Eastern Research Group, Inc.

Analysis of Evaporative On-Board Diagnostic (OBD) Readiness and DTCs Using I/M Data

Final Report

Contract No. EP-C-12-017
Work Assignment 2-06

Prepared for:

U.S. Environmental Protection Agency

Prepared by:

Eastern Research Group, Inc.

February 19, 2014

ERG Project No.: 0308.02.006.001

Analysis of Evaporative On-Board Diagnostic (OBD) Readiness and DTCs Using I/M Data

Contract No. EP-C-12-017
Work Assignment 2-06

Final Report

Prepared for:

Carl Fulper, Work Assignment Manager
Kent Helmer, Project Officer
U.S. Environmental Protection Agency
2000 Traverwood Dr.
Ann Arbor, MI 48105

Prepared by:

Meredith Weatherby
Michael Sabisch
Sandeep Kishan
Eastern Research Group, Inc.
3508 Far West Blvd., Suite 210
Austin, TX 78731

February 19, 2014

Table of Contents

1.0 Introduction 1
2.0 Summary of Analysis Results for Evap Monitor Readiness 4
2.1 Defining Initial Tests 4
2.2 Percent of Initial Inspections with Ready Evap Monitors 5
2.3 Percent of Test Cycles with Ready Evap Monitors 6
2.4 Trends of Evap Monitor Readiness by Vehicle Age 7
2.5 Trends of Evap Monitor Readiness by Age with Out-of-Cycle Tests Removed 15
2.6 Multiple Inspection Cycles with Evap Monitors "Not Ready" 18
3.0 Summary of Analysis Results for Evap DTCs Set 18
3.1 Percent of Evap Monitor Ready Inspections with Stored Evap DTCs 20
3.2 Trends of Evap DTCs Set by Age 21
3.3 Trends of Evap DTCs Set by Age with Out-of-Cycle Tests Removed 29
3.4 Evap DTC Rates for States Combined 33
3.5 Evap DTCs over Multiple Inspection Cycles 35
3.6 Evaluation of Evap DTC rates based on the Prior I/M Cycle's Evap Monitor Readiness Status 36
4.0 Most Common Evap DTCs 36
4.1 Most Common Individual Evap DTCs 36
4.2 Most Common Individual Evap DTCs and Evap DTC Combinations 38
5.0 Conclusions 40

Appendix A Summary of Data Filters Applied the States' Data A-1
Appendix B Tables of Percentage of Evap Monitors "Not Ready" by Calendar Year and Model Year for Each State B-1
Appendix C Tables of Percentage of Evap DTCs Set by Calendar Year and Model Year for Each State C-1
Appendix D Tables of Individual DTCs Set by Calendar Year and Model Year for Some Common Evap DTCs D-1
Appendix E Tables of Most Common Evap DTCs and DTC Combinations Set for Each State E-1

List of Tables

Table 1. Calendar Years and Other Program Information for Each State 3
Table 2. Initial Test Monitor Readiness Results for All States 5
Table 3. Evap Monitor Readiness Status for All Tests Within an I/M Cycle for All States 6
Table 4. Generic P0 Evap DTCs 19
Table 5. Percent of Inspection Cycles with a "Ready" Evap Monitor and One or More Evap DTCs 21
Table 6. Counts of Instances for Each Evap DTC by State 37
Table 7. Evap DTCs Most Commonly Found in All States' Data 38

List of Figures

Figure 1. Percent of Inspection Cycles with Evap Monitor Ready at Least Once by Age for State A.....8
Figure 2. Percent of Inspection Cycles with Evap Monitor Ready at Lease Once by Age for State B.....9
Figure 3. Percent of Inspection Cycles with Evap Monitor Ready at Least Once by Age for State C.....10
Figure 4. Percent of Inspection Cycles with Evap Monitor Ready at Least Once by Age for State D.....11
Figure 5. Slope of Percent of Inspections with Evap Monitor Ready by Age Trend Lines with All Data Unmodified.....14
Figure 6. Slope of Percent of Inspections with Evap Monitor Ready by Age Trend Lines with Data Modified – Out-of-Cycle Inspections Removed 16
Figure 7. Slope of Percent of Inspections with Evap Monitor Ready by Age Trend Lines Comparing All Data Unmodified and Data Modified (Out-of-Cycle Inspections Removed) 17
Figure 8. Percent of Inspections with Evap DTCs by Age for State A.....22
Figure 9. Percent of Inspections with Evap DTCs by Age for State B.....23
Figure 10. Percent of Inspections with Evap DTCs by Age for State C.....24
Figure 11. Percent of Inspections with Evap DTCs by Age for State D.....25
Figure 12. Slope of Percent of Evap Monitor Ready Inspections with Evap DTCs by Age Trend Lines with All Data Unmodified 28
Figure 13. Slope of Percent of Evap Monitor Ready Inspections with Evap DTCs by Age Trend Lines with Data Modified – Out-of-Cycle Inspections Removed 31
Figure 14. Slope of Percent of Evap Monitor Ready Inspections with Evap DTCs by Age Trend Lines Comparing All Data Unmodified and Data Modified (Out-of-Cycle Inspections Removed) 32
Figure 15. Slope of Percent of Evap Monitor Ready Inspections with Evap DTCs by Age Trend Lines For States A, B, and C Combined and State D Trend Lines with Data Modified – Out-of-cycle Inspections Removed 34

1.0 Introduction

This report presents results from an analysis of light-duty gasoline-powered vehicle On-board Diagnostic (OBD) evaporative emissions control system (evap) diagnostic trouble codes (DTCs) using inspection and maintenance (I/M) program data from four states. The purpose of this analysis was to better understand evap monitor readiness trends, to quantify evap DTC rates for light-duty vehicles subjected to an I/M program, and to better understand the prevalence and interrelationships of evap DTCs in an I/M fleet. Evaporative monitor readiness results were assessed for initial tests and retests, and for those vehicles that did have an evaporative monitor status of "ready", evaporative DTCs were evaluated by vehicle model year (1996 and newer) and calendar year (calendar years 2003-2011). Evaporative monitor readiness was also evaluated to better understand readiness trends, to determine if evaporative monitor readiness status might be masking evaporative trouble codes, and to determine how many vehicles never have a "ready" evaporative monitor over multiple inspection cycles. In this context, an inspection cycle generally consists of one or multiple tests performed within a four-month window, usually until a pass is achieved or a waiver is issued. A large percentage of the inspection cycles in the I/M programs for these states consist of a single passing inspection for a vehicle within that four month period (additional details regarding "initial" tests and "inspection cycles" are provided in Section 2.1, "Defining Initial Tests"). Trends in readiness and DTC rates were evaluated and compared by calendar year, vehicle model year, inspection cycle and vehicle age across the four states of analysis. Individual evaporative DTCs were also tracked for specific vehicles over multiple inspection cycles in an effort to better understand the efficacy of evaporative system repairs, and evaporative DTC combinations were evaluated to better understand the interactions and interdependence of evaporative system DTCs.

In this report, the results of analysis of data from four states (identified as "State A" through "State D" for anonymity) are presented. The data was split into calendar year for each state, and only model years 1996 and newer were included in this analysis. Pre-1996 model year vehicles weren't included in the analysis since OBDII compliance was not federally mandated until model year 1996. Although OBD monitoring of evap control systems was present beginning with model year 1996 vehicles, enhanced OBD evap monitoring of federally-certified Tier 1 vehicles began in model year 1996 but was not fully phased-in until model year 1999 vehicles (enhanced evap phase-in of California-certified NLEV vehicles began in model year 1995 with full phase-in by model year 1998 vehicles). Because enhanced OBD evap monitoring of federal vehicles was not fully phased in until model year 1999 vehicles, some report results, such as readiness trends presented in Section 2.4 and DTC trends presented in Section 3.2, only include model year 2000 and newer (enhanced evap) vehicles. Also, when reviewing results, it

should be noted that federal phase-in of Tier 2 evap requirements began in model year 2004 with full compliance by model year 2007, while phase-in for CARB LEVII evap requirements began in model year 2004 with complete phase-in by MY2006.

The standards to which new vehicles are certified may have an influence on DTC rates presented in this report. Phasing in from model years 2000-2003, California-certified vehicles (vehicles either sold in California or in other states that have adopted California standards) were equipped with 0.020" leak detection monitoring (in lieu of 0.040" federal leak detection requirements). This may account for some difference in detected evap failures, and hence reported evap DTC rates, if some vehicles included in this analysis conformed to tighter monitoring standards and could theoretically identify more evap system failures.

The date states acquired the ability to test vehicles with CAN (controller area network) communication could slightly alter the fleet receiving OBD inspections (and hence evap rates), although with the federally-mandated 2004-2008 CAN rollout and the new model year exemption, this will have a very minimal impact on fleet profile and overall study results over the period of evaluation.

The data from these states spans the calendar years of 2004 through 2012, depending on data available from each state at the time of analysis. Table 1 shows the calendar years of data analyzed for each state as well as the I/M program cycle frequency (annual or biennial) and model year exemption period for the I/M program during the calendar years of data analyzed for each state. The last column highlights each state's readiness criteria (how many "not ready" monitors are allowed for each state's OBD test), although as stated previously each state's ready criteria was not used in this evaluation. When comparing results among states, it is noteworthy that differences in average ambient temperature ranges, altitude or vehicle fleet longevity (vehicle age distribution) among the states could impact each state's evap readiness rates and DTC results presented in this report.

Table 1. Calendar Years and Other Program Information for Each State

State Code	Calendar Years of Data Available	OBD Inspection Frequency	Exemption Period	Ready Criteria (Number of monitors allowed to not be ready for an I/M inspection)
A	2004-2010	Biennial	Resale: First 4 years Biennial: First 6 years	2 allowed for all vehicles (a bit more complex: based on vehicle-specific lookup tables)
B	2007-2012	Annual	First 3 model years	1996 – 2000: 2 allowed 2001 and newer: 1 allowed
C	2005-2009	Biennial	First 4 model years	1996 – 2000: 2 allowed 2001 and newer: 1 allowed
D	2004-2011	Biennial	First 4 model years	N/A, OBD not enforced

In order to minimize the differences of State I/M programs, the OBD readiness determination and OBD pass / fail determination from each state's program were excluded from analysis. The results in this report are based on the OBD evap monitor readiness status (without regard to the state's I/M readiness determination) and the presence (or lack of) evap-related DTCs (without regard to MIL command status). In Section 3 (DTC Analysis), all vehicles with a "not ready" evap monitor are excluded, and the calendar year / model year percentages are based only on those vehicles with a "ready" evap monitor, unless otherwise indicated. In addition, the DTC analysis results in this report are based on all I/M records with evap DTCs, regardless of MIL command or pass/fail status of the test. Therefore, the evap DTC rates presented in this report may include non-active (historical) codes and be higher than would be seen using only I/M fails (evap DTCs with MIL commanded on). These history codes don't represent a current malfunction but a problem that occurred sometime in the vehicle's recent past. Information regarding the impact of the use of these codes with no MIL illumination is provided in Section 3.0.

The OBD ready criteria for State D indicates that the OBD program is not enforced. This means that the OBD test result is not a criteria for passing or failing an inspection. The pass / fail determination for that state is based on results of an IM240 tailpipe test and a gas cap functionality test. A vehicle that fails the IM240 or gas cap test fails the overall test and must pass a re-inspection to receive an overall pass. A vehicle with stored OBD codes and an illuminated malfunction indicator light (MIL) will not fail the test unless the vehicle also fails the IM240 test or the gas cap functionality test.

A summary of the analysis objectives and results of analysis is provided in the following sections.

2.0 Summary of Analysis Results for Evap Monitor Readiness

In order to understand and quantify the evap DTC rates, vehicles with an evap monitor ready at the time of the I/M test were first identified. Therefore, the first part of the analysis involved quantifying how many vehicles had a "ready" evap monitor at the time of the initial or re- inspection for one inspection cycle.

The objectives for the analysis in this section were to quantify the percent of vehicle inspections with evap monitors "ready and "not ready" at the time of inspection, evaluate the rate of readiness as vehicles age, and compare the results among the states to determine if the increase of "not ready" vehicles was similar for each state.

2.1 Defining Initial Tests

The purpose of the analysis was to quantify the percent of inspection cycles with an evap monitor status of "not ready" for each inspection in the cycle, so it was important to define each vehicle's inspection cycle by finding the initial test in each cycle. The analysis was performed using multiple calendar years of I/M data for each state. Before finding the initial tests in the dataset for each state, the datasets were filtered to remove any suspect I/M records and any data points not to be considered in the analysis. A general summary of the data QC and filtering performed on the states' data is contained in Appendix A.

The procedure for defining an initial test varied from state to state, depending on how each state organizes its I/M data and what records and data are stored in each database. For state A, the test record for any vehicle that completes and passes a final test in an I/M cycle contains a sticker number (this indicates the vehicle completed all I/M program requirements for that year). This sticker number is used to identify final tests in each I/M cycle (and hence the initial test for the next cycle).

In other states, a variety of methods were used to determine initial tests and inspection cycles. In states B and D, an initial I/M test was defined by finding an I/M test which followed a record with an overall result of "Pass". For State B, this method was used in conjunction with the file that lists all the waivers in State B, because for a small portion of the vehicles, a final test can still have a result of "Fail" when a waiver was issued.

In state C, the sticker number could typically be used to determine the initial test; however, in about 5% of the records the sticker number did not adequately define the initial tests. For these tests, the time between two tests was calculated. If the time elapsed between any two

tests was more than 180 days (even if no valid sticker number was issued), the test that was over 180 days later was defined as an initial test.

2.2 Percent of Initial Inspections with Ready Evap Monitors

Table 2 summarizes the evap monitor readiness status for all initial inspections from each state. Note that these percentages represent the percent of inspections for vehicles in the I/M fleet that are not ready at the time of their initial inspection. In some cases, this may be vastly different from the percent of vehicles in the registered fleet that would have evap monitors not ready, because each state has an exemption period for new vehicles. Depending on the number of years exempted from I/M testing, the I/M fleet will be significantly older and could therefore have a higher incidence of evap monitor "not-readiness" than the registered fleet (based on evap monitor readiness vs. vehicle age trends shown in Section 2.4).

From Table 2, it can be seen that the percent of initial inspections for vehicles in the I/M fleet with an evap monitor "not ready" ranged from approximately 9% to 12% (evap monitor readiness ranged from approximately 88% to 91%). The highest incidence of evap monitor not readiness at initial inspection was in State A, where almost 12% of the vehicles receiving initial tests had evap monitors that were not ready. Table 1 shows that State A also has a 6 model year exemption for new vehicles for I/M testing, which could indicate that State A would have the oldest I/M fleet. The age distributions of the vehicles tested in each calendar year were calculated to determined the relative age of each of the I/M fleets of States A, B, C, and D, and it was determined that the age of the I/M fleet is older for State A than for the other states. For example, in calendar year 2008, 88% of the inspections in State A were for vehicles that were 6 years old or older. In comparison, in States B, C, and D for calendar year 2008, only 62% - 70% of the inspections were for vehicles 6 years old and older.

Table 2. Initial Test Monitor Readiness Results for All States

State	Percent of Inspections for I/M Fleet with Evap Monitor Ready at Initial Inspection	Percent of Inspections for I/M Fleet with Evap Monitor Not Ready at Initial Inspection
A	88.3%	11.7%
B	90.3%	9.7%
C	91.2%	8.8%
D	91.3%	8.7%

Note: These results are for model years 1996 and newer

Table 2 shows that across different I/M programs with varying calendar years of data present, the results all show that approximately 90% of the initial inspections have evap monitors

ready. The results indicate that about 10% of the initial inspections in any given I/M program are going to have an evap monitor that is not ready. The similarity in this percentage for all of the states suggests that this number could approximate a national percentage of initial inspections with "not ready" evap monitors for vehicles in an I/M fleet.

2.3 Percent of Test Cycles with Ready Evap Monitors

For this analysis, the readiness of all tests within inspection cycles (not just the initial test) was analyzed to determine the number of inspection cycles with a "not ready" evap monitor. In many cases, there was only one test for the vehicle in the I/M cycle, but in some cycles, the vehicle received multiple inspections. In the previous section, it was found that roughly 9% to 12% of the initial inspections had an evap monitor status of "not ready". Table 3 shows that these percentages decrease to 7% to 11% for all inspections in an I/M cycle. This trend of an increase in evap monitor readiness is likely due to the fact that the evap monitor has multiple chances to achieve readiness in *inspection cycles* (as opposed to one chance in a *single inspection*). These multiple chances are the likely cause of the increase in evap monitor readiness, despite the possibility of OBD resets resulting from vehicle repairs and battery disconnects during the inspection cycle. This increase in readiness indicates that "not ready" evap monitors occasionally achieved readiness for retests in inspection cycles with multiple tests. Similar to the initial test results from the previous section, the percentage range of "not ready" evap monitors is very similar among all the states that were analyzed and could approximate a national percentage of vehicles in I/M programs with "not ready" evap monitors.

Table 3. Evap Monitor Readiness Status for All Tests Within an I/M Cycle for All States

State	Percent of I/M Fleet Inspections with Evap Monitor Ready For Least One Test in the Inspection Cycle	Percent of I/M Fleet Inspections with Evap Monitor Not Ready For All Tests in the Inspection Cycle
A	89.6%	10.4%
B	92.1%	7.9%
C	92.8%	7.2%
D	91.4%	8.6%

Note: These results are for model years 1996 and newer

When comparing these results with previous analysis of non-evap OBD monitors, the percentage of "not ready" evap monitors was much higher than for other OBD monitors. For example, when looking at all the OBD monitors' readiness for one of these states, the non-evap OBD monitors had an overall "not ready" percentage in the 1% - 2% range instead of the 7%-11% range seen for the evap monitor. As the OBD evap monitor is typically subject to more

rigorous enabling criteria (specific vehicle operation and soak requirements) than other monitors in order to achieve readiness, this monitor is generally one of the last monitors to achieve readiness, and will likely have a higher fleet-wide “not ready” rate than other monitors at any point in time (such as during an I/M inspection). Due to the longer “not ready” period of the OBD evap monitor, it is possible that attempts to mask MIL illumination in order to pass an I/M test (through a battery disconnect or code clearing) could contribute somewhat to the OBD evap monitor readiness rates being lower than those of the other monitors in the I/M data evaluated for this study.

2.4 Trends of Evap Monitor Readiness by Vehicle Age

The next analysis involved determining the trend of the increase of the percent of inspections with “not ready” evap monitors by age for each state and to compare the trends across the states. To do this the data was separated by calendar year and vehicle model year and tabulated the evap monitor readiness status of all the inspection cycles for each of the states. Specifically, the calculations involved finding the percentages of inspection cycles in which the vehicle’s evap monitor was “ready” for at least one test during the cycle, and results for each state were graphed to illustrate the trends of evap monitor readiness for vehicles as they age. These results are shown in Figures 1 through 4.

Figure 1. Percent of Inspection Cycles with Evap Monitor Ready at Least Once by Age for State A

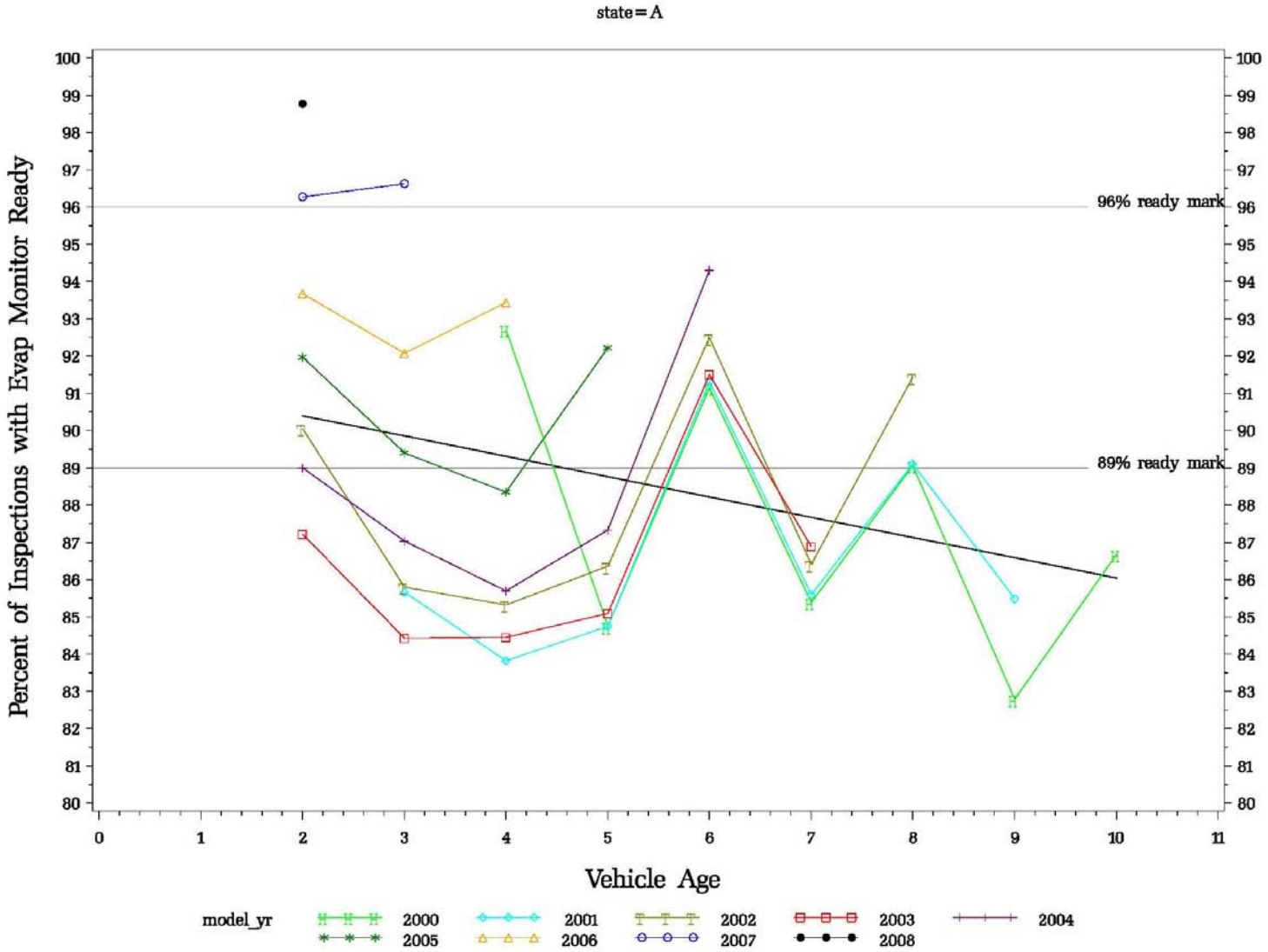


Figure 2. Percent of Inspection Cycles with Evap Monitor Ready at Lease Once by Age for State B

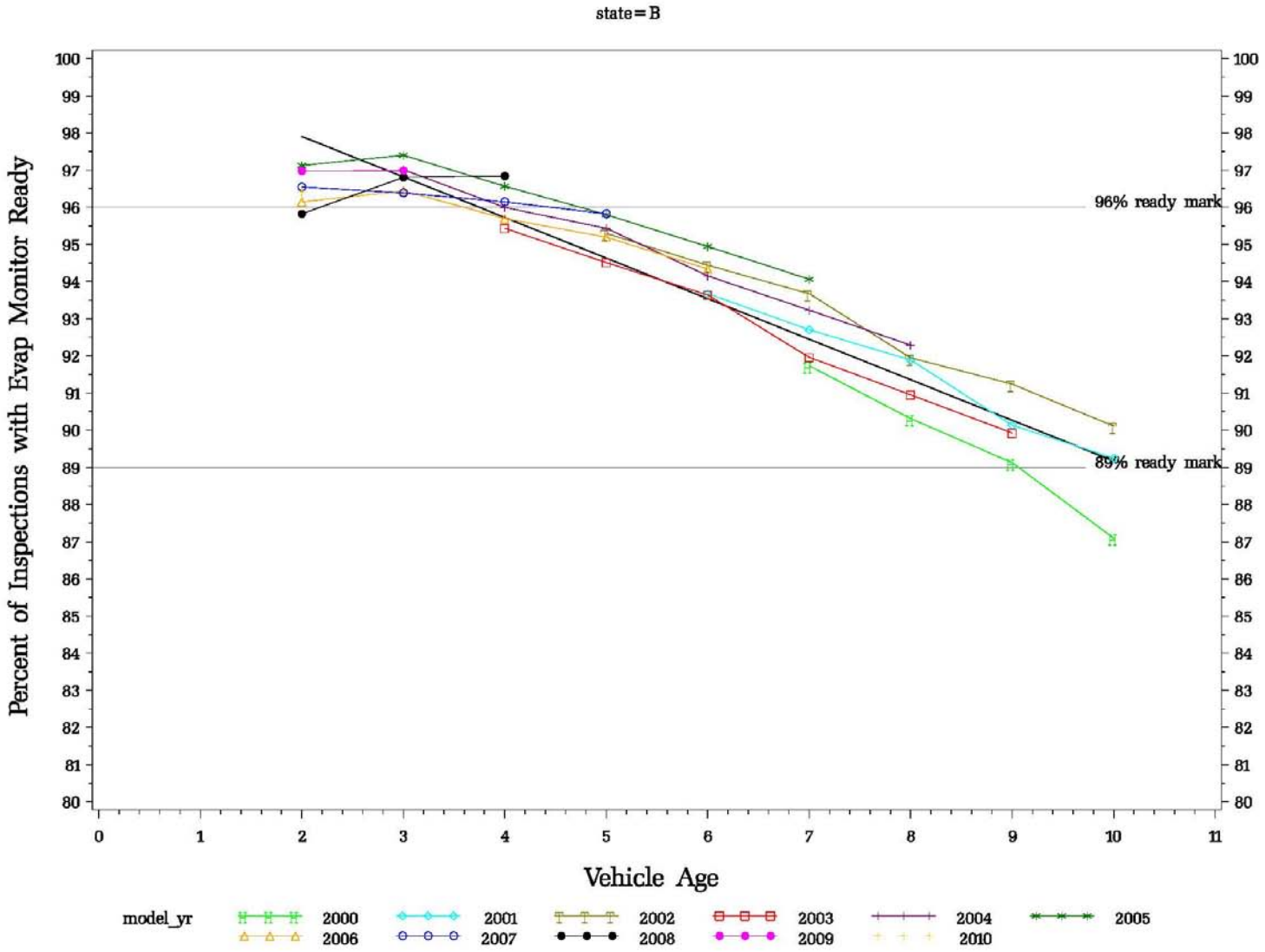


Figure 3. Percent of Inspection Cycles with Evap Monitor Ready at Least Once by Age for State C

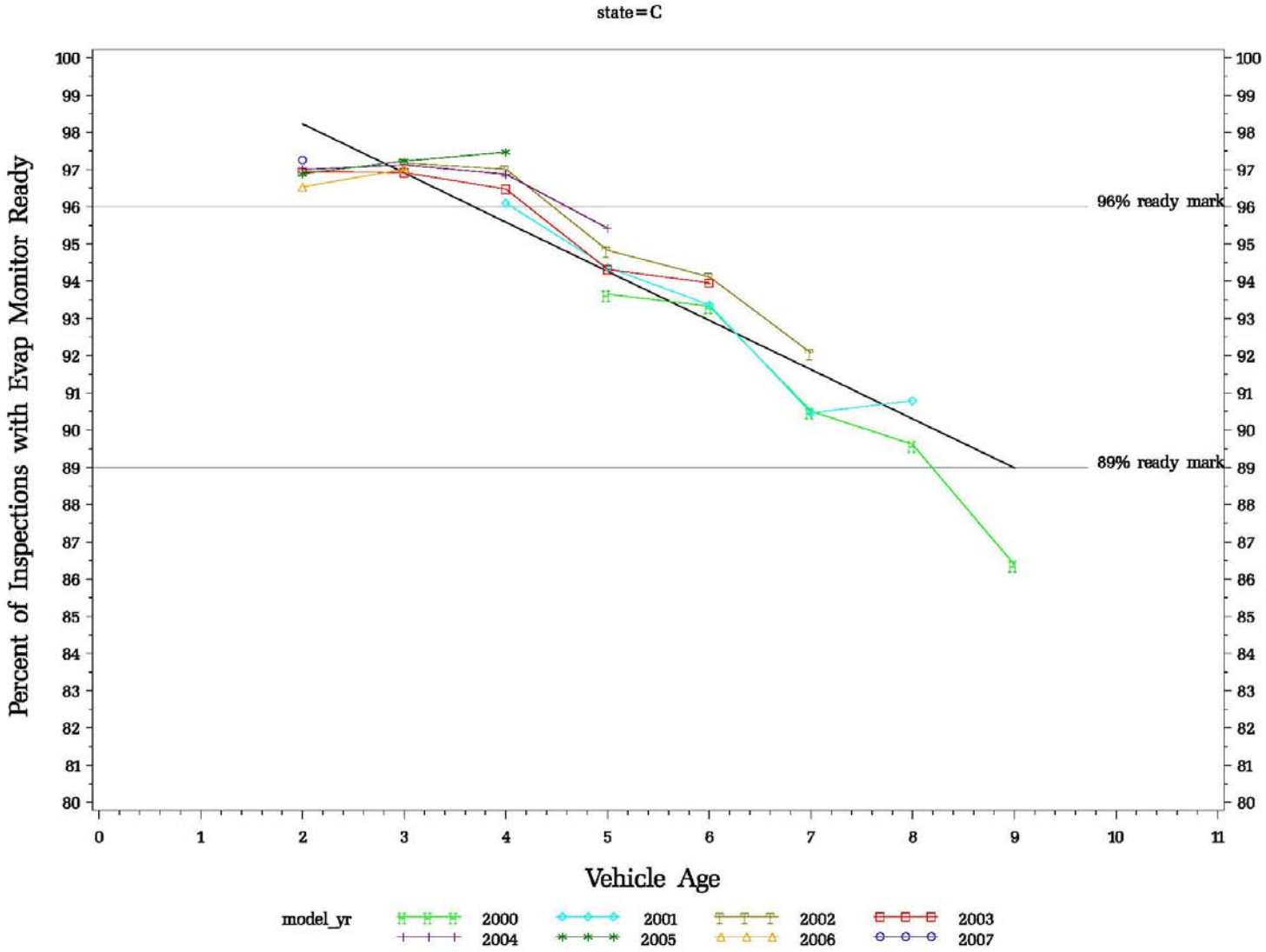
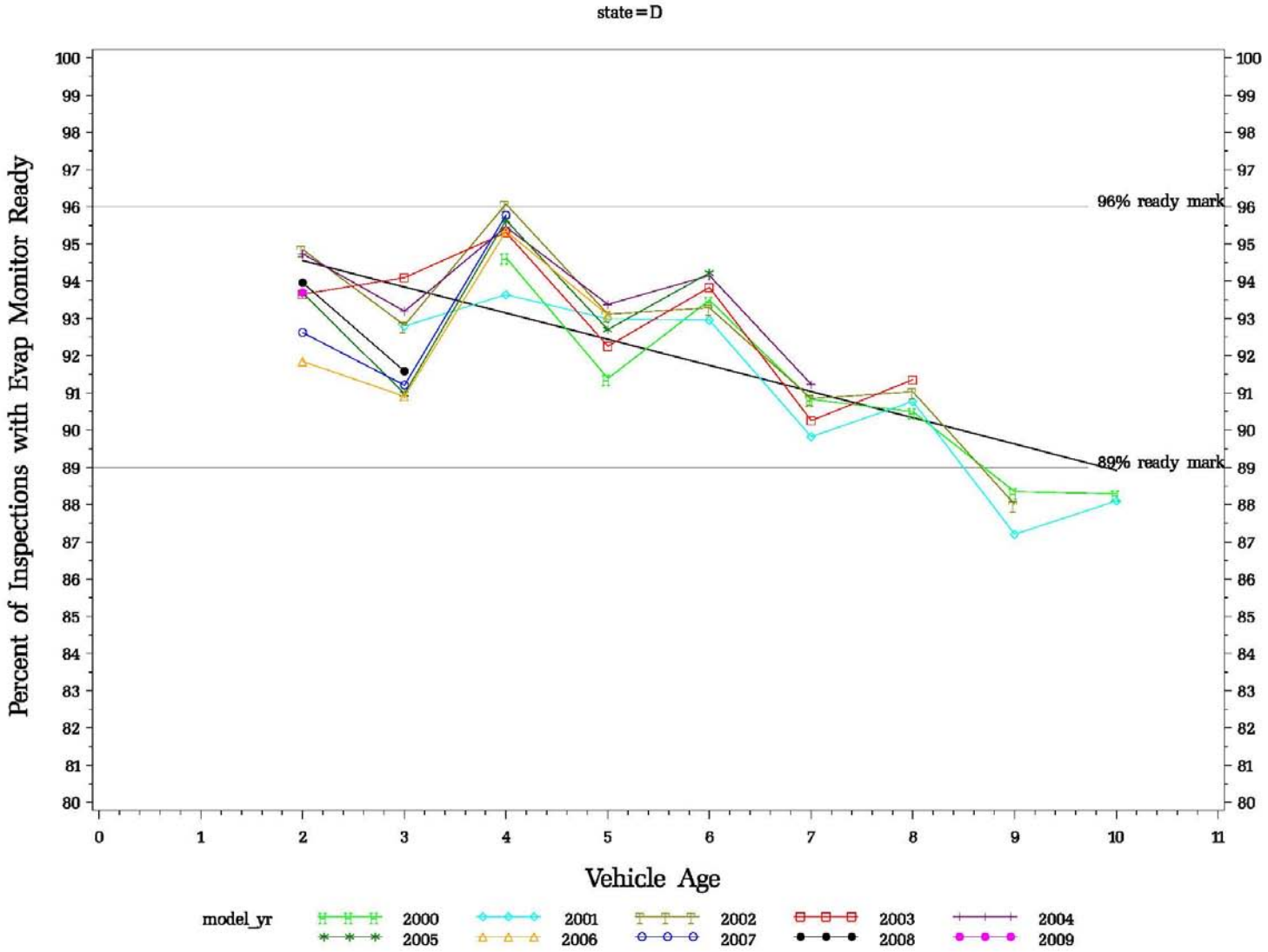


Figure 4. Percent of Inspection Cycles with Evap Monitor Ready at Least Once by Age for State D



On the figures, only model years 2000 and newer are shown. This is because although OBD evap systems were present in some 1996 vehicles, full phase-in of enhanced evap OBD did not occur until 1999. In order to develop trend lines for the evap monitor readiness percentage by age, using only 2000 and newer model years (a full year after phase-in was complete) ensures that the data used would be most representative of the trends for enhanced evap vehicles. In each graph, the different colored lines with points represent the actual data from each model year and age for the state. The solid black line with no points shows a trend line[1] for all model years which predicts the percentage of evap monitor readiness at a given vehicle age. The analysis was conducted to calculate the percentage of inspections with "ready" evap monitors for all vehicles in a given age (from 2 to 10 years old in most states). The vehicles at any given age can have a range of odometer values, so they may not all be in the same condition in terms of wear-and-tear and mileage.

The reference lines on the graphs which cross at 89% and 96% to help in comparing the figures for each of the states. When comparing the figures, it can be seen that States B and C have readiness percentages that are close to one another, about 98% evap monitor readiness for 2 year old vehicles, and about 89% evap monitor readiness for 8 year old vehicles. In comparison, States A and D have lower readiness rates (90% to 94%) for the 2 year old vehicles than States B and C.

The graph of State A differs from those of the other states. First, the range of the percentage of inspection cycles with "ready" evap monitors for all model years at a given age is larger than for the other states, especially for the newest vehicles. For example, a 2 year old vehicle in State A has a range of 87% - 99% of the inspections with an evap monitor ready, while that range is only 91% - 95% for state D. State A has a 6 model year exemption (with test-on-resale after a vehicles is 4 years old), so the number of 2 year old vehicles in that dataset is small compared to the vehicles in the other model years. These vehicles are probably not representative of the 2 year old vehicles in the I/M fleet, as they are most likely vehicles that have moved into the state from another area or are coming in for an inspection for some other reason even though it is not required. This is one possible explanation for why the percentage of 2 year old vehicles with evap monitors "not ready" in State A is larger than for 2 year old vehicles in other states. Also, State A has a biennial inspection frequency. Vehicles start receiving tests when they are 6 years old and then are only tested every other year after that. The "zig-zag" on the curves follows a biennial trend (this trend is also evident but not as pronounced for states C and D, the other biennial programs). The inspection totals by calendar year and age (shown in the tables in

[1] Trend lines were developed using linear regression techniques.

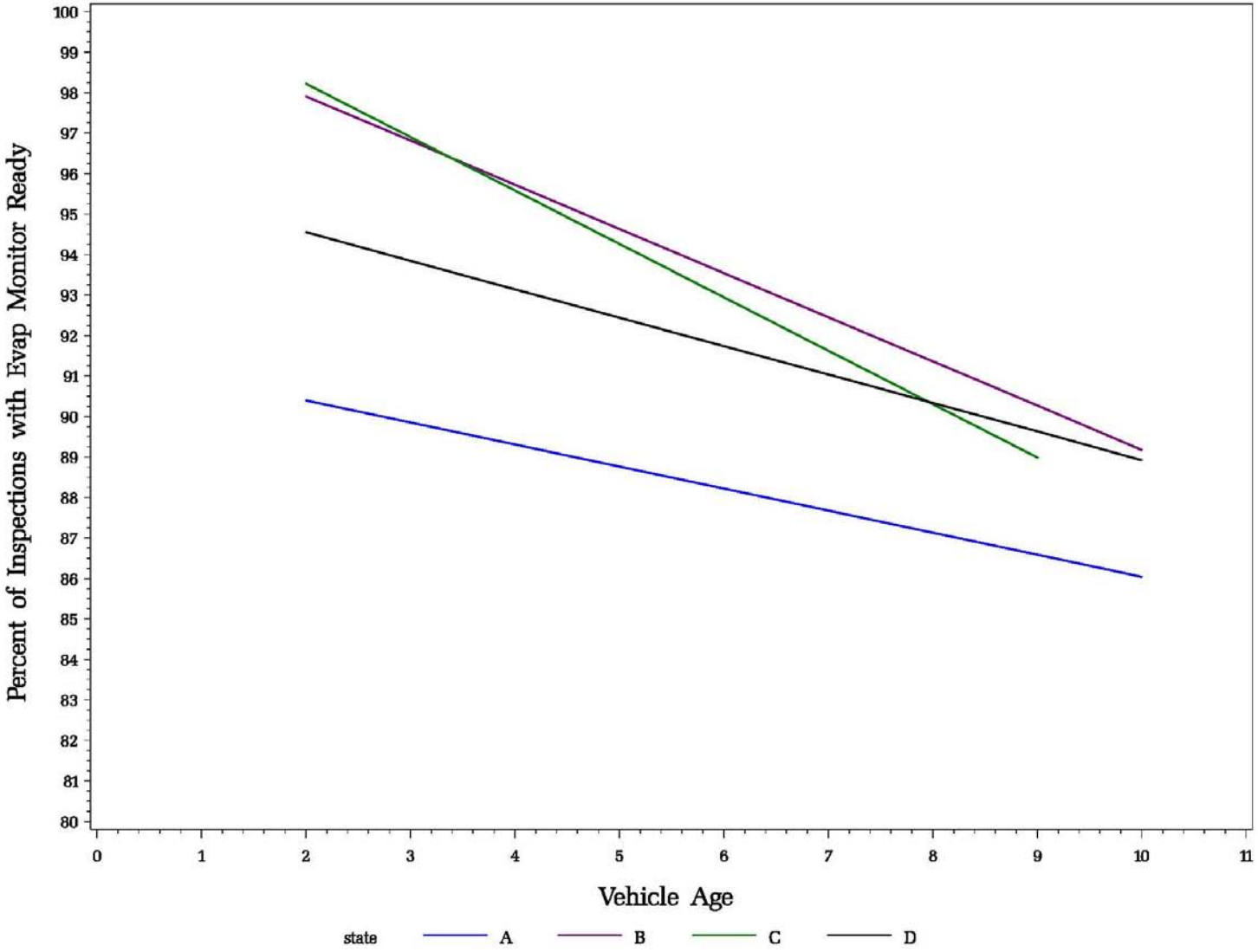
Appendix B) show that the total number of inspections is lower for these “off” I/M years, and the overall average readiness is also lower for these “off” I/M years.

The other state that has percentages that do not fall on the reference lines for the 2 and 8 year old vehicles is State D, which does not enforce the OBD program and therefore OBD monitor readiness is not a requirement for the I/M test.

The results in the graphs for each state show that vehicles were more likely to have an evap monitor status of “not ready” as the vehicle aged. The percentages and rates of increase of evap monitor not readiness differed for some of the states. The vehicles in state D were more likely than the other states to have an evap monitor status of “not ready”, even when they were only 2 years old, and the slope of the increase of evap monitors being not ready as vehicles aged was not as steep as for States B and C.

Figure 5 shows the tendency of readiness decreasing as a function of vehicle age more clearly. Trend lines of the “predicted” percentage of vehicles with an evap monitor ready versus age are shown, and it can be seen that the slope of the lines for States B and C are steeper than for States A and D. States A and D have nearly identical rates of decrease in readiness by vehicle age, although State A is approximately 5% lower than State D. Individual tables listing results for each state are provided in Appendix B.

Figure 5. Slope of Percent of Inspections with Evap Monitor Ready by Age
Trend Lines with All Data Unmodified



2.5 Trends of Evap Monitor Readiness by Age with Out-of-Cycle Tests Removed

The data presented in Figure 5 above shows the results of the trend line predicting the percent of inspections with evap monitors ready versus vehicle age. The results in Figure 5 show that the slopes of the lines (the decrease in the rate of readiness as vehicles age) for States A and D are different than the slopes for States B and C. For State A especially, this could be due to the fact that there is a 6 model year exemption period for I/M testing, so the vehicles less than 6 years old that receive an I/M test may be resale vehicles and may not be in the same condition as similarly-aged vehicles in the rest of the fleet. Also, most of these states have a biennial I/M program, so the number of inspections in these out-of-cycle years is lower than for the on-I/M cycle years, and the readiness rates seen in these out-of-cycle years is lower on average than the in-cycle years.

Since out-of-cycle inspections may be due in part to vehicles moving into the state and/or resale vehicles, results from these out-of-cycle inspections might differ from the in-cycle I/M program results, so for comparison to Figure 5 the dataset was modified for each of the states to only include inspections of vehicles that would typically be subject to the I/M program at the time of their inspection. This involved removing inspections in which the vehicle was too new for the I/M inspection and also removing inspections during an "off" year in the biennial I/M programs. Once the datasets for each state were modified in this way, the trend lines[2] of vehicle age versus the percentage of vehicle inspections with a "ready" evap monitors ready for at least one test during the cycle were recalculated. Figures 6 and 7 show the results from these trend lines calculated with the modified datasets. It should be noted that this was done only to evaluate the effect of "out-of-cycle" I/M inspections on the evap monitor readiness rate in each of the I/M programs. Removing these "out-of-cycle" tests appears to increase the evap monitor readiness rate from the overall rates seen in each I/M program (in-cycle and out-of-cycle tests inclusive). States A and C are both enforced biennial programs, and therefore there are more enforced "out-of-cycle" tests in States A and C than in States B and D (State B is an enforced annual program and State D is biennial but unenforced for OBD). Additional influences may also arise due to vehicles moving into the various states from non-I/M areas and being subjected to an I/M program for the first time. Investigation into the causes of differences in evap readiness rates between "in-cycle" and "out-of-cycle" tests was beyond the scope of this work assignment and was not performed.

[2] Trend lines were developed using linear regression techniques.

Figure 6. Slope of Percent of Inspections with Evap Monitor Ready by Age
Trend Lines with Data Modified – Out-of-Cycle Inspections Removed

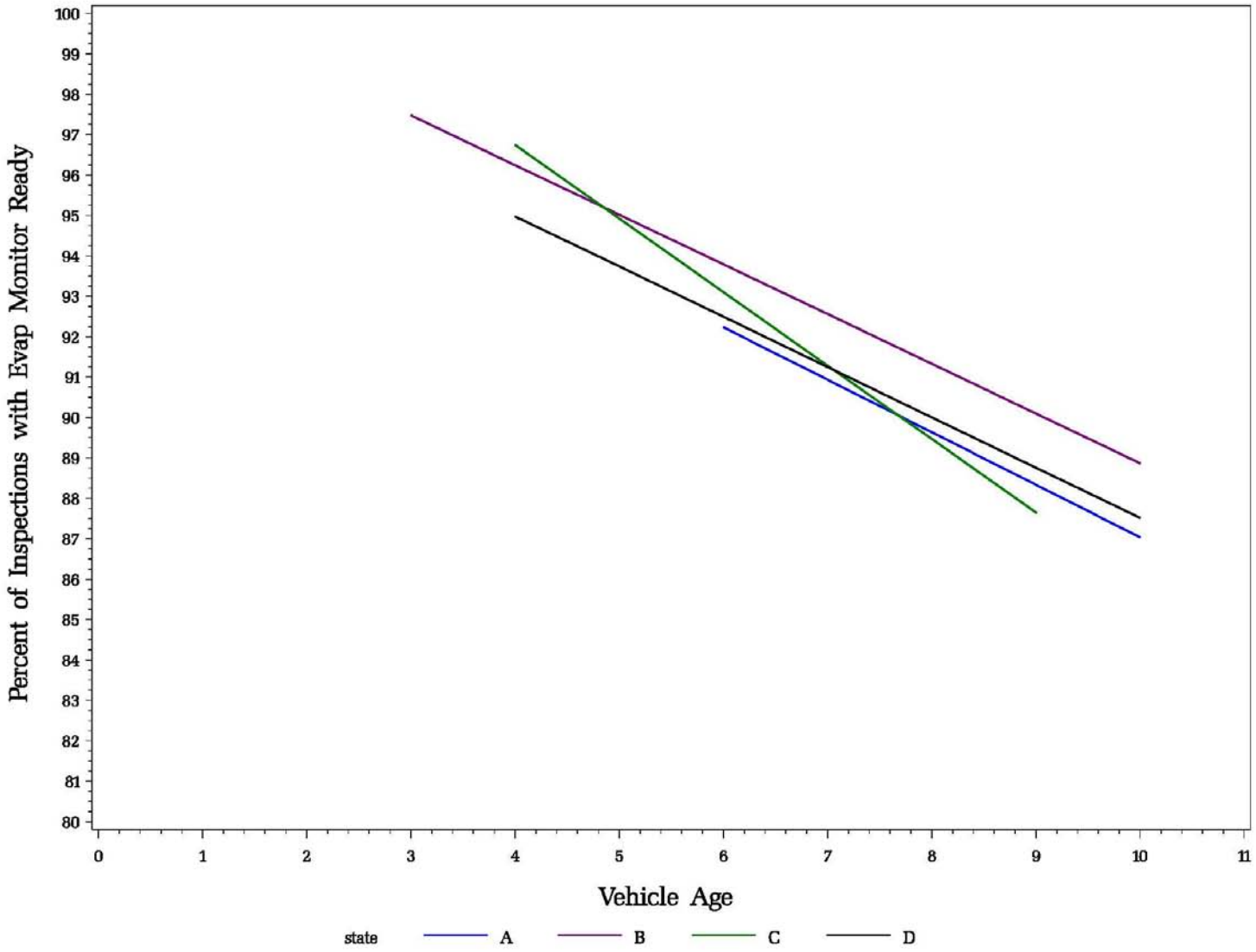


Figure 7. Slope of Percent of Inspections with Evap Monitor Ready by Age
Trend Lines Comparing All Data Unmodified and Data Modified (Out-of-Cycle Inspections Removed)

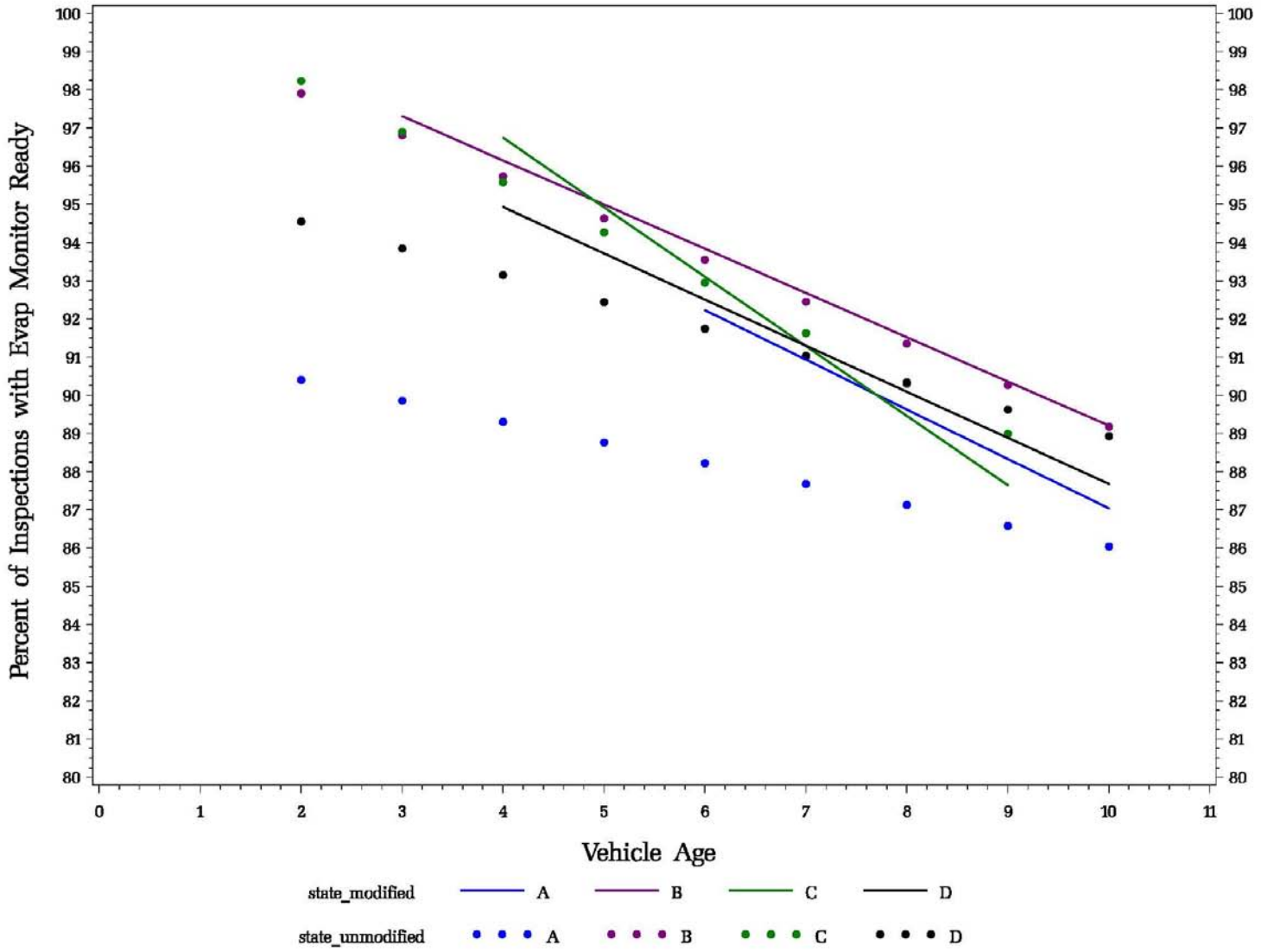


Figure 6 shows that once the out-of-cycle inspections were removed, results from all four states have very similar percentages of vehicle readiness by age. This graph shows that as a vehicle ages, it will be more likely to have an evap monitor "not ready" during an I/M cycle, and that the increase in its likeliness of having an evap monitor "not ready" is approximately 1% per year as the vehicle ages (for vehicles in their I/M inspection cycle).

Figure 7 shows combined linear trend lines of the unmodified and modified data sets. This graph is a combination of Figures 5 and 6.

2.6 Multiple Inspection Cycles with Evap Monitors "Not Ready"

The purpose of this next analysis was to identify patterns of vehicles having "not ready" evap monitors for all inspections over multiple consecutive inspection cycles. The subset of vehicles for which the evap monitor was "not ready" for all tests in an inspection cycle was evaluated, and the evap monitor status for those vehicles was tracked across inspection cycles on subsequent calendar years. Even though previous results indicated that up to 15% of inspections for older vehicles could have a "not ready" evap monitor, the results of this analysis show that those are not the same vehicles each time. The results from all states show that most vehicles (over 97%) have an evap monitor status of "not ready" only one or two times in their entire I/M history. For the vehicles that were in the data for at least 2 inspection cycles, only about 0.5% of them have an evap monitor status of "not ready" each time they come in for an inspection.

3.0 Summary of Analysis Results for Evap DTCs Set

An analysis of the number of evap DTCs set during any test in the I/M cycle was performed for all vehicles that had a ready evap monitor for at least one inspection during an I/M cycle in each calendar year. Several OBD P0 and P1 DTCs that pertain to the evaporative emissions control system were considered[3]. Less than 0.1% of the DTCs present were P2 or P3 codes. The generic (P0) SAE J2012 evap DTCs of interest for this study are listed in Table 4, along with the evap-related P1 (manufacturer-specific) fault codes. SAE J2012 definitions are provided for all generic P0 fault codes, but P1 codes were defined based on Internet research (as shown in Table 4). In general, the evap-related P1 (manufacturer-specific) fault codes included in this analysis correspond to the generic P0 fault code categories.

As previously stated, all evap DTCs were considered in this analysis, regardless of MIL command status. Consequently, the evap DTC rates presented in this report may include non-

[3] P2 and P3 codes were not considered in this analysis due to the small numbers of those codes present in the states' data.

active (historical) codes and be higher than would be seen using only I/M fails (evap DTCs with MIL commanded on). These history codes don't represent a current malfunction but a problem that occurred sometime in the vehicle's past but that is not yet cleared from the vehicle's OBD system. It was not possible to determine how long it had been since the MIL had been extinguished for these history codes. The number of these history codes varied among states. For states A and D, approximately 30% to 50% of all evap DTCs are present without a MIL commanded on, while for States B and C, the DTCs without a MIL commanded on comprised less than 15% of all evap DTCs. These DTCs with no MIL illumination were included in the analysis to provide as much information as possible regarding potential evap problems in the vehicle fleet, but it's possible some of the DTCs may be indicative of a problem that existed but is now corrected and has not been cleared from the vehicle computer's history yet. Therefore, the overall DTC rates presented in this report are not intended to represent I/M program evap fail rates, since vehicles with evap codes but no MIL illumination would not have failed the OBD I/M inspection based solely on the presence of evap codes.

The following subsections provide summary analysis results, and additional details are provided in the report appendices.

Table 4. Generic P0 Evap DTCs

DTC Code	DTC Description
P0093	Fuel System Leak Detected - Large Leak
P0094	Fuel System Leak Detected - Small Leak
P0440	Evaporative Emission Control System Malfunction
P0441	Evaporative Emission Control System Incorrect Purge Flow
P1441	Evaporative Emission System Flow During Non-Purge[1]
P0442	Evaporative Emission Control System Leak Detected (small leak)
P0443	Evaporative Emission Control System Purge Control Valve Circuit
P1443	Incorrect evaporative system purge control valve flow[1]
P0444	Evaporative Emission Control System Purge Control Valve Circuit Open
P0445	Evaporative Emission Control System Purge Control Valve Circuit Shorted
P0446	Evaporative Emission Control System Vent Control Circuit Malfunction
P0447	Evaporative Emission Control System Vent Control Circuit Open
P0448	Evaporative Emission Control System Vent Control Circuit Shorted
P1448	Evap Canister Vent Control Valve Open[1]
P0449	Evaporative Emission Control System Vent Valve/Solenoid Circuit Malfunction
P0450	Evaporative Emission Control System Pressure Sensor Malfunction
P0451	Evaporative Emission Control System Pressure Sensor Range/Performance
P0452	Evaporative Emission Control System Pressure Sensor Low Input
P0453	Evaporative Emission Control System Pressure Sensor High Input
P0454	Evaporative Emission Control System Pressure Sensor Intermittent
P0455	Evaporative Emission Control System Leak Detected (gross leak)
P0456	Evaporative Emission Control System Leak Detected (very small leak)

DTC Code	DTC Description
P1456	Evaporative Emissions Control System Leakage Fuel Tank[1]
P0457	Evaporative Emission Control System Leak Detected (fuel cap loose/off)
P1457	Evaporative Emissions Control System Leakage EVAP Canister System[1]
P0458	Evaporative Emission System Purge Control Valve Circuit Low
P0459	Evaporative Emission System Purge Control Valve Circuit High
P0465	Purge Flow Sensor Circuit Malfunction
P0466	Purge Flow Sensor Circuit Range/Performance
P0467	Purge Flow Sensor Circuit Low Input
P0468	Purge Flow Sensor Circuit High Input
P0469	Purge Flow Sensor Circuit Intermittent
P0496	Evaporative Emission System High Purge Flow
P0497	Evaporative Emission System Low Purge Flow
P0498	Evaporative Emission System Vent Valve Control Circuit Low
P0499	Evaporative Emission System Vent Valve Control Circuit High

1 P1 code descriptions were developed based on Internet research (http://www.innova.com/en-US/Dtc and http://engine-codes.com/) using the most common vehicle makes occurring in the I/M data for each code.

3.1 Percent of Evap Monitor Ready Inspections with Stored Evap DTCs

For all vehicles with a "ready" evap monitor the number of vehicle test records containing evap-related DTCs for each inspection cycle was tabulated by calendar year and model year. Using these results, the percentage of all inspection cycles containing an evap DTC was calculated.

The results, shown in Table 5, indicate that between 0.7% and 2.5% of the inspection cycles for vehicles with a "ready" evap monitor have a stored evap DTC. Approximately 10% of the inspections do not have an evap monitor ready, and for these, the percent of inspections with evap DTCs was not calculated, as these vehicles with "not ready" evap monitors could provide an artificially low (unrepresentative) evap DTC rate since the OBD system hasn't completed evap system testing for these vehicles.

The State A percentage of 1.6% may be slightly higher than the rates for States B and C because of the six model year exemption period in State A, (which results in an older I/M fleet than the other states). State D's 2.5% DTC rate may be due to the fact that OBD results are not enforced in State D. In State D, OBD tests are performed in an advisory capacity, but a vehicle can pass the I/M test with the MIL commanded on. The main pass/fail determination is based on the IM240 and gas cap functionality test results, unlike the other states (States A, B, and C) where the OBD test is the enforced for 1996 and newer vehicles, so an OBD failure results in an overall test failure.

Table 5. Percent of Inspection Cycles with a "Ready" Evap Monitor and One or More Evap DTCs

State	Percent of Evap Ready Inspections with an Evap DTC Set
A	1.6%
B	0.7%
C	0.9%
D	2.5%

Note: These results are for model years 1996 and newer

3.2 Trends of Evap DTCs Set by Age

The next analysis involved determining the trend of the increase of the percent of evap monitor "ready" inspections with evap DTCs by age for each state and to compare the trends across the states. The test records with a "ready" evap monitor by calendar year and model year were binned, and the percent of inspections with stored evap DTCs by state were tabulated. Results were graphed for each state to illustrate changes in the trends of evap DTCs as vehicles age. The results are shown in Figures 8 through 11.

Figure 8. Percent of Inspections with Evap DTCs by Age for State A

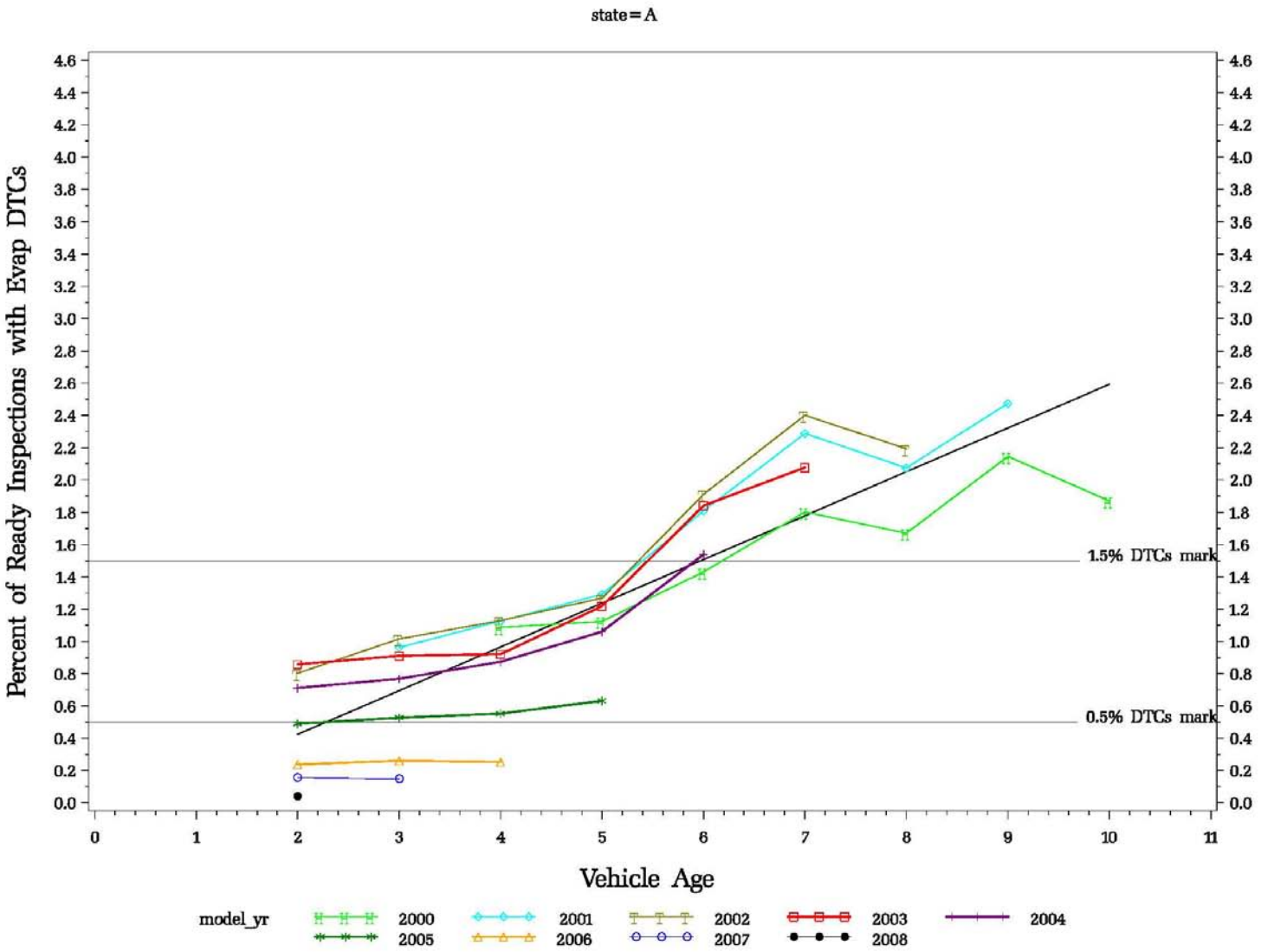


Figure 9. Percent of Inspections with Evap DTCs by Age for State B

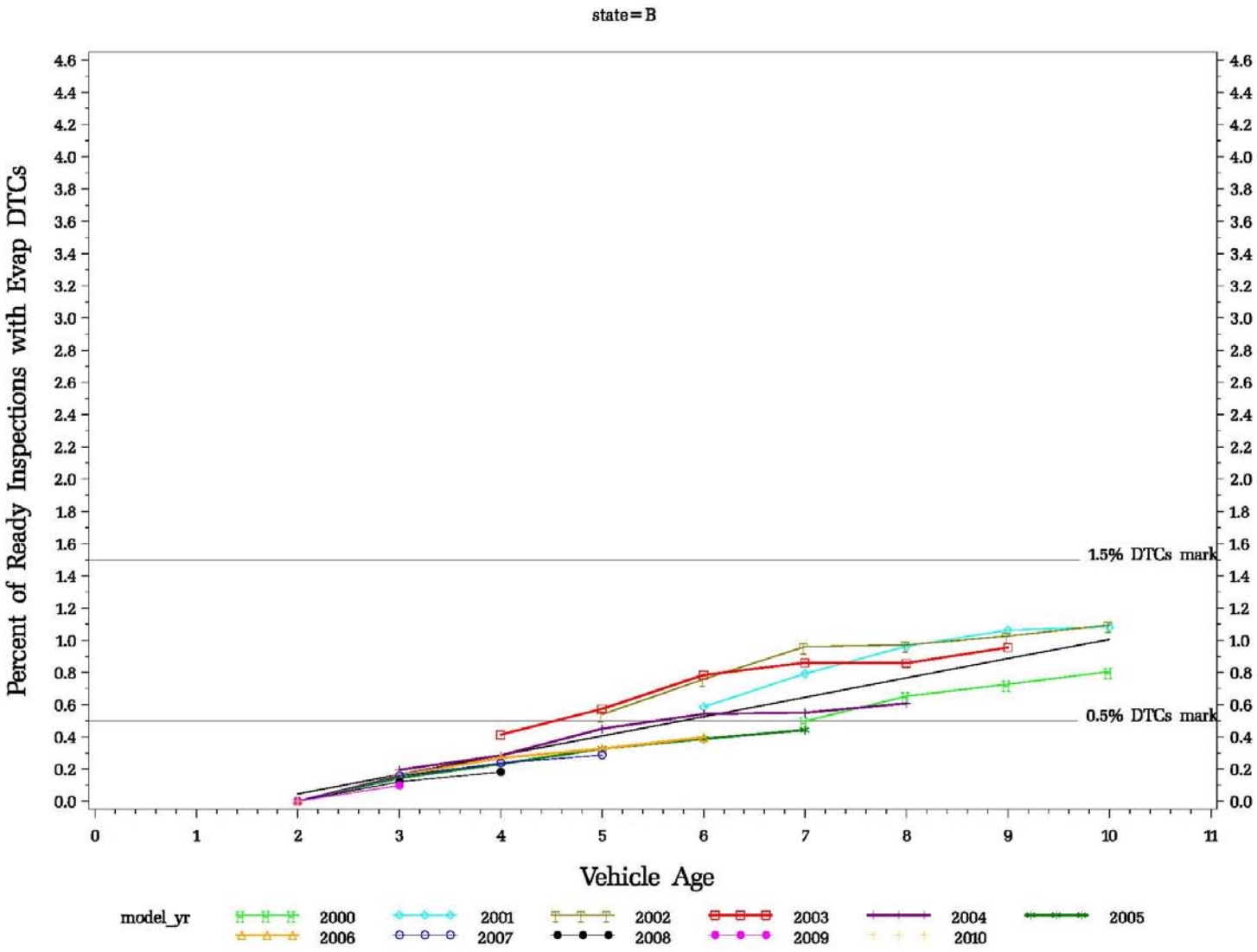


Figure 10. Percent of Inspections with Evap DTCs by Age for State C

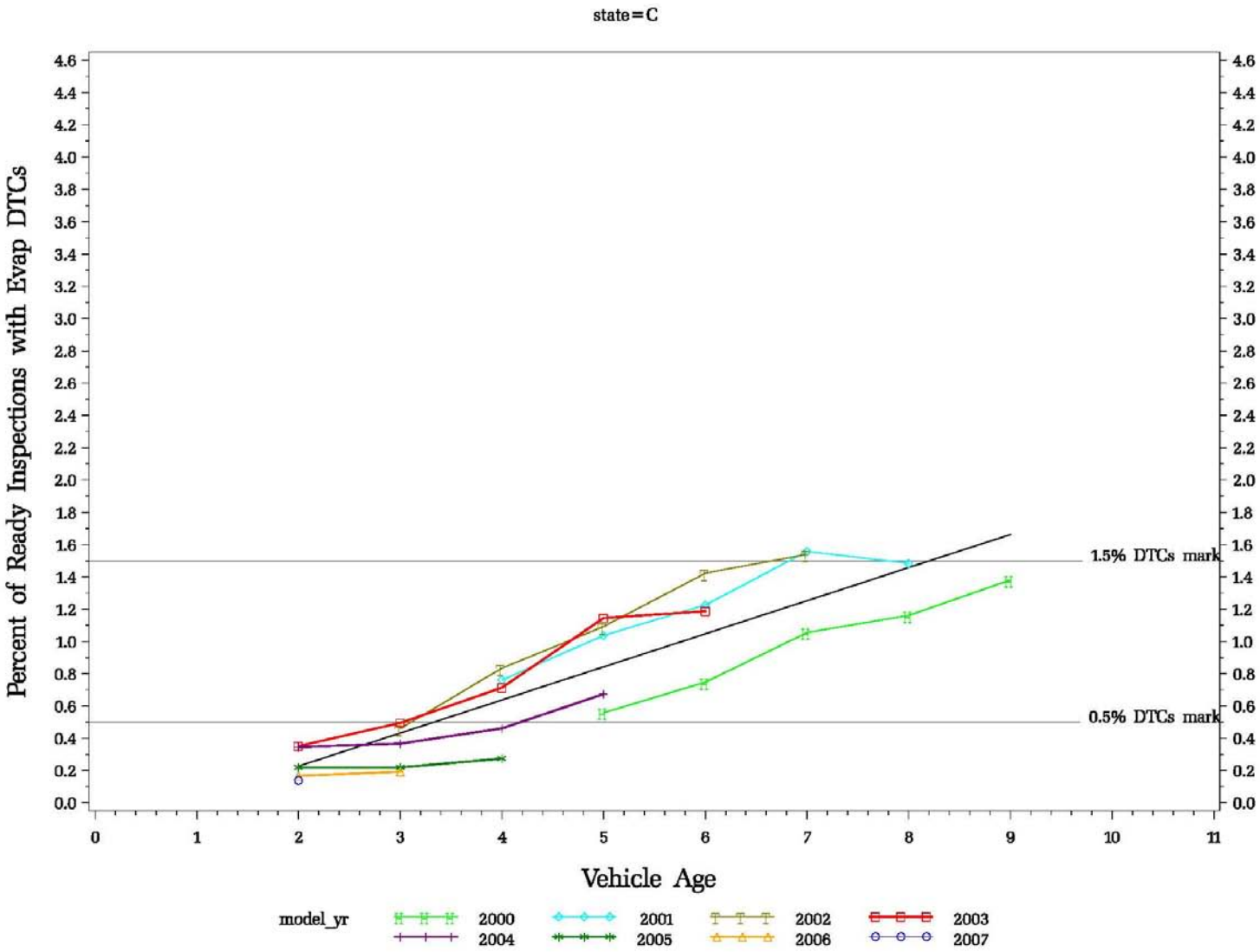
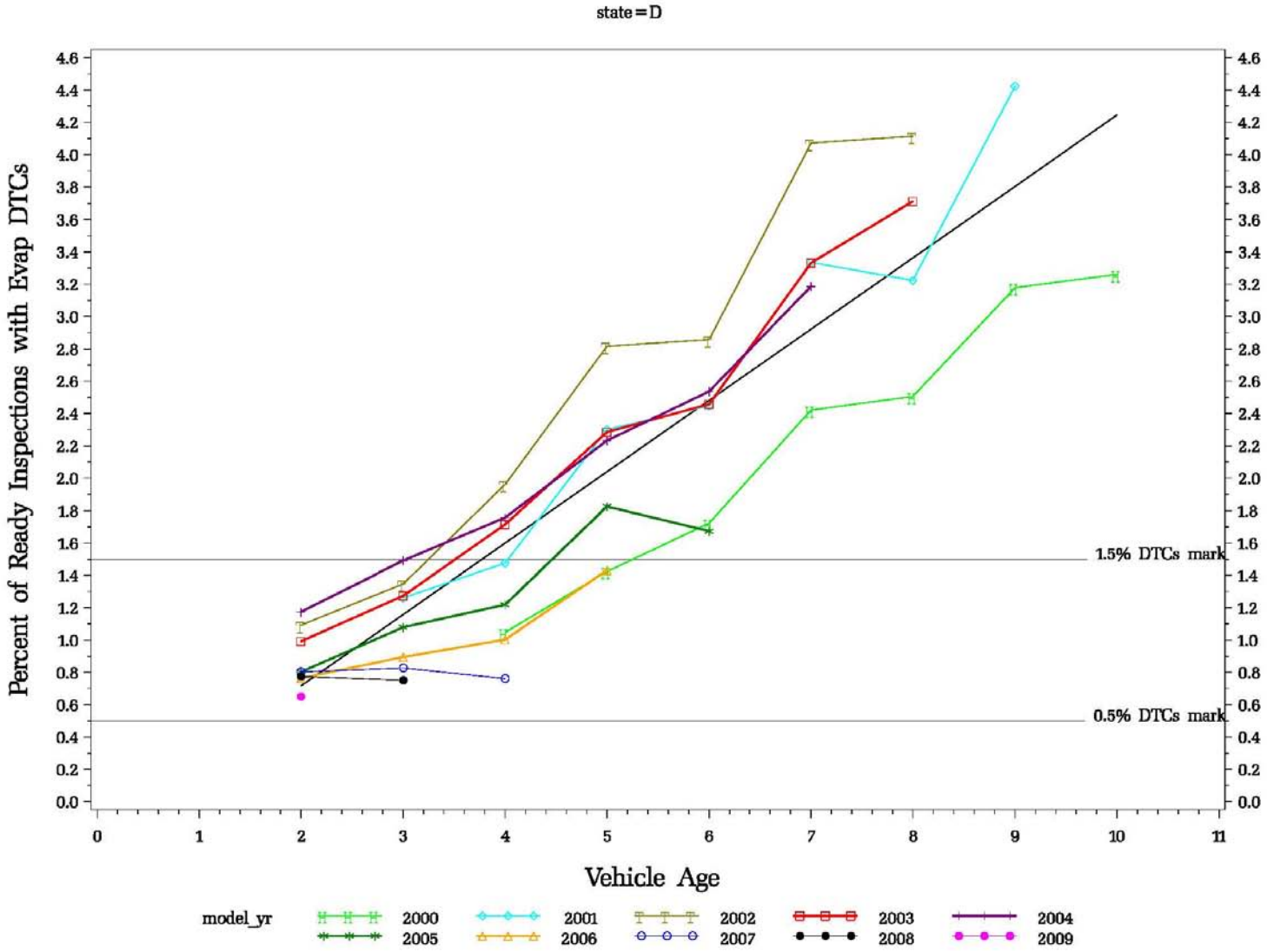


Figure 11. Percent of Inspections with Evap DTCs by Age for State D



Only model years 2000 and newer are shown in the figures. As stated in a previous section, this is because full phase-in of the enhanced evap OBD system did not happen until 1999, and using only 2000 and newer model years (a full year after phase-in was complete) ensures that the data used would be most representative of the trends for enhanced evap vehicles. In each graph, the different colored lines with points represent data for each model year and vehicle age for each state. The solid black line with no points shows a trend line for model year 2000 and newer vehicles, predicting the percent of vehicle tests that would have a stored evap DTC at a given age. The trend lines[4] for each state represent the percentage of stored evap DTCs at each age for each calendar year combined. The analysis was conducted to calculate the percentage of evap monitor "ready" inspections with stored evap DTCs for all vehicles in a given age (from 2 to 10 years old in most states). The vehicles at any given age can have a range of odometer values, so they may not all be in the same condition in terms of wear-and-tear and mileage.

Although linear trends were found to be most suitable for the ranges of interest of the combined data, the by-model-year graphs do show a slight curvature, especially as the vehicles age. For State A, the rate of vehicles with evap DTCs seems to increase after the vehicle age of 5 years, possibly due to State A's model year exemption of 6 years. Then, all states appear to show a general trend of a slight drop in the rate of evap DTCs after 7 years of age. This could be due to aging vehicles retiring out of the fleet or other factors, and additional analysis could be performed to fit the data more closely for the newer and older age vehicles. The trend lines were simply provided to show the general trends for vehicles under 10 years of age.

The graphs for each state have reference lines to facilitate comparison among the states. The horizontal reference lines cross at 0.5% and at 1.5% of the vehicle inspections with "ready" evap monitors and with evap DTCs set. States B and C have percentages of evap DTCs set that are below these two horizontal reference lines at ages 2 years old and 8 years old. The other 2 states, States A and D, have DTC percentages that are at or above the 0.5% and 1.5% reference lines.

Again, State A has a 6-year exemption for new vehicles and only performs test-on-resale after a vehicles is 4 years old, so the 2 to 5 year old vehicles in that dataset may not be representative of the fleet. State D does not enforce the OBD program and therefore, having an OBD evap DTC set with a MIL illuminated is not a basis for failing an inspection. Therefore, it is expected the rate of evap DTCs will be higher since motorists are not required to make repairs

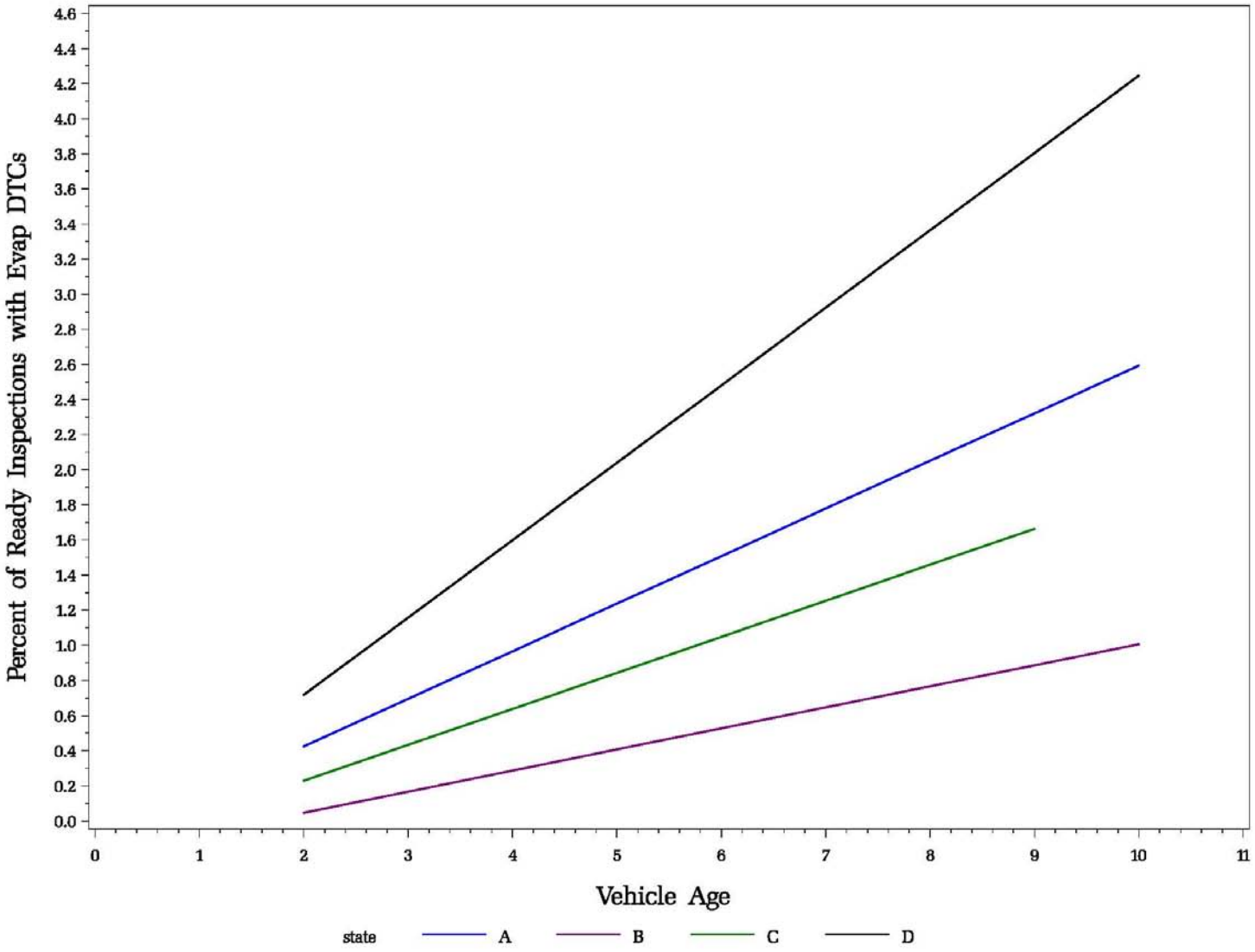
[4] Trend lines were developed using linear regression techniques.

based solely on MIL illumination. The differences in these programs may explain the higher percentage of evap DTCs set than in the other 2 states.

The graphs show that vehicles were more likely to have stored evap DTCs as they aged. The rate of increase of evap DTCs as vehicles aged was not as steep as for States B and C as it was for states A and D. Figure 12 shows the trend lines for all four states combined. On that graph, it can be seen that the slope of the lines for States A and D are steeper than for states B and C, with the slope for state D being the steepest. This shows lower rates of evap DTCs in states with enforced OBD programs.

The individual tables in Appendix C show the results for each state in more detail.

Figure 12. Slope of Percent of Evap Monitor Ready Inspections with Evap DTCs by Age Trend Lines with All Data Unmodified



3.3 Trends of Evap DTCs Set by Age with Out-of-Cycle Tests Removed

The data presented in Figure 12 shows the results of the percent of inspections with evap DTCs set versus vehicle age.

This dataset was then modified for each of the states to only include inspections of vehicles that would be subject to the I/M program at the time of their inspection. This was done to allow a comparison between the complete I/M dataset and a modified dataset including only "in-cycle" tests. To create the modified datasets, all inspections in which the vehicle was too new for the I/M inspection and inspections performed in the "off" year (for biennial I/M programs) were removed. Once the datasets for each state were modified in this way, the trend lines for the percent of vehicle inspections with "ready" evap monitors and stored evap DTCs versus vehicle age were calculated. These revised trend lines are shown in Figures 13 and 14. It should be noted that this was done only to evaluate the effect of "out-of-cycle" I/M inspections on evap DTC rates in each of the I/M programs, as removing these "out-of-cycle" tests may bias the evap DTC rates upward from the overall rates seen in each I/M program (in-cycle and out-of-cycle tests inclusive).

Figure 13 shows that three of the states have very similar rates of increase of evap DTCs as the vehicles get older. For these three states, the figure shows that older vehicles are more likely to have stored evap DTCs, and the likelihood that a vehicle will have a stored evap DTC during the I/M cycles increases by approximately 0.15% per year.

The slope of the fourth state, State D, is over 3 times higher than the slope of the other three states, which as stated previously is likely due to the fact that OBD is not enforced in State D. It is possible that the slope of the line for State D is indicative of the minimum rate of increase of evap DTCs in a non-I/M area. The rate of increase in a non-I/M area could be even higher than the slope for State D, because State D does perform the OBD test on an advisory basis, does have an evap repair consumer assistance program, and does have an I/M program that includes an enforced gas cap test.

Figure 14 shows combined trend lines of the unmodified and modified data sets. This graph is a combination of Figures 12 and 13. It is interesting to note that the State A and C modified and unmodified datasets have very different slopes, while the slopes for the modified and unmodified datasets for States B and D are similar. This could be due to the fact that States A and C are both enforced biennial programs, and therefore there are more enforced "out-of-cycle" tests in States A and C than in States B and D (State B is an enforced annual program and State D is biennial but unenforced for OBD). Additional influences may also arise due to

previously-untested vehicles moving into the various states and being subjected to an I/M program for the first time. Investigation regarding the root causes of differences in evap DTC rates between “in-cycle” and “out-of-cycle” tests was beyond the scope of this work assignment and was not performed.

Figure 13. Slope of Percent of Evap Monitor Ready Inspections with Evap DTCs by Age Trend Lines with Data Modified – Out-of-Cycle Inspections Removed

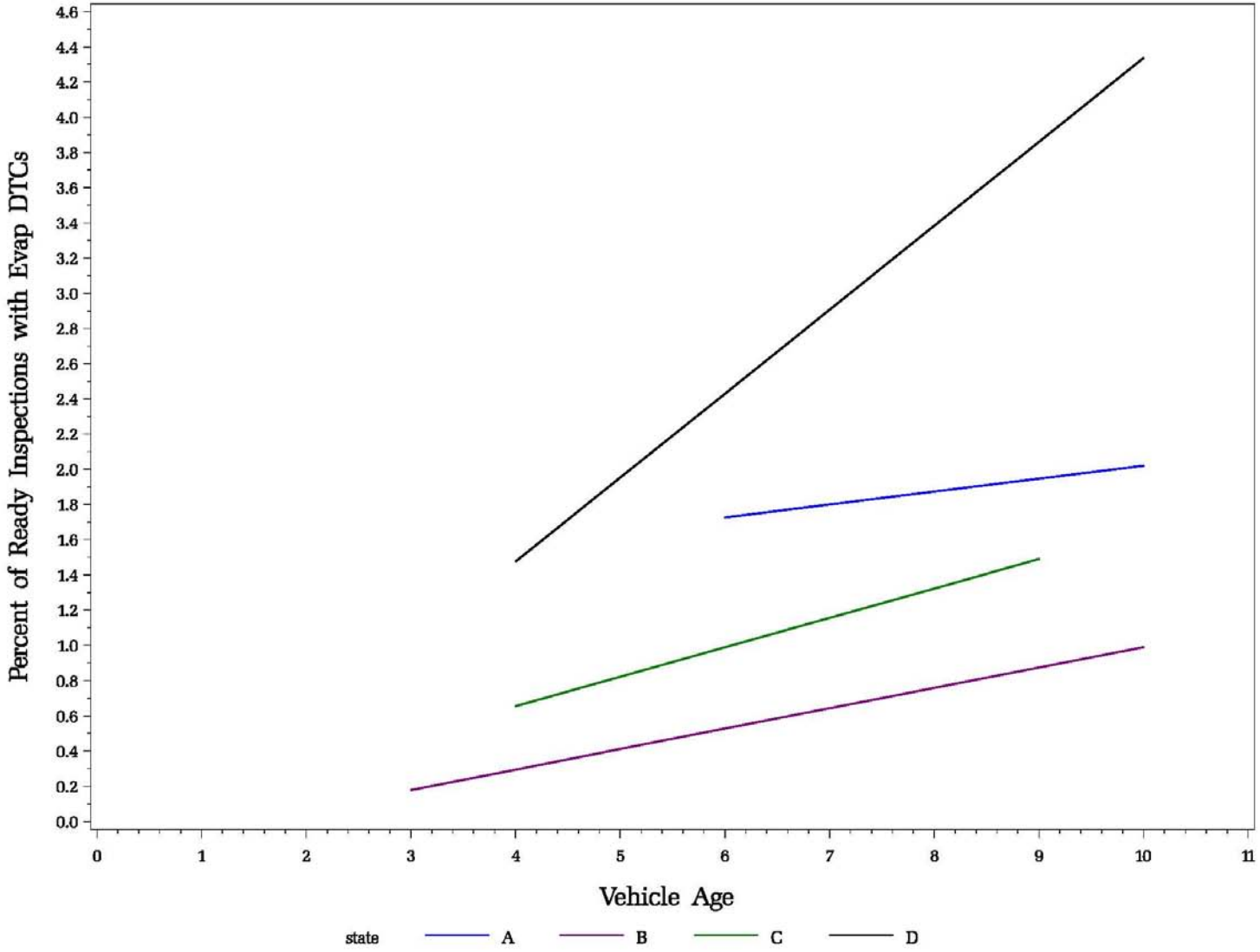
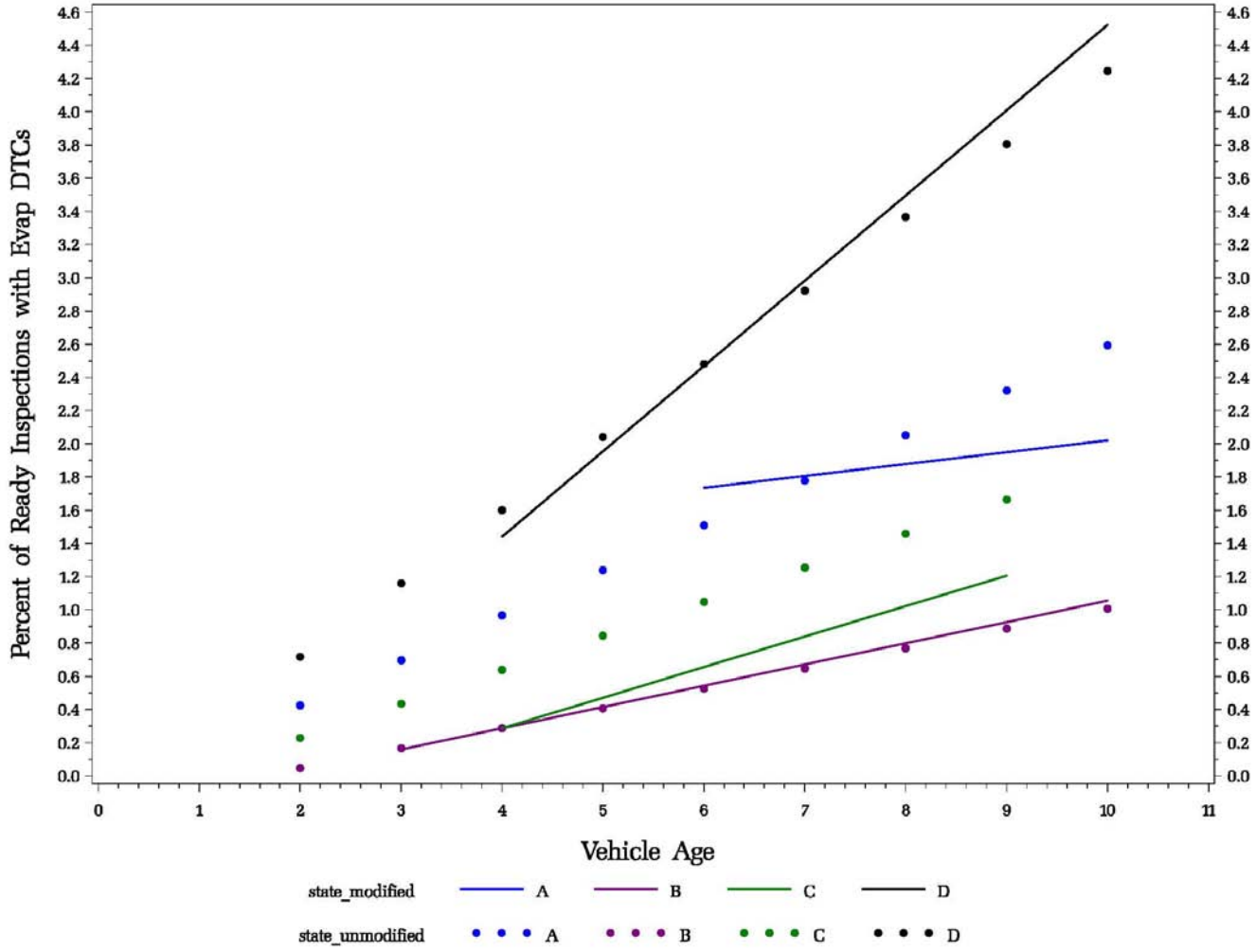


Figure 14. Slope of Percent of Evap Monitor Ready Inspections with Evap DTCs by Age Trend Lines Comparing All Data Unmodified and Data Modified (Out-of-Cycle Inspections Removed)



3.4 Evap DTC Rates for States Combined

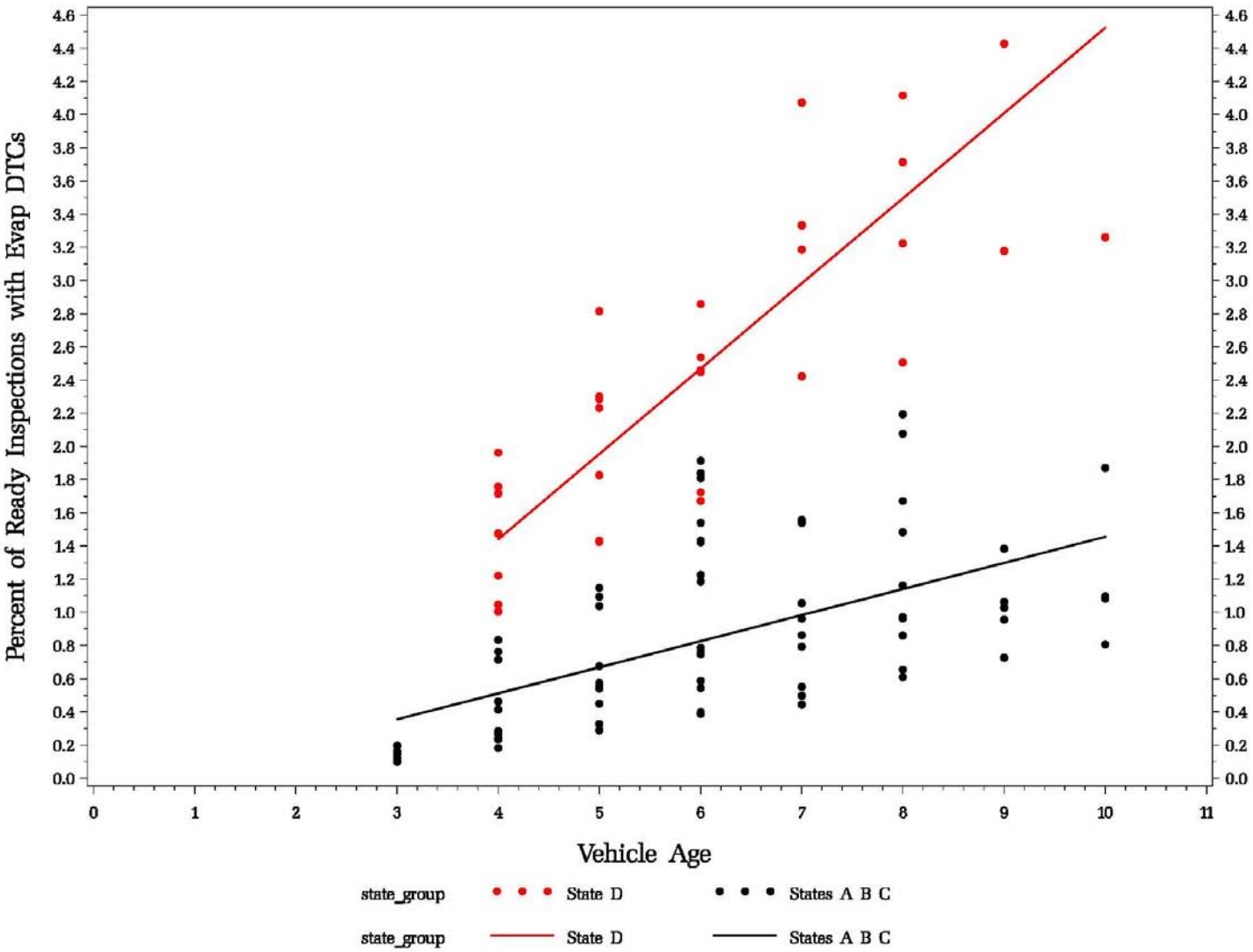
The results from section 3.3 showed that when out-of-cycle tests are removed from the data, three of the states have very similar rates of increase of evap DTCs as the vehicles get older. For all states, the results show that older vehicles are more likely to have stored evap DTCs, and the likelihood that a vehicle will have a stored evap DTC during an I/M cycle increases by over approximately 0.15% per year.

In this section, the number of evap DTCs set by calendar year and model year for those three states (States A, B, and C) were combined to calculate one trend line[5] of the percent of evap DTCs set by vehicle age. The trend line for States A, B, and C combined were plotted versus the trend line for State D alone so that the results of States A, B, and C combined (states with an enforced OBD program) could be compared with State D (without an enforced OBD program). In order to avoid biasing results based on how an I/M program is administered (i.e., 6 model year new vehicle exemption vs. 3 model year new vehicle exemption), all three programs were weighted equally (the slope of the composite trend line was not weighted based on the total number of tests analyzed for each program). Also, as stated previously, State D could represent a conservative (low) estimate of the evap DTC percentage in a non-I/M area because State D's OBD test result is not enforced. However, it is expected that the evap DTC rate in a non-I/M area would be higher, because although OBD is not enforced in State D, it does have an enforced I/M program with a fuel cap test, and OBD tests are conducted on an advisory basis.

Figure 15 shows the results. The points on the figure show the individual data points from States A, B, and C combined (in black) and from State D (in red). Each data point on the graph represents one calendar year and model year combination of the percent of evap DTCs set for one state. The results in Figure 15 show the differences between the percentage of evap DTCs for vehicles at different ages when there is an OBD I/M program which includes evap and when there is not an enforced OBD I/M program but there is a fuel cap inspection.

[5] Trend lines were developed using linear regression techniques.

Figure 15. Slope of Percent of Evap Monitor Ready Inspections with Evap DTCs by Age
Trend Lines For States A, B, and C Combined and State D
Trend Lines with Data Modified – Out-of-cycle Inspections Removed



The data points on the graph show the range of values of the percentage of evap DTCs by age for two sets (states A, B, and C combined and state D). The data points on the graph show that for the three states with an enforced OBD program, at 4 years old, the percentage of tests with evap DTCs was between 0.2% and 0.8%. At 8 years old, the percentage increased to between 0.5% and 2.2%, and the rate of increase was approximately 0.15% per year. In comparison, for state D, at 4 years old the percentage of tests with evap DTCs was between 1.0% and 2.0%. At 8 years old, the percentage increased to between 2.6% and 4.2%, and the rate of increase was approximately 0.5% per year.

The two trend lines in the figure could be an approximation of the percentage and rate of increase of evap DTCs as vehicles age in I/M areas and in non-I/M areas. Again, however, it should be noted that State D does have an I/M program which includes an OBD test (advisory) as well as a fuel cap test, so evap DTC rates in State D are likely lower than those in a non-I/M area. The trend line showed that for the three states with an enforced I/M program, at 4 years old the approximate percentage of tests with evap DTCs is 0.5%. This percentage increases to approximately 1.1% for 8 year old vehicles. The increase in the percentage is approximately 0.15% per year. For state D, the trend line shows that the percentage of tests with evap DTCs for 4 year old vehicles is approximately 1.4%, and this increases to approximately 3.5% for 8 year old vehicles. The increase in the percentage of tests with evap DTCs by age is approximately 0.5%.

State D does include an enforced gas cap test in their I/M program, so the trend line approximating the non-I/M area (in red) might be a conservative estimate. The trend lines show that for 8 year old vehicles in an I/M area, approximately 1.0% of them could have a stored evap DTC, while in a non-I/M area the percent of 8 year old vehicles could be over 3%.

As has been stated earlier, all of the predicted values are based on linear trends, and the data in these plots do suggest some non-linearity in the relationship. A more in-depth statistical analysis could be used to refine these predicted evap DTC rates by age in a future analysis.

3.5 Evap DTCs over Multiple Inspection Cycles

In enforced OBD programs, less than 0.5% of the vehicles with a “ready” evap monitor and with at least one evap DTC were found to have evap DTCs in more than one I/M cycle. This suggests that it may be more common for evap DTCs to periodically occur throughout the I/M fleet rather than be limited to a smaller number of “problem” vehicles that repeatedly have evap DTCs over multiple I/M cycles. However, the distribution of the fleet (in terms of the number of inspection cycles) will affect the percentage of vehicles with evap DTCs in more than one I/M

cycle (older vehicles which have undergone more inspection cycles will be more likely to have evap DTCs in more than one I/M cycle).

3.6 Evaluation of Evap DTC rates based on the Prior I/M Cycle's Evap Monitor Readiness Status

For this analysis, the evap DTC rates for "evap ready" vehicles which had a "not ready" evap monitor in the previous I/M cycle were analyzed. For every state, the evap DTC rates were between 2% and 10% higher for vehicles that previously had a "not ready" evap monitor in comparison to the overall fleet. One possible explanation for this is that for some of these preceding tests in which the evap monitor was not ready, the vehicle's battery had been disconnected prior to the test in order to extinguish the MIL and pass the I/M inspection, thus resetting the readiness monitors and clearing the DTCs (possibly evap DTCs) which would reappear during a subsequent inspection unless that problem had been properly addressed. Regardless of the cause, these results imply that that the actual rate of vehicles with evap DTCs may be higher than the DTC rate calculated based on I/M data (i.e., "not ready" evap monitors may be masking some evap DTCs in the I/M data), but because of the differences among the states and the small subsample of vehicle tests, additional analysis would be required to investigate this more fully.

4.0 Most Common Evap DTCs

The graphs in Section 3 present rates of evap DTCs without consideration of the specific DTC. In this section, the specific evap DTCs that were set in each state were highlighted. This additional analysis showed the majority of evap DTCs are limited to a small subset of codes. This section summarizes the most common evap codes, either set individually or in combination with other evap codes (e.g. codes P0442 and P0455).

4.1 Most Common Individual Evap DTCs

The prevalence of generic (P0) evap codes and manufacturer-specific (P1) codes were tabulated to identify the trends in individual DTCs (not the multiples in this case). The number of test records containing each of the individual evap DTCs (listed in Table 4) was summed for each state. This count was done by DTC, regardless of which other evap DTCs were in the same test record. Table 6 shows the results of the counts of each evap DTC for each of the states. Because records with more than one evap DTC were counted more than once, the total number of test records in Table 6 will exceed the total number of test records with evap DTCs. For example, a record with 3 evap DTCs will be listed 3 times in Table 6, once for each of the 3 DTCs contained in the test record.

Table 6. Counts of Instances for Each Evap DTC by State

	State A		State B		State C		State D	
Specific P0 and P1 Evap DTCs	**Number of records**	**%**	**Number of records**	**%**	**Number of records**	**%**	**Number of records**	**%**
P_093	259	0.0%	18	0.0%	5	0.0%	3	0.0%
P_094	6	0.0%	0	0.0%	2	0.0%	3	0.0%
P_440	70,351	10.6%	11,332	14.6%	13,954	15.0%	10,424	13.4%
P_441	59,423	9.0%	8,693	11.2%	10,590	11.4%	6,529	8.4%
P_442	114,294	17.3%	14,853	19.1%	16,892	18.2%	13,524	17.4%
P_443	56,553	8.5%	3,782	4.9%	5,602	6.0%	7,422	9.6%
P_444	2,132	0.3%	298	0.4%	260	0.3%	218	0.3%
P_445	1,474	0.2%	142	0.2%	160	0.2%	214	0.3%
P_446	51,523	7.8%	6,927	8.9%	9,891	10.7%	4,617	6.0%
P_447	3,880	0.6%	570	0.7%	468	0.5%	1,291	1.7%
P_448	1,833	0.3%	442	0.6%	1,578	1.7%	442	0.6%
P_449	2,582	0.4%	1,111	1.4%	385	0.4%	359	0.5%
P_450	5,480	0.8%	544	0.7%	719	0.8%	958	1.2%
P_451	1,866	0.3%	253	0.3%	345	0.4%	440	0.6%
P_452	11,723	1.8%	1,184	1.5%	591	0.6%	2,151	2.8%
P_453	2,691	0.4%	598	0.8%	322	0.3%	518	0.7%
P_454	145	0.0%	35	0.0%	11	0.0%	103	0.1%
P_455	118,694	17.9%	15,571	20.0%	18,472	19.9%	12,310	15.9%
P_456	130,312	19.7%	8,228	10.6%	8,195	8.8%	11,672	15.1%
P_457	24,079	3.6%	2,279	2.9%	4,119	4.4%	3,837	4.9%
P_458	174	0.0%	5	0.0%	9	0.0%	10	0.0%
P_459	39	0.0%	19	0.0%	8	0.0%	6	0.0%
P_465	31	0.0%	5	0.0%	1	0.0%	1	0.0%
P_466	1	0.0%	0	0.0%	0	0.0%	1	0.0%
P_467	0	0.0%	0	0.0%	0	0.0%	3	0.0%
P_468	0	0.0%	0	0.0%	0	0.0%	3	0.0%
P_469	0	0.0%	0	0.0%	0	0.0%	2	0.0%
P_496	746	0.1%	690	0.9%	173	0.2%	251	0.3%
P_497	633	0.1%	71	0.1%	34	0.0%	104	0.1%
P_498	339	0.1%	33	0.0%	24	0.0%	85	0.1%
P_499	186	0.0%	30	0.0%	21	0.0%	37	0.0%
Total[1]	661,449	100%	77,713	100%	92,831	100%	77,538	100%

[1] These totals are for 1996 and newer vehicles. They will be larger than the total of evap DTCs presented in Appendix tables C-1 through C-4 and E-1 through E-4 because some evap DTCs are set together.

From Table 6, the most common individual DTCs that were in all states combined were identified. These include P0 and P1 codes (shaded in gray in the table) with 440, 441, 442, 443, 446, 447, 448, 449, 450, 452, 455, 456, and 457. The results are presented by calendar year and model year in Appendix D. Because the other evap DTCs were not as common, their distributions are not presented in Appendix D. The numbers in the Appendix D tables indicate that as vehicles age, the percentage of vehicles with each particular evap DTC increases slightly. When reviewing these results, it should be noted that different vehicle makes and models have different evap monitor readiness and evap DTC rates. Therefore, differences in fleet mix and fleet age distributions in the various states could be contributing to the differences among states. Also, as noted previously, environmental conditions such as ambient temperatures and elevation (ambient pressure) which vary from state to state may also affect evap monitor readiness and evap DTC rates and contribute to the differences among the state results provided in Appendix D.

4.2 Most Common Individual Evap DTCs and Evap DTC Combinations

The prevalence of generic (P0) evap codes and manufacturer-specific (P1) codes (either individually or in combinations) was tabulated. Less than 20 different individual and combinations of evap codes comprised more than 90% of all evap codes in the data. Appendix E contains tables showing the most common evap DTCs and evap DTC combinations for each state. Table 7 lists the most common evap DTCs for all 4 states combined. The DTC definitions are based on the generic P0 codes listed in SAEJ2012 and are listed in Table 4. The percentage of all codes from all states is listed in Table 7.

Table 7. Evap DTCs Most Commonly Found in All States' Data

# of Evap codes	Specific P0 and P1 codes set	Generic description of DTCs set	Number of occurrences	Percentage of evap codes	Cumulative percentage of evap codes
1	P_456	Evap system very small leak detected	139,596	17.8%	17.8%
1	P_455	Evap system gross leak detected	128,058	16.4%	34.2%
1	P_442	Evap system small leak detected	114,606	14.6%	48.9%
1	P_440	Evap system malfunction	73,787	9.4%	58.3%
1	P_443	Evap system purge control valve circuit (P0) or incorrect purge control valve flow (P1)	69,023	8.8%	67.1%
1	P_441	Incorrect purge flow (P0) or flow during non-purge (P1)	54,533	7.0%	74.1%
1	P_446	Evap system vent control circuit malfunction	40,935	5.2%	79.3%
1	P_457	Evap system leak detected (fuel	28,293	3.6%	82.9%

# of Evap codes	Specific P0 and P1 codes set	Generic description of DTCs set	Number of occurrences	Percentage of evap codes	Cumulative percentage of evap codes
		cap) (P0) or evap canister (P1)			
2	P_442 and P_455	Small leak and gross leak	19,718	2.5%	85.4%
3	P_440, P_441, and P_446	Evap system malfunction, incorrect purge flow or flow during non-purge, and vent control circuit malfunction	14,225	1.8%	87.3%
1	P_452	Evap system pressure sensor low input	12,028	1.5%	88.8%
Multiple	Other Evap DTC set as 1 or 2 or 3 or more DTCs together		87,693	11.2%	100.0%
		Total	782,495		

Note: These results are for model years 1996 and newer

Table 7 shows that for all the states combined, common codes primarily fall into two categories, leaks or purge flow. The leak codes, including P_442, P_455, P_456, and P_457, comprise more than 50% of the overall evap codes for vehicles of model years 1996 and newer. This number represents a minimum of the percent of the total evap DTCs that involve leaks, because the four codes listed above are only some of the codes that could indicate a leak in the evaporative emissions control system. Also, 50% represents the minimum percentage of evap DTCs that involve leaks, but the percentage of evaporative emissions resulting from these leak-related DTCs may be higher or lower than 50% of all evaporative emissions, since emission rates can vary significantly based on type of failure. Some malfunctions may not result in any evaporative emissions release. This analysis does not attempt to quantify the emission rates from any specific evap DTCs, it only quantifies the rate of evap DTCs.

The second most common category of evap DTCs in Table 7 involve some sort of error in the operation of the purge flow control. The codes for these DTCs include P_441 and P_443, and they make up approximately 15%-20% of the evap DTCs found in the data. Other types of evap codes include general evap malfunction (P_440), vent control circuit malfunction (P_446), and pressure sensor (P_450).

The leak codes for each of the states were tabulated by calendar year and model year to see what percentage of the inspections with evap DTCs had leak-related evap DTCs. The detailed tables for leaks are also included in Appendix E. The tables show that in a given calendar year and model year, the percentage of the evap DTCs that are leak-related varies

significantly from the overall percentage of over 50% highlighted above. In general, however, the newer model years have a higher percentage of the evap DTCs being leak-related than the older model years. In some calendar years and model years, over 75% of the evap DTCs can be leak-related. This indicates that the overall percentage of 50% of the evap DTCs being leak-related is a conservative estimate, especially if only newer model years are considered.

5.0 Conclusions

This report presented results from analysis of OBD evap monitor readiness status and OBD evaporative emissions control system DTCs as a function of calendar year and model year using I/M program data from four states. The main purpose of this Work Assignment was to better understand evap monitor readiness and evap DTC rates for light-duty gasoline cars and trucks. In order to standardize results among all states and minimize the effect of differences in how State I/M programs are administered, this analysis was performed without regarding to each state's OBD readiness or OBD pass / fail determinations. Results in this report are based on the OBD evap monitor readiness status (without regard to the state's I/M readiness determination) and the presence (or lack of) evap-related DTCs (without regard to MIL command status).

The first part of the analysis involved determining how many vehicles had a "ready" evap monitor at the time of initial and/or re-test inspection within one inspection cycle. Evap monitor readiness was evaluated because some evap DTCs may not be set for vehicles with evap system malfunctions until the evap monitor achieves readiness (i.e., a "not ready" evap monitor can "mask" some evap system DTCs). The percentage of "not ready" evap monitors was evaluated and compared among each state, and that analysis showed that all states have similar evap monitor readiness percentages, even State D which does not perform pass/fail OBD inspections, they are only advisory.

Regardless of the details of the I/M program administration or the calendar years of data analyzed, the results suggest that approximately 7-11% of the initial inspections in any given I/M program are likely to have a "not ready" evap monitor. The similarity in this percentage for all of the states suggests that this number could approximate a national percentage of vehicles in I/M programs with a "not ready" evap monitor.

When comparing these results with previous analysis of non-evap OBD monitors, the percentage of "not ready" evap monitors was much higher than for other OBD monitors. For example, when evaluating all the OBD monitors' status for one of these states, the non-evap OBD monitors had an overall "not ready" range of 1% - 2% instead of the 7%-11% range seen for the evap monitor. As the OBD evap monitor is typically subject to more rigorous enabling

criteria (specific vehicle operation and soak requirements) than other monitors in order to achieve readiness, this monitor is generally one of the last monitors to achieve readiness, and will likely have a higher fleet-wide "not ready" rate than other monitors at any point in time (such as during an I/M inspection). Due to the longer "not ready" period of the OBD evap monitor, it is possible that attempts to mask MIL illumination in order to pass an I/M test (through a battery disconnect or code clearing) or code clearing after legitimate repairs could contribute somewhat to the lower OBD evap monitor readiness rates seen during I/M tests.

Further analysis indicated that vehicles in an I/M environment (including State D, which is advisory-only for OBD) are more likely to have a "not ready" evap monitor as they age. Linear trend lines[6] were developed for each of the states showing the percent of inspections with a ready evap monitor versus vehicle age. This trend line was based on a modified dataset for each of the states that only included inspections of vehicles that would typically be subject to the I/M program at the time of their regular inspection. This involved removing inspections in which the vehicle was too new for the I/M inspection and also removing inspections during an "off" year in the biennial I/M programs. The results showed that as a vehicles age, they will be more likely to have a "not ready" evap monitor during an I/M cycle. The analysis was conducted by binning all vehicles in a given age (from 2 to 10 years old in most states). The vehicles at any given age can have a range of odometer values, so they may not all be in the same condition in terms of wear-and-tear and mileage.

For all four states, the trend lines showed that between 2% and 4% of the inspections of vehicles entering the I/M program (at about 2 years old) had a "not ready" evap monitor. The percentage increased to between 8% and 11% as the vehicles aged to 8 years old, and the rate of increase was approximately 1% per year as the vehicle ages.

The evap DTC rates for all vehicles with "ready" evap monitors was then analyzed. The results indicate 0.7%-2.5% of the inspections with "ready" evap monitors have a stored evap DTC. The results also show that the overall percentage of inspections with a stored evap DTC is higher for State D (where OBD is not enforced) than for the other states where OBD is enforced. The percentage of inspections with evap DTCs were also analyzed by calendar year and model year, and trend lines[7] were developed for each of the states showing the percentage of inspections with evap DTCs versus vehicle age. These trend lines were based on a modified dataset for each of the states which only included inspections of vehicles that would typically be subject to the I/M program at the time of their inspection (again, removing vehicles that are "too

[6] Trend lines were developed using linear regression techniques.
[7] Trend lines were developed using linear regression techniques

new" or not in their biennial test year). For the three states with an enforced I/M OBD program, between 0.1% and 0.5% of vehicles with "ready" evap monitors entering the I/M program (at about 2 years old) had an evap DTC. At 4 years old, the percentage of tests with evap DTCs increased to between 0.2% and 0.8% for those three states. At 8 years old, the percentage increased to between 0.5% and 2.2%, and the rate of increase was approximately 0.15% per year.

The rate of increase in the percentage of evap DTCs for the fourth state, State D, was over 3 times higher than the rate of the other three states. For example, at 4 years old the percentage of tests with evap DTCs was between 1.0% and 2.0% for state D. At 8 years old, the percentage increased to between 2.6% and 4.2%, and the rate of increase was approximately 0.5% per year. This higher rate of increase of the percentage of evap DTCs by age is likely due to the fact that OBD is not enforced in State D. It is possible that the percentage of evap DTCs for State D is indicative of the minimum rate of evap DTCs in a non-I/M area. The rate of increase in a non-I/M area could be even higher than the slope for State D, because State D does have an I/M program that includes an evap testing component (gas cap test).

The percentage of evap DTCs set by calendar year and model year were combined for those three states (States A, B, and C) to calculate a single trend line showing the percentage of evap DTCs set by vehicle age. The combined State A, B, C trend line was then compared with the trend line for State D (in which OBD is not enforced) as a comparison of results from states with an enforced OBD program versus a state without an enforced OBD program. The trend lines show that the rate of increase of evap DTCs as the vehicles age is over 3 times higher for State D versus that for the states with an enforced OBD program. For example, the trend line showed that for the three states with an enforced I/M program, at 4 years old the approximate percentage of tests with evap DTCs is 0.5%. This percentage increases to approximately 1.1% for 8 year old vehicles. The increase in the percentage is approximately 0.15% per year. For state D, the trend line shows that the percentage of tests with evap DTCs for 4 year old vehicles is approximately 1.4%, and this increases to approximately 3.5% for 8 year old vehicles. The increase in the percentage of tests with evap DTCs by age is approximately 0.5%. These trend lines might be used as one way to approximate the rate of stored evap DTCs for vehicles in I/M and non-I/M areas.

Vehicles with evap DTCs were analyzed over multiple inspection cycles, and less than 0.5% of these vehicles were found to have evap DTCs in more than one I/M cycle. Vehicles with "not ready" evap monitors throughout one inspection cycle were found to have slightly higher evap DTC rates during the subsequent inspection cycle, suggesting that "not ready" evap monitors could be masking evap problems (and hence evap DTCs). However, further analysis

showed that less than 3% of the vehicles analyzed had an evap monitor status of “not ready” more than two times in their entire I/M history.

Further analysis showed that the majority of evap DTCs are limited to a small subset of codes. The records with individual evap codes as well as multiple evap codes were analyzed, and the results showed that usually fewer than 20 different individual and combinations of evap codes comprised more than 90% of all evap codes in the data. The results show that for all the states combined, common codes primarily fall into two categories, leaks or purge flow. The leak codes, including P_442, P_455, P_456, and P_457, comprise more than 50% of the overall evap codes for vehicles of model years 1996 - 2010. This number represents a minimum of the percentage of the total evap DTCs that involve leaks, because the four codes listed above are only some of the codes that could indicate a leak in the evaporative emissions control system. This 50% represents the minimum percentage of evap DTCs that involve leaks, but the percentage of evaporative emissions resulting from these leak-related DTCs may be higher (or lower) than 50% of all evaporative emissions, since emission rates can vary significantly based on type of malfunction.. This analysis does not attempt to quantify the emission rates from any specific evap DTCs, it only quantifies the rate of evap DTCs.

The second most common category of evap DTCs in the data involved some sort of error in the operation of the purge flow control. The codes for these DTCs included P_441 and P_443, and they made up approximately 15%-20% of the evap DTCs found in the data.

The newest vehicles in every state are not subject to the I/M program and therefore are not included in this analysis. The evap monitor readiness status decreases and evap DTC rates increase as vehicles age. It is likely the evap monitor “not ready” rates and the evap DTC rates presented in this report are actually higher than those that would be seen for the entire on-road vehicle fleet. The newer vehicles would make up a high percentage of the fleet but would have lower percentages of “not ready” evap monitors and stored evap DTCs. The vehicles analyzed from each state for this report are all subject to an I/M program. Since the State D program is advisory for OBD, it was used in this report to approximate OBD evap fleet trends from a non-I/M area, but it is likely to be a “best-case” scenario (lower evap DTC rates than a non-I/M area) since State D does provide OBD results on an advisory basis and it does have an enforced gas cap test.

For future work, data from another source (such as some commercially available database of on-road vehicle data monitoring) could be obtained to further develop estimates of the evap

monitor status and DTC rates for new vehicles and vehicles operating outside of I/M programs (as these vehicles are not currently well represented in this analysis of I/M data).

Future work could also involve evaluation of on-road I/M pullover testing to determine the evap DTC and evap monitor readiness rates for in-use vehicles and compare these rates with the I/M rates presented in this report. Other future work could also involve performing analysis of DTCs and readiness of monitors associated with engine operation (i.e., exhaust emissions) and compare these rates with the evaporative emissions control system rates presented in this report.

Appendix A
Summary of Data Filters Applied the States' Data

For all the states' data, filters were applied to the data to remove any inspection records that should not be used for this analysis. This included inspections of heavy duty vehicles (vehicles with a gross vehicle weight rating (GVWR) greater than 8500 lbs), inspections of vehicles with a fuel type other than gasoline, invalid or unofficial test records, audits and special inspections performed at government-operated stations (in the states where this is applicable).

Any records with obviously invalid VINs, such as VINs of "TEST", "OBDTEST", "OBD2TEST", "12345", "000" and "111", were removed. Then any vehicle tests with a result of "Abort" were removed. These aborted tests do not have any valid OBD results, so they were removed before beginning the identification of initial tests. Also, for the purposes of this analysis, all vehicles 1995 and older were removed from the dataset, and records with invalid model years were removed. Only records where the inspection record indicated that an OBDII inspection had been performed (i.e., test type=OBD, OBD result=P or F, malfunction indicator light (MIL) status=P or F, diagnostic link connector (DLC) result=P) were kept. In addition, any tests where the inspection reason indicated that the record was for a safety-only inspection and any other tests where an OBD inspection was not required were dropped. Finally, in some states, a few vehicles were found to have received hundreds of inspections, often with three or more inspections on the same day; these appear to be audit vehicles, and since they do not represent actual vehicles from the I/M fleet, they were also deleted.

Appendix B
Tables of Percentage of Evap Monitors “Not Ready” by Calendar Year and Model Year for Each State

Table B-1. Percent of Evap Monitors Ready for All Test Cycles by Calendar Year and Model Year: State A

Calendar Year		Model Year															
		1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
2004	Ready	810,561	516,697	971,755	511,922	1,245,836	308,108	256,568	247,453	143,357	7,887	6	.	.	.	.	.
	Total	843,246	569,106	1,065,028	583,806	1,343,798	359,696	284,912	268,590	154,769	8,863	6	.	.	.	.	.
	% Rdy	96.1%	90.8%	91.2%	87.7%	92.7%	85.7%	90.1%	92.1%	92.6%	89.0%	100.0%	.	.	.	.	.
2005	Ready	432,051	842,942	501,595	1,040,290	296,247	243,609	118,992	79,784	77,762	51,387	2,688	7	.	.	.	.
	Total	456,604	917,775	572,812	1,150,154	349,579	290,644	138,695	91,474	85,050	55,153	3,071	7	.	.	.	.
	% Rdy	94.6%	91.8%	87.6%	90.4%	84.7%	83.8%	85.8%	87.2%	91.4%	93.2%	87.5%	100.0%	.	.	.	.
2006	Ready	667,343	499,630	836,110	518,456	1,350,221	259,989	229,412	99,549	68,995	75,619	45,474	3,122	6	.	.	.
	Total	699,816	557,066	937,095	602,608	1,481,334	306,798	268,900	117,918	77,522	80,950	48,352	3,424	6	.	.	.
	% Rdy	95.4%	89.7%	89.2%	86.0%	91.1%	84.7%	85.3%	84.4%	89.0%	93.4%	94.0%	91.2%	100.0%	.	.	.
2007	Ready	387,300	704,889	478,407	893,653	442,636	1,314,166	239,320	215,297	87,833	64,136	68,348	40,544	2,115	2	.	.
	Total	411,795	775,171	557,093	1,012,319	518,372	1,439,185	277,118	254,939	100,926	69,741	71,905	41,804	2,137	2	.	.
	% Rdy	94.1%	90.9%	85.9%	88.3%	85.4%	91.3%	86.4%	84.5%	87.0%	92.0%	95.1%	97.0%	99.0%	100.0%	.	.
2008	Ready	540,399	439,432	695,175	484,571	1,140,170	409,179	1,290,781	208,776	182,380	77,783	58,321	58,816	28,066	1,758	.	.
	Total	571,533	495,384	794,806	576,994	1,280,294	478,032	1,395,503	245,367	212,833	87,004	62,259	60,203	28,240	1,779	.	.
	% Rdy	94.6%	88.7%	87.5%	84.0%	89.1%	85.6%	92.5%	85.1%	85.7%	89.4%	93.7%	97.7%	99.4%	98.8%	.	.
2009	Ready	348,025	600,445	432,646	769,712	452,706	1,147,469	380,440	1,308,578	188,646	167,453	78,192	55,180	56,542	19,145	1,639	.
	Total	374,438	672,594	519,581	896,492	546,853	1,287,831	440,307	1,430,133	216,017	189,553	84,929	57,323	56,966	19,266	1,657	.
	% Rdy	92.9%	89.3%	83.3%	85.9%	82.8%	89.1%	86.4%	91.5%	87.3%	88.3%	92.1%	96.3%	99.3%	99.4%	98.9%	.
2010	Ready	463,884	409,166	611,897	469,722	1,012,825	462,347	1,193,482	388,749	1,355,367	218,014	196,057	95,001	68,529	48,734	23,220	2,013
	Total	497,470	470,704	723,119	573,883	1,168,494	540,824	1,305,366	447,463	1,437,297	236,415	209,837	98,327	69,384	49,147	23,496	2,034
	% Rdy	93.2%	86.9%	84.6%	81.8%	86.7%	85.5%	91.4%	86.9%	94.3%	92.2%	93.4%	96.6%	98.8%	99.2%	98.8%	99.0%

Table B-2. Percent of Evap Monitors Ready for All Test by Calendar Year and Model Year: State B

Calendar Year		Model Year															
		1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
2007	Ready	86,221	104,473	120,599	141,773	162,736	160,655	175,040	176,875	187,828	270	33	.	.	.	.	.
	Total	92,393	116,055	134,549	158,861	177,411	171,512	183,683	185,345	193,633	278	34	.	.	.	.	.
	% Rdy	93.3%	90.0%	89.6%	89.2%	91.7%	93.7%	95.3%	95.4%	97.0%	97.1%	97.1%	.	.	.	.	.
2008	Ready	75,210	91,437	105,053	129,595	151,430	151,741	166,816	167,678	176,481	182,274	224	62	8	2	.	.
	Total	81,152	102,586	118,560	147,513	167,685	163,693	176,643	177,429	183,862	187,140	233	62	8	2	.	.
	% Rdy	92.7%	89.1%	88.6%	87.9%	90.3%	92.7%	94.4%	94.5%	96.0%	97.4%	96.1%	100.0%	.	.	.	.
2009	Ready	66,540	82,052	94,083	116,227	140,870	143,391	159,370	161,291	168,772	169,544	177,769	446	107	16	.	.
	Total	72,254	92,787	108,001	133,492	158,056	156,054	170,134	172,242	176,856	175,578	184,345	462	107	17	.	.
	% Rdy	92.1%	88.4%	87.1%	87.1%	89.1%	91.9%	93.7%	93.6%	95.4%	96.6%	96.4%	96.5%	100.0%	94.1%	.	.
2010	Ready	59,887	74,645	85,547	105,528	128,581	135,363	152,925	157,135	165,719	165,354	169,173	185,562	849	155	22	1
	Total	65,892	85,700	100,570	124,532	147,635	150,186	166,319	170,870	176,021	172,606	176,778	192,526	886	160	24	1
	% Rdy	90.9%	87.1%	85.1%	84.7%	87.1%	90.1%	91.9%	92.0%	94.1%	95.8%	95.7%	96.4%	95.8%	96.9%	91.7%	100.0%
2011	Ready	52,826	67,607	77,743	96,822	118,358	125,100	146,159	151,629	161,859	163,129	166,142	174,090	163,134	448	328	49
	Total	58,355	77,871	92,173	115,492	137,645	140,163	160,202	166,714	173,623	171,830	174,540	181,088	168,523	462	332	51
	% Rdy	90.5%	86.8%	84.3%	83.8%	86.0%	89.3%	91.2%	91.0%	93.2%	94.9%	95.2%	96.1%	96.8%	97.0%	98.8%	96.1%
2012	Ready	46,544	60,051	69,510	87,437	108,562	115,802	135,902	145,333	156,673	159,423	163,487	170,765	151,659	103,040	592	353
	Total	51,500	69,714	83,619	105,800	128,104	130,894	150,831	161,629	169,775	169,488	173,303	178,223	156,607	106,250	614	366
	% Rdy	90.4%	86.1%	83.1%	82.6%	84.7%	88.5%	90.1%	89.9%	92.3%	94.1%	94.3%	95.8%	96.8%	97.0%	96.4%	96.4%

Table B-3. Percent of Evap Monitors Ready for All Test Cycles by Calendar Year and Model Year: State C

Calendar Year		Model Year															
		1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
2005	Ready	75,983	175,748	109,776	210,126	149,671	257,887	133,550	46,229	24,040	10,583	334	.	.	.	.	.
	Total	80,645	191,168	120,910	226,857	159,826	268,365	137,436	47,689	24,815	11,092	435	.	.	.	.	.
	% Rdy	94.2%	91.9%	90.8%	92.6%	93.6%	96.1%	97.2%	96.9%	96.9%	95.4%	76.8%	.	.	.	.	.
2006	Ready	123,740	75,286	160,245	107,288	224,672	127,510	274,461	114,192	31,183	20,469	12,954	491	.	.	.	.
	Total	130,324	84,484	176,005	118,975	240,740	135,125	282,929	117,823	32,149	21,030	14,276	558	.	.	.	.
	% Rdy	94.9%	89.1%	91.0%	90.2%	93.3%	94.4%	97.0%	96.9%	97.0%	97.3%	90.7%	88.0%	.	.	.	.
2007	Ready	64,117	139,445	94,372	175,277	135,525	222,527	144,704	286,939	110,806	34,310	26,882	12,122	373	.	.	.
	Total	69,537	156,425	108,822	196,377	149,742	238,339	152,596	297,433	114,085	35,415	27,828	12,665	405	.	.	.
	% Rdy	92.2%	89.1%	86.7%	89.3%	90.5%	93.4%	94.8%	96.5%	97.1%	96.9%	96.6%	95.7%	92.1%	.	.	.
2008	Ready	86,214	59,396	118,266	86,064	178,528	111,461	225,227	117,687	242,347	96,650	31,588	24,386	9,483	338	.	.
	Total	93,066	69,862	136,502	101,139	199,215	123,222	239,296	124,793	250,175	99,405	32,726	24,995	9,738	351	.	.
	% Rdy	92.6%	85.0%	86.6%	85.1%	89.6%	90.5%	94.1%	94.3%	96.9%	97.2%	96.5%	97.6%	97.4%	96.3%	.	.
2009	Ready	40,797	89,350	62,188	119,328	96,311	164,854	114,012	219,130	109,265	223,890	94,323	31,377	24,560	7,813	300	.
	Total	45,251	103,153	75,843	139,321	111,502	181,567	123,824	233,231	114,515	229,713	97,232	32,266	25,040	8,023	317	.
	% Rdy	90.2%	86.6%	82.0%	85.6%	86.4%	90.8%	92.1%	94.0%	95.4%	97.5%	97.0%	97.2%	98.1%	97.4%	94.6%	.
2010	Ready	8,874	8,668	12,595	10,866	21,822	13,487	29,721	15,601	33,661	12,563	32,270	5,270	2,237	1,225	165	1
	Total	9,847	10,519	15,526	13,852	25,661	15,681	32,487	17,384	35,796	13,189	33,508	5,451	2,299	1,262	173	1
	% Rdy	90.1%	82.4%	81.1%	78.4%	85.0%	86.0%	91.5%	89.7%	94.0%	95.3%	96.3%	96.7%	97.3%	97.1%	95.4%	100.0%

Table B-4. Percent of Evap Monitors Ready for All Test Cycles by Calendar Year and Model Year: State D

Calendar Year		Model Year															
		1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
2004	Ready	39,980	36,292	49,093	34,875	59,763	27,702	18,151	12,524	7,131	135	.	.	.	.	.	.
	Total	42,471	39,731	52,633	37,708	63,151	29,855	19,137	13,408	7,670	152	.	.	.	.	.	.
	% Rdy	94.1%	91.3%	93.3%	92.5%	94.6%	92.8%	94.8%	93.4%	93.0%	88.8%	.	.	.	.	.	.
2005	Ready	24,512	33,229	28,801	38,007	30,625	44,354	21,698	10,902	8,631	4,124	59	.	.	.	.	.
	Total	26,678	36,714	32,033	41,295	33,510	47,369	23,378	11,642	9,321	4,512	74	.	.	.	.	.
	% Rdy	91.9%	90.5%	89.9%	92.0%	91.4%	93.6%	92.8%	93.6%	92.6%	91.4%	79.7%	.	.	.	.	.
2006	Ready	27,920	29,204	38,540	32,057	47,915	30,771	56,159	18,290	9,471	8,091	3,326	82	.	.	.	.
	Total	29,873	32,272	42,181	35,136	51,254	33,092	58,458	19,439	9,997	8,603	3,626	97	.	.	.	.
	% Rdy	93.5%	90.5%	91.4%	91.2%	93.5%	93.0%	96.1%	94.1%	94.7%	94.0%	91.7%	84.5%	.	.	.	.
2007	Ready	20,569	28,735	27,859	35,803	31,537	40,804	29,411	47,946	15,368	7,587	5,707	2,636	74	.	.	.
	Total	22,336	31,926	31,216	39,316	34,721	43,896	31,588	50,311	16,490	8,099	6,153	2,873	79	.	.	.
	% Rdy	92.1%	90.0%	89.2%	91.1%	90.8%	93.0%	93.1%	95.3%	93.2%	93.7%	92.8%	91.8%	93.7%	.	.	.
2008	Ready	20,393	21,900	27,664	25,105	34,333	25,433	37,983	21,320	43,360	11,950	5,768	5,075	1,823	48	.	.
	Total	22,253	24,887	31,299	28,486	37,938	28,314	40,718	23,111	45,423	13,135	6,280	5,457	1,946	51	.	.
	% Rdy	91.6%	88.0%	88.4%	88.1%	90.5%	89.8%	93.3%	92.3%	95.5%	91.0%	91.8%	93.0%	93.7%	94.1%	.	.
2009	Ready	19,979	27,398	26,041	32,468	30,261	37,899	29,272	40,594	22,314	48,482	11,162	5,362	4,491	966	34	.
	Total	22,082	31,150	30,159	36,750	34,254	41,752	32,219	43,262	23,898	50,697	12,279	5,789	4,761	1,045	38	.
	% Rdy	90.5%	88.0%	86.3%	88.3%	88.3%	90.8%	90.9%	93.8%	93.4%	95.6%	90.9%	92.6%	94.3%	92.4%	89.5%	.
2010	Ready	23,198	25,460	31,671	29,009	39,278	31,098	43,194	27,237	42,972	23,179	47,335	11,499	5,429	2,755	922	26
	Total	25,775	29,737	36,863	33,923	44,488	35,661	47,451	30,177	45,642	25,003	49,648	12,608	5,778	2,904	973	30
	% Rdy	90.0%	85.6%	85.9%	85.5%	88.3%	87.2%	91.0%	90.3%	94.2%	92.7%	95.3%	91.2%	94.0%	94.9%	94.8%	86.7%
2011	Ready	21,199	34,395	29,383	41,656	35,198	47,302	35,131	49,151	29,687	54,786	31,436	57,766	12,417	3,224	2,739	748
	Total	23,851	39,910	35,151	48,481	41,239	53,693	39,921	53,803	32,541	58,150	33,769	60,315	13,558	3,441	2,860	803
	% Rdy	88.9%	86.2%	83.6%	85.9%	85.4%	88.1%	88.0%	91.4%	91.2%	94.2%	93.1%	95.8%	91.6%	93.7%	95.8%	93.2%

Appendix C
Tables of Percentage of Evap DTCs Set by Calendar Year and Model Year for Each State

Table C-1. For All Test Cycles with Evap Monitor Ready: Percent with One or More Evap DTCs Set, by Calendar Year and Model Year: State A

Calendar Year		Model Year															
		1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
2004	Yes	10,678	7,638	11,756	6,140	13,535	2,969	2,059	1,420	525	8	0	.	.	.	.	.
	Total Rdys	810,561	516,697	971,755	511,922	1,245,836	308,108	256,568	247,453	143,357	7,887	6	.	.	.	.	.
	%w/DTC	1.3%	1.5%	1.2%	1.2%	1.1%	1.0%	0.8%	0.6%	0.4%	0.1%	0.0%	.	.	.	.	.
2005	Yes	7,171	12,636	8,092	12,960	3,330	2,740	1,210	684	414	111	1	0	.	.	.	.
	Total Rdys	432,051	842,942	501,595	1,040,290	296,247	243,609	118,992	79,784	77,762	51,387	2,688	7	.	.	.	.
	%w/DTC	1.7%	1.5%	1.6%	1.2%	1.1%	1.1%	1.0%	0.9%	0.5%	0.2%	0.0%	0.0%	.	.	.	.
2006	Yes	9,495	9,452	12,756	7,921	19,312	3,361	2,591	907	490	306	45	5	0	.	.	.
	Total Rdys	667,343	499,630	836,110	518,456	1,350,221	259,989	229,412	99,549	68,995	75,619	45,474	3,122	6	.	.	.
	%w/DTC	1.4%	1.9%	1.5%	1.5%	1.4%	1.3%	1.1%	0.9%	0.7%	0.4%	0.1%	0.2%	0.0%	.	.	.
2007	Yes	6,646	12,175	9,418	12,776	7,979	23,780	3,032	1,985	674	315	91	32	0	0	.	.
	Total Rdys	387,300	704,889	478,407	893,653	442,636	1,314,166	239,320	215,297	87,833	64,136	68,348	40,544	2,115	2	.	.
	%w/DTC	1.7%	1.7%	2.0%	1.4%	1.8%	1.8%	1.3%	0.9%	0.8%	0.5%	0.1%	0.1%	0.0%	0.0%	.	.
2008	Yes	8,044	9,283	12,580	8,688	19,051	9,362	24,685	2,541	1,593	409	138	65	5	0	.	.
	Total Rdys	540,399	439,432	695,175	484,571	1,140,170	409,179	1,290,781	208,776	182,380	77,783	58,321	58,816	28,066	1,758	.	.
	%w/DTC	1.5%	2.1%	1.8%	1.8%	1.7%	2.3%	1.9%	1.2%	0.9%	0.5%	0.2%	0.1%	0.0%	0.0%	.	.
2009	Yes	6,176	11,455	10,028	13,022	9,712	23,820	9,137	24,073	2,001	926	205	86	16	4	0	.
	Total Rdys	348,025	600,445	432,646	769,712	452,706	1,147,469	380,440	1,308,578	188,646	167,453	78,192	55,180	56,542	19,145	1,639	.
	%w/DTC	1.8%	1.9%	2.3%	1.7%	2.1%	2.1%	2.4%	1.8%	1.1%	0.6%	0.3%	0.2%	0.0%	0.0%	0.0%	.
2010	Yes	6,947	8,724	12,680	9,490	18,935	11,436	26,169	8,076	20,839	1,376	498	140	28	15	7	0
	Total Rdys	463,884	409,166	611,897	469,722	1,012,825	462,347	1,193,482	388,749	1,355,367	218,014	196,057	95,001	68,529	48,734	23,220	2,013
	%w/DTC	1.5%	2.1%	2.1%	2.0%	1.9%	2.5%	2.2%	2.1%	1.5%	0.6%	0.3%	0.1%	0.0%	0.0%	0.0%	0.0%

Table C-2. For All Test Cycles with Evap Monitor Ready: Percent with One or More Evap DTCs Set, by Calendar Year and Model Year: State B

Calendar Year		Model Year															
		1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
2007	Yes	825	993	908	716	809	943	946	730	365	0	0	0	.	.	.	.
	Total Rdys	86,221	104,473	120,599	141,773	162,736	160,655	175,040	176,875	187,828	270	33	1	.	.	.	.
	%w/DTC	1.0%	1.0%	0.8%	0.5%	0.5%	0.6%	0.5%	0.4%	0.2%	0.0%	0.0%	0.0%	.	.	.	.
2008	Yes	749	992	981	875	990	1,201	1,266	963	502	265	0	0	0	.	.	.
	Total Rdys	75,210	91,437	105,053	129,595	151,430	151,741	166,816	167,678	176,481	182,274	224	62	8	.	.	.
	%w/DTC	1.0%	1.1%	0.9%	0.7%	0.7%	0.8%	0.8%	0.6%	0.3%	0.1%	0.0%	0.0%	0.0%	.	.	.
2009	Yes	699	982	965	912	1,022	1,382	1,530	1,264	759	395	286	0	0	0	.	.
	Total Rdys	66,540	82,052	94,083	116,227	140,870	143,391	159,370	161,291	168,772	169,544	177,769	446	107	16	.	.
	%w/DTC	1.1%	1.2%	1.0%	0.8%	0.7%	1.0%	1.0%	0.8%	0.4%	0.2%	0.2%	0.0%	0.0%	0.0%	.	.
2010	Yes	707	1,021	1,018	929	1,036	1,438	1,485	1,353	899	539	455	295	0	0	0	.
	Total Rdys	59,887	74,645	85,547	105,528	128,581	135,363	152,925	157,135	165,719	165,354	169,173	185,562	849	155	22	.
	%w/DTC	1.2%	1.4%	1.2%	0.9%	0.8%	1.1%	1.0%	0.9%	0.5%	0.3%	0.3%	0.2%	0.0%	0.0%	0.0%	.
2011	Yes	647	963	974	942	983	1,353	1,499	1,301	892	631	542	414	197	0	0	0
	Total Rdys	52,826	67,607	77,743	96,822	118,358	125,100	146,159	151,629	161,859	163,129	166,142	174,090	163,134	448	328	49
	%w/DTC	1.2%	1.4%	1.3%	1.0%	0.8%	1.1%	1.0%	0.9%	0.6%	0.4%	0.3%	0.2%	0.1%	0.0%	0.0%	0.0%
2012	Yes	583	876	954	910	1,072	1,357	1,487	1,388	953	707	652	492	276	102	0	0
	Total Rdys	46,544	60,051	69,510	87,437	108,562	115,802	135,902	145,333	156,673	159,423	163,487	170,765	151,659	103,040	592	353
	%w/DTC	1.3%	1.5%	1.4%	1.0%	1.0%	1.2%	1.1%	1.0%	0.6%	0.4%	0.4%	0.3%	0.2%	0.1%	0.0%	0.0%

Table C-3. For All Test Cycles with Evap Monitor Ready: Percent with One or More Evap DTCs Set, by Calendar Year and Model Year: State C

Calendar Year		Model Year															
		1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
2005	Yes	1,252	2,554	1,555	1,446	837	1,962	614	162	34	14	0	.	.	.	.	.
	Total Rdys	75,983	175,748	109,776	210,126	149,671	257,887	133,550	46,229	24,040	10,583	334	.	.	.	.	.
	%w/DTC	1.6%	1.5%	1.4%	0.7%	0.6%	0.8%	0.5%	0.4%	0.1%	0.1%	0.0%	.	.	.	.	.
2006	Yes	1,538	1,688	2,197	1,126	1,677	1,321	2,287	566	108	23	16	2	.	.	.	.
	Total Rdys	123,740	75,286	160,245	107,288	224,672	127,510	274,461	114,192	31,183	20,469	12,954	491	.	.	.	.
	%w/DTC	1.2%	2.2%	1.4%	1.0%	0.7%	1.0%	0.8%	0.5%	0.3%	0.1%	0.1%	0.4%	.	.	.	.
2007	Yes	1,073	2,260	1,858	1,943	1,431	2,729	1,580	2,044	407	75	27	14	0	.	.	.
	Total Rdys	64,117	139,445	94,372	175,277	135,525	222,527	144,704	286,939	110,806	34,310	26,882	12,122	373	.	.	.
	%w/DTC	1.7%	1.6%	2.0%	1.1%	1.1%	1.2%	1.1%	0.7%	0.4%	0.2%	0.1%	0.1%	0.0%	.	.	.
2008	Yes	1,224	1,403	2,035	1,415	2,072	1,735	3,203	1,348	1,120	211	53	19	4	0	.	.
	Total Rdys	86,214	59,396	118,266	86,064	178,528	111,461	225,227	117,687	242,347	96,650	31,588	24,386	9,483	338	.	.
	%w/DTC	1.4%	2.4%	1.7%	1.6%	1.2%	1.6%	1.4%	1.1%	0.5%	0.2%	0.2%	0.1%	0.0%	0.0%	.	.
2009	Yes	688	1,587	1,424	1,749	1,331	2,445	1,754	2,597	737	615	182	43	28	3	0	.
	Total Rdys	40,797	89,350	62,188	119,328	96,311	164,854	114,012	219,130	109,265	223,890	94,323	31,377	24,560	7,813	300	.
	%w/DTC	1.7%	1.8%	2.3%	1.5%	1.4%	1.5%	1.5%	1.2%	0.7%	0.3%	0.2%	0.1%	0.1%	0.0%	0.0%	.
2010	Yes	82	147	168	180	238	257	360	214	180	53	65	8	2	2	1	0
	Total Rdys	8,874	8,668	12,595	10,866	21,822	13,487	29,721	15,601	33,661	12,563	32,270	5,270	2,237	1,225	165	1
	%w/DTC	0.9%	1.7%	1.3%	1.7%	1.1%	1.9%	1.2%	1.4%	0.5%	0.4%	0.2%	0.2%	0.1%	0.2%	0.6%	0.0%

Table C-4. For All Test Cycles with Evap Monitor Ready: Percent with One or More Evap DTCs Set, by Calendar Year and Model Year: State D

Calendar Year		Model Year															
		1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
2004	Yes	744	767	584	403	625	349	198	57	25	0	.	.	.	.	.	.
	Total Rdys	39,980	36,292	49,093	34,875	59,763	27,702	18,151	12,524	7,131	135	.	.	.	.	.	.
	%w/DTC	1.9%	2.1%	1.2%	1.2%	1.0%	1.3%	1.1%	0.5%	0.4%	0.0%	.	.	.	.	.	.
2005	Yes	601	827	520	517	436	654	292	108	46	13	0	.	.	.	.	.
	Total Rdys	24,512	33,229	28,801	38,007	30,625	44,354	21,698	10,902	8,631	4,124	59	.	.	.	.	.
	%w/DTC	2.5%	2.5%	1.8%	1.4%	1.4%	1.5%	1.3%	1.0%	0.5%	0.3%	0.0%	0	.	.	.	.
2006	Yes	736	986	807	580	825	708	1,102	233	111	46	8	2	.	.	.	.
	Total Rdys	27,920	29,204	38,540	32,057	47,915	30,771	56,159	18,290	9,471	8,091	3,326	82	.	.	.	.
	%w/DTC	2.6%	3.4%	2.1%	1.8%	1.7%	2.3%	2.0%	1.3%	1.2%	0.6%	0.2%	2.4%	.	.	.	.
2007	Yes	729	1,020	752	693	764	999	828	822	229	61	29	9	0	.	.	.
	Total Rdys	20,569	28,735	27,859	35,803	31,537	40,804	29,411	47,946	15,368	7,587	5,707	2,636	74	.	.	.
	%w/DTC	3.5%	3.5%	2.7%	1.9%	2.4%	2.4%	2.8%	1.7%	1.5%	0.8%	0.5%	0.3%	0.0%	.	.	.
2008	Yes	739	1,008	834	621	860	848	1,085	487	762	129	44	33	4	0	.	.
	Total Rdys	20,393	21,900	27,664	25,105	34,333	25,433	37,983	21,320	43,360	11,950	5,768	5,075	1,823	48	.	.
	%w/DTC	3.6%	4.6%	3.0%	2.5%	2.5%	3.3%	2.9%	2.3%	1.8%	1.1%	0.8%	0.7%	0.2%	0.0%	.	.
2009	Yes	796	1,254	985	943	962	1,222	1,192	998	498	591	100	43	24	4	0	.
	Total Rdys	19,979	27,398	26,041	32,468	30,261	37,899	29,272	40,594	22,314	48,482	11,162	5,362	4,491	966	34	.
	%w/DTC	4.0%	4.6%	3.8%	2.9%	3.2%	3.2%	4.1%	2.5%	2.2%	1.2%	0.9%	0.8%	0.5%	0.4%	0.0%	.
2010	Yes	1,004	1,474	1,282	1,030	1,280	1,376	1,777	907	1,090	423	475	95	42	20	2	0
	Total Rdys	23,198	25,460	31,671	29,009	39,278	31,098	43,194	27,237	42,972	23,179	47,335	11,499	5,429	2,755	922	26
	%w/DTC	4.3%	5.8%	4.0%	3.6%	3.3%	4.4%	4.1%	3.3%	2.5%	1.8%	1.0%	0.8%	0.8%	0.7%	0.2%	0.0%
2011	Yes	1,066	2,094	1,420	1,499	1,342	2,183	1,975	1,825	946	916	450	440	93	21	10	2
	Total Rdys	21,199	34,395	29,383	41,656	35,198	47,302	35,131	49,151	29,687	54,786	31,436	57,766	12,417	3,224	2,739	748
	%w/DTC	5.0%	6.1%	4.8%	3.6%	3.8%	4.6%	5.6%	3.7%	3.2%	1.7%	1.4%	0.8%	0.7%	0.7%	0.4%	0.3%

Appendix D
Tables of Individual DTCs Set by Calendar Year and Model Year for Some Common Evap DTCs

Table D-1. Number of Inspection Cycles with DTC 440 Set, by Model Year and IM Calendar Year – State A

Calendar Year		Model Year															
		1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
2004	Year	952	865	1,549	916	1,483	194	125	76	11	0	0	.	.	.	.	.
	Total	810,561	516,697	971,755	511,922	1,245,836	308,108	256,568	247,453	143,357	7,887	6	.	.	.	.	.
	%w/DTC	0.1%	0.2%	0.2%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.	.
2005	Year	822	1,440	1,184	1,966	339	241	79	56	5	0	0	0	.	.	.	.
	Total	432,051	842,942	501,595	1,040,290	296,247	243,609	118,992	79,784	77,762	51,387	2,688	7	.	.	.	.
	%w/DTC	0.2%	0.2%	0.2%	0.2%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	.	.	.	.
2006	Year	1,084	1,174	1,862	1,189	2,487	301	175	70	16	1	0	0	0	.	.	.
	Total	667,343	499,630	836,110	518,456	1,350,221	259,989	229,412	99,549	68,995	75,619	45,474	3,122	6	.	.	.
	%w/DTC	0.2%	0.2%	0.2%	0.2%	0.2%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.
2007	Year	836	1,504	1,416	1,876	1,082	2,921	265	155	26	1	0	0	0	0	.	.
	Total	387,300	704,889	478,407	893,653	442,636	1,314,166	239,320	215,297	87,833	64,136	68,348	40,544	2,115	2	.	.
	%w/DTC	0.2%	0.2%	0.3%	0.2%	0.2%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.
2008	Year	982	1,166	1,821	1,290	2,599	1,259	2,644	219	46	0	0	0	1	0	.	.
	Total	540,399	439,432	695,175	484,571	1,140,170	409,179	1,290,781	208,776	182,380	77,783	58,321	58,816	28,066	1,758	.	.
	%w/DTC	0.2%	0.3%	0.3%	0.3%	0.2%	0.3%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.
2009	Year	735	1,353	1,467	1,788	1,403	3,208	1,134	2,426	72	8	1	1	0	0	0	.
	Total	348,025	600,445	432,646	769,712	452,706	1,147,469	380,440	1,308,578	188,646	167,453	78,192	55,180	56,542	19,145	1,639	.
	%w/DTC	0.2%	0.2%	0.3%	0.2%	0.3%	0.3%	0.3%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.
2010	Year	818	1,042	1,708	1,387	2,711	1,519	2,980	900	904	9	4	2	0	0	0	0
	Total	463,884	409,166	611,897	469,722	1,012,825	462,347	1,193,482	388,749	1,355,367	218,014	196,057	95,001	68,529	48,734	23,220	2,013
	%w/DTC	0.2%	0.3%	0.3%	0.3%	0.3%	0.3%	0.2%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table D-2. Number of Inspection Cycles with DTC 441 Set, by Model Year and IM Calendar Year – State A

Calendar Year		Model Year															
		1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
2004	Year	1,768	841	504	490	979	131	100	98	52	0	0	.	.	.	.	.
	Total	810,561	516,697	971,755	511,922	1,245,836	308,108	256,568	247,453	143,357	7,887	6	.	.	.	.	.
	%w/DTC	0.2%	0.2%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.	.
2005	Year	1,472	1,453	383	805	300	169	66	84	39	9	0	0	.	.	.	.
	Total	432,051	842,942	501,595	1,040,290	296,247	243,609	118,992	79,784	77,762	51,387	2,688	7	.	.	.	.
	%w/DTC	0.3%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	.	.	.	.
2006	Year	1,961	1,219	581	613	1,555	189	134	101	53	22	2	0	0	.	.	.
	Total	667,343	499,630	836,110	518,456	1,350,221	259,989	229,412	99,549	68,995	75,619	45,474	3,122	6	.	.	.
	%w/DTC	0.3%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	.	.	.
2007	Year	1,553	1,680	499	848	721	1,704	223	264	48	18	11	0	0	0	.	.
	Total	387,300	704,889	478,407	893,653	442,636	1,314,166	239,320	215,297	87,833	64,136	68,348	40,544	2,115	2	.	.
	%w/DTC	0.4%	0.2%	0.1%	0.1%	0.2%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.
2008	Year	1,897	1,350	580	698	1,586	695	2,139	330	150	30	13	4	1	0	.	.
	Total	540,399	439,432	695,175	484,571	1,140,170	409,179	1,290,781	208,776	182,380	77,783	58,321	58,816	28,066	1,758	.	.
	%w/DTC	0.4%	0.3%	0.1%	0.1%	0.1%	0.2%	0.2%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.
2009	Year	1,540	1,734	517	877	883	1,938	900	3,826	219	82	19	4	0	0	0	.
	Total	348,025	600,445	432,646	769,712	452,706	1,147,469	380,440	1,308,578	188,646	167,453	78,192	55,180	56,542	19,145	1,639	.
	%w/DTC	0.4%	0.3%	0.1%	0.1%	0.2%	0.2%	0.2%	0.3%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.
2010	Year	1,677	1,333	599	740	1,734	920	2,378	1,458	2,683	100	41	1	2	3	0	0
	Total	463,884	409,166	611,897	469,722	1,012,825	462,347	1,193,482	388,749	1,355,367	218,014	196,057	95,001	68,529	48,734	23,220	2,013
	%w/DTC	0.4%	0.3%	0.1%	0.2%	0.2%	0.2%	0.2%	0.4%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table D-3. Number of Inspection Cycles with DTC 442 Set, by Model Year and IM Calendar Year – State A

Calendar Year		Model Year															
		1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
2004	Year	516	1,002	2,047	898	2,593	454	292	335	155	4	0	.	.	.	.	.
	Total	810,561	516,697	971,755	511,922	1,245,836	308,108	256,568	247,453	143,357	7,887	6	.	.	.	.	.
	%w/DTC	0.1%	0.2%	0.2%	0.2%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%	0.0%	.	.	.	.	.
2005	Year	333	1,533	1,507	1,780	861	524	180	141	104	7	0	0	.	.	.	.
	Total	432,051	842,942	501,595	1,040,290	296,247	243,609	118,992	79,784	77,762	51,387	2,688	7	.	.	.	.
	%w/DTC	0.1%	0.2%	0.3%	0.2%	0.3%	0.2%	0.2%	0.2%	0.1%	0.0%	0.0%	0.0%	.	.	.	.
2006	Year	522	1,134	2,268	1,276	5,257	632	442	206	115	30	3	0	0	.	.	.
	Total	667,343	499,630	836,110	518,456	1,350,221	259,989	229,412	99,549	68,995	75,619	45,474	3,122	6	.	.	.
	%w/DTC	0.1%	0.2%	0.3%	0.2%	0.4%	0.2%	0.2%	0.2%	0.2%	0.0%	0.0%	0.0%	0.0%	.	.	.
2007	Year	361	1,471	1,654	1,883	2,319	5,282	584	538	150	42	6	1	0	0	.	.
	Total	387,300	704,889	478,407	893,653	442,636	1,314,166	239,320	215,297	87,833	64,136	68,348	40,544	2,115	2	.	.
	%w/DTC	0.1%	0.2%	0.3%	0.2%	0.5%	0.4%	0.2%	0.2%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	.	.
2008	Year	384	1,145	2,283	1,440	5,635	2,282	5,505	699	321	56	10	4	2	0	.	.
	Total	540,399	439,432	695,175	484,571	1,140,170	409,179	1,290,781	208,776	182,380	77,783	58,321	58,816	28,066	1,758	.	.
	%w/DTC	0.1%	0.3%	0.3%	0.3%	0.5%	0.6%	0.4%	0.3%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	.	.
2009	Year	337	1,367	1,918	2,120	2,787	5,418	2,329	8,096	481	124	24	4	5	0	0	.
	Total	348,025	600,445	432,646	769,712	452,706	1,147,469	380,440	1,308,578	188,646	167,453	78,192	55,180	56,542	19,145	1,639	.
	%w/DTC	0.1%	0.2%	0.4%	0.3%	0.6%	0.5%	0.6%	0.6%	0.3%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	.
2010	Year	392	1,140	2,473	1,637	5,261	2,750	6,106	2,614	5,468	181	45	5	3	0	1	0
	Total	463,884	409,166	611,897	469,722	1,012,825	462,347	1,193,482	388,749	1,355,367	218,014	196,057	95,001	68,529	48,734	23,220	2,013
	%w/DTC	0.1%	0.3%	0.4%	0.3%	0.5%	0.6%	0.5%	0.7%	0.4%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table D-4. Number of Inspection Cycles with DTC 443 Set, by Model Year and IM Calendar Year – State A

Calendar Year		Model Year															
		1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
2004	Year	6,323	2,551	228	77	168	50	20	13	1	.	.	.	.	.	.	.
	Total	810,561	516,697	971,755	511,922	1,245,836	308,108	256,568	247,453	143,357	7,887	6	.	.	.	.	.
	%w/DTC	0.8%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.	.
2005	Year	3,776	4,505	188	161	64	41	13	7	4	1	.	.	.	.	.	.
	Total	432,051	842,942	501,595	1,040,290	296,247	243,609	118,992	79,784	77,762	51,387	2,688	7	.	.	.	.
	%w/DTC	0.9%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.
2006	Year	4,769	3,052	246	115	264	52	16	7	1	3	.	.	.	.	.	.
	Total	667,343	499,630	836,110	518,456	1,350,221	259,989	229,412	99,549	68,995	75,619	45,474	3,122	6	.	.	.
	%w/DTC	0.7%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.
2007	Year	3,021	3,926	237	200	154	343	32	24	2	3	1	.	.	.	.	.
	Total	387,300	704,889	478,407	893,653	442,636	1,314,166	239,320	215,297	87,833	64,136	68,348	40,544	2,115	2	.	.
	%w/DTC	0.8%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.
2008	Year	3,568	2,820	271	152	317	132	178	22	14	1	1	.	1	.	.	.
	Total	540,399	439,432	695,175	484,571	1,140,170	409,179	1,290,781	208,776	182,380	77,783	58,321	58,816	28,066	1,758	.	.
	%w/DTC	0.7%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.
2009	Year	2,597	3,494	280	240	179	402	113	219	13	9	.	.	.	.	.	.
	Total	348,025	600,445	432,646	769,712	452,706	1,147,469	380,440	1,308,578	188,646	167,453	78,192	55,180	56,542	19,145	1,639	.
	%w/DTC	0.7%	0.6%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.
2010	Year	2,903	2,478	265	193	329	198	292	103	102	6	1	1	.	.	.	.
	Total	463,884	409,166	611,897	469,722	1,012,825	462,347	1,193,482	388,749	1,355,367	218,014	196,057	95,001	68,529	48,734	23,220	2,013
	%w/DTC	0.6%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table D-5. Number of Inspection Cycles with DTC 446 Set, by Model Year and IM Calendar Year – State A

Calendar Year		Model Year															
		1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
2004	Year	423	583	762	484	746	188	130	132	50	0	0	.	.	.	.	.
	Total	810,561	516,697	971,755	511,922	1,245,836	308,108	256,568	247,453	143,357	7,887	6	.	.	.	.	.
	%w/DTC	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	.	.	.	.	.
2005	Year	341	876	617	1,250	178	228	75	71	61	2	0	0	.	.	.	.
	Total	432,051	842,942	501,595	1,040,290	296,247	243,609	118,992	79,784	77,762	51,387	2,688	7	.	.	.	.
	%w/DTC	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	.	.	.	.
2006	Year	544	784	1,051	748	1,369	281	161	69	63	7	6	0	0	.	.	.
	Total	667,343	499,630	836,110	518,456	1,350,221	259,989	229,412	99,549	68,995	75,619	45,474	3,122	6	.	.	.
	%w/DTC	0.1%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	.	.	.
2007	Year	412	1,023	831	1,461	702	2,265	218	174	55	11	4	3	0	0	.	.
	Total	387,300	704,889	478,407	893,653	442,636	1,314,166	239,320	215,297	87,833	64,136	68,348	40,544	2,115	2	.	.
	%w/DTC	0.1%	0.1%	0.2%	0.2%	0.2%	0.2%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.
2008	Year	569	841	1,118	1,088	1,490	936	1,963	237	164	10	6	1	1	0	.	.
	Total	540,399	439,432	695,175	484,571	1,140,170	409,179	1,290,781	208,776	182,380	77,783	58,321	58,816	28,066	1,758	.	.
	%w/DTC	0.1%	0.2%	0.2%	0.2%	0.1%	0.2%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.
2009	Year	406	1,154	1,011	1,784	874	2,613	835	2,550	216	56	9	1	0	0	0	.
	Total	348,025	600,445	432,646	769,712	452,706	1,147,469	380,440	1,308,578	188,646	167,453	78,192	55,180	56,542	19,145	1,639	.
	%w/DTC	0.1%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.
2010	Year	499	836	1,276	1,324	1,741	1,161	2,201	757	2,228	100	26	2	0	0	0	0
	Total	463,884	409,166	611,897	469,722	1,012,825	462,347	1,193,482	388,749	1,355,367	218,014	196,057	95,001	68,529	48,734	23,220	2,013
	%w/DTC	0.1%	0.2%	0.2%	0.3%	0.2%	0.3%	0.2%	0.2%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table D-6. Number of Inspection Cycles with DTC 447 Set, by Model Year and IM Calendar Year – State A

Calendar Year		Model Year															
		1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
2004	Year	109	132	29	4	10	5	3	3	2	0	0	.	.	.	.	.
	Total	810,561	516,697	971,755	511,922	1,245,836	308,108	256,568	247,453	143,357	7,887	6	.	.	.	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.	.
2005	Year	121	230	23	24	3	7	1	.	1	1	0	0	.	.	.	.
	Total	432,051	842,942	501,595	1,040,290	296,247	243,609	118,992	79,784	77,762	51,387	2,688	7	.	.	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.
2006	Year	139	282	54	9	18	10	2	3	5	0	0	0	0	.	.	.
	Total	667,343	499,630	836,110	518,456	1,350,221	259,989	229,412	99,549	68,995	75,619	45,474	3,122	6	.	.	.
	%w/DTC	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.
2007	Year	140	354	39	24	11	26	3	4	2	0	0	0	0	0	.	.
	Total	387,300	704,889	478,407	893,653	442,636	1,314,166	239,320	215,297	87,833	64,136	68,348	40,544	2,115	2	.	.
	%w/DTC	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.
2008	Year	186	308	55	18	24	12	20	3	6	1	2	2	0	0	.	.
	Total	540,399	439,432	695,175	484,571	1,140,170	409,179	1,290,781	208,776	182,380	77,783	58,321	58,816	28,066	1,758	.	.
	%w/DTC	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.
2009	Year	173	365	46	31	15	38	11	10	3	3	1	1	0	0	0	.
	Total	348,025	600,445	432,646	769,712	452,706	1,147,469	380,440	1,308,578	188,646	167,453	78,192	55,180	56,542	19,145	1,639	.
	%w/DTC	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.
2010	Year	192	346	51	26	13	15	14	9	37	7	2	1	0	0	0	0
	Total	463,884	409,166	611,897	469,722	1,012,825	462,347	1,193,482	388,749	1,355,367	218,014	196,057	95,001	68,529	48,734	23,220	2,013
	%w/DTC	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table D-7. Number of Inspection Cycles with DTC 448 Set, by Model Year and IM Calendar Year – State A

Calendar Year		Model Year															
		1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
2004	Year	1	10	109	22	35	8	4	0	0	0	0	.	.	.	.	.
	Total	810,561	516,697	971,755	511,922	1,245,836	308,108	256,568	247,453	143,357	7,887	6	.	.	.	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.	.
2005	Year	3	4	94	41	5	2	4	1	0	1	0	0	.	.	.	.
	Total	432,051	842,942	501,595	1,040,290	296,247	243,609	118,992	79,784	77,762	51,387	2,688	7	.	.	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.
2006	Year	3	10	151	41	42	8	6	1	0	0	0	0	0	.	.	.
	Total	667,343	499,630	836,110	518,456	1,350,221	259,989	229,412	99,549	68,995	75,619	45,474	3,122	6	.	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.
2007	Year	1	6	117	59	25	46	4	1	0	1	1	0	0	0	.	.
	Total	387,300	704,889	478,407	893,653	442,636	1,314,166	239,320	215,297	87,833	64,136	68,348	40,544	2,115	2	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.
2008	Year	0	7	150	38	41	31	39	7	.	.	2	0	0	0	.	.
	Total	540,399	439,432	695,175	484,571	1,140,170	409,179	1,290,781	208,776	182,380	77,783	58,321	58,816	28,066	1,758	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.
2009	Year	1	6	141	60	22	42	24	13	3	.	3	2	1	0	0	.
	Total	348,025	600,445	432,646	769,712	452,706	1,147,469	380,440	1,308,578	188,646	167,453	78,192	55,180	56,542	19,145	1,639	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.
2010	Year	3	6	157	36	26	34	43	10	11	1	5	1	0	0	0	0
	Total	463,884	409,166	611,897	469,722	1,012,825	462,347	1,193,482	388,749	1,355,367	218,014	196,057	95,001	68,529	48,734	23,220	2,013
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table D-8. Number of Inspection Cycles with DTC 449 Set, by Model Year and IM Calendar Year – State A

Calendar Year		Model Year															
		1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
2004	Year	1	1	1	27	76	13	5	8	3	0	0	.	.	.	.	.
	Total	810,561	516,697	971,755	511,922	1,245,836	308,108	256,568	247,453	143,357	7,887	6	.	.	.	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.	.
2005	Year	1	0	1	51	40	14	0	3	10	1	0	0	.	.	.	.
	Total	432,051	842,942	501,595	1,040,290	296,247	243,609	118,992	79,784	77,762	51,387	2,688	7	.	.	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.
2006	Year	1	3	1	35	153	27	10	12	11	6	1	0	0	.	.	.
	Total	667,343	499,630	836,110	518,456	1,350,221	259,989	229,412	99,549	68,995	75,619	45,474	3,122	6	.	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.
2007	Year	0	2	1	68	79	141	12	12	14	7	3	0	0	0	.	.
	Total	387,300	704,889	478,407	893,653	442,636	1,314,166	239,320	215,297	87,833	64,136	68,348	40,544	2,115	2	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.
2008	Year	1	0	4	43	143	51	105	22	20	3	3	0	0	0	.	.
	Total	540,399	439,432	695,175	484,571	1,140,170	409,179	1,290,781	208,776	182,380	77,783	58,321	58,816	28,066	1,758	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.
2009	Year	1	2	1	64	91	151	51	138	30	16	8	1	0	0	0	.
	Total	348,025	600,445	432,646	769,712	452,706	1,147,469	380,440	1,308,578	188,646	167,453	78,192	55,180	56,542	19,145	1,639	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.
2010	Year	1	0	1	58	159	54	108	70	276	26	21	.	.	4	0	0
	Total	463,884	409,166	611,897	469,722	1,012,825	462,347	1,193,482	388,749	1,355,367	218,014	196,057	95,001	68,529	48,734	23,220	2,013
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table D-9. Number of Inspection Cycles with DTC 450 Set, by Model Year and IM Calendar Year – State A

Calendar Year		Model Year															
		1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
2004	Year	48	97	198	77	160	23	1	2	1	0	0	.	.	.	.	.
	Total	810,561	516,697	971,755	511,922	1,245,836	308,108	256,568	247,453	143,357	7,887	6	.	.	.	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.	.
2005	Year	40	143	123	142	47	18	4	1	1	0	0	0	.	.	.	.
	Total	432,051	842,942	501,595	1,040,290	296,247	243,609	118,992	79,784	77,762	51,387	2,688	7	.	.	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.
2006	Year	69	112	189	68	307	13	1	3	0	0	0	0	0	.	.	.
	Total	667,343	499,630	836,110	518,456	1,350,221	259,989	229,412	99,549	68,995	75,619	45,474	3,122	6	.	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.
2007	Year	51	183	125	102	170	151	9	4	0	0	0	0	0	0	.	.
	Total	387,300	704,889	478,407	893,653	442,636	1,314,166	239,320	215,297	87,833	64,136	68,348	40,544	2,115	2	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.
2008	Year	62	139	140	71	380	38	60	4	7	0	0	0	0	0	.	.
	Total	540,399	439,432	695,175	484,571	1,140,170	409,179	1,290,781	208,776	182,380	77,783	58,321	58,816	28,066	1,758	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.
2009	Year	40	218	93	89	224	169	21	28	8	1	0	1	0	0	0	.
	Total	348,025	600,445	432,646	769,712	452,706	1,147,469	380,440	1,308,578	188,646	167,453	78,192	55,180	56,542	19,145	1,639	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.
2010	Year	51	136	108	72	416	81	74	7	59	0	0	0	0	0	0	0
	Total	463,884	409,166	611,897	469,722	1,012,825	462,347	1,193,482	388,749	1,355,367	218,014	196,057	95,001	68,529	48,734	23,220	2,013
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table D10. Number of Inspection Cycles with DTC 452 Set, by Model Year and IM Calendar Year – State A

Calendar Year		Model Year															
		1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
2004	Year	13	17	158	99	147	32	35	13	4	0	0	.	.	.	.	.
	Total	810,561	516,697	971,755	511,922	1,245,836	308,108	256,568	247,453	143,357	7,887	6	.	.	.	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.	.
2005	Year	12	22	205	266	64	48	14	13	7	4	0	0	.	.	.	.
	Total	432,051	842,942	501,595	1,040,290	296,247	243,609	118,992	79,784	77,762	51,387	2,688	7	.	.	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.
2006	Year	13	18	426	344	386	78	28	10	2	8	0	0	0	.	.	.
	Total	667,343	499,630	836,110	518,456	1,350,221	259,989	229,412	99,549	68,995	75,619	45,474	3,122	6	.	.	.
	%w/DTC	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.
2007	Year	7	19	482	585	247	390	31	17	2	7	1	0	0	0	.	.
	Total	387,300	704,889	478,407	893,653	442,636	1,314,166	239,320	215,297	87,833	64,136	68,348	40,544	2,115	2	.	.
	%w/DTC	0.0%	0.0%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.
2008	Year	11	23	690	545	525	172	230	17	11	4	1	.	1	0	.	.
	Total	540,399	439,432	695,175	484,571	1,140,170	409,179	1,290,781	208,776	182,380	77,783	58,321	58,816	28,066	1,758	.	.
	%w/DTC	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.
2009	Year	8	18	592	778	382	449	131	122	7	18	2	1	0	0	0	.
	Total	348,025	600,445	432,646	769,712	452,706	1,147,469	380,440	1,308,578	188,646	167,453	78,192	55,180	56,542	19,145	1,639	.
	%w/DTC	0.0%	0.0%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.
2010	Year	11	14	661	584	657	255	360	66	87	14	0	1	0	1	0	0
	Total	463,884	409,166	611,897	469,722	1,012,825	462,347	1,193,482	388,749	1,355,367	218,014	196,057	95,001	68,529	48,734	23,220	2,013
	%w/DTC	0.0%	0.0%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table D-11. Number of Inspection Cycles with DTC 455 Set, by Model Year and IM Calendar Year – State A

Calendar Year		Model Year															
		1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
2004	Year	513	1,660	3,435	1,449	3,228	826	413	381	188	4	0	.	.	.	.	.
	Total	810,561	516,697	971,755	511,922	1,245,836	308,108	256,568	247,453	143,357	7,887	6	.	.	.	.	.
	%w/DTC	0.1%	0.3%	0.4%	0.3%	0.3%	0.3%	0.2%	0.2%	0.1%	0.1%	0.0%	.	.	.	.	.
2005	Year	303	2,612	2,360	2,782	801	816	271	120	111	56	1	0	.	.	.	.
	Total	432,051	842,942	501,595	1,040,290	296,247	243,609	118,992	79,784	77,762	51,387	2,688	7	.	.	.	.
	%w/DTC	0.1%	0.3%	0.5%	0.3%	0.3%	0.3%	0.2%	0.2%	0.1%	0.1%	0.0%	0.0%	.	.	.	.
2006	Year	456	1,907	3,461	1,724	3,883	895	565	161	108	112	18	4	0	.	.	.
	Total	667,343	499,630	836,110	518,456	1,350,221	259,989	229,412	99,549	68,995	75,619	45,474	3,122	6	.	.	.
	%w/DTC	0.1%	0.4%	0.4%	0.3%	0.3%	0.3%	0.2%	0.2%	0.2%	0.1%	0.0%	0.1%	0.0%	.	.	.
2007	Year	311	2,246	2,577	2,513	1,777	6,392	700	352	135	101	38	21	0	0	.	.
	Total	387,300	704,889	478,407	893,653	442,636	1,314,166	239,320	215,297	87,833	64,136	68,348	40,544	2,115	2	.	.
	%w/DTC	0.1%	0.3%	0.5%	0.3%	0.4%	0.5%	0.3%	0.2%	0.2%	0.2%	0.1%	0.1%	0.0%	0.0%	.	.
2008	Year	434	1,754	3,126	1,731	3,618	2,773	5,563	434	346	159	48	32	0	0	.	.
	Total	540,399	439,432	695,175	484,571	1,140,170	409,179	1,290,781	208,776	182,380	77,783	58,321	58,816	28,066	1,758	.	.
	%w/DTC	0.1%	0.4%	0.4%	0.4%	0.3%	0.7%	0.4%	0.2%	0.2%	0.2%	0.1%	0.1%	0.0%	0.0%	.	.
2009	Year	340	2,015	2,369	2,402	1,966	5,614	2,360	3,742	408	355	79	24	7	2	0	.
	Total	348,025	600,445	432,646	769,712	452,706	1,147,469	380,440	1,308,578	188,646	167,453	78,192	55,180	56,542	19,145	1,639	.
	%w/DTC	0.1%	0.3%	0.5%	0.3%	0.4%	0.5%	0.6%	0.3%	0.2%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	.
2010	Year	435	1,676	2,806	1,843	3,524	2,917	5,200	1,475	3,618	464	178	46	11	8	5	0
	Total	463,884	409,166	611,897	469,722	1,012,825	462,347	1,193,482	388,749	1,355,367	218,014	196,057	95,001	68,529	48,734	23,220	2,013
	%w/DTC	0.1%	0.4%	0.5%	0.4%	0.3%	0.6%	0.4%	0.4%	0.3%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%

Table D-12. Number of Inspection Cycles with DTC 456 Set, by Model Year and IM Calendar Year – State A

Calendar Year		Model Year															
		1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
2004	Year	91	158	2,983	1,685	4,900	1,113	990	295	59	1	0	.	.	.	.	.
	Total	810,561	516,697	971,755	511,922	1,245,836	308,108	256,568	247,453	143,357	7,887	6	.	.	.	.	.
	%w/DTC	0.0%	0.0%	0.3%	0.3%	0.4%	0.4%	0.4%	0.1%	0.0%	0.0%	0.0%	.	.	.	.	.
2005	Year	63	244	1,596	3,882	854	807	535	160	61	13	0	0	.	.	.	.
	Total	432,051	842,942	501,595	1,040,290	296,247	243,609	118,992	79,784	77,762	51,387	2,688	7	.	.	.	.
	%w/DTC	0.0%	0.0%	0.3%	0.4%	0.3%	0.3%	0.4%	0.2%	0.1%	0.0%	0.0%	0.0%	.	.	.	.
2006	Year	76	171	2,775	1,914	5,460	1,117	1,174	252	100	39	9	0	0	.	.	.
	Total	667,343	499,630	836,110	518,456	1,350,221	259,989	229,412	99,549	68,995	75,619	45,474	3,122	6	.	.	.
	%w/DTC	0.0%	0.0%	0.3%	0.4%	0.4%	0.4%	0.5%	0.3%	0.1%	0.1%	0.0%	0.0%	0.0%	.	.	.
2007	Year	64	215	1,711	3,458	1,658	7,490	1,222	527	169	80	12	2	0	0	.	.
	Total	387,300	704,889	478,407	893,653	442,636	1,314,166	239,320	215,297	87,833	64,136	68,348	40,544	2,115	2	.	.
	%w/DTC	0.0%	0.0%	0.4%	0.4%	0.4%	0.6%	0.5%	0.2%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	.	.
2008	Year	76	142	2,690	1,825	4,802	2,317	10,213	723	386	92	23	6	1	0	.	.
	Total	540,399	439,432	695,175	484,571	1,140,170	409,179	1,290,781	208,776	182,380	77,783	58,321	58,816	28,066	1,758	.	.
	%w/DTC	0.0%	0.0%	0.4%	0.4%	0.4%	0.6%	0.8%	0.3%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	.	.
2009	Year	59	219	1,947	3,181	1,974	6,987	2,887	7,132	504	193	30	16	1	1	0	.
	Total	348,025	600,445	432,646	769,712	452,706	1,147,469	380,440	1,308,578	188,646	167,453	78,192	55,180	56,542	19,145	1,639	.
	%w/DTC	0.0%	0.0%	0.5%	0.4%	0.4%	0.6%	0.8%	0.5%	0.3%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	.
2010	Year	59	134	3,072	2,027	4,718	2,982	10,053	2,134	6,106	311	70	24	6	3	1	0
	Total	463,884	409,166	611,897	469,722	1,012,825	462,347	1,193,482	388,749	1,355,367	218,014	196,057	95,001	68,529	48,734	23,220	2,013
	%w/DTC	0.0%	0.0%	0.5%	0.4%	0.5%	0.6%	0.8%	0.5%	0.5%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table D-13. Number of Inspection Cycles with DTC 457 Set, by Model Year and IM Calendar Year – State A

Calendar Year		Model Year															
		1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
2004	Year	26	85	206	167	270	185	139	197	68	0	0	.	.	.	.	.
	Total	810,561	516,697	971,755	511,922	1,245,836	308,108	256,568	247,453	143,357	7,887	6	.	.	.	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	.	.	.	.	.
2005	Year	22	144	157	307	105	191	75	105	57	17	0	0	.	.	.	.
	Total	432,051	842,942	501,595	1,040,290	296,247	243,609	118,992	79,784	77,762	51,387	2,688	7	.	.	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	.	.	.	.
2006	Year	29	126	254	210	366	204	156	120	74	41	7	1	0	.	.	.
	Total	667,343	499,630	836,110	518,456	1,350,221	259,989	229,412	99,549	68,995	75,619	45,474	3,122	6	.	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	.	.	.
2007	Year	28	159	224	306	177	1,412	181	245	130	51	12	3	0	0	.	.
	Total	387,300	704,889	478,407	893,653	442,636	1,314,166	239,320	215,297	87,833	64,136	68,348	40,544	2,115	2	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	.	.
2008	Year	34	136	261	242	351	607	1,403	252	263	65	31	19	0	0	.	.
	Total	540,399	439,432	695,175	484,571	1,140,170	409,179	1,290,781	208,776	182,380	77,783	58,321	58,816	28,066	1,758	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	.	.
2009	Year	32	150	236	330	223	1,709	622	2,118	328	117	47	34	2	1	0	.
	Total	348,025	600,445	432,646	769,712	452,706	1,147,469	380,440	1,308,578	188,646	167,453	78,192	55,180	56,542	19,145	1,639	.
	%w/DTC	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.2%	0.2%	0.2%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	.
2010	Year	36	136	271	206	392	909	1,774	674	2,657	202	115	49	6	0	0	0
	Total	463,884	409,166	611,897	469,722	1,012,825	462,347	1,193,482	388,749	1,355,367	218,014	196,057	95,001	68,529	48,734	23,220	2,013
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.1%	0.2%	0.2%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%

Table D-14. Number of Inspection Cycles with DTC 440 Set, by Model Year and IM Calendar Year – State B

Calendar Year		Model Year															
		1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
2007	Year	118	150	221	219	235	216	207	115	26	0	0	0	.	.	.	.
	Total	86,221	104,473	120,599	141,773	162,736	160,655	175,040	176,875	187,828	270	33	1	.	.	.	.
	%w/DTC	0.1%	0.1%	0.2%	0.2%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	.	.	.	.
2008	Year	129	158	255	230	292	285	270	161	35	1	0	0	0	.	.	.
	Total	75,210	91,437	105,053	129,595	151,430	151,741	166,816	167,678	176,481	182,274	224	62	8	.	.	.
	%w/DTC	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.
2009	Year	119	157	219	274	321	350	276	200	52	5	0	0	0	0	.	.
	Total	66,540	82,052	94,083	116,227	140,870	143,391	159,370	161,291	168,772	169,544	177,769	446	107	16	.	.
	%w/DTC	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.
2010	Year	121	178	242	242	299	350	318	199	48	8	3	3	0	0	.	.
	Total	59,887	74,645	85,547	105,528	128,581	135,363	152,925	157,135	165,719	165,354	169,173	185,562	849	155	.	.
	%w/DTC	0.2%	0.2%	0.3%	0.2%	0.2%	0.3%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.
2011	Year	117	150	235	229	298	368	343	178	59	6	0	2	1	0	0	.
	Total	52,826	67,607	77,743	96,822	118,358	125,100	146,159	151,629	161,859	163,129	166,142	174,090	163,134	448	328	.
	%w/DTC	0.2%	0.2%	0.3%	0.2%	0.3%	0.3%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.
2012	Year	94	122	208	251	341	381	355	224	51	8	2	2	0	0	0	0
	Total	46,544	60,051	69,510	87,437	108,562	115,802	135,902	145,333	156,673	159,423	163,487	170,765	151,659	103,040	592	353
	%w/DTC	0.2%	0.2%	0.3%	0.3%	0.3%	0.3%	0.3%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table D-15. Number of Inspection Cycles with DTC 441 Set, by Model Year and IM Calendar Year – State B

Calendar Year		Model Year															
		1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
2007	Year	255	177	53	56	102	96	141	145	77	0	0	0	.	.	.	.
	Total	86,221	104,473	120,599	141,773	162,736	160,655	175,040	176,875	187,828	270	33	1	.	.	.	.
	%w/DTC	0.3%	0.2%	0.0%	0.0%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	.	.	.	.
2008	Year	242	175	60	66	120	134	211	202	92	27	0	0	0	.	.	.
	Total	75,210	91,437	105,053	129,595	151,430	151,741	166,816	167,678	176,481	182,274	224	62	8	.	.	.
	%w/DTC	0.3%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	.	.	.
2009	Year	220	189	61	74	155	140	208	257	142	40	20	0	0	0	.	.
	Total	66,540	82,052	94,083	116,227	140,870	143,391	159,370	161,291	168,772	169,544	177,769	446	107	16	.	.
	%w/DTC	0.3%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.
2010	Year	226	189	55	79	138	163	227	266	172	60	34	19	0	0	0	.
	Total	59,887	74,645	85,547	105,528	128,581	135,363	152,925	157,135	165,719	165,354	169,173	185,562	849	155	22	.
	%w/DTC	0.4%	0.3%	0.1%	0.1%	0.1%	0.1%	0.1%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.
2011	Year	194	178	57	67	126	158	208	254	133	49	42	34	22	0	0	0
	Total	52,826	67,607	77,743	96,822	118,358	125,100	146,159	151,629	161,859	163,129	166,142	174,090	163,134	448	328	49
	%w/DTC	0.4%	0.3%	0.1%	0.1%	0.1%	0.1%	0.1%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2012	Year	167	173	41	74	149	171	216	275	143	78	55	37	23	4	0	0
	Total	46,544	60,051	69,510	87,437	108,562	115,802	135,902	145,333	156,673	159,423	163,487	170,765	151,659	103,040	592	353
	%w/DTC	0.4%	0.3%	0.1%	0.1%	0.1%	0.1%	0.2%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table D-16. Number of Inspection Cycles with DTC 442 Set, by Model Year and IM Calendar Year – State B

Calendar Year		Model Year															
		1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
2007	Year	45	96	130	86	221	284	288	301	119	0	0	0	.	.	.	.
	Total	86,221	104,473	120,599	141,773	162,736	160,655	175,040	176,875	187,828	270	33	1	.	.	.	.
	%w/DTC	0.1%	0.1%	0.1%	0.1%	0.1%	0.2%	0.2%	0.2%	0.1%	0.0%	0.0%	0.0%	.	.	.	.
2008	Year	37	97	136	121	284	385	408	382	171	76	0	0	0	.	.	.
	Total	75,210	91,437	105,053	129,595	151,430	151,741	166,816	167,678	176,481	182,274	224	62	8	.	.	.
	%w/DTC	0.0%	0.1%	0.1%	0.1%	0.2%	0.3%	0.2%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	.	.	.
2009	Year	33	112	155	131	269	459	570	534	252	115	73	0	0	0	.	.
	Total	66,540	82,052	94,083	116,227	140,870	143,391	159,370	161,291	168,772	169,544	177,769	446	107	16	.	.
	%w/DTC	0.0%	0.1%	0.2%	0.1%	0.2%	0.3%	0.4%	0.3%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	.	.
2010	Year	38	91	129	134	273	468	499	556	316	147	131	63	0	0	0	.
	Total	59,887	74,645	85,547	105,528	128,581	135,363	152,925	157,135	165,719	165,354	169,173	185,562	849	155	22	.
	%w/DTC	0.1%	0.1%	0.2%	0.1%	0.2%	0.3%	0.3%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	.
2011	Year	16	79	155	142	218	410	456	538	299	188	150	88	39	0	0	0
	Total	52,826	67,607	77,743	96,822	118,358	125,100	146,159	151,629	161,859	163,129	166,142	174,090	163,134	448	328	49
	%w/DTC	0.0%	0.1%	0.2%	0.1%	0.2%	0.3%	0.3%	0.4%	0.2%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%
2012	Year	23	66	125	116	232	369	427	578	338	207	157	118	79	25	0	0
	Total	46,544	60,051	69,510	87,437	108,562	115,802	135,902	145,333	156,673	159,423	163,487	170,765	151,659	103,040	592	353
	%w/DTC	0.0%	0.1%	0.2%	0.1%	0.2%	0.3%	0.3%	0.4%	0.2%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%

Table D-17. Number of Inspection Cycles with DTC 443 Set, by Model Year and IM Calendar Year – State B

Calendar Year		Model Year															
		1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
2007	Year	327	263	52	17	18	18	9	5	2	0	0	0	.	.	.	.
	Total	86,221	104,473	120,599	141,773	162,736	160,655	175,040	176,875	187,828	270	33	1	.	.	.	.
	%w/DTC	0.4%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.
2008	Year	247	248	47	24	18	20	6	4	3	2	0	0	0	.	.	.
	Total	75,210	91,437	105,053	129,595	151,430	151,741	166,816	167,678	176,481	182,274	224	62	8	.	.	.
	%w/DTC	0.3%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.
2009	Year	238	209	44	17	32	26	10	10	7	0	1	0	0	0	.	.
	Total	66,540	82,052	94,083	116,227	140,870	143,391	159,370	161,291	168,772	169,544	177,769	446	107	16	.	.
	%w/DTC	0.4%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.
2010	Year	231	256	55	20	23	37	17	13	7	1	1	2	0	0	0	.
	Total	59,887	74,645	85,547	105,528	128,581	135,363	152,925	157,135	165,719	165,354	169,173	185,562	849	155	22	.
	%w/DTC	0.4%	0.3%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.
2011	Year	225	205	42	10	32	31	22	14	8	2	2	3	1	0	0	0
	Total	52,826	67,607	77,743	96,822	118,358	125,100	146,159	151,629	161,859	163,129	166,142	174,090	163,134	448	328	49
	%w/DTC	0.4%	0.3%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2012	Year	198	200	47	23	36	25	22	16	11	9	1	3	5	2	0	0
	Total	46,544	60,051	69,510	87,437	108,562	115,802	135,902	145,333	156,673	159,423	163,487	170,765	151,659	103,040	592	353
	%w/DTC	0.4%	0.3%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table D-18. Number of Inspection Cycles with DTC 446 Set, by Model Year and IM Calendar Year – State B

Calendar Year		Model Year															
		1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
2007	Year	37	112	116	150	109	111	119	73	30	0	0	.	.	.	.	.
	Total	86,221	104,473	120,599	141,773	162,736	160,655	175,040	176,875	187,828	270	33	.	.	.	.	.
	%w/DTC	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	.	.	.	.	.
2008	Year	50	111	103	181	130	157	139	92	33	15	0	0	0	.	.	.
	Total	75,210	91,437	105,053	129,595	151,430	151,741	166,816	167,678	176,481	182,274	224	62	8	.	.	.
	%w/DTC	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.
2009	Year	46	102	119	165	153	155	149	117	43	15	9	0	0	0	.	.
	Total	66,540	82,052	94,083	116,227	140,870	143,391	159,370	161,291	168,772	169,544	177,769	446	107	16	.	.
	%w/DTC	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.
2010	Year	44	108	120	181	156	221	178	120	56	34	10	2	0	0	0	.
	Total	59,887	74,645	85,547	105,528	128,581	135,363	152,925	157,135	165,719	165,354	169,173	185,562	849	155	22	.
	%w/DTC	0.1%	0.1%	0.1%	0.2%	0.1%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.
2011	Year	58	118	127	215	165	223	196	141	63	24	5	3	1	0	0	0
	Total	52,826	67,607	77,743	96,822	118,358	125,100	146,159	151,629	161,859	163,129	166,142	174,090	163,134	448	328	49
	%w/DTC	0.1%	0.2%	0.2%	0.2%	0.1%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2012	Year	43	95	142	188	189	237	202	189	72	29	21	7	2	1	0	0
	Total	46,544	60,051	69,510	87,437	108,562	115,802	135,902	145,333	156,673	159,423	163,487	170,765	151,659	103,040	592	353
	%w/DTC	0.1%	0.2%	0.2%	0.2%	0.2%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table D-19. Number of Inspection Cycles with DTC 447 Set, by Model Year and IM Calendar Year – State B

Calendar Year		Model Year															
		1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
2007	Year	5	18	4	2	1	1	0	1	0	0	0	.	.	.	.	.
	Total	86,221	104,473	120,599	141,773	162,736	160,655	175,040	176,875	187,828	270	33	.	.	.	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.	.
2008	Year	9	24	10	7	3	2	1	1	1	2	0	0	0	.	.	.
	Total	75,210	91,437	105,053	129,595	151,430	151,741	166,816	167,678	176,481	182,274	224	62	8	.	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.
2009	Year	12	41	9	4	3	2	1	0	2	2	0	0	0	0	.	.
	Total	66,540	82,052	94,083	116,227	140,870	143,391	159,370	161,291	168,772	169,544	177,769	446	107	16	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.
2010	Year	9	58	12	8	2	3	1	4	4	2	3	1	0	0	0	.
	Total	59,887	74,645	85,547	105,528	128,581	135,363	152,925	157,135	165,719	165,354	169,173	185,562	849	155	22	.
	%w/DTC	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.
2011	Year	13	86	11	9	5	2	1	2	3	1	0	1	7	0	0	0
	Total	52,826	67,607	77,743	96,822	118,358	125,100	146,159	151,629	161,859	163,129	166,142	174,090	163,134	448	328	49
	%w/DTC	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2012	Year	13	71	26	8	5	7	4	3	1	1	2	2	4	7	0	0
	Total	46,544	60,051	69,510	87,437	108,562	115,802	135,902	145,333	156,673	159,423	163,487	170,765	151,659	103,040	592	353
	%w/DTC	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table D-20. Number of Inspection Cycles with DTC 448 Set, by Model Year and IM Calendar Year – State B

Calendar Year		Model Year															
		1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
2007	Year	0	1	22	7	7	3	9	6	0	0	0	0	.	.	.	.
	Total	86,221	104,473	120,599	141,773	162,736	160,655	175,040	176,875	187,828	270	33	1	.	.	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.
2008	Year	0	0	33	10	5	5	16	7	1	0	0	0	0	.	.	.
	Total	75,210	91,437	105,053	129,595	151,430	151,741	166,816	167,678	176,481	182,274	224	62	8	.	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.
2009	Year	0	0	23	10	3	3	6	1	1	0	1	0	0	0	.	.
	Total	66,540	82,052	94,083	116,227	140,870	143,391	159,370	161,291	168,772	169,544	177,769	446	107	16	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.
2010	Year	0	3	22	5	7	4	13	6	2	0	2	1	0	0	0	.
	Total	59,887	74,645	85,547	105,528	128,581	135,363	152,925	157,135	165,719	165,354	169,173	185,562	849	155	22	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.
2011	Year	0	1	18	10	6	10	14	5	0	0	1	0	1	0	0	0
	Total	52,826	67,607	77,743	96,822	118,358	125,100	146,159	151,629	161,859	163,129	166,142	174,090	163,134	448	328	49
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2012	Year	0	0	22	10	5	7	21	9	5	1	3	0	1	1	0	0
	Total	46,544	60,051	69,510	87,437	108,562	115,802	135,902	145,333	156,673	159,423	163,487	170,765	151,659	103,040	592	353
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table D-21. Number of Inspection Cycles with DTC 449 Set, by Model Year and IM Calendar Year – State B

Calendar Year		Model Year															
		1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
2007	Year	0	0	0	13	12	10	4	5	1	0	0	0	.	.	.	.
	Total	86,221	104,473	120,599	141,773	162,736	160,655	175,040	176,875	187,828	270	33	1	.	.	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.
2008	Year	0	0	0	9	16	11	10	11	2	7	0	0	0	.	.	.
	Total	75,210	91,437	105,053	129,595	151,430	151,741	166,816	167,678	176,481	182,274	224	62	8	.	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.
2009	Year	0	0	0	11	14	12	5	16	5	13	41	0	0	0	.	.
	Total	66,540	82,052	94,083	116,227	140,870	143,391	159,370	161,291	168,772	169,544	177,769	446	107	16	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.
2010	Year	0	0	0	16	14	16	14	38	10	15	91	55	0	0	0	.
	Total	59,887	74,645	85,547	105,528	128,581	135,363	152,925	157,135	165,719	165,354	169,173	185,562	849	155	22	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	.
2011	Year	0	0	0	10	17	9	12	29	13	29	99	55	25	0	0	0
	Total	52,826	67,607	77,743	96,822	118,358	125,100	146,159	151,629	161,859	163,129	166,142	174,090	163,134	448	328	49
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
2012	Year	0	0	0	12	11	13	22	31	10	27	80	64	35	11	0	0
	Total	46,544	60,051	69,510	87,437	108,562	115,802	135,902	145,333	156,673	159,423	163,487	170,765	151,659	103,040	592	353
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table D-22. Number of Inspection Cycles with DTC 450 Set, by Model Year and IM Calendar Year – State B

Calendar Year		Model Year															
		1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
2007	Year	2	10	25	9	24	8	2	4	2	0	0	0	.	.	.	.
	Total	86,221	104,473	120,599	141,773	162,736	160,655	175,040	176,875	187,828	270	33	1	.	.	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.
2008	Year	3	15	22	6	24	10	1	1	0	0	0	0	0	.	.	.
	Total	75,210	91,437	105,053	129,595	151,430	151,741	166,816	167,678	176,481	182,274	224	62	8	.	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.
2009	Year	6	19	18	6	21	11	5	3	2	3	2	0	0	0	.	.
	Total	66,540	82,052	94,083	116,227	140,870	143,391	159,370	161,291	168,772	169,544	177,769	446	107	16	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.
2010	Year	4	20	17	4	27	7	5	1	2	3	2	0	0	0	0	.
	Total	59,887	74,645	85,547	105,528	128,581	135,363	152,925	157,135	165,719	165,354	169,173	185,562	849	155	22	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.
2011	Year	5	18	15	11	25	11	7	0	1	3	0	1	0	0	0	0
	Total	52,826	67,607	77,743	96,822	118,358	125,100	146,159	151,629	161,859	163,129	166,142	174,090	163,134	448	328	49
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2012	Year	8	22	4	6	23	17	2	3	3	2	1	0	0	0	0	0
	Total	46,544	60,051	69,510	87,437	108,562	115,802	135,902	145,333	156,673	159,423	163,487	170,765	151,659	103,040	592	353
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table D-23. Number of Inspection Cycles with DTC 452 Set, by Model Year and IM Calendar Year – State B

Calendar Year		Model Year															
		1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
2007	Year	3	2	31	36	21	11	4	3	1	0	0	0	.	.	.	.
	Total	86,221	104,473	120,599	141,773	162,736	160,655	175,040	176,875	187,828	270	33	1	.	.	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.
2008	Year	1	1	42	40	44	13	10	7	4	3	0	0	0	.	.	.
	Total	75,210	91,437	105,053	129,595	151,430	151,741	166,816	167,678	176,481	182,274	224	62	8	.	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.
2009	Year	1	2	47	52	28	17	6	8	1	0	2	0	0	0	.	.
	Total	66,540	82,052	94,083	116,227	140,870	143,391	159,370	161,291	168,772	169,544	177,769	446	107	16	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.
2010	Year	0	0	52	66	39	35	19	5	6	5	2	2	0	0	0	.
	Total	59,887	74,645	85,547	105,528	128,581	135,363	152,925	157,135	165,719	165,354	169,173	185,562	849	155	22	.
	%w/DTC	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.
2011	Year	1	0	47	75	44	29	19	15	4	1	3	4	2	0	0	0
	Total	52,826	67,607	77,743	96,822	118,358	125,100	146,159	151,629	161,859	163,129	166,142	174,090	163,134	448	328	49
	%w/DTC	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2012	Year	0	1	48	71	51	41	27	12	4	1	3	4	4	1	0	0
	Total	46,544	60,051	69,510	87,437	108,562	115,802	135,902	145,333	156,673	159,423	163,487	170,765	151,659	103,040	592	353
	%w/DTC	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table D-24. Number of Inspection Cycles with DTC 455 Set, by Model Year and IM Calendar Year – State B

Calendar Year		Model Year															
		1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
2007	Year	30	186	210	117	155	310	321	149	110	0	0	0	.	.	.	.
	Total	86,221	104,473	120,599	141,773	162,736	160,655	175,040	176,875	187,828	270	33	1	.	.	.	.
	%w/DTC	0.0%	0.2%	0.2%	0.1%	0.1%	0.2%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	.	.	.	.
2008	Year	37	176	234	148	179	456	463	242	148	119	0	0	0	.	.	.
	Total	75,210	91,437	105,053	129,595	151,430	151,741	166,816	167,678	176,481	182,274	224	62	8	.	.	.
	%w/DTC	0.0%	0.2%	0.2%	0.1%	0.1%	0.3%	0.3%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	.	.	.
2009	Year	38	180	205	135	190	476	547	348	275	179	116	0	0	0	.	.
	Total	66,540	82,052	94,083	116,227	140,870	143,391	159,370	161,291	168,772	169,544	177,769	446	107	16	.	.
	%w/DTC	0.1%	0.2%	0.2%	0.1%	0.1%	0.3%	0.3%	0.2%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	.	.
2010	Year	38	171	214	154	195	484	505	356	294	269	199	97	0	0	0	.
	Total	59,887	74,645	85,547	105,528	128,581	135,363	152,925	157,135	165,719	165,354	169,173	185,562	849	155	22	.
	%w/DTC	0.1%	0.2%	0.3%	0.1%	0.2%	0.4%	0.3%	0.2%	0.2%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	.
2011	Year	23	154	168	152	178	406	498	313	310	266	261	161	87	0	0	0
	Total	52,826	67,607	77,743	96,822	118,358	125,100	146,159	151,629	161,859	163,129	166,142	174,090	163,134	448	328	49
	%w/DTC	0.0%	0.2%	0.2%	0.2%	0.2%	0.3%	0.3%	0.2%	0.2%	0.2%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%
2012	Year	35	153	174	137	208	388	444	310	321	310	312	209	99	39	0	0
	Total	46,544	60,051	69,510	87,437	108,562	115,802	135,902	145,333	156,673	159,423	163,487	170,765	151,659	103,040	592	353
	%w/DTC	0.1%	0.3%	0.3%	0.2%	0.2%	0.3%	0.3%	0.2%	0.2%	0.2%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%

Table D-25. Number of Inspection Cycles with DTC 456 Set, by Model Year and IM Calendar Year – State B

Calendar Year		Model Year															
		1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
2007	Year	2	8	70	40	66	126	232	181	79	0	0	0	.	.	.	.
	Total	86,221	104,473	120,599	141,773	162,736	160,655	175,040	176,875	187,828	270	33	1	.	.	.	.
	%w/DTC	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	.	.	.	.
2008	Year	1	11	95	65	70	168	267	239	108	55	0	0	0	.	.	.
	Total	75,210	91,437	105,053	129,595	151,430	151,741	166,816	167,678	176,481	182,274	224	62	8	.	.	.
	%w/DTC	0.0%	0.0%	0.1%	0.1%	0.0%	0.1%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	.	.	.
2009	Year	1	10	132	74	92	205	358	325	162	78	60	0	0	0	.	.
	Total	66,540	82,052	94,083	116,227	140,870	143,391	159,370	161,291	168,772	169,544	177,769	446	107	16	.	.
	%w/DTC	0.0%	0.0%	0.1%	0.1%	0.1%	0.1%	0.2%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.
2010	Year	0	6	133	72	96	184	325	304	165	101	88	78	0	0	0	.
	Total	59,887	74,645	85,547	105,528	128,581	135,363	152,925	157,135	165,719	165,354	169,173	185,562	849	155	22	.
	%w/DTC	0.0%	0.0%	0.2%	0.1%	0.1%	0.1%	0.2%	0.2%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	.
2011	Year	3	11	150	81	92	168	274	270	172	135	109	108	45	0	0	0
	Total	52,826	67,607	77,743	96,822	118,358	125,100	146,159	151,629	161,859	163,129	166,142	174,090	163,134	448	328	49
	%w/DTC	0.0%	0.0%	0.2%	0.1%	0.1%	0.1%	0.2%	0.2%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%
2012	Year	3	12	161	79	94	140	262	263	182	161	149	96	50	26	0	0
	Total	46,544	60,051	69,510	87,437	108,562	115,802	135,902	145,333	156,673	159,423	163,487	170,765	151,659	103,040	592	353
	%w/DTC	0.0%	0.0%	0.2%	0.1%	0.1%	0.1%	0.2%	0.2%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%

Table D-26. Number of Inspection Cycles with DTC 457 Set, by Model Year and IM Calendar Year – State B

Calendar Year		Model Year															
		1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
2007	Year	3	18	38	29	16	33	32	25	11	0	0	0	.	.	.	.
	Total	86,221	104,473	120,599	141,773	162,736	160,655	175,040	176,875	187,828	270	33	1	.	.	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.
2008	Year	3	23	25	37	29	30	41	33	12	26	0	0	0	.	.	.
	Total	75,210	91,437	105,053	129,595	151,430	151,741	166,816	167,678	176,481	182,274	224	62	8	.	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.
2009	Year	5	22	31	39	27	49	52	31	15	36	23	0	0	0	.	.
	Total	66,540	82,052	94,083	116,227	140,870	143,391	159,370	161,291	168,772	169,544	177,769	446	107	16	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.
2010	Year	2	20	46	36	29	64	46	46	26	39	32	35	0	0	0	.
	Total	59,887	74,645	85,547	105,528	128,581	135,363	152,925	157,135	165,719	165,354	169,173	185,562	849	155	22	.
	%w/DTC	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.
2011	Year	5	21	31	32	40	50	75	50	35	61	50	30	14	0	0	0
	Total	52,826	67,607	77,743	96,822	118,358	125,100	146,159	151,629	161,859	163,129	166,142	174,090	163,134	448	328	49
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2012	Year	4	18	43	43	38	57	88	42	33	67	68	49	12	8	0	0
	Total	46,544	60,051	69,510	87,437	108,562	115,802	135,902	145,333	156,673	159,423	163,487	170,765	151,659	103,040	592	353
	%w/DTC	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table D-27. Number of Inspection Cycles with DTC 440 Set, by Model Year and IM Calendar Year – State C

Calendar Year		Model Year															
		1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
2005	Year	218	649	500	296	182	337	118	23	7	0	0	.	.	.	.	.
	Total	75,983	175,748	109,776	210,126	149,671	257,887	133,550	46,229	24,040	10,583	334	.	.	.	.	.
	%w/DTC	0.3%	0.4%	0.5%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	.	.	.	.	.
2006	Year	289	466	618	241	375	228	353	86	15	0	0	0	.	.	.	.
	Total	123,740	75,286	160,245	107,288	224,672	127,510	274,461	114,192	31,183	20,469	12,954	491	.	.	.	.
	%w/DTC	0.2%	0.6%	0.4%	0.2%	0.2%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	.	.	.	.
2007	Year	230	567	516	368	297	464	226	276	53	0	0	1	0	.	.	.
	Total	64,117	139,445	94,372	175,277	135,525	222,527	144,704	286,939	110,806	34,310	26,882	12,122	373	.	.	.
	%w/DTC	0.4%	0.4%	0.5%	0.2%	0.2%	0.2%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.
2008	Year	230	351	524	326	393	293	477	184	61	2	0	1	0	0	.	.
	Total	86,214	59,396	118,266	86,064	178,528	111,461	225,227	117,687	242,347	96,650	31,588	24,386	9,483	338	.	.
	%w/DTC	0.3%	0.6%	0.4%	0.4%	0.2%	0.3%	0.2%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.
2009	Year	149	438	375	361	286	472	279	361	47	9	0	0	0	0	0	.
	Total	40,797	89,350	62,188	119,328	96,311	164,854	114,012	219,130	109,265	223,890	94,323	31,377	24,560	7,813	300	.
	%w/DTC	0.4%	0.5%	0.6%	0.3%	0.3%	0.3%	0.2%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.
2010	Year	20	38	42	35	41	54	60	27	17	2	0	0	0	0	0	0
	Total	8,874	8,668	12,595	10,866	21,822	13,487	29,721	15,601	33,661	12,563	32,270	5,270	2,237	1,225	165	1
	%w/DTC	0.2%	0.4%	0.3%	0.3%	0.2%	0.4%	0.2%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table D-28. Number of Inspection Cycles with DTC 441 Set, by Model Year and IM Calendar Year – State C

Calendar Year		Model Year															
		1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
2005	Year	301	219	125	197	109	203	85	26	7	2	0	.	.	.	.	.
	Total	75,983	175,748	109,776	210,126	149,671	257,887	133,550	46,229	24,040	10,583	334	.	.	.	.	.
	%w/DTC	0.4%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	.	.	.	.	.
2006	Year	394	174	248	208	246	127	248	101	35	1	0	2	.	.	.	.
	Total	123,740	75,286	160,245	107,288	224,672	127,510	274,461	114,192	31,183	20,469	12,954	491	.	.	.	.
	%w/DTC	0.3%	0.2%	0.2%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.4%	.	.	.	.
2007	Year	266	250	221	400	218	300	189	407	86	6	7	0	0	.	.	.
	Total	64,117	139,445	94,372	175,277	135,525	222,527	144,704	286,939	110,806	34,310	26,882	12,122	373	.	.	.
	%w/DTC	0.4%	0.2%	0.2%	0.2%	0.2%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	.	.	.
2008	Year	362	197	260	302	276	175	410	251	201	29	6	1	0	0	.	.
	Total	86,214	59,396	118,266	86,064	178,528	111,461	225,227	117,687	242,347	96,650	31,588	24,386	9,483	338	.	.
	%w/DTC	0.4%	0.3%	0.2%	0.4%	0.2%	0.2%	0.2%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.
2009	Year	207	220	194	350	223	284	221	473	144	65	19	4	2	0	0	.
	Total	40,797	89,350	62,188	119,328	96,311	164,854	114,012	219,130	109,265	223,890	94,323	31,377	24,560	7,813	300	.
	%w/DTC	0.5%	0.2%	0.3%	0.3%	0.2%	0.2%	0.2%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.
2010	Year	24	18	21	21	46	35	49	45	36	6	5	0	0	0	0	0
	Total	8,874	8,668	12,595	10,866	21,822	13,487	29,721	15,601	33,661	12,563	32,270	5,270	2,237	1,225	165	1
	%w/DTC	0.3%	0.2%	0.2%	0.2%	0.2%	0.3%	0.2%	0.3%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table D-29. Number of Inspection Cycles with DTC 442 Set, by Model Year and IM Calendar Year – State C

Calendar Year		Model Year															
		1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
2005	Year	61	236	143	195	194	661	205	59	11	3	0	.	.	.	.	.
	Total	75,983	175,748	109,776	210,126	149,671	257,887	133,550	46,229	24,040	10,583	334	.	.	.	.	.
	%w/DTC	0.1%	0.1%	0.1%	0.1%	0.1%	0.3%	0.2%	0.1%	0.0%	0.0%	0.0%	.	.	.	.	.
2006	Year	67	152	248	154	401	439	859	206	25	5	7	0	.	.	.	.
	Total	123,740	75,286	160,245	107,288	224,672	127,510	274,461	114,192	31,183	20,469	12,954	491	.	.	.	.
	%w/DTC	0.1%	0.2%	0.2%	0.1%	0.2%	0.3%	0.3%	0.2%	0.1%	0.0%	0.1%	0.0%	.	.	.	.
2007	Year	53	248	240	306	361	955	588	853	140	22	5	2	0	.	.	.
	Total	64,117	139,445	94,372	175,277	135,525	222,527	144,704	286,939	110,806	34,310	26,882	12,122	373	.	.	.
	%w/DTC	0.1%	0.2%	0.3%	0.2%	0.3%	0.4%	0.4%	0.3%	0.1%	0.1%	0.0%	0.0%	0.0%	.	.	.
2008	Year	54	144	292	218	601	577	1,212	545	349	73	11	4	3	0	.	.
	Total	86,214	59,396	118,266	86,064	178,528	111,461	225,227	117,687	242,347	96,650	31,588	24,386	9,483	338	.	.
	%w/DTC	0.1%	0.2%	0.2%	0.3%	0.3%	0.5%	0.5%	0.5%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	.	.
2009	Year	31	183	209	298	362	824	640	1,202	231	145	39	6	10	0	0	.
	Total	40,797	89,350	62,188	119,328	96,311	164,854	114,012	219,130	109,265	223,890	94,323	31,377	24,560	7,813	300	.
	%w/DTC	0.1%	0.2%	0.3%	0.2%	0.4%	0.5%	0.6%	0.5%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	.
2010	Year	5	16	27	33	67	83	128	82	56	13	12	3	0	0	0	0
	Total	8,874	8,668	12,595	10,866	21,822	13,487	29,721	15,601	33,661	12,563	32,270	5,270	2,237	1,225	165	1
	%w/DTC	0.1%	0.2%	0.2%	0.3%	0.3%	0.6%	0.4%	0.5%	0.2%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%

Table D-30. Number of Inspection Cycles with DTC 443 Set, by Model Year and IM Calendar Year – State C

Calendar Year		Model Year															
		1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
2005	Year	555	812	29	24	16	23	2	1	0	0	0	.	.	.	.	.
	Total	75,983	175,748	109,776	210,126	149,671	257,887	133,550	46,229	24,040	10,583	334	.	.	.	.	.
	%w/DTC	0.7%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.	.
2006	Year	636	456	55	23	31	26	9	2	3	0	0	0	.	.	.	.
	Total	123,740	75,286	160,245	107,288	224,672	127,510	274,461	114,192	31,183	20,469	12,954	491	.	.	.	.
	%w/DTC	0.5%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.
2007	Year	412	586	62	33	16	29	17	8	3	0	0	0	0	.	.	.
	Total	64,117	139,445	94,372	175,277	135,525	222,527	144,704	286,939	110,806	34,310	26,882	12,122	373	.	.	.
	%w/DTC	0.6%	0.4%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.
2008	Year	418	316	63	31	47	35	19	6	6	2	0	0	0	0	.	.
	Total	86,214	59,396	118,266	86,064	178,528	111,461	225,227	117,687	242,347	96,650	31,588	24,386	9,483	338	.	.
	%w/DTC	0.5%	0.5%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.
2009	Year	220	338	32	31	22	34	14	18	4	3	0	0	1	0	0	.
	Total	40,797	89,350	62,188	119,328	96,311	164,854	114,012	219,130	109,265	223,890	94,323	31,377	24,560	7,813	300	.
	%w/DTC	0.5%	0.4%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.
2010	Year	24	29	4	5	2	3	4	2	0	0	0	0	0	0	0	0
	Total	8,874	8,668	12,595	10,866	21,822	13,487	29,721	15,601	33,661	12,563	32,270	5,270	2,237	1,225	165	1
	%w/DTC	0.3%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table D-31. Number of Inspection Cycles with DTC 446 Set, by Model Year and IM Calendar Year – State C

Calendar Year		Model Year															
		1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
2005	Year	105	558	238	195	135	271	71	19	2	1	0	.	.	.	.	.
	Total	75,983	175,748	109,776	210,126	149,671	257,887	133,550	46,229	24,040	10,583	334	.	.	.	.	.
	%w/DTC	0.1%	0.3%	0.2%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	.	.	.	.	.
2006	Year	115	380	362	198	283	171	196	59	7	0	0	0	.	.	.	.
	Total	123,740	75,286	160,245	107,288	224,672	127,510	274,461	114,192	31,183	20,469	12,954	491	.	.	.	.
	%w/DTC	0.1%	0.5%	0.2%	0.2%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	.	.	.	.
2007	Year	95	425	325	352	228	396	152	191	20	5	2	0	0	.	.	.
	Total	64,117	139,445	94,372	175,277	135,525	222,527	144,704	286,939	110,806	34,310	26,882	12,122	373	.	.	.
	%w/DTC	0.1%	0.3%	0.3%	0.2%	0.2%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.
2008	Year	123	268	366	283	298	230	304	104	65	11	.0	1	0	0	.	.
	Total	86,214	59,396	118,266	86,064	178,528	111,461	225,227	117,687	242,347	96,650	31,588	24,386	9,483	338	.	.
	%w/DTC	0.1%	0.5%	0.3%	0.3%	0.2%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.
2009	Year	72	307	256	342	188	373	173	230	39	31	7	1	2	0	0	.
	Total	40,797	89,350	62,188	119,328	96,311	164,854	114,012	219,130	109,265	223,890	94,323	31,377	24,560	7,813	300	.
	%w/DTC	0.2%	0.3%	0.4%	0.3%	0.2%	0.2%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.
2010	Year	7	27	31	30	37	35	54	19	15	1	4	0	0	0	0	0
	Total	8,874	8,668	12,595	10,866	21,822	13,487	29,721	15,601	33,661	12,563	32,270	5,270	2,237	1,225	165	1
	%w/DTC	0.1%	0.3%	0.2%	0.3%	0.2%	0.3%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table D-32. Number of Inspection Cycles with DTC 447 Set, by Model Year and IM Calendar Year – State C

Calendar Year		Model Year															
		1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
2005	Year	7	34	7	6	4	0	1	1	0	0	0	.	.	.	.	.
	Total	75,983	175,748	109,776	210,126	149,671	257,887	133,550	46,229	24,040	10,583	334	.	.	.	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.	.
2006	Year	6	36	13	7	5	4	5	0	0	0	0	0	.	.	.	.
	Total	123,740	75,286	160,245	107,288	224,672	127,510	274,461	114,192	31,183	20,469	12,954	491	.	.	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.
2007	Year	6	51	14	10	6	5	2	2	0	0	0	0	0	.	.	.
	Total	64,117	139,445	94,372	175,277	135,525	222,527	144,704	286,939	110,806	34,310	26,882	12,122	373	.	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.
2008	Year	10	70	14	8	6	3	7	2	5	0	0	0	0	0	.	.
	Total	86,214	59,396	118,266	86,064	178,528	111,461	225,227	117,687	242,347	96,650	31,588	24,386	9,483	338	.	.
	%w/DTC	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.
2009	Year	5	70	10	3	0	2	5	2	0	6	1	0	0	0	0	.
	Total	40,797	89,350	62,188	119,328	96,311	164,854	114,012	219,130	109,265	223,890	94,323	31,377	24,560	7,813	300	.
	%w/DTC	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.
2010	Year	0	4	1	1	0	0	0	1	0	0	0	0	0	0	0	0
	Total	8,874	8,668	12,595	10,866	21,822	13,487	29,721	15,601	33,661	12,563	32,270	5,270	2,237	1,225	165	1
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table D-33. Number of Inspection Cycles with DTC 448 Set, by Model Year and IM Calendar Year – State C

Calendar Year		Model Year															
		1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
2005	Year	0	1	230	53	13	23	9	1	0	0	0	.	.	.	.	.
	Total	75,983	175,748	109,776	210,126	149,671	257,887	133,550	46,229	24,040	10,583	334	.	.	.	.	.
	%w/DTC	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.	.
2006	Year	0	1	257	42	19	15	18	8	0	0	0	0	.	.	.	.
	Total	123,740	75,286	160,245	107,288	224,672	127,510	274,461	114,192	31,183	20,469	12,954	491	.	.	.	.
	%w/DTC	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.
2007	Year	0	3	178	57	20	33	20	18	0	0	1	0	0	.	.	.
	Total	64,117	139,445	94,372	175,277	135,525	222,527	144,704	286,939	110,806	34,310	26,882	12,122	373	.	.	.
	%w/DTC	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.
2008	Year	0	3	173	45	18	18	41	10	0	0	0	1	0	0	.	.
	Total	86,214	59,396	118,266	86,064	178,528	111,461	225,227	117,687	242,347	96,650	31,588	24,386	9,483	338	.	.
	%w/DTC	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.
2009	Year	0	1	99	34	13	26	28	25	3	0	2	0	0	0	0	.
	Total	40,797	89,350	62,188	119,328	96,311	164,854	114,012	219,130	109,265	223,890	94,323	31,377	24,560	7,813	300	.
	%w/DTC	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.
2010	Year	0	0	5	4	1	3	4	1	0	0	0	0	0	0	0	0
	Total	8,874	8,668	12,595	10,866	21,822	13,487	29,721	15,601	33,661	12,563	32,270	5,270	2,237	1,225	165	1
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table D-34. Number of Inspection Cycles with DTC 449 Set, by Model Year and IM Calendar Year – State C

Calendar Year		Model Year															
		1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
2005	Year	0	0	1	13	9	4	3	1	0	1	0	.	.	.	.	.
	Total	75,983	175,748	109,776	210,126	149,671	257,887	133,550	46,229	24,040	10,583	334	.	.	.	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.	.
2006	Year	0	0	0	8	13	5	10	9	1	0	0	0	.	.	.	.
	Total	123,740	75,286	160,245	107,288	224,672	127,510	274,461	114,192	31,183	20,469	12,954	491	.	.	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.
2007	Year	0	0	0	14	5	12	2	24	2	0	0	0	0	.	.	.
	Total	64,117	139,445	94,372	175,277	135,525	222,527	144,704	286,939	110,806	34,310	26,882	12,122	373	.	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.
2008	Year	0	0	0	9	22	8	14	18	11	2	2	0	0	0	.	.
	Total	86,214	59,396	118,266	86,064	178,528	111,461	225,227	117,687	242,347	96,650	31,588	24,386	9,483	338	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.
2009	Year	0	0	0	17	16	13	5	44	9	21	14	4	0	0	0	.
	Total	40,797	89,350	62,188	119,328	96,311	164,854	114,012	219,130	109,265	223,890	94,323	31,377	24,560	7,813	300	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.
2010	Year	0	0	0	2	3	0	2	7	0	1	4	0	0	0	0	0
	Total	8,874	8,668	12,595	10,866	21,822	13,487	29,721	15,601	33,661	12,563	32,270	5,270	2,237	1,225	165	1
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table D-35. Number of Inspection Cycles with DTC 450 Set, by Model Year and IM Calendar Year – State C

Calendar Year		Model Year															
		1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
2005	Year	7	53	71	20	10	15	1	0	0	0	0	.	.	.	.	.
	Total	75,983	175,748	109,776	210,126	149,671	257,887	133,550	46,229	24,040	10,583	334	.	.	.	.	.
	%w/DTC	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.	.
2006	Year	8	23	91	16	17	5	4	2	0	0	0	0	.	.	.	.
	Total	123,740	75,286	160,245	107,288	224,672	127,510	274,461	114,192	31,183	20,469	12,954	491	.	.	.	.
	%w/DTC	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.
2007	Year	8	17	51	30	16	13	5	4	0	0	0	0	0	.	.	.
	Total	64,117	139,445	94,372	175,277	135,525	222,527	144,704	286,939	110,806	34,310	26,882	12,122	373	.	.	.
	%w/DTC	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.
2008	Year	10	11	52	11	14	9	7	2	3	1	0	0	0	0	.	.
	Total	86,214	59,396	118,266	86,064	178,528	111,461	225,227	117,687	242,347	96,650	31,588	24,386	9,483	338	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.
2009	Year	8	17	24	13	11	9	1	9	2	3	0	0	0	1	0	.
	Total	40,797	89,350	62,188	119,328	96,311	164,854	114,012	219,130	109,265	223,890	94,323	31,377	24,560	7,813	300	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.
2010	Year	0	1	4	3	3	1	0	0	1	0	1	0	0	0	0	0
	Total	8,874	8,668	12,595	10,866	21,822	13,487	29,721	15,601	33,661	12,563	32,270	5,270	2,237	1,225	165	1
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table D-36. Number of Inspection Cycles with DTC 452 Set, by Model Year and IM Calendar Year – State C

Calendar Year		Model Year															
		1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
2005	Year	1	6	14	17	7	13	2	1	1	1	0	.	.	.	.	.
	Total	75,983	175,748	109,776	210,126	149,671	257,887	133,550	46,229	24,040	10,583	334	.	.	.	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.	.
2006	Year	4	3	29	17	16	4	7	3	0	0	0	0	.	.	.	.
	Total	123,740	75,286	160,245	107,288	224,672	127,510	274,461	114,192	31,183	20,469	12,954	491	.	.	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.
2007	Year	0	9	38	27	21	14	13	3	1	0	0	0	0	.	.	.
	Total	64,117	139,445	94,372	175,277	135,525	222,527	144,704	286,939	110,806	34,310	26,882	12,122	373	.	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.
2008	Year	1	3	45	26	24	5	13	7	9	2	0	1	0	0	.	.
	Total	86,214	59,396	118,266	86,064	178,528	111,461	225,227	117,687	242,347	96,650	31,588	24,386	9,483	338	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.
2009	Year	0	2	24	47	23	17	13	16	5	8	1	1	0	0	0	.
	Total	40,797	89,350	62,188	119,328	96,311	164,854	114,012	219,130	109,265	223,890	94,323	31,377	24,560	7,813	300	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.
2010	Year	0	0	2	5	5	4	2	3	2	1	1	0	0	0	0	0
	Total	8,874	8,668	12,595	10,866	21,822	13,487	29,721	15,601	33,661	12,563	32,270	5,270	2,237	1,225	165	1
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table D-37. Number of Inspection Cycles with DTC 455 Set, by Model Year and IM Calendar Year – State C

Calendar Year		Model Year															
		1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
2005	Year	35	380	293	311	249	877	194	46	7	6	0	.	.	.	.	.
	Total	75,983	175,748	109,776	210,126	149,671	257,887	133,550	46,229	24,040	10,583	334	.	.	.	.	.
	%w/DTC	0.0%	0.2%	0.3%	0.1%	0.2%	0.3%	0.1%	0.1%	0.0%	0.1%	0.0%	.	.	.	.	.
2006	Year	48	265	470	234	462	561	835	158	24	10	7	1	.	.	.	.
	Total	123,740	75,286	160,245	107,288	224,672	127,510	274,461	114,192	31,183	20,469	12,954	491	.	.	.	.
	%w/DTC	0.0%	0.4%	0.3%	0.2%	0.2%	0.4%	0.3%	0.1%	0.1%	0.0%	0.1%	0.2%	.	.	.	.
2007	Year	32	388	386	388	383	1,169	599	525	112	32	11	6	0	.	.	.
	Total	64,117	139,445	94,372	175,277	135,525	222,527	144,704	286,939	110,806	34,310	26,882	12,122	373	.	.	.
	%w/DTC	0.0%	0.3%	0.4%	0.2%	0.3%	0.5%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	.	.	.
2008	Year	48	220	415	250	552	751	1,222	411	326	95	19	7	1	0	.	.
	Total	86,214	59,396	118,266	86,064	178,528	111,461	225,227	117,687	242,347	96,650	31,588	24,386	9,483	338	.	.
	%w/DTC	0.1%	0.4%	0.4%	0.3%	0.3%	0.7%	0.5%	0.3%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	.	.
2009	Year	27	232	297	306	332	948	651	689	240	283	93	18	3	1	0	.
	Total	40,797	89,350	62,188	119,328	96,311	164,854	114,012	219,130	109,265	223,890	94,323	31,377	24,560	7,813	300	.
	%w/DTC	0.1%	0.3%	0.5%	0.3%	0.3%	0.6%	0.6%	0.3%	0.2%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	.
2010	Year	5	31	26	37	47	94	128	56	47	22	32	4	1	0	1	0
	Total	8,874	8,668	12,595	10,866	21,822	13,487	29,721	15,601	33,661	12,563	32,270	5,270	2,237	1,225	165	1
	%w/DTC	0.1%	0.4%	0.2%	0.3%	0.2%	0.7%	0.4%	0.4%	0.1%	0.2%	0.1%	0.1%	0.0%	0.0%	0.6%	0.0%

Table D-38. Number of Inspection Cycles with DTC 456 Set, by Model Year and IM Calendar Year – State C

Calendar Year		Model Year															
		1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
2005	Year	0	5	27	57	65	343	145	43	11	3	0	.	.	.	.	.
	Total	75,983	175,748	109,776	210,126	149,671	257,887	133,550	46,229	24,040	10,583	334	.	.	.	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	.	.	.	.	.
2006	Year	2	3	53	34	135	199	718	146	23	7	1	0	.	.	.	.
	Total	123,740	75,286	160,245	107,288	224,672	127,510	274,461	114,192	31,183	20,469	12,954	491	.	.	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.1%	0.2%	0.3%	0.1%	0.1%	0.0%	0.0%	0.0%	.	.	.	.
2007	Year	1	3	66	89	113	424	371	634	107	22	5	5	0	.	.	.
	Total	64,117	139,445	94,372	175,277	135,525	222,527	144,704	286,939	110,806	34,310	26,882	12,122	373	.	.	.
	%w/DTC	0.0%	0.0%	0.1%	0.1%	0.1%	0.2%	0.3%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	.	.	.
2008	Year	1	2	80	43	192	250	902	352	248	42	15	3	0	0	.	.
	Total	86,214	59,396	118,266	86,064	178,528	111,461	225,227	117,687	242,347	96,650	31,588	24,386	9,483	338	.	.
	%w/DTC	0.0%	0.0%	0.1%	0.0%	0.1%	0.2%	0.4%	0.3%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.
2009	Year	0	2	43	74	70	349	380	700	160	114	33	13	8	1	0	.
	Total	40,797	89,350	62,188	119,328	96,311	164,854	114,012	219,130	109,265	223,890	94,323	31,377	24,560	7,813	300	.
	%w/DTC	0.0%	0.0%	0.1%	0.1%	0.1%	0.2%	0.3%	0.3%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	.
2010	Year	1	0	7	10	14	27	84	52	41	9	10	.0	1	2	0	0
	Total	8,874	8,668	12,595	10,866	21,822	13,487	29,721	15,601	33,661	12,563	32,270	5,270	2,237	1,225	165	1
	%w/DTC	0.0%	0.0%	0.1%	0.1%	0.1%	0.2%	0.3%	0.3%	0.1%	0.1%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%

Table D-39. Number of Inspection Cycles with DTC 457 Set, by Model Year and IM Calendar Year – State C

Calendar Year		Model Year															
		1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
2005	Year	3	31	243	275	20	67	20	5	2	0	0	.	.	.	.	.
	Total	75,983	175,748	109,776	210,126	149,671	257,887	133,550	46,229	24,040	10,583	334	.	.	.	.	.
	%w/DTC	0.0%	0.0%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.	.
2006	Year	8	33	295	162	83	41	70	26	5	1	1	0	.	.	.	.
	Total	123,740	75,286	160,245	107,288	224,672	127,510	274,461	114,192	31,183	20,469	12,954	491	.	.	.	.
	%w/DTC	0.0%	0.0%	0.2%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.
2007	Year	5	58	213	269	57	86	55	110	20	4	1	1	0	.	.	.
	Total	64,117	139,445	94,372	175,277	135,525	222,527	144,704	286,939	110,806	34,310	26,882	12,122	373	.	.	.
	%w/DTC	0.0%	0.0%	0.2%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.
2008	Year	7	32	224	179	105	60	85	56	50	24	4	2	0	0	.	.
	Total	86,214	59,396	118,266	86,064	178,528	111,461	225,227	117,687	242,347	96,650	31,588	24,386	9,483	338	.	.
	%w/DTC	0.0%	0.1%	0.2%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.
2009	Year	4	29	146	231	92	110	55	131	38	53	15	2	0	0	0	.
	Total	40,797	89,350	62,188	119,328	96,311	164,854	114,012	219,130	109,265	223,890	94,323	31,377	24,560	7,813	300	.
	%w/DTC	0.0%	0.0%	0.2%	0.2%	0.1%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.
2010	Year	0	2	19	26	16	11	13	9	10	5	3	1	0	0	0	0
	Total	8,874	8,668	12,595	10,866	21,822	13,487	29,721	15,601	33,661	12,563	32,270	5,270	2,237	1,225	165	1
	%w/DTC	0.0%	0.0%	0.2%	0.2%	0.1%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table D-40. Number of Inspection Cycles with DTC 440 Set, by Model Year and IM Calendar Year – State D

Calendar Year		Model Year															
		1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
2004	Year	124	141	159	96	94	56	20	9	1	0	.	.	.	.	.	.
	Total	42,813	40,020	52,811	37,864	63,342	29,961	19,182	13,428	7,684	153	.	.	.	.	.	.
	%w/DTC	0.3%	0.4%	0.3%	0.3%	0.1%	0.2%	0.1%	0.1%	0.0%	0.0%	.	.	.	.	.	.
2005	Year	105	137	149	130	79	97	37	10	0	1	0	.	.	.	.	.
	Total	27,135	37,127	32,263	41,566	33,742	47,631	23,498	11,683	9,348	4,531	74	.	.	.	.	.
	%w/DTC	0.4%	0.4%	0.5%	0.3%	0.2%	0.2%	0.2%	0.1%	0.0%	0.0%	0.0%	.	.	.	.	.
2006	Year	126	165	205	171	129	100	97	25	9	1	0	0	.	.	.	.
	Total	30,410	32,824	42,526	35,454	51,593	33,310	58,757	19,504	10,038	8,644	3,640	98	.	.	.	.
	%w/DTC	0.4%	0.5%	0.5%	0.5%	0.3%	0.3%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	.	.	.	.
2007	Year	132	170	183	174	125	143	74	73	12	1	0	0	0	.	.	.
	Total	22,893	32,469	31,633	39,706	35,112	44,220	31,817	50,547	16,605	8,135	6,195	2,887	79	.	.	.
	%w/DTC	0.6%	0.5%	0.6%	0.4%	0.4%	0.3%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	.	.	.
2008	Year	126	154	225	156	151	126	114	59	39	3	0	0	0	0	.	.
	Total	23,025	25,756	32,019	29,129	38,462	28,627	41,004	23,270	45,643	13,198	6,312	5,482	1,954	51	.	.
	%w/DTC	0.5%	0.6%	0.7%	0.5%	0.4%	0.4%	0.3%	0.3%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.
2009	Year	147	189	258	241	198	202	126	110	24	8	2	0	0	0	0	.
	Total	22,991	32,073	31,006	37,555	34,948	42,122	32,518	43,440	24,059	50,840	12,335	5,816	4,786	1,046	38	.
	%w/DTC	0.6%	0.6%	0.8%	0.6%	0.6%	0.5%	0.4%	0.3%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.
2010	Year	201	305	347	266	225	248	216	123	73	4	13	3	0	0	0	0
	Total	26,680	30,744	37,843	34,740	45,235	36,062	47,770	30,368	45,844	25,094	49,966	12,656	5,804	2,915	977	30
	%w/DTC	0.8%	1.0%	0.9%	0.8%	0.5%	0.7%	0.5%	0.4%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2011	Year	206	348	383	420	295	368	267	246	79	22	11	10	1	0	0	0
	Total	24,780	41,134	36,204	49,546	42,174	54,295	40,382	54,101	32,748	58,337	33,885	60,414	13,590	3,449	2,866	804
	%w/DTC	0.8%	0.8%	1.1%	0.8%	0.7%	0.7%	0.7%	0.5%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table D-41. Number of Inspection Cycles with DTC 441 Set, by Model Year and IM Calendar Year – State D

Calendar Year		Model Year															
		1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
2004	Year	150	89	41	24	48	25	12	5	4	0	.	.	.	.	.	.
	Total	39,980	36,292	49,093	34,875	59,763	27,702	18,151	12,524	7,131	135	.	.	.	.	.	.
	%w/DTC	0.4%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%	0.0%	0.1%	0.0%	.	.	.	.	.	.
2005	Year	122	83	37	24	23	51	30	6	5	1	0	.	.	.	.	.
	Total	24,512	33,229	28,801	38,007	30,625	44,354	21,698	10,902	8,631	4,124	59	.	.	.	.	.
	%w/DTC	0.5%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	.	.	.	.	.
2006	Year	131	110	59	23	52	46	68	14	15	2	0	0	.	.	.	.
	Total	27,920	29,204	38,540	32,057	47,915	30,771	56,159	18,290	9,471	8,091	3,326	82	.	.	.	.
	%w/DTC	0.5%	0.4%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%	0.2%	0.0%	0.0%	0.0%	.	.	.	.
2007	Year	135	121	45	39	48	64	43	94	23	8	5	0	0	.	.	.
	Total	20,569	28,735	27,859	35,803	31,537	40,804	29,411	47,946	15,368	7,587	5,707	2,636	74	.	.	.
	%w/DTC	0.7%	0.4%	0.2%	0.1%	0.2%	0.2%	0.1%	0.2%	0.1%	0.1%	0.1%	0.0%	0.0%	.	.	.
2008	Year	135	131	51	52	56	72	83	60	83	17	1	1	1	0	.	.
	Total	20,393	21,900	27,664	25,105	34,333	25,433	37,983	21,320	43,360	11,950	5,768	5,075	1,823	48	.	.
	%w/DTC	0.7%	0.6%	0.2%	0.2%	0.2%	0.3%	0.2%	0.3%	0.2%	0.1%	0.0%	0.0%	0.1%	0.0%	.	.
2009	Year	153	170	67	60	65	75	92	128	48	83	6	5	2	0	0	.
	Total	19,979	27,398	26,041	32,468	30,261	37,899	29,272	40,594	22,314	48,482	11,162	5,362	4,491	966	34	.
	%w/DTC	0.8%	0.6%	0.3%	0.2%	0.2%	0.2%	0.3%	0.3%	0.2%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	.
2010	Year	219	172	86	79	75	106	149	109	120	57	57	3	3	3	0	0
	Total	23,198	25,460	31,671	29,009	39,278	31,098	43,194	27,237	42,972	23,179	47,335	11,499	5,429	2,755	922	26
	%w/DTC	0.9%	0.7%	0.3%	0.3%	0.2%	0.3%	0.3%	0.4%	0.3%	0.2%	0.1%	0.0%	0.1%	0.1%	0.0%	0.0%
2011	Year	211	296	107	95	93	140	136	228	108	131	69	45	9	0	0	1
	Total	21,199	34,395	29,383	41,656	35,198	47,302	35,131	49,151	29,687	54,786	31,436	57,766	12,417	3,224	2,739	748
	%w/DTC	1.0%	0.9%	0.4%	0.2%	0.3%	0.3%	0.4%	0.5%	0.4%	0.2%	0.2%	0.1%	0.1%	0.0%	0.0%	0.1%

Table D-42. Number of Inspection Cycles with DTC 442 Set, by Model Year and IM Calendar Year – State D

Calendar Year		Model Year															
		1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
2004	Year	49	71	56	47	147	79	40	14	14	0	.	.	.	.	.	.
	Total	39,980	36,292	49,093	34,875	59,763	27,702	18,151	12,524	7,131	135	.	.	.	.	.	.
	%w/DTC	0.1%	0.2%	0.1%	0.1%	0.2%	0.3%	0.2%	0.1%	0.2%	0.0%	.	.	.	.	.	.
2005	Year	34	65	54	44	124	139	59	30	13	3	0	.	.	.	.	.
	Total	24,512	33,229	28,801	38,007	30,625	44,354	21,698	10,902	8,631	4,124	59	.	.	.	.	.
	%w/DTC	0.1%	0.2%	0.2%	0.1%	0.4%	0.3%	0.3%	0.3%	0.2%	0.1%	0.0%	.	.	.	.	.
2006	Year	42	86	68	54	240	219	226	61	21	7	1	1	.	.	.	.
	Total	27,920	29,204	38,540	32,057	47,915	30,771	56,159	18,290	9,471	8,091	3,326	82	.	.	.	.
	%w/DTC	0.2%	0.3%	0.2%	0.2%	0.5%	0.7%	0.4%	0.3%	0.2%	0.1%	0.0%	1.2%	.	.	.	.
2007	Year	32	69	88	64	276	325	253	232	46	11	4	0	0	.	.	.
	Total	20,569	28,735	27,859	35,803	31,537	40,804	29,411	47,946	15,368	7,587	5,707	2,636	74	.	.	.
	%w/DTC	0.2%	0.2%	0.3%	0.2%	0.9%	0.8%	0.9%	0.5%	0.3%	0.1%	0.1%	0.0%	0.0%	.	.	.
2008	Year	42	89	92	75	278	282	317	168	154	23	7	1	0	0	.	.
	Total	20,393	21,900	27,664	25,105	34,333	25,433	37,983	21,320	43,360	11,950	5,768	5,075	1,823	48	.	.
	%w/DTC	0.2%	0.4%	0.3%	0.3%	0.8%	1.1%	0.8%	0.8%	0.4%	0.2%	0.1%	0.0%	0.0%	0.0%	.	.
2009	Year	43	110	143	116	333	407	406	349	127	117	9	3	1	0	0	.
	Total	19,979	27,398	26,041	32,468	30,261	37,899	29,272	40,594	22,314	48,482	11,162	5,362	4,491	966	34	.
	%w/DTC	0.2%	0.4%	0.5%	0.4%	1.1%	1.1%	1.4%	0.9%	0.6%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	.
2010	Year	46	127	157	139	411	455	548	355	233	70	84	10	4	2	0	0
	Total	23,198	25,460	31,671	29,009	39,278	31,098	43,194	27,237	42,972	23,179	47,335	11,499	5,429	2,755	922	26
	%w/DTC	0.2%	0.5%	0.5%	0.5%	1.0%	1.5%	1.3%	1.3%	0.5%	0.3%	0.2%	0.1%	0.1%	0.1%	0.0%	0.0%
2011	Year	51	196	194	175	413	682	704	700	243	183	67	60	10	4	0	1
	Total	21,199	34,395	29,383	41,656	35,198	47,302	35,131	49,151	29,687	54,786	31,436	57,766	12,417	3,224	2,739	748
	%w/DTC	0.2%	0.6%	0.7%	0.4%	1.2%	1.4%	2.0%	1.4%	0.8%	0.3%	0.2%	0.1%	0.1%	0.1%	0.0%	0.1%

Table D-43. Number of Inspection Cycles with DTC 443 Set, by Model Year and IM Calendar Year – State D

Calendar Year		Model Year															
		1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
2004	Year	340	252	19	4	9	2	1	0	0	0	.	.	.	.	.	.
	Total	39,980	36,292	49,093	34,875	59,763	27,702	18,151	12,524	7,131	135	.	.	.	.	.	.
	%w/DTC	0.9%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.	.	.
2005	Year	288	286	16	9	4	14	1	3	2	0	0	.	.	.	.	.
	Total	24,512	33,229	28,801	38,007	30,625	44,354	21,698	10,902	8,631	4,124	59	.	.	.	.	.
	%w/DTC	1.2%	0.9%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.	.
2006	Year	360	336	48	17	15	10	16	1	0	0	0	0	.	.	.	.
	Total	27,920	29,204	38,540	32,057	47,915	30,771	56,159	18,290	9,471	8,091	3,326	82	.	.	.	.
	%w/DTC	1.3%	1.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.
2007	Year	359	382	31	27	20	11	10	12	4	0	0	0	0	.	.	.
	Total	20,569	28,735	27,859	35,803	31,537	40,804	29,411	47,946	15,368	7,587	5,707	2,636	74	.	.	.
	%w/DTC	1.7%	1.3%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.
2008	Year	355	357	69	32	18	21	21	14	10	1	0	0	0	0	.	.
	Total	20,393	21,900	27,664	25,105	34,333	25,433	37,983	21,320	43,360	11,950	5,768	5,075	1,823	48	.	.
	%w/DTC	1.7%	1.6%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.
2009	Year	370	418	46	25	27	39	22	19	10	5	1	0	0	0	0	.
	Total	19,979	27,398	26,041	32,468	30,261	37,899	29,272	40,594	22,314	48,482	11,162	5,362	4,491	966	34	.
	%w/DTC	1.9%	1.5%	0.2%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.
2010	Year	418	449	73	36	50	35	42	14	12	3	8	0	0	0	0	0
	Total	23,198	25,460	31,671	29,009	39,278	31,098	43,194	27,237	42,972	23,179	47,335	11,499	5,429	2,755	922	26
	%w/DTC	1.8%	1.8%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2011	Year	485	664	85	41	45	66	30	37	13	9	13	3	1	0	1	0
	Total	21,199	34,395	29,383	41,656	35,198	47,302	35,131	49,151	29,687	54,786	31,436	57,766	12,417	3,224	2,739	748
	%w/DTC	2.3%	1.9%	0.3%	0.1%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table D-44. Number of Inspection Cycles with DTC 446 Set, by Model Year and IM Calendar Year – State D

Calendar Year		Model Year															
		1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
2004	Year	54	55	40	22	41	16	20	3	3	0	.	.	.	.	.	.
	Total	39,980	36,292	49,093	34,875	59,763	27,702	18,151	12,524	7,131	135	.	.	.	.	.	.
	%w/DTC	0.1%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	.	.	.	.	.	.
2005	Year	27	94	37	34	23	54	18	9	4	0	0	.	.	.	.	.
	Total	24,512	33,229	28,801	38,007	30,625	44,354	21,698	10,902	8,631	4,124	59	.	.	.	.	.
	%w/DTC	0.1%	0.3%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	.	.	.	.	.
2006	Year	47	80	55	33	54	27	80	14	14	0	0	0	.	.	.	.
	Total	27,920	29,204	38,540	32,057	47,915	30,771	56,159	18,290	9,471	8,091	3,326	82	.	.	.	.
	%w/DTC	0.2%	0.3%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	.	.	.	.
2007	Year	49	86	61	54	52	60	45	81	18	2	1	0	0	.	.	.
	Total	20,569	28,735	27,859	35,803	31,537	40,804	29,411	47,946	15,368	7,587	5,707	2,636	74	.	.	.
	%w/DTC	0.2%	0.3%	0.2%	0.2%	0.2%	0.1%	0.2%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	.	.	.
2008	Year	49	82	67	60	48	65	79	33	58	3	1	0	0	0	.	.
	Total	20,393	21,900	27,664	25,105	34,333	25,433	37,983	21,320	43,360	11,950	5,768	5,075	1,823	48	.	.
	%w/DTC	0.2%	0.4%	0.2%	0.2%	0.1%	0.3%	0.2%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.
2009	Year	44	96	82	90	54	59	89	77	43	18	0	0	0	0	0	.
	Total	19,979	27,398	26,041	32,468	30,261	37,899	29,272	40,594	22,314	48,482	11,162	5,362	4,491	966	34	.
	%w/DTC	0.2%	0.4%	0.3%	0.3%	0.2%	0.2%	0.3%	0.2%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.
2010	Year	70	118	100	120	73	83	107	52	92	12	7	2	1	0	0	0
	Total	23,198	25,460	31,671	29,009	39,278	31,098	43,194	27,237	42,972	23,179	47,335	11,499	5,429	2,755	922	26
	%w/DTC	0.3%	0.5%	0.3%	0.4%	0.2%	0.3%	0.2%	0.2%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2011	Year	75	154	137	163	93	125	127	105	67	49	12	6	3	0	0	0
	Total	21,199	34,395	29,383	41,656	35,198	47,302	35,131	49,151	29,687	54,786	31,436	57,766	12,417	3,224	2,739	748
	%w/DTC	0.4%	0.4%	0.5%	0.4%	0.3%	0.3%	0.4%	0.2%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table D-45. Number of Inspection Cycles with DTC 447 Set, by Model Year and IM Calendar Year – State D

Calendar Year		Model Year															
		1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
2004	Year	17	104	3	2	.	2	1	0	0	0	.	.	.	.	.	.
	Total	39,980	36,292	49,093	34,875	59,763	27,702	18,151	12,524	7,131	135	.	.	.	.	.	.
	%w/DTC	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.	.	.
2005	Year	20	97	8	1	.	4	0	0	0	0	0	.	.	.	.	.
	Total	24,512	33,229	28,801	38,007	30,625	44,354	21,698	10,902	8,631	4,124	59	.	.	.	.	.
	%w/DTC	0.1%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.	.
2006	Year	14	106	7	1	.	4	2	0	0	0	0	0	.	.	.	.
	Total	27,920	29,204	38,540	32,057	47,915	30,771	56,159	18,290	9,471	8,091	3,326	82	.	.	.	.
	%w/DTC	0.1%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.
2007	Year	16	106	16	1	2	1	2	2	2	0	0	0	0	.	.	.
	Total	20,569	28,735	27,859	35,803	31,537	40,804	29,411	47,946	15,368	7,587	5,707	2,636	74	.	.	.
	%w/DTC	0.1%	0.4%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.
2008	Year	19	111	14	3	4	5	3	.	1	0	0	0	0	0	.	.
	Total	20,393	21,900	27,664	25,105	34,333	25,433	37,983	21,320	43,360	11,950	5,768	5,075	1,823	48	.	.
	%w/DTC	0.1%	0.5%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.
2009	Year	15	145	25	4	1	.	7	4	2	0	0	1	0	0	0	.
	Total	19,979	27,398	26,041	32,468	30,261	37,899	29,272	40,594	22,314	48,482	11,162	5,362	4,491	966	34	.
	%w/DTC	0.1%	0.5%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.
2010	Year	29	164	33	7	2	4	3	5	7	0	2	0	1	0	0	0
	Total	23,198	25,460	31,671	29,009	39,278	31,098	43,194	27,237	42,972	23,179	47,335	11,499	5,429	2,755	922	26
	%w/DTC	0.1%	0.6%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2011	Year	34	264	31	7	7	8	5	4	2	1	0	2	3	0	0	0
	Total	21,199	34,395	29,383	41,656	35,198	47,302	35,131	49,151	29,687	54,786	31,436	57,766	12,417	3,224	2,739	748
	%w/DTC	0.2%	0.8%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table D-46. Number of Inspection Cycles with DTC 448 Set, by Model Year and IM Calendar Year – State D

Calendar Year		Model Year															
		1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
2004	Year	0	0	13	3	0	3	1	1	0	0	.	.	.	.	.	.
	Total	39,980	36,292	49,093	34,875	59,763	27,702	18,151	12,524	7,131	135	.	.	.	.	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.	.	.
2005	Year	0	0	13	1	3	5	2	1	0	0	0	.	.	.	.	.
	Total	24,512	33,229	28,801	38,007	30,625	44,354	21,698	10,902	8,631	4,124	59	.	.	.	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.	.
2006	Year	0	0	13	2	2	5	6	4	0	0	0	0	.	.	.	.
	Total	27,920	29,204	38,540	32,057	47,915	30,771	56,159	18,290	9,471	8,091	3,326	82	.	.	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.
2007	Year	0	0	6	5	5	8	8	11	0	0	0	0	0	.	.	.
	Total	20,569	28,735	27,859	35,803	31,537	40,804	29,411	47,946	15,368	7,587	5,707	2,636	74	.	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.
2008	Year	0	0	20	8	6	5	10	4	1	0	2	1	0	0	.	.
	Total	20,393	21,900	27,664	25,105	34,333	25,433	37,983	21,320	43,360	11,950	5,768	5,075	1,823	48	.	.
	%w/DTC	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.
2009	Year	0	0	23	5	5	5	15	5	0	0	1	0	0	0	0	.
	Total	19,979	27,398	26,041	32,468	30,261	37,899	29,272	40,594	22,314	48,482	11,162	5,362	4,491	966	34	.
	%w/DTC	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.
2010	Year	0	0	23	6	7	12	17	8	3	0	3	1	2	0	0	0
	Total	23,198	25,460	31,671	29,009	39,278	31,098	43,194	27,237	42,972	23,179	47,335	11,499	5,429	2,755	922	26
	%w/DTC	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2011	Year	0	1	31	16	12	16	19	14	2	0	5	5	2	0	0	0
	Total	21,199	34,395	29,383	41,656	35,198	47,302	35,131	49,151	29,687	54,786	31,436	57,766	12,417	3,224	2,739	748
	%w/DTC	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table D-47. Number of Inspection Cycles with DTC 449 Set, by Model Year and IM Calendar Year – State D

Calendar Year		Model Year															
		1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
2004	Year	0	0	0	1	3	0	0	0	0	0	.	.	.	.	.	.
	Total	39,980	36,292	49,093	34,875	59,763	27,702	18,151	12,524	7,131	135	.	.	.	.	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.	.	.
2005	Year	0	0	0	2	2	3	1	.	1	0	0	.	.	.	.	.
	Total	24,512	33,229	28,801	38,007	30,625	44,354	21,698	10,902	8,631	4,124	59	.	.	.	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.	.
2006	Year	0	0	0	4	6	.	1	1	1	0	0	0	.	.	.	.
	Total	27,920	29,204	38,540	32,057	47,915	30,771	56,159	18,290	9,471	8,091	3,326	82	.	.	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.
2007	Year	0	0	0	4	7	8	4	4	7	0	0	0	0	.	.	.
	Total	20,569	28,735	27,859	35,803	31,537	40,804	29,411	47,946	15,368	7,587	5,707	2,636	74	.	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.
2008	Year	0	0	0	3	5	4	5	3	14	1	1	0	0	0	.	.
	Total	20,393	21,900	27,664	25,105	34,333	25,433	37,983	21,320	43,360	11,950	5,768	5,075	1,823	48	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.
2009	Year	.	.	.	7	5	11	9	7	12	3	1	1	1	0	0	.
	Total	19,979	27,398	26,041	32,468	30,261	37,899	29,272	40,594	22,314	48,482	11,162	5,362	4,491	966	34	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.
2010	Year	0	0	1	5	8	12	11	11	22	5	3	3	2	0	0	0
	Total	23,198	25,460	31,671	29,009	39,278	31,098	43,194	27,237	42,972	23,179	47,335	11,499	5,429	2,755	922	26
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2011	Year	0	0	0	9	15	17	11	14	20	16	7	7	4	3	0	0
	Total	21,199	34,395	29,383	41,656	35,198	47,302	35,131	49,151	29,687	54,786	31,436	57,766	12,417	3,224	2,739	748
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%

Table D-48. Number of Inspection Cycles with DTC 450 Set, by Model Year and IM Calendar Year – State D

Calendar Year		Model Year															
		1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
2004	Year	17	12	23	3	20	6	0	0	0	0	.	.	.	.	.	.
	Total	39,980	36,292	49,093	34,875	59,763	27,702	18,151	12,524	7,131	135	.	.	.	.	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.	.	.
2005	Year	9	17	16	8	15	17	1	0	0	0	0	.	.	.	.	.
	Total	24,512	33,229	28,801	38,007	30,625	44,354	21,698	10,902	8,631	4,124	59	.	.	.	.	.
	%w/DTC	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.	.
2006	Year	12	18	26	5	33	15	.	1	0	0	0	0	.	.	.	.
	Total	27,920	29,204	38,540	32,057	47,915	30,771	56,159	18,290	9,471	8,091	3,326	82	.	.	.	.
	%w/DTC	0.0%	0.1%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.
2007	Year	8	20	30	10	18	26	1	.	2	0	0	0	0	.	.	.
	Total	20,569	28,735	27,859	35,803	31,537	40,804	29,411	47,946	15,368	7,587	5,707	2,636	74	.	.	.
	%w/DTC	0.0%	0.1%	0.1%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.
2008	Year	13	16	24	2	41	19	2	3	3	0	0	0	0	0	.	.
	Total	20,393	21,900	27,664	25,105	34,333	25,433	37,983	21,320	43,360	11,950	5,768	5,075	1,823	48	.	.
	%w/DTC	0.1%	0.1%	0.1%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.
2009	Year	5	14	28	11	15	17	8	3	1	1	2	0	0	0	0	.
	Total	19,979	27,398	26,041	32,468	30,261	37,899	29,272	40,594	22,314	48,482	11,162	5,362	4,491	966	34	.
	%w/DTC	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.
2010	Year	11	16	30	4	36	17	2	7	2	1	5	1	1	0	0	0
	Total	23,198	25,460	31,671	29,009	39,278	31,098	43,194	27,237	42,972	23,179	47,335	11,499	5,429	2,755	922	26
	%w/DTC	0.0%	0.1%	0.1%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2011	Year	17	45	46	14	19	36	11	7	3	3	2	4	1	0	0	0
	Total	21,199	34,395	29,383	41,656	35,198	47,302	35,131	49,151	29,687	54,786	31,436	57,766	12,417	3,224	2,739	748
	%w/DTC	0.1%	0.1%	0.2%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table D-49. Number of Inspection Cycles with DTC 452 Set, by Model Year and IM Calendar Year – State D

Calendar Year		Model Year															
		1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
2004	Year	1	1	13	9	10	8	3	0	0	0	.	.	.	.	.	.
	Total	39,980	36,292	49,093	34,875	59,763	27,702	18,151	12,524	7,131	135	.	.	.	.	.	.
	%w/DTC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.	.	.
2005	Year	0	0	29	17	16	8	4	1	0	0	.	.	.	.	.	.
	Total	24,512	33,229	28,801	38,007	30,625	44,354	21,698	10,902	8,631	4,124	59	.	.	.	.	.
	%w/DTC	0.0%	0.0%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.	.
2006	Year	0	0	63	48	52	11	2	1	0	0	0	0	.	.	.	.
	Total	27,920	29,204	38,540	32,057	47,915	30,771	56,159	18,290	9,471	8,091	3,326	82	.	.	.	.
	%w/DTC	0.0%	0.0%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.
2007	Year	0	1	93	60	55	24	13	4	1	0	0	2	0	.	.	.
	Total	20,569	28,735	27,859	35,803	31,537	40,804	29,411	47,946	15,368	7,587	5,707	2,636	74	.	.	.
	%w/DTC	0.0%	0.0%	0.3%	0.2%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	.	.	.
2008	Year	1	1	86	75	58	24	10	3	6	1	0	0	1	0	.	.
	Total	20,393	21,900	27,664	25,105	34,333	25,433	37,983	21,320	43,360	11,950	5,768	5,075	1,823	48	.	.
	%w/DTC	0.0%	0.0%	0.3%	0.3%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	.	.
2009	Year	0	1	105	93	86	31	9	5	7	4	1	1	0	0	0	.
	Total	19,979	27,398	26,041	32,468	30,261	37,899	29,272	40,594	22,314	48,482	11,162	5,362	4,491	966	34	.
	%w/DTC	0.0%	0.0%	0.4%	0.3%	0.3%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.
2010	Year	2	1	145	117	99	40	21	9	8	7	1	2	1	0	0	0
	Total	23,198	25,460	31,671	29,009	39,278	31,098	43,194	27,237	42,972	23,179	47,335	11,499	5,429	2,755	922	26
	%w/DTC	0.0%	0.0%	0.5%	0.4%	0.3%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2011	Year	1	1	157	142	131	55	28	12	1	6	1	3	0	1	0	0
	Total	21,199	34,395	29,383	41,656	35,198	47,302	35,131	49,151	29,687	54,786	31,436	57,766	12,417	3,224	2,739	748
	%w/DTC	0.0%	0.0%	0.5%	0.3%	0.4%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table D-50. Number of Inspection Cycles with DTC 455 Set, by Model Year and IM Calendar Year – State D

Calendar Year		Model Year															
		1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
2004	Year	13	96	91	60	95	95	42	10	1	0	.	.	.	.	.	.
	Total	39,980	36,292	49,093	34,875	59,763	27,702	18,151	12,524	7,131	135	.	.	.	.	.	.
	%w/DTC	0.0%	0.3%	0.2%	0.2%	0.2%	0.3%	0.2%	0.1%	0.0%	0.0%	.	.	.	.	.	.
2005	Year	8	130	69	95	78	174	50	15	12	7	0	.	.	.	.	.
	Total	24,512	33,229	28,801	38,007	30,625	44,354	21,698	10,902	8,631	4,124	59	.	.	.	.	.
	%w/DTC	0.0%	0.4%	0.2%	0.2%	0.3%	0.4%	0.2%	0.1%	0.1%	0.2%	0.0%	.	.	.	.	.
2006	Year	12	140	113	83	111	224	217	35	27	18	7	1	.	.	.	.
	Total	27,920	29,204	38,540	32,057	47,915	30,771	56,159	18,290	9,471	8,091	3,326	82	.	.	.	.
	%w/DTC	0.0%	0.5%	0.3%	0.3%	0.2%	0.7%	0.4%	0.2%	0.3%	0.2%	0.2%	1.2%	.	.	.	.
2007	Year	16	132	97	91	121	256	229	124	46	16	8	2	0	.	.	.
	Total	20,569	28,735	27,859	35,803	31,537	40,804	29,411	47,946	15,368	7,587	5,707	2,636	74	.	.	.
	%w/DTC	0.1%	0.5%	0.3%	0.3%	0.4%	0.6%	0.8%	0.3%	0.3%	0.2%	0.1%	0.1%	0.0%	.	.	.
2008	Year	16	134	112	91	115	241	274	94	152	36	20	11	3	0	.	.
	Total	20,393	21,900	27,664	25,105	34,333	25,433	37,983	21,320	43,360	11,950	5,768	5,075	1,823	48	.	.
	%w/DTC	0.1%	0.6%	0.4%	0.4%	0.3%	0.9%	0.7%	0.4%	0.4%	0.3%	0.3%	0.2%	0.2%	0.0%	.	.
2009	Year	24	177	131	145	121	290	368	177	147	185	37	18	9	2	0	.
	Total	19,979	27,398	26,041	32,468	30,261	37,899	29,272	40,594	22,314	48,482	11,162	5,362	4,491	966	34	.
	%w/DTC	0.1%	0.6%	0.5%	0.4%	0.4%	0.8%	1.3%	0.4%	0.7%	0.4%	0.3%	0.3%	0.2%	0.2%	0.0%	.
2010	Year	24	182	177	124	189	394	499	219	252	163	165	28	17	9	0	0
	Total	23,198	25,460	31,671	29,009	39,278	31,098	43,194	27,237	42,972	23,179	47,335	11,499	5,429	2,755	922	26
	%w/DTC	0.1%	0.7%	0.6%	0.4%	0.5%	1.3%	1.2%	0.8%	0.6%	0.7%	0.3%	0.2%	0.3%	0.3%	0.0%	0.0%
2011	Year	32	261	169	219	205	631	609	398	243	313	167	173	43	6	2	0
	Total	21,199	34,395	29,383	41,656	35,198	47,302	35,131	49,151	29,687	54,786	31,436	57,766	12,417	3,224	2,739	748
	%w/DTC	0.2%	0.8%	0.6%	0.5%	0.6%	1.3%	1.7%	0.8%	0.8%	0.6%	0.5%	0.3%	0.3%	0.2%	0.1%	0.0%

Table D-51. Number of Inspection Cycles with DTC 456 Set, by Model Year and IM Calendar Year – State D

Calendar Year		Model Year															
		1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
2004	Year	3	6	123	115	181	78	74	14	3	0	.	.	.	.	.	.
	Total	39,980	36,292	49,093	34,875	59,763	27,702	18,151	12,524	7,131	135	.	.	.	.	.	.
	%w/DTC	0.0%	0.0%	0.3%	0.3%	0.3%	0.3%	0.4%	0.1%	0.0%	0.0%	.	.	.	.	.	.
2005	Year	3	2	89	141	85	193	128	39	6	1	0	.	.	.	.	.
	Total	24,512	33,229	28,801	38,007	30,625	44,354	21,698	10,902	8,631	4,124	59	.	.	.	.	.
	%w/DTC	0.0%	0.0%	0.3%	0.4%	0.3%	0.4%	0.6%	0.4%	0.1%	0.0%	0.0%	.	.	.	.	.
2006	Year	1	8	126	116	158	180	542	82	23	7	0	0	.	.	.	.
	Total	27,920	29,204	38,540	32,057	47,915	30,771	56,159	18,290	9,471	8,091	3,326	82	.	.	.	.
	%w/DTC	0.0%	0.0%	0.3%	0.4%	0.3%	0.6%	1.0%	0.4%	0.2%	0.1%	0.0%	0.0%	.	.	.	.
2007	Year	1	8	115	159	97	253	311	310	51	13	8	5	0	.	.	.
	Total	20,569	28,735	27,859	35,803	31,537	40,804	29,411	47,946	15,368	7,587	5,707	2,636	74	.	.	.
	%w/DTC	0.0%	0.0%	0.4%	0.4%	0.3%	0.6%	1.1%	0.6%	0.3%	0.2%	0.1%	0.2%	0.0%	.	.	.
2008	Year	3	2	120	99	133	189	391	139	216	30	11	9	0	0	.	.
	Total	20,393	21,900	27,664	25,105	34,333	25,433	37,983	21,320	43,360	11,950	5,768	5,075	1,823	48	.	.
	%w/DTC	0.0%	0.0%	0.4%	0.4%	0.4%	0.7%	1.0%	0.7%	0.5%	0.3%	0.2%	0.2%	0.0%	0.0%	.	.
2009	Year	4	11	117	161	134	300	377	298	112	138	21	13	7	1	0	.
	Total	19,979	27,398	26,041	32,468	30,261	37,899	29,272	40,594	22,314	48,482	11,162	5,362	4,491	966	34	.
	%w/DTC	0.0%	0.0%	0.4%	0.5%	0.4%	0.8%	1.3%	0.7%	0.5%	0.3%	0.2%	0.2%	0.2%	0.1%	0.0%	.
2010	Year	4	13	162	133	182	266	583	242	302	97	106	16	12	6	2	0
	Total	23,198	25,460	31,671	29,009	39,278	31,098	43,194	27,237	42,972	23,179	47,335	11,499	5,429	2,755	922	26
	%w/DTC	0.0%	0.1%	0.5%	0.5%	0.5%	0.9%	1.3%	0.9%	0.7%	0.4%	0.2%	0.1%	0.2%	0.2%	0.2%	0.0%
2011	Year	1	20	192	208	146	442	528	456	232	191	85	120	20	6	5	0
	Total	21,199	34,395	29,383	41,656	35,198	47,302	35,131	49,151	29,687	54,786	31,436	57,766	12,417	3,224	2,739	748
	%w/DTC	0.0%	0.1%	0.7%	0.5%	0.4%	0.9%	1.5%	0.9%	0.8%	0.3%	0.3%	0.2%	0.2%	0.2%	0.2%	0.0%

Table D-52. Number of Inspection Cycles with DTC 457 Set, by Model Year and IM Calendar Year – State D

Calendar Year		Model Year															
		1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
2004	Year	0	5	32	35	31	19	12	6	6	0	.	.	.	.	.	.
	Total	39,980	36,292	49,093	34,875	59,763	27,702	18,151	12,524	7,131	135	.	.	.	.	.	.
	%w/DTC	0.0%	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%	0.0%	0.1%	0.0%	.	.	.	.	.	.
2005	Year	0	6	30	32	14	36	17	9	4	2	0	.	.	.	.	.
	Total	24,512	33,229	28,801	38,007	30,625	44,354	21,698	10,902	8,631	4,124	59	.	.	.	.	.
	%w/DTC	0.0%	0.0%	0.1%	0.1%	0.0%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	.	.	.	.	.
2006	Year	0	10	59	57	44	33	56	34	16	4	1	0	.	.	.	.
	Total	27,920	29,204	38,540	32,057	47,915	30,771	56,159	18,290	9,471	8,091	3,326	82	.	.	.	.
	%w/DTC	0.0%	0.0%	0.2%	0.2%	0.1%	0.1%	0.1%	0.2%	0.2%	0.0%	0.0%	0.0%	.	.	.	.
2007	Year	2	12	39	59	27	49	35	105	36	9	3	1	0	.	.	.
	Total	20,569	28,735	27,859	35,803	31,537	40,804	29,411	47,946	15,368	7,587	5,707	2,636	74	.	.	.
	%w/DTC	0.0%	0.0%	0.1%	0.2%	0.1%	0.1%	0.1%	0.2%	0.2%	0.1%	0.1%	0.0%	0.0%	.	.	.
2008	Year	1	12	40	47	46	45	65	44	109	23	5	11	0	0	.	.
	Total	20,393	21,900	27,664	25,105	34,333	25,433	37,983	21,320	43,360	11,950	5,768	5,075	1,823	48	.	.
	%w/DTC	0.0%	0.1%	0.1%	0.2%	0.1%	0.2%	0.2%	0.2%	0.3%	0.2%	0.1%	0.2%	0.0%	0.0%	.	.
2009	Year	4	17	60	81	35	68	55	94	44	86	27	7	1	1	0	.
	Total	19,979	27,398	26,041	32,468	30,261	37,899	29,272	40,594	22,314	48,482	11,162	5,362	4,491	966	34	.
	%w/DTC	0.0%	0.1%	0.2%	0.2%	0.1%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.1%	0.0%	0.1%	0.0%	.
2010	Year	6	24	72	88	65	86	96	54	124	60	82	27	9	1	0	0
	Total	23,198	25,460	31,671	29,009	39,278	31,098	43,194	27,237	42,972	23,179	47,335	11,499	5,429	2,755	922	26
	%w/DTC	0.0%	0.1%	0.2%	0.3%	0.2%	0.3%	0.2%	0.2%	0.3%	0.3%	0.2%	0.2%	0.2%	0.0%	0.0%	0.0%
2011	Year	2	26	77	137	69	130	123	128	75	110	69	67	13	1	1	0
	Total	21,199	34,395	29,383	41,656	35,198	47,302	35,131	49,151	29,687	54,786	31,436	57,766	12,417	3,224	2,739	748
	%w/DTC	0.0%	0.1%	0.3%	0.3%	0.2%	0.3%	0.4%	0.3%	0.3%	0.2%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%

Appendix E
Tables of Most Common Evap DTCs and DTC Combinations Set for Each State

Table E-1. For All Test Cycles With Evap Monitor Ready: Evap DTCs Most Commonly Found in State A Data

# of Evap codes	Specific P0 and P1 codes set	Generic description of DTCs set	Number of occurrences	Percentage	Cumulative percent
1	P_456	Small leak detected	120,262	20.6%	20.6%
1	P_455	Gross leak	97,505	16.7%	37.3%
1	P_442	Small leak	86,979	14.9%	52.2%
1	P_443	Purge control valve circuit	53,488	9.2%	61.3%
1	P_440	Evap system malfunction	50,167	8.6%	69.9%
1	P_441	Incorrect purge flow	39,597	6.8%	76.7%
1	P_446	Vent control circuit malfunction	31,168	5.3%	82.0%
1	P_457	System leak detected	20,188	3.5%	85.5%
2	P_442 and P_455	Small leak and gross leak	12,203	2.1%	87.6%
3	P_440, P_441, and P_446	Evap system malfunction, incorrect purge flow, and vent control circuit malfunction	10,062	1.7%	89.3%
1	P_452	Pressure sensor low input	9,718	1.7%	91.0%
Multiple	Other Evap DTC set as 1 or 2 or 3 or more DTCs together	less than 5,000 in each instance	52,749	9.0%	100.0%
		Total	584,086		

Table E-2. For All Test Cycles With Evap Monitor Ready: Evap DTCs Most Commonly Found in State B Data

# of Evap codes	Specific P0 and P1 codes set	Generic description of DTCs set	Number of occurrences	Percentage	Cumulative percent
1	P_455	Gross leak	10,239	16.9%	16.9%
1	P_442	Small leak	8,902	14.7%	31.6%
1	P_440	Evap system malfunction	7,436	12.3%	43.9%
1	P_456	Small leak detected	5,240	8.7%	52.6%
1	P_441	Incorrect purge flow	4,702	7.8%	60.3%
1	P_443	Purge control valve circuit	3,446	5.7%	66.0%
1	P_446	Vent control circuit malfunction	3,134	5.2%	71.2%
2	P_442 and P_455	Small leak and gross leak	2,386	3.9%	75.1%
3	P_440, P_441, and P_446	Evap system malfunction, incorrect purge flow, and vent control circuit malfunction	1,743	2.9%	78.0%
1	P_457	System leak detected	1,418	2.3%	80.4%
2	P_442 and P_456	Small leak and small leak detected	916	1.5%	81.9%
3	P_442, P_455, and P_456	Small leak, gross leak, and small leak detected	879	1.5%	83.3%
1	P_452	Pressure sensor low input	633	1.0%	84.4%
3	P_441 and P_446	Incorrect purge flow, and vent control circuit malfunction	535	0.9%	85.3%
Multiple	Other Evap DTC set as 1 or 2 or 3 or more DTCs together	less than 500 in each instance	8,928	14.7%	100.0%
		Total	60,537		

Table E-3. For All Test Cycles With Evap Monitor Ready: Evap DTCs Most Commonly Found in State C Data

# of Evap codes	Specific P0 and P1 codes set	Generic description of DTCs set	Number of occurrences	Percentage of evap codes	Cumulative percentage of evap codes
1	P_455	Gross leak	11,855	16.6%	16.6%
1	P_442	Small leak	9,274	13.0%	29.6%
1	P_440	Evap system malfunction	8,097	11.3%	40.9%
1	P_441	Incorrect purge flow	5,788	8.1%	49.0%
1	P_443	Incorrect evaporative system purge control valve flow	5,160	7.2%	56.3%
1	P_456	Small leak detected	4,656	6.5%	62.8%
2	P_446	Vent control circuit malfunction	4,035	5.7%	68.4%
1	P_442 and P_455	Small leak and gross leak	3,549	5.0%	73.4%
1	P_457	System leak detected	3,488	4.9%	78.3%
1	P_440, P_441, and P_446	Evap system malfunction, incorrect purge flow, and vent control circuit malfunction	1,727	2.4%	80.7%
3	P_441 and P_446	Incorrect purge flow, and vent control circuit malfunction	1,686	2.4%	83.1%
3	P_442, P_455, and P_456	Small leak, gross leak, and small leak detected	1,519	2.1%	85.2%
3	P_440 and P_446	Evap system malfunction and vent control circuit malfunction	1,389	1.9%	87.1%
2	P_442 and P_456	Small leak and small leak detected	1,175	1.6%	88.8%
2	P_440 and P_448	Evap system malfunction and evap canister vent control valve open	1,169	1.6%	90.4%
Multiple	Other Evap DTC set as 1 or 2 or 3 or more DTCs together	less than 500 in each instance	6,835	9.6%	100.0%
		Total	71,402		

Table E-4. For All Test Cycles With Evap Monitor Ready: Evap DTCs Most Commonly Found in State D Data

# of Evap codes	Specific P0 and P1 codes set	Generic description of DTCs set	Number of occurrences	Percentage	Cumulative percent
1	P_442	Small leak	9,451	14.2%	14.2%
1	P_456	Small leak detected	9,438	14.2%	28.4%
1	P_455	Gross leak	8,459	12.7%	41.1%
1	P_440	Evap system malfunction	8,087	12.2%	53.3%
1	P_443	Purge control valve circuit	6,929	10.4%	63.7%
1	P_441	Incorrect purge flow	4,446	6.7%	70.4%
1	P_457	System leak detected	3,199	4.8%	75.2%
1	P_446	Vent control circuit malfunction	2,598	3.9%	79.1%
1	P_452	Pressure sensor low input	1,677	2.5%	81.7%
2	P_442 and P_455	Small leak and gross leak	1,580	2.4%	84.0%
1	P_447	Vent control circuit open	1,284	1.9%	86.0%
3	P_442, P_455, and P_456	Small leak, gross leak, and small leak detected	913	1.4%	87.3%
1	P_450	Pressure sensor malfunction	695	1.0%	88.4%
3	P_440, P_441, and P_446	Evap system malfunction, incorrect purge flow, and vent control circuit malfunction	693	1.0%	89.4%
Multiple	Other Evap DTC set as 1 or 2 or 3 or more DTCs together	less than 500 in each instance	7,021	10.6%	100.0%
		Total	66,470		

Table E-5. For All Test Cycles with Evap Monitor Ready: Percent of all Leak-Related Evap DTCs (P442, 455, 456, or 457), by Calendar Year and Model Year: State A

Calendar Year		Model Year															
		1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
2004	Leak DTCs	980	2,502	5,285	2,256	5,940	1,430	911	944	425	8	.	.	.	.	.	.
	All Evap DTCs	10,678	7,638	11,756	6,140	13,535	2,969	2,059	1,420	525	8	.	.	.	.	.	.
	% of all DTCs that are leaks	9.2%	32.8%	45.0%	36.7%	43.9%	48.2%	44.2%	66.5%	81.0%	100.0%	.	.	.	.	.	.
2005	Leak DTCs	597	3,906	3,724	4,398	1,706	1,472	551	382	286	83	1	.	.	.	.	.
	All Evap DTCs	7,171	12,636	8,092	12,960	3,330	2,740	1,210	684	414	111	1	.	.	.	.	.
	% of all DTCs that are leaks	8.3%	30.9%	46.0%	33.9%	51.2%	53.7%	45.5%	55.8%	69.1%	74.8%	100.0%	.	.	.	.	.
2006	Leak DTCs	917	2,835	5,508	2,887	9,216	1,692	1,207	516	307	193	34	5	.	.	.	.
	All Evap DTCs	9,495	9,452	12,756	7,921	19,312	3,361	2,591	907	490	306	45	5	.	.	.	.
	% of all DTCs that are leaks	9.7%	30.0%	43.2%	36.4%	47.7%	50.3%	46.6%	56.9%	62.7%	63.1%	75.6%	100.0%	.	.	.	.
2007	Leak DTCs	632	3,487	4,033	4,211	4,127	12,003	1,458	1,163	436	212	65	26	.	.	.	.
	All Evap DTCs	6,646	12,175	9,418	12,776	7,979	23,780	3,032	1,985	674	315	91	32	.	.	.	.
	% of all DTCs that are leaks	9.5%	28.6%	42.8%	33.0%	51.7%	50.5%	48.1%	58.6%	64.7%	67.3%	71.4%	81.3%	.	.	.	.
2008	Leak DTCs	758	2,699	5,169	3,043	9,312	5,082	11,520	1,449	952	296	103	57	3	.	.	.
	All Evap DTCs	8,044	9,283	12,580	8,688	19,051	9,362	24,685	2,541	1,593	409	138	65	5	.	.	.
	% of all DTCs that are leaks	9.4%	29.1%	41.1%	35.0%	48.9%	54.3%	46.7%	57.0%	59.8%	72.4%	74.6%	87.7%	60.0%	.	.	.
2009	Leak DTCs	625	3,173	4,066	4,265	4,754	11,357	4,840	14,038	1,215	650	159	69	15	4	.	.
	All Evap DTCs	6,176	11,455	10,028	13,022	9,712	23,820	9,137	24,073	2,001	926	205	86	16	4	.	.
	% of all DTCs that are leaks	10.1%	27.7%	40.5%	32.8%	48.9%	47.7%	53.0%	58.3%	60.7%	70.2%	77.6%	80.2%	93.8%	100.0%	.	.
2010	Leak DTCs	775	2,591	4,963	3,272	8,720	5,653	11,644	4,730	11,927	920	375	113	24	10	7	.
	All Evap DTCs	6,947	8,724	12,680	9,490	18,935	11,436	26,169	8,076	20,839	1,376	498	140	28	15	7	.
	% of all DTCs that are leaks	11.2%	29.7%	39.1%	34.5%	46.1%	49.4%	44.5%	58.6%	57.2%	66.9%	75.3%	80.7%	85.7%	66.7%	100.0%	0.0%

Table E-6. For All Test Cycles with Evap Monitor Ready: Percent of all Leak-Related Evap DTCs (P442, 455, 456, or 457), by Calendar Year and Model Year: State B

Calendar Year		Model Year															
		1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
2007	Leak DTCs	72	276	337	199	376	589	598	525	261	.	.	.	.	.	.	.
	All Evap DTCs	825	993	908	716	809	943	946	730	365	.	.	.	.	.	.	.
	% of all DTCs that are leaks	8.7%	27.8%	37.1%	27.8%	46.5%	62.5%	63.2%	71.9%	71.5%	.	.	.	.	.	.	.
2008	Leak DTCs	70	262	363	261	460	781	804	685	366	230	.	.	.	.	.	.
	All Evap DTCs	749	992	981	875	990	1,201	1,266	963	502	265	.	.	.	.	.	.
	% of all DTCs that are leaks	9.3%	26.4%	37.0%	29.8%	46.5%	65.0%	63.5%	71.1%	72.9%	86.8%	.	.	.	.	.	.
2009	Leak DTCs	65	274	341	263	447	858	1,002	901	585	341	229	.	.	.	.	.
	All Evap DTCs	699	982	965	912	1,022	1,382	1,530	1,264	759	395	286	.	.	.	.	.
	% of all DTCs that are leaks	9.3%	27.9%	35.3%	28.8%	43.7%	62.1%	65.5%	71.3%	77.1%	86.3%	80.1%	.	.	.	.	.
2010	Leak DTCs	73	243	324	275	476	857	917	938	666	462	372	213	.	.	.	.
	All Evap DTCs	707	1,021	1,018	929	1,036	1,438	1,485	1,353	899	539	455	295	.	.	.	.
	% of all DTCs that are leaks	10.3%	23.8%	31.8%	29.6%	45.9%	59.6%	61.8%	69.3%	74.1%	85.7%	81.8%	72.2%	.	.	.	.
2011	Leak DTCs	38	221	306	278	404	753	870	920	682	542	459	307	151	.	.	.
	All Evap DTCs	647	963	974	942	983	1,353	1,499	1,301	892	631	542	414	197	.	.	.
	% of all DTCs that are leaks	5.9%	22.9%	31.4%	29.5%	41.1%	55.7%	58.0%	70.7%	76.5%	85.9%	84.7%	74.2%	76.6%	.	.	.
2012	Leak DTCs	56	204	284	240	446	720	832	941	730	593	522	366	197	79	.	.
	All Evap DTCs	583	876	954	910	1,072	1,357	1,487	1,388	953	707	652	492	276	102	.	.
	% of all DTCs that are leaks	9.6%	23.3%	29.8%	26.4%	41.6%	53.1%	56.0%	67.8%	76.6%	83.9%	80.1%	74.4%	71.4%	77.5%	.	.

Table E-7. For All Test Cycles with Evap Monitor Ready: Percent of all Leak-Related Evap DTCs (P442, 455, 456, or 457), by Calendar Year and Model Year: State C

Calendar Year		Model Year															
		1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
2005	Leak DTCs	93	574	428	482	440	1,385	394	121	24	12	.	.	.	.	.	.
	All Evap DTCs	1,252	2,554	1,555	1,446	837	1,962	614	162	34	14	.	.	.	.	.	.
	% of all DTCs that are leaks	7.4%	22.5%	27.5%	33.3%	52.6%	70.6%	64.2%	74.7%	70.6%	85.7%	.	.	.	.	.	.
2006	Leak DTCs	108	390	689	354	850	907	1,563	386	65	18	15	1	.	.	.	.
	All Evap DTCs	1,538	1,688	2,197	1,126	1,677	1,321	2,287	566	108	23	16	2	.	.	.	.
	% of all DTCs that are leaks	7.0%	23.1%	31.4%	31.4%	50.7%	68.7%	68.3%	68.2%	60.2%	78.3%	93.8%	50.0%	.	.	.	.
2007	Leak DTCs	83	594	590	635	745	1,839	1,069	1,548	302	68	21	12	.	.	.	.
	All Evap DTCs	1,073	2,260	1,858	1,943	1,431	2,729	1,580	2,044	407	75	27	14	.	.	.	.
	% of all DTCs that are leaks	7.7%	26.3%	31.8%	32.7%	52.1%	67.4%	67.7%	75.7%	74.2%	90.7%	77.8%	85.7%	.	.	.	.
2008	Leak DTCs	96	337	672	428	1,129	1,174	2,154	973	797	189	40	14	4	.	.	.
	All Evap DTCs	1,224	1,403	2,035	1,415	2,072	1,735	3,203	1,348	1,120	211	53	19	4	.	.	.
	% of all DTCs that are leaks	7.8%	24.0%	33.0%	30.2%	54.5%	67.7%	67.2%	72.2%	71.2%	89.6%	75.5%	73.7%	100.0%	.	.	.
2009	Leak DTCs	57	384	482	549	670	1,555	1,145	1,931	542	503	151	36	21	2	.	.
	All Evap DTCs	688	1,587	1,424	1,749	1,331	2,445	1,754	2,597	737	615	182	43	28	3	.	.
	% of all DTCs that are leaks	8.3%	24.2%	33.8%	31.4%	50.3%	63.6%	65.3%	74.4%	73.5%	81.8%	83.0%	83.7%	75.0%	66.7%	.	.
2010	Leak DTCs	10	43	50	67	115	159	233	147	125	43	51	7	2	2	1	.
	All Evap DTCs	82	147	168	180	238	257	360	214	180	53	65	8	2	2	1	.
	% of all DTCs that are leaks	12.2%	29.3%	29.8%	37.2%	48.3%	61.9%	64.7%	68.7%	69.4%	81.1%	78.5%	87.5%	100.0%	100.0%	100.0%	.

Table E-8. For All Test Cycles with Evap Monitor Ready: Percent of all Leak-Related Evap DTCs (P442, 455, 456, or 457), by Calendar Year and Model Year: State D

Calendar Year		Model Year															
		1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
2004	Leak DTCs	58	147	143	106	244	191	91	34	23	.	.	.	.	.	.	.
	All Evap DTCs	744	767	584	403	625	349	198	57	25	.	.	.	.	.	.	.
	% of all DTCs that are leaks	7.8%	19.2%	24.5%	26.3%	39.0%	54.7%	46.0%	59.6%	92.0%	.	.	.	.	.	.	.
2005	Leak DTCs	41	177	119	135	206	313	131	56	30	12	.	.	.	.	.	.
	All Evap DTCs	601	827	520	517	436	654	292	108	46	13	.	.	.	.	.	.
	% of all DTCs that are leaks	6.8%	21.4%	22.9%	26.1%	47.2%	47.9%	44.9%	51.9%	65.2%	92.3%	.	.	.	.	.	.
2006	Leak DTCs	53	208	179	137	350	422	508	136	71	34	8	2	.	.	.	.
	All Evap DTCs	736	986	807	580	825	708	1,102	233	111	46	8	2	.	.	.	.
	% of all DTCs that are leaks	7.2%	21.1%	22.2%	23.6%	42.4%	59.6%	46.1%	58.4%	64.0%	73.9%	100.0%	100.0%	.	.	.	.
2007	Leak DTCs	48	187	180	148	402	574	505	479	131	44	21	7	.	.	.	.
	All Evap DTCs	729	1,020	752	693	764	999	828	822	229	61	29	9	.	.	.	.
	% of all DTCs that are leaks	6.6%	18.3%	23.9%	21.4%	52.6%	57.5%	61.0%	58.3%	57.2%	72.1%	72.4%	77.8%	.	.	.	.
2008	Leak DTCs	57	206	197	157	399	495	580	290	416	92	38	29	3	.	.	.
	All Evap DTCs	739	1,008	834	621	860	848	1,085	487	762	129	44	33	4	.	.	.
	% of all DTCs that are leaks	7.7%	20.4%	23.6%	25.3%	46.4%	58.4%	53.5%	59.5%	54.6%	71.3%	86.4%	87.9%	75.0%	.	.	.
2009	Leak DTCs	67	265	265	248	464	672	712	605	330	426	87	35	16	4	.	.
	All Evap DTCs	796	1,254	985	943	962	1,222	1,192	998	498	591	100	43	24	4	.	.
	% of all DTCs that are leaks	8.4%	21.1%	26.9%	26.3%	48.2%	55.0%	59.7%	60.6%	66.3%	72.1%	87.0%	81.4%	66.7%	100.0%	.	.
2010	Leak DTCs	70	286	319	253	594	784	998	584	640	309	390	71	35	17	2	.
	All Evap DTCs	1,004	1,474	1,282	1,030	1,280	1,376	1,777	907	1,090	423	475	95	42	20	2	.
	% of all DTCs that are leaks	7.0%	19.4%	24.9%	24.6%	46.4%	57.0%	56.2%	64.4%	58.7%	73.0%	82.1%	74.7%	83.3%	85.0%	100.0%	.
2011	Leak DTCs	79	419	337	381	614	1,244	1,220	1,144	608	655	329	350	73	15	6	1
	All Evap DTCs	1,066	2,094	1,420	1,499	1,342	2,183	1,975	1,825	946	916	450	440	93	21	10	2
	% of all DTCs that are leaks	7.4%	20.0%	23.7%	25.4%	45.8%	57.0%	61.8%	62.7%	64.3%	71.5%	73.1%	79.5%	78.5%	71.4%	60.0%	50.0%