - 04152011

Remarks:

This is the date the observation was made. The first two digits specify the month, the second two digits indicate the date, and the last four digits designate the year that the inspection was conducted.

SAS Variable Type: Character

Question 6 - Area

Data Set: DAILY

SAS Name: AREA

Label Name: Kind of Locality

Attribute Codes:

SAS	Description
1	Urban
2	Suburban
3	Rural

Remarks:

The geographic area around the gas station was characterized by the observer as being urban, suburban, or rural in nature, using the following definitions:

Urban: Areas defined as the entirety of a major city including its commercial and industrial sub-districts and neighborhoods.

Suburban: Areas defined as metropolitan area whose main role is residency for workers of the city and where land uses are auto-oriented. These areas are lower density that cities and include pre-World War II smaller towns and cities, as well as mixed-use activity centers.

Rural: Areas characterized as localities with large expanses of undeveloped or agricultural land, dotted by small towns, villages, or any other small activity clusters.

SAS Variable Type: Numeric

Question 7 - ZIP Code

Data Set: N/A

SAS Name: N/A

Label Name: N/A

Attribute Codes:

Range: [List of applicable ZIP Codes]

Remarks:

The ZIP Code of the site where data was collected was recorded but that data is not included in the database.

SAS Variable Type: N/A

SAS Field Length: N/A

Question 8 - Spanish Speaker Available

Data Set: DAILY

SAS Name: SPANAVAIL

Label Name: Availability of Spanish speaker

Attribute Codes:

SAS	Description
1	No
2	Yes, all day
3	Yes, partial day

Remarks:

The data collector recorded if a Spanish speaker was present during data collection, and if so, whether or not they were present for all three hours of the session.

SAS Variable Type: Numeric

Question 9 - Time Period

Data Set: DAILY/DAILY_TALLY

Remarks:

The attributes below identify the times that data collection began and ended. The data was stored using a 24-hour (00:00-24:00 military) clock.

The data collector recorded the times "From" and "To" in sub-questions 9.1 - 9.2, identifying when each of the five tally periods began and ended. The next two pages of the manual provide detail on the specific attributes (9.1 - 9.2) that apply to this question.

Additional variables were used to record volume data for the five data collection periods. During these data collection periods, the data collectors were instructed to suspend vehicle inspections and interviews and to tally the number of vehicles entering the facility.

The assigned time periods were 08:00 - 08:15 a.m., 1000 - 10:15 a.m., 12:00 - 12:15 p.m., 2:00 - 2:15 p.m., and 4:00 - 4:15 p.m., and were to last the full 15 minutes, unless data collection had to be suspended prematurely due to a weather related reason or cooperation issues.

The information for the responses listed below was duplicated within the data sets for ease of use and contain the same time-related data.

The specific attributes (responses) are defined as follows.

- **9.1:** Time Period From
- 9.2: Time Period To

Response 9.1 – Time Period – From

Data Set: DAILY/DAILY_TALLY

SAS Name: DAYSTART/TIMEFROM

Label Name: Time of day when data collection started/Start of time period

Attribute Codes:

Range: 07:00 – 09:00

Remarks:

The information for the responses listed above was duplicated within the data sets for ease of use and contain the same time-related data.

The data collector recorded when the tally period began. The resulting earliest and latest time recorded (07:00 – 09:00) comprised the range.

SAS Variable Type: Character

Response 9.2 – Time Period – To

Data Set: DAILY/DAILY_TALLY

SAS Name: DAYEND/TIMETO

Label Name: Time of day when data collection ended/End of time period

Attribute Codes:

Range: 10:30 – 19:00

Remarks:

The information for the responses listed above was duplicated within the data sets for ease of use and contain the same data.

The data collector recorded when the tally period ended. The resulting earliest and latest times recorded (10:30 - 19:00) comprised the range.

SAS Variable Type: Character

Question 10 - Vehicle Body Types

Data Set: DAILY_TALLY

SAS Name: BODYTYPE

Label Name: Vehicle Body Type

Attribute Codes:

SAS	Description
1	Automobiles (Small)
2	Automobiles (Large)
3	Utility Vehicles (SUV)
4	Van-Based Light Trucks
5	Light Conventional Trucks (PU)

Remarks:

The data collector indicated the body type of the vehicle.

This variable describes the body type of the vehicle.

Auto (Small): Small autos are defined as 2- or 3-door automobiles

Auto (Large): Large autos are defined as 4- (or more) door automobiles

SUV: Sport Utility Vehicle

Van: Van-based Light Trucks

PU: Pickup trucks

SAS Variable Type: Numeric

Question 11 - Vehicle Body Type Count Tallies

Data Set: DAILY_TALLY

SAS Name: PERIOD1, PERIOD2, PERIOD3, PERIOD4, PERIOD5

Label Name: Period "X" tally of this body type

Attribute Codes:

Range:

Remarks:

This variable tallied the number of vehicles, for the body type listed in Question 10, which entered the sample site during the time periods.

SAS Variable Type: Numeric

Question 12 - Tally Total

Data Set: DAILY_TALLY

SAS Name: VEHTALLY

Label Name: Day's tally for this body type

Attribute Codes:

Range: 0 – 43

Remarks:

This is the range for the total of all vehicle body types that were tallied during the five 15-minute tally periods in any one of the data collection sessions (days).

SAS Variable Type: Numeric

Question 13 – Inspection Total

Data Set: DAILY_TALLY

SAS Name: INSPECTTALLY

Label Name: Total inspections for this body type

Attribute Codes:

Range: 0 – 34

Remarks:

This is the range for the total of all vehicle body types that were inspected during the five 15-minute tally periods in any one of the data collection sessions (days).

SAS Variable Type: Numeric

Question 14 - Refusal Total

Data Set: DAILY_TALLY

SAS Name: REFUSETALLY

Label Name: Total inspections refused for this body category

Attribute Codes:

Range: 0 – 17

Remarks:

This is the range for the total of all vehicle body types that refused to participate during the five 15-minute tally periods in any one of the data collection sessions (days).

SAS Variable Type: Numeric

Question 15 - Totals for the Day - Tally Total

Data Set: DAILY

Remarks:

The attributes below identify the tally totals for Responses 15.1 – 15.3.

The data collector recorded the totals by using tic marks to represent each vehicle that qualified for each subcategory.

The specific attributes (responses) are defined as follows.

15.1: Daily tally totals

15.2: Inspection Totals

15.3: Refusal Totals

Question 15.1 – Totals for the Day – Tally Total

Data Set: DAILY

SAS Name: TALLYTOTAL

Label Name: Total # Veh Seen for all body types

Attribute Codes:

Range: 1 – 80

Remarks:

This variable tallied the number of vehicles of all body types listed in Question 10 that entered the sample site that day.

SAS Variable Type: Numeric

Question 15.2 – Totals for the Day – Inspection Total

Data Set: DAILY

SAS Name: INSPECTTOTAL

Label Name: Total # Veh Inspected for all body types

Attribute Codes:

Range: 1 – 53

Remarks:

This variable tallied the number of vehicles of all body types listed in Question 10 that were inspected at the sample site that day.

SAS Variable Type: Numeric

Question 15.3 – Totals for the Day – Refused Total

Data Set: DAILY

SAS Name: REFUSETOTAL

Label Name: Total # Veh Refused for all body types

Attribute Codes:

Range: 1 – 30

Remarks:

This variable tallied the number of vehicles of all body types listed in Question 10 that refused to participate in the survey that day.

SAS Variable Type: Numeric

Auto: Small Large

Auto: Small Large
SUV Van PU

SUV Van PU

Auto: Small Large

Other [All that apply]

Daily Site Form - Refueling (DSR 1061)

Paperwork Reduction Act Burden Statement A federal agency may not conduct or sponsor, and a person is not required to respond to, nor shall a person be subject to a penalty for faining to comply with a collection of information subject to the requirements of the Paperwork Reduction Act unless that collection of information displays a current valid OMB Control Number. The OMB Control Number for this information collection is 2127-0626. Since data will be collected on this form via observation, public reporting for this collection of information is estimated to be approximately 0 minutes per response, including the time for reviewing instructions, completing and reviewing the collection of information All responses to this collection of information are voluntary. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to: Information Collection Clearance Officer, National Highway Traffic Safety Administration, 1200 New Jersey Ave, S.E., Washington, DC, 20090. NHTS A Form 1061 U.S. Department of Transportation National Highway Traffic Safety Administration DAILY SITE FORM Form Approved O.M.B. No. 2127-0626 Expiration Date: 06/30/13 REFUELING National Automotive Sampling System ssure Monitoring System-Special Study Primary Sampling Unit Number: 2. Site Number: 3. Date of Observation: /2010/2011 4. Station Characteristics: Cash Only Pay-at-Pump Cashier Window Store Car Wash Auto Repair [All that apply] Page Pages REFUELING 6. Time In 7. Time Out Other Descriptors (e.g. Color) 5. Body Type (Check One) 8. Activities Auto: Small Large SUV Van PU Pay and Leave [Only Activity] OR Store Auto-Related Other [All that apply] Auto: Small Large SUV Van PU Pay and Leave [Only Activity] Other [All that apply] OR Store Auto-Related Auto: Small Large Pay and Leave [Only Activity] OR Store Auto-Related Other [All that apply] Auto: Small Large Pay and Leave [Only Activity] OR 🔲 Store 🔲 Auto-Related 🔲 Other [All that apply] Auto: Small Large SUV Van PU Pay and Leave [Only Activity] OR Store Auto-Related Other [All that apply] Auto: Small Large Pay and Leave [Only Activity] OR Store Auto-Related Other [All that apply] Auto: Small Large Pay and Leave [Only Activity] ☐ PU ☐ Van OR Store Auto-Related Other [All that apply] Auto: Small Large Pay and Leave [Only Activity]

OR Store Auto-Related

OR Store Auto-Related

Pay and Leave [Only Activity]

Pay and Leave [Only Activity] OR Store Auto-Related
Pay and Leave [Only Activity]

OR Store Auto-Related
Pay and Leave [Only Activity]

OR Store Auto-Related

Pay and Leave [Only Activity]
OR Store Auto-Related

Pay and Leave [Only Activity]

OR Store Auto-Related

The **Daily Site Form – Refueling** was used to collect information about the drivers, their vehicles, and the data collection sites (i.e., gas stations). Data collectors recorded the types of activities conducted by the drivers while their vehicles were positioned at the pump, such as refueling, entering station convenience stores, washing vehicle windows, and checking vehicle fluids. Data collectors also recorded information regarding the vehicles (i.e., the types of vehicles entering the gas stations and the times the vehicles were positioned at the pump) and station characteristics, such as payment options available (i.e., cash only, pay at the pump, cashier window) and station adjoining facilities (e.g., convenience stores, auto repair facilities).

The assigned time periods were 08:00 – 08:15 a.m., 1000 – 10:15 a.m., 12:00 – 12:15 p.m., 2:00 – 2:15 p.m., and 4:00 – 4:15 p.m., and were to last the full 15 minutes unless a weather related reason or cooperation issues resulted in the need to prematurely suspend data collection at that site. Researchers could vary the start time of the work day, as long as they marked the start time in this form, started their work day on the hour (if possible), and did counts every two hours. During the assigned time periods, one data collector collected data on the Daily Site Form – Tallies and Inspections, while the second data collector collected data on this form, the Daily Site Form – Refueling.

Data collectors were to use additional Daily Site Forms, as needed, as they monitored the vehicles entering the gas station to refuel. The data collectors were instructed to number each additional form consequently during the data collection. At the end of the data collection for each day, they were to record the total number of forms that were used that day, in the box at the top right side of the form, on each of the Daily Site-Refueling forms that were used.

Question 1 - Primary Sampling Unit Number

Data Set: DAILY_FUEL

SAS Name: PSU

Label Name: Primary Sampling Unit

Range: 02 - 82

Remarks:

TPMS-SS used NHTSA's NASS-CDS sites for data collection. The NASS-CDS consists of 24 statistically representative PSUs located throughout the country.¹⁰ The PSUs have been assigned two-digit identifying numbers that range from 02 to 82.

SAS Variable Type: Numeric

¹⁰ Additional information about the NASS CDS PSUs can be found in Appendix F of the 2014 NASS CDS Analytical User's Manual at https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812198. Demographic data on the 24 PSUs have been included in Appendix F to give researchers supplementary information on the nature of the PSUs.

Question 2 - Site Number

Data Set: DAILY_FUEL

SAS Name: SITEID

Label Name: Site ID

Range: 2701 – 31375

Remarks:

The gas station sites were selected based upon the sample design, as described in the Sample Design section of this coding manual. Each site was assigned a two-digit site number, ¹¹ which identified the ZIP Code and the gas station at which data was being collected. While this site number was used during data collection, this number is not included in the SAS database; instead, a site-specific unique five-digit SITEID was created for use in the SAS database. There is no correlation between the components of the Site Number (e.g., ZIP Code and station number) and the SITEID variable.

SAS Variable Type: Numeric

¹¹ The first digit of the site number identifies the ZIP Code while the second digit identifies the refueling station at which that day's data collection was being conducted. For example, for Day 10 where the sampling instructions state to use the third ZIP Code and the second refueling station, the Site Number would be 32. If the team was refused and went to the third alternate station, the appropriate code would be 33.

Question 3 – Date of Observation

Data Set: DAILY_FUEL

SAS Name: DATE

Label Name: Date

Range: 08102010 - 04152011

Remarks:

This is the date the observation was made. The first two digits specify the month, the second two digits indicate the date, and the last four digits designate the year that the inspection was conducted.

SAS Variable Type: Character

Question 4 - Station Characteristics

Data Set: DAILY_FUEL

Remarks:

The choices below identify the stations characteristics outlined in Question 4.

Question 4 was a "Check all that apply" question. Staff people were instructed check all the aspects that applied to the station from the six choices below.

The next six pages of the manual provide detail on the specific attributes (questions 4.1 – 4.6) that apply to this question.

The specific attributes (responses) are defined as follows.

- **4.1:** Cash only
- **4.2:** Pay-at-pump
- **4.3:** Cashier window
- **4.4:** Store
- 4.5: Car wash
- **4.6:** Auto repair

Response 4.1 - Cash Only

Data Set: DAILY_FUEL

SAS Name: CHARCASH

Label Name: Station Characteristics – Cash Only

Attribute Codes:

SAS	Description
0	No
1	Yes

Remarks:

The interviewers recorded if this location was a "cash only" station option—a gas station where drivers were not allowed to pay at the pump. Instead, the driver had to pay a cashier who could be located either inside or outside the gas station building.

Question 4 was a "Check all that apply" question and data collectors could choose multiple actions.

SAS Variable Type: Numeric

Response 4.2 - Pay-at-pump

Data Set: DAILY_FUEL

SAS Name: CHARPUMP

Label Name: Station Characteristics – Pay-at-Pump

Attribute Codes:

SAS	Description
0	No
1	Yes

Remarks:

The interviewers recorded if this location was a "pay-at-pump" gas station where drivers were allowed to pay at the pump with a credit, debit or other type of card.

Question 4 was a "Check all that apply" question and data collectors could choose multiple actions.

SAS Variable Type: Numeric

Response 4.3 - Cash Window

Data Set: DAILY_FUEL

SAS Name: CHARWINDOW

Label Name: Station Characteristics – Cash Window

Attribute Codes:

SAS	Description
0	No
1	Yes

Remarks:

The interviewers recorded if this location was a gas station with a "cash window." Data collectors were provided with the following additional information:

Cashier Window: A window or another structure where a cashier is positioned in order to take payment for gasoline purchases. Such structures would include walk-up windows on the side of gas station buildings as well as kiosks and other small structures, located between or by gasoline pumps. If there is a window for payment, this box should be checked even if the cashier has the dual duty of taking payment from customers at the window and also from customers within the store

Question 4 was a "Check all that apply" question and data collectors could choose multiple actions.

SAS Variable Type: Numeric

Response 4.4 – Store

Data Set: DAILY_FUEL

SAS Name: CHARSTORE

Label Name: Station Characteristics – Store

Attribute Codes:

SAS	Description
0	No
1	Yes

Remarks:

The interviewers recorded if this location was a gas station with a "store" – a gas station that has a convenience store as part of the station.

Question 4 was a "Check all that apply" question and data collectors could choose multiple actions.

SAS Variable Type: Numeric

Response 4.5 – Car Wash

Data Set: DAILY_FUEL

SAS Name: CHARWASH

Label Name: Station Characteristics - Car Wash

Attribute Codes:

SAS	Description
0	No
1	Yes

Remarks:

The interviewers recorded if this location was a gas station with a "car wash" on the grounds of the station.

Question 4 was a "Check all that apply" question and data collectors could choose multiple actions.

SAS Variable Type: Numeric

Response 4.6 – Auto repair

Data Set: DAILY_FUEL

SAS Name: CHARAUTO

Label Name: Station Characteristics - Auto Repair

Attribute Codes:

SAS	Description
0	No
1	Yes

Remarks:

The interviewers recorded if this gas station had an "auto repair" feature – a gas station that had an adjoining garage or vehicle repair facility with or without a mechanic on duty.

Question 4 was a "Check all that apply" question and data collectors could choose multiple actions.

SAS Variable Type: Numeric

Question 5 - Body Type

Data Set: DAILY_FUEL

SAS Name: BODYTYPE

Label Name: Vehicle Body Type

Attribute Codes:

SAS	Description
1	Automobiles (Small)
2	Automobiles (Large)
3	Utility Vehicles (SUV)
4	Van-based Light Trucks (Van)
5	Light Conventional Trucks (PU)

Remarks:

This variable describes the body type of the vehicle.

Auto (Small): Small autos are defined as 2- or 3-door automobiles

Auto (Large): Large autos are defined as 4- (or more) door automobiles

SUV Sport Utility Vehicle

Van: Van-based Light Trucks

PU: Pickup trucks

The data collector was instructed to check the box for the appropriate vehicle body type for which a "Time In" (Question 6) was recorded. Since the data collectors might be tracking more than one vehicle at a time, they were told they could enter descriptive information about the vehicles (e.g., color, size) in the next box to help to avoid confusion.

SAS Variable Type: Numeric

Question 6 - Time In

Data Set: DAILY_FUEL

SAS Name: FUELSTART

Label Name: Time Vehicle Begins to Fuel

Range: 0700 – 1815

Remarks:

For each vehicle, the data collector was instructed to record when refueling began.

The data collector began by recording the time when the first vehicle began to fuel during one of the assigned time periods. The data collector continued recording the time that vehicles began to fuel until that time period was over. Since assigned time periods ran for 15 minutes every two hours, the times recorded are clustered around the assigned observation times.

The data was stored using a 24-hour (00:00-24:00 military) clock.

SAS Variable Type: Character

Question 7 - Time Out

Data Set: DAILY_FUEL

SAS Name: FUELEND

Label Name: Time Vehicle Finishes Fueling

Attribute Codes:

Range: 0704 - 1820, 9999

Remarks:

For each vehicle, the data collector was instructed to record when refueling was completed.

For any vehicle for which the data collector began to record refueling data, but was unable to obtain a "Time Out" time, the data collector was instructed to record "99:99;" this included vehicles that did not complete refueling before the end of the 15-minute data collection time. If, however, there was a delay in beginning data collection for the interview data and/or if the data collector noticed the vehicle leaving once the data collector had begun collecting interview data, the data collector could enter a "Time Out" for that vehicle.

The data was stored using a 24-hour (00:00-24:00 military) clock.

Code 9999 (Unknown) was coded when the data collector lost track of the vehicle during the vehicle's refueling.

SAS Variable Type: Character

Question 8 - Activities

Data Set: DAILY_FUEL

Remarks:

The choices below identify the driver's activities as outlined in Question 8.

The data collectors were instructed to record what the driver or passengers did before, during, or after the tank was being filled.

If the only activity besides filling the tank was to pay and leave the gas station, the first box was to be checked. If other activities were also done, the first box was not checked, but all of the other applicable boxes were checked.

The other type of activities, which were being tracked, was if the driver or a passenger:

- 1. Entered a convenience store, or a similar business that was part of the gas station,
- 2. Did some auto-related activity (e.g., wash vehicle windows, check air in tires, have the car washed, have the vehicle checked by a mechanic) and/or
- 3. Did some other activity (e.g., visit with others, get directions),

The next four pages of the manual provide detail on the specific attributes (questions 8.1 – 8.4) that apply to this question.

The specific attributes (responses) are defined as follows.

- **8.1:** Pay and leave (only activity)
- **8.2:** Store
- **8.3:** Auto-related
- 8.4: Other

Response 8.1 - Pay and Leave

Data Set: DAILY_FUEL

SAS Name: ACTSPAY

Label Name: Pay and Leave

Attribute Codes:

SAS	Description
0	No
1	Yes

Remarks:

The interviewers recorded if the driver or passengers fueled the vehicle and then paid and left the location.

Question 8 was a "Check all that apply" question and data collectors could choose multiple actions, except for this activity.

SAS Variable Type: Numeric

Response 8.2 – Store

Data Set: DAILY_FUEL

SAS Name: ACTSSTORE

Label Name: Goes in Gas Station Building

Attribute Codes:

SAS	Description
0	No
1	Yes

Remarks:

The interviewers recorded if the driver or passengers entered the service station's adjoining store.

SAS Variable Type: Numeric

Response 8.3 - Auto-Related

Data Set: DAILY_FUEL

SAS Name: ACTSAUTO

Label Name: Does Auto-Related Activity

Attribute Codes:

SAS	Description
0	No
1	Yes

Remarks:

The interviewers recorded if the driver or passengers did an auto-related activity (e.g., wash vehicle windows, check air in tires, have the car washed, have the vehicle checked by a mechanic).

SAS Variable Type: Numeric

Response 8.4 - Auto-Related

Data Set: DAILY_FUEL

SAS Name: ACTSO

Label Name: Does Some Other Activity

Attribute Codes:

SAS	Description
0	No
1	Yes

Remarks:

The interviewers recorded if the driver or passengers did another activity not specified in Question 8 (e.g., visit with others, get directions, etc.).

SAS Variable Type: Numeric

Tire Inspection Form (TIR 1062)

subject to the information co approximately are voluntary.	ncy may not conduct or sponsor, and a perso requirements of the Paperwork Reduction Ac bllection is 21 27-0626. Since data will be coll of minutes per response, including the time Send comments regarding this burden esti cer, National Highway Traffic Safety Adminis	n is not required to re ct unless that collection ected on this form via for reviewing instructi nate or any other aspe	n of information observation and ons, completing ect of this collect	all a person displays a d inspection and review ion of infor	be subject to a p current valid OME , public reporting ing the collection mation, including	3 Control Numbe for this collection of information suggestions for	r. The OMB Control I n of information is es All responses to this o	Num ber for this tim ated to be ∞llection of in form at	tion
	of Transportation ay Traffic Safety	TIRE	E INSPEC	ПОМ Б	ORM		National	pproved O.M.B. No. 2 Expiration Date: Automotive Sampling nitoring System-Speci	06/30/1 Syster
2. Site Num 3. Observati 4. Date of O	Sampling Unit Number ber ion Number bservation //: lay	2010/2011		7. Vehic 8. Vehic 9. Ambi	le Make le Model ent Air Tempe	erature] Fog, [_] Rain, [ı.
11. TIRE	12. TIRE MANUFACTURER	13. TIRE MODEL	14. TIRE (eg. P215/		15. MAXIMUM PRESSURE	16. MEASURED PRESSURE	17. TIRE TEMPERATURE	18. MEASURED MIN. TREAD DEPTH	TIRE
LF					—psi	—psi	oF	/32"	LF
LR					—psi	—psi	oF	/32"	LR
RR					psi	psi	oF	/32"	RF
RF					por	per		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	3.30

The Tire Inspection Form (NHTSA 1062) was designed to collect general site and vehicle information, weather conditions at the time of the inspections, and the conditions of the tires such as the manufacturer, tire specifications, and the current inflation levels.

Questions 1 to 4 on this form were administrative, being filled in before the staff member approached the vehicle. Questions 5 to 10 recorded site, vehicle, and weather data while Questions 11 to 18 recorded the details about the vehicle's tires.

Question 1 - Primary Sampling Unit Number

Data Set: TIRE_INFO

SAS Name: PSU

Label Name: Primary Sampling Unit

Range: 02 – 82

Remarks:

TPMS-SS used NHTSA's NASS-CDS sites for data collection. The NASS-CDS consists of 24 statistically representative PSUs located throughout the country. The PSUs have been assigned two-digit identifying numbers that range from 02 to 82.

SAS Variable Type: Numeric

¹² Additional information about the NASS CDS PSUs can be found in Appendix F of the 2014 NASS CDS Analytical User's Manual at https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812198. Demographic data on the 24 PSUs have been included in Appendix F to give researchers supplementary information on the nature of the PSUs.

Question 2 - Site Number

Data Set: TIRE_INFO

SAS Name: SITEID

Label Name: Site ID

Range: 2701 – 31375

Remarks:

The gas station sites were selected based upon the sample design, as described in the Sample Design section of this coding manual. Each site was assigned a two-digit site number, ¹³ which identified the ZIP Code and the gas station at which data was being collected. While this site number was used during data collection, this number is not included in the SAS database; instead, a site-specific unique five-digit SITEID was created for use in the SAS database. There is no correlation between the components of the Site Number (e.g., ZIP Code and station number) and the SITEID variable.

SAS Variable Type: Numeric

¹³ The first digit of the site number identifies the ZIP Code while the second digit identifies the refueling station at which that day's data collection was being conducted. For example, for Day 10 where the sampling instructions state to use the third ZIP Code and the second refueling station, the Site Number would be 32. If the team was refused and went to the third alternate station, the appropriate code would be 33.

Question 3 – Observation Number

Data Set: TIRE_INFO

SAS Name: OBSERVID

Label Name: Observation ID

Range: 1 – 71

Remarks:

Staff members were instructed to start with the number (1) and record sequentially for each observation throughout the session. This process was repeated whenever the Site Number was changed. For each observation, this number was to be consistent with the Observation Number documented on all other interview, inspection, and supplemental forms.

SAS Variable Type: Numeric

Question 4 - Date of Observation

Data Set: TIRE_INFO

SAS Name: DATE

Label Name: Date

Range: 08102010 - 04152011

Remarks:

This is the date the observation was made. The first two digits specify the month, the second two digits indicate the date, and the last four digits designate the year that the inspection was conducted.

SAS Variable Type: Character

Question 5 - Time of Day

Data Set: TIRE_INFO

SAS Name: INSPTIME

Label Name: Time of day of inspection

Range: 07:16 – 18:00

Remarks:

The data collector recorded the time of day that the inspection began.

The data was stored using a 24-hour (00:00-24:00 military) clock.

SAS Variable Type: Character

Question 6 - Vehicle Model Year

Data Set: TIRE_INFO

SAS Name: MODELYEAR

Label Name: Vehicle Model Year

Attribute Codes:

SAS	Description
#	Year of vehicle

Remarks:

The data collector indicated the vehicle model year.

Note: Data was collected on 2004 and newer vehicles only.

SAS Variable Type: Numeric

Question 7 - Vehicle Make

Data Set: TIRE_INFO

SAS Name: MAKE

Label Name: Vehicle Make

Attribute Codes:

SAS	Description
#	Make of vehicle - refer to Appendix A

Remarks:

The data collector recorded the make of the vehicle.

SAS Variable Type: Numeric

Question 8 - Vehicle Model

Data Set: TIRE_INFO

SAS Name: MODEL

Label Name: Vehicle Model

Attribute Codes:

SAS	Description
#	Model of vehicle - refer to Appendix B

Remarks:

The data collector recorded the model of the vehicle.

SAS Variable Type: Numeric

Question 9 - Ambient Air Temperature

Data Set: TIRE_INFO

SAS Name: AIRTEMP

Label Name: Ambient Air Temperature

Range: 1 – 119

Remarks:

The data collector recorded the ambient air temperature just prior to each inspection.

The temperature was measured in degrees Fahrenheit, using a pyrometer, just prior to each inspection. The data collectors were instructed to hold the pyrometer sensor in the air and wait until the reading stabilized before recording the temperature.

SAS Variable Type: Numeric

Question 10 - Weather

Data Set: TIRE_INFO

SAS Name: WEATHER

Label Name: Weather conditions

Attribute Codes:

SAS	Description
1	Clear
2	Cloudy
3	Fog
4	Rain
5	Sleet
6	Snow

Remarks:

The interviewers recorded the weather conditions at the time of the tire inspection.

SAS Variable Type: Numeric

Question 11 - Tire

Data Set: TIRE

Question 11, "Tire" was a column header on the field form and not a coded variable. There is no data stored within the application or datasets for this column header as the location is captured in the individual dataset column names.

Data collectors were instructed to complete the form, moving in a counter-clockwise direction around the vehicle, beginning with the left front tire (i.e., LF, LR, RR, and RF).

They were told to use standard measurements (e.g., psi, Fahrenheit and 1/32nd inches) and not to use metric values when recording measurements obtained. Whole-number readings from analog gauges were to be rounded to the closest whole number, while .5 readings from digital gauges were to be alternatively rounded up or down to the closest whole number.

Data collectors were advised that the pressure in the tires might be higher than recommended without the TPMS warning lamp being illuminated because TPMS is designed to alert drivers only to underinflated tires.

Since tire data was to be obtained from the sidewalls of the tires, the data collectors were instructed to note, in the space provided for a specific item, if the information could not be read (e.g., too faint or worn).

Question 12 - Tire Manufacturer

Data Set: TIRE

Remarks:

The data collectors recorded, in sub-questions 12.1 – 12.4, the manufacturer for each of the tires.

The specific attributes for this Question 12 are defined as follows.

12.1: LF tire manufacturer

12.2: LR tire manufacturer

12.3: RR tire manufacturer

12.4: RF tire manufacturer

The next four pages of the manual contain additional information on the tire manufacturer.

Response 12.1 – Tire Manufacturer - LF

Data Set: TIRE

SAS Name: T_MANUFLF

Label Name: Tire Manufacturer – LF

Attribute Codes:

SAS	Description
#	Tire manufacturer – refer to Appendix C
8888	Other manufacturer
9999	Unknown

Remarks:

The data collector recorded the name of the tire manufacturer of the LF tire.

SAS Variable Type: Numeric

Response 12.2 – Tire Manufacturer - LR

Data Set: TIRE

SAS Name: T_MANUFLR

Label Name: Tire Manufacturer – LR

Attribute Codes:

SAS	Description
#	Tire manufacturer – refer to Appendix C
8888	Other manufacturer
9999	Unknown

Remarks:

The data collector recorded the name of the tire manufacturer of the LR tire.

SAS Variable Type: Numeric

Response 12.3 - Tire Manufacturer - RR

Data Set: TIRE

SAS Name: T_MANUFRR

Label Name: Tire Manufacturer – RR

Attribute Codes:

SAS	Description
#	Tire manufacturer – refer to Appendix C
8888	Other manufacturer
9999	Unknown

Remarks:

The data collector recorded the name of the tire manufacturer of the RR tire.

SAS Variable Type: Numeric

Response 12.4 – Tire Manufacturer - RF

Data Set: TIRE

SAS Name: T_MANUFRF

Label Name: Tire Manufacturer – RF

Attribute Codes:

SAS	Description
#	Tire manufacturer – refer to Appendix C
8888	Other manufacturer
9999	Unknown

Remarks:

The data collector recorded the name of the tire manufacturer of the RF tire.

SAS Variable Type: Numeric

Question 13 - Tire Model

Data Set: TIRE

Remarks:

In the next four pages of the manual, the model name of each of the tires, as recorded by the data collector, is reported in sub-questions 13.1 – 13.4, as follows.

13.1: LF tire model name

13.2: LR tire model name

13.3: RR tire model name

13.4: RF tire model name

The next four pages of the manual contain additional information on the tire model.

Response 13.1 – Tire Model - LF

Data Set: TIRE

SAS Name: T_MODELLF

Label Name: Tire Model – LF

Attribute Codes:

SAS	Description
#	Name of tire model

Remarks:

The data collector recorded the tire model name of the LF tire.

SAS Variable Type: Character

Response 13.2 – Tire Model - LR

Data Set: TIRE

SAS Name: T_MODELLR

Label Name: Tire Model – LR

Attribute Codes:

SAS	Description
#	Name of tire model

Remarks:

The data collector recorded the tire model name of the LR tire.

SAS Variable Type: Character

Response 13.3 – Tire Model - RR

Data Set: TIRE

SAS Name: T_MODELRR

Label Name: Tire Model – RR

Attribute Codes:

SAS	Description
#	Name of tire model

Remarks:

The data collector recorded the tire model name of the RR tire.

SAS Variable Type: Character

Response 13.4 – Tire Model - RF

Data Set: TIRE

SAS Name: T_MODELRF

Label Name: Tire Model - RF

Attribute Codes:

SAS	Description
#	Name of tire model

Remarks:

The data collector recorded the tire model name of the RF tire.

SAS Variable Type: Character

Question 14 - Tire Size

Data Set: TIRE

Remarks:

The data collector recorded, in sub-questions 14.1 – 14.4, the size of each of the tires. If the size could not be determined, the data collector recorded "Unknown."

The specific attributes for Question 14 are defined as follows.

14.1: LF tire size

14.2: LR tire size

14.3: RR tire size

14.4: RF tire size

The next four pages of the manual contain additional information on the tire size.

Response 14.1 – Tire Size - LF

Data Set: TIRE

SAS Name: T_SIZELF

Label Name: Tire Size – LF

Attribute Codes:

SAS	Description
#	Record the tire size

Remarks:

The data collector recorded the size of the LF tire.

SAS Variable Type: Character

Response 14.2 – Tire Size - LR

Data Set: TIRE

SAS Name: T_SIZELR

Label Name: Tire Size – LR

Attribute Codes:

SAS	Description
#	Record the tire size

Remarks:

The data collector recorded the size of the LR tire.

SAS Variable Type: Character

Response 14.3 – Tire Size - RR

Data Set: TIRE

SAS Name: T_SIZERR

Label Name: Tire Size - RR

Attribute Codes:

SAS	Description
#	Record the tire size

Remarks:

The data collector recorded the size of the RR tire.

SAS Variable Type: Character

Response 14.4 – Tire Size - RF

Data Set: TIRE

SAS Name: T_SIZERF

Label Name: Tire Size – RF

Attribute Codes:

SAS	Description
#	Record the tire size

Remarks:

The data collector recorded the size of the RF tire.

SAS Variable Type: Character

Question 15 - Maximum Pressure

Data Set: TIRE

Remarks:

In sub-questions 15.1 – 15.4, the recommended maximum tire pressure for each of the tires, as recorded by the data collectors, is reported as follows.

- **15.1:** LF maximum tire pressure
- 15.2: LR maximum tire pressure
- **15.3:** RR maximum tire pressure
- **15.4:** RF maximum tire pressure

The next four pages of the manual contain additional information on the maximum tire pressures for the tires.

Response 15.1 – Maximum Pressure - LF

Data Set: TIRE

SAS Name: MAXPLF

Label Name: Maximum Pressure – LF

Attribute Codes:

SAS	Description
#	Maximum pressure
.U	Unknown

Remarks:

The data collector recorded the recommended maximum pressure of the LF tire as found on the tire's sidewall.

The pressure was documented in pounds per square inch.

SAS Variable Type: Numeric

Response 15.2 – Maximum Pressure - LR

Data Set: TIRE

SAS Name: MAXPLR

Label Name: Maximum Pressure – LR

Attribute Codes:

SAS	Description
#	Maximum pressure
.U	Unknown

Remarks:

The data collector recorded the recommended maximum pressure of the LR tire as found on the tire's sidewall.

The pressure was documented in pounds per square inch.

SAS Variable Type: Numeric

Response 15.3 - Maximum Pressure - RF

Data Set: TIRE

SAS Name: MAXPRF

Label Name: Maximum Pressure – RF

Attribute Codes:

SAS	Description
#	Maximum pressure
.U	Unknown

Remarks:

The data collector recorded the recommended maximum pressure of the RF tire as found on the tire's sidewall.

The pressure was documented in pounds per square inch.

SAS Variable Type: Numeric

Response 15.4 – Maximum Pressure - RR

Data Set: TIRE

SAS Name: MAXPRR

Label Name: Maximum Pressure – RR

Attribute Codes:

SAS	Description
#	Maximum pressure
.U	Unknown

Remarks:

The data collector recorded the recommended maximum pressure of the RR tire as found on the tire's sidewall.

The pressure was documented in pounds per square inch.

SAS Variable Type: Numeric

Question 16 - Measured Pressure

Data Set: TIRE

Remarks:

In sub-questions 16.1 – 16.4, the measured pressure 14 for each of the tires, as recorded by the data collectors, is reported as follows.

16.1: LF measured tire pressure

16.2: LR measured tire pressure

16.3: RR measured tire pressure

16.4: RF measured tire pressure

Additional information is contained in the next four pages of the manual.

¹⁴ Before taking a reading, the data collectors were instructed to clear the gauge and set it to 0. Then they were to place the gauge over the tire's value stem and press firmly so that there was no escaping air. If the gauge maxed to its capacity during the pressure reading, the data collectors were instructed to annotate "60 psi." Also, the data collectors were advised that a tire normally will lose 0.1 psi for each reading.

Response 16.1 - Measured Pressure - LF

Data Set: TIRE

SAS Name: MSPLF

Label Name: Measured Pressure – LF

Attribute Codes:

SAS	Description
#	Measured pressure
.U	Unknown

Remarks:

The data collector recorded the measured pressure for the LF tire at the time of inspection. The pressure was measured with an air gauge and was documented in pounds per square inch.

SAS Variable Type: Numeric

Response 16.2 – Measured Pressure - LR

Data Set: TIRE

SAS Name: MSPLR

Label Name: Measured Pressure – LR

Attribute Codes:

SAS	Description
#	Measured pressure
.U	Unknown

Remarks:

The data collector recorded the measured pressure for the LR tire at the time of inspection. The pressure was measured with an air gauge and was documented in pounds per square inch.

SAS Variable Type: Numeric

Response 16.3 - Measured Pressure - RF

Data Set: TIRE

SAS Name: MSPRF

Label Name: Measured Pressure - RF

Attribute Codes:

SAS	Description
#	Measured pressure
.U	Unknown

Remarks:

The data collector recorded the measured pressure for the RF tire at the time of inspection. The pressure was measured with an air gauge and was documented in pounds per square inch.

SAS Variable Type: Numeric

Response 16.4 - Measured Pressure - RR

Data Set: TIRE

SAS Name: MSPRR

Label Name: Measured Pressure – RR

Attribute Codes:

SAS	Description
#	Measured pressure
.U	Unknown

Remarks:

The data collector recorded the measured pressure for the RR tire at the time of inspection. The pressure was measured with an air gauge and was documented in pounds per square inch

SAS Variable Type: Numeric

Question 17 - Tire Temperature

Data Set: TIRE

Remarks:

In sub-questions 17.1 - 17.4, the measured temperature of each of the vehicle's tires, as recorded by the data collectors, was reported as follows.

17.1: LF tire temperature

17.2: LR tire temperature

17.3: RR tire temperature

17.4: RF tire temperature

The data collectors were instructed to use a pyrometer to measure the tire temperature at the junction of the tire tread and the sidewall, in-line with the valve stem. They were to wait to take the temperature until the reading stabilized, and they were cautioned to be careful not to puncture the tire.

Additional information is contained in the next four pages of the manual.

Response 17.1 – Tire Temperature LF

Data Set: TIRE

SAS Name: TEMPLF

Label Name: Left Front Tire Temperature

Attribute Codes:

SAS	Description
#	Measured temperature
.U	Unknown

Remarks:

The data collector recorded the LF tire temperature at the time of inspection. The temperature was measured with a pyrometer and was documented in Fahrenheit.

SAS Variable Type: Numeric

Response 17.2 – Tire Temperature LR

Data Set: TIRE

SAS Name: TEMPLR

Label Name: Left Rear Tire Temperature

Attribute Codes:

SAS	Description
#	Measured temperature
.U	Unknown

Remarks:

The data collector recorded the LR tire temperature at the time of inspection. The temperature was measured with a pyrometer and was documented in Fahrenheit.

SAS Variable Type: Numeric

Response 17.3 – Tire Temperature RF

Data Set: TIRE

SAS Name: TEMPRF

Label Name: Right Front Tire Temperature

Attribute Codes:

SAS	Description
#	Measured temperature
.U	Unknown

Remarks:

The data collector recorded the RF tire temperature at the time of inspection. The temperature was measured with a pyrometer and was documented in Fahrenheit.

SAS Variable Type: Numeric

Response 17.4 – Tire Temperature RR

Data Set: TIRE

SAS Name: TEMPRR

Label Name: Right Rear Tire Temperature

Attribute Codes:

SAS	Description
#	Measured temperature
.U	Unknown

Remarks:

The data collector recorded the RR tire temperature at the time of inspection. The temperature was measured with a pyrometer and was documented in Fahrenheit.

SAS Variable Type: Numeric

Question 18 - Measured Tread Depth

Data Set: TIRE

Remarks:

In sub-questions 18.1 - 18.4, the tread depth of the vehicle's tires, as recorded by the data collectors, is reported as follows.

18.1: LF tire measured minimum tread depth

18.2: LR tire measured minimum tread depth

18.3: RR tire measured minimum tread depth

18.4: RF tire measured minimum tread depth

The data collectors were instructed to measure the tread with a tread depth indicator by placing the indicator on the shallowest groove of the tread (being careful not to measure on a wear bar indicator), pressing down on the measurement rod until contact was made with the bottom of the groove, and rotating the indicator until a line on the measurement rod is flush with the base. The data collectors were told to record this measurement, the minimum tread depth on the measured tire, to the nearest 1/32 of an inch.

Additional information is contained in the next four pages of the manual.

Response 18.1 - Measured Tread Depth LF

Data Set: TIRE

SAS Name: TREADLF

Label Name: Measured tread depth – LF

Attribute Codes:

SAS	Description
#	Measured tread depth
.U	Unknown

Remarks:

The data collector measure ${\rm d}^{15}$ the minimum tread depth of the LF tire at the time of inspection.

SAS Variable Type: Numeric

¹⁵ The tread depth was measured with a tread depth indicator and was documented to the nearest ½2 of an inch.

Response 18.2 - Measured Tread Depth LR

Data Set: TIRE

SAS Name: TREADLR

Label Name: Measured tread depth – LR

Attribute Codes:

SAS	Description
#	Measured tread depth
.U	Unknown

Remarks:

The data collector measured¹⁶ the minimum tread depth of the LR tire at the time of inspection.

SAS Variable Type: Numeric

¹⁶ The tread depth was measured with a tread depth indicator and was documented to the nearest ½2 of an inch.

Response 18.3 - Measured Tread Depth RF

Data Set: TIRE

SAS Name: TREADRF

Label Name: Measured tread depth – RF

Attribute Codes:

SAS	Description
#	Measured tread depth
.U	Unknown

Remarks:

The data collector measure d^{17} the minimum tread depth of the RF tire at the time of inspection.

SAS Variable Type: Numeric

 $^{^{17}}$ The tread depth was measured with a tread depth indicator and was documented to the nearest $\frac{17}{2}$ of an inch.

Response 18.4 - Measured Tread Depth RR

Data Set: TIRE

SAS Name: TREADRR

Label Name: Measured tread depth - RR

Attribute Codes:

SAS	Description
#	Measured tread depth
.U	Unknown

Remarks:

The data collector measured¹⁸ the minimum tread depth of the RR tire at the time of inspection.

SAS Variable Type: Numeric

¹⁸ The tread depth was measured with a tread depth indicator and was documented to the nearest ½2 of an inch.

Vehicle Inspection Form (VEH 1063)

	National Automotive Sampling Tire Pressure Monitoring System-Specia	FORM	. Department of Transportation
g System Special Study	The Flessure Monitoring System Specie		ional Highway Traffic Safety ninistration
	ation Number	3.	Primary Sampling Unit Number
/ 2010/2011	Observation// 2010/2		Site Number
	DN .	VEHICLE IDENTI	
tegory	9. Vehicle Body Type Category		Vehicle Model Year
Sma∏ Large	1) Automobiles: ☐Small ☐ La		Vehicle Make
5	2) ☐ Utility Vehicles		Vehicle Model
ht Trucks	 3) ☐ Van Based Light Trucks 		Vehicle Mileage
onal Trucks	4) Light Conventional Trucks		
	RF Tirepsi	RR Tire	
lbs		ID/OWNER'S MAN	WESTERS
100		2 *	Manufacturer's Recommended Tire Size
psi	psi	Pressure (Front)**	Manufacturer Recommended Cold Tire
1/2 5/30	psi	Pressure (Rear)**	Manufacturer Recommended Cold Tire
psi			
psi			
psi			
	RF Tirepsi	lo,	2) Tire Specific Warning Icon: N 3) Tire Specific PSI: N PLACAF GWR Manufacturer's Recommended Tire Size

The Vehicle Inspection Form (NHTSA 1063) was designed to collect vehicle identification information on the vehicle such as make, model, year and body type; TPMS information on the type of display and the tire pressure; and placard and owner's manual information such as the GVWR and manufacturer's recommendations on proper inflation levels.

Questions 1 to 4 on this form were administrative and were completed by the staff member conducting the interview.

Questions 5 - 15 were core questions that were completed by the staff members, based on their inspection of the vehicle.

Question 1 - Primary Sampling Unit Number

Data Set: VEHICLE

SAS Name: PSU

Label Name: Primary Sampling Unit

Attribute Codes:

Range: 02 – 82

Remarks:

TPMS-SS used NHTSA's NASS-CDS sites for data collection. The NASS-CDS consists of 24 statistically representative PSUs located throughout the country.¹⁹ The PSUs have been assigned two-digit identifying numbers that range from 02 to 82.

SAS Variable Type: Numeric

¹⁹ Additional information about the NASS CDS PSUs can be found in Appendix F of the 2014 NASS CDS Analytical User's Manual at https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812198. Demographic data on the 24 PSUs have been included in Appendix F to give researchers supplementary information on the nature of the PSUs.

Question 2 - Site Number

Data Set: VEHICLE

SAS Name: SITEID

Label Name: Site ID

Attribute Codes:

Range: 2701 – 31375

Remarks:

The gas station sites were selected based upon the sample design, as described in the Sample Design section of this coding manual. Each site was assigned a two-digit site number, ²⁰ which identified the ZIP Code and the gas station at which data was being collected. While this site number was used during data collection, this number is not included in the SAS database; instead, a site-specific unique five-digit SITEID was created for use in the SAS database. There is no correlation between the components of the Site Number (e.g., ZIP Code and station number) and the SITEID variable.

SAS Variable Type: Numeric

²⁰ The first digit of the site number identifies the ZIP Code while the second digit identifies the refueling station at which that day's data collection was being conducted. For example, for Day 10 where the sampling instructions state to use the third ZIP Code and the second refueling station, the Site Number would be 32. If the team was refused and went to the third alternate station, the appropriate code would be 33.

Question 3 – Observation Number

Data Set: VEHICLE

SAS Name: OBSERVID

Label Name: Observation ID

Attribute Codes:

Range: 1 – 71

Remarks:

Staff members were instructed to start with the number (1) and record sequentially for each observation throughout the session. This process was repeated whenever the Site Number was changed. For each observation, this number was to be consistent with the Observation Number documented on all other interview, inspection, and supplemental forms.

SAS Variable Type: Numeric

Question 4 - Date of Observation

Data Set: VEHICLE

SAS Name: DATE

Label Name: Date

Attribute Codes:

Range: 08102010 - 04152011

Remarks:

This is the date the observation was made. The first two digits specify the month, the second two digits indicate the date, and the last four digits designate the year that the inspection was conducted.

SAS Variable Type: Character

Question 5 - Vehicle Model Year

Data Set: VEHICLE

SAS Name: MODELYEAR

Label Name: Vehicle Model Year

Attribute Codes:

SAS	Description
#	Year of vehicle
.U	Unknown

Remarks:

The data collector indicated the vehicle model year, as determined from the vehicle's VIN.

SAS Variable Type: Numeric

Question 6 - Make

Data Set: VEHICLE

SAS Name: MAKE

Label Name: Vehicle Make

Attribute Codes:

SAS	Description
#	Make of vehicle – refer to Appendix A

Remarks:

The data collector recorded the make of the vehicle.

SAS Variable Type: Numeric

Question 7 - Model

Data Set: VEHICLE

SAS Name: MODEL

Label Name: Vehicle model

Attribute Codes:

SAS	Description
#	Model of vehicle - refer to Appendix B

Remarks:

The data collector recorded the model of the vehicle.

SAS Variable Type: Numeric

Question 8 - Vehicle Mileage

Data Set: VEHICLE

SAS Name: MILEAGE

Label Name: Odometer reading

Attribute Codes:

SAS	Description
#	Mileage of vehicle
.U	Unknown

Remarks:

The data collector recorded the vehicle's mileage.

Data collectors were told that it might be necessary to turn the vehicle ignition switch to the on position to see the vehicle's mileage. Since drivers might be hesitant to do so while they are filling their gas tanks, data collectors were told to request that the drivers turn the switch to the on position either before or after the drivers filled the gas tank.

SAS Variable Type: Numeric

Question 9 - Vehicle Body Type Category

Data Set: VEHICLE

SAS Name: BODYTYPE

Label Name: Vehicle Body Type

Attribute Codes:

SAS	Description
1	Automobiles (Small)
2	Automobiles (Large)
3	Utility Vehicles (SUV)
4	Van-Based Light Trucks
5	Light Conventional Trucks (PU)

Remarks:

The data collector indicated the body type of the vehicle, using the same definitions used in the observation portion of the interview surveys:

Automobiles (Small): Small autos are defined as 2- or 3-door automobiles

Automobiles (Large): Large autos are defined as 4- (or more) door automobiles

SUV: Sport Utility Vehicle

Van: Van-Based Light Truck

PU: Pickup

SAS Variable Type: Numeric

Question 10 - Vehicle Identification Number

Data Set: VEHICLE

SAS Name: VIN

++

Label Name: VIN

Attribute Codes:

#	Enter the Vehicle Identification Number
.U	No VIN
99999999999	Unknown

Remarks:

The data collector recorded the 17-digit VIN found on the vehicle. The final 5 digits of the VIN were redacted from the SAS file to insure participant privacy and anonymity.

SAS Variable Type: Numeric

Question 11 - TPMS Display

Data Sets: VEHICLE/TIRE

Remarks:

Since the Tire Pressure Monitoring System's FMVSS 138, went into full effect on September 1, 2007, all passenger cars, light trucks (pickups, vans, and sport utility vehicles), and buses with GVWRs of 10,000 pounds or less are required to be installed with a TPMS to inform drivers of low tire pressure. Vehicle manufacturers are allowed to decide to have two separate lamps (i.e., warning lamp and malfunction lamp) or to have combined warning/malfunction lamps. In addition, they can select the specific type of display that is used, as long as the display meets certain guidelines.

The data collector recorded "Yes" or "No" to sub-questions 11.1 – 11.3 as to whether the vehicle was equipped with the specific TPMS display types featured in the Figures below.

11.1: Display Only – Contains only a low tire pressure warning on the instrument panel. Information is not provided about the tire pressure of individual tires.



11.2: Tire Specific Warning Icon – Indicates which tires are underinflated, but do not provide the exact psi of the individual tires.



11.3: Tire Specific psi – Always provides the psi for each of the tires. The psi is provided not only when the tires are under or over inflated, but also when they are properly inflated.



If Option 11.3, "Tire specific psi" was chosen, the data collector recorded, in the spaces provided on the form, the individual psi that were seen on the vehicle's TPMS display.

The individual psi were recorded as follows.

- **11.3.1:** LF Tire ___ psi
- **11.3.2:** LR Tire ___ psi
- **11.3.3:** RF Tire ___ psi
- **11.3.4:** RR Tire ___ psi

The next seven pages of the manual provide detail on the specific attributes for Question 11.

Response 11.1 – Display Only

Data Set: VEHICLE

SAS Name: DISPLAY

Label Name: TPMS Display Only

Attribute Codes:

0	No
1	Yes

Remarks:

The data collector recorded if the TPMS had a general low tire pressure display that did not provide information regarding which tires were low or what was the psi of the individual tires.

SAS Variable Type: Numeric

Response 11.2 - Tire Specific Warning Icon

Data Set: VEHICLE

SAS Name: DISPLAYICON

Label Name: TPMS Display – Tire Specific Warning Icon

Attribute Codes:

0	No
1	Yes

Remarks:

The data collector recorded if the TPMS had a tire specific warning display that **did not** provide the psi of the individual tires.

SAS Variable Type: Numeric

Response 11.3 – Tire Specific psi

Data Set: VEHICLE

SAS Name: DISPLAYPSI

Label Name: TPMS Display – Tire Specific psi

Attribute Codes:

0	No
1	Yes

Remarks:

The data collector recorded if the TPMS had a tire specific warning display that **did** provide the psi of the individual tires.

In the next four sub-questions, the data collector recorded the individual tire pressures, if applicable.

SAS Variable Type: Numeric

Response 11.3.1 – LF Tire ___ psi

Data Set: TIRE

SAS Name: TPMS_DISPLAYLF

Label Name: Direct TPMS display reading - LF

Attribute Codes:

#	Tire's displayed psi
.U	Unknown
	Not applicable

Remarks:

The data collector recorded the psi of the LF tire.

SAS Variable Type: Numeric

Response 11.3.2 - LR Tire ___ psi

Data Set: TIRE

SAS Name: TPMS_DISPLAYLR

Label Name: Direct TPMS display reading - LR

Attribute Codes:

#	Tire's displayed psi
.U	Unknown
	Not applicable

Remarks:

The data collector recorded the psi of the LR tire.

SAS Variable Type: Numeric

Response 11.3.3 - RF Tire ___ psi

Data Set: TIRE

SAS Name: TPMS_DISPLAYRF

Label Name: Direct TPMS display reading - RF

Attribute Codes:

#	Tire's displayed psi
.U	Unknown
	Not applicable

Remarks:

The data collector recorded the psi of the RF tire.

SAS Variable Type: Numeric

Response 11.3.4 - RR Tire ___ psi

Data Set: TIRE

SAS Name: TPMS_DISPLAYRR

Label Name: Direct TPMS display reading - RR

Attribute Codes:

#	Tire's displayed psi
.U	Unknown
	Not applicable

Remarks:

The data collector recorded the psi of the RR tire.

SAS Variable Type: Numeric

Question 12 - GVWR

Data Set: VEHICLE

SAS Name: GVWR

Label Name: GVWR

Attribute Codes:

SAS	Description
#	GVWR of the vehicle
.U	Unknown

Remarks:

The GVWR (Gross Vehicle Weight Rating) is the maximum allowable total weight of the <u>vehicle</u> when loaded (i.e., the weight of the vehicle itself plus <u>fuel</u>, <u>passengers</u>, <u>cargo</u>, and <u>trailer</u> tongue weight).

GVWR was recorded in pounds.

SAS Variable Type: Numeric

Question 13 - Manufacturer's Recommended Tire Size

Data Set: VEHICLE

SAS Name: MANUSIZE

Label Name: Recommended Tire Size

Attribute Codes:

SAS	Description
#	Recommended tire size

Remarks:

The data collectors recorded the manufacturer's recommended tire sizes, using the following guidelines:

- 1. If only one size was listed on the placard, then that size was coded.
- 2. If more than one tire size was listed on the placard, the data collector:
 - 2.1. Entered, in the space provided on the survey form, all listed tire sizes that were on the placard.
 - 2.2. Determined the size of the tires currently on the vehicle.
 - 2.2.1. If that size is one of the sizes listed on the placard, then circle that tire size
 - 2.2.2. If that size is not listed on the placard, then circle the tire size that most closely matches the tire and rim size.

If the size could not be determined, the data collector recorded "UNKNOWN."

SAS Variable Type: Character

Question 14 - Manufacturer's Recommended Cold Tire Pressure (front)

Data Set: VEHICLE

SAS Name: MANUFFRNTC

Label Name: Recommended Tire Pressure Cold Front

Attribute Codes:

SAS	Description
#	Recommended cold tire pressure (front)
.U	Unknown

Remarks:

The data collector recorded the manufacturer's recommended cold tire pressure for the front two tires of the vehicle. The measurement was recorded in psi.

Data collectors were instructed to assume that the listed recommended tire pressure was the cold pressure, if the placard or owner's manual did not specify whether the recommended tire pressure was a hot or cold pressure. If no information could be documented from the vehicle, the data collectors were told that the Tire Guide²¹ could be used to document the recommended pressure.

SAS Variable Type: Numeric

SAS Field Length: 3

²¹ Chychrun, N. G., Garfield, J., Snyder, A., & Chychrun, J. (2010). *2010 Tire Guide* (Volume 53). Boca Raton, FL: A Bennett Garfield Publication.

Question 15 - Manufacturer's Recommended Cold Tire Pressure (rear)

Data Set: VEHICLE

SAS Name: MANUREARC

Label Name: Recommended Tire Pressure Cold Rear

Attribute Codes:

SAS	Description
#	Recommended cold tire pressure (rear)
.U	Unknown

Remarks:

The data collector recorded the manufacturer's recommended cold tire pressure for the back two tires of the vehicle. The measurement was recorded in psi.

Data collectors were instructed to assume that the listed recommended tire pressure was the cold pressure, if the placard or owner's manual did not specify whether the recommended tire pressure was a hot or cold pressure. If no information could be documented from the vehicle, the data collectors were told that the Tire Guide²² could be used to document the recommended pressure.

SAS Variable Type: Numeric

SAS Field Length: 3

Interview Form - Tire Pressure (INT 1064)

145

²² Ibid

Paperwork Reduction Act Burden Statement

A federal agency may not conduct or sponsor, and a person is not required to respond to, nor shall a person be subject to a penalty for failure to comply with a collection of information subject to the requirements of the Paperwork Reduction Act unless that collection of information displays a current valid OMB Control Number. The OMB Control Number for this information collection is 2127-0626. Public reporting for this collection of information is estimated to be approximately 10 minutes per response, including the time for reviewing instructions, completing and reviewing the collection of information. All responses to this collection of information are voluntary. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to:

		INTERVE	W EODM	Form Approved O.M.B. No. 2127-0626
U		INTERVIE TIRE PRI		Expiration Date: 06/30/13
ted St tional	ates Department of Transportation Highway Traffic Safety Administration	IIRE PRI		National Automotive Sampling System Tire Pressure Monitoring System – Special Study
1.	Primary Sampling Unit Numbe	r	[Questions about tire pre	ossurel
2	Site Number			eir tires at their proper pressure
				sons. List the reasons that are
	Observation Number	n Australiana sa		u for keeping tires properly
4.	400 A	// 2010/2011		read categories, but check all
5.	Interview in: O English	O Spanish	that apply)	
6	Observations: (O Interviewed (Refused () <2004)	1) 🔲 Improved	
0.000	1) Time of Day	ACDISON CHARACTER STATE AND ACTION OF THE CONTRACTOR		d vehicle performance/handling
	2) Ambient Air Temperature		3) Improved	9
	25 27 12 25	201	4) Longer la	403 WW 1875 - WY 1847 1876
	3) Weather: ☐ Gear, ☐ Gou	ıdy, 🔲 Fog,	5) 🔲 Other (sp	eaty)
	🔲 Rain, 🗀	Sleet, 🔲 Snow	12 Mhara wauld va	vu or do vou primarily turn for
	4) Body Type: Auto: O Sma	II O Large	information on v	ou, or do you, <u>primarily</u> turn for what pressure to set your tires for neck one)
	O SUV O Van	2001 100 S 100-100000-00100		
		1 0 00	, –	prior knowledge
	5) Sex: O Male O Female		2) Owner's	
	6) Age: O Young Adult O A	dult O Senior	3) O Vehicle p	
	7) #in Vehicle:		4) O Tire sidev	
			5) O A service	
	estions about Vehicle]	o2 (Chaok Ona)		r other automatic system
7. Who is the owner of this vehicle? (Check One)1) O Joint with other			7) O Relative (8) O Don't kno	
	2) O Self		9) O Other (sp	
	3) O Partner/spouse/significa	nt other	a) O Other (sp	ecity)
	4) O Parent or Other family m		13. Whose responsible	ility is it to check the tire pressure?
	5) O Friend or neighbor	TOTTO	(Check one)	
	6) O Lease		1) O Self	
	7) O Short-term rental		2) O Relative	
	8) O Car-share		3) O Service s	tation/dealer
	9) O Company/work		4) O TPMS	
	10) O Other			r other automatic system
8.	How long have you had this ve	hide?	7) O No one	ther than self, relative or friend)
1000	Years: Months:		, _	ecify)
		(< 1 month)	o) O Other (sp	ecity)
9.	Was this vehicle new when you	ı obtained it?	14. Under what circ	umstances do you have the tire
	O No O Y	es	pressure on this	vehicle checked, either by
10	Have any of the original tires o	n this vehicle been	5	eone else? (Check all that apply)
	replaced? If yes, which ones a			kip to Q 16—Add Air)
10	A. Original tires replaced?	10B. If Yes, when?	2) 🔲 Before a	
	Tire Yes No Don't	Yrs Mos Unk		es look or feel low
	Know			pressure warning light comes on
_	LF D D		5) When ca	
	LR			e load being carried is changed
	RR			sure is checked on a regular basis
4)	RF			ar or other automatic system
	Spare		9) 🔲 Don't kno	O₩
5)			10) Toth (ecify)

2) O within the past month 3) O 1-2 months ago 4) O 3-4 months ago 5) O More than 4 months ago 6) O Don't know 26	on TPMS at a later date, using: 1) O On-line 2) O Mail-back form 3) O Phone call back 4) O Refuse (End) 5. At what phone number(s) would you like to be called? 6. What are good times to call? 7. SUP ID:
---	---

The Interview Form – Tire Pressure (NHTSA 1064) was designed to collect information on the condition of the vehicle's tires, how the participant/caretaker monitored the vehicle's tire pressure, and what efforts they took to maintain the proper tire inflation. The two main interview forms (Tire Pressure/Refueling) were designed to be alternated between participants; however, since the vehicle inspection tended to take longer than the interview forms, the interviewers generally completed both forms.

Questions 1 to 4 on this form were administrative, being filled in before the interviewer approached the vehicle. Questions 5 to 6.7 were observational, completed by the interviewer conducting the interview. Questions 1 to 6 were completed regardless of whether the interview was completed or refused, or whether the vehicle was outside of the study's scope (Model Year 2003 or older).

Questions 7 to 21 were core questions that all participants were asked.

Form Questions 22 to 27 are case management questions that are not included in the SAS database and not further discussed in this manual.

Question 1 - Primary Sampling Unit Number

Data Set: INT_TIRE

SAS Name: PSU

Label Name: Primary Sampling Unit

Attribute Codes:

Range: 02 – 82

Remarks:

TPMS-SS used NHTSA's NASS-CDS sites for data collection. The NASS-CDS consists of 24 statistically representative PSUs located throughout the country.²³ The PSUs have been assigned two-digit identifying numbers that range from 02 to 82.

SAS Variable Type: Numeric

²³ Additional information about the NASS CDS PSUs can be found in Appendix F of the 2014 NASS CDS Analytical User's Manual at https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812198 Demographic data on the 24 PSUs have been included in Appendix F to give researchers supplementary information on the nature of the PSUs.

Question 2 - Site Number

Data Set: INT_TIRE

SAS Name: SITEID

Label Name: Site ID

Attribute Codes:

Range: 2701 – 31375

Remarks:

The gas station sites were selected based upon the sample design, as described in the Sample Design section of this coding manual. Each site was assigned a two digit site number,²⁴ which identified the ZIP Code and the gas station at which data was being collected. While this site number was used during data collection, this number is not included in the SAS database; instead, a site-specific unique five-digit SITEID was created for use in the SAS database. There is no correlation between the components of the Site Number (e.g., ZIP Code and station number) and the SITEID variable.

SAS Variable Type: Numeric

²⁴ The first digit of the site number identifies the ZIP Code while the second digit identifies the refueling station at which that day's data collection was being conducted. For example, for Day 10 where the sampling instructions state to use the third ZIP Code and the second refueling station, the Site Number would be 32. If the team was refused and went to the third alternate station, the appropriate code would be 33.

Question 3 - Observation Number

Data Set: INT_TIRE

SAS Name: OBSERVID

Label Name: Observation ID

Attribute Codes:

Range: 1 – 71

Remarks:

Interviewers were instructed to start with the number (1) and record sequentially for each observation throughout the session. This process was repeated whenever the Site Number was changed. For each observation, this number was to be consistent with the Observation Number documented on all other interview, inspection, and supplemental forms.

SAS Variable Type: Numeric

Question 4 - Date of Observation

Data Set: INT_TIRE

SAS Name: DATE

Label Name: Date

Attribute Codes:

Range: 08102010 - 04152011

Remarks:

This is the date the observation was made. The first two digits specify the month, the second two digits indicate the date, and the last four digits designate the year that the inspection was conducted.

SAS Variable Type: Character

Question 5 - Interview In

Data Set: INT_TIRE

SAS Name: LANGUAGE

Label Name: Interview Language

Attribute Codes:

SAS	Description
1	English
2	Spanish

Remarks:

This is the language in which the interview was completed.

SAS Variable Type: Numeric

Question 6 - Observations

Data Sets: INT_TIRE

Remarks:

Two types of data are included in the INT_TIRE data set for Question #6: observation and inspection. The observation data (INTVCAT, OBSERAGE, OBSERNUM, OBSERSEX, and OBSERTYPE) were collected from all vehicles approached, including those that were out of scope (i.e., <2004) and those that were driven by drivers who did not agree to be interviewed. The inspection data (AIRTEMP, INSPTIME, WEATHER) were collected only of those vehicles which were part of the 6013 complete vehicle observations. The observation variable INTVCAT came from the OBSERVATION dataset and the inspection variables come from the TIRE_INFO data set. These variables are included for the convenience of having them in one data set along with the observation variables from the Tire Pressure Interview form. These data are described in the following seven variables (6.0 - 6.7)

- **6.0:** Interview category
- **6.1:** Time of day
- **6.2:** Ambient air temperature
- **6.3:** Weather
- 6.4: Body type
- **6.5:** Sex
- **6.6:** Age
- **6.7:** Number of people in vehicle

Response 6.0 – Interview Category

Data Set: OBSERVATION

SAS Name: INTVCAT

Label Name: Interview Categories

Attribute Codes:

SAS	Description
1	Interviewed
2	Refused
3	<2004

Remarks:

This variable reports what happened when the interviewers requested cooperation from the vehicles' drivers—whether the: (1) Interview was obtained, (2) Participant declined to participate in the survey, or (3) Vehicle was out of scope because its model year was 2003 or older.

SAS Variable Type: Numeric

Response 6.1 – Time of Day

Data Set: TIRE_INFO

SAS Name: INSPTIME

Label Name: Time of day of inspection

Attribute Codes:

Range: 07:16 - 18:00

Remarks:

The interviewers recorded the time of day²⁵ that a vehicle's driver was approached to solicit participation in the study. The resulting earliest and latest times recorded (07:16-18:00) comprised the range.

SAS Variable Type: Character

²⁵ The data was stored using a 24-hour (00:00-24:00 military) clock.

Response 6.2 – Ambient Air Temperature

Data Set: TIRE_INFO

SAS Name: AIRTEMP

Label Name: Ambient Air Temperature

Attribute Codes:

Range: 1 - 119

Remarks:

The interviewers recorded the temperature in Fahrenheit at the time that the vehicle's driver was approached to solicit participation in the study.

SAS Variable Type: Numeric

Response 6.3 – Weather

Data Set: TIRE_INFO

SAS Name: WEATHER

Label Name: Weather conditions

Attribute Codes:

SAS	Description
1	Clear
2	Cloudy
3	Fog
4	Rain
5	Sleet
6	Snow

Remarks:

The interviewers recorded the weather conditions at the time that a vehicle's driver was approached to solicit participation in the study Interviewers were instructed to check all of the options that were applicable.

SAS Variable Type: Numeric

Response 6.4 – Body Type

Data Set: INT_TIRE

SAS Name: OBSERTYPE

Label Name: Observed – Body Type

Attribute Codes:

SAS	Description
1	Automobiles (Small)
2	Automobiles (Large)
3	Utility Vehicles (SUV)
4	Van-Based Light Trucks (VAN)
5	Light Conventional Trucks (PU)

Remarks:

Using the following categories, the interviewers recorded the body type of the vehicle that was approached:

Auto (Small): Small autos are defined as 2- or 3-door automobiles

Auto (Large): Large autos are defined as 4- (or more) door automobiles

SUV: Sport Utility Vehicle

Van: Van-Based Light Trucks

PU: Pickup

SAS Variable Type: Numeric

Response 6.5 – Sex

Data Set: INT_TIRE

SAS Name: OBSERSEX

Label Name: Observed – Sex

Attribute Codes:

SAS	Description
1	Male
2	Female

Remarks:

The interviewer recorded the sex of the vehicle's driver, as based upon observation by the interviewer.

SAS Variable Type: Numeric

Response 6.6 – Age

Data Set: INT_TIRE

SAS Name: OBSERAGE

Label Name: Observed – Age Category

Attribute Codes:

SAS	Description
1	Young adult
2	Adult
3	Senior

Remarks:

Using the following categories, the interviewer recorded the approximate age category of the vehicle's driver, as based upon the interviewer's best estimate.

Young Adult: If the driver appears to be 16 to 24 years old

Adult: If the driver appears to be 25 to 69 years old

Senior: If the driver appears to be 70 years old or older

SAS Variable Type: Numeric

Response 6.7 – # in vehicle

Data Set: INT_TIRE

SAS Name: OBSERNUM

Label Name: Observed # of Persons in Vehicle

Range: 0 – 9

Attribute Codes:

SAS	Description
#	Recorded number of people in vehicle
.U	Unknown

Remarks:

This variable contains the number of people who were in the vehicle at the time that the vehicle's driver was approached to solicit participation in the study, as based upon observation by the interviewer.

SAS Variable Type: Numeric

Question 7 - Who is the owner of this vehicle

Data Set: INT_TIRE

SAS Name: OWNER

Label Name: Owner of vehicle

Attribute Codes:

SAS	Description
1	Joint with other
2	Self
3	Partner/spouse/significant other
4	Parent or other family member
5	Friend or neighbor
6	Lease
7	Short-term rental
8	Car-share
9	Company/work
10	Other
.N	No response

Remarks:

This variable denotes the owner of the vehicle, as identified by the driver of the vehicle.

SAS Variable Type: Numeric

Question 8 - How long have you had this vehicle

Data Set: INT_TIRE

SAS Name: OWN_DAYS

Label Name: Time owned vehicle

Range: 1 – 2,520

Attribute Codes:

SAS	Description
#	Recorded number of days vehicle owned
.U	Unknown

Remarks:

The interviewers recorded how long this vehicle has been owned by the current owner. Data was normally collected in years and months; however, if the time that the vehicle had been owned was less than one month, the time was recorded in days. Times recorded in years and months were converted into days during the data entry process and were entered in days in the SAS database.

SAS Variable Type: Numeric

Question 9 - Was this vehicle new when you obtained it

Data Set: INT_TIRE

SAS Name: NEWUSED

Label Name: New or used when acquired

Attribute Codes:

SAS	Description
1	No
2	Yes
.N	No response

Remarks:

The interviewers recorded if the vehicle, when obtained by the current owner, was new.

SAS Variable Type: Numeric

Question 10 - Have any of the original tires been replaced? If so, which ones and when?

Data Set: TIRE

SAS Name: TIREREPLACE

Label Name: Have any tires been replaced

Remarks:

This variable contains the participant's response to interview Question 10, "Have any of the original tires on this vehicle been replaced? If so, which ones and when?"

The interviewers were instructed to record their answers in the graph show in Figure 2 below so that information about every tire in/on the vehicle could be obtained for two different questions: (1) has it been replaced, and (2) if yes, when. The first column contained Yes, No, and Don't Know responses. The second column recorded in Years and Months when each tire was replaced. An "unknown" option was also available for the second column.

Figure 2 is the question as it appeared on the **Interview Form – Tire Pressure** (1064) document the interviewers used in the field.

Figure 2 - Question 10

10A. Original tires replaced?				10B. If Yes, when?		
Tire	Yes	No	Don't Know	Yrs	Mos	Unk
1) LF						
2) LR						
3) RR						
4) RF						
5) Spare						
6) Other Specify:						

The next 2 pages of the manual provide detail on the specific attributes (Responses 10.A.1 to 10.B.6) that apply to this question.

Response 10.A.1 to 10.A.6 – Tires Replaced

Data Set: TIRE

SAS Name: REPLACE1, REPLACE2, REPLACE3, REPLACE4, REPLACE5, REPLACE6

Label Name: Has this tire been replaced? – LF

Has this tire been replaced? – LR Has this tire been replaced? – RR Has this tire been replaced? – RF

Has this tire been replaced? - Yes, Spare

Has this tire been replaced? – Yes, Other (specify)

Attribute Codes:

SAS	Description
0	No
1	Yes
.N	No response
.U	Unknown
	N/A – tire pressure interview not conducted

Remarks:

The interviewers recorded which if any of the vehicle's tires had been replaced.

SAS Variable Type: Numeric

Response 10.B.1 - 10.B.6 - When Tires Replaced

Data Set: TIRE

SAS Name: REPLACE_MON1, REPLACE_MON2, REPLACE_MON3, REPLACE_MON4,

REPLACE_MON5, REPLACE_MON6

Label Name: Tire replaced – Months – LF

Tire replaced - Months - LR Tire replaced - Months - RR Tire replaced - Months - RF

Tire replaced – Months – Yes, Spare Tire replaced – Months – Other (specify)

Range: 0 - 48

Attribute Codes:

SAS	Description
#	Recorded number of months since tire replaced
.N	No response
.U	Unknown
	N/A – tire pressure interview not conducted

Remarks:

The interviewers recorded the number of months since a tire was replaced. This data was collected in years and months, but recorded in months in the SAS database.

SAS Variable Type: Numeric

Question 11 - What reasons are important to you for keeping tires properly inflated

Data Set: INT_RESPONSE

Remarks:

The choices below identify the driver's response to interview Question 11, "Drivers keep their tires at their proper pressure for different reasons. List the reasons that are important to you for keeping tires properly inflated?"

Question 11 was a "Check all that apply" question. To make data collection more efficient, the survey form that the interviewers used, but which the drivers did not see, had a list of "standard choices" that were expected to be common. Interviewers were told not to read the listed items to the drivers so that the drivers independently provided their own responses. Instead, interviewers were instructed to record all of the answers provided by the drivers in the following manner: (1) checking all of the standard choices, as listed on the survey form, that were mentioned by the driver; and (2) recording any non-standard responses in the space provided on the survey form.

The next six pages of the manual provide detail on the specific attributes (questions 11.1 – 11.5) that apply to this question.

The specific attributes (responses) are defined as follows.

- **11.1:** Improved safety
- 11.2: Improved vehicle performance/handling
- **11.3:** Improved fuel economy
- **11.4:** Longer lasting tires
- **11.5**: Other
- **11.5.1** Other, _____

Response 11.1 – Improved safety

Data Set: INT_RESPONSE

SAS Name: WHYAIR1

Label Name: Why properly inflated tires important – Improved Safety

Attribute Codes:

SAS	Description
0	No
1	Yes
.U	Unknown

Remarks:

This attribute contains the driver's response to interview Question 11, "Drivers keep their tires at their proper pressure for different reasons. List the reasons that are important to you for keeping tires properly inflated?"/Attribute 11.1, "Improved safety."

Question 11 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided.

SAS Variable Type: Numeric

Response 11.2 - Improved vehicle performance/handling

Data Set: INT_RESPONSE

SAS Name: WHYAIR2

Label Name: Why properly inflated tires important – Improved vehicle

performance/handling

Attribute Codes:

SAS	Description
0	No
1	Yes
.U	Unknown

Remarks:

This attribute contains the driver's response to interview Question 11, "Drivers keep their tires at their proper pressure for different reasons. List the reasons that are important to you for keeping tires properly inflated?"/Attribute 11.2, "Improved vehicle performance/handling."

Question 11 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided.

SAS Variable Type: Numeric

Response 11.3 – Improved fuel economy

Data Set: INT_RESPONSE

SAS Name: WHYAIR3

Label Name: Why properly inflated tires important – Improved fuel economy

Attribute Codes:

SAS	Description
0	No
1	Yes
.U	Unknown

Remarks:

This attribute contains the driver's response to interview Question 11, "Drivers keep their tires at their proper pressure for different reasons. List the reasons that are important to you for keeping tires properly inflated?"/Attribute 11.3, "Improved fuel economy."

Question 11 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided.

SAS Variable Type: Numeric

Response 11.4 – Longer lasting tires

Data Set: INT_RESPONSE

SAS Name: WHYAIR4

Label Name: Why properly inflated tires important – Longer lasting tires

Attribute Codes:

SAS	Description
0	No
1	Yes
.U	Unknown

Remarks:

This attribute contains the driver's response to interview Question 11, "Drivers keep their tires at their proper pressure for different reasons. List the reasons that are important to you for keeping tires properly inflated?"/Attribute 11.4, "Longer lasting tires."

Question 11 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided.

SAS Variable Type: Numeric

Response 11.5 - Other

Data Set: INT_RESPONSE

SAS Name: WHYAIR5

Label Name: Why properly inflated tires important – Other (specify)

Attribute Codes:

SAS	Description
0	No
1	Yes
.U	Unknown

Remarks:

This attribute contains the driver's response to interview Question 11, "Drivers keep their tires at their proper pressure for different reasons. List the reasons that are important to you for keeping tires properly inflated?"/Attribute 11.5, "Other."

Question 11 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided.

SAS Variable Type: Numeric

Response 11.6. - Specify

Data Set: INT_RESPONSE

SAS Name: WHYAIROS

Label Name: Why properly inflated tires important, Specify

Attribute Codes:

Remarks:

This attribute contains the driver's response to interview Question 11, "Drivers keep their tires at their proper pressure for different reasons. List the reasons that are important to you for keeping tires properly inflated?"/Attribute 11.5.1, "Other (specify)."

Question 11 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided.

If the participant provided a response that was not captures by 11.1 – 11.4, the interviewers were instructed to select, "Other" in 11.5 and enter the answer provided by the participant in the space on the survey form.

SAS Variable Type: Character

Question 12 - Where do you primarily turn for information on what pressure to set your tires

Data Set: INT_TIRE

Remarks:

The attributes below identify the participant's response to interview Question 12, "Where would you, or do you, primarily turn for information on what pressure to set your tires for this vehicle?"

Question 12 was a "Check only one answer" question. Interviewers were instructed to read the choices listed and to check the box that corresponded to "the **primary** method the participant uses to obtain this information." The next two pages of the manual provide detail on the specific attributes (12.1 - 12.2) that apply to this question.

If the driver chose Attribute 9, "Other," the interviewers were instructed to record what other source the participant indicated in the specify box on the form.

The specific attributes (responses) are defined as follows.

12.1: Intuition/prior knowledge

Owner's manual

Vehicle placard

Tire sidewall labeling

A service technician

OnStar or other automatic system

Relative of friend

Don't know

12.2: Other, _____

Response 12.1 – (Intuition/prior knowledge...other)

Data Set: INT_TIRE

SAS Name: DETERMINGID

Label Name: Tire pressure info primarily from

Attribute Codes:

SAS	Description
1	Intuition/prior knowledge
2	Owner's manual
3	Vehicle placard
4	Tire sidewall labeling
5	A service technician
6	OnStar or other automatic system
7	Relative of friend
8	Don't know
9	Other (specify)
.N	No response

Remarks:

SAS Variable Type: Numeric

Response 12.2 - Specify

Data Set: INT_TIRE

SAS Name: DETERMINGIDOS

Label Name: Tire pressure info primarily from, Specify

Attribute Codes:

Remarks:

If the participant provided a response that was not captured in Response 12.1 above, the interviewers were instructed to select, "Other," in 12.1 and enter, in the space on the survey form, the answer that was provided by the participant.

SAS Variable Type: Character

Question 13 - Whose responsibility is it to check the tire pressure

Data Set: INT_TIRE

Remarks:

The attributes below identify the participant's response to interview Question 13, "Whose responsibility is it to check the tire pressure?"

Question 13 was a "Check only one answer" question. The next two pages of the manual provide detail on the specific attributes (13.1 – 13.2) that apply to this question.

If the driver chose Attribute 8, "Other," the interviewers were instructed to record, in the specify box on the form, what other source the participant indicated was responsible for checking the tire pressure.

The specific attributes (responses) are defined as follows.

13.1: Self

Relative or friend

Service station/dealer

TPMS

OnStar or other automatic system

Owner (other than self, relative, or friend)

No one

13.2: Other, _____

Response 13.1 – (Self...Other)

Data Set: INT_TIRE

SAS Name: WHOCHECK

Label Name: Checking tire pressure is responsibility of

Attribute Codes:

SAS	Description
1	Self
2	Relative of friend
3	Service station/dealer
4	TPMS
5	OnStar or other automatic system
6	Owner (other than self, relative, or friend)
7	No one
8	Other, specify
.N	No response

Remarks:

SAS Variable Type: Numeric

Response 13.2 - Specify

Data Set: INT_TIRE

SAS Name: WHOCHECKOS

Label Name: Checking tire pressure is responsibility of, Specify

Attribute Codes:

Remarks:

If the participant provided a response that was not captured in Response 13.1 above, the interviewers were instructed to select, "Other," in 13.1 and enter, in the space on survey form, the answer that was provided by the participant.

SAS Variable Type: Character

Question 14 - When do you have the tire pressure checked, either by yourself or someone else?

Data Set: INT_RESPONSE

Remarks:

The choices below identify the driver's response to interview Question 14, "Under what circumstances do you have the tire pressure on this vehicle checked, either by yourself or someone else?"

Question 14 was a "Check all that apply" question. To make data collection more efficient, the survey form that the interviewers used, but which the drivers did not see, had a list of "standard choices" that were expected to be common. Interviewers were told not to read the listed items to the drivers so that the drivers independently provided their own responses. Instead, interviewers were instructed to record all of the answers provided by the drivers in the following manner: (1) checking all of the standard choices, as listed on the survey form, that were mentioned by the driver; and (2) recording any non-standard responses in the space provided on the survey form.

If the participant answered 14.1, "Never," the interviewers were instructed to skip to Question 16; otherwise, they were to continue to Question 15.

The next 11 pages of the manual provide detail on the specific attributes (questions 14.1 – 14.10) that apply to this question.

The specific attributes (responses) are defined as follows.

1	4	1	1	١	e١	مر	r
	4	- 1		N	\rightarrow	/	•

14.2: Before a long trip

14.3: When tires look or feel low

14.4: When tire pressure warning light comes on

14.5: When car is serviced

14.6: When the load being carried is changed

14.7: Tire pressure is checked on a regular basis

14.8: By OnStar or other automatic system

14.9: Don't' know

14.10: Other

14.10.1 Other, Specify _____

Response 14.1 - Never

Data Set: INT_RESPONSE

SAS Name: CHECKID1

Label Name: Reason check pressure – General – Never

Attribute Codes:

SAS	Description
0	No
1	Yes
.U	Unknown

Remarks:

This attribute contains the driver's response to interview Question 14, "Under what circumstances do you have the tire pressure on this vehicle checked, either by yourself or someone else?"/Attribute 14.1, "Never."

If the participant chose this attribute 14.1, "Never," the interviewers were instructed to skip to Question 16; otherwise, they were to continue to Question 15.

Question 14 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided.

SAS Variable Type: Numeric

Response 14.2 - Before a long trip

Data Set: INT_RESPONSE

SAS Name: CHECKID2

Label Name: Reason check pressure – General – Before a long trip

Attribute Codes:

SAS	Description
0	No
1	Yes
.U	Unknown

Remarks:

This attribute contains the driver's response to interview Question 14, "Under what circumstances do you have the tire pressure on this vehicle checked, either by yourself or someone else?"/Attribute 14.2, "Before a long trip."

Question 14 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided.

SAS Variable Type: Numeric

Response 14.3 – When tires look or feel low

Data Set: INT_RESPONSE

SAS Name: CHECKID3

Label Name: Reason check pressure – General – When tires look or feel low

Attribute Codes:

SAS	Description
0	No
1	Yes
.U	Unknown

Remarks:

This attribute contains the driver's response to interview Question 14, "Under what circumstances do you have the tire pressure on this vehicle checked, either by yourself or someone else?"/Attribute 14.3, "When tires look or feel low."

Question 14 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided.

SAS Variable Type: Numeric

Response 14.4 - When tire pressure warning light comes on

Data Set: INT_RESPONSE

SAS Name: CHECKID4

Label Name: Reason check pressure – General – When tire pressure warning light

comes on

Attribute Codes:

SAS	Description
0	No
1	Yes
.U	Unknown

Remarks:

This attribute contains the driver's response to interview Question 14, "Under what circumstances do you have the tire pressure on this vehicle checked, either by yourself or someone else?"/Attribute 14.4, "When tire pressure warning light comes on."

Question 14 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided.

SAS Variable Type: Numeric

Response 14.5 - When car is serviced

Data Set: INT_RESPONSE

SAS Name: CHECKID5

Label Name: Reason check pressure – General – When car is serviced

Attribute Codes:

SAS	Description
0	No
1	Yes
.U	Unknown

Remarks:

This attribute contains the driver's response to interview Question 14, "Under what circumstances do you have the tire pressure on this vehicle checked, either by yourself or someone else?"/Attribute 14.5, "When car is serviced."

Question 14 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided.

SAS Variable Type: Numeric

Response 14.6 - When the load being carried is changed

Data Set: INT_RESPONSE

SAS Name: CHECKID6

Label Name: Reason check pressure – General – When the load being carried is

changed

Attribute Codes:

SAS	Description
0	No
1	Yes
.U	Unknown

Remarks:

This attribute contains the driver's response to interview Question 14, "Under what circumstances do you have the tire pressure on this vehicle checked, either by yourself or someone else?"/Attribute 14.6, "When the load being carried is changed."

Question 14 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided.

SAS Variable Type: Numeric

Response 14.7 – Tire pressure is checked on a regular basis

Data Set: INT_RESPONSE

SAS Name: CHECKID7

Label Name: Reason check pressure – General – Tire pressure is checked on a

regular basis

Attribute Codes:

SAS	Description
0	No
1	Yes
.U	Unknown

Remarks:

This attribute contains the driver's response to interview Question 14, "Under what circumstances do you have the tire pressure on this vehicle checked, either by yourself or someone else?"/Attribute 14.7, "Tire pressure is checked on a regular basis."

Question 14 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided.

SAS Variable Type: Numeric

Response 14.8 – By OnStar or other automatic system

Data Set: INT_RESPONSE

SAS Name: CHECKID8

Label Name: Reason check pressure – General – By OnStar or other automatic

system

Attribute Codes:

SAS	Description
0	No
1	Yes
.U	Unknown

Remarks:

This attribute contains the driver's response to interview Question 14, "Under what circumstances do you have the tire pressure on this vehicle checked, either by yourself or someone else?"/Attribute 14.8, "By OnStar or other automatic system."

Question 14 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided.

SAS Variable Type: Numeric

Response 14.9 – Don't know

Data Set: INT_RESPONSE

SAS Name: CHECKID9

Label Name: Reason check pressure – General – Don't know

Attribute Codes:

SAS	Description
0	No
1	Yes
.U	Unknown

Remarks:

This attribute contains the driver's response to interview Question 14, "Under what circumstances do you have the tire pressure on this vehicle checked, either by yourself or someone else?"/Attribute 14.9, "Don't know."

Question 14 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided.

SAS Variable Type: Numeric

Response 14.10 - Other

Data Set: INT_RESPONSE

SAS Name: CHECKID10

Label Name: Reason check pressure – General – Other

Attribute Codes:

SAS	Description
0	No
1	Yes
.U	Unknown

Remarks:

This attribute contains the driver's response to interview Question 14, "Under what circumstances do you have the tire pressure on this vehicle checked, either by yourself or someone else?"/Attribute 14.10, "Other."

Question 14 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided.

SAS Variable Type: Numeric

Response 14.11 - Specify

Data Set: INT_RESPONSE

SAS Name: CHECKIDOS

Label Name: Reason check pressure – General, Specify

Attribute Codes:

Remarks:

This attribute contains the driver's response to interview Question 14, "Under what circumstances do you have the tire pressure on this vehicle checked, either by yourself or someone else?"/Attribute 14.10.1, "Other, specify."

Question 14 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided.

If the participant provided a response that was not captured by 14.1 – 14.9, the interviewers were instructed to select, "Other" in 14.10 and enter the response provided by the participant in the space on the survey form.

SAS Variable Type: Character

Question 15 - When was the last time you, or someone else, checked the tire pressure

Data Set: INT_TIRE

SAS Name: LASTSERVICEID

Last time air pressure checked

Attribute Codes:

SAS	Description
1	Never
2	Within the past month
3	1 – 2 months ago
4	3 – 4 months ago
5	More than 4 months ago
6	Continuously (as with TPMS or OnStar)
7	Don't know
.N	No response
	Skipped

Remarks:

The interviewers recorded the participant's response to Question 15, "When was the last time you or someone else checked the tire pressure on this vehicle?"

SAS Variable Type: Numeric

Question 16 - When was the last time you, or someone else, put air in the tires

Data Set: INT_TIRE

SAS Name: LASTAIRID

Label Name: Last time air put in

Attribute Codes:

SAS	Description
1	Never
2	Within the past month
3	1 – 2 months ago
4	3 – 4 months ago
5	More than 4 months ago
6	Don't know
.N	No response

Remarks:

The interviewers recorded the participant's response to Question 16, "When was the last time you or someone else put air in the tires on this vehicle?"

If the participant answered, Attribute 1 (Never), the interviewers were instructed to skip to Question 18; otherwise, they were to continue to Question 17.

SAS Variable Type: Numeric

Question 17 - The last time air was put in the tires on this vehicle - how was it done

Data Set: INT_TIRE

SAS Name: METHODAIR

Last time air put in, method

Attribute Codes:

SAS	Description
1	Used pump owned by self or other person
2	Gas station air pump by self or other
3	Asked a relative or friend to do it
4	When vehicle was serviced
5	Has not needed to put air into a tire
6	Other
.N	No response
	Skipped

Remarks:

The interviewers recorded the participant's response to Question 17, "The last time you or someone else put air in the tires on this vehicle – how did you do it?"

Interviewers were instructed to select, "When the vehicle was serviced," if the driver mentioned any vehicle or tire center.

SAS Variable Type: Numeric

Question 18 - Does this vehicle have a Tire Pressure Monitoring System

Data Set: INT_TIRE

SAS Name: TPMSPRESENCEID

Label Name: Have TPMS?

Attribute Codes:

SAS	Description
1	No
2	Yes
3	Don't know
.N	No response

Remarks:

The interviewers recorded the participant's response to Question 18, "Does this vehicle have a Tire Pressure Monitoring System – also known as a TPMS?"

If the participant indicated that the vehicle did have a TPMS system, the interviewers asked the participant if they would complete the supplemental interview.

SAS Variable Type: Numeric

Question 19 - What is your home ZIP Code

Data Set: INT_TIRE

SAS Name: ZIP

Label Name: Home ZIP Code

Attribute Codes:

Range: [List of applicable ZIP Codes]

SAS	Description
#	Entered ZIP Code
99996	Not a U.S. resident
99999	Don't know

Remarks:

The interviewers recorded the home ZIP Code of the participant.

SAS Variable Type: Character

Question 20 - How old are you

Data Set: INT_TIRE

SAS Name: AGE

Label Name: Driver Age

Range: 16 – 93 years

Attribute Codes:

SAS	Description			
#	Recorded age of participant			
.Ū	Unknown			

Remarks:

The interviewers were instructed to record the age of the participant to the nearest year.

SAS Variable Type: Numeric

Question 21 - What is the highest grade or year of school you completed

Data Set: INT_TIRE

SAS Name: SCHOOLYR

Label Name: Educational attainment

Attribute Codes:

SAS	Description
1	Less than high school
2	High school/GED
3	Some college
4	College graduate
5	Higher degree
6	(Vol) Refused
.N	No response

Remarks:

The interviewers recorded the highest grade or year of school the participant completed.

If they

SAS Variable Type: Numeric

Interview Form - Refueling (INR 1065)

Paperwork Reduction Act Burden Statement

A federal agency may not conduct or sponsor, and a person is not required to respond to, nor shall a person be subject to a penalty for failure to comply with a collection of information subject to the requirements of the Paperwork Reduction Act unless that collection of information displays a current valid OMB Control Number. The OMB Control Number for this information collection is 2127-0626. Public reporting for this collection of information is estimated to be approximately 10 minutes per response, including the time for reviewing instructions, completing and reviewing the collection of information. All responses to this collection of information are

			INTERVI	EW FORI	Form Approved O.M.B. No. 2127-0626 Expiration Date: 06/30/13
ited States itional High	Department of Transport nway Traffic Safety Admin	ation istration	REFL	JELING	National Automotive Sampling System Tire Pressure Monitoring System – Special Study
1. Prin	mary Sampling Un	it Numb	er	16 . Wh	at is the primary reason you stopped for gas
2. Site	Number			tod	ay? (Check one)
3. Obs	servation Number			0.00	O Gas tank low
4. Date	e of Observation		/ / 2010/2011		O Price of the gas
5. Inte	erview in: O Eng		O Spanish		O Fill up on routine basis (e.g., weekly, bi-weekly)
				4)	O Top off tank for specific reason (e.g., before long trip)
	•		O Refused O <2004)	5)	O Convenient at this time
	Time of Day			,	O To get/do something else (e.g., food, rest stop
2)	Ambient Air Temp	perature			O Other (specify)
3)	Weather: Clea	ır, 🗌 Clo	oudy, 🔲 Fog,		
			☐ Sleet, ☐ Snow	17. Doe	es this vehicle have a Tire Pressure Monitoring tem –also known as a TPMS system?
4)	Body Type: Auto:				O No
٦)			in O PU	,	O Yes
-			in OPO	3)	O Don't know
,	Sex: O Male O			NowIr	need to ask you some basic information about
- A	Age: O Young A			yoursel	f. [Demographic Information]
7)	# in Vehicle:		$_$ OUnknown	18 . Wh	at is your home zip code?
Question	ns about Refueling	•••••	_ O OHNIOWH	19 . Hov	v old are you?(Code to nearest yr)
7. Did	you go out of you	ırwayto	get to this gas		at is the highest grade or year of school you
stat	ion? If so, how far	?	(Nearest ¼ mile)		npleted?
8 Did	it take extra time	to aet to	this gas station? If	1)	O Less than high school O High school / GED
	how long?				O Some college
					O College graduate
aau	ore filling up your ige?	(Coc	lere was the gas le to nearest 1/8 th tank)	5)	O Higher degree
-				6)	O (Vol) Refused
10. Hov	w many persons to	otal are i	n this venicie?	(Continue	e only for vehicles that have TPM S; Q#17)
11 Hov	w many of them ar	e under	the age of 16?		uld you have time now to answer a few
					estions on TPMS? O No <i>(Go to Q 22-Do Later)</i>
12 For	and of the person	na in thi	avehiele what is		O Yes (Go to Supplemental Form)
his/	each of the person her primary reaso	n for tra	velina?	-	
		Driver	Adults <16 Yrs.	22. Wo	uld you be willing to answer a few questions TPMS at a later date, using:
	To/From Work				On-line
	On Work Time			2)	O Mail-back form
C. (Other				O Phone call back
13 Hove	w many gallons of	nae did	you put in your	4)	O Refuse (End)
veh	icle?		(Code to nearest gallon)	23. Wh	at is your name?
14 . Afte gau	er adding gas to yo ge?	our tank, _(Code to	where was the gas nearest 1/8 th tank)	24 . At v	what phone number(s) would you like to be ed?
ÍΕ	RESPONSE TO G	UESTIO	N #14 IS " Full" ,	25 . Wh	at are good times to call?
	ONTINUE; IF NOT,				P ID:
45 165	ull: Do you always	s fill upo	rour tank?		: Check that INR13-INR15 have been answered***
15. If Fu	uli. Do you always	s iiii up y	our tank?	^^ NOTE	: Cneck that INR13-INR15 have been answered" "

The Interview Form – Refueling (NHTSA 1065) was designed to collect information on the participant's refueling habits, the distances they traveled to reach their current location, and if their vehicles had a TPMS.

Questions 1 to 6 on this form were observational only completed by the interviewer conducting the interview. These questions were completed regardless of whether the interview was completed, refused, or the vehicle was outside of the study's scope (Model Year 2003 or older).

Questions 7 to 20 were core questions asked to all participants. If a participant answered "yes" to Question 17, "does this vehicle have a Tire Pressure Monitoring System," questions 21 to 25 were also asked. If a participant answered "no" to Question 17, the interview was ended after Question 20.

Form Questions 21 to 26 are case management questions that are not included in the SAS database and not further discussed in this manual.

Question 1 - Primary Sampling Unit Number

Data Set: INT_FUEL

SAS Name: PSU

Label Name: Primary Sampling Unit

Attribute Codes:

Range: 02 – 82

Remarks:

TPMS-SS used the NASS-CDS sites for data collection. The NASS-CDS consists of 24 statistically representative PSUs located throughout the country.²⁶ The PSUs have been assigned two-digit identifying numbers that range from 02 to 82.

SAS Variable Type: Numeric

SAS Field Length: 3

²⁶ Additional information about the NASS CDS PSUs can be found in Appendix F of the 2014 NASS CDS Analytical User's Manual at https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812198. Demographic data on the 24 PSUs have been included in Appendix F to give researchers supplementary information on the nature of the PSUs.

Question 2 - Site Number

Data Set: INT_FUEL

SAS Name: SITEID

Label Name: Site ID

Attribute Codes:

Range: 2701 – 31375

Remarks:

The gas station sites were selected based upon the sample design, as described in the Sample Design section of this coding manual. Each site was assigned a two-digit site number,²⁷ which identified the ZIP Code and the gas station at which data was being collected. While this site number was used during data collection, this number is not included in the SAS database; instead, a site-specific unique five-digit SITEID was created for use in the SAS database. There is no correlation between the components of the Site Number (e.g., ZIP Code and station number) and the SITEID variable.

SAS Variable Type: Numeric

²⁷ The first digit of the site number identifies the ZIP Code while the second digit identifies the refueling station at which that day's data collection was being conducted. For example, for Day 10 where the sampling instructions state to use the third ZIP Code and the second refueling station, the Site Number would be 32. If the team was refused and went to the third alternate station, the appropriate code would be 33.

Question 3 – Observation Number

Data Set: INT_FUEL

SAS Name: OBSERVID

Label Name: Observation ID

Attribute Codes:

Range: 1 – 71

Remarks:

Interviewers were instructed to start with the number (1) and record sequentially for each observation throughout the session. This process was repeated whenever the Site Number was changed. For each observation, this number was to be consistent with the Observation Number documented on all other interview, inspection, and supplemental forms.

SAS Variable Type: Numeric

Question 4 - Date of Observation

Data Set: INT_FUEL

SAS Name: DATE

Label Name: Date

Attribute Codes:

Range: 08102010 - 04152011

Remarks:

This is the date the observation was made. The first two digits specify the month, the second two digits indicate the date, and the last four digits designate the year that the inspection was conducted.

SAS Variable Type: Character

Question 5 - Interview In

Data Set: INT_FUEL

SAS Name: LANGUAGE

Label Name: Interview Language

Attribute Codes:

SAS	Description
1	English
2	Spanish

Remarks:

This is the language in which the interview was completed.

SAS Variable Type: Numeric

Question 6 - Observations

Data Sets: INT_FUEL

Remarks:

Two types of data are included in the INT_FUEL data set for Question #6: observation and inspection. The observation data (INTVCAT, OBSERAGE, OBSERNUM, OBSERSEX, and OBSERTYPE) were collected from all vehicles approached, including those that were out of scope (i.e., <2004) and those that were driven by drivers who did not agree to be interviewed. The inspection data (AIRTEMP, INSPTIME, WEATHER) were collected only of those vehicles that were part of the 6013 complete vehicle observations. The observation variable INTVCAT comes from the OBSERVATION dataset and the inspection variables come from the TIRE_INFO data set. These variables are included for the convenience of having them in one data set along with the observation variables from the Refueling Interview form. These data are described in the following seven variables (6.0 - 6.7)

- **6.0:** Interview category
- **6.1:** Time of day
- **6.2:** Ambient air temperature
- **6.3:** Weather
- 6.4: Body type
- **6.5:** Sex
- **6.6:** Age
- **6.7:** Number of people in vehicle

Response 6.0 – Interview Category

Data Set: OBSERVATION

SAS Name: INTVCAT

Label Name: Interview Categories

Attribute Codes:

SAS	Description
1	Interviewed
2	Refused
3	<2004

Remarks:

This variable reports what happened when the interviewers requested cooperation from the vehicles' drivers—whether the: (1) Interview was obtained, (2) Participant declined to participate in the survey, or (3) Vehicle was out of scope because its model year was 2003 or older.

SAS Variable Type: Numeric

Response 6.1 – Time of Day

Data Set: TIRE_INFO

SAS Name: INSPTIME

Label Name: Time of day of inspection

Attribute Codes:

Range: 07:16 - 18:00

Remarks:

The interviewers recorded the time of day²⁸ that a vehicle's driver was approached to solicit participation in the study. The resulting earliest and latest times recorded (07:16-18:00) comprised the range.

SAS Variable Type: Character

²⁸ The data was stored using a 24-hour (00:00-24:00 military) clock.

Response 6.2 – Ambient Air Temperature

Data Set: TIRE_INFO

SAS Name: AIRTEMP

Label Name: Ambient Air Temperature

Attribute Codes:

Range: 1 - 119

Remarks:

The interviewers recorded the temperature (in Fahrenheit) at the time that the vehicle's driver was approached to solicit participation in the study.

SAS Variable Type: Numeric

Response 6.3 – Weather

Data Set: TIRE_INFO

SAS Name: WEATHER

Label Name: Weather conditions

Attribute Codes:

SAS	Description
1	Clear
2	Cloudy
3	Fog
4	Rain
5	Sleet
6	Snow

Remarks:

The interviewers recorded the weather conditions at the time that a vehicle's driver was approached to solicit participation in the study. Interviewers were instructed to check all of the options that were applicable.

SAS Variable Type: Numeric

Response 6.4 - Body Type

Data Set: INT_FUEL

SAS Name: OBSERTYPE

Label Name: Observed – Body Type

Attribute Codes:

SAS	Description
1	Automobiles (Small)
2	Automobiles (Large)
3	Utility Vehicles (SUV)
4	Van-Based Light Trucks (VAN)
5	Light Conventional Trucks (PU)

Remarks:

Using the following categories, the interviewers recorded the body type of the vehicle that was approached:

Auto (Small): Small autos are defined as 2- or 3-door automobiles

Auto (Large): Large autos are defined as 4- (or more) door automobiles

SUV: Sport Utility Vehicle

Van: Van-Based Light Trucks

PU: Pickup

SAS Variable Type: Numeric

Response 6.5 – Sex

Data Set: INT_FUEL

SAS Name: OBSERSEX

Label Name: Observed – Sex

Attribute Codes:

SAS	Description
1	Male
2	Female

Remarks:

The interviewer recorded the sex of the vehicle's driver, as based upon observation by the interviewer.

SAS Variable Type: Numeric

Response 6.6 – Age

Data Set: INT_FUEL

SAS Name: OBSERAGE

Label Name: Observed – Age Category

Attribute Codes:

SAS	Description
1	Young adult
2	Adult
3	Senior

Remarks:

Using the following categories, the interviewer recorded the approximate age category of the vehicle's driver, as based upon the interviewer's best estimate.

Young Adult: If the driver appears to be 16 to 24 years old

Adult: If the driver appears to be 25 to 69 years old

Senior: If the driver appears to be 70 years old or older

SAS Variable Type: Numeric

Response 6.7 – # in vehicle

Data Set: INT_FUEL

SAS Name: OBSERNUM

Label Name: Observed # of Persons in Vehicle

Range: 0 – 9

Attribute Codes:

SAS	Description
#	Recorded number of persons in vehicle
.U	Unknown

Remarks:

This variable contains the number of people who were in the vehicle at the time that the vehicle's driver was approached to solicit participation in the study, as based upon observation by the interviewer.

SAS Variable Type: Numeric

Question 7 - Did you go out of your way to get to this gas station, if so, how far

Data Set: INT_FUEL

SAS Name: EXTRAMILES

Label Name: Extra Miles to Get Gas Here

Range: 0 – 65 miles

Attribute Codes:

SAS	Description
#	Recorded number of extra miles to get to station
.N	No response
.U	Unknown

Remarks:

This variable records how many miles the participant traveled, out-of-their way, to get to this gas station. The miles were recorded to the nearest quarter mile.

SAS Variable Type: Numeric

Question 8 - Did it take extra time to get to this gas station, if so, how long

Data Set: INT_FUEL

SAS Name: EXTRATIME

Label Name: Extra Time to Get Gas Here

Range: 0 - 60 minutes

Attribute Codes:

SAS	Description
#	Recorded number of extra minutes to get to station
.N	No response
.U	Unknown

Remarks:

This variable records how many minutes of extra time the participant traveled to get to this gas station.

SAS Variable Type: Numeric

Question 9 - Before filling up your tank, where was the gas gauge

Data Set: INT_FUEL

SAS Name: GAUGESTART

Label Name: Gas Gauge at Start of Fill Up

Attribute Codes:

SAS	Description
0	< 1/8
1	1/8
2	1/4
3	3/8
4	1/2
5	5/8
6	3/4
7	7/8
8	Full
.N	No response
.U	Unknown

Remarks:

This variable records the position of the gas gauge indicator prior to fueling at this station. The interviewers were instructed to code this variable to the nearest 1/8th of a tank.

SAS Variable Type: Numeric

Question 10 - How many persons total are in this vehicle

Data Set: INT_FUEL

SAS Name: PERSONS

Label Name: Number of Persons in Vehicle

Range: 0 – 9

Attribute Codes:

SAS	Description
#	Recorded number of persons in vehicle
.U	Unknown

Remarks:

This variable records how many total people were inside the vehicle at the time of the inspection.

SAS Variable Type: Numeric

Question 11 - How many of them are under the age of 16

Data Set: INT_FUEL

SAS Name: UNDER16

Label Name: Number of Persons Under 16 Years

Range: 0 – 7

Attribute Codes:

SAS	Description
#	Recorded number of persons under 16 years old
.N	No response
.U	Unknown

Remarks:

This variable records how many people under 16 years old were in the vehicle.

SAS Variable Type: Numeric

Question 12 - For each of the persons in the vehicle, what is his/her primary reason for traveling

Data Set: INT_FUEL

Remarks:

This variable contains the driver's response to interview Question 12, "for each of the persons in the vehicle, what is his/her primary reason for traveling?"

Based upon the driver's response, the interviewer marked the appropriate boxes in the graph show in Figure 1 below.

Figure 1 is the question as it appeared on the **Interview Form – Refueling** (1065), the document the team used in the field.

Figure 1 - Question 12

	Driver	Adults	<16 Yrs.
a. To/From Work			
b. On Work Time			
c. Other			

The next nine pages of the manual provide detail on the specific attributes (Responses 12.A.1 to 12.C.3) that apply to this question.

Response 12.A.1 – Count of drivers traveling to or from work

Data Set: INT_FUEL

SAS Name: TRAVELDRA

Label Name: Count of Drivers traveling to/from Work

Range: 0 – 2

Attribute Codes:

SAS	Description
#	Recorded number of drivers traveling to or from work
.N	No response

Remarks:

This attribute records the response to Question 12, "for each of the persons in the vehicle, what is his/her primary reason for traveling?"/Response, "the count of drivers traveling to or from work."

SAS Variable Type: Numeric

Response 12.B.1 – Count of drivers traveling on work time

Data Set: INT_FUEL

SAS Name: TRAVELDRB

Label Name: Count of Drivers Traveling on Work Time

Range: 0 – 1

Attribute Codes:

SAS	Description
#	Recorded number of drivers traveling on work time
.N	No response

Remarks:

This attribute records the response to Question 12, "for each of the persons in the vehicle, what is his/her primary reason for traveling?"/Response, "the count of drivers traveling on work time."

SAS Variable Type: Numeric

Response 12.C.1 – Count of drivers traveling for other reasons

Data Set: INT_FUEL

SAS Name: TRAVELDRC

Label Name: Count of Drivers Traveling for Other reasons

Range: 0 – 2

Attribute Codes:

SAS	Description
#	Recorded number of drivers traveling for other reasons
.N	No response

Remarks:

This attribute records the response to Question 12, "for each of the persons in the vehicle, what is his/her primary reason for traveling?"/Response, "the count of drivers traveling for other reasons."

SAS Variable Type: Numeric

Response 12.A.2 - Count of other adult occupants traveling to or from work

Data Set: INT_FUEL

SAS Name: TRAVELADULTA

Label Name: Count of Other Adult Occupants Traveling to/From Work

Range: 0 – 15

Attribute Codes:

SAS	Description
#	Recorded number of other adult occupants traveling to or from
	work
.N	No response

Remarks:

This attribute records the response to Question 12, "for each of the persons in the vehicle, what is his/her primary reason for traveling?"/Response, "the count of other adult occupants traveling to or from work."

SAS Variable Type: Numeric

Response 12.B.2 - Count of other adult occupants traveling on work time

Data Set: INT_FUEL

SAS Name: TRAVELADULTB

Label Name: Count of Other Adult Occupants Traveling on Work Time

Range: 0 – 4

Attribute Codes:

SAS	Description
#	Recorded number of other adult occupants traveling on work time
.N	No response

Remarks:

This attribute records the response to Question 12, "for each of the persons in the vehicle, what is his/her primary reason for traveling?"/Response, "the count of other adult occupants traveling on work time."

SAS Variable Type: Numeric

Response 12.C.2 - Count of other adult occupants traveling for other reasons

Data Set: INT_FUEL

SAS Name: TRAVELADULTC

Label Name: Count of Other Adult Occupants Traveling for Other Reasons

Range: 0 – 8

Attribute Codes:

SAS	Description
#	Recorded number of other adult occupants traveling for other
	reasons
.N	No response

Remarks:

This attribute records the response to Question 12, "for each of the persons in the vehicle, what is his/her primary reason for traveling?"/Response, "the count of other adult occupants traveling for other reasons."

SAS Variable Type: Numeric

Response 12.A.3 – Count of children under 16 traveling to or from work

Data Set: INT_FUEL

SAS Name: TRAVELCHILDA

Label Name: Count of Children Under 16 Traveling to/from Work

Range: 0 – 15

Attribute Codes:

SAS	Description
#	Recorded number of children under 16 traveling to or from work
.N	No response

Remarks:

This attribute records the response to Question 12, "for each of the persons in the vehicle, what is his/her primary reason for traveling?"/Response, "the count of children under 16 traveling to or from work."

SAS Variable Type: Numeric

Response 12.B.3 - Count of children under 16 traveling on work time

Data Set: INT_FUEL

SAS Name: TRAVELCHILDB

Label Name: Count of Children Under 16 traveling on Work Time

Range: 0 – 2

Attribute Codes:

SAS	Description
#	Recorded number of children under 16 traveling on work time
.N	No response

Remarks:

This attribute records the response to Question 12, "for each of the persons in the vehicle, what is his/her primary reason for traveling?"/Response, "the count of children under 16 traveling on work time."

SAS Variable Type: Numeric

Response 12.C.3 – Count of children under 16 traveling for other reasons

Data Set: INT_FUEL

SAS Name: TRAVELCHILDC

Label Name: Count of Children under 16 traveling for Other reasons

Range: 0 – 7

Attribute Codes:

SAS	Description
#	Recorded number of children under 16 traveling for other reasons
.N	No response

Remarks:

This attribute records the response to Question 12, "for each of the persons in the vehicle, what is his/her primary reason for traveling?"/Response, "the count of children under 16 traveling for other reasons."

SAS Variable Type: Numeric

Question 13 - How many gallons of gas did you put in your vehicle

Data Set: INT_FUEL

SAS Name: GALLONS

Label Name: Number of Gallons of Gas

Range: 1 – 35 gallons

Attribute Codes:

SAS	Description
#	Recorded number of gallons of gas the driver put into the vehicle
.U	Unknown

Remarks:

The interviewer recorded how many gallons of gas that the driver put into the vehicle. The interviewer was instructed to record the number to the nearest gallon.

SAS Variable Type: Numeric

Question 14 - After adding gas to your tank, where was the gas gauge

Data Set: INT_FUEL

SAS Name: GAUGEEND

Label Name: Gas Gauge at End of Fill Up

Attribute Codes:

SAS	Description
0	< 1/8
1	1/8
2	1/4
3	3/8
4	1/2
5	5/8
6	3/4
7	7/8
8	Full
.N	No response
.U	Unknown

Remarks:

This variable records the position of the gas gauge indicator after fueling at this station. The interviewers were instructed to code this variable to the nearest 1/8th of a tank.

If SAS code 8 (Full) was selected, the interviewers were instructed to continue to Question 15. If any other SAS code was selected, they were to skip to Question 16.

SAS Variable Type: Numeric

Question 15 - If Full: Do you always fill up your tank

Data Set: INT_FUEL

SAS Name: ALWAYSFILL

Label Name: Always Fill Up Tank?

Attribute Codes:

SAS	Description
0	No
1	Yes
.N	No response
-	Skipped

Remarks:

This variable records whether the participant responds that he or she does or does not always fills the tank to full when refueling.

If the participant was still in the process of refueling the vehicle, the interviewers were instructed to skip to Question 16 and SAS code .N was selected.

(If Interview Form - Refueling questions 13-15 were skipped at this time, they were to be asked after Interview Form - Refueling question 20. If the driver still had not finished refueling at that time, these questions were to be asked as soon as the driver has finished refueling. These questions may have had to be asked at the end of the interview.)

SAS Variable Type: Numeric

Question 16 - What is the primary reason you stopped for gas today

Data Set: INT_FUEL

Remarks:

The attributes below identify the participant's response to interview Question 16, "What is the primary reason you stopped for gas today?"

Question 16 was a "Check only one answer" question. Interviewers were instructed to read the choices listed and to check the box that corresponded to the primary reason the participant stopped for gas today. The next two pages of the manual provide detail on the specific attributes (16.1 – 16.2) that apply to this question.

If the driver chose Attribute 7, "Other," the interviewers were instructed to record, in the specify space on the form, what other primary reason that they stopped for gas today.

The specific attributes (responses) are defined as follows.

16.1: Gas tank low

Price of the gas

Fill up on a routine basis (e.g. weekly, bi-weekly)

Top off for specific reason (e.g., before long trip)

Convenient at this time

To get/do something else (e.g., food, rest stop)

16.2:	Other,	
	O (1101,	

Response 16.1 - (Gas tank low ... Other)

Data Set: INT_FUEL

SAS Name: WHYGAS

Label Name: Primary Reason Stop for Gas?

Attribute Codes:

SAS	Description
1	Gas tank low
2	Price of the gas
3	Fill up on a routine basis (e.g. weekly, bi-weekly)
4	Top off for specific reason (e.g., before long trip)
5	Convenient at this time
6	To get/do something else (e.g., food, rest stop)
7	Other (specify)
.N	No response

Remarks:

Question 16 was a "Check only one answer" question. Interviewers were instructed to read the choices listed and to check the box that corresponded to the primary reason the participant stopped for gas today.

SAS Variable Type: Numeric

Response 16.2 - Specify

Data Set: INT_FUEL

SAS Name: WHYGASOS

Label Name: Primary Reason Stop for Gas, Specify

Attribute Codes:

Remarks:

If the participant provided a response that was not captured in Response 16.1 above, the interviewers were instructed to select, "Other," in 16.1 and enter, in the space on survey form, the answer that was provided by the participant.

SAS Variable Type: Character

Question 17 - Does the vehicle have a Tire Pressure Monitoring System

Data Set: INT_FUEL

SAS Name: TPMSPRESENCEID

Label Name: Have TPMS?

Attribute Codes:

SAS	Description
1	No
2	Yes
3	Don't Know
.N	No response

Remarks:

The interviewer recorded the driver's answer to the question, "Does the vehicle have a Tire Pressure Monitoring System?"

SAS Variable Type: Numeric

Question 18 - What is your home ZIP Code

Data Set: INT_FUEL

SAS Name: ZIP

Label Name: Home ZIP code

Attribute Codes:

Range: [List of applicable ZIP Codes]

SAS	Description
#	Entered ZIP Code
99996	Not a U.S. resident
99999	Don't know

Remarks:

The interviewers recorded the home ZIP Code of the participant.

SAS Variable Type: Character

Question 19 - How old are you

Data Set: INT_FUEL

SAS Name: AGE

Label Name: Driver Age

Range: 16 – 93 years

Attribute Codes:

SAS	Description
#	Recorded age of participant
.U	Unknown

Remarks:

The interviewers were instructed to record the age of the participant to the nearest year.

SAS Variable Type: Numeric

Question 20 - What is the highest grade or year of school you completed

Data Set: INT_FUEL

SAS Name: SCHOOLYR

Label Name: Educational attainment

Attribute Codes:

SAS	Description
1	Less than high school
2	High school/GED
3	Some college
4	College graduate
5	Higher degree
6	(Vol) Refused
.N	No response

Remarks:

The interviewers recorded the highest grade or year of school the participant completed.

SAS Variable Type: Numeric

Interview Form - Supplemental (1066)



United States Department of Transportation National Highway Traffic Safety Administration

SUPPLEMENTAL FORM

Form Approved O.M.B. No. 2127-0626 Expiration Date: 06/30/13

National Automotive Sampling System Tire Pressure Monitoring System – Special Study

Paperwork Reduction Act Burden Statement

A federal agency may not conduct or sponsor, and a person is not required to respond to, nor shall a person be subject to a penalty for failure to comply with a collection of information subject to the requirements of the Paperwork Reduction Act unless that collection of information displays a current valid OMB Control Number. The OMB Control Number for this information

collection is 2127-0626. Public reporting for this collection of in response, including the time for reviewing instructions, completit to this collection of information are voluntary. Send comments r collection of information, including suggestions for reducing this Highway Traffic Safety Administration, 1200 New Jersey Ave, S.	ng and reviewing the collection of information. All responses egarding this burden estimate or any other aspect of this burden to: Information Collection Clearance Officer, National
Official Use Only 1. Primary Sampling Unit Number 2. Site Number 3. Observation Number 4. Date of Observation/ 2010/2011 5. SUP ID 6. Tire Pressure Monitoring Systems (TPMS) can have: 1) A warning lamp used to indicate low tire pressure 2) A malfunction lamp used to indicate the TPMS is not working properly. 3) A combined warning/malfunction lamp used to indicate low tire pressure and/or the system is not working properly. Does your TPMS have either a warning lamp or a combined warning/malfunction lamp? (Check one) O No O Yes O Don't Know	9. When was the last time the warning (combined) lamp illuminated on this vehicle? (Check one) 1) ○ Within the past month 2) ○ 1-3 months ago 3) ○ 4 or more months ago 4) ○ Continuously/repetitively 5) ○ Don't know 10. What actions did you take the last time the TPMS warning (combined) lamp illuminated? (Check all that apply) 1) □ Checked tire pressure 2) □ Reset the TPMS 3) □ Took vehicle to the dealer or a service facility 4) □ Added air 5) □ Did nothing (Skip to #14) 6) □ Other (specify) 11. How long after you first noticed the lamp illuminated, did you take action? (Check one)
IF RESPONSE TO QUESTION #6 IS "YES", CONTINUE; IF NOT, SKIP TO QUESTION #15	 O During the same trip (e.g., pulled over) O Later the same day or within several days O One or more weeks after
[Questions on TPMS Low Pressure Warning Lamp] 7. Do you know where your TPMS warning (combined) lamp is located? If yes, where? (Check one) 1) O No 2) O Yes, on instrument panel 3) O Yes, on rearview mirror 4) O Yes, roof console 5) O Yes, other (specify)	 12. Did any of the tires need air? If yes, how many? (Check one) 1) O No 2) O Yes,(Number of tires) 3) O Yes, don't know how many tires. 4) O Don't know if any of tires needed air.
 Has your TPMS warning (combined) lamp ever illuminated except during engine on/off cycles? If yes, how many times? (Check one) O No O Yes,(Approximate number of times) O Yes, light is continuously illuminated or comes on regularly O Yes, don't know how many times. O Don't know if illuminated IF RESPONSE TO QUESTION #8 IS "YES", CONTINUE; IF NOT, SKIP TO QUESTION #15	IF RESPONSE TO QUESTION #12 IS "YES", CONTINUE; IF NOT, SKIP TO QUESTION #14 13. Approximately how much air was needed in each tire? (Estimate on average if multiple tires needed air) (Check one) 1) O Less than 5 PSI 2) O 5 to 10 PSI 3) O 10 to 15 PSI 4) O More than 15 PSI 5) O Don't know Additional Questions on the Other Side—Please Turn Over

 14. Have you or someone else checked the vehicle because the <u>warning</u> (<u>combined</u>) lamp was not working correctly? If yes, what was found to be the reason? (Check all that apply) 1) No, did not check it 2) Yes, needed re-set 3) Yes, sensors or other part in the tire not working 4) Yes, batteries needed to be changed 5) Yes, light bulb needed to be replaced 6) Yes, general problem with TPMS system 7) Yes, don't know 8) Yes, other (specify) 	 21. Has your TPMS malfunction lamp ever illuminated except during engine on/off cycles? If yes, how many times? (Check one) 1) O No 2) O Yes, (Approximate number of times) 3) O Yes, light is continuously illuminated or comes on regularly 4) O Yes, don't know how many times. 5) O Don't know if illuminated
15. Do you know how to reset (calibrate) your TPMS? If yes, how do you do it? (Check one) 1) O No 2) O Yes, use button in vehicle 3) O Yes, follow menu on display 4) O Yes, only dealer/service station can do it 5) O Yes, other (specify) 16. When should your TPMS be reset? (Check all that apply) 1) Never 2) When the tire pressure is checked 3) When the tire pressure is changed 4) When a tire is changed 5) When the tires are rotated 6) Don't know 7) Other (specify) 17. How easy or difficult is it to reset your TPMS? (Check one) 1) O Very easy 2) O Somewhat easy 3) O Somewhat difficult 4) O Very difficult 5) O Don't know 18. To what extent do you rely on your TPMS to tell you when your tires need air? (Check one) 1) O Rely fully on the TPMS 2) O Rely on TPMS, but also use other methods 3) O Don't rely on TPMS, only use other methods 19. Does your TPMS have a malfunction lamp? (Check one) O No O Yes O Don't Know IF RESPONSE TO QUESTION #19 IS "YES", CONTINUE; IF NOT, GO TO THE END	IF RESPONSE TO QUESTION #21 IS "YES", CONTINUE IF NOT, GO TO THE END 22. When was the last time the malfunction lamp illuminated on this vehicle? (Check one) 1) O Within the past month 2) O1-2 months ago 3) O 3-4 months ago 4) O More than 4 months ago 5) O Continuously/repetitively 6) O Don't know 23. What actions did you take the last time the TPMS malfunction lamp illuminated? (Check all that apply) 1) Did nothing-it often illuminates 2) Did nothing-other reasons 3) Reset the TPMS 4) Took vehicle to the dealer or a service facilit 5) Self or others worked on vehicle 6) Other (specify) 24. Have you or someone else checked the vehicle because the malfunction lamp was not working correctly? If yes, what was found to be the reason? (Check all that apply) 1) No, did not check it 2) Yes, needed re-set 3) Yes, sensors or other part in the tire not working 4) Yes, batteries needed to be changed 5) Yes, light bulb needed to be replaced 6) Yes, general problem with TPMS system 7) Yes, don't know 8) Yes, other (specify)
[Questions on TPMS Malfunction Warning Lamp] 20. Do you know where your TPMS malfunction lamp is located? If yes, where? (Check one) 1) O No 2) O Yes, on instrument panel 3) O Yes, on rearview mirror 4) O Yes, roof console 5) O Yes, other (specify) IF RESPONSE TO QUESTION #20 IS "YES", CONTINUE; IF NOT, GO TO THE END	THE END THANK YOU FOR YOUR PARTICIPATION

The Interview Form – Supplemental (NHTSA 1066) was designed to collect information on the participant's knowledge and experience with TPMS. This form was used to collect data from participants with TPMS, regardless of whether they were asked questions from the two primary interviews – the Tire Pressure or Refueling. Participants could complete this form either on-site or by using an off-site option such as on-line, mail-it-back, or telephone.

The Interviewers were instructed to complete at least two supplemental interviews per datacollection day without identifying a particular case number. This was done to ensure the anonymity of each case. Additional supplemental interviews could be completed as long as they did not interfere with the collection of the two primary interviews and the vehicle inspection.

Question 5 (SUP ID) on this form was a unique number used to link the Supplemental Form to the other case data. Master lists of SUP IDs were sent to the teams prior to the study and if a participant agreed to complete the supplemental interview the SUP ID was interrelated from the primary interview form to the supplemental form to ensure the correct linkage.

Question 1 - Primary Sampling Unit Number

Data Set: SUP

SAS Name: PSU

Label Name: Primary Sampling Unit

Attribute Codes:

Range: 02 – 82

Remarks:

TPMS-SS used NHTSA's NASS-CDS sites for data collection. The NASS-CDS consists of 24 statistically representative PSUs located throughout the country.²⁹ The PSUs have been assigned two-digit identifying numbers that range from 02 to 82.

SAS Variable Type: Numeric

 $^{^{29}}$ Additional information about the NASS CDS PSUs can be found in Appendix F of the 2014 NASS CDS Analytical User's Manual at https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812198 . Demographic data on the 24 PSUs have been included in Appendix F to give researchers supplementary information on the nature of the PSUs.

Question 2 - Site Number

Data Set: SUP

SAS Name: SITEID

Label Name: Site ID

Attribute Codes:

Range: 2701 – 31375

Remarks:

The gas station sites were selected based upon the sample design, as described in the Sample Design section of this coding manual. Each site was assigned a two-digit site number³⁰, which identified the ZIP Code and the gas station at which data was being collected. While this site number was used during data collection, this number is not included in the SAS database; instead, a site-specific unique five-digit SITEID was created for use in the SAS database. There is no correlation between the components of the Site Number (e.g., ZIP Code and station number) and the SITEID variable.

SAS Variable Type: Numeric

³⁰ The first digit of the site number identifies the ZIP Code while the second digit identifies the refueling station at which that day's data collection was being conducted. For example, for Day 10 where the sampling instructions state to use the third ZIP Code and the second refueling station, the Site Number would be 32. If the team was refused and went to the third alternate station, the appropriate code would be 33.

Question 3 - Observation Number

Data Set: SUP

SAS Name: OBSERVID

Label Name: Observation ID

Attribute Codes:

Range: 1 – 71

Remarks:

Interviewers were instructed to start with the number (1) and record sequentially for each observation throughout the session. This process was repeated whenever the Site Number was changed. For each observation, this number was to be consistent with the Observation Number documented on all other interview, inspection, and supplemental forms.

SAS Variable Type: Numeric

Question 4 - Date of Observation

Data Set: SUP

SAS Name: DATE

Label Name: Date

Attribute Codes:

Range: 08102010 - 04152011

Remarks:

This is the date the observation was made. The first two digits specify the month, the second two digits indicate the date, and the last four digits designate the year that the inspection was conducted.

SAS Variable Type: Character

Question 5 - SUP ID

Data Set: N/A

SAS Name: N/A

Label Name: N/A

Attribute Codes:

Range: N/A

Remarks:

This was internal control variable and is not included in the TPMS manual.

SAS Variable Type: N/A

SAS Field Length: N/A

Question 6 - Does your TPMS have a warning lamp or a combined warning/malfunction lamp?

Data Set: SUP

SAS Name: TPMSWARNID

Label Name: Has Warning (or Combined) Lamp

Attribute Codes:

SAS	Description
1	No
2	Yes
3	Don't know
.N	No response

Remarks:

This variable records the response of the participant to Question 6, "Does your TPMS have either a warning lamp or a combined warning/malfunction lamp?"

TPMS systems can have:

- 1) A warning lamp used to indicate low tire pressure.
- 2) A malfunction lamp used to indicate the TPMS is not working properly.
- 3) A combined warning/malfunction lamp used to indicate low tire pressure and/or is not working properly.

This question contained instructions on how to proceed based on the answers given by the participant. If the participant answered "Yes," interviewers were instructed to continue to Question 7. If the participant answered "No, don't know," or if they did not provide a response, the interviewers were instructed to skip to Question 15.

SAS Variable Type: Numeric

Question 7 - Do you know where your TPMS warning/combined lamp is located? If yes, where?

Data Set: SUP

Remarks:

The attributes below identify the participant's response to interview Question 7, "Do you know where your TPMS warning/combined lamp is located? If so, where?"

Question 7 was a "Check only one answer" question. The next two pages of the manual provide detail on the specific attributes (7.1 - 7.2) that apply to this question.

In the designated space on the survey form, the interviewers were instructed to record where the participant indicated that the warning light was located, if the driver chose Attribute 5, "Yes, other (specify)."

The specific attributes (responses) are defined as follows.

7.1: No

Yes, on instrument panel Yes, on rearview mirror Yes, roof console Yes, other (specify)

7.2: Other, _____

Response 7.1 – No...yes, other

Data Set: SUP

SAS Name: TPMSLAMPLOCID

Label Name: Knows where warning lamp located

Attribute Codes:

SAS	Description
1	No
2	Yes, on instrument panel
3	Yes, on rearview mirror
4	Yes, roof console
5	Yes, other (specify)
.N	No response
•	Skipped

Remarks:

This variable records where the TPMS warning or combined lamp was located.

SAS Variable Type: Numeric

Response 7.2 - Specify

Data Set: SUP

SAS Name: TPMSLAMPLOCIDOS

Label Name: Knows where warning lamp located, specify

Attribute Codes:

Remarks:

If the participant provided a response that was not captured in Response 7.1 above, the interviewers were instructed to select, "Other (specify)," in 7.1 and enter, in the space on the survey form, the answer that was provided by the participant.

SAS Variable Type: Character

Question 8 - How many times has your TPMS warning lamp come on beyond on/off cycles?

Data Set: SUP

SAS Name: LAMPEVERONID

Label Name: Number times warning lamp lighted

Range: 0 – 50

Attribute Codes:

SAS	Description
0	No
1 - 50	Number of times
97	Yes, light is continuously illuminated or comes on regularly
98	Yes, don't know how many times
99	Don't know if illuminated
.N	No response
	Skipped

Remarks:

This variable contains the participant's response to interview Question 8, "Has your TPMS warning (combined) lamp ever illuminated except during engine on/or cycles? If yes, how many times? (Check one)

Interviewers were instructed to ask this question of both drivers who knew where the warning lamp was and those who do not know where the lamp was, in order to see if the driver has any general knowledge as to the number of times that the light had illuminated (e.g., spouse or someone else has seen that the light was illuminated and took care of it).

Question 8 was a "Check only one answer" question. Interviewers were instructed to read the choices listed and to check the box that corresponded to the answer the participant provided.

This question contained instructions on how to proceed based on the answers given by the participant. If the participant answered "Yes" to having a warning lamp illuminate, interviewers were instructed to continue to Question 9. If the participant answered "No," Don't know, or if they did not provide a response, the interviewers were instructed to skip to Question 15.

SAS Variable Type: Numeric

Question 9 - When was the last time the warning/combined lamp illuminated on this vehicle?

Data Set: SUP

SAS Name: LAMPLASTONID

Label Name: Last time warning lamp lighted

Attribute Codes:

SAS	Description
1	Within the past month
2	1 – 3 months ago
3	4 or more months ago
4	Continuously/repetitively
5	Don't know
.N	No response
	Skipped

Remarks:

This variable records the participant's response to Question 9, "When was the last time the warning/combined lamp illuminated on this vehicle?"

Question 9 was a "Check only one answer" question. Interviewers were instructed to read the choices listed and to check the box that corresponded to the answer the participant provided.

SAS Variable Type: Numeric

Question 10 – What actions were taken the last time the TPMS warning/combined lamp illuminated?

Data Set: SUP_RESPONSE

Remarks:

The choices below identify the driver's response to interview Question 10, "What actions did you take the last time the TPMS warning/combined lamp illuminated?"

Question 10 was a "Check all that apply" question. To make data collection more efficient, the survey form that the interviewers used, but which the drivers did not see, had a list of "standard choices" that were expected to be common. Interviewers were told not to read the listed items to the drivers so that the drivers independently provided their own responses. Instead, interviewers were instructed to record all of the answers provided by the drivers in the following manner: (1) checking all of the standard choices, as listed on the survey form, that were mentioned by the driver; and (2) recording any non-standard responses in the space provided on the survey form.

If the participant answered 10.5, "Did nothing," the interviewers were instructed to skip to Question 14; otherwise, they were to continue to Question 11.

The next seven pages of the manual provide detail on the specific attributes (questions 10.1 – 10.7) that apply to this question.

The specific attributes (responses) are defined as follows.

10.1: Checked tire pressure

10.2: Reset the TPMS

10.3: Took vehicle to dealer or a service facility

10.4: Added air

10.5: Did nothing (Skip to #14)

10.6: Other (specify)

10.7: Specify

Response 10.1 – Checked tire pressure

Data Set: SUP_RESPONSE

SAS Name: ACTIONSTAKE1

Label Name: Actions taken – Warning Lamp – Checked tire pressure

Attribute Codes:

SAS	Description
0	No
1	Yes
.U	Unknown

Remarks:

This attribute contains the driver's response to interview Question 10, "What actions did you take the last time the TPMS warning/combined lamp illuminated?"/Attribute 10.1, "Checked tire pressure."

Question 10 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided. A "Yes" response is found in this field if the driver indicated that they checked their tire pressure.

SAS Variable Type: Numeric

Response 10.2 – Reset the TPMS

Data Set: SUP_RESPONSE

SAS Name: ACTIONSTAKE2

Label Name: Actions taken – Warning Lamp – Reset the TPMS

Attribute Codes:

SAS	Description
0	No
1	Yes
.U	Unknown

Remarks:

This attribute contains the driver's response to interview Question 10, "What actions did you take the last time the TPMS warning/combined lamp illuminated?"/Attribute 10.2, "Reset the TPMS."

Question 10 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided. A "Yes" response is found in this field if the driver indicated that they checked their tire pressure.

SAS Variable Type: Numeric

Response 10.3 - Took vehicle to the dealer or a service facility

Data Set: SUP_RESPONSE

SAS Name: ACTIONSTAKE3

Label Name: Actions taken – Warning Lamp – Took vehicle to the dealer or a service

facility

Attribute Codes:

SAS	Description
0	No
1	Yes
.U	Unknown

Remarks:

This attribute contains the driver's response to interview Question 10, "What actions did you take the last time the TPMS warning/combined lamp illuminated?"/Attribute 10.3, "Took vehicle to the dealer or a service facility."

Question 10 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided. A "Yes" response is found in this field if the driver indicated that they checked their tire pressure.

SAS Variable Type: Numeric

Response 10.4 - Added air

Data Set: SUP_RESPONSE

SAS Name: ACTIONSTAKE4

Label Name: Actions taken – Warning Lamp – Added air

Attribute Codes:

SAS	Description
0	No
1	Yes
.U	Unknown

Remarks:

This attribute contains the driver's response to interview Question 10, "What actions did you take the last time the TPMS warning/combined lamp illuminated?"/Attribute 10.4, "Added air."

Question 10 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided. A "Yes" response is found in this field if the driver indicated that they checked their tire pressure.

SAS Variable Type: Numeric

Response 10.5 - Did nothing

Data Set: SUP_RESPONSE

SAS Name: ACTIONSTAKE5

Label Name: Actions taken – Warning Lamp – Did nothing

Attribute Codes:

SAS	Description
0	No
1	Yes
.U	No response

Remarks:

This attribute contains the driver's response to interview Question 10, "What actions did you take the last time the TPMS warning/combined lamp illuminated?"/Attribute 10.5, "Did nothing."

Question 10 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided. A "Yes" response is found in this field if the driver indicated that they checked their tire pressure.

If the participant chose the attribute, "Did nothing," the interviewers were instructed to skip to Question 14; otherwise, they were to continue to Question 11.

SAS Variable Type: Numeric

Response 10.6 - Other

Data Set: SUP_RESPONSE

SAS Name: ACTIONSTAKE6

Label Name: Actions taken – Warning Lamp – Other (specify)

Attribute Codes:

SAS	Description
0	No
1	Yes
.U	Unknown

Remarks:

This attribute contains the driver's response to interview Question 10, "What actions did you take the last time the TPMS warning/combined lamp illuminated?"/Attribute 10.6, "Other."

Question 10 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided. A "Yes" response is found in this field if the driver indicated that they checked their tire pressure.

SAS Variable Type: Numeric

Response 10.7 - Specify

Data Set: SUP_RESPONSE

SAS Name: ACTIONSTAKEOS

Label Name: Actions taken – Warning Lamp – specify

Attribute Codes:

Remarks:

This attribute contains the driver's response to interview Question 10, "What actions did you take the last time the TPMS warning/combined lamp illuminated?"/Attribute 10.7, "Specify."

Question 10 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided. A "Yes" response is found in this field if the driver indicated that they checked their tire pressure.

If the participant provided a response that was not captured by 10.1 – 10.5, the interviewers were instructed to select, "Other" in 10.6 and enter the answer provided by the participant in the space on the survey form.

SAS Variable Type: Character

Question 11 - How long after you first noticed the lamp illuminated did you take action?

Data Set: SUP

SAS Name: ACTWHEN

Label Name: Time to take action after illumination

Attribute Codes:

SAS	Description
1	During the same trip (e.g., pulled over)
2	Later the same day or within several days
3	One or more weeks after
.N	No response

Remarks:

This variable records the participant's response to Question 11, "How long after you first noticed the lamp illuminated did you take action?"

Question 11 was a "Check only one answer" question. Interviewers were instructed to read the choices listed and to check the box that corresponded to the answer the participant provided.

SAS Variable Type: Numeric

Question 12 - Did any of the tires need air? If yes, how many?

Data Set: SUP

SAS Name: NEEDEDAIRID

Label Name: Any tires need air?

Range: 1 – 4

Attribute Codes:

SAS	Description
0	No
1 - 4	Yes, number of tires
8	Yes, don't know how many tires
9	Don't know if any tires needed air
.N	No response
	Skipped

Remarks:

This variable records how many, if any, of the tires needed air. If the driver chose Attribute 2, "Yes," the interviewers were instructed to record the number of tires that needed air in the designated space on the form.

This question contained instructions on how to proceed based on the answers given by the participant. If the participant answered "Yes" to any of the tires needing air, interviewers were instructed to continue to Question 13. If the participant answered "No," Don't know, or if they did not provide a response, the interviewers were instructed to skip to Question 15.

SAS Variable Type: Numeric

Question 13 - Approximately how much air was needed in each tire?

Data Set: SUP

SAS Name: AIRNEEDEDID

Label Name: Average air per tire

Attribute Codes:

SAS	Description
1	Less than 5 psi
2	5 to 10 psi
3	10 - 15 psi
4	More than 15 psi
5	Don't know
.N	No response
	Skipped

Remarks:

This variable records the participant's response to Question 13, "How much air was needed in each tire?" (Check one)

If multiple tires needed air, the interviewers were instructed to estimate the average amount of air per tire had been needed.

This question was a "Check only one answer" question. Interviewers were instructed to read the choices listed and to check the box that corresponded to the answer the participant provided.

SAS Variable Type: Numeric

Question 14 - If the warning lamp was not working correctly, what was found to be the reason

Data Set: SUP_RESPONSE

Remarks:

The choices below identify the driver's response to interview Question 14, "Have you or someone else checked the vehicle because the warning/combined lamp was not working correctly? If yes, what was found to be the reason?"

Question 14 was a "Check all that apply" question. To make data collection more efficient, the survey form that the interviewers used, but which the drivers did not see, had a list of "standard choices" that were expected to be common. Interviewers were told not to read the listed items to the drivers so that the drivers independently provided their own responses. Instead, interviewers were instructed to record all of the answers provided by the drivers in the following manner: (1) checking all of the standard choices, as listed on the survey form, that were mentioned by the driver; and (2) recording any non-standard responses in the space provided on the survey form.

The next nine pages of the manual provide detail on the specific attributes (questions 14.1 – 14.9) that apply to this question.

The specific attributes (responses) are defined as follows.

- 14.1: No, did not check it
- **14.2:** Yes, needed reset
- 14.3: Yes, sensors or other part in the tire not working
- **14.4:** Yes, batteries needed to be changed
- **14.5:** Yes, light bulb needed to be replaced
- **14.6:** Yes, general problem with TPMS
- 14.7: Yes, don't know
- **14.8:** Yes, other (specify)
- **14.9:** Specify

Response 14.1 – No, did not check it

Data Set: SUP_RESPONSE

SAS Name: CHECKMALF1

Label Name: Reason malfunction lamp not working – No, did not check it

Attribute Codes:

SAS	Description
0	No
1	Yes
.U	No response

Remarks:

This attribute contains the driver's response to interview Question 14, "Have you or someone else checked the vehicle because the warning/combined lamp was not working correctly? If yes, what was found to be the reason?"/Attribute 14.1, "No, did not check it."

Question 14 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided.

SAS Variable Type: Numeric

Response 14.2 – Yes, needed reset

Data Set: SUP_RESPONSE

SAS Name: CHECKMALF2

Label Name: Reason malfunction lamp not working – Yes, needed re-set

Attribute Codes:

SAS	Description
0	No
1	Yes
.U	Unknown

Remarks:

This attribute contains the driver's response to interview Question 14, "Have you or someone else checked the vehicle because the warning/combined lamp was not working correctly? If yes, what was found to be the reason?"/Attribute 14.2, "Yes, needed re-set."

Question 14 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided.

SAS Variable Type: Numeric

Response 14.3 - Yes, sensors or other part in the tire not working

Data Set: SUP_RESPONSE

SAS Name: CHECKMALF3

Label Name: Reason malfunction lamp not working – Yes, sensors or other part in

the tire not working

Attribute Codes:

SAS	Description
0	No
1	Yes
.U	Unknown

Remarks:

This attribute contains the driver's response to interview Question 14, "Have you or someone else checked the vehicle because the warning/combined lamp was not working correctly? If yes, what was found to be the reason?"/Attribute 14.3, "Yes, sensors or other part in the tire not working."

Question 14 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided.

SAS Variable Type: Numeric

Response 14.4 - Yes, batteries needed to be changed

Data Set: SUP_RESPONSE

SAS Name: CHECKMALF4

Label Name: Reason malfunction lamp not working – Yes, batteries needed to be

changed

Attribute Codes:

SAS	Description
0	No
1	Yes
.U	Unknown

Remarks:

This attribute contains the driver's response to interview Question 14, "Have you or someone else checked the vehicle because the warning/combined lamp was not working correctly? If yes, what was found to be the reason?"/Attribute 14.4, "Yes, batteries needed to be changed."

Question 14 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided.

SAS Variable Type: Numeric

Response 14.5 - Yes, light bulb needed to be replaced

Data Set: SUP_RESPONSE

SAS Name: CHECKMALF5

Label Name: Reason malfunction lamp not working – Yes, light bulb needed to be

replaced

Attribute Codes:

SAS	Description
0	No
1	Yes
.U	Unknown

Remarks:

This attribute contains the driver's response to interview Question 14, "Have you or someone else checked the vehicle because the warning/combined lamp was not working correctly? If yes, what was found to be the reason?"/Attribute 14.5, "Yes, light bulb needed to be replaced."

Question 14 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided.

SAS Variable Type: Numeric

Response 14.6 - Yes, general problem with TPMS system

Data Set: SUP_RESPONSE

SAS Name: CHECKMALF6

Label Name: Reason malfunction lamp not working – Yes, general problem with

TPMS system

Attribute Codes:

SAS	Description
0	No
1	Yes
.U	Unknown

Remarks:

This attribute contains the driver's response to interview Question 14, "Have you or someone else checked the vehicle because the warning/combined lamp was not working correctly? If yes, what was found to be the reason?"/Attribute 14.6, "Yes, general problem with TPMS system."

Question 14 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided.

SAS Variable Type: Numeric

Response 14.7 - Yes, don't know

Data Set: SUP_RESPONSE

SAS Name: CHECKMALF7

Label Name: Reason malfunction lamp not working – Yes, don't know

Attribute Codes:

SAS	Description
0	No
1	Yes
.U	Unknown

Remarks:

This attribute contains the driver's response to interview Question 14, "Have you or someone else checked the vehicle because the warning/combined lamp was not working correctly? If yes, what was found to be the reason?"/Attribute 14.7, "Yes, don't know."

Question 14 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided.

SAS Variable Type: Numeric

Response 14.8 – Yes, other

Data Set: SUP_RESPONSE

SAS Name: CHECKMALF8

Label Name: Reason malfunction lamp not working – Yes, other (specify)

Attribute Codes:

SAS	Description
0	No
1	Yes
.U	Unknown

Remarks:

This attribute contains the driver's response to interview Question 14, "Have you or someone else checked the vehicle because the warning/combined lamp was not working correctly? If yes, what was found to be the reason?"/Attribute 14.8, "Yes, other (specify)."

Question 14 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided.

SAS Variable Type: Numeric

Response 14.9 - Specify

Data Set: SUP_RESPONSE

SAS Name: CHECKMALFOS

Label Name: Reason malfunction lamp not working, Specify

Attribute Codes:

Remarks:

This attribute contains the driver's response to interview Question 14, "What actions did you take the last time the TPMS warning/combined lamp illuminated?"/Attribute 14.9, "Specify."

Question 14 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided.

If the participant provided a response that was not captured by 14.1 – 14.7, the interviewers were instructed to select, "Other" in 14.8 and enter the answer provided by the participant in the designated space on the survey form.

SAS Variable Type: Character

Question 15 - Do you know how to reset (calibrate) your TPMS

Data Set: SUP

Remarks:

The attributes below identify the participant's response to interview Question 15, "Do you know how to reset (calibrate) your TPMS?"

Question 15 was a "Check only one answer" question. The next two pages of the manual provide detail on the specific attributes (15.1 – 15.2) that apply to this question.

If the driver chose Attribute 5, "Yes, other (specify)" the interviewers were instructed to record, in the designated space on the survey form, the response participant provided.

The specific attributes (responses) are defined as follows.

15.1: No

Yes, use button in vehicle Yes, follow menu on display Yes, only dealer/service station can do it Yes, other (specify)

15.2: Specify

Response 15.1 – No...yes, other

Data Set: SUP

SAS Name: RESETUSEID

Label Name: Reset Method

Attribute Codes:

SAS	Description
1	No
2	Yes, use button in vehicle
3	Yes, follow menu on display
4	Yes, only dealer/service station can do it
5	Yes, other (specify)
.N	No response

Remarks:

This attribute contains the driver's response to interview Question 15, "Do you know how to reset (calibrate) your TPMS?"

SAS Variable Type: Numeric

Response 15.2 - Specify

Data Set: SUP

SAS Name: RESETUSEIDOS

Label Name: Reset Method, specify

Attribute Codes:

Remarks:

If the participant provided a response that was not captured in Response 15.1, the interviewers were instructed to select, "Other," in 15.1 and enter, in the space on the survey form, the answer that was provided by the participant.

SAS Variable Type: Character

Question 16 – When should your TPMS be reset

Data Set: SUP_RESPONSE

Remarks:

The choices below identify the driver's response to interview Question 16, "When should your TPMS be reset?"

Question 16 was a "Check all that apply" question. To make data collection more efficient, the survey form that the interviewers used, but which the drivers did not see, had a list of "standard choices" that were expected to be common. Interviewers were told not to read the listed items to the drivers so that the drivers independently provided their own responses. Instead, interviewers were instructed to record all of the answers provided by the drivers in the following manner: (1) checking all of the standard choices, as listed on the survey form, that were mentioned by the driver; and (2) recording any non-standard responses in the space provided on the survey form.

The next eight pages of the manual provide detail on the specific attributes (questions 16.1 – 16.8) that apply to this question.

The specific attributes (responses) are defined as follows.

- **16.1:** Never
- **16.2:** When the tire pressure is checked
- **16.3:** When the tire pressure is changed
- **16.4:** When a tire is changed
- **16.5:** When the tires are rotated
- **16.6:** Don't know
- **16.7:** Other (specify)
- **16.8:** Specify

Response 16.1 – Never

Data Set: SUP_RESPONSE

SAS Name: WHENRESET1

Label Name: When resets TPMS - Never

Attribute Codes:

SAS	Description
0	No
1	Yes
.U	No response

Remarks:

This attribute contains the driver's response to interview Question 16, "When should your TPMS be reset?"/Attribute 16.1, "Never."

Question 16 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided.

SAS Variable Type: Numeric

Response 16.2 - When the tire pressure is checked

Data Set: SUP_RESPONSE

SAS Name: WHENRESET2

Label Name: When resets TPMS - When the tire pressure is checked

Attribute Codes:

SAS	Description
0	No
1	Yes
.U	No response

Remarks:

This attribute contains the driver's response to interview Question 16, "When should your TPMS be reset?"/Attribute 16.2, "When the tire pressure is checked."

Question 16 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided.

SAS Variable Type: Numeric

Response 16.3 – When the tire pressure is changed

Data Set: SUP_RESPONSE

SAS Name: WHENRESET3

Label Name: When resets TPMS – When the tire pressure is changed

Attribute Codes:

SAS	Description
0	No
1	Yes
.U	No response

Remarks:

This attribute contains the driver's response to interview Question 16, "When should your TPMS be reset?"/Attribute 16.3, "When the tire pressure is changed."

Question 16 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided.

SAS Variable Type: Numeric

Response 16.4 – When a tire is changed

Data Set: SUP_RESPONSE

SAS Name: WHENRESET4

Label Name: When resets TPMS – When a tire is changed

Attribute Codes:

SAS	Description
0	No
1	Yes
.U	No response

Remarks:

This attribute contains the driver's response to interview Question 16, "When should your TPMS be reset?"/Attribute 16.4, "When a tire is changed."

Question 16 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided.

SAS Variable Type: Numeric

Response 16.5 - When the tires are rotated

Data Set: SUP_RESPONSE

SAS Name: WHENRESET5

Label Name: When resets TPMS – When the tires are rotated

Attribute Codes:

SAS	Description
0	No
1	Yes
.U	No response

Remarks:

This attribute contains the driver's response to interview Question 16, "When should your TPMS be reset?"/Attribute 16.5, "When the tires are rotated."

Question 16 was a "Check all that apply" question. Interviewers were instructed not to read the options provided, and to check all of the options the driver selected.

SAS Variable Type: Numeric

Response 16.6 – Don't know

Data Set: SUP_RESPONSE

SAS Name: WHENRESET6

Label Name: When resets TPMS – Don't know

Attribute Codes:

SAS	Description
0	No
1	Yes
.U	No response

Remarks:

This attribute contains the driver's response to interview Question 16, "When should your TPMS be reset?"/Attribute 16.6, "Don't know."

Question 16 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided.

SAS Variable Type: Numeric

Response 16.7 – Other

Data Set: SUP_RESPONSE

SAS Name: WHENRESET7

Label Name: When resets TPMS – Other (specify)

Attribute Codes:

SAS	Description
0	No
1	Yes
.U	Unknown

Remarks:

This attribute contains the driver's response to interview Question 16, "Have you or someone else checked the vehicle because the warning/combined lamp was not working correctly? If yes, what was found to be the reason?"/Attribute 16.7, "Other (specify)."

Question 16 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided.

SAS Variable Type: Numeric

Response 16.8 - Specify

Data Set: SUP_RESPONSE

SAS Name: WHENRESETOS

Label Name: When resets TPMS, Specify

Attribute Codes:

Remarks:

This attribute contains the driver's response to interview Question 16, "When should your TPMS be reset?"/Attribute 16.8, "Specify."

Question 16 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided.

If the participant provided a response that was not captured by 16.1 – 16.6, the interviewers were instructed to select, "Other" in 16.7 and enter, in the space on the survey form, the answer provided by the participant.

SAS Variable Type: Character

Question 17 - How easy or difficult is it to reset your TPMS

Data Set: SUP

SAS Name: RESETCONVENIENTID

Label Name: Ease of resetting TPMS

Attribute Codes:

SAS	Description
1	Very easy
2	Somewhat easy
3	Somewhat difficult
4	Very Difficult
5	Don't know
.N	No response

Remarks:

This variable records the participant's response to Question 17, "How easy or difficult is it to reset your TPMS?"

Question 17 was asked of both drivers who know how to set the TPMS and those who do not know how to reset it, in order to see if the driver has any general knowledge as to the ease of resetting the TPMS.

This question was a "Check only one answer" question. Interviewers were instructed to read the choices listed and to check the box that corresponded to the answer the participant provided.

SAS Variable Type: Numeric

Question 18 - To what extent do you rely on your TPMS to tell you when your tires need air

Data Set: SUP

SAS Name: TPMSRELYID

Label Name: Depends on TPMS

Attribute Codes:

SAS	Description
1	Rely fully on TPMS
2	Rely on TPMS, but also use other methods
3	Don't rely on TPMS, only use other methods
.N	No response

Remarks:

This variable records the participant's response to Question 18, "To what extent do you rely on your TPMS to tell you when your tires need air?"

This question was a "Check only one answer" question. Interviewers were instructed to read the choices listed and to check the box that corresponded to the answer the participant provided.

SAS Variable Type: Numeric

Question 19 - Does your TPMS have a malfunction lamp

Data Set: SUP

SAS Name: TPMSMALFID

Label Name: Has malfunction lamp

Attribute Codes:

SAS	Description
1	No
2	Yes
3	Don't know
.N	No response

Remarks:

This variable records the participant's response to Question 19, "Does your TPMS have a malfunction lamp?"

This question contained instructions on how to proceed based on the answers given by the participant. If the participant answered "Yes," the interviewers were instructed to continue to Question 20. If the participant answered "No, don't know," or if they did not provide a response, the interviewers were instructed to end the supplemental interview.

SAS Variable Type: Numeric

Question 20 - Do you know where your TPMS malfunction lamp is located? If yes, where?

Data Set: SUP

Remarks:

The attributes below identify the participant's response to interview Question 20, "Do you know where your TPMS malfunction lamp is located? If yes, where?"

Question 20 was a "Check only one answer" question. The next two pages of the manual provide detail on the specific attributes (20.1 – 20.2) that apply to this question.

If the driver chose Attribute 5, "Yes, other (specify)" the interviewers were instructed to record, in the specify box on the form, the response participant provided.

The specific attributes (responses) are defined as follows.

20.1: No

Yes, on instrument panel Yes, on rearview mirror Yes, roof console

Yes, other (specify)

20.2: Specify

Response 20.1 – No...yes, other

Data Set: SUP

SAS Name: TPMSMALFLOCID

Label Name: Knows where malfunction lamp is located

Attribute Codes:

SAS	Description
1	No
2	Yes, on instrument panel
3	Yes, on rearview mirror
4	Yes, roof console
5	Yes, other (specify)
.N	No response

Remarks:

This attribute contains the driver's response to interview Question 20, "Do you know where your TPMS malfunction lamp is located? If yes, where?"

This question contained instructions on how to proceed based on the answers given by the participant. If the participant answered "Yes," the interviewers were instructed to continue to Question 21. If the participant answered "No" or if they did not provide a response, the interviewers were instructed to end the supplemental interview.

SAS Variable Type: Numeric

Response 20.2 - Specify

Data Set: SUP

SAS Name: TPMSMALFLOCIDOS

Label Name: Knows where malfunction lamp is located, Specify

Attribute Codes:

Remarks:

If the participant provided a response that was not captured in Response 20.1, the interviewers were instructed to select, "Other," in 20.1 and enter, in the space on the survey form, the answer that was provided by the participant.

SAS Variable Type: Numeric

Question 21 - How many times has your TPMS malfunction lamp come on beyond on/off cycles

Data Set: SUP

SAS Name: MALFEVERONID

Label Name: # times malfunction lamp lighted

Range: 1 – 10

Attribute Codes:

SAS	Description
0	No
1 -10	Yes, number of times (Approximate number of times)
97	Yes, light is continuously illuminated or comes on regularly
98	Yes, don't know how many times
99	Don't know if illuminated
.N	No response
	Skipped

Remarks:

This variable contains the participant's response to interview Question 21, "Has your TPMS malfunction lamp ever illuminated, except during engine on/off cycles? If yes, how many times?"

This question was a "Check only one answer" question. Interviewers were instructed to read the choices listed and to check the box that corresponded to the answer the participant provided.

In the designated space on the survey form, the interviewers were instructed to record the number of times the lamp had illuminated, if the driver chose Attribute 2, "Yes, number of times."

This question contained instructions on how to proceed based on the answers given by the participant. If the participant answered "Yes" to the TPMS Malfunction light illuminating, interviewers were instructed to continue to Question 22. If the participant answered "No," Don't know, or if they did not provide a response, the interviewers were instructed to skip to the end of the supplemental interview.

SAS Variable Type: Numeric

Question 22 - When was the last time the malfunction lamp illuminated on this vehicle

Data Set: SUP

SAS Name: MALFLASTONID

Label Name: Last time malfunction lamp lighted

Attribute Codes:

SAS	Description
1	Within the past month
2	1 – 2 months ago
3	3 – 4 months ago
4	More than 4 months ago
5	Continuously/Repetitive
6	Don't know
.N	No response
	Skipped

Remarks:

This variable records the participant's response to Question 22, "When was the last time the malfunction lamp illuminated on this vehicle?"

This question was a "Check only one answer" question. Interviewers were instructed to read the choices listed and to check the box that corresponded to the answer the participant provided.

SAS Variable Type: Numeric

Question 23 - What actions did you take the last time the TPMS malfunction lamp illuminated

Data Set: SUP_RESPONSE

Remarks:

The choices below identify the driver's response to interview Question 23, "What actions did you take the last time the TPMS malfunction lamp illuminated?"

Question 23 was a "Check all that apply" question. To make data collection more efficient, the survey form that the interviewers used, but which the drivers did not see, had a list of "standard choices" that were expected to be common. Interviewers were told not to read the listed items to the drivers so that the drivers independently provided their own responses. Instead, interviewers were instructed to record all of the answers provided by the drivers in the following manner: (1) checking all of the standard choices, as listed on the survey form, that were mentioned by the driver; and (2) recording any non-standard responses in the space provided on the survey form.

The next seven pages of the manual provide detail on the specific attributes (questions 23.1 – 23.7) that apply to this question.

The specific attributes (responses) are defined as follows.

- 23.1: Did nothing it often illuminates
- 23.2: Did nothing other reasons
- 23.3: Reset the TPMS
- **23.4:** Took vehicle to the dealer of service facility
- 23.5: Self or others worked on vehicle
- **23.6:** Other (specify)
- **23.7:** Specify

Response 23.1 - Did nothing - it often illuminates

Data Set: SUP_RESPONSE

SAS Name: MALFUNCTIONID1

Label Name: Actions taken – malfunction lamp – did nothing – it often illuminates

Attribute Codes:

SAS	Description
0	No
1	Yes
.U	Unknown

Remarks:

This attribute contains the driver's response to interview Question 23, "What actions did you take the last time the TPMS malfunction lamp illuminated?"/Attribute 23.1, "Did nothing – it often illuminates."

Question 23 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided.

SAS Variable Type: Numeric

Response 23.2 – Did nothing – other reasons

Data Set: SUP_RESPONSE

SAS Name: MALFUNCTIONID2

Label Name: Actions taken – malfunction lamp – did nothing – other reasons

Attribute Codes:

SAS	Description
0	No
1	Yes
.U	Unknown

Remarks:

This attribute contains the driver's response to interview Question 23, "What actions did you take the last time the TPMS malfunction lamp illuminated?"/Attribute 23.2, "Did nothing – other reasons."

Question 23 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided.

SAS Variable Type: Numeric

Response 23.3 – Reset the TPMS

Data Set: SUP_RESPONSE

SAS Name: MALFUNCTIONID3

Label Name: Actions taken – malfunction lamp – Reset the TPMS

Attribute Codes:

SAS	Description
0	No
1	Yes
.U	No response

Remarks:

This attribute contains the driver's response to interview Question 23, "What actions did you take the last time the TPMS malfunction lamp illuminated?"/Attribute 23.3, "Reset the TPMS."

Question 23 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided.

SAS Variable Type: Numeric

Response 23.4 - Took vehicle to the dealer or a service facility

Data Set: SUP_RESPONSE

SAS Name: MALFUNCTIONID4

Label Name: Actions taken – malfunction lamp – Took vehicle to the dealer or a

service facility

Attribute Codes:

SAS	Description
0	No
1	Yes
.U	No response

Remarks:

This attribute contains the driver's response to interview Question 23, "What actions did you take the last time the TPMS malfunction lamp illuminated?"/Attribute 23.4, "Took vehicle to the dealer or a service facility."

Question 23 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided.

SAS Variable Type: Numeric

Response 23.5 - Self or other worked on vehicle

Data Set: SUP_RESPONSE

SAS Name: MALFUNCTIONID5

Label Name: Actions taken – malfunction lamp – Self or other worked on vehicle

Attribute Codes:

SAS	Description
0	No
1	Yes
.U	No response

Remarks:

This attribute contains the driver's response to interview Question 23, "What actions did you take the last time the TPMS malfunction lamp illuminated?"/Attribute 23.5, "Self or other worked on vehicle."

Question 23 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided.

SAS Variable Type: Numeric

Response 23.6 - Other

Data Set: SUP_RESPONSE

SAS Name: MALFUNCTIONID6

Label Name: Actions taken – malfunction lamp – Other (specify)

Attribute Codes:

SAS	Description
0	No
1	Yes
.U	Unknown

Remarks:

This attribute contains the driver's response to interview Question 23, "What actions did you take the last time the TPMS malfunction lamp illuminated?"/Attribute 23.6, "Other (specify)."

Question 23 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided.

SAS Variable Type: Numeric

Response 23.7 - Specify

Data Set: SUP_RESPONSE

SAS Name: MALFUNCTIONIDOS

Label Name: Actions taken--Malfunction Lamp, Specify

Attribute Codes:

Remarks:

This attribute contains the driver's response to interview Question 23, "What actions did you take the last time the TPMS malfunction lamp illuminated?"/Attribute 23.7, "Specify."

Question 23 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided.

If the participant provided a response that was not captured by 23.1 – 23.5, the interviewers were instructed to select, "Other" in 23.6 and enter, in the space on the survey form, the answer provided by the participant.

SAS Variable Type: Character

Question 24 - If the warning lamp was not working correctly, what was found to be the reason

Data Set: SUP_RESPONSE

Remarks:

The choices below identify the driver's response to interview Question 24, "Have you or someone else checked the vehicle because the malfunction lamp was not working correctly? If yes, what was found to be the reason?"

Question 24 was a "Check all that apply" question. To make data collection more efficient, the survey form that the interviewers used, but which the drivers did not see, had a list of "standard choices" that were expected to be common. Interviewers were told not to read the listed items to the drivers so that the drivers independently provided their own responses. Instead, interviewers were instructed to record all of the answers provided by the drivers in the following manner: (1) checking all of the standard choices, as listed on the survey form, that were mentioned by the driver; and (2) recording any non-standard responses in the space provided on the survey form.

The next nine pages of the manual provide detail on the specific attributes (questions 24.1 – 24.9) that apply to this question.

The specific attributes (responses) are defined as follows.

24.1: No, did not check

24.2: Yes, needed reset

24.3: Yes, sensors or other part in the tire not working

24.4: Yes, batteries needed to be changed

24.5: Yes, light bulb needed to be replaced

24.6: Yes, general problem with TPMS system

24.7: Yes, don't know

24.8: Yes, other (specify)

24.9: Specify

Response 24.1 – No, did not check it

Data Set: SUP_RESPONSE

SAS Name: CHECKWARN1

Label Name: Reason warning lamp not working – No, did not check it

Attribute Codes:

SAS	Description
0	No
1	Yes
.U	Unknown

Remarks:

This attribute contains the driver's response to interview Question 24, "Have you or someone else checked the vehicle because the malfunction lamp was not working correctly? If yes, what was found to be the reason?"/ Attribute 24.1, "No, did not check it."

Question 24 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided.

SAS Variable Type: Numeric

Response 24.2 – Yes, needed reset

Data Set: SUP_RESPONSE

SAS Name: CHECKWARN2

Label Name: Reason warning lamp not working – Yes, needed re-set

Attribute Codes:

SAS	Description
0	No
1	Yes
.U	Unknown

Remarks:

This attribute contains the driver's response to interview Question 24, "Have you or someone else checked the vehicle because the malfunction lamp was not working correctly? If yes, what was found to be the reason?"/ Attribute 24.2, "Yes, needed reset."

Question 24 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided.

SAS Variable Type: Numeric

Response 24.3 - Yes, sensors or other part in tire not working

Data Set: SUP_RESPONSE

SAS Name: CHECKWARN3

Label Name: Reason warning lamp not working – Yes, sensors or other part in tire

not working

Attribute Codes:

SAS	Description
0	No
1	Yes
.U	Unknown

Remarks:

This attribute contains the driver's response to interview Question 24, "Have you or someone else checked the vehicle because the malfunction lamp was not working correctly? If yes, what was found to be the reason?"/ Attribute 24.3, "Yes, sensors or other part in tire not working."

Question 24 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided.

SAS Variable Type: Numeric

Response 24.4 - Yes, batteries needed to be changed

Data Set: SUP_RESPONSE

SAS Name: CHECKWARN4

Label Name: Reason warning lamp not working – Yes, batteries needed to be

changed

Attribute Codes:

SAS	Description
0	No
1	Yes
.U	Unknown

Remarks:

This attribute contains the driver's response to interview Question 24, "Have you or someone else checked the vehicle because the malfunction lamp was not working correctly? If yes, what was found to be the reason?"/ Attribute 24.4, "Yes, batteries needed to be changed."

Question 24 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided.

SAS Variable Type: Numeric

Response 24.5 - Yes, light bulb needed to be replaced

Data Set: SUP_RESPONSE

SAS Name: CHECKWARN5

Label Name: Reason warning lamp not working – Yes, light bulb needed to be

replaced

Attribute Codes:

SAS	Description
0	No
1	Yes
.U	Unknown

Remarks:

This attribute contains the driver's response to interview Question 24, "Have you or someone else checked the vehicle because the malfunction lamp was not working correctly? If yes, what was found to be the reason?"/ Attribute 24.5, "Yes, light bulbs needed to be replaced."

Question 24 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided.

SAS Variable Type: Numeric

Response 24.6 – Yes, general problem with TPMS system

Data Set: SUP_RESPONSE

SAS Name: CHECKWARN6

Label Name: Reason warning lamp not working – Yes, general problem with TPMS

system

Attribute Codes:

SAS	Description
0	No
1	Yes
.U	No response

Remarks:

This attribute contains the driver's response to interview Question 24, "Have you or someone else checked the vehicle because the malfunction lamp was not working correctly? If yes, what was found to be the reason?"/ Attribute 24.6, "Yes, general problem with TPMS system."

Question 24 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided.

SAS Variable Type: Numeric

Response 24.7 – Yes, don't know

Data Set: SUP_RESPONSE

SAS Name: CHECKWARN7

Label Name: Reason warning lamp not working – Yes, don't know

Attribute Codes:

SAS	Description
0	No
1	Yes
.U	No response

Remarks:

This attribute contains the driver's response to interview Question 24, "Have you or someone else checked the vehicle because the malfunction lamp was not working correctly? If yes, what was found to be the reason?"/ Attribute 24.7, "Yes, don't know."

Question 24 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided.

SAS Variable Type: Numeric

SAS Field Length: 3

Response 24.8 – Yes, other

Data Set: SUP_RESPONSE

SAS Name: CHECKWARN8

Label Name: Reason warning lamp not working – Yes, other (specify)

Attribute Codes:

SAS	Description
0	No
1	Yes
.U	No response

Remarks:

This attribute contains the driver's response to interview Question 24, "Have you or someone else checked the vehicle because the malfunction lamp was not working correctly? If yes, what was found to be the reason?"/ Attribute 24.8, "Yes, other (specify)."

Question 24 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided.

SAS Variable Type: Numeric

SAS Field Length: 3

Response 24.9 - Specify

Data Set: SUP_RESPONSE

SAS Name: CHECKWARNOS

Label Name: Reason warning lamp not working, Specify

Attribute Codes:

Remarks:

This attribute contains the driver's response to interview Question 24, "Have you or someone else checked the vehicle because the malfunction lamp was not working correctly? If yes, what was found to be the reason?"/Attribute 24.9, "Specify."

Question 24 was a "Check all that apply" question. Interviewers were instructed not to read the options listed on the form, but to check all of the options the driver provided.

If the participant provided a response that was not captured by 24.1 – 24.7, the interviewers were instructed to select, "Other" in 24.8 and enter, in the space on the survey form, the answer provided by the participant.

SAS Variable Type: Character

SAS Field Length: 100

Appendix A: List of Vehicle Makes

SAS CODE	<u>MANUFACTURER</u>
54	ACURA
31	ALFA ROMEO
3	AM GENERAL
1	AMC/AMERICAN MOTORS
69	ASTON MARTIN
32	AUDI
33	AUSTIN/AUSTIN-HEALEY
98	AUTO UNION/DKW
98	AUTOCAR
29	AVANTI
69	BERTONE
34	BMW
69	BRICKLIN
80	BROCKWAY
70	BSA
79	BUELL
18	BUICK
19	CADILLAC
29	CHECKER
20	CHEVROLET
6	CHRYSLER
69	CITROEN
29	CONSULIER
64	DAEWOO
60	DAIHATSU
69	DELOREAN
29	DESOTO
69	DESTA
81	DIAMOND REO/REO
98	DIVCO
7	DODGE
71	DUCATI
10	EAGLE
29	EXCALIBER
69	FERRARI
36	FIAT
12	FORD
82	FREIGHTLINER/WHITE
83	FWD

SAS CODE	MANUFACTURER
23	GMC
25	GRUMMAN
72	HARLEY-DAVIDSON
69	HILLMAN
98	HINO
37	HONDA
29	HUDSON
79	HYOSUNG
55	HYUNDAI
8	IMPERIAL
79	INDIAN
58	INFINITI
84	INTERNATIONAL HARVESTER/NAVISTAR
38	ISUZU
88	IVECO/MAGIRUS
39	JAGUAR
2	JEEP/KAISER JEEP
69	JENSEN
73	KAWASAKI
85	KENWORTH
63	KIA
79	KTM
69	LADA
69	LAMBORGHINI
40	LANCIA
62	LAND ROVER
59	LEXUS
13	LINCOLN
69	LOTUS
86	MACK
98	MARMON
69	MASERATI
41	MAZDA
42	MERCEDES-BENZ
14	MERCURY
56	MERKUR
43	MG
69	MINI
52	MITSUBISHI
69	MORGAN
69	MORRIS
7.4	14070 011771

74

MOTO GUZZI

SAS CODE	MANUFACTURER
98	NEOPLAN
35	NISSAN/DATSUN
75	NORTON
21	OLDSMOBILE
98	OSHKOSH
29	OTHER DOMESTIC MANUFACTURER (light vehicles)
69	OTHER FOREIGN MANUFACTURER (light vehicles)
98	OTHER MAKE (med/heavy truck/bus or "other")
78	OTHER MAKE MOPED
79	OTHER MAKE MOTORED CYCLE
29	PACKARD
87	PETERBILT
44	PEUGEOT
9	PLYMOUTH
22	PONTIAC
45	PORSCHE
69	RELIANT
46	RENAULT/AMC
69	ROLLS-ROYCE/BENTLEY
47	SAAB
24	SATURN
98	SCANIA
67	SCION
69	SIMCA
69	SINGER
65	SMART
61	STERLING
98	STERLING TRUCKS
29	STUDEBAKER
29	STUTZ
48	SUBARU
69	SUNBEAM
53	SUZUKI
29	TESLA
49	TOYOTA
50	TRIUMPH
69	TVR
99	UNKNOWN DOMESTIC MANUFACTURER
99	UNKNOWN FOREIGN MANUFACTURER
99	UNKNOWN MANUFACTURER
99	UNKNOWN MEDIUM/HEAVY TRUCKS AND BUSES MANUFACTURER
30	VOLKSWAGEN

Appendix A: List of Vehicle Makes

SAS CODE	MANUFACTURER
51	VOLVO
98	WARD LAFRANCE
98	WESTERN STAR
98	WINNEBAGO
76	YAMAHA
57	YUGO

Appendix B: List of Vehicle Models

Vehicle Make	Vehicle Model	SAS Code
ACURA	INTEGRA	54-031
ACURA	LEGEND	54-032
ACURA	RL	54-032
ACURA	NSX	54-033
ACURA	VIGOR	54-034
ACURA	TL	54-035
ACURA	CL	54-035
ACURA	RLX	54-036
ACURA	RSX	54-038
ACURA	TSX	54-039
ACURA	ZDX	54-040
ACURA	ILX	54-041
ACURA	OTHER AUTOMOBILE	54-398
ACURA	UNKNOWN AUTOMOBILE	54-399
ACURA	SLX	54-401
ACURA	RDX	54-402
ACURA	MDX	54-421
ACURA	OTHER LIGHT TRUCK	54-498
ACURA	UNKNOWN TYPE LIGHT TRUCK	54-499
ACURA	UNKNOWN VEHICLE	54-999
ALFA ROMEO	SPIDER	31-031
ALFA ROMEO	SPORTS SEDAN	31-032
ALFA ROMEO	SPRINT SPECIAL	31-033
ALFA ROMEO	GTV-6	31-034
ALFA ROMEO	164	31-035
ALFA ROMEO	4C	31-036
ALFA ROMEO	OTHER AUTOMOBILE	31-398
ALFA ROMEO	UNKNOWN AUTOMOBILE	31-399
ALFA ROMEO	UNKNOWN VEHICLE	31-999
AM GENERAL	DISPATCHER - Post Office (Jeep)	03-401
AM GENERAL	HUMMER H3	03-402
AM GENERAL	HUMMER H1/H2	03-421
AM GENERAL	DISPATCHER - DJ series Post Office Van	03-466
AM GENERAL	OTHER LIGHT TRUCK	03-498
AM GENERAL	UNKNOWN LIGHT TRUCK	03-499
AM GENERAL	MEDIUM/HEAVY TRUCK	03-884
AM GENERAL	OTHER MEDIUM/HEAVY TRUCK	03-898
AM GENERAL	UNKNOWN MEDIUM/HEAVY TRUCK	03-899
AM GENERAL	UNK TYPE TRUCK (LIGHT/MED/HEAVY)	03-899

Vehicle Make	Vehicle Model	SAS Code
AM GENERAL	BUS - REAR ENGINE/FLAT FRONT	03-983
AM GENERAL	OTHER BUS	03-988
AM GENERAL	UNKNOWN BUS TYPE	03-989
AM GENERAL	UNKNOWN VEHICLE	03-999
AMC/AMERICAN MOTORS	RAMBLER/AMERICAN	01-001
AMC/AMERICAN MOTORS	REBEL/MATADOR	01-002
AMC/AMERICAN MOTORS	AMBASSADOR	01-003
AMC/AMERICAN MOTORS	PACER	01-004
AMC/AMERICAN MOTORS	AMX	01-005
AMC/AMERICAN MOTORS	JAVELIN	01-006
AMC/AMERICAN MOTORS	HORNET/CONCORD	01-007
AMC/AMERICAN MOTORS	SPIRIT/GREMLIN	01-008
AMC/AMERICAN MOTORS	EAGLE	01-009
AMC/AMERICAN MOTORS	EAGLE SX-4	01-010
AMC/AMERICAN MOTORS	OTHER AUTOMOBILE	01-398
AMC/AMERICAN MOTORS	UNKNOWN AUTOMOBILE	01-399
AMC/AMERICAN MOTORS	UNKNOWN VEHICLE	01-999
ASTON MARTIN	LAGONDA	69-031
ASTON MARTIN	SALOON	69-031
ASTON MARTIN	UNKNOWN AUTOMOBILE	69-031
ASTON MARTIN	VOLANTE	69-031
ASTON MARTIN	OTHER AUTOMOBILE	69-031
ASTON MARTIN	VANTAGE	69-031
AUDI	SUPER 90	32-031
AUDI	100/A6	32-032
AUDI	FOX	32-033
AUDI	4000	32-034
AUDI	5000	32-035
AUDI	80/90	32-036
AUDI	200	32-037
AUDI	V8 QUATTRO	32-038
AUDI	COUPE QUATTRO	32-039
AUDI	S4/S6 (THRU 2011)	32-040
AUDI	CABRIOLET	32-041
AUDI	A4	32-042
AUDI	A3	32-043
AUDI	A8	32-044
AUDI	тт	32-045
AUDI	S8	32-046
AUDI	ALLROAD ('01-'05)	32-047
AUDI	A5	32-049
AUDI	R8	32-050

Vehicle Make	Vehicle Model	SAS Code
AUDI	S6 ('12 - ON)	32-056
AUDI	S7	32-057
AUDI	RS7	32-058
AUDI	\$3	32-059
AUDI	OTHER AUTOMOBILE	32-398
AUDI	UNKNOWN AUTOMOBILE	32-399
AUDI	Q7	32-401
AUDI	Q5	32-402
AUDI	ALLROAD ('13 ON)	32-403
AUDI	SQ5	32-404
AUDI	OTHER LIGHT TRUCK	32-498
AUDI	UNKNOWN LIGHT TRUCK	32-499
AUDI	UNKNOWN VEHICLE	32-999
AUSTIN/AUSTIN-HEALEY	MARINA	33-031
AUSTIN/AUSTIN-HEALEY	AMERICA	33-032
AUSTIN/AUSTIN-HEALEY	HEALEY SPRITE	33-033
AUSTIN/AUSTIN-HEALEY	HEALY 3000	33-034
AUSTIN/AUSTIN-HEALEY	MINI	33-035
AUSTIN/AUSTIN-HEALEY	OTHER AUTOMOBILE	33-398
AUSTIN/AUSTIN-HEALEY	UNKNOWN AUTOMOBILE	33-399
AUSTIN/AUSTIN-HEALEY	UNKNOWN VEHICLE	33-999
AUTO UNION/DKW	MEDIUM/HEAVY-BASED MOTORHOME	98-802
AUTO UNION/DKW	MEDIUM/HEAVY - UNKNOWN ENGINE LOCATION	98-802
AUTO UNION/DKW	MEDIUM/HEAVY - COE/ENTRY POSITION UNKNOWN	98-802
AUTO UNION/DKW	MEDIUM/HEAVY - OTHER	98-802
AUTO UNION/DKW	MEDIUM/HEAVY - COE/HIGH ENTRY	98-802
AUTO UNION/DKW	MEDIUM/HEAVY - CBE	98-802
AUTO UNION/DKW	MEDIUM/HEAVY - COE/LOW ENTRY	98-802
AUTOCAR	MEDIUM/HEAVY - UNKOWN ENGINE LOCATION	98-801
AUTOCAR	MEDIUM/HEAVY - COE/HIGH ENTRY	98-801
AUTOCAR	MEDIUM/HEAVY - COE/LOW ENTRY	98-801
AUTOCAR	MEDIUM/HEAVY - CBE	98-801
AUTOCAR	MEDIUM/HEAVY-BASED MOTORHOME	98-801
AUTOCAR	MEDIUM/HEAVY - COE/ENTRY POSITION UNKNOWN	98-801
AUTOCAR	MEDIUM/HEAVY - OTHER	98-801
AVANTI	UNKNOWN AUTOMOBILE	29-001
AVANTI	OTHER AUTOMOBILE	29-001
BERTONE	OTHER AUTOMOBILE	69-052
BERTONE	UNKNOWN AUTOMOBILE	69-052
BMW	1600, 2002	34-031
BMW	COUPE	34-032
BMW	BAVARIA SEDAN	34-033

Vehicle Make	<u>Vehicle Model</u>	SAS Code
BMW	3 SERIES	34-034
BMW	5 SERIES	34-035
BMW	6 SERIES	34-036
BMW	7 SERIES	34-037
BMW	8 SERIES	34-038
BMW	Z3	34-039
BMW	Z8	34-040
BMW	V5	34-041
BMW	Z4	34-042
BMW	1 SERIES	34-043
BMW	X6	34-044
BMW	13	34-045
BMW	18	34-046
BMW	4 SERIES	34-047
BMW	OTHER AUTOMOBILE	34-398
BMW	UNKNOWN AUTOMOBILE	34-399
BMW	X5	34-401
BMW	Х3	34-402
BMW	X1	34-403
BMW	OTHER LIGHT TRUCK	34-498
BMW	UNKNOWN LIGHT TRUCK	34-499
BMW	MOTORCYCLE (000-050CC)	34-701
BMW	MOTORCYCLE (051-124CC)	34-702
BMW	MOTORCYCLE (125-349CC)	34-703
BMW	MOTORCYCLE (350-449CC)	34-704
BMW	MOTORCYCLE (450-749CC)	34-705
BMW	MOTORCYCLE (750CC-OVER)	34-706
BMW	MOTORCYCLE (UNKNOWN CC)	34-709
BMW	UNKNOWN MOTORED CYCLE	34-799
BMW	UNKNOWN VEHICLE	34-999
BRICKLIN	OTHER AUTOMOBILE	69-032
BRICKLIN	UNKNOWN AUTOMOBILE	69-032
BROCKWAY	MEDIUM/HEAVY TRUCK-BASED MOTORHOME	80-850
BROCKWAY	MEDIUM/HEAVY - CBE	80-881
BROCKWAY	MEDIUM/HEAVE - COE/LOW ENTRY	80-882
BROCKWAY	MEDIUM/HEAVY - COE HIGH ENTRY	80-883
BROCKWAY	MEDIUM/HEAVY - UNKNOWN ENGINE LOCATION	80-884
BROCKWAY	MEDIUM/HEAVY - COE/ENTRY POSITION UNKNOWN	80-890
BROCKWAY	MEDIUM/HEAVY - OTHER	80-898
BROCKWAY	UNKNOWN MEDIUM/HEAVY TRUCK	80-899
BSA	MOTORCYCLE (000-050CC)	70-701
BSA	MOTORCYCLE (051-124CC)	70-702

Vehicle Make	Vehicle Model	SAS Code
BSA	MOTORCYCLE (125-349CC)	70-703
BSA	MOTORCYCLE (350-449CC)	70-704
BSA	MOTORCYCLE (450-749CC)	70-705
BSA	MOTORCYCLE (750CC-OVER)	70-706
BSA	MOTORCYCLE (UNKNOWN CC)	70-709
BSA	OTHER MOTORED CYCLE	70-798
BSA	UNKNOWN MOTORED CYCLE	70-799
BUELL	MOTORCYCLE (000-050CC)	79-701
BUELL	MOTORCYCLE (051-124CC)	79-702
BUELL	MOTORCYCLE (125-349CC)	79-703
BUELL	MOTORCYCLE (350-449CC)	79-704
BUELL	MOTORCYCLE (450-749CC)	79-705
BUELL	MOTORCYCLE (750CC OR GREATER)	79-706
BUELL	MOTORCYCLE (UNKNOWN CC)	79-709
BUELL	OTHER MOTORED CYCLE	79-798
BUELL	UNKNOWN MOTORED CYCLE	79-799
BUICK	SPECIAL/SKYLARK (thru 1972)	18-001
BUICK	LESABRE/CENTURION/WILDCAT	18-002
BUICK	ELECTRA/ELECTRA 225/PARK AVENUE (91-ON)	18-003
BUICK	ROADMASTER	18-004
BUICK	RIVIERA	18-005
BUICK	CENTURY	18-007
BUICK	APOLLO/SKYLARK (73-76)	18-008
BUICK	REGAL	18-010
BUICK	SKYHAWK	18-012
BUICK	SKYLARK (76-85)	18-015
BUICK	SOMERSET(85-87)/SKYLARK(86-ON)	18-018
BUICK	REGAL ('11 ON)	18-019
BUICK	REGAL (FWD)	18-020
BUICK	REATTA	18-021
BUICK	LACROSSE	18-022
BUICK	LUCERNE	18-023
BUICK	ENCLAVE (< 2013)	18-024
BUICK	VERANO	18-025
BUICK	OPEL KADETT	18-031
BUICK	OPEL MANTA	18-032
BUICK	OPEL GT	18-033
BUICK	OPEL ISUZU	18-034
BUICK	OTHER AUTOMOBILE	18-398
BUICK	UNKNOWN AUTOMOBILE	18-399
BUICK	RENDEZVOUS	18-401
BUICK	RAINIER	18-402

Vehicle Make	<u>Vehicle Model</u>	SAS Code
BUICK	ENCORE	18-404
BUICK	ENCLAVE (>=2013)	18-421
BUICK	TERRAZA	18-441
BUICK	OTHER LIGHT TRUCK	18-498
BUICK	UNKNOWN LIGHT TRUCK	18-499
BUICK	UNKNOWN VEHICLE	18-999
CADILLAC	DEVILLE/FLEETWOOD	19-003
CADILLAC	LIMOUSINE	19-004
CADILLAC	ELDORADO	19-005
CADILLAC	COMMERCIAL SERIES	19-006
CADILLAC	ALLANTE	19-009
CADILLAC	SEVILLE	19-014
CADILLAC	CIMARRON	19-016
CADILLAC	CATERA	19-017
CADILLAC	CTS	19-018
CADILLAC	XLR	19-019
CADILLAC	SRX	19-020
CADILLAC	STS	19-021
CADILLAC	DTS	19-022
CADILLAC	XTS	19-023
CADILLAC	ATS	19-024
CADILLAC	ELR	19-025
CADILLAC	OTHER AUTOMOBILE	19-398
CADILLAC	UNKNOWN AUTOMOBILE	19-399
CADILLAC	ESCALADE	19-421
CADILLAC	ESCALADE ESV	19-431
CADILLAC	ESCALADE EXT	19-481
CADILLAC	OTHER LIGHT TRUCK	19-498
CADILLAC	UNKNOWN LIGHT TRUCK	19-499
CADILLAC	UNKNOWN VEHICLE	19-999
CHECKER	OTHER AUTOMOBILE	29-002
CHECKER	TAXI	29-002
CHECKER	SUPERBA	29-002
CHECKER	UNKNOWN AUTOMOBILE	29-002
CHECKER	AEROBUS	29-002
CHECKER	MARATHON	29-002
CHEVROLET	CHEVELLE/MALIBU (thru 83)	20-001
CHEVROLET	IMPALA/CAPRICE	20-002
CHEVROLET	CORVETTE	20-004
CHEVROLET	CORVAIR	20-006
CHEVROLET	EL CAMINO	20-007
CHEVROLET	NOVA (-79)	20-008
	•	

Vehicle Make	Vehicle Model	SAS Code
CHEVROLET	CAMARO	20-009
CHEVROLET	MONTE CARLO ('70-'88) (RWD ONLY)	20-010
CHEVROLET	VEGA	20-011
CHEVROLET	MONZA	20-012
CHEVROLET	CHEVETTE	20-013
CHEVROLET	CITATION	20-015
CHEVROLET	CAVALIER	20-016
CHEVROLET	CELEBRITY	20-017
CHEVROLET	BERETTA/CORSICA	20-019
CHEVROLET	LUMINA	20-020
CHEVROLET	SS	20-021
CHEVROLET	COBALT	20-022
CHEVROLET	HHR	20-023
CHEVROLET	TRAVERSE ('09-'12)	20-024
CHEVROLET	CRUZE	20-025
CHEVROLET	VOLT	20-026
CHEVROLET	CAPRICE PPV	20-027
CHEVROLET	SONIC	20-028
CHEVROLET	SPARK	20-029
CHEVROLET	SPECTRUM	20-031
CHEVROLET	NOVA/GEO PRIZM	20-032
CHEVROLET	SPRINT/GEO SPRINT	20-033
CHEVROLET	GEO METRO	20-034
CHEVROLET	GEO STORM	20-035
CHEVROLET	MONTE CARLO (1995+) (FWD ONLY)	20-036
CHEVROLET	MALIBU (1997+)	20-037
CHEVROLET	SSR	20-038
CHEVROLET	AVEO	20-039
CHEVROLET	OTHER AUTOMOBILE	20-398
CHEVROLET	UNKNOWN AUTOMOBILE	20-399
CHEVROLET	S-10 BLAZER, BLAZER	20-401
CHEVROLET	GEO TRACKER	20-402
CHEVROLET	TRAILBLAZER (2003+)	20-403
CHEVROLET	EQUINOX	20-404
CHEVROLET	CAPTIVA	20-405
CHEVROLET	FULLSIZE BLAZER (K, Tahoe)	20-421
CHEVROLET	SUBURBAN ('04 -)	20-422
CHEVROLET	TRAVERSE (2013+)	20-423
CHEVROLET	SUBURBAN ('50-'03)	20-431
CHEVROLET	ASTRO VAN	20-441
CHEVROLET	LUMINA APV/VENTURE	20-442
CHEVROLET	UPLANDER	20-444

<u>Vehicle Make</u>	Vehicle Model	SAS Code
CHEVROLET	G-SERIES VAN	20-461
CHEVROLET	P-SERIES VAN	20-466
CHEVROLET	VAN DERIVATIVE	20-470
CHEVROLET	S-10/T-10	20-471
CHEVROLET	LUV	20-472
CHEVROLET	COLORADO	20-473
CHEVROLET	C, K, R, V-SERIES PICKUP	20-481
CHEVROLET	AVALANCHE	20-482
CHEVROLET	OTHER LIGHT TRUCK	20-498
CHEVROLET	UNKNOWN LIGHT TRUCK	20-499
CHEVROLET	MEDIUM/HEAVY CBE	20-881
CHEVROLET	MEDIUM/HEAVY COE LOW ENTRY	20-882
CHEVROLET	MEDIUM/HEAVY COE HIGH ENTRY	20-883
CHEVROLET	MEDIUM/HEAVY; UNKNOWN ENGINE LOCATION	20-884
CHEVROLET	MEDIUM/HEAVY; UNKNOWN ENGINE LOCATION	20-890
CHEVROLET	OTHER MEDIUM/HEAVY TRUCK	20-898
CHEVROLET	UNK TYPE TRUCK (LIGHT/MED/HEAVY)	20-899
CHEVROLET	UNKNOWN MEDIUM/HEAVY TRUCK	20-899
CHEVROLET	BUS	20-981
CHEVROLET	OTHER BUS	20-988
CHEVROLET	UNKNOWN BUS TYPE	20-989
CHEVROLET	OTHER VEHICLE	20-998
CHEVROLET	UNKNOWN VEHICLE	20-999
CHRYSLER	CORDOBA	06-009
CHRYSLER	NEWPORT	06-010
CHRYSLER	NEW YORKER FIFTH AVENUE (THRU '89)	06-010
CHRYSLER	RAMPAGE 2.2 (CAR-BASED PICKUP)	06-013
CHRYSLER	NEW YORKER ('83-'90)	06-014
CHRYSLER	RWD ONLY-NEW YORKER/NEWPORT/5TH	06-014
	AVENUE/IMPERIAL	
CHRYSLER	NEW YORKER SALON ('90-'93)	06-014
CHRYSLER	NEW YORKER/E CLASS/IMPERIAL/5TH AVENUE	06-014
CHRYSLER	LASER	06-015
CHRYSLER	LEBARON	06-016
CHRYSLER	LEBARON GTS/GTC	06-017
CHRYSLER	INTREPID (CANADIAN)	06-018
CHRYSLER	NEON (EXPORT)	06-019
CHRYSLER	200	06-020
CHRYSLER	SRT VIPER (2013+)	06-021
CHRYSLER	TC (MASERATI SPORT)	06-031
CHRYSLER	CONQUEST	06-035
CHRYSLER	CONCORDE	06-041

Vehicle Make	Vehicle Model	SAS Code
CHRYSLER	LHS	06-042
CHRYSLER	SEBRING	06-043
CHRYSLER	CIRRUS	06-044
CHRYSLER	300/300M/300C/300S	06-051
CHRYSLER	PT CRUISER	06-052
CHRYSLER	PROWLER	06-053
CHRYSLER	PACIFICA	06-054
CHRYSLER	CROSSFIRE	06-055
CHRYSLER	OTHER AUTOMOBILE	06-398
CHRYSLER	UNKNOWN AUTOMOBILE	06-399
CHRYSLER	ASPEN	06-421
CHRYSLER	TOWN AND COUNTRY	06-441
CHRYSLER	VOYAGER	06-442
CHRYSLER	OTHER LIGHT TRUCK	06-498
CHRYSLER	UNKNOWN LIGHT TRUCK	06-499
CHRYSLER	UNKNOWN VEHICLE	06-999
CITROEN	OTHER AUTOMOBILE	69-033
CITROEN	UNKNOWN AUTOMOBILE	69-033
CONSULIER	UNKNOWN AUTOMOBILE	29-398
CONSULIER	OTHER AUTOMOBILE	29-398
DAEWOO	LANOS	64-031
DAEWOO	NUBIRA	64-032
DAEWOO	LEGANZA	64-033
DAEWOO	OTHER AUTOMOBILE	64-398
DAEWOO	UNKNOWN AUTOMOBILE	64-399
DAEWOO	UNKNOWN VEHICLE	64-999
DAIHATSU	CHARADE	60-031
DAIHATSU	OTHER AUTOMOBILE	60-398
DAIHATSU	UNKNOWN AUTOMOBILE	60-399
DAIHATSU	ROCKY	60-401
DAIHATSU	OTHER LIGHT TRUCK	60-498
DAIHATSU	UNKNOWN LIGHT TRUCK	60-499
DAIHATSU	UNKNOWN VEHICLE	60-999
DELOREAN	OTHER AUTOMOBILE	69-034
DELOREAN	UNKNOWN AUTOMOBILE	69-034
DESOTO	UNKNOWN AUTOMOBILE	29-398
DESOTO	OTHER AUTOMOBILE	29-398
DESTA	UNKNOWN AUTOMOBILE	69-048
DESTA	OTHER AUTOMOBILE	69-048
DIAMOND REO/REO	MEDIUM/HEAVY TRUCK-BASED MOTORHOME	81-850
DIAMOND REO/REO	MEDIUM/HEAVY - CBE	81-881
DIAMOND REO/REO	MEDIUM/HEAVY - COE/LOW ENTRY	81-882

Vehicle Make	Vehicle Model	SAS Code
DIAMOND REO/REO	MEDIUM/HEAVY - COE/HIGH ENTRY	81-883
DIAMOND REO/REO	MEDIUM/HEAVY - UNKNOWN ENGINE LOCATION	81-884
DIAMOND REO/REO	MEDIUM/HEAVY - COE/ENTRY POSITION UNKNOWN	81-890
DIAMOND REO/REO	MEDIUM/HEAVY - OTHER	81-898
DIAMOND REO/REO	UNKNOWN MEDIUM/HEAVY TRUCK	81-899
DIVCO	MEDIUM/HEAVY - OTHER	98-803
DIVCO	MEDIUM/HEAVY - COE/ENTRY POSITION UNKNOWN	98-803
DIVCO	MEDIUM/HEAVY - UNKNOWN ENGINE LOCATION	98-803
DIVCO	MEDIUM/HEAVY - COE/HIGH ENTRY	98-803
DIVCO	MEDIUM/HEAVY - COE/LOW ENTRY	98-803
DIVCO	MEDIUM/HEAVY - CBE	98-803
DIVCO	MEDIUM/HEAVY-BASED MOTORHOME	98-803
DODGE	DART ('60-'76)	07-001
DODGE	CORONET/CHARGER/MAGNUM	07-002
DODGE	POLARA/MONACO/ROYAL MONACO	07-003
DODGE	VIPER	07-004
DODGE	CHALLENGER ('70-'74)	07-005
DODGE	ASPEN	07-006
DODGE	DIPLOMAT	07-007
DODGE	OMNI/CHARGER	07-008
DODGE	MIRADA	07-009
DODGE	ST REGIS	07-010
DODGE	ARIES (K)	07-011
DODGE	400	07-012
DODGE	RAMPAGE 2.2, GT, SPORT	07-013
DODGE	600	07-014
DODGE	DAYTONA	07-015
DODGE	LANCER	07-016
DODGE	SHADOW	07-017
DODGE	DYNASTY	07-018
DODGE	SPIRIT	07-019
DODGE	NEON	07-020
DODGE	MAGNUM	07-021
DODGE	CHARGER ('06+)	07-024
DODGE	CALIBER	07-025
DODGE	AVENGER ('08+)	07-026
DODGE	JOURNEY	07-027
DODGE	CHALLENGER ('08+)	07-028
DODGE	DART ('13+)	07-029
DODGE	CHALLENGER ('78-'83)	07-033
DODGE	COLT (EXCLUDES VISTA)	07-034
DODGE	CONQUEST	07-035

Vehicle Make	Vehicle Model	SAS Code
DODGE	STEALTH	07-039
DODGE	MONACO	07-040
DODGE	INTREPID	07-041
DODGE	AVENGER ('95-'00)	07-042
DODGE	STRATUS	07-043
DODGE	OTHER AUTOMOBILE	07-398
DODGE	UNKNOWN AUTOMOBILE	07-399
DODGE	RAIDER	07-401
DODGE	NITRO	07-403
DODGE	RAMCHARGER	07-421
DODGE	DURANGO	07-422
DODGE	VISTA	07-441
DODGE	CARAVAN	07-442
DODGE	RAM C/V	07-443
DODGE	B-SERIES VANS	07-461
DODGE	SPRINTER	07-462
DODGE	RAM PROMASTER	07-463
DODGE	VAN DERIVATIVE	07-470
DODGE	D50, COLT P/U, RAM 50/RAM 100	07-471
DODGE	DAKOTA	07-472
DODGE	D, W-SERIES PICKUP, W100-W350	07-481
DODGE	RAM	07-482
DODGE	OTHER LIGHT TRUCK	07-498
DODGE	UNKNOWN LIGHT TRUCK	07-499
DODGE	MEDIUM/HEAVY: CBE	07-881
DODGE	MEDIUM/HEAVY: COE LOW ENTRY	07-882
DODGE	MEDIUM/HEAVY: COE HIGH ENTRY	07-883
DODGE	MEDIUM/HEAVY: UNKNOWN ENGINE LOCATION	07-884
DODGE	MEDIUM/HEAVY: COE ENTRY POSITION UNKNOWN	07-890
DODGE	OTHER MEDIUM/HEAVY TRUCK	07-898
DODGE	UNK TYPE TRUCK (LIGHT/MED/HEAVY)	07-899
DODGE	UNKNOWN MEDIUM/HEAVY TRUCK	07-899
DODGE	MEDIUM BUS	07-981
DODGE	OTHER BUS	07-988
DODGE	UNKNOWN BUS TYPE	07-989
DODGE	OTHER VEHICLE	07-998
DODGE	UNKNOWN VEHICLE	07-999
DUCATI	MOTORCYCLE (000-050CC)	71-701
DUCATI	MOTORCYCLE (051-124CC)	71-702
DUCATI	MOTORCYCLE (125-349CC)	71-703
DUCATI	MOTORCYCLE (350-449CC)	71-704
DUCATI	MOTORCYCLE (450-749CC)	71-705

Vehicle Make	Vehicle Model	SAS Code
DUCATI	MOTORCYCLE (750CC-OVER)	71-706
DUCATI	MOTORCYCLE (UNKNOWN CC)	71-709
DUCATI	OTHER MOTORED CYCLE	71-798
DUCATI	UNKNOWN MOTORED CYCLE	71-799
EAGLE	SUMMIT	10-034
EAGLE	TALON	10-037
EAGLE	PREMIER	10-040
EAGLE	VISION	10-041
EAGLE	MEDALLION	10-044
EAGLE	OTHER AUTOMOBILE	10-398
EAGLE	UNKNOWN AUTOMOBILE	10-399
EAGLE	SUMMIT WAGON	10-441
EAGLE	OTHER LIGHT TRUCK	10-498
EAGLE	UNKNOWN LIGHT TRUCK	10-499
EAGLE	UNKNOWN VEHICLE	10-999
EXCALIBER	OTHER AUTOMOBILE	29-398
EXCALIBER	UNKNOWN AUTOMOBILE	29-398
FERRARI	SUPERAMERICA	69-035
FERRARI	UNKNOWN AUTOMOBILE	69-035
FERRARI	OTHER AUTOMOBILE	69-035
FIAT	124 (COUPE/SEDAN)	36-031
FIAT	124 SPIDER/RACER	36-032
FIAT	BRAVA - 131	36-033
FIAT	850 (COUPE/SPYDER)	36-034
FIAT	128	36-035
FIAT	X-1/9	36-036
FIAT	STRADA	36-037
FIAT	500/500c	36-038
FIAT	OTHER AUTOMOBILE	36-398
FIAT	UNKNOWN AUTOMOBILE	36-399
FIAT	500L	36-401
FIAT	500X	36-402
FIAT	MEDIUM/HEAVY COE LOW ENTRY	36-882
FIAT	MEDIUM/HEAVY COE HIGH ENTRY	36-883
FIAT	MEDIUM/HEAVY COE ENTRY POSITION UNKNOWN	36-890
FIAT	OTHER MEDIUM/HEAVY TRUCK	36-898
FIAT	UNKNOWN MEDIUM/HEAVY TRUCK	36-899
FIAT	UNKNOWN VEHICLE	36-999
FORD	FALCON	12-001
FORD	FAIRLANE	12-002
FORD	MUSTANG/MUSTANG II	12-003
FORD	THUNDERBIRD (ALL SIZES)	12-004

<u>Vehicle Make</u>	<u>Vehicle Model</u>	SAS Code
FORD	LTD II	12-005
FORD	LTD/CUSTOM/GALAXY (ALL SIZES)	12-006
FORD	RANCHERO	12-007
FORD	MAVERICK	12-008
FORD	PINTO	12-009
FORD	TORINO/GRAN TORINO/ELITE	12-010
FORD	GRANADA	12-011
FORD	FAIRMONT	12-012
FORD	ESCORT/EXP	12-013
FORD	TEMPO	12-015
FORD	CROWN VICTORIA	12-016
FORD	TAURUS/TAURUS X	12-017
FORD	PROBE	12-018
FORD	FIVE HUNDRED	12-021
FORD	FREESTYLE	12-022
FORD	FUSION	12-023
FORD	EDGE	12-024
FORD	FLEX	12-025
FORD	C-MAX	12-027
FORD	ENGLISH FORD	12-031
FORD	FIESTA	12-032
FORD	FESTIVA	12-033
FORD	LASER	12-034
FORD	CONTOUR	12-035
FORD	ASPIRE	12-036
FORD	FOCUS	12-037
FORD	GT	12-038
FORD	OTHER AUTOMOBILE	12-398
FORD	UNKNOWN AUTOMOBILE	12-399
FORD	EXPLORER/BRONCO ii/BRONCO (-77)	12-401
FORD	ESCAPE	12-402
FORD	BRONCO-FULLSIZE ('78 -)	12-421
FORD	EXPEDITION	12-422
FORD	EXCURSION	12-431
FORD	AEROSTAR	12-441
FORD	WINDSTAR	12-442
FORD	FREESTAR	12-443
FORD	TRANSIT CONNECT	12-444
FORD	E-SERIES VANS	12-461
FORD	TRANSIT	12-462
FORD	VAN DERIVATIVE	12-470
FORD	RANGER	12-471
. 0.1.5	10 11 0 2 11	16 7/1

<u>Vehicle Make</u>	Vehicle Model	SAS Code
FORD	COURIER	12-472
FORD	SPORT TRAC	12-473
FORD	F-SERIES PICKUP	12-481
FORD	OTHER LIGHT TRUCK	12-498
FORD	UNKNOWN LIGHT TRUCK	12-499
FORD	F450/550 PICKUP >4536 GVWR	12-880
FORD	MEDIUM/HEAVY CBE	12-881
FORD	MEDIUM/HEAVY COE LOW ENTRY	12-882
FORD	MEDIUM/HEAVY COE HIGH ENTRY	12-883
FORD	MEDIUM/HEAVY: UNKNOWN ENGINE LOCATION	12-884
FORD	MEDIUM/HEAVY: COE ENTRY POSITION UNKNOWN	12-890
FORD	OTHER MEDIUM/HEAVY TRUCK	12-898
FORD	UNK TYPE TRUCK (LIGHT/MED/HEAVY)	12-899
FORD	UNKNOWN MEDIUM/HEAVY TRUCK	12-899
FORD	MEDIUM BUS	12-981
FORD	OTHER BUS	12-988
FORD	UNKNOWN BUS TYPE	12-989
FORD	OTHER VEHICLE	12-998
FORD	UNKNOWN VEHICLE	12-999
FREIGHTLINER/WHITE	SPRINTER/ADVANTAGE	82-461
FREIGHTLINER/WHITE	M-LINE WALK IN VAN	82-470
FREIGHTLINER/WHITE	OTHER LIGHT TRUCK	82-498
FREIGHTLINER/WHITE	UNKNOWN LIGHT TRUCK	82-499
FREIGHTLINER/WHITE	MEDIUM/HEAVY TRUCK-BASED MOTORHOME	82-850
FREIGHTLINER/WHITE	MEDIUM/HEAVY - CBE	82-881
FREIGHTLINER/WHITE	MEDIUM/HEAVY - COE/LOW ENTRY	82-882
FREIGHTLINER/WHITE	MEDIUM/HEAVY - COE/HIGH ENTRY	82-883
FREIGHTLINER/WHITE	MEDIUM/HEAVY - UNKNOWN ENGINE LOCATION	82-884
FREIGHTLINER/WHITE	MEDIUM/HEAVY - COE/ENTRY POSITION UNKNOWN	82-890
FREIGHTLINER/WHITE	MEDIUM/HEAVY - OTHER	82-898
FREIGHTLINER/WHITE	UNKNOWN LIGHT/MEDIUM/HEAVY TRUCK	82-899
FREIGHTLINER/WHITE	BUS CONVENTIONAL ENGINE OUT FRONT	82-981
FREIGHTLINER/WHITE	BUS FRONT ENGINE/FLAT FRONT	82-982
FREIGHTLINER/WHITE	BUS REAR ENGINE/FLAT FRONT	82-983
FREIGHTLINER/WHITE	OTHER BUS	82-988
FREIGHTLINER/WHITE	UNKNOWN BUS TYPE	82-989
FREIGHTLINER/WHITE	UNKNOWN VEHICLE	82-999
FWD	MEIDUM/HEAVY TRUCK-BASED MOTORHOME	83-850
FWD	MEDIUM/HEAVY - CBE	83-881
FWD	MEDIUM/HEAVY - COE/LOW ENTRY	83-882
FWD	MEDIUM/HEAVY - COE/HIGH ENTRY	83-883
FWD	MEDIUM/HEAVY - UNKNOWN ENGINE LOCATION	83-884

<u>Vehicle Make</u> FWD	<u>Vehicle Model</u> MEDIUM/HEAVY - COE/ENTRY POSITION UNKNOWN	SAS Code 83-890
FWD	MEDIUM/HEAVY - OTHER	83-898
FWD	UNKNOWN MEDIUM/HEAVY TRUCK	83-899
GMC	CABALLERO/SPRINT	23-007
GMC	ACADIA	23-008
GMC	OTHER AUTOMOBILE	23-398
GMC	UNKNOWN AUTOMOBILE	23-399
GMC	JIMMY/TYPHOON/ENVOY	23-401
GMC	TERRAIN	23-402
GMC	FULLSIZE JIMMY/YUKON	23-421
GMC	SUBURBAN	23-431
GMC	SAFARI (MINIVAN)	23-441
GMC	G-SERIES VAN	23-461
GMC	P-SERIES VAN	23-466
GMC	VAN DERIVATIVE	23-470
GMC	S15/T15/SONOMA	23-471
GMC	CANYON	23-472
GMC	C, K, R, V-SERIES PICKUP	23-481
GMC	OTHER LIGHT TRUCK	23-498
GMC	UNKNOWN LIGHT TRUCK	23-499
GMC	MEDIUM/HEAVY CBE	23-881
GMC	MEDIUM/HDAVY COE LOW ENTRY	23-882
GMC	MEDIUM/HEAVY COE HIGH ENTRY	23-883
GMC	MEDIUM/HEAVY: UNKNOWN ENGINE LOCATION	23-884
GMC	MEDIUM/HEAVY: COE ENTRY POSITION UNKNOWN	23-890
GMC	OTHER MEDIUM/HEAVY TRUCK	23-898
GMC	UNKNOWN MEDIUM/HEAVY TRUCK	23-899
GMC	UNK TYPE TRUCK (LIGHT/MED/HEAVY)	23-899
GMC	MEDIUM BUS	23-981
GMC	OTHER BUS	23-988
GMC	UNKNOWN BUS TYPE	23-989
GMC	UNKNOWN VEHICLE	23-999
GRUMMAN	LLV	25-441
GRUMMAN	STEP-IN VAN	25-442
GRUMMAN	OTHER LIGHT TRUCK	25-498
GRUMMAN	UNKNOWN LIGHT TRUCK	25-499
GRUMMAN	MEDIUM/HEAVY TRUCK - CBE	25-881
GRUMMAN	MEDIUM/HEAVY TRUCK - COE LOW ENTRY	25-882
GRUMMAN	MEDIUM/HEAVY TRUCK - COE HIGH ENTRY	25-883
GRUMMAN	MEDIUM/HEAVY TRUCK UNKNOWN ENGINE LOCATION	25-884

<u>Vehicle Make</u> GRUMMAN	Vehicle Model MEDIUM/HEAVY TRUCK ENTRY POSITION UNKNOWN	<u>SAS</u> <u>Code</u> 25-890
GRUMMAN	OTHER MEDIUM/HEAVY TRUCK	25-898
GRUMMAN	UNKNOWN MEDIUM/HEAVY TRUCK	25-899
GRUMMAN	UNK TYPE TRUCK (LIGHT/MED/HEAVY)	25-899
GRUMMAN	BUS-FLAT FRONT, REAR ENGINE	25-983
GRUMMAN	OTHER BUS	25-988
GRUMMAN	UNKNOWN BUS TYPE	25-989
GRUMMAN	UNKNOWN VEHICLE	25-999
HARLEY-DAVIDSON	MOTORCYCLE (000-050CC)	72-701
HARLEY-DAVIDSON	MOTORCYCLE (051-124CC)	72-702
HARLEY-DAVIDSON	MOTORCYCLE (125-349CC)	72-703
HARLEY-DAVIDSON	MOTORCYCLE (350-449CC)	72-704
HARLEY-DAVIDSON	MOTORCYCLE (450-749CC)	72-705
HARLEY-DAVIDSON	MOTORCYCLE (750CC-OVER)	72-706
HARLEY-DAVIDSON	MOTORCYCLE (UNKNOWN CC)	72-709
HARLEY-DAVIDSON	OTHER MOTORED CYCLE	72-798
HARLEY-DAVIDSON	UNKNOWN MOTORED CYCLE	72-799
HILLMAN	UNKNOWN AUTOMOBILE	69-036
HILLMAN	OTHER AUTOMOBILE	69-036
HINO	MEDIUM/HEAVY - OTHER	98-806
HINO	MEDIUM/HEAVY - COE/LOW ENTRY	98-806
HINO	MEDIUM/HEAVY-BASED MOTORHOME	98-806
HINO	MEDIUM/HEAVY - CBE	98-806
HINO	MEDIUM/HEAVY - COE/HIGH ENTRY	98-806
HINO	MEDIUM/HEAVY - UNKNOWN ENGINE LOCATION	98-806
HINO	MEDIUM/HEAVY - COE/ENTRY POSITION UNKNOWN	98-806
HONDA	CIVIC/CRX/DEL SOL	37-031
HONDA	ACCORD	37-032
HONDA	PRELUDE	37-033
HONDA	600	37-034
HONDA	S2000	37-035
HONDA	INSIGHT	37-037
HONDA	FCX	37-038
HONDA	FIT	37-039
HONDA	CR-Z	37-041
HONDA	OTHER AUTOMOBILE	37-398
HONDA	UNKNOWN AUTOMOBILE	37-399
HONDA	PASSPORT	37-401
HONDA	CR-V	37-402
HONDA	ELEMENT	37-403
HONDA	PILOT	37-421
HONDA	ODYSSEY	37-441

<u>Vehicle Make</u> HONDA	<u>Vehicle Model</u> RIDGELINE	<u>SAS Code</u> 37-471
HONDA	OTHER LIGHT TRUCK	37-471 37-498
HONDA	UNKNOWN LIGHT TRUCK	37-498 37-499
HONDA	MOTORCYCLE (000-050CC)	37-499 37-701
HONDA	MOTORCYCLE (000-050CC)	37-701
HONDA	MOTORCYCLE (125-349CC)	37-702
HONDA	MOTORCYCLE (350-449CC)	37-704
HONDA	MOTORCYCLE (450-749CC)	37-705
HONDA	MOTORCYCLE (750CC-OVER)	37-706
HONDA	MOTORCYCLE (UNKNOWN CC)	37-709
HONDA	ATC/ATV (000-050CC)	37-731
HONDA	ATC/ATV (051-124CC)	37-732
HONDA	ATC/ATV (125-349CC)	37-733
HONDA	ATC/ATV (350CC-OVER)	37-734
HONDA	ATC/ATV (UNKNOWN CC)	37-739
HONDA	OTHER MOTORED CYCLE	37-798
HONDA	UNKNOWN VEHICLE	37-999
HUDSON	UNKNOWN AUTOMOBILE	29-398
HUDSON	OTHER AUTOMOBILE	29-398
HYOSUNG	OTHER MOTORED CYCLE	79-798
HYOSUNG	UNKNOWN MOTORED CYCLE	79-799
HYUNDAI	PONY	55-031
HYUNDAI	EXCEL	55-032
HYUNDAI	SONATA	55-033
HYUNDAI	SCOUPE	55-034
HYUNDAI	ELANTRA	55-035
HYUNDAI	ACCENT	55-036
HYUNDAI	TIBURON	55-037
HYUNDAI	XG300/350	55-038
HYUNDAI	AZERA	55-039
HYUNDAI	EQUUS	55-040
HYUNDAI	GENESIS	55-041
HYUNDAI	VELOSTER	55-042
HYUNDAI	OTHER AUTOMOBILE	55-398
HYUNDAI	UNKNOWN AUTOMOBILE	55-399
HYUNDAI	SANTA FE	55-401
HYUNDAI	TUCSON	55-402
HYUNDAI	VERACRUZ	55-403
HYUNDAI	ENTOURAGE	55-441
HYUNDAI	OTHER LIGHT TRUCK	55-498
HYUNDAI	UNKNOWN LIGHT TRUCK	55-499
HYUNDAI	UNKNOWN VEHICLE	55-999

Vehicle Make	Vehicle Model	SAS Code
IMPERIAL	IMPERIAL	08-010
IMPERIAL	OTHER AUTOMOBILE	08-398
IMPERIAL	UNKNOWN AUTOMOBILE	08-399
IMPERIAL	UNKNOWN VEHICLE	08-999
INDIAN	MOTORCYCLE (000-050CC)	79-701
INDIAN	MOTORCYCLE (051-124CC)	79-702
INDIAN	MOTORCYCLE (125-349CC)	79-703
INDIAN	MOTORCYCLE (350-449CC)	79-704
INDIAN	MOTORCYCLE (450-749CC)	79-705
INDIAN	MOTORCYCLE (750CC OR GREATER)	79-706
INDIAN	MOTORCYCLE (UNKNOWN CC)	79-709
INDIAN	OTHER MOTORED CYCLE	79-798
INDIAN	UNKNOWN MOTORED CYCLE	79-799
INFINITI	M30	58-031
INFINITI	Q45	58-032
INFINITI	G20	58-033
INFINITI	J30	58-034
INFINITI	130	58-035
INFINITI	135	58-036
INFINITI	G25/G35/G37	58-037
INFINITI	M35/M37/M45/M56	58-038
INFINITI	FX35/FX37/FX45/FX50	58-039
INFINITI	EX35	58-040
INFINITI	Q50	58-041
INFINITI	Q60	58-042
INFINITI	Q70	58-043
INFINITI	QX50	58-044
INFINITI	OTHER AUTOMOBILE	58-398
INFINITI	UNKNOWN AUTOMOBILE	58-399
INFINITI	QX4	58-401
INFINITI	JX35	58-402
INFINITI	QX60	58-403
INFINITI	QX70	58-404
INFINITI	QX56	58-421
INFINITI	QX80	58-422
INFINITI	OTHER LIGHT TRUCK	58-498
INFINITI	UNKNOWN LIGHT TRUCK	58-499
INFINITI	UNKNOWN VEHICLE	58-999
INTERNATIONAL	SCOUT	84-421
HARVESTER/NAVISTAR		
INTERNATIONAL	TRAVELALL	84-431
HARVESTER/NAVISTAR		

Vehicle Make Vehicle Model INTERNATIONAL MULTISTOP VAN	<u>SAS Code</u> 84-466
HARVESTER/NAVISTAR	84-400
INTERNATIONAL PICKUP	84-481
HARVESTER/NAVISTAR	04 401
INTERNATIONAL OTHER LIGHT TRUCK	84-498
HARVESTER/NAVISTAR	
INTERNATIONAL UNKNOWN LIGHT TRUCK	84-499
HARVESTER/NAVISTAR	
INTERNATIONAL TRUCK-BASED MOTORHOME	84-850
HARVESTER/NAVISTAR	
INTERNATIONAL MEDIUM HEAVY - CBE	84-881
HARVESTER/NAVISTAR	
INTERNATIONAL MEDIUM/HEAVY - COE LOW ENTRY	84-882
HARVESTER/NAVISTAR	04.003
INTERNATIONAL MEDIUM/HEAVY - COE HIGH ENTRY	84-883
HARVESTER/NAVISTAR INTERNATIONAL MEDIUM/HEAVY: UNKNOWN ENGINE LOCATION	84-884
HARVESTER/NAVISTAR	04-004
INTERNATIONAL MEDIUM/HEAVY: COE ENTRY POSITION UNKNOWN	84-890
HARVESTER/NAVISTAR	0+ 050
INTERNATIONAL OTHER MEDIUM/HEAVY TRUCK	84-898
HARVESTER/NAVISTAR	04-030
INTERNATIONAL UNKNOWN MEDIUM/HEAVY TRUCK	84-899
HARVESTER/NAVISTAR	01033
INTERNATIONAL UNK TYPE TRUCK (LIGHT/MED/HEAVY)	84-899
HARVESTER/NAVISTAR	
INTERNATIONAL BUS-BASED MOTOHOME	84-950
HARVESTER/NAVISTAR	
INTERNATIONAL CONVENTIONAL BUS	84-981
HARVESTER/NAVISTAR	
INTERNATIONAL BUS-FLAT FRONT, FRONT ENGINE	84-982
HARVESTER/NAVISTAR	
INTERNATIONAL BUS-FLAT FRONT, REAR ENGINE	84-983
HARVESTER/NAVISTAR	04.000
INTERNATIONAL OTHER BUS	84-988
HARVESTER/NAVISTAR INTERNATIONAL UNKNOWN BUS TYPE	84-989
HARVESTER/NAVISTAR	04-303
INTERNATIONAL OTHER VEHICLE	84-998
HARVESTER/NAVISTAR	01330
INTERNATIONAL UNKNOWN VEHICLE	84-999
HARVESTER/NAVISTAR	
ISUZU I-MARK	38-031
ISUZU IMPULSE	38-032
ISUZU STYLUS	38-033
ISUZU OTHER AUTOMOBILE	38-398

Vehicle Make	Vehicle Model	SAS Code
ISUZU	UNKNOWN AUTOMOBILE	38-399
ISUZU	TROOPER/TROOPER II	38-401
ISUZU	RODEO	38-402
ISUZU	AMIGO	38-403
ISUZU	VEHICROSS	38-404
ISUZU	AXIOM	38-405
ISUZU	ASCENDER	38-421
ISUZU	OASIS	38-441
ISUZU	P'UP (PICKUP) HOMBRE	38-471
ISUZU	i-280/i-290	38-473
ISUZU	i-350/i-370	38-474
ISUZU	OTHER LIGHT TRUCK	38-498
ISUZU	UNKNOWN LIGHT TRUCK	38-499
ISUZU	MEDIUM/HEAVY - CBE	38-881
ISUZU	MEDIUM/HEAVY COE LOW ENTRY	38-882
ISUZU	MEDIUM/HEAVY COE HIGH ENTRY	38-883
ISUZU	MEDIUM/HEAVY UNKNOWN ENGINE LOCATION	38-884
ISUZU	MEDIUM/HEAVY COE ENTRY POSITION UNKNOWN	38-890
ISUZU	OTHER MEDIUM/HEAVY TRUCK	38-898
ISUZU	UNKNOWN MEDIUM/HEAVY TRUCK	38-899
ISUZU	UNK TYPE TRUCK (LIGHT/MED/HEAVY)	38-899
ISUZU	CONVENTIONAL FRONT ENGINE	38-981
ISUZU	FRONT ENGINE/FLAT FRONT	38-982
ISUZU	REAR ENGINE/FLAT FRONT	38-983
ISUZU	OTHER BUS	38-988
ISUZU	UNKNOWN BUS TYPE	38-989
ISUZU	UNKNOWN VEHICLE	38-999
IVECO/MAGIRUS	MEDIUM/HEAVY-BASED MOTORHOME	88-850
IVECO/MAGIRUS	MEDIUM/HEAVY - CBE	88-881
IVECO/MAGIRUS	MEDIUM/HEAVY - COE/LOW ENTRY	88-882
IVECO/MAGIRUS	MEDIUM/HEAVY - COE/HIGH ENTRY	88-883
IVECO/MAGIRUS	MEDIUM/HEAVY - UNKOWN ENGINE LOCATION	88-884
IVECO/MAGIRUS	MEDIUM/HEAVY - COE/ENTRY POSITION UNKNOWN	88-890
IVECO/MAGIRUS	MEDIUM/HEAVY - OTHER	88-898
IVECO/MAGIRUS	UNKNOWN MEDIUM/HEAVY TRUCK	88-899
JAGUAR	XJ-S, XK8 COUPE	39-031
JAGUAR	XJ6/12 SEDAN/COUPE/XJ8/	39-032
JAGUAR	VANDEN PLAS	39-032
JAGUAR	XKE	39-033
JAGUAR	S-TYPE	39-034
JAGUAR	X100	39-034
JAGUAR	X-TYPE	39-035
5, 13 O7 111	7. THE	33 033

Vehicle Make	Vehicle Model	SAS Code
JAGUAR	XKR/XK	39-036
JAGUAR	XF/XF-R	39-037
JAGUAR	F-TYPE	39-038
JAGUAR	OTHER AUTOMOBILE	39-398
JAGUAR	UNKNOWN AUTOMOBILE	39-399
JAGUAR	UNKNOWN VEHICLE	39-999
JEEP/KAISER JEEP	COMPASS	02-001
JEEP/KAISER JEEP	OTHER AUTOMOBILE	02-398
JEEP/KAISER JEEP	UNKNOWN AUTOMOBILE	02-399
JEEP/KAISER JEEP	CJ-2/CJ-3/CJ-4	02-401
JEEP/KAISER JEEP	CJ-5/CJ-6/CH-7/CH-8	02-402
JEEP/KAISER JEEP	YJ-SERIES/WRANGLER	02-403
JEEP/KAISER JEEP	CHEROKEE ('84+)	02-404
JEEP/KAISER JEEP	LIBERTY	02-405
JEEP/KAISER JEEP	COMMANDER	02-406
JEEP/KAISER JEEP	PATRIOT	02-407
JEEP/KAISER JEEP	CHEROKEE ('69-'83)	02-421
JEEP/KAISER JEEP	GRAND CHEROKEE	02-422
JEEP/KAISER JEEP	GRAND WAGONEER	02-431
JEEP/KAISER JEEP	PICKUP	02-481
JEEP/KAISER JEEP	COMANCHE	02-482
JEEP/KAISER JEEP	OTHER LIGHT TRUCK	02-498
JEEP/KAISER JEEP	UNKNOWN LIGHT TRUCK	02-499
JEEP/KAISER JEEP	UNKNOWN VEHICLE	02-999
JENSEN	UNKNOWN AUTOMOBILE	69-037
JENSEN	HEALY	69-037
JENSEN	OTHER AUTOMOBILE	69-037
KAWASAKI	MOTORCYCLE (000-050CC)	73-701
KAWASAKI	MOTORCYCLE (051-124CC)	73-702
KAWASAKI	MOTORCYCLE (125-349CC)	73-703
KAWASAKI	MOTORCYCLE (350-449CC)	73-704
KAWASAKI	MOTORCYCLE (450-749CC)	73-705
KAWASAKI	MOTORCYCLE (750CC-OVER)	73-706
KAWASAKI	MOTORCYCLE (UNKNOWN CC)	73-709
KAWASAKI	ATC/ATV (000-050CC)	73-731
KAWASAKI	ATC/ATV (051-124CC)	73-732
KAWASAKI	ATC/ATV (125-349CC)	73-733
KAWASAKI	ATC/ATV (350CC-OVER)	73-734
KAWASAKI	ATC/ATV (UNKNOWN CC)	73-739
KAWASAKI	OTHER MOTORED CYCLE	73-798
KAWASAKI	UNKNOWN MOTORED CYCLE	73-799
KENWORTH	MEDIUM/HEAVY TRUCK-BASED MOTORHOME	85-850

<u>Vehicle Make</u> KENWORTH	<u>Vehicle Model</u> MEDIUM/HEAVY - CBE	SAS <u>Code</u> 85-881
KENWORTH	MEDIUM/HEAVY - COE/LOW ENTRY	85-882
KENWORTH	MEDIUM/HEAVY - COE/HIGH ENTRY	85-883
KENWORTH	MEDIUM/HEAVY - UNKNOWN ENGINE LOCATION	85-884
KENWORTH	MEDIUM/HEAVY - COE/ENTRY POSITION UNKNOWN	85-890
KENWORTH	MEDIUM/HEAVY - OTHER	85-898
KENWORTH	UNKNOWN MEDIUM/HEAVY TRUCK	85-899
KIA	SEPHIA	63-031
KIA	SPECTRA	63-032
KIA	RIO/RIO 5	63-033
KIA	OPTIMA	63-034
KIA	AMANTI	63-035
KIA	RONDO	63-036
KIA	SOUL	63-037
KIA	FORTE	63-038
KIA	CADENZA	63-039
KIA	OTHER AUTOMOBILE	63-398
KIA	UNKNOWN AUTOMOBILE	63-399
KIA	SPORTAGE	63-401
KIA	SORENTO	63-402
KIA	BORREGO	63-421
KIA	SEDONA	63-441
KIA	OTHER LIGHT TRUCK	63-498
KIA	UNKNOWN LIGHT TRUCK	63-499
KIA	UNKNOWN VEHICLE	63-999
KTM	OTHER MOTORED CYCLE	79-798
KTM	UNKNOWN MOTORED CYCLE	79-799
LADA	OTHER AUTOMOBILE	69-053
LADA	UNKNOWN AUTOMOBILE	69-053
LAMBORGHINI	COUNTACH 5000S	69-038
LAMBORGHINI	OTHER AUTOMOBILE	69-038
LAMBORGHINI	JALPA	69-038
LAMBORGHINI	UNKNOWN AUTOMOBILE	69-038
LANCIA	BETA SEDAN-HPE	40-031
LANCIA	BETA COUPE - ZAGATO	40-032
LANCIA	SCORPION	40-033
LANCIA	OTHER AUTOMOBILE	40-398
LANCIA	UNKNOWN AUTOMOBILE	40-399
LANCIA	UNKNOWN VEHICLE	40-999
LAND ROVER	DISCOVERY (LR)	62-401
LAND ROVER	RANGE ROVER EVOQUE	62-404
LAND ROVER	DISCOVERY SPORT	62-405

Vehicle Make	Vehicle Model	SAS Code
LAND ROVER	RANGE ROVER	62-421
LAND ROVER	4.0 SE (RR)	62-422
LAND ROVER	FREELANDER	62-422
LAND ROVER	DEFENDER 90 (LR)	62-422
LAND ROVER	LR3	62-423
LAND ROVER	LR2	62-424
LAND ROVER	OTHER LIGHT TRUCK	62-498
LAND ROVER	UNKNOWN LIGHT TRUCK	62-499
LAND ROVER	UNKNOWN VEHICLE	62-999
LEXUS	ES-250/300/330/350	59-031
LEXUS	LS	59-032
LEXUS	SC-300/SC-400	59-033
LEXUS	GS-300/350/400/430/450h	59-034
LEXUS	IS-250/300/350/500	59-035
LEXUS	SC 430	59-036
LEXUS	HS 250H	59-037
LEXUS	CT 200H	59-038
LEXUS	LFA	59-039
LEXUS	OTHER AUTOMOBILE	59-398
LEXUS	UNKNOWN AUTOMOBILE	59-399
LEXUS	RX300/350	59-401
LEXUS	GX470	59-402
LEXUS	RX330/350/400h	59-403
LEXUS	GX460	59-404
LEXUS	NX	59-405
LEXUS	LX 450/470/570	59-421
LEXUS	OTHER LIGHT TRUCK	59-498
LEXUS	UNKNOWN LIGHT TRUCK	59-499
LEXUS	UNKNOWN VEHICLE	59-999
LINCOLN	CONTINENTAL (THRU '81)/TOWN CAR	13-001
LINCOLN	MARK	13-002
LINCOLN	CONTINENTAL (82-ON)	13-005
LINCOLN	VERSAILLES	13-011
LINCOLN	LS	13-012
LINCOLN	ZEPHYR/MKZ	13-013
LINCOLN	MKX	13-014
LINCOLN	MKS	13-015
LINCOLN	MKT	13-016
LINCOLN	OTHER AUTOMOBILE	13-398
LINCOLN	UNKNOWN AUTOMOBILE	13-399
LINCOLN	AVIATOR	13-401
LINCOLN	MKC	13-402

Vehicle Make	Vehicle Model	SAS Code
LINCOLN	NAVIGATOR	13-421
LINCOLN	BLACKWOOD	13-481
LINCOLN	MARK LT	13-482
LINCOLN	OTHER LIGHT TRUCK	13-498
LINCOLN	UNKNOWN LIGHT TRUCK	13-499
LINCOLN	UNKNOWN VEHICLE	13-999
LOTUS	ESPRIT	69-039
LOTUS	UNKNOWN AUTOMOBILE	69-039
LOTUS	EUROPA	69-039
LOTUS	ELISE	69-039
LOTUS	OTHER AUTOMOBILE	69-039
MACK	MEDIUM/HEAVY-BASED MOTORHOME	86-850
MACK	MEDIUM/HEAVY - CBE	86-881
MACK	MEDIUM/HEAVY - COE/LOW ENTRY	86-882
MACK	MEDIUM/HEAVY - COE/HIGH ENTRY	86-883
MACK	MEDIUM/HEAVY - UNKNOWN ENGINE LOCATION	86-884
MACK	MEDIUM/HEAVY - COE/ENTRY POSITION UNKNOWN	86-890
MACK	MEDIUM/HEAVY - OTHER	86-898
MACK	UNKNOWN MEDIUM/HEAVY TRUCK	86-899
MARMON	MEDIUM/HEAVY-BASED MOTORHOME	98-898
MARMON	MEDIUM/HEAVY - COE/HIGH ENTRY	98-898
MARMON	MEDIUM/HEAVY - UNKNOWN ENGINE LOCATION	98-898
MARMON	MEDIUM/HEAVY - COE/LOW ENTRY	98-898
MARMON	MEDIUM/HEAVY - CBE	98-898
MARMON	MEDIUM/HEAVY - COE/ENTRY POSITION UNKNOWN	98-898
MARMON	MEDIUM/HEAVY - OTHER	98-898
MASERATI	GHIBLI	69-040
MASERATI	BITURBO	69-040
MASERATI	UNKNOWN AUTOMOBILE	69-040
MASERATI	OTHER AUTOMOBILE	69-040
MAZDA	RX2	41-031
MAZDA	RX3	41-032
MAZDA	RX4	41-033
MAZDA	RX7	41-034
MAZDA	GLC/PROTEGE/323	41-035
MAZDA	COSMO	41-036
MAZDA	626	41-037
MAZDA	808	41-038
MAZDA	MIZER	41-039
MAZDA	R-100	41-040
MAZDA	616/618	41-041

<u>Vehicle Make</u> MAZDA	<u>Vehicle Model</u> 1800	<u>SAS</u> <u>Code</u> 41-042
MAZDA	929	41-043
MAZDA	MX-6	41-044
MAZDA	MIATA/MX-5	41-045
MAZDA	MX-3	41-046
MAZDA	MILLENIA	41-047
MAZDA	MP3	41-048
MAZDA	RX-8	41-049
MAZDA	MAZDA 6	41-050
MAZDA	MAZDA3	41-051
MAZDA	MAZDA 5	41-052
MAZDA	CX-7	41-053
MAZDA	CX9 ('07-'12)	41-054
MAZDA	MAZDA2	41-055
MAZDA	OTHER AUTOMOBILE	41-398
MAZDA	UNKNOWN AUTOMOBILE	41-399
MAZDA	NAVAJO	41-401
MAZDA	TRIBUTE	41-402
MAZDA	CX-5	41-403
MAZDA	CX-9 (2013+)	41-421
MAZDA	MPV	41-441
MAZDA	MAZDA PICKUP	41-471
MAZDA	OTHER LIGHT TRUCK	41-498
MAZDA	UNKNOWN LIGHT TRUCK	41-499
MAZDA	UNKNOWN VEHICLE	41-999
MERCEDES-BENZ	200/220/230/240/250/260/280/300/320 SE,CD,D,SD,ETC	42-031
MERCEDES-BENZ	230/280 SL	42-032
MERCEDES-BENZ	300/350/380/450/500SL/560SL	42-033
MERCEDES-BENZ	350/380/420/450/560/ SLC	42-034
MERCEDES-BENZ	280/300SEL	42-035
MERCEDES-BENZ	380/420/450/500/560SEL/500SEC/560SEC/350SDL/3 00SDL	42-036
MERCEDES-BENZ	300 SE/380/450 SE	42-037
MERCEDES-BENZ	600, 6.9 SEDAB	42-038
MERCEDES-BENZ	190	42-039
MERCEDES-BENZ	300	42-040
MERCEDES-BENZ	400/500 E	42-041
MERCEDES-BENZ	C CLASS (94 on)	42-042
MERCEDES-BENZ	S CLASS	42-043
MERCEDES-BENZ	SL CLASS	42-044
MERCEDES-BENZ	SLK	42-045

<u>Vehicle Make</u>	Vehicle Model	SAS Code
MERCEDES-BENZ	CL CLASS	42-046
MERCEDES-BENZ	CLK	42-047
MERCEDES-BENZ	E CLASS	42-048
MERCEDES-BENZ	SLR	42-049
MERCEDES-BENZ	R-CLASS	42-050
MERCEDES-BENZ	CLS CLASS	42-051
MERCEDES-BENZ	SLS CLASS	42-052
MERCEDES-BENZ	B CLASS	42-053
MERCEDES-BENZ	CLA CLASS	42-054
MERCEDES-BENZ	OTHER AUTOMOBILE	42-398
MERCEDES-BENZ	UNKNOWN AUTOMOBILE	42-399
MERCEDES-BENZ	M/ML CLASS	42-401
MERCEDES-BENZ	G CLASS	42-402
MERCEDES-BENZ	GLK CLASS	42-403
MERCEDES-BENZ	GL CLASS	42-421
MERCEDES-BENZ	SPRINTER	42-461
MERCEDES-BENZ	VAN DERIVATIVE	42-470
MERCEDES-BENZ	OTHER LIGHT TRUCK	42-498
MERCEDES-BENZ	UNKNOWN LIGHT TRUCK	42-499
MERCEDES-BENZ	MEDIUM/HEAVE - CBE	42-881
MERCEDES-BENZ	MEDIUM/HEAVY - COE LOW ENTRY	42-882
MERCEDES-BENZ	MEDIUM/HEAVY - COE HIGH ENTRY	42-883
MERCEDES-BENZ	MEDIUM/HEAVY; UNKNOWN ENGINE LOCATION	42-884
MERCEDES-BENZ	MEDIUM/HEAVY: COE ENTRY POSITION UNKNOWN	42-890
MERCEDES-BENZ	OTHER MEDIUM/HEAVY TRUCK	42-898
MERCEDES-BENZ	UNK TYPE TRUCK (LIGHT/MED/HEAVY)	42-899
MERCEDES-BENZ	UNKNOWN MEDIUM/HEAVY TRUCK	42-899
MERCEDES-BENZ	MEDIUM BUS	42-981
MERCEDES-BENZ	OTHER BUS	42-988
MERCEDES-BENZ	UNKNOWN BUS TYPE	42-989
MERCEDES-BENZ	UNKNOWN VEHICLE	42-999
MERCURY	CYCLONE	14-002
MERCURY	CAPRI-DOMESTIC	14-003
MERCURY	COUGAR/XR7	14-004
MERCURY	MARQUIS/MONTEREY	14-006
MERCURY	COMET	14-008
MERCURY	BOBCAT	14-009
MERCURY	MONTEGO	14-010
MERCURY	MONARCH	14-011
MERCURY	ZEPHYR	14-012
MERCURY	LYNX/LN-7 (82-83)	14-013
MERCURY	TOPAZ	14-015

<u>Vehicle Make</u>	Vehicle Model	SAS Code
MERCURY	SABLE	14-017
MERCURY	MONTEGO (2005+)	14-020
MERCURY	MILAN	14-021
MERCURY	CAPRI-FOREIGN	14-031
MERCURY	PANTERA	14-033
MERCURY	TRACER	14-036
MERCURY	MYSTIQUE	14-037
MERCURY	COUGAR	14-038
MERCURY	MARAUDER	14-039
MERCURY	OTHER AUTOMOBILE	14-398
MERCURY	UNKNOWN AUTOMOBILE	14-399
MERCURY	MOUNTAINEER	14-401
MERCURY	MARINER	14-402
MERCURY	VILLAGER	14-443
MERCURY	MONTEREY (2004+)	14-444
MERCURY	OTHER LIGHT TRUCK	14-498
MERCURY	UNKNOWN LIGHT TRUCK	14-499
MERCURY	UNKNOWN VEHICLE	14-999
MERKUR	XR4Ti	56-031
MERKUR	SCORPIO	56-032
MERKUR	OTHER AUTOMOBILE	56-398
MERKUR	UNKNOWN AUTOMOBILE	56-399
MERKUR	UNKNOWN VEHICLE	56-999
MG	MIDGET	43-031
MG	MGB ('76-'79)	43-032
MG	MGB ('67-'75)	43-033
MG	MGA	43-034
MG	TA/TC/TD/TF	43-035
MG	MGC	43-036
MG	OTHER AUTOMOBILE	43-398
MG	UNKNOWN AUTOMOBILE	43-399
MG	UNKNOWN VEHICLE	43-999
MINI	COOPER, COOPER S	69-054
MITSUBISHI	STARION	52-031
MITSUBISHI	TREDIA	52-032
MITSUBISHI	CORDIA	52-033
MITSUBISHI	GALANT	52-034
MITSUBISHI	MIRAGE	52-035
MITSUBISHI	PRECIS	52-036
MITSUBISHI	ECLIPSE	52-037
MITSUBISHI	SIGMA	52-038
MITSUBISHI	3000GT	52-039

<u>Vehicle Make</u> MITSUBISHI	<u>Vehicle Model</u> DIAMANTE	<u>SAS Code</u> 52-040
MITSUBISHI	IMEV	52-040
MITSUBISHI	LANCER	52-041
MITSUBISHI	MIRAGE ('14 ON)	52-040
MITSUBISHI	OTHER AUTOMOBILE	52-398
MITSUBISHI	UNKNOWN AUTOMOBILE	52-396
MITSUBISHI	MONTERO	52-399
MITSUBISHI	OUTLANDER	52-401
MITSUBISHI	ENDEAVOR	52-402
MITSUBISHI	MINIVAN	52-403 52-441
MITSUBISHI	EXPO WAGON	52-441
MITSUBISHI	PICKUP	52-442 52-471
MITSUBISHI	RAIDER/DUROCROSS	52-471 52-472
MITSUBISHI	OTHER LIGHT TRUCK	52-472 52-498
MITSUBISHI	UNKNOWN LIGHT TRUCK	52-496 52-499
MITSUBISHI	MEDIUM/HEAVY - COE LOW ENTRY	52-499
	•	52-882
MITSUBISHI MITSUBISHI	OTHER MEDIUM/HEAVY TRUCK	
	UNKNOWN MEDIUM/HEAVY TRUCK	52-899
MITSUBISHI	UNK TYPE TRUCK (LIGHT/MED/HEAVY) CONVENTIONAL FRONT ENGINE	52-899
MITSUBISHI		52-981
MITSUBISHI MITSUBISHI	FRONT ENGINE/FLAT FRONT	52-982
	REAR ENGINE/FLAT FRONT	52-983
MITSUBISHI	OTHER BUS	52-988
MITSUBISHI	UNKNOWN TYPE BUS	52-989
MITSUBISHI	UNKNOWN VEHICLE OTHER AUTOMOBILE	52-999
MORRIS		69-041
MORRIS	UNKNOWN AUTOMOBILE	69-041
MORRIS	MINOR	69-041
MOTO GUZZI	MOTORCYCLE (000-050CC)	74-701
MOTO GUZZI	MOTORCYCLE (051-124CC)	74-702
MOTO GUZZI	MOTORCYCLE (125-349CC)	74-703
MOTO GUZZI	MOTORCYCLE (350-449CC)	74-704
MOTO GUZZI	MOTORCYCLE (450-749CC)	74-705
MOTO GUZZI	MOTORCYCLE (750CC-OVER)	74-706
MOTO GUZZI	MOTORCYCLE (UNKNOWN CC)	74-709
MOTO GUZZI	ATC/ATV (000-050CC)	74-731
MOTO GUZZI	ATC/ATV (051-124CC)	74-732
MOTO GUZZI	ATC/ATV (125-349CC)	74-733
MOTO GUZZI	ATC/ATV (350CC-OVER)	74-734
MOTO GUZZI	ATC/ATV (UNKNOWN CC)	74-739
MOTO GUZZI	OTHER MOTORED CYCLE	74-798
MOTO GUZZI	UNKNOWN MOTORED CYCLE	74-799

Vehicle Make	Vehicle Model	SAS Code
NEOPLAN NEOPLAN	OTHER BUS BUS - REAR ENGINE/FLAT FRONT	98-902 98-902
NEOPLAN	BUS-BASED MOTORHOME	98-902 98-902
NEOPLAN	BUS - FRONT ENGINE/FLAT FRONT	98-902
NEOPLAN	BUS - CONVENTIONAL FRONT ENGINE	98-902
NISSAN/DATSUN	F10	35-031
NISSAN/DATSUN	200/240 SX	35-031
NISSAN/DATSUN	1200/240 3X 1200/210/B210	35-032
NISSAN/DATSUN	Z-CAR, ZX	35-034
NISSAN/DATSUN	310	35-034
NISSAN/DATSUN	510	35-035
NISSAN/DATSUN	610	35-030
NISSAN/DATSUN	710	35-037
NISSAN/DATSUN	810/MAXIMA	35-038
NISSAN/DATSUN	ROADSTER	35-039
NISSAN/DATSUN	PL411, RL411	35-040
NISSAN/DATSUN	STANZA	35-042
NISSAN/DATSUN	SENTRA	35-043
NISSAN/DATSUN	PULSAR	35-044
NISSAN/DATSUN	MICRA	35-045
NISSAN/DATSUN	NX 1600/2000	35-046
NISSAN/DATSUN	ALTIMA	35-047
NISSAN/DATSUN	350Z/370Z	35-048
NISSAN/DATSUN	MURANO	35-049
NISSAN/DATSUN	VERSA	35-050
NISSAN/DATSUN	ROGUE	35-051
NISSAN/DATSUN	CUBE	35-052
, NISSAN/DATSUN	GT-R	35-053
NISSAN/DATSUN	LEAF	35-055
NISSAN/DATSUN	OTHER AUTOMOBILE	35-398
NISSAN/DATSUN	UNKNOWN AUTOMOBILE	35-399
NISSAN/DATSUN	PATHFINDER	35-401
NISSAN/DATSUN	XTERRA	35-402
NISSAN/DATSUN	JUKE	35-403
NISSAN/DATSUN	PATHFINDER ARMADA	35-421
NISSAN/DATSUN	VAN	35-441
NISSAN/DATSUN	AXXESS	35-442
NISSAN/DATSUN	QUEST	35-443
NISSAN/DATSUN	ALTRA EV	35-444
NISSAN/DATSUN	NV200/eNV200	35-446
NISSAN/DATSUN	NV	35-461
NISSAN/DATSUN	DATSUN/NISSAN PU/FRONTIER	35-471

<u>Vehicle Make</u> NISSAN/DATSUN	<u>Vehicle Model</u> TITAN	<u>SAS</u> <u>Code</u> 35-481
NISSAN/DATSUN	OTHER LIGHT TRUCK	35-498
NISSAN/DATSUN	UNKNOWN LIGHT TRUCK	35-499
NISSAN/DATSUN	MEDIUM/HEAVY COE HIGH ENTRY	35-883
NISSAN/DATSUN	OTHER MEDIUM/HEAVY TRUCK	35-898
NISSAN/DATSUN	UNKNOWN MEDIUM/HEAVY TRUCK	35-899
NISSAN/DATSUN	UNK TYPE TRUCK (LIGHT/MED/HEAVY)	35-899
NISSAN/DATSUN	UNKNOWN VEHICLE	35-999
NORTON	MOTORCYCLE (000-050CC)	75-701
NORTON	MOTORCYCLE (051-124CC)	75-702
NORTON	MOTORCYCLE (125-349CC)	75-703
NORTON	MOTORCYCLE (350-449CC)	75-704
NORTON	MOTORCYCLE (450-749CC)	75-705
NORTON	MOTORCYCLE (750CC-OVER)	75-706
NORTON	MOTORCYCLE (UNKNOWN CC)	75-709
NORTON	OTHER MOTORED CYCLE	75-798
NORTON	UNKNOWN MOTORED CYCLE	75-799
OLDSMOBILE	CUTLASS (RWD-ONLY)	21-001
OLDSMOBILE	DELTA 88	21-002
OLDSMOBILE	NINETY-EIGHT	21-003
OLDSMOBILE	TORONADO-TROFEO	21-005
OLDSMOBILE	COMMERCIAL SERIES	21-006
OLDSMOBILE	STARFIRE	21-012
OLDSMOBILE	OMEGA	21-015
OLDSMOBILE	FIRENZA	21-016
OLDSMOBILE	CIERA	21-017
OLDSMOBILE	CALAIS	21-018
OLDSMOBILE	CUTLASS (FWD)	21-020
OLDSMOBILE	ACHIEVA	21-021
OLDSMOBILE	AURORA	21-022
OLDSMOBILE	INTRIGUE	21-023
OLDSMOBILE	ALERO	21-024
OLDSMOBILE	OTHER AUTOMOBILE	21-398
OLDSMOBILE	UNKNOWN AUTOMOBILE	21-399
OLDSMOBILE	BRAVADA	21-401
OLDSMOBILE	SILHOUETTE	21-441
OLDSMOBILE	OTHER LIGHT TRUCK	21-498
OLDSMOBILE	UNKNOWN LIGHT TRUCK	21-499
OLDSMOBILE	OTHER VEHICLE	21-998
OLDSMOBILE	UNKNOWN VEHICLE	21-999
OSHKOSH	MEDIUM/HEAVY - COE/LOW ENTRY	98-805
OSHKOSH	MEDIUM/HEAVY - OTHER	98-805

Vehicle Make	Vehicle Model	SAS Code
OSHKOSH OSHKOSH	MEDIUM/HEAVY - COE/ENTRY POSITION UNKNOWN MEDIUM/HEAVY - COE/HIGH ENTRY	98-805 98-805
OSHKOSH	MEDIUM/HEAVY - CBE	98-805
OSHKOSH	MEDIUM/HEAVY-BASED MOTORHOME	98-805
OSHKOSH	MEDIUM/HEAVY - UNKNOWN ENGINE LOCATION	98-805
OTHER DOMESTIC MANUFACTURER (light vehicles)	OTHER MAKE	29-398
OTHER DOMESTIC MANUFACTURER (light vehicles)	UNKNOWN MAKE	29-399
OTHER DOMESTIC MANUFACTURER (light vehicles)	OTHER LIGHT TRUCK	29-498
OTHER DOMESTIC MANUFACTURER (light vehicles)	OTHER MEDIUM/HEAVY TRUCK	29-898
OTHER DOMESTIC MANUFACTURER (light vehicles)	OTHER BUS	29-988
OTHER DOMESTIC MANUFACTURER (light vehicles)	OTHER VEHICLE	29-998
OTHER FOREIGN MANUFACTURER (light vehicles)	OTHER MAKE	69-398
OTHER FOREIGN MANUFACTURER (light vehicles)	UNKOWN MAKE	69-399
OTHER FOREIGN MANUFACTURER (light vehicles)	OTHER LIGHT TRUCK	69-498
OTHER MAKE (med/heavy truck/bus or "other")	TRUCK-BASED MOTORHOME	98-850
OTHER MAKE (med/heavy truck/bus or "other")	OTHER MEDIUM/HEAVY TRUCK	98-898
OTHER MAKE (med/heavy truck/bus or "other")	BUS-BASED MOTORHOME	98-950
OTHER MAKE (med/heavy truck/bus or "other")	OTHER BUS	98-988
OTHER MAKE (med/heavy truck/bus or "other")	OTHER VEHICLE	98-998
OTHER MAKE MOPED	0-50cc	78-701
OTHER MAKE MOPED	51-124cc	78-702
OTHER MAKE MOPED	UNKNOWN cc	78-709
OTHER MAKE MOPED	OTHER MOTORED CYCLE	78-798

<u>Vehicle Make</u>	Vehicle Model	SAS Code
OTHER MAKE MOPED	UNKNOWN MOTORED CYCLE	78-799
OTHER MAKE MOTORED CYCLE	0-50cc	79-701
OTHER MAKE MOTORED CYCLE	51-124cc	79-702
OTHER MAKE MOTORED CYCLE	125-349cc	79-703
OTHER MAKE MOTORED CYCLE	350-449cc	79-704
OTHER MAKE MOTORED CYCLE	450-749cc	79-705
OTHER MAKE MOTORED CYCLE	750c or greater	79-706
OTHER MAKE MOTORED CYCLE	Unknown cc	79-709
OTHER MAKE MOTORED CYCLE	ATC/ATV 0-50cc	79-731
OTHER MAKE MOTORED CYCLE	ATC/ATV 51-124cc	79-732
OTHER MAKE MOTORED CYCLE	ATC/ATV 125-349cc	79-733
OTHER MAKE MOTORED CYCLE	ATC/ATV 350cc OR GREATER	79-734
OTHER MAKE MOTORED CYCLE	ATV/ATC UNKNOWN cc	79-739
OTHER MAKE MOTORED CYCLE	OTHER MOTORED CYCLE	79-798
OTHER MAKE MOTORED CYCLE	UNKNOWN MOTORED CYCLE	79-799
PETERBILT	MEDIUM/HEAVY-BASED MOTORHOME	87-850
PETERBILT	MEDIUM/HEAVY - CBE	87-881
PETERBILT	MEDIUM/HEAVY - COE/LOW ENTRY	87-882
PETERBILT	MEDIUM/HEAVY - COE/HIGH ENTRY	87-883
PETERBILT	MEDIUM/HEAVY - UNKNOWN ENGINE LOCATION	87-884
PETERBILT	MEDIUM/HEAVY - COE/ENTRY POSITION UNKNOWN	87-890
PETERBILT	MEDIUM/HEAVY - OTHER	87-898
PETERBILT	UNKNOWN MEDIUM/HEAVY TRUCK	87-899
PEUGEOT	304	44-031
PEUGEOT	403	44-032
PEUGEOT	404	44-033
PEUGEOT	504/505	44-034
PEUGEOT	604	44-035
PEUGEOT	405	44-036
PEUGEOT	OTHER AUTOMOBILE	44-398
PEUGEOT	UNKNOWN AUTOMOBILE	44-399
PEUGEOT	MOTORCYCLE (000-050CC)	44-701
PEUGEOT	MOTORCYCLE (051-124CC)	44-702
PEUGEOT	MOTORCYCLE (UNKNOWN CC)	44-709
PEUGEOT	UNKNOWN MOTORED CYCLE	44-799
PEUGEOT	UNKNOWN VEHICLE	44-999
PLYMOUTH	VALIANT/DUSTER/SCAMP	09-001
PLYMOUTH	SATELLITE/BELVEDERE	09-002
PLYMOUTH	FURY	09-003
PLYMOUTH	GRAN FURY	09-004

<u>Vehicle Make</u> PLYMOUTH	<u>Vehicle Model</u> BARRACUDA	<u>SAS Code</u> 09-005
PLYMOUTH	VOLARE	09-005
PLYMOUTH	CARAVELLE	09-000
PLYMOUTH	HORIZON	09-007
PLYMOUTH	RELIANT (K)	09-008
PLYMOUTH	SCAMP (CAR-BASED PICKUP)	09-011
PLYMOUTH	SUNDANCE	09-013
PLYMOUTH	ACCLAIM	09-017
PLYMOUTH	NEON	09-019
PLYMOUTH	CRICKET	09-020
PLYMOUTH	ARROW	09-031
PLYMOUTH	SAPPORO	09-032
PLYMOUTH		09-033
PLYMOUTH	CHAMP/COLT (EXCLUDES VISTA) CONQUEST	09-034
PLYMOUTH	LASER	09-035
PLYMOUTH	BREEZE	09-037
PLYMOUTH	PROWLER	09-038
PLYMOUTH	OTHER AUTOMOBILE	09-039
PLYMOUTH	UNKNOWN AUTOMOBILE	09-398
PLYMOUTH	TRAILDUSTER	09-399
PLYMOUTH	COLT VISTA	09-421
PLYMOUTH	VOYAGER (MINIVAN)	09-441
PLYMOUTH	VAN-FULLSIZE (B-SERIES)	09-442
PLYMOUTH	ARROW PICKUP (FOREIGN)	09-401
PLYMOUTH	OTHER LIGHT TRUCK	09-471
PLYMOUTH	UNKNOWN LIGHT TRUCK	09-498
PLYMOUTH	UNKNOWN VEHICLE	09-499
PONTIAC	LEMANS/TEMPEST (THRU 79)	22-001
PONTIAC	BONNEVILLE/CATALINA/PARISIENNE	22-001
PONTIAC	FIERO	22-002
PONTIAC	VENTURA/GTO	22-003
PONTIAC	FIREBIRD/TRANS AM	22-008
PONTIAC	GRAND PRIX (RWD)	22-009
PONTIAC	ASTRE	22-010
PONTIAC	SUNBIRD (THRU 80)	22-011
PONTIAC	T1000/1000	22-012
PONTIAC	PHOENIX	22-015
PONTIAC	J2000/SUNBIRD/SUNFIRE	22-015
PONTIAC	6000	22-016
PONTIAC	GRAND AM	22-017
PONTIAC	G5	22-018
PONTIAC	GRAND PRIX (FWD)	22-019
FUNTIAC	GIVAIND FUIX (FWD)	ZZ-UZU

<u>Vehicle Make</u> PONTIAC	<u>Vehicle Model</u> G6	<u>SAS Code</u> 22-022
PONTIAC	SOLSTICE	22-023
PONTIAC	G8	22-024
PONTIAC	G3	22-025
PONTIAC	LEMANS (88-on)	22-031
PONTIAC	VIBE	22-032
PONTIAC	OTHER AUTOMOBILE	22-398
PONTIAC	UNKNOWN AUTOMOBILE	22-399
PONTIAC	AZTEK	22-401
PONTIAC	TORRENT	22-403
PONTIAC	TRANS SPORT/MONTANA	22-441
PONTIAC	OTHER LIGHT TRUCK	22-498
PONTIAC	OTHER LIGHT TRUCK	22-498
PONTIAC	UNKNOWN LIGHT TRUCK	22-499
PONTIAC	UNKNOWN VEHICLE	22-999
PORSCHE	911	45-031
PORSCHE	912	45-032
PORSCHE	914	45-033
PORSCHE	924	45-034
PORSCHE	928	45-035
PORSCHE	930	45-036
PORSCHE	944	45-037
PORSCHE	959	45-038
PORSCHE	968	45-039
PORSCHE	986 BOXSTER	45-040
PORSCHE	CAYMAN	45-041
PORSCHE	PANAMERA	45-042
PORSCHE	918	45-043
PORSCHE	OTHER AUTOMOBILE	45-398
PORSCHE	UNKNOWN AUTOMOBILE	45-399
PORSCHE	MACAN	45-401
PORSCHE	CAYENNE	45-421
PORSCHE	UNKNOWN VEHICLE	45-999
RELIANT	UNKNOWN AUTOMOBILE	69-049
RELIANT	OTHER AUTOMOBILE	69-049
RENAULT/AMC	LECAR	46-031
RENAULT/AMC	DAUPHINE/10/R-8/CARAVELLE	46-032
RENAULT/AMC	12	46-033
RENAULT/AMC	15	46-034
RENAULT/AMC	16	46-035
RENAULT/AMC	17	46-036
RENAULT/AMC	R18I	46-037

RENAULT/AMC ALLIANCE/ENCORE/GTA, CONVERTIBLE 46-039 RENAULT/AMC ALPINE 46-041 RENAULT/AMC MEDALLION 46-045 RENAULT/AMC PREMIER 46-045 RENAULT/AMC OTHER AUTOMOBILE 46-398 RENAULT/AMC UNKNOWN AUTOMOBILE 46-399 RENAULT/AMC UNKNOWN VEHICLE 46-999 ROLLS-ROYCE/BENTLEY OTHER AUTOMOBILE 69-042 ROLLS-ROYCE/BENTLEY CLOUD/SHADOW SERIES 69-042 SAAB 99/99E/900 47-031 SAAB 95/96/97 47-032 SAAB 95/96/97 47-033 SAAB 9-3 47-034 SAAB 9-3 47-035 SAAB 9-2X 47-037 SAAB 9-2X 47-037 SAAB 9-2X 47-037 SAAB 9-7X 47-401 SAAB 9-7X 47-401 SAAB 9-7X 47-401 SAAB UNKNOWN LIGHT TRUCK 47-499 S	<u>Vehicle Make</u> RENAULT/AMC	<u>Vehicle Model</u> FUEGO	<u>SAS</u> <u>Code</u> 46-038
RENAULT/AMC MEDALLION 46-044 RENAULT/AMC PREMIER 46-049 RENAULT/AMC OTHER AUTOMOBILE 46-398 RENAULT/AMC UNKNOWN AUTOMOBILE 46-399 RENAULT/AMC UNKNOWN VEHICLE 46-999 ROLLS-ROYCE/BENTLEY OTHER AUTOMOBILE 69-042 ROLLS-ROYCE/BENTLEY CLOUD/SHADOW SERIES 69-042 SAAB 99/99E/900 47-031 SAAB SONNETT 47-032 SAAB 95/96/97 47-032 SAAB 95/96/97 47-033 SAAB 9-3 47-034 SAAB 9-3 47-035 SAAB 9-3 47-035 SAAB 9-2X 47-036 SAAB 9-2X 47-036 SAAB 9-2X 47-036 SAAB 9-2X 47-039 SAAB 9-2X 47-039 SAAB 9-2X 47-034 SAAB UNKNOWN AUTOMOBILE 47-399 SAAB UNKNOWN L	RENAULT/AMC	ALLIANCE/ENCORE/GTA, CONVERTIBLE	46-039
RENAULT/AMC PREMIER 46-045 RENAULT/AMC OTHER AUTOMOBILE 46-398 RENAULT/AMC UNKNOWN AUTOMOBILE 46-399 RENAULT/AMC UNKNOWN VEHICLE 46-999 ROLLS-ROYCE/BENTLEY OTHER AUTOMOBILE 69-042 ROLLS-ROYCE/BENTLEY CLOUD/SHADOW SERIES 69-042 ROLLS-ROYCE/BENTLEY UNKNOWN AUTOMOBILE 69-042 SAAB 99/99E/900 47-031 SAAB SONNETT 47-032 SAAB SONNETT 47-032 SAAB 95/96/97 47-033 SAAB 95/96/97 47-034 SAAB 9000, CS 47-034 SAAB 9-3 47-034 SAAB 9-5 47-036 SAAB 9-5 47-036 SAAB 9-2X 47-037 SAAB 9-2X 47-037 SAAB 9-7X 47-491 SAAB UNKNOWN AUTOMOBILE 47-399 SAAB UNKNOWN LIGHT TRUCK 47-499	RENAULT/AMC	ALPINE	46-041
RENAULT/AMC OTHER AUTOMOBILE 46-398 RENAULT/AMC UNKNOWN AUTOMOBILE 46-399 RENAULT/AMC UNKNOWN VEHICLE 46-399 RENAULT/AMC UNKNOWN VEHICLE 69-042 ROLLS-ROYCE/BENTLEY OTHER AUTOMOBILE 69-042 ROLLS-ROYCE/BENTLEY UNKNOWN AUTOMOBILE 69-042 SAAB 99/99E/900 47-031 SAAB SONNETT 47-032 SAAB 95/96/97 47-033 SAAB 95/96/97 47-033 SAAB 95/96/97 47-034 SAAB 95/96/97 47-033 SAAB 95/96/97 47-034 SAAB 95/95 47-035 SAAB 9-3 47-035 SAAB 9-2X 47-037 SAAB 9-2X 47-037 SAAB 9-2X 47-493 SAAB 9-7X 47-401 SAAB UNKNOWN AUTOMOBILE 47-399 SAAB UNKNOWN EIGHT TRUCK 47-499 SAAB </td <td>RENAULT/AMC</td> <td>MEDALLION</td> <td>46-044</td>	RENAULT/AMC	MEDALLION	46-044
RENAULT/AMC UNKNOWN AUTOMOBILE 46-399 RENAULT/AMC UNKNOWN VEHICLE 46-999 ROLLS-ROYCE/BENTLEY OTHER AUTOMOBILE 69-042 ROLLS-ROYCE/BENTLEY CLOUD/SHADOW SERIES 69-042 ROLLS-ROYCE/BENTLEY UNKNOWN AUTOMOBILE 69-042 SAAB 99/99E/900 47-031 SAAB SONNETT 47-032 SAAB 95/96/97 47-033 SAAB 95/96/97 47-033 SAAB 9000, CS 47-033 SAAB 9-3 47-033 SAAB 9-5 47-036 SAAB 9-2X 47-037 SAAB 9-2X 47-037 SAAB 9-2X 47-037 SAAB 9-7X 47-401 SAAB UNKNOWN AUTOMOBILE 47-398 SAAB UNKNOWN LIGHT TRUCK 47-498 SAAB UNKNOWN VEHICLE 47-499 SAAB UNKNOWN VEHICLE 47-999 SATURN SC 24-002 S	RENAULT/AMC	PREMIER	46-045
RENAULT/AMC UNKNOWN VEHICLE 46-999 ROLLS-ROYCE/BENTLEY OTHER AUTOMOBILE 69-042 ROLLS-ROYCE/BENTLEY CLOUD/SHADOW SERIES 69-042 ROLLS-ROYCE/BENTLEY UNKNOWN AUTOMOBILE 69-042 SAAB 99/99E/900 47-031 SAAB SONNETT 47-032 SAAB 95/96/97 47-033 SAAB 9000, CS 47-034 SAAB 9-3 47-035 SAAB 9-2X 47-035 SAAB 9-2X 47-037 SAAB 9-2X 47-037 SAAB 9-2X 47-037 SAAB 9-7X 47-401 SAAB UNKNOWN AUTOMOBILE 47-399 SAAB UNKNOWN LIGHT TRUCK 47-499 SAAB UNKNOWN LIGHT TRUCK 47-499 SAAB UNKNOWN VEHICLE 47-999 SATURN SC 24-002 SATURN SW 24-003 SATURN LS/ LS1/ LS2/L100/L200/L300 24-005	RENAULT/AMC	OTHER AUTOMOBILE	46-398
ROLLS-ROYCE/BENTLEY OTHER AUTOMOBILE 69-042 ROLLS-ROYCE/BENTLEY CLOUD/SHADOW SERIES 69-042 ROLLS-ROYCE/BENTLEY UNKNOWN AUTOMOBILE 69-042 SAAB 99/99E/900 47-031 SAAB 99/99E/900 47-031 SAAB 95/96/97 47-033 SAAB 9000, CS 47-034 SAAB 9-3 47-035 SAAB 9-5 47-035 SAAB 9-5 47-035 SAAB 9-7X 47-037 SAAB 9-7X 47-401 SAAB UNKNOWN LIGHT TRUCK 47-499 SAAB UNKNOWN VEHICLE 47-999 SATURN SC 24-002 SATURN SW 24-003	RENAULT/AMC	UNKNOWN AUTOMOBILE	46-399
ROLLS-ROYCE/BENTLEY CLOUD/SHADOW SERIES 69-042 ROLLS-ROYCE/BENTLEY UNKNOWN AUTOMOBILE 69-042 SAAB 99/99E/900 47-031 SAAB SONNETT 47-032 SAAB 95/96/97 47-033 SAAB 9000, CS 47-034 SAAB 9-3 47-035 SAAB 9-5 47-036 SAAB 9-2X 47-037 SAAB 9-2X 47-036 SAAB 9-2X 47-037 SAAB 9-2X 47-037 SAAB 9-7X 47-401 SAAB UNKNOWN AUTOMOBILE 47-399 SAAB OTHER LIGHT TRUCK 47-498 SAAB UNKNOWN VEHICLE 47-999 SATURN SC 24-002 SATURN SW 24-003 <	RENAULT/AMC	UNKNOWN VEHICLE	46-999
ROLLS-ROYCE/BENTLEY UNKNOWN AUTOMOBILE 69-042 SAAB 99/99E/900 47-031 SAAB SONNETT 47-032 SAAB 95/96/97 47-032 SAAB 95/96/97 47-034 SAAB 9000, CS 47-034 SAAB 9-3 47-035 SAAB 9-5 47-036 SAAB 9-2X 47-037 SAAB OTHER AUTOMOBILE 47-398 SAAB UNKNOWN AUTOMOBILE 47-399 SAAB UNKNOWN LIGHT TRUCK 47-498 SAAB UNKNOWN VEHICLE 47-499 SAAB UNKNOWN VEHICLE 47-999 SATURN SC 24-001 SATURN SC 24-002 SATURN SW 24-003 SATURN EV 24-004 SATURN LW/LW1/LW2/LW200/J300 24-005 SATURN LW/LW1/LW2/LW200/J300 24-006 SATURN AURA 24-009 SATURN AURA <td< td=""><td>ROLLS-ROYCE/BENTLEY</td><td>OTHER AUTOMOBILE</td><td>69-042</td></td<>	ROLLS-ROYCE/BENTLEY	OTHER AUTOMOBILE	69-042
SAAB 99/99E/900 47-031 SAAB SONNETT 47-032 SAAB 95/96/97 47-033 SAAB 9000, CS 47-034 SAAB 9 - 3 47-035 SAAB 9 - 5 47-036 SAAB 9 - 2X 47-037 SAAB OTHER AUTOMOBILE 47-398 SAAB UNKNOWN AUTOMOBILE 47-399 SAAB OTHER LIGHT TRUCK 47-498 SAAB OTHER LIGHT TRUCK 47-499 SAAB UNKNOWN LIGHT TRUCK 47-499 SAAB UNKNOWN VEHICLE 47-999 SATURN SC 24-001 SATURN SC 24-002 SATURN SW 24-003 SATURN SW 24-004 SATURN LS/ LSI/ LSZ/L100/L200/L300 24-005 SATURN LW/LW1/ LW2/ LW200/300 24-006 SATURN ON 24-007 SATURN AURA 24-008 SATURN AURA 24-009 SATURN OTHER AUTOMOBILE 24-398	ROLLS-ROYCE/BENTLEY	CLOUD/SHADOW SERIES	69-042
SAAB SONNETT 47-032 SAAB 95/96/97 47-033 SAAB 9000, CS 47-034 SAAB 9 - 3 47-035 SAAB 9 - 5 47-036 SAAB 9 - 2X 47-037 SAAB OTHER AUTOMOBILE 47-398 SAAB UNKNOWN AUTOMOBILE 47-399 SAAB OTHER LIGHT TRUCK 47-498 SAAB OTHER LIGHT TRUCK 47-498 SAAB UNKNOWN LIGHT TRUCK 47-499 SAAB UNKNOWN VEHICLE 47-999 SATURN SL 24-001 SATURN SC 24-002 SATURN SW 24-003 SATURN EV 24-004 SATURN LS/ LS1/ LS2/L100/L200/L300 24-005 SATURN LW/LW1/ LW2/ LW200/300 24-006 SATURN ON 24-007 SATURN AURA 24-009 SATURN AURA 24-010 SATURN OTHER AUTOMOBILE	ROLLS-ROYCE/BENTLEY	UNKNOWN AUTOMOBILE	69-042
SAAB 95/96/97 47-033 SAAB 9000, CS 47-034 SAAB 9 - 3 47-035 SAAB 9 - 5 47-036 SAAB 9-2X 47-037 SAAB OTHER AUTOMOBILE 47-398 SAAB UNKNOWN AUTOMOBILE 47-399 SAAB UNKNOWN AUTOMOBILE 47-499 SAAB OTHER LIGHT TRUCK 47-498 SAAB UNKNOWN LIGHT TRUCK 47-499 SAAB UNKNOWN VEHICLE 47-999 SATURN SL 24-001 SATURN SC 24-002 SATURN SW 24-003 SATURN EV 24-004 SATURN LS/ LS1/ LS2/L100/L200/L300 24-006 SATURN LW/LW1/ LW2/ LW200/300 24-006 SATURN ION 24-007 SATURN SKY 24-008 SATURN OUTLOOK 24-010 SATURN OUTLOOK 24-011 SATURN OTHER AUTOMOBILE 24-398 SATURN OTHER AUTOMOBILE 24-399 <td>SAAB</td> <td>99/99E/900</td> <td>47-031</td>	SAAB	99/99E/900	47-031
SAAB 9000, CS 47-034 SAAB 9 - 3 47-035 SAAB 9 - 5 47-036 SAAB 9-2X 47-037 SAAB OTHER AUTOMOBILE 47-398 SAAB UNKNOWN AUTOMOBILE 47-399 SAAB 9-7X 47-401 SAAB OTHER LIGHT TRUCK 47-498 SAAB UNKNOWN LIGHT TRUCK 47-499 SAAB UNKNOWN VEHICLE 47-999 SATURN SL 24-001 SATURN SC 24-002 SATURN SW 24-003 SATURN EV 24-004 SATURN LS/ LS1/ LS2/L100/L200/L300 24-005 SATURN LW/LW1/ LW2/ LW200/300 24-006 SATURN LW/LW1/ LW2/ LW200/300 24-006 SATURN AURA 24-007 SATURN AURA 24-007 SATURN AURA 24-001 SATURN OUTLOOK 24-010 SATURN OTHER AUTOMOBILE 24-398 SATURN UNKNOWN AUTOMOBILE 24-399	SAAB	SONNETT	47-032
SAAB 9 - 3 47-035 SAAB 9 - 5 47-036 SAAB 9-2X 47-037 SAAB OTHER AUTOMOBILE 47-398 SAAB UNKNOWN AUTOMOBILE 47-399 SAAB UNKNOWN AUTOMOBILE 47-491 SAAB OTHER LIGHT TRUCK 47-498 SAAB UNKNOWN LIGHT TRUCK 47-499 SAAB UNKNOWN VEHICLE 47-999 SATURN SL 24-001 SATURN SC 24-002 SATURN SW 24-003 SATURN SW 24-004 SATURN EV 24-004 SATURN LS/ LS1/ LS2/L100/L200/L300 24-005 SATURN LW/LW1/ LW2/ LW200/300 24-006 SATURN ION 24-007 SATURN AURA 24-008 SATURN AURA 24-009 SATURN OUTLOOK 24-010 SATURN OTHER AUTOMOBILE 24-398 SATURN UNKNOWN AUTOMOBILE 24-399 SATURN VUE 24-401	SAAB	95/96/97	47-033
SAAB 9-5 47-036 SAAB 9-2X 47-037 SAAB OTHER AUTOMOBILE 47-398 SAAB UNKNOWN AUTOMOBILE 47-399 SAAB UNKNOWN AUTOMOBILE 47-401 SAAB OTHER LIGHT TRUCK 47-498 SAAB UNKNOWN LIGHT TRUCK 47-499 SAAB UNKNOWN VEHICLE 47-999 SATURN SL 24-001 SATURN SC 24-002 SATURN SW 24-002 SATURN EV 24-004 SATURN LS/ LS1/ LS2/L100/L200/L300 24-005 SATURN LW/LW1/ LW2/ LW200/300 24-006 SATURN ION 24-007 SATURN SKY 24-008 SATURN AURA 24-009 SATURN OUTLOOK 24-010 SATURN OTHER AUTOMOBILE 24-398 SATURN UNKNOWN AUTOMOBILE 24-398 SATURN VUE 24-401 SATURN VUE 24-401 SATURN OTHER LIGHT TRUCK 24-498	SAAB	9000, CS	47-034
SAAB 9-2X 47-037 SAAB OTHER AUTOMOBILE 47-398 SAAB UNKNOWN AUTOMOBILE 47-399 SAAB 9-7X 47-401 SAAB OTHER LIGHT TRUCK 47-498 SAAB UNKNOWN LIGHT TRUCK 47-499 SAAB UNKNOWN VEHICLE 47-999 SATURN SL 24-001 SATURN SC 24-002 SATURN SW 24-003 SATURN EV 24-004 SATURN LS/ LS1/ LS2/L100/L200/L300 24-005 SATURN LW/LW1/ LW2/ LW200/300 24-005 SATURN ION 24-007 SATURN SKY 24-008 SATURN AURA 24-009 SATURN OUTLOOK 24-010 SATURN OTHER AUTOMOBILE 24-398 SATURN UNKNOWN AUTOMOBILE 24-399 SATURN VUE 24-401 SATURN OTHER LIGHT TRUCK 24-491 SATURN OTHER LIGHT TRUCK 24-498 SATURN OTHER LIGHT TRUCK <t< td=""><td>SAAB</td><td>9 - 3</td><td>47-035</td></t<>	SAAB	9 - 3	47-035
SAAB OTHER AUTOMOBILE 47-398 SAAB UNKNOWN AUTOMOBILE 47-399 SAAB 9-7X 47-401 SAAB OTHER LIGHT TRUCK 47-498 SAAB UNKNOWN LIGHT TRUCK 47-499 SAAB UNKNOWN VEHICLE 47-999 SATURN SL 24-001 SATURN SC 24-002 SATURN SW 24-003 SATURN EV 24-004 SATURN LS/ LS1/ LS2/L100/L200/L300 24-005 SATURN LW/LW1/ LW2/ LW200/300 24-006 SATURN ION 24-007 SATURN SKY 24-008 SATURN AURA 24-009 SATURN AURA 24-010 SATURN OUTLOOK 24-010 SATURN ASTRA 24-011 SATURN OTHER AUTOMOBILE 24-398 SATURN VUE 24-401 SATURN VUE 24-401 SATURN OTHER LIGHT TRUCK 24-498 SATURN OTHER LIGHT TRUCK 24-498	SAAB	9 - 5	47-036
SAAB UNKNOWN AUTOMOBILE 47-399 SAAB 9-7X 47-401 SAAB OTHER LIGHT TRUCK 47-498 SAAB UNKNOWN LIGHT TRUCK 47-499 SAAB UNKNOWN VEHICLE 47-999 SATURN SL 24-001 SATURN SC 24-002 SATURN SW 24-003 SATURN EV 24-004 SATURN LS/ LS2/ LS2/ L100/ L200/ L300 24-005 SATURN LW/LW1/ LW2/ LW200/ 300 24-006 SATURN ION 24-007 SATURN SKY 24-008 SATURN SKY 24-008 SATURN AURA 24-010 SATURN OUTLOOK 24-010 SATURN ASTRA 24-011 SATURN OTHER AUTOMOBILE 24-398 SATURN UNKNOWN AUTOMOBILE 24-399 SATURN VUE 24-401 SATURN NUKNOWN LIGHT TRUCK 24-498 SATURN OTHER LIGHT TRUCK 24-498 SATURN OTHER LIGHT TRUCK	SAAB	9-2X	47-037
SAAB 9-7X 47-401 SAAB OTHER LIGHT TRUCK 47-498 SAAB UNKNOWN LIGHT TRUCK 47-499 SAAB UNKNOWN VEHICLE 47-999 SATURN SL 24-001 SATURN SC 24-002 SATURN SW 24-003 SATURN EV 24-004 SATURN LS/ LS1/ LS2/L100/L200/L300 24-005 SATURN LW/LW1/ LW2/ LW200/300 24-006 SATURN ION 24-007 SATURN SKY 24-008 SATURN AURA 24-009 SATURN OUTLOOK 24-010 SATURN OTHER AUTOMOBILE 24-398 SATURN UNKNOWN AUTOMOBILE 24-398 SATURN VUE 24-401 SATURN RELAY 24-441 SATURN OTHER LIGHT TRUCK 24-498 SATURN UNKNOWN LIGHT TRUCK 24-498	SAAB	OTHER AUTOMOBILE	47-398
SAAB OTHER LIGHT TRUCK 47-498 SAAB UNKNOWN LIGHT TRUCK 47-499 SAAB UNKNOWN VEHICLE 47-999 SATURN SL 24-001 SATURN SC 24-002 SATURN SW 24-003 SATURN EV 24-004 SATURN LS/ LS1/ LS2/L100/L200/L300 24-005 SATURN LW/LW1/ LW2/ LW200/300 24-006 SATURN ION 24-007 SATURN SKY 24-008 SATURN AURA 24-009 SATURN OUTLOOK 24-010 SATURN OTHER AUTOMOBILE 24-398 SATURN UNKNOWN AUTOMOBILE 24-399 SATURN VUE 24-401 SATURN RELAY 24-41 SATURN OTHER LIGHT TRUCK 24-498 SATURN UNKNOWN LIGHT TRUCK 24-498	SAAB	UNKNOWN AUTOMOBILE	47-399
SAAB UNKNOWN LIGHT TRUCK 47-499 SAAB UNKNOWN VEHICLE 47-999 SATURN SL 24-001 SATURN SC 24-002 SATURN SW 24-003 SATURN EV 24-004 SATURN LS/ LS1/ LS2/L100/L200/L300 24-005 SATURN LW/LW1/ LW2/ LW200/300 24-006 SATURN ION 24-007 SATURN SKY 24-008 SATURN AURA 24-009 SATURN OUTLOOK 24-010 SATURN ASTRA 24-011 SATURN OTHER AUTOMOBILE 24-398 SATURN UNKNOWN AUTOMOBILE 24-399 SATURN VUE 24-401 SATURN RELAY 24-41 SATURN OTHER LIGHT TRUCK 24-498 SATURN UNKNOWN LIGHT TRUCK 24-499	SAAB	9-7X	47-401
SAAB UNKNOWN VEHICLE 47-999 SATURN SL 24-001 SATURN SC 24-002 SATURN SW 24-003 SATURN EV 24-004 SATURN LS/ LS1/ LS2/L100/L200/L300 24-005 SATURN LW/LW1/ LW2/ LW200/300 24-006 SATURN ION 24-007 SATURN SKY 24-008 SATURN AURA 24-009 SATURN OUTLOOK 24-010 SATURN ASTRA 24-011 SATURN OTHER AUTOMOBILE 24-398 SATURN UNKNOWN AUTOMOBILE 24-399 SATURN VUE 24-401 SATURN RELAY 24-441 SATURN OTHER LIGHT TRUCK 24-498 SATURN UNKNOWN LIGHT TRUCK 24-499	SAAB	OTHER LIGHT TRUCK	47-498
SATURN SL 24-001 SATURN SC 24-002 SATURN SW 24-003 SATURN EV 24-004 SATURN LS/ LS1/ LS2/L100/L200/L300 24-005 SATURN LW/LW1/ LW2/ LW200/300 24-006 SATURN ION 24-007 SATURN SKY 24-008 SATURN AURA 24-009 SATURN OUTLOOK 24-010 SATURN ASTRA 24-011 SATURN OTHER AUTOMOBILE 24-398 SATURN UNKNOWN AUTOMOBILE 24-399 SATURN VUE 24-401 SATURN RELAY 24-441 SATURN OTHER LIGHT TRUCK 24-498 SATURN UNKNOWN LIGHT TRUCK 24-499	SAAB	UNKNOWN LIGHT TRUCK	47-499
SATURN SC 24-002 SATURN SW 24-003 SATURN EV 24-004 SATURN LS/ LS1/ LS2/L100/L200/L300 24-005 SATURN LW/LW1/ LW2/ LW200/300 24-006 SATURN ION 24-007 SATURN SKY 24-008 SATURN AURA 24-009 SATURN OUTLOOK 24-010 SATURN ASTRA 24-011 SATURN OTHER AUTOMOBILE 24-398 SATURN UNKNOWN AUTOMOBILE 24-399 SATURN VUE 24-401 SATURN RELAY 24-441 SATURN OTHER LIGHT TRUCK 24-498 SATURN UNKNOWN LIGHT TRUCK 24-499	SAAB	UNKNOWN VEHICLE	47-999
SATURN SW 24-003 SATURN EV 24-004 SATURN LS/ LS1/ LS2/L100/L200/L300 24-005 SATURN LW/LW1/ LW2/ LW200/300 24-006 SATURN ION 24-007 SATURN SKY 24-008 SATURN AURA 24-009 SATURN OUTLOOK 24-010 SATURN ASTRA 24-011 SATURN OTHER AUTOMOBILE 24-398 SATURN UNKNOWN AUTOMOBILE 24-399 SATURN VUE 24-401 SATURN RELAY 24-441 SATURN OTHER LIGHT TRUCK 24-498 SATURN UNKNOWN LIGHT TRUCK 24-499	SATURN	SL	24-001
SATURN EV 24-004 SATURN LS/ LS1/ LS2/L100/L200/L300 24-005 SATURN LW/LW1/ LW2/ LW200/300 24-006 SATURN ION 24-007 SATURN SKY 24-008 SATURN AURA 24-009 SATURN OUTLOOK 24-010 SATURN ASTRA 24-011 SATURN OTHER AUTOMOBILE 24-398 SATURN UNKNOWN AUTOMOBILE 24-399 SATURN VUE 24-401 SATURN RELAY 24-441 SATURN OTHER LIGHT TRUCK 24-498 SATURN UNKNOWN LIGHT TRUCK 24-499	SATURN	SC	24-002
SATURN LS/ LS1/ LS2/L100/L200/L300 24-005 SATURN LW/LW1/ LW2/ LW200/300 24-006 SATURN ION 24-007 SATURN SKY 24-008 SATURN AURA 24-009 SATURN OUTLOOK 24-010 SATURN ASTRA 24-011 SATURN OTHER AUTOMOBILE 24-398 SATURN UNKNOWN AUTOMOBILE 24-399 SATURN VUE 24-401 SATURN RELAY 24-441 SATURN OTHER LIGHT TRUCK 24-498 SATURN UNKNOWN LIGHT TRUCK 24-499	SATURN	SW	24-003
SATURN LW/LW1/ LW2/ LW200/300 24-006 SATURN ION 24-007 SATURN SKY 24-008 SATURN AURA 24-009 SATURN OUTLOOK 24-010 SATURN ASTRA 24-011 SATURN OTHER AUTOMOBILE 24-398 SATURN UNKNOWN AUTOMOBILE 24-399 SATURN VUE 24-401 SATURN RELAY 24-441 SATURN OTHER LIGHT TRUCK 24-498 SATURN UNKNOWN LIGHT TRUCK 24-499	SATURN	EV	24-004
SATURN ION 24-007 SATURN SKY 24-008 SATURN AURA 24-009 SATURN OUTLOOK 24-010 SATURN ASTRA 24-011 SATURN OTHER AUTOMOBILE 24-398 SATURN UNKNOWN AUTOMOBILE 24-399 SATURN VUE 24-401 SATURN RELAY 24-441 SATURN OTHER LIGHT TRUCK 24-498 SATURN UNKNOWN LIGHT TRUCK 24-499	SATURN	LS/ LS1/ LS2/L100/L200/L300	24-005
SATURN SKY 24-008 SATURN AURA 24-009 SATURN OUTLOOK 24-010 SATURN ASTRA 24-011 SATURN OTHER AUTOMOBILE 24-398 SATURN UNKNOWN AUTOMOBILE 24-399 SATURN VUE 24-401 SATURN RELAY 24-441 SATURN OTHER LIGHT TRUCK 24-498 SATURN UNKNOWN LIGHT TRUCK 24-499	SATURN	LW/LW1/ LW2/ LW200/300	24-006
SATURN AURA 24-009 SATURN OUTLOOK 24-010 SATURN ASTRA 24-011 SATURN OTHER AUTOMOBILE 24-398 SATURN UNKNOWN AUTOMOBILE 24-399 SATURN VUE 24-401 SATURN RELAY 24-441 SATURN OTHER LIGHT TRUCK 24-498 SATURN UNKNOWN LIGHT TRUCK 24-499	SATURN	ION	24-007
SATURN OUTLOOK 24-010 SATURN ASTRA 24-011 SATURN OTHER AUTOMOBILE 24-398 SATURN UNKNOWN AUTOMOBILE 24-399 SATURN VUE 24-401 SATURN RELAY 24-441 SATURN OTHER LIGHT TRUCK 24-498 SATURN UNKNOWN LIGHT TRUCK 24-499	SATURN	SKY	24-008
SATURN ASTRA 24-011 SATURN OTHER AUTOMOBILE 24-398 SATURN UNKNOWN AUTOMOBILE 24-399 SATURN VUE 24-401 SATURN RELAY 24-441 SATURN OTHER LIGHT TRUCK 24-498 SATURN UNKNOWN LIGHT TRUCK 24-499	SATURN	AURA	24-009
SATURN OTHER AUTOMOBILE 24-398 SATURN UNKNOWN AUTOMOBILE 24-399 SATURN VUE 24-401 SATURN RELAY 24-441 SATURN OTHER LIGHT TRUCK 24-498 SATURN UNKNOWN LIGHT TRUCK 24-499	SATURN	OUTLOOK	24-010
SATURN UNKNOWN AUTOMOBILE 24-399 SATURN VUE 24-401 SATURN RELAY 24-441 SATURN OTHER LIGHT TRUCK 24-498 SATURN UNKNOWN LIGHT TRUCK 24-499	SATURN	ASTRA	24-011
SATURN VUE 24-401 SATURN RELAY 24-441 SATURN OTHER LIGHT TRUCK 24-498 SATURN UNKNOWN LIGHT TRUCK 24-499	SATURN	OTHER AUTOMOBILE	24-398
SATURN RELAY 24-441 SATURN OTHER LIGHT TRUCK 24-498 SATURN UNKNOWN LIGHT TRUCK 24-499	SATURN	UNKNOWN AUTOMOBILE	24-399
SATURN OTHER LIGHT TRUCK 24-498 SATURN UNKNOWN LIGHT TRUCK 24-499	SATURN	VUE	24-401
SATURN UNKNOWN LIGHT TRUCK 24-499	SATURN	RELAY	24-441
	SATURN	OTHER LIGHT TRUCK	24-498
SATURN UNKNOWN VEHICLE 24-999	SATURN	UNKNOWN LIGHT TRUCK	24-499
	SATURN	UNKNOWN VEHICLE	24-999

Vehicle Make	Vehicle Model	SAS Code
SCANIA	MEDIUM/HEAVY - OTHER	98-807
SCANIA	MEDIUM/HEAVY - UNKNOWN ENGINE LOCATION	98-807
SCANIA	MEDIUM/HEAVY - COE/HIGH ENTRY	98-807
SCANIA	MEDIUM/HEAVY - COE/LOW ENTRY	98-807
SCANIA	MEDIUM/HEAVY - CBE	98-807
SCANIA	MEDIUM/HEAVY-BASED MOTORHOME	98-807
SCANIA	MEDIUM/HEAVY - COE/ENTRY POSITION UNKNOWN	98-807
SCION	XB (2012 ON)	67-031
SCION	TC (2012 ON)	67-032
SCION	XD (2012 ON)	67-033
SCION	IQ (2012 ON)	67-034
SCION	FR-S	67-035
SCION	OTHER AUTOMOBILE	67-398
SCION	UNKNOWN AUTOMOBILE	67-399
SIMCA	UNKNOWN AUTOMOBILE	69-044
SIMCA	OTHER AUTOMOBILE	69-044
SMART	FORTWO	65-031
SMART	OTHER AUTOMOBILE	65-398
SMART	UNKNOWN AUTOMOBILE	65-399
STERLING	827S	61-031
STERLING	OTHER AUTOMOBILE	61-398
STERLING	UNKNOWN AUTOMOBILE	61-399
STERLING	UNKNOWN VEHICLE	61-999
STERLING TRUCKS	MEDIUM/HEAVY - OTHER	98-808
STERLING TRUCKS	MEDIUM/HEAVY - COE/ENTRY POSITION UNKNOWN	98-808
STERLING TRUCKS	MEDIUM/HEAVY - UNKNOWN ENGINE LOCATION	98-808
STERLING TRUCKS	MEDIUM/HEAVY - COE/HIGH ENTRY	98-808
STERLING TRUCKS	MEDIUM/HEAVY - CBE	98-808
STERLING TRUCKS	MEDIUM/HEAVY - COE/LOW ENTRY	98-808
STUDEBAKER	OTHER AUTOMOBILE	29-001
STUDEBAKER	UNKNOWN AUTOMOBILE	29-001
STUDEBAKER	HAWK	29-001
STUDEBAKER	LARK	29-001
STUDEBAKER	GRAN TURISMO	29-001
STUDEBAKER	CRUISER	29-001
STUTZ	OTHER AUTOMOBILE	29-398

<u>Vehicle Make</u> STUTZ	Vehicle Model UNKNOWN AUTOMOBILE	<u>SAS</u> <u>Code</u> 29-398
SUBARU	DL/FE/G/GF/GL/GLF/STD/LOYALE	48-031
SUBARU	STAR	48-032
SUBARU	360	48-033
SUBARU	LEGACY/OUTBACK(MY<'03)	48-034
SUBARU	XT/XT6	48-035
SUBARU	JUSTY	48-036
SUBARU	SVX	48-037
SUBARU	IMPREZA	48-038
SUBARU	RX	48-039
SUBARU	BRAT DL, GL	48-043
SUBARU	BAJA	48-044
SUBARU	OUTBACK	48-045
SUBARU	BRZ	48-046
SUBARU	OTHER AUTOMOBILE	48-398
SUBARU	UNKNOWN AUTOMOBILE	48-399
SUBARU	FORESTER	48-401
SUBARU	B9 TRIBECA	48-402
SUBARU	XV CROSSTREK	48-403
SUBARU	OTHER LIGHT TRUCK	48-498
SUBARU	UNKNOWN LIGHT TRUCK	48-499
SUBARU	UNKNOWN VEHICLE	48-999
SUNBEAM	UNKNOWN AUTOMOBILE	69-045
SUNBEAM	OTHER AUTOMOBILE	69-045
SUZUKI	SWIFT/SA310	53-031
SUZUKI	SWIFT	53-034
SUZUKI	ESTEEM	53-035
SUZUKI	AERIO	53-036
SUZUKI	FORENZA	53-037
SUZUKI	VERONA	53-038
SUZUKI	RENO	53-039
SUZUKI	SX4	53-040
SUZUKI	KIZASHI	53-041
SUZUKI	OTHER AUTOMOBILE	53-398
SUZUKI	UNKNOWN AUTOMOBILE	53-399
SUZUKI	SAMURAI	53-401
SUZUKI	SIDEKICK/GRAND VITARA	53-402
SUZUKI	X-90/VITARA	53-403
SUZUKI	GRAND VITARA	53-404
SUZUKI	XL7	53-405
SUZUKI	EQUATOR	53-481
SUZUKI	OTHER LIGHT TRUCK	53-498

SUZUKI UNKNOWN LIGHT TRUCK \$3-499 SUZUKI MOTORCYCLE (000-050CC) \$3-701 SUZUKI MOTORCYCLE (051-124CC) \$3-703 SUZUKI MOTORCYCLE (125-349CC) \$3-703 SUZUKI MOTORCYCLE (450-749CC) \$3-705 SUZUKI MOTORCYCLE (750CC-0VER) \$3-706 SUZUKI MOTORCYCLE (UNKNOWN CC) \$3-709 SUZUKI ATC/ATV (000-050CC) \$3-731 SUZUKI ATC/ATV (005-124CC) \$3-732 SUZUKI ATC/ATV (125-349CC) \$3-733 SUZUKI ATC/ATV (125-349CC) \$3-733 SUZUKI ATC/ATV (125-349CC) \$3-733 SUZUKI ATC/ATV (105-124CC) \$3-733 SUZUKI ATC/ATV (105-00-00CC) \$3-733 SUZUKI ATC/ATV (105-00CC) \$3-733 SUZUKI ATC/ATV (105-00CC) \$3-739 SUZUKI OTHER MOTORED CYCLE \$3-799 SUZUKI UNKNOWN NOTORED CYCLE \$3-799 SUZUKI UNKNOWN NEHICLE \$3-999 TESLA MODEL	Vehicle Make	Vehicle Model	SAS Code
SUZUKI MOTORCYCLE (I25-124CC) 53-702 SUZUKI MOTORCYCLE (125-349CC) 53-703 SUZUKI MOTORCYCLE (135-0-449CC) 53-704 SUZUKI MOTORCYCLE (1450-749CC) 53-705 SUZUKI MOTORCYCLE (UNKNOWN CC) 53-706 SUZUKI ATC/ATV (000-050CC) 53-731 SUZUKI ATC/ATV (051-124CC) 53-732 SUZUKI ATC/ATV (125-349CC) 53-733 SUZUKI ATC/ATV (125-349CC) 53-733 SUZUKI ATC/ATV (14100CC) 53-733 SUZUKI ATC/ATV (10KNOWN CC) 53-739 SUZUKI OTHER MOTORED CYCLE 53-798 SUZUKI UNKNOWN NOTORED CYCLE 53-799 SUZUKI UNKNOWN VEHICLE 53-799 SUZUKI UNKNOWN VEHICLE 53-799 SUZUKI UNKNOWN AUTOMOBILE 29-005 TESLA ROADSTER 29-005 TESLA ROADSTER 29-005 TESLA MODEL S 29-005 TOYOTA COROLA 49-031	SUZUKI		53-499
SUZUKI MOTORCYCLE (125-349CC) 53-703 SUZUKI MOTORCYCLE (350-449CC) 53-704 SUZUKI MOTORCYCLE (750CC-0VCR) 53-706 SUZUKI MOTORCYCLE (750CC-0VCR) 53-706 SUZUKI MOTORCYCLE (UNKNOWN CC) 53-709 SUZUKI ATC/ATV (000-050CC) 53-731 SUZUKI ATC/ATV (051-124CC) 53-732 SUZUKI ATC/ATV (125-349CC) 53-733 SUZUKI ATC/ATV (101KNOWN CC) 53-739 SUZUKI OTHER MOTORED CYCLE 53-798 SUZUKI UNKNOWN MOTORED CYCLE 53-799 SUZUKI UNKNOWN VEHICLE 53-999 TESLA MODEL X 29-005 TESLA MODEL X 29-005 TESLA MODEL S 29-005 TOYOTA CORONA 49-031 TOYOTA CORO	SUZUKI	MOTORCYCLE (000-050CC)	53-701
SUZUKI MOTORCYCLE (350-449CC) 53-704 SUZUKI MOTORCYCLE (450-749CC) 53-705 SUZUKI MOTORCYCLE (450-749CC) 53-705 SUZUKI MOTORCYCLE (UNKNOWN CC) 53-709 SUZUKI ATC/ATV (000-050CC) 53-731 SUZUKI ATC/ATV (125-349CC) 53-732 SUZUKI ATC/ATV (125-349CC) 53-733 SUZUKI ATC/ATV (10KNOWN CC) 53-738 SUZUKI OTHER MOTORED CYCLE 53-798 SUZUKI UNKNOWN MOTORED CYCLE 53-799 SUZUKI UNKNOWN VEHICLE 52-005 <td>SUZUKI</td> <td>MOTORCYCLE (051-124CC)</td> <td>53-702</td>	SUZUKI	MOTORCYCLE (051-124CC)	53-702
SUZUKI MOTORCYCLE (450-749CC) 53-705 SUZUKI MOTORCYCLE (750CC-0VER) 53-706 SUZUKI MOTORCYCLE (UNKNOWN CC) 53-709 SUZUKI ATC/ATV (000-050CC) 53-731 SUZUKI ATC/ATV (051-124CC) 53-732 SUZUKI ATC/ATV (125-349CC) 53-733 SUZUKI ATC/ATV (125-349CC) 53-733 SUZUKI ATC/ATV (UNKNOWN CC) 53-739 SUZUKI OTHER MOTORED CYCLE 53-798 SUZUKI UNKNOWN MOTORED CYCLE 53-799 SUZUKI UNKNOWN VEHICLE 53-999 TESLA MODEL X 29-005 TESLA ROADSTER 29-005 TESLA ROADSTER 29-005 TESLA MODEL S 29-005 TESLA MODEL S 29-005 TESLA UNKNOWN AUTOMOBILE 29-005 TOYOTA COROLLA 49-032 TOYOTA COROLLA 49-033 TOYOTA CRESSIDA 49-034 TOYOTA CRESSIDA	SUZUKI	MOTORCYCLE (125-349CC)	53-703
SUZUKI MOTORCYCLE (750CC-OVER) 53-706 SUZUKI MOTORCYCLE (UNKNOWN CC) 53-709 SUZUKI ATC/ATV (000-050CC) 53-731 SUZUKI ATC/ATV (051-124CC) 53-732 SUZUKI ATC/ATV (350CC-OVER) 53-733 SUZUKI ATC/ATV (UNKNOWN CC) 53-739 SUZUKI OTHER MOTORED CYCLE 53-798 SUZUKI UNKNOWN MOTORED CYCLE 53-798 SUZUKI UNKNOWN VEHICLE 53-999 TESLA MODEL X 29-005 TESLA ROADSTER 29-005 TESLA MODEL S 29-005 TOYOTA CORONA 49-031 TOYOTA CORONA 49-032 TOYOTA CRESIDA 49-033 TOYOTA CRESSIDA 49-034 TOYOTA CRESSIDA 49-035	SUZUKI	MOTORCYCLE (350-449CC)	53-704
SUZUKI MOTORCYCLE (UNKNOWN CC) 53-709 SUZUKI ATC/ATV (000-050CC) 53-731 SUZUKI ATC/ATV (051-124CC) 53-732 SUZUKI ATC/ATV (125-349CC) 53-733 SUZUKI ATC/ATV (350CC-OVER) 53-734 SUZUKI ATC/ATV (UNKNOWN CC) 53-739 SUZUKI OTHER MOTORED CYCLE 53-798 SUZUKI UNKNOWN MOTORED CYCLE 53-799 SUZUKI UNKNOWN VEHICLE 53-999 TESLA MODEL X 29-005 TESLA MODEL S 29-005 TESLA MODEL S 29-005 TESLA MODEL S 29-005 TESLA UNKNOWN AUTOMOBILE 29-005 TOYOTA CORONA 49-031 TOYOTA CELICA 49-032 TOYOTA CELICA 49-033 TOYOTA CELICA 49-034 TOYOTA CRESSIDA 49-035 TOYOTA CRESSIDA 49-035 TOYOTA CRESSIDA 49-036 <	SUZUKI	MOTORCYCLE (450-749CC)	53-705
SUZUKI ATC/ATV (000-050CC) 53-731 SUZUKI ATC/ATV (051-124CC) 53-732 SUZUKI ATC/ATV (125-349CC) 53-733 SUZUKI ATC/ATV (125-349CC) 53-734 SUZUKI ATC/ATV (UNKNOWN CC) 53-739 SUZUKI OTHER MOTORED CYCLE 53-798 SUZUKI UNKNOWN MOTORED CYCLE 53-799 SUZUKI UNKNOWN VEHICLE 53-799 SUZUKI MODEL X 29-005 <td< td=""><td>SUZUKI</td><td>MOTORCYCLE (750CC-OVER)</td><td>53-706</td></td<>	SUZUKI	MOTORCYCLE (750CC-OVER)	53-706
SUZUKI ATC/ATV (051-124CC) 53-732 SUZUKI ATC/ATV (125-349CC) 53-733 SUZUKI ATC/ATV (350CC-OVER) 53-734 SUZUKI ATC/ATV (UNKNOWN CC) 53-739 SUZUKI OTHER MOTORED CYCLE 53-798 SUZUKI UNKNOWN MOTORED CYCLE 53-799 SUZUKI UNKNOWN VEHICLE 53-999 TESLA MODEL X 29-005 TESLA MODEL S 29-005 TOYOTA CORONA 49-031 TOYOTA CORONA 49-031 TOYOTA COROLLA 49-032 TOYOTA CRESSIDA 49-034 TOYOTA CRESSIDA 49-035 TOYOTA CRESSIDA 49-036 TOYOTA CRESINA 49-036 TOYOTA CRESINA 49-036 TOYOTA	SUZUKI	MOTORCYCLE (UNKNOWN CC)	53-709
SUZUKI ATC/ATV (125-349CC) 53-733 SUZUKI ATC/ATV (350CC-OVER) 53-734 SUZUKI ATC/ATV (UNKNOWN CC) 53-739 SUZUKI OTHER MOTORED CYCLE 53-798 SUZUKI UNKNOWN MOTORED CYCLE 53-799 SUZUKI UNKNOWN VEHICLE 53-999 TESLA MODEL X 29-005 TESLA ROADSTER 29-005 TESLA MODEL S 29-005 TESLA 49-005 <td>SUZUKI</td> <td>ATC/ATV (000-050CC)</td> <td>53-731</td>	SUZUKI	ATC/ATV (000-050CC)	53-731
SUZUKI ATC/ATV (JUNKNOWN CC) 53-734 SUZUKI ATC/ATV (UNKNOWN CC) 53-739 SUZUKI OTHER MOTORED CYCLE 53-798 SUZUKI UNKNOWN MOTORED CYCLE 53-799 SUZUKI UNKNOWN VEHICLE 53-999 SUZUKI UNKNOWN VEHICLE 53-999 TESLA MODEL X 29-005 TESLA ROADSTER 29-005 TESLA MODEL S 29-005 TESLA UNKNOWN AUTOMOBILE 29-005 TOYOTA CORONA 49-031 TOYOTA COROLLA 49-032 TOYOTA COROLLA 49-033 TOYOTA SUPRA 49-034 TOYOTA CRESSIDA 49-035 TOYOTA CRESSIDA 49-035 TOYOTA CROWN 49-036 TOYOTA CROWN 49-036 TOYOTA TERCEL 49-038 TOYOTA STARLET 49-039 TOYOTA MR-2 49-041 TOYOTA <td< td=""><td>SUZUKI</td><td>ATC/ATV (051-124CC)</td><td>53-732</td></td<>	SUZUKI	ATC/ATV (051-124CC)	53-732
SUZUKI ATC/ATV (UNKNOWN CC) 53-739 SUZUKI OTHER MOTORED CYCLE 53-798 SUZUKI UNKNOWN MOTORED CYCLE 53-799 SUZUKI UNKNOWN VEHICLE 53-799 TESLA MODEL X 29-005 TESLA ROADSTER 29-005 TESLA MODEL S 29-005 TESLA UNKNOWN AUTOMOBILE 29-005 TOYOTA CORONA 49-031 TOYOTA COROLLA 49-032 TOYOTA CELICA 49-033 TOYOTA CELICA 49-033 TOYOTA CRESSIDA 49-035 TOYOTA CRESSIDA 49-035 TOYOTA CRESSIDA 49-035 TOYOTA CRENINA 49-037 TOYOTA TERCEL 49-038 TOYOTA TERCEL 49-038 TOYOTA STARLET 49-039 TOYOTA MR-2 49-041 TOYOTA MR-2 49-042 TOYOTA SCION XA	SUZUKI	ATC/ATV (125-349CC)	53-733
SUZUKI OTHER MOTORED CYCLE 53-798 SUZUKI UNKNOWN MOTORED CYCLE 53-799 SUZUKI UNKNOWN VEHICLE 53-799 TESLA MODEL X 29-005 TESLA ROADSTER 29-005 TESLA MODEL S 29-005 TOYOTA CORONA 49-031 TOYOTA CORONA 49-031 TOYOTA COROLLA 49-032 TOYOTA CELICA 49-033 TOYOTA CELICA 49-034 TOYOTA CRESSIDA 49-035 TOYOTA CROWN 49-035 TOYOTA CROWN 49-036 TOYOTA CROWN 49-037 TOYOTA TERCEL 49-038 TOYOTA STARLET 49-038 TOYOTA CAMRY 49-040 TOYOTA MR-2 49-041 TOYOTA AVALON 49-042 TOYOTA SOLARA 49-044 TOYOTA SCION XA 49-048	SUZUKI	ATC/ATV (350CC-OVER)	53-734
SUZUKI UNKNOWN MOTORED CYCLE 53-799 SUZUKI UNKNOWN VEHICLE 53-999 TESLA MODEL X 29-005 TESLA ROADSTER 29-005 TESLA MODEL S 29-005 TESLA UNKNOWN AUTOMOBILE 29-005 TOYOTA CORONA 49-031 TOYOTA COROLLA 49-031 TOYOTA CELICA 49-033 TOYOTA CELICA 49-033 TOYOTA CRESSIDA 49-034 TOYOTA CROWN 49-035 TOYOTA CROWN 49-036 TOYOTA CARINA 49-037 TOYOTA TERCEL 49-038 TOYOTA STARLET 49-039 TOYOTA CAMRY 49-040 TOYOTA MR-2 49-041 TOYOTA AVALON 49-042 TOYOTA SOLARA 49-044 TOYOTA SCION XA 49-048 TOYOTA SCION XB (< 2012)	SUZUKI	ATC/ATV (UNKNOWN CC)	53-739
SUZUKI UNKNOWN VEHICLE 53-999 TESLA MODEL X 29-005 TESLA ROADSTER 29-005 TESLA MODEL S 29-005 TESLA UNKNOWN AUTOMOBILE 29-005 TOYOTA CORONA 49-031 TOYOTA COROLLA 49-032 TOYOTA CELICA 49-033 TOYOTA SUPRA 49-034 TOYOTA CRESSIDA 49-035 TOYOTA CRESSIDA 49-036 TOYOTA CROWN 49-036 TOYOTA CRESIDA 49-037 TOYOTA CRESIDA 49-035 TOYOTA CRESSIDA 49-035 TOYOTA CRESSIDA 49-034 TOYOTA CRESSIDA 49-037 TOYOTA TERCEL 49-038 TOYOTA TERCEL 49-038 TOYOTA STARLET 49-039 TOYOTA MR-2 49-041 TOYOTA AVALON 49-042	SUZUKI	OTHER MOTORED CYCLE	53-798
TESLA MODEL X 29-005 TESLA ROADSTER 29-005 TESLA MODEL S 29-005 TESLA UNKNOWN AUTOMOBILE 29-005 TOYOTA CORONA 49-031 TOYOTA COROLLA 49-032 TOYOTA CELICA 49-033 TOYOTA SUPRA 49-034 TOYOTA CRESSIDA 49-035 TOYOTA CROWN 49-036 TOYOTA CARINA 49-037 TOYOTA TERCEL 49-038 TOYOTA STARLET 49-039 TOYOTA CAMRY 49-040 TOYOTA MR-2 49-041 TOYOTA ASEO 49-042 TOYOTA AVALON 49-043 TOYOTA SOLARA 49-044 TOYOTA ECHO 49-045 TOYOTA SCION XA 49-046 TOYOTA SCION XB (< 2012)	SUZUKI	UNKNOWN MOTORED CYCLE	53-799
TESLA ROADSTER 29-005 TESLA MODEL S 29-005 TESLA UNKNOWN AUTOMOBILE 29-005 TOYOTA CORONA 49-031 TOYOTA COROLLA 49-032 TOYOTA CELICA 49-033 TOYOTA SUPRA 49-034 TOYOTA CRESSIDA 49-035 TOYOTA CROWN 49-036 TOYOTA CARINA 49-037 TOYOTA TERCEL 49-038 TOYOTA STARLET 49-039 TOYOTA CAMRY 49-040 TOYOTA MR-2 49-041 TOYOTA AVALON 49-042 TOYOTA SOLARA 49-043 TOYOTA SOLARA 49-045 TOYOTA PRIUS 49-046 TOYOTA SCION XA 49-048 TOYOTA SCION XB (< 2012)	SUZUKI	UNKNOWN VEHICLE	53-999
TESLA MODEL S 29-005 TESLA UNKNOWN AUTOMOBILE 29-005 TOYOTA CORONA 49-031 TOYOTA COROLLA 49-032 TOYOTA CELICA 49-033 TOYOTA SUPRA 49-034 TOYOTA CRESSIDA 49-035 TOYOTA CROWN 49-036 TOYOTA CARINA 49-037 TOYOTA TERCEL 49-038 TOYOTA STARLET 49-039 TOYOTA CAMRY 49-040 TOYOTA MR-2 49-041 TOYOTA PASEO 49-042 TOYOTA AVALON 49-043 TOYOTA SOLARA 49-044 TOYOTA ECHO 49-045 TOYOTA SCION XA 49-048 TOYOTA SCION XB (< 2012)	TESLA	MODEL X	29-005
TESLA UNKNOWN AUTOMOBILE 29-005 TOYOTA CORONA 49-031 TOYOTA COROLLA 49-032 TOYOTA CELICA 49-033 TOYOTA SUPRA 49-034 TOYOTA CRESSIDA 49-035 TOYOTA CROWN 49-036 TOYOTA CARINA 49-037 TOYOTA TERCEL 49-038 TOYOTA STARLET 49-039 TOYOTA CAMRY 49-040 TOYOTA MR-2 49-041 TOYOTA PASEO 49-042 TOYOTA AVALON 49-043 TOYOTA SOLARA 49-044 TOYOTA ECHO 49-045 TOYOTA SCION XA 49-048 TOYOTA SCION XB (< 2012)	TESLA	ROADSTER	29-005
TOYOTA CORONA 49-031 TOYOTA COROLLA 49-032 TOYOTA CELICA 49-033 TOYOTA SUPRA 49-034 TOYOTA CRESSIDA 49-035 TOYOTA CROWN 49-036 TOYOTA CARINA 49-037 TOYOTA TERCEL 49-038 TOYOTA STARLET 49-039 TOYOTA CAMRY 49-040 TOYOTA MR-2 49-041 TOYOTA PASEO 49-042 TOYOTA AVALON 49-043 TOYOTA SOLARA 49-044 TOYOTA ECHO 49-045 TOYOTA SCION XA 49-048 TOYOTA SCION XB (< 2012)	TESLA	MODEL S	29-005
TOYOTA COROLLA 49-032 TOYOTA CELICA 49-033 TOYOTA SUPRA 49-034 TOYOTA CRESSIDA 49-035 TOYOTA CROWN 49-036 TOYOTA CARINA 49-037 TOYOTA TERCEL 49-038 TOYOTA STARLET 49-039 TOYOTA CAMRY 49-040 TOYOTA MR-2 49-041 TOYOTA PASEO 49-042 TOYOTA AVALON 49-043 TOYOTA SOLARA 49-044 TOYOTA ECHO 49-045 TOYOTA SCION XA 49-048 TOYOTA SCION XB (< 2012)	TESLA	UNKNOWN AUTOMOBILE	29-005
TOYOTA CELICA 49-033 TOYOTA SUPRA 49-034 TOYOTA CRESSIDA 49-035 TOYOTA CROWN 49-036 TOYOTA CARINA 49-037 TOYOTA TERCEL 49-038 TOYOTA STARLET 49-039 TOYOTA CAMRY 49-040 TOYOTA MR-2 49-041 TOYOTA PASEO 49-042 TOYOTA AVALON 49-043 TOYOTA SOLARA 49-044 TOYOTA ECHO 49-045 TOYOTA SCION XA 49-048 TOYOTA SCION XB (< 2012)	TOYOTA	CORONA	49-031
TOYOTA SUPRA 49-034 TOYOTA CRESSIDA 49-035 TOYOTA CROWN 49-036 TOYOTA CARINA 49-037 TOYOTA TERCEL 49-038 TOYOTA STARLET 49-039 TOYOTA CAMRY 49-040 TOYOTA MR-2 49-041 TOYOTA PASEO 49-042 TOYOTA AVALON 49-043 TOYOTA SOLARA 49-044 TOYOTA ECHO 49-045 TOYOTA SCION XA 49-048 TOYOTA SCION XB (< 2012)	TOYOTA	COROLLA	49-032
TOYOTA CRESSIDA 49-035 TOYOTA CROWN 49-036 TOYOTA CARINA 49-037 TOYOTA TERCEL 49-038 TOYOTA STARLET 49-039 TOYOTA CAMRY 49-040 TOYOTA MR-2 49-041 TOYOTA PASEO 49-042 TOYOTA AVALON 49-043 TOYOTA SOLARA 49-044 TOYOTA ECHO 49-045 TOYOTA PRIUS 49-046 TOYOTA SCION XA 49-048 TOYOTA SCION XB (< 2012)	TOYOTA	CELICA	49-033
TOYOTA CROWN 49-036 TOYOTA CARINA 49-037 TOYOTA TERCEL 49-038 TOYOTA STARLET 49-039 TOYOTA CAMRY 49-040 TOYOTA MR-2 49-041 TOYOTA PASEO 49-042 TOYOTA AVALON 49-043 TOYOTA SOLARA 49-044 TOYOTA ECHO 49-045 TOYOTA PRIUS 49-046 TOYOTA SCION XA 49-048 TOYOTA SCION XB (< 2012)	TOYOTA	SUPRA	49-034
TOYOTA CARINA 49-037 TOYOTA TERCEL 49-038 TOYOTA STARLET 49-039 TOYOTA CAMRY 49-040 TOYOTA MR-2 49-041 TOYOTA PASEO 49-042 TOYOTA AVALON 49-043 TOYOTA SOLARA 49-044 TOYOTA ECHO 49-045 TOYOTA PRIUS 49-046 TOYOTA SCION XA 49-048 TOYOTA SCION XB (< 2012)	TOYOTA	CRESSIDA	49-035
TOYOTA TERCEL 49-038 TOYOTA STARLET 49-039 TOYOTA CAMRY 49-040 TOYOTA MR-2 49-041 TOYOTA PASEO 49-042 TOYOTA AVALON 49-043 TOYOTA SOLARA 49-044 TOYOTA ECHO 49-045 TOYOTA PRIUS 49-046 TOYOTA SCION XA 49-048 TOYOTA SCION XB (< 2012)	TOYOTA	CROWN	49-036
TOYOTA STARLET 49-039 TOYOTA CAMRY 49-040 TOYOTA MR-2 49-041 TOYOTA PASEO 49-042 TOYOTA AVALON 49-043 TOYOTA SOLARA 49-044 TOYOTA ECHO 49-045 TOYOTA PRIUS 49-046 TOYOTA SCION XA 49-048 TOYOTA SCION XB (< 2012)	TOYOTA	CARINA	49-037
TOYOTA CAMRY 49-040 TOYOTA MR-2 49-041 TOYOTA PASEO 49-042 TOYOTA AVALON 49-043 TOYOTA SOLARA 49-044 TOYOTA ECHO 49-045 TOYOTA PRIUS 49-046 TOYOTA SCION XA 49-048 TOYOTA SCION XB (< 2012)	TOYOTA	TERCEL	49-038
TOYOTA MR-2 49-041 TOYOTA PASEO 49-042 TOYOTA AVALON 49-043 TOYOTA SOLARA 49-044 TOYOTA ECHO 49-045 TOYOTA PRIUS 49-046 TOYOTA SCION XA 49-048 TOYOTA SCION XB (< 2012)	TOYOTA	STARLET	49-039
TOYOTA PASEO 49-042 TOYOTA AVALON 49-043 TOYOTA SOLARA 49-044 TOYOTA ECHO 49-045 TOYOTA PRIUS 49-046 TOYOTA SCION XA 49-048 TOYOTA SCION XB (< 2012)	TOYOTA	CAMRY	49-040
TOYOTA AVALON 49-043 TOYOTA SOLARA 49-044 TOYOTA ECHO 49-045 TOYOTA PRIUS 49-046 TOYOTA SCION XA 49-048 TOYOTA SCION XB (< 2012)	TOYOTA	MR-2	49-041
TOYOTA SOLARA 49-044 TOYOTA ECHO 49-045 TOYOTA PRIUS 49-046 TOYOTA SCION XA 49-048 TOYOTA SCION XB (< 2012)	TOYOTA	PASEO	49-042
TOYOTA ECHO 49-045 TOYOTA PRIUS 49-046 TOYOTA SCION XA 49-048 TOYOTA SCION XB (< 2012)	TOYOTA	AVALON	49-043
TOYOTA PRIUS 49-046 TOYOTA SCION XA 49-048 TOYOTA SCION XB (< 2012)	TOYOTA	SOLARA	49-044
TOYOTA SCION XA 49-048 TOYOTA SCION XB (< 2012)	TOYOTA	ECHO	49-045
TOYOTA SCION XB (< 2012)	TOYOTA	PRIUS	49-046
TOYOTA SCION TC (< 2012)	TOYOTA	SCION XA	49-048
TOYOTA YARIS 49-051 TOYOTA SCION XD (< 2012)	TOYOTA	SCION XB (< 2012)	49-049
TOYOTA SCION XD (< 2012) 49-052	TOYOTA	SCION TC (< 2012)	49-050
,	TOYOTA	YARIS	49-051
TOYOTA VFN7A 49-052	TOYOTA	SCION XD (< 2012)	49-052
101011. 45-000	TOYOTA	VENZA	49-053

Vehicle Make	Vehicle Model	SAS Code
TOYOTA	SCION IQ (< 2012)	49-054
TOYOTA	OTHER AUTOMOBILE	49-398
TOYOTA	UNKNOWN AUTOMOBILE	49-399
TOYOTA	4-RUNNER	49-401
TOYOTA	RAV-4	49-402
TOYOTA	HIGHLANDER	49-403
TOYOTA	MATRIX	49-404
TOYOTA	FJ CRUISER	49-405
TOYOTA	LANDCRUISER	49-421
TOYOTA	SEQUOIA	49-422
TOYOTA	MINVAN/PREVIA	49-441
TOYOTA	SIENNA	49-442
TOYOTA	PICKUP	49-471
TOYOTA	TACOMA	49-472
TOYOTA	T-100	49-481
TOYOTA	TUNDRA	49-482
TOYOTA	OTHER LIGHT TRUCK	49-498
TOYOTA	UNKNOWN LIGHT TRUCK	49-499
TOYOTA	UNKNOWN VEHICLE	49-999
TRIUMPH	SPITFIRE	50-031
TRIUMPH	GT-6	50-032
TRIUMPH	TR4	50-033
TRIUMPH	TR6	50-034
TRIUMPH	TR7/8	50-035
TRIUMPH	HERALD	50-036
TRIUMPH	STAG	50-037
TRIUMPH	OTHER AUTOMOBILE	50-398
TRIUMPH	UNKNOWN AUTOMOBILE	50-399
TRIUMPH	MOTORCYCLE (000-050CC)	50-701
TRIUMPH	MOTORCYCLE (051-124CC)	50-702
TRIUMPH	MOTORCYCLE (125-349CC)	50-703
TRIUMPH	MOTORCYCLE (350-449CC)	50-704
TRIUMPH	MOTORCYCLE (450-749CC)	50-705
TRIUMPH	MOTORCYCLE (750CC-OVER)	50-706
TRIUMPH	MOTORCYCLE (UNKNOWN CC)	50-709
TRIUMPH	UNKNOWN MOTORED CYCLE	50-799
TRIUMPH	UNKNOWN VEHICLE	50-999
TVR	OTHER AUTOMOBILE	69-046
TVR	UNKNOWN AUTOMOBILE	69-046
UNKNOWN DOMESTIC	UNKNOWN AUTOMOBILE	99-399
MANUFACTURER		

Vehicle Make	Vehicle Model	SAS Code
UNKNOWN DOMESTIC	UNKNOWN LIGHT TRUCK	99-499
MANUFACTURER		
UNKNOWN DOMESTIC	UNKNOWN MOTORED CYCLE	99-799
MANUFACTURER		
UNKNOWN DOMESTIC	UNKNOWN MEDIUM/HEAVY TRUCK	99-899
MANUFACTURER	LINUANOVANA DI IC TVDE	00.000
UNKNOWN DOMESTIC	UNKNOWN BUS TYPE	99-989
MANUFACTURER UNKNOWN DOMESTIC	UNKNOWN VEHICLE	99-999
MANUFACTURER	ONKNOWN VEHICLE	33-333
UNKNOWN FOREIGN	UNKNOWN AUTOMOBILE	99-399
MANUFACTURER	OMMOWN ACTOMOBILE	33 333
UNKNOWN FOREIGN	UNKNOWN LIGHT TRUCK	99-499
MANUFACTURER		
UNKNOWN FOREIGN	UNKNOWN MOTORED CYCLE	99-799
MANUFACTURER		
UNKNOWN FOREIGN	UNKNOWN MEDIUM/HEAVY TRUCK	99-899
MANUFACTURER		
UNKNOWN FOREIGN	UNKNOWN BUS TYPE	99-989
MANUFACTURER		
UNKNOWN FOREIGN	UNKNOWN VEHICLE	99-999
MANUFACTURER		00.000
UNKNOWN MANUFACTURER	UNKNOWN AUTOMOBILE	99-399
UNKNOWN MANUFACTURER	UNKNOWN LIGHT TRUCK	99-499
UNKNOWN MANUFACTURER	UNKNOWN MOTORED CYCLE	99-799
UNKNOWN MANUFACTURER	UNK TYPE TRUCK (LIGHT/MED/HEAVY)	99-899
UNKNOWN MANUFACTURER	UNKNOWN MEDIUM/HEAVY TRUCK	99-899
UNKNOWN MANUFACTURER	UNKNOWN BUS TYPE	99-989
UNKNOWN MANUFACTURER	UNKNOWN VEHICLE	99-999
UNKNOWN MEDIUM/HEAVY	Unknown medium/heavy truck	99-899
TRUCKS AND BUSES		
MANUFACTURER		
UNKNOWN MEDIUM/HEAVY	Unknown bus type	99-988
TRUCKS AND BUSES		
MANUFACTURER	KARAANINI CIJIA	20.024
VOLKSWAGEN	KARMANN GHIA	30-031
VOLKSWAGEN	BEETLE 1300/1500	30-032
VOLKSWAGEN	SUPER BEETLE	30-033
VOLKSWAGEN	411/412	30-034
VOLKSWAGEN	SQUAREBACK/FASTBACK	30-035
VOLKSWAGEN	RABBIT	30-036
VOLKSWAGEN	DASHER	30-037
VOLKSWAGEN	SCIROCCO	30-038
VOLKSWAGEN	JETTA ('81-'92)	30-040
VOLKSWAGEN	QUANTUM	30-041

<u>Vehicle Make</u>	<u>Vehicle Model</u>	SAS Code
VOLKSWAGEN	GOLF ('85-'92)/CABRIOLET/CABRIO/GTI/GLI	30-042
VOLKSWAGEN	RABBIT PICKUP	30-043
VOLKSWAGEN	FOX	30-044
VOLKSWAGEN	CORRADO	30-045
VOLKSWAGEN	PASSAT	30-046
VOLKSWAGEN	JETTA III (93+)	30-047
VOLKSWAGEN	GOLF III ('93+)	30-048
VOLKSWAGEN	NEW BEETLE	30-049
VOLKSWAGEN	PHAETON	30-050
VOLKSWAGEN	EOS	30-051
VOLKSWAGEN	CC	30-052
VOLKSWAGEN	OTHER AUTOMOBILE	30-398
VOLKSWAGEN	UNKNOWN AUTOMOBILE	30-399
VOLKSWAGEN	THE THING (181)	30-401
VOLKSWAGEN	TIGUAN	30-402
VOLKSWAGEN	TOUAREG	30-421
VOLKSWAGEN	VANAGON/CAMPER	30-441
VOLKSWAGEN	EUROVAN	30-442
VOLKSWAGEN	ROUTAN	30-443
VOLKSWAGEN	OTHER LIGHT TRUCK	30-498
VOLKSWAGEN	UNKNOWN LIGHT TRUCK	30-499
VOLKSWAGEN	OTHER VEHICLE	30-998
VOLKSWAGEN	UNKNOWN VEHICLE	30-999
VOLVO	122	51-031
VOLVO	142/144/145	51-032
VOLVO	164	51-033
VOLVO	240/242/244/245	51-034
VOLVO	262/264/265	51-035
VOLVO	1800	51-036
VOLVO	760/780	51-038
VOLVO	740	51-039
VOLVO	940	51-040
VOLVO	960	51-041
VOLVO	850	51-042
VOLVO	70 SERIES	51-043
VOLVO	90 SERIES	51-044
VOLVO	80 SERIES	51-045
VOLVO	40 SERIES	51-046
VOLVO	60 SERIES	51-047
VOLVO	V50	51-048
VOLVO	C30	51-049
VOLVO	XC60	51-050

<u>Vehicle Make</u> VOLVO	Vehicle Model	SAS <u>Code</u>
VOLVO	V60 OTHER AUTOMOBILE	51-051 51-398
VOLVO	UNKNOWN AUTOMOBILE	51-399
VOLVO	XC90	51-399
VOLVO	XC70 (2014+)	51-401
VOLVO	MEDIUM/HEAVY CBE	51-402
VOLVO	MEDIUM/HEAVY COE LOW ENTRY	51-882
VOLVO	MEDIUM/HEAVY COE LOW ENTRY	51-883
VOLVO	MEDIUM/HEAVY COE HIGH ENTRY MEDIUM/HEAVY - UNKNOWN ENGINE LOCATION	51-884
VOLVO	MEDIUM/HEAVY: COE ENTRY POSITION UNKNOWN	51-890
VOLVO	OTHER MEDIUM/HEAVY TRUCK	51-898
VOLVO	UNKNOWN MEDIUM/HEAVY TRUCK	51-899
VOLVO	MEDIUM BUS	51-899
VOLVO	OTHER BUS	51-981
VOLVO	UNKNOWN TYPE BUS	51-988
VOLVO	UNKNOWN TYPE BOS UNKNOWN VEHICLE	51-969
WARD LAFRANCE	MEDIUM/HEAVY - COE/ENTRY POSITION UNKNOWN	98-898
WARD LAFRANCE	MEDIUM/HEAVY - COE/ENTRY POSITION ONKNOWN MEDIUM/HEAVY - UNKNOWN ENGINE LOCATION	98-898
WARD LAFRANCE	MEDIUM/HEAVY - COE/HIGH ENTRY	98-898
WARD LAFRANCE	MEDIUM/HEAVY - COE/LOW ENTRY	98-898
WARD LAFRANCE	MEDIUM/HEAVY - CBE	98-898
WARD LAFRANCE	MEDIUM/HEAVY-BASED MOTORHOME	98-898
WARD LAFRANCE	MEDIUM/HEAVY - OTHER	98-898
WESTERN STAR	MEDIUM/HEAVY - OTHER	98-804
WESTERN STAR	MEDIUM/HEAVY - COE/ENTRY POSITION UNKNOWN	98-804
WESTERN STAR	MEDIUM/HEAVY - COE/HIGH ENTRY	98-804
WESTERN STAR	MEDIUM/HEAVY - COE/LOW ENTRY	98-804
WESTERN STAR	MEDIUM/HEAVY - CBE	98-804
WESTERN STAR	MEDIUM/HEAVY - UNKNOWN ENGINE LOCATION	98-804
WESTERN STAR	MEDIUM/HEAVY-BASED MOTORHOME	98-804
WINNEBAGO	VAN-BASED MOTORHOME	98-470
WINNEBAGO	LIGHT-TRUCK-BASED MOTORHOME	98-498
WINNEBAGO	UNKNOWN TYPE LIGHT MOTORHOME	98-499
WINNEBAGO	MOTORHOME	98-850
WINNEBAGO	MEDIUM/HEAVY OTHER	98-898
WINNEBAGO	MEDIUM/HEAVY UNKNOWN	98-899
WINNEBAGO	UNKNOWN VEHICLE	98-999
YAMAHA	MOTORCYCLE (000-050CC)	76-701
YAMAHA	MOTORCYCLE (051-124CC)	76-702
YAMAHA	MOTORCYCLE (125-349CC)	76-703
YAMAHA	MOTORCYCLE (350-449CC)	76-704
YAMAHA	MOTORCYCLE (450-749CC)	76-705

Appendix B: List of Vehicle Models

Vehicle Make	<u>Vehicle Model</u>	SAS Code
YAMAHA	MOTORCYCLE (750CC-OVER)	76-706
YAMAHA	MOTORCYCLE (UNKNOWN CC)	76-709
YAMAHA	ATC/ATV (000-050CC)	76-731
YAMAHA	ATC/ATV (051-124CC)	76-732
YAMAHA	ATC/ATV (125-349CC)	76-733
YAMAHA	ATC/ATV (350CC-OVER)	76-734
YAMAHA	ATC/ATV (UNKNOWN CC)	76-739
YAMAHA	OTHER MOTORED CYCLE	76-798
YAMAHA	UNKNOWN MOTORED CYCLE	76-799
YAMAHA	OTHER VEHICLE	76-998
YUGO	GV	57-031
YUGO	OTHER AUTOMOBILE	57-398
YUGO	UNKNOWN AUTOMOBILE	57-399
YUGO	UNKNOWN VEHICLE	57-999

Appendix C: List of Tire Manufacturers

SAS Code	<u>Tire Manufacturer</u>	SAS Code	Tire Manufacturer
1	AKURET	40	DENMAN
2	AMERICAN	41	DIAMOND
3	AMERICAN RADIAL	42	DOMINATOR
4	APACHE	43	DORAL
5	ARIZONIAN	44	DOUBLE COIN
6	ARMSTRONG	45	DOUGLAS
7	ASTRO	46	DUNLOP
8	ATLAS	47	DURALON
9	AURORA	48	DYNASTAR
10	AVON	49	ELDORADO
11	BARUM	50	ELECTRA
12	BFGOODRICH	51	EMBASSY
13	BIG O	52	ESCORT
14	BILT-MOR	53	EUROTECH
15	BRADLEY	54	EXXON
16	BRIDGESTONE	55	FALKEN
17	BRIGADIER	56	FEDERAL
18	BRUNSWICK	57	FIRESTONE
19	CARQUEST	58	FISK
20	CASCADE	59	FORMULA
21	CAVALIER	60	FRONTIER
22	CEAT	61	FULDA
23	CENTENNIAL	62	FUTURA
24	CHENG SHIN	63	GENERAL
25	CONCORDE	64	GILLETE
26	CONTENTAL/TAG	65	GISLAVED
27	CONTINENTAL	66	GOODRICH
28	CO-OP	67	GOODYEAR
29	COOPER	68	GT TIRE
30	COOPER-EXPORT	69	GT TIRE US
31	CORDOVAN	70	GUARDIAN
32	CORNELL	71	GUARDSMAN
33	COSMO	72	HALLMARK
34	CRESTWOOD	73	HANKOOK
35	CROWN	74	HERCULES
36	DANZIG	75	HIGH COUNTRY
37	DAYTON	76	HOOD
38	DEAN	77	HOOSIER
39	DELTA	78	JETZON

SAS Code	Tire Manufacturer	SAS Code	Tire Manufacturer
79	JUPITER	121	PHILLIPS
80	KELLY	122	PIRELLI
81	KELLY-SPRINGFIELD	123	POLARIS
82	KINGSTAR	124	POS-A-TRAC
83	KIRKLAND	125	POS-A-TRACTION
84	KIRKWOOD	126	REGUL
85	K-MART	127	RELIANT
86	кимно	128	REMINGTON
87	LARAMIE	129	REPUBLIC
88	LASSA	130	REYNOLDS
89	LEE	131	RIKEN
90	M&H	132	ROAD KING
91	MABOR	133	ROADMASTER
92	MARSHAL	134	ROADPRO
93	MASTERCRAFT	135	RUNWAY
94	MAXXIS	136	SEARS
95	MEDALIST	137	SEMPERIT
96	MENTOR	138	SHELL
97	MERIT	139	SIDEWINDER
98	MICHELIN	140	SIEBERLING
99	MICKEY THOMPSON	141	SIGMA
100	MILLER	142	SOLO-TECH
101	MITAS	143	SONIC
102	MODI	144	SPARTAN
103	MOHAWK	145	SPORT IV
104	MONARCH	146	STAR
105	MONTGOMERY WARD	147	STARFIRE
106	MRF	148	SUMITOMO
107	MULTI-MILE	149	SUMMIT
108	NANKANG/BRADLEY	150	SUPER SPORT
109	NATIONAL	151	TACOMA
110	NITTO	152	TBC
111	NOKIAN	153	TELSTAR
112	NTB	154	TEMCO
113	OHTSU	155	TIGAR
114	PACEMARK	156	TNT
115	PANTHER	157	TOSCO 76
116	PARKWAY	158	TOURING SUPREME
117	PARNELLI	159	TOYO
118	PATRIOT	160	TREDTECH
119	PEERLESS	161	TRIBUNE
120	PENSKE	162	TURNPIKE USA

SAS Code	Tire Manufacturer
163	ULTRA-TECH
164	UNION 76
165	UNIROYAL
166	UNIVERSAL
167	VANDERBILT
168	VIKING
169	VISA
170	VOGUE
171	VREDESTEIN
172	WESTERN AUTO
173	WINSTON
174	WOOSUNG
175	YKS
176	YOKOHAMA
177	ALLEGIANCEIV
178	LEMANS
179	LIBERATOR
180	WYNSTAR
181	PATHFINDER
182	DEFINITY
183	FUZION
184	NEXEN
185	PRIMEWELL
186	WANLI
187	WESTLAKE
8887	TIRE MISSING
8888	Other (specify)
9999	Unknown



