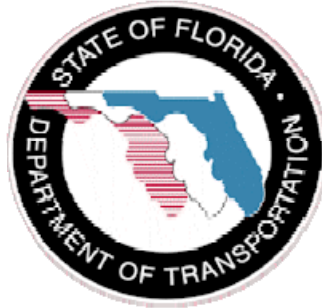


State of Florida
Department of Transportation



2013 Flexible Pavement Condition Survey
Facts and Figures

FDOT Office

State Materials Office

Research Report Number

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This team's hard work in collecting and processing the data, and organizing this report is greatly appreciated.

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**** Title 23 U.S.C. Section 409, provides that this information provided to you is not subject to discovery nor is it admissible into evidence.**

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Executive Summary

The Pavement Condition Unit is one of four functional units of the Pavement Materials System Section, which represents one of four areas of expertise within the State Materials Office (SMO).

Since 1985, this unit has been collecting, processing, and analyzing the information on the condition and performance of the State Roadway System on an annual basis. The information provided by the Pavement Condition Survey (PCS) Program has been critical to the Department's effort to support informed highway planning, policy, and decision making at the State and local levels. This includes the apportionment and allocation of funding needs to the Districts, as well as the determination of appropriate cost-effective strategies to rehabilitate and preserve existing highway transportation infrastructure.

All roadway sections are rated in terms of varying severity levels and extent of specific distresses, namely, (1) cracking, (2) rutting, and (3) ride quality. The PCS evaluates the pavement lane that has deteriorated most in each roadway direction. The beginning and ending of pavement sections to be rated are determined by construction limits or uniformity of conditions.

Once the survey in a particular county is completed, the Verification Report is forwarded to the appropriate district for review. Any concerns are addressed and resolved prior to the data reporting being finalized. The Central Pavement Management Office is responsible for the data processing and analysis, and for making the data available for use by the Department, consultants, and others. The Central Program Development Office is responsible for reporting the condition of the State Highway System for Pavement Management purposes.

The present report provides essential information on the current condition of the flexible pavement sections of the Florida State Highway System as part of the PCS program. It also includes a summary of the historical condition rating data.

To obtain an electronic copy of this and other reports, and to learn more about our program, please visit the Pavement Materials Division at SMO's website:

Intranet <http://materials.dot.state.fl.us/>

Internet <http://www.dot.state.fl.us/statematerialsoffice/>

Section I

Introduction

The Pavement Condition Unit is responsible for the Department's Annual Pavement Condition Survey. The survey is conducted on the entire State-maintained Highway System, on an annual basis.

The survey is conducted by a highly-trained and experienced staff, and requires each of these four area staff specialists about 25 weeks of travel each year to complete. Since 1986, the PCS program has seen close to a 20 percent increase in surveyed lane miles (refer to chart on page 4).

The annual PCS is used to accomplish the following main objectives:

- Determine the present condition of the State Roadway System
- Compare the present to past conditions
- Predict deterioration rates
- Predict rehabilitation funding needs
- Provide justification for project rehabilitation
- Provide justification for annual rehabilitation budget
- Provide justification for distribution of the funds to Districts

The PCS is conducted to monitor the following distress criteria, (1) cracking, (2) rutting, and (3) ride quality. For each distress type, the pavement sections are rated on a 0 to 10 scale, where a rating of 10 indicates a section in excellent condition. Currently, any section with a rating of 6 or less is eligible for rehabilitation.

Cracking is a subjective rating conducted visually from windshield survey, from the roadway shoulder, or from pavement images. Rut and ride are measured using an automated vehicle-mounted profiling system that measures the longitudinal profile of the roadway. The ride quality is quantified in terms of Ride Number (RN), which is the mathematical processing of longitudinal profile measurements to produce an estimate of a user's perception of ride quality in accordance with ASTM E1489 standard.

In order to ensure maximum accuracy and repeatability of the data collected, the testing equipment is well maintained and routinely calibrated. In addition, over 150 edit checks are currently implemented to test both the data accuracy and compliance with other parameters of the Pavement Management System (PMS). Comparisons of annual PCS data with earlier years to review trends and identify potential errors are also performed. When necessary, efforts are made to upgrade the survey equipment and to improve the data analysis software to increase efficiency and effectiveness of data collection and processing. These types of improvements now allow in-depth analysis of any segment of the highway system and on-time completion of the PCS while maintaining a high level of accuracy.

For more detailed information about the Pavement Condition Surveys, please refer to the latest edition of the Rigid and Flexible Pavement Condition Survey Handbooks, which can be accessed online at:

<http://materials.dot.state.fl.us/smo/pavement/performance/pcs/pavementconditionsurvey.htm>

The facts and figures contained in this report are for flexible pavements only, which represent approximately 97% of the entire State Highway System.

Observations

The review and analysis of PCS historical Distress Ratings for flexible pavements have resulted in the following statewide observations:

- The average Crack Rating has remained stable from 1996 to 2008 with a mean rating of 8.14 and a range of 8.02 to 8.27. Since then the rating has increased significantly and is now 8.79 in 2013. This change is largely due to a increase of the number of miles resurfaced beginning in 2008.
- The average Rut Rating has gradually improved from 8.81 in 1996 to 9.12 in 2013. The mean rating over this period is 8.92, or about 0.13 inches average rutting for the entire state maintained highway system.
- The average Ride Rating remained stable from 1996 to 2003 having a mean rating of 8.17. Prior to the 2004 PCS, Ride data was collected at 12 inch sample intervals. Beginning with the 2004 PCS, Ride data was collected at 6 inch sample intervals. This explains the decrease in Ride Rating from 8.13 in 2003 to 7.63 in 2004. The Ride Rating has remained constant for the last 9 years with an average of 7.67.
- 97.6% of the pavement sections rated in 2013 for cracking were within one point compared to the 2012 ratings.*
- 100% of the pavement sections rated in 2013 for rutting were within one point compared to the 2012 ratings.*
- 100% of the pavement sections rated in 2013 for ride were within one point compared to the 2012 ratings.*

* Note: Sections that had undergone notable changes such as new construction, or total rehabilitation were excluded from the analysis.

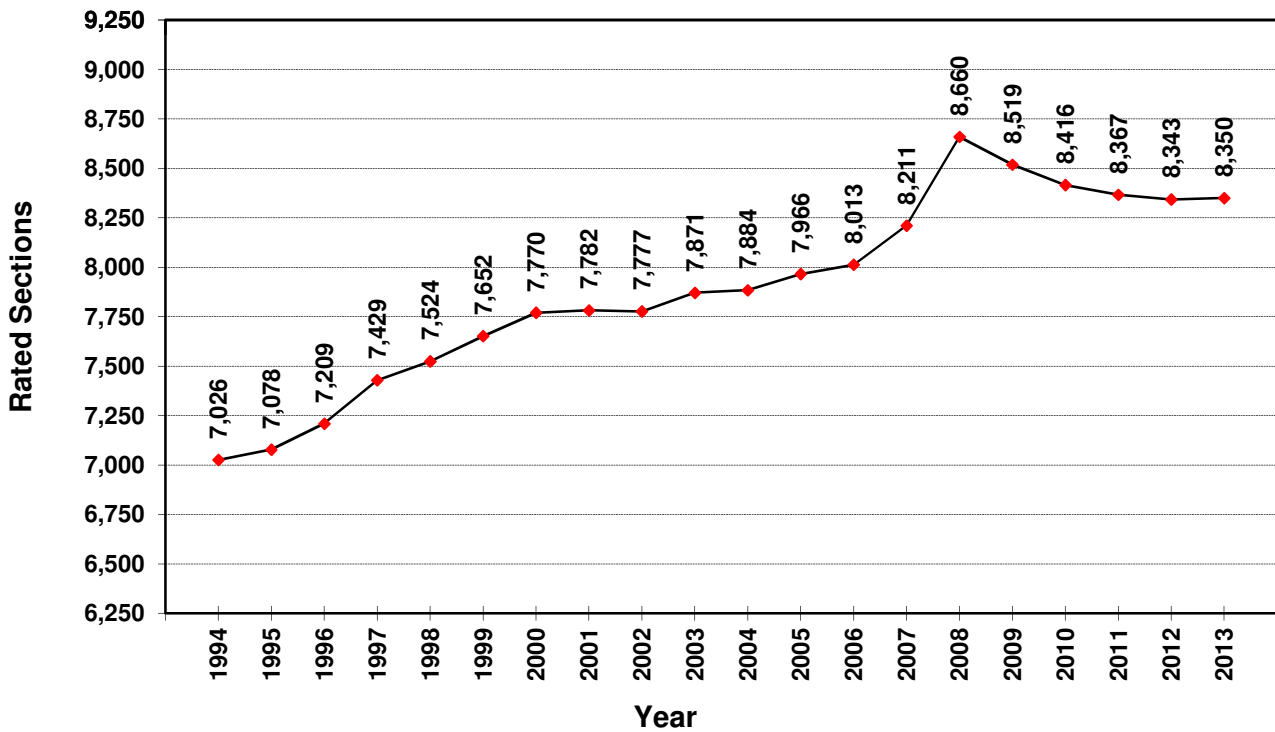
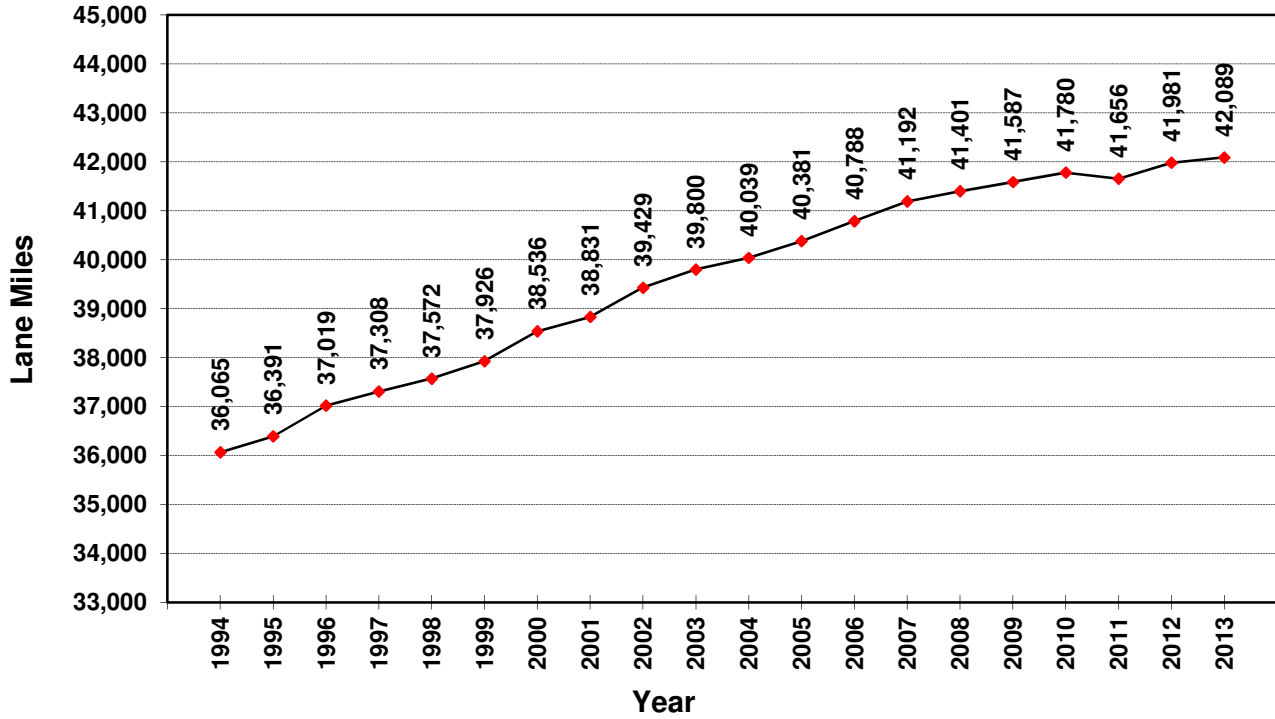
General Notes

- ~ For multi-lane roadways: The worst lane in each direction is rated (normally the outermost traffic lane).
- ~ For two lane roadways: The worst lane is rated (normally the same lane tested the previous year).
- ~ Rated sections are determined by construction limits or significant changes in visual condition of the pavement.
- ~ Crack Rating is subjective and collected visually, as a windshield survey or from the roadway shoulder. It is also rated based on the severity and extent of the distress for area inside and outside the wheel paths.
- ~ Flexible Pavement Condition Survey Production History (p. 4) is based on total lane miles, including no ride type, under construction type, and structures. All other graphs and tables are based on lane miles where given rating index (crack, rut, or ride) was measured.
- ~ Historical Distress Ratings by District (Section VI) and by System (Section VII) are based on Lane Miles for Crack Rating.

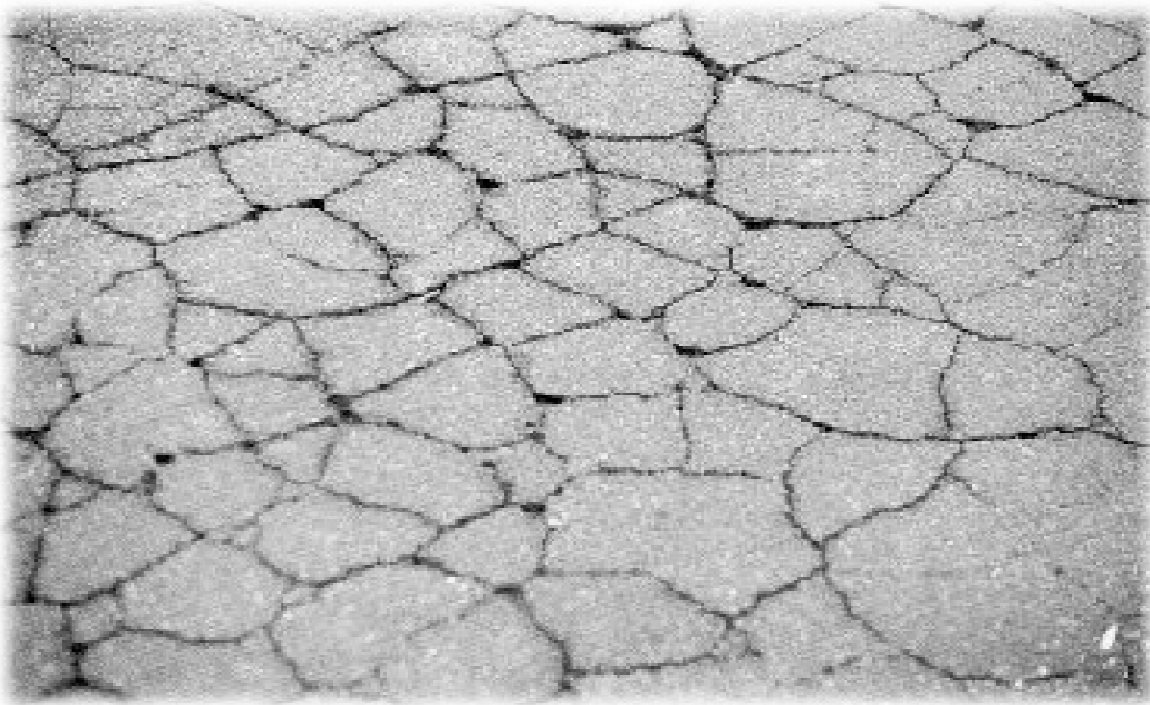
Flexible Pavement Condition Survey

Production History

Lane Miles / Rated Sections



Section II
Crack Rating
By
System and District



Section II

Crack Rating by System and District

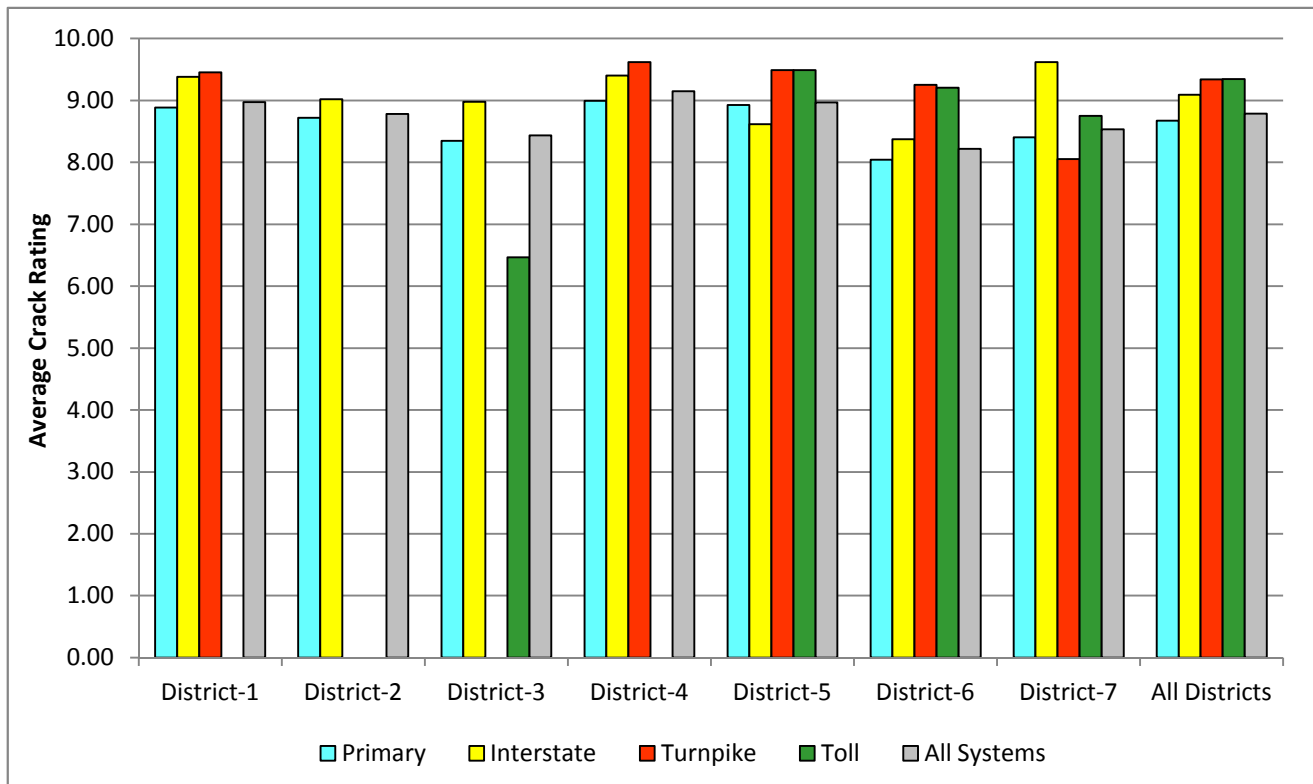
Crack Rating Criteria

- 1 Cracking is estimated as the combined percentage of distressed areas within the wheel paths (CW) and percentage of distressed areas outside of the wheel paths (CO). These percentages are estimated separately for each of the two areas.
- 2 There are three classes of cracking, the ratings of which are based upon severity level: 1B, II and III.
- 3 Only predominate class of cracking is used to establish a Crack Rating. However, the combination of individual percentages of all types of cracking is used to calculate the overall percentage of cracked pavement.
- 4 Crack Rating is rated on a 0 to 10 scale, where a rating of 10 represents a pavement in perfect condition. Currently, a rating of 6 or less makes pavement segments eligible for rehabilitation.
- 5 The Crack Rating is subtracted from a perfect score of 10.

$$\text{Crack Rating} = 10 - (\text{CW} + \text{CO})$$

Where: CW and CO are numerical factors for cracking within the wheel paths (CW) and outside of the wheel paths (CO). These factors are based on the severity and extent of the type of cracking.

2013 Crack Rating by System and District



Lane Miles

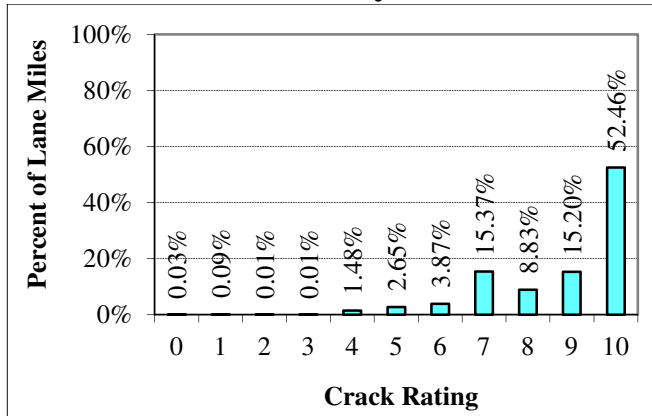
System	District-1	District-2	District-3	District-4	District-5	District-6	District-7	Statewide
Primary	4,774	6,115	5,296	4,051	5,242	2,197	3,051	30,726
Interstate	982	1,625	886	1,191	1,268	93	443	6,488
Turnpike	84	0	0	702	717	242	223	1,968
Toll	0	0	4	0	521	131	75	732
Statewide	5,839	7,741	6,185	5,945	7,748	2,663	3,792	39,913

Crack Rating

System	District-1	District-2	District-3	District-4	District-5	District-6	District-7	Statewide
Primary	8.88	8.72	8.35	8.99	8.93	8.04	8.41	8.67
Interstate	9.38	9.02	8.98	9.40	8.62	8.38	9.62	9.09
Turnpike	9.45			9.62	9.49	9.25	8.05	9.34
Toll			6.47		9.49	9.20	8.75	9.34
Statewide	8.97	8.78	8.44	9.15	8.96	8.22	8.53	8.79

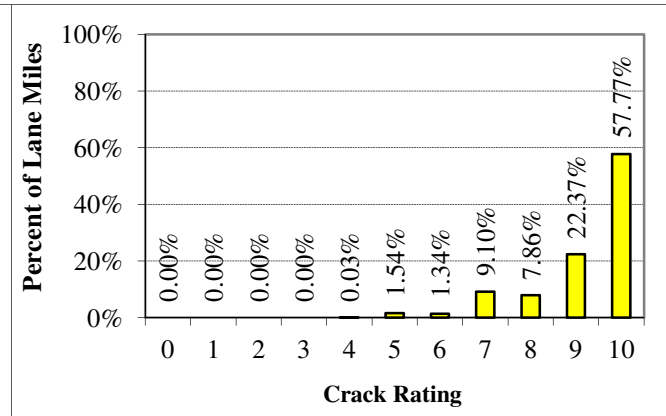
2013 Crack Distribution by System - Statewide

Primary



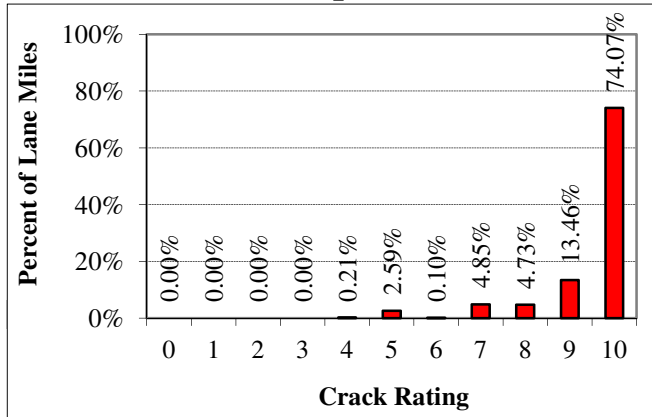
30726 Lane Miles, Mean = 8.67

Interstate



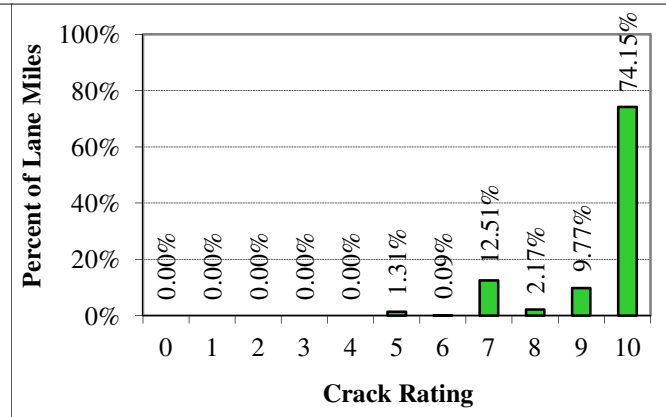
6488 Lane Miles, Mean = 9.09

Turnpike



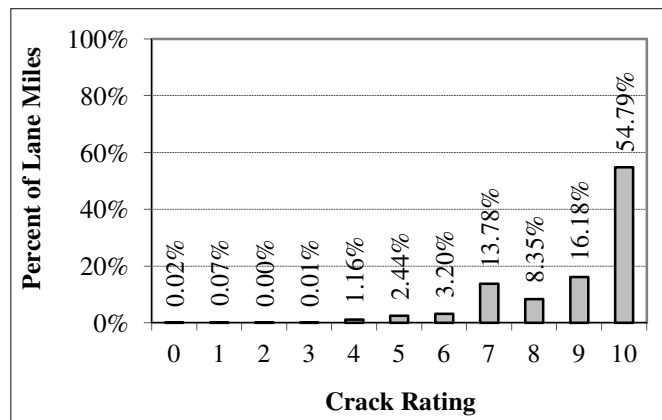
1968 Lane Miles, Mean = 9.34

Toll



732 Lane Miles, Mean = 9.34

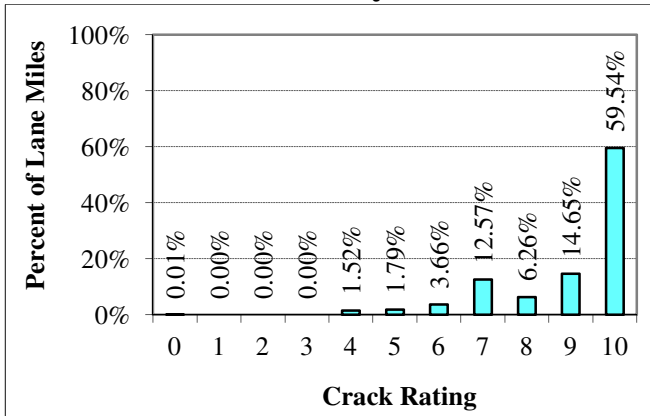
Statewide



39913 Lane Miles, Mean = 8.79

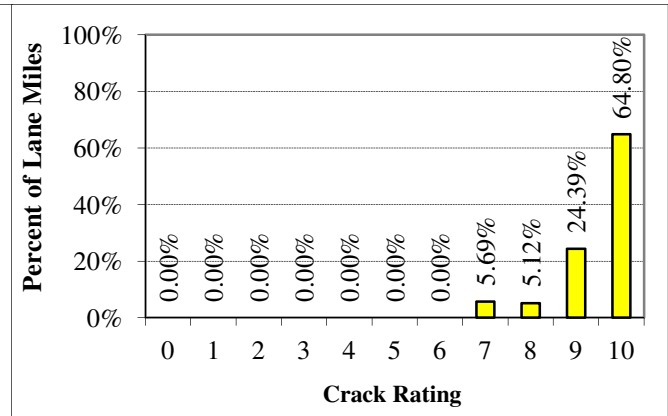
2013 Crack Distribution by System - District 1

Primary



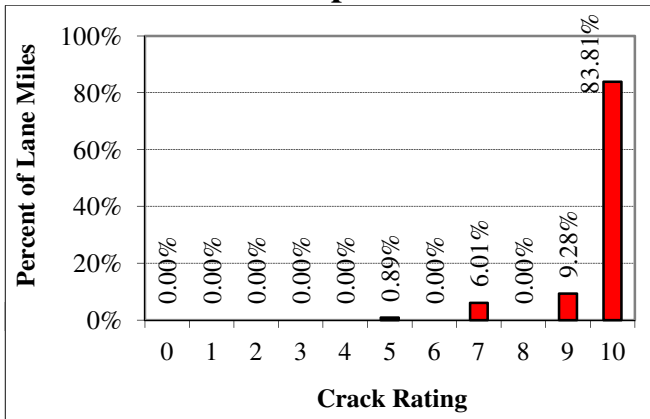
4774 Lane Miles, Mean = 8.88

Interstate



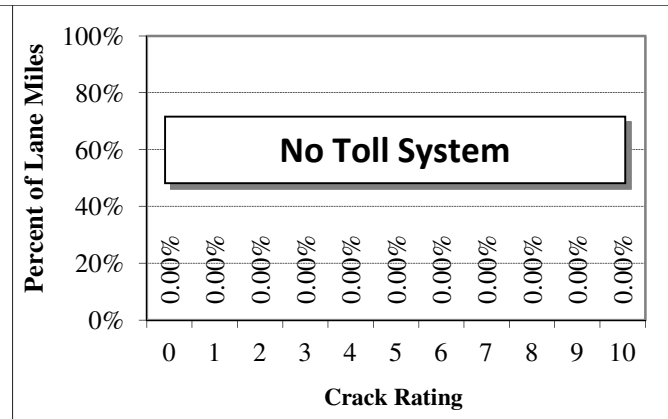
982 Lane Miles, Mean = 9.38

Turnpike



84 Lane Miles, Mean = 9.45

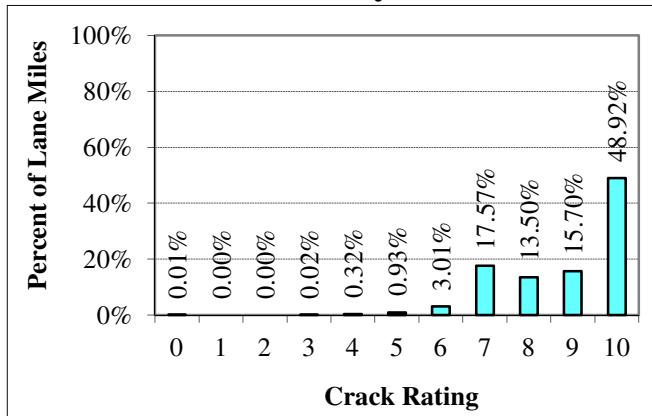
Toll



0 Lane Miles, Mean = N/A

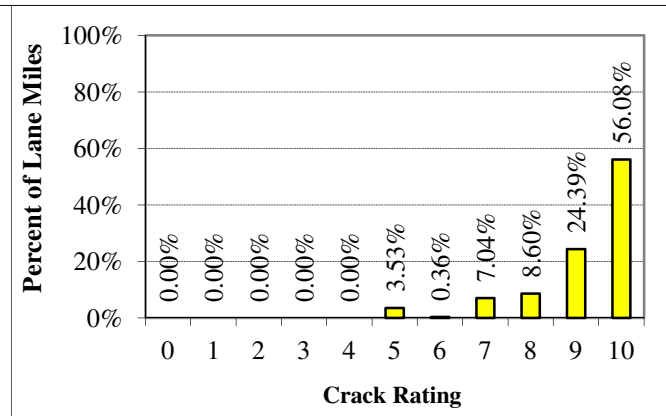
2013 Crack Distribution by System - District 2

Primary



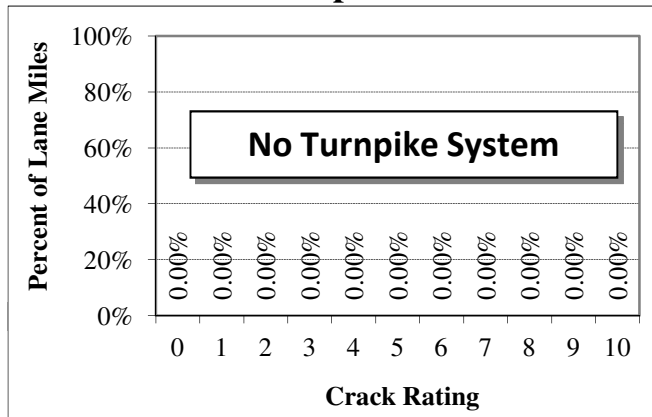
6115 Lane Miles, Mean = 8.72

Interstate



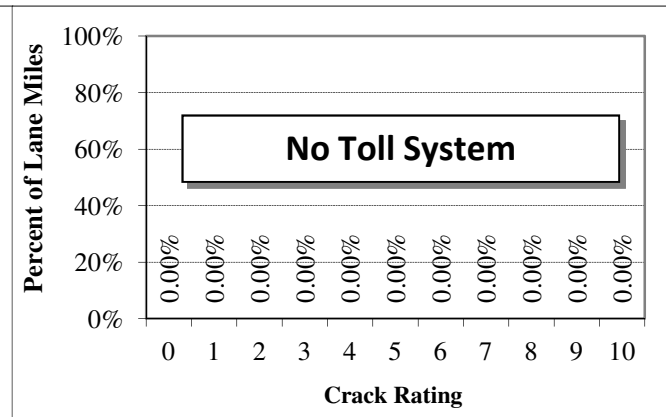
1625 Lane Miles, Mean = 9.02

Turnpike



0 Lane Miles, Mean = N/A

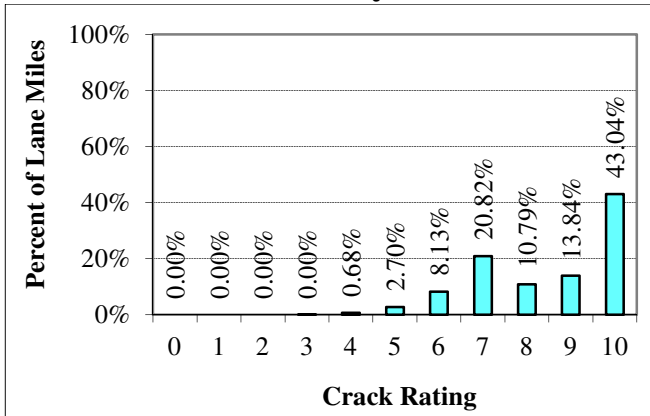
Toll



0 Lane Miles, Mean = N/A

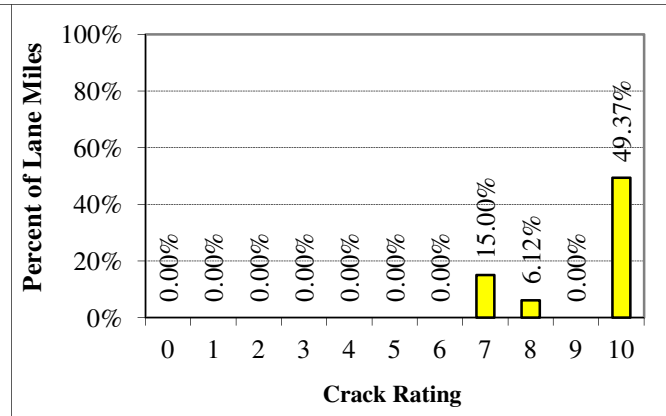
2013 Crack Distribution by System - District 3

Primary



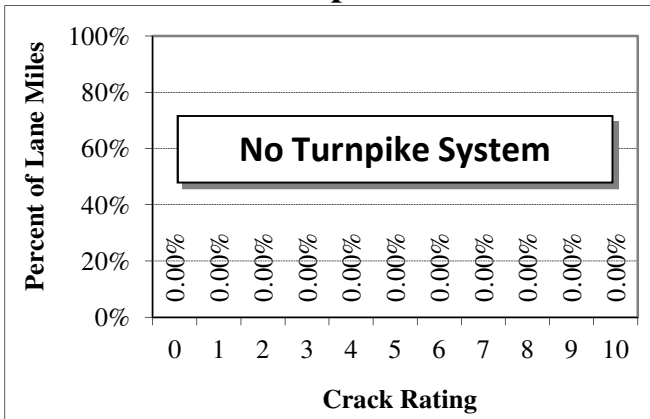
5296 Lane Miles, Mean = 8.35

Interstate



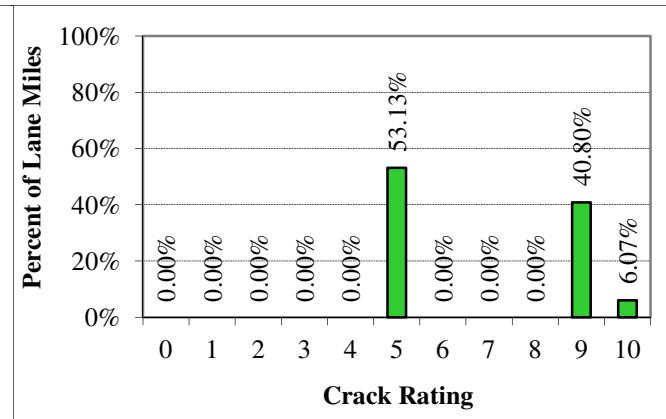
886 Lane Miles, Mean = 8.98

Turnpike



0 Lane Miles, Mean = N/A

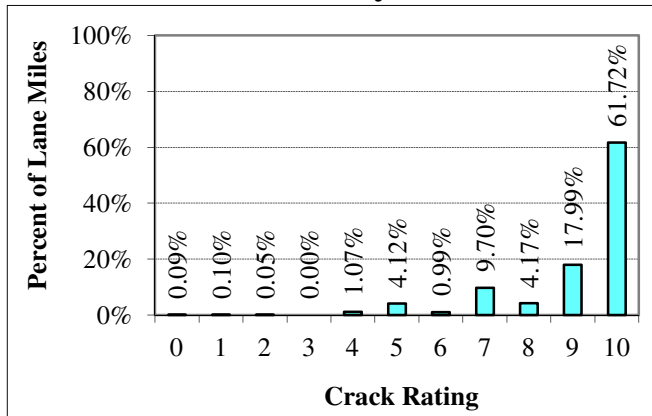
Toll



4 Lane Miles, Mean = 6.47

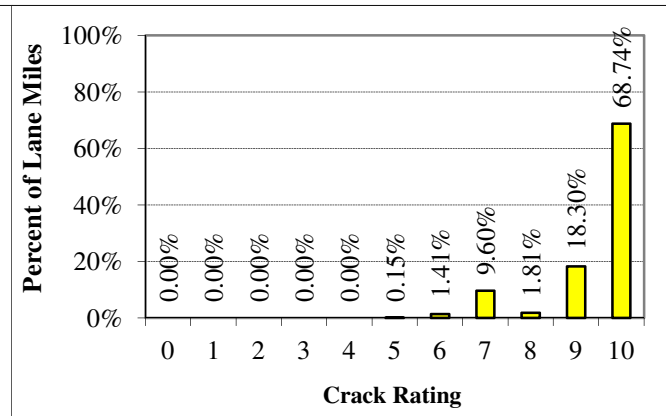
2013 Crack Distribution by System - District 4

Primary



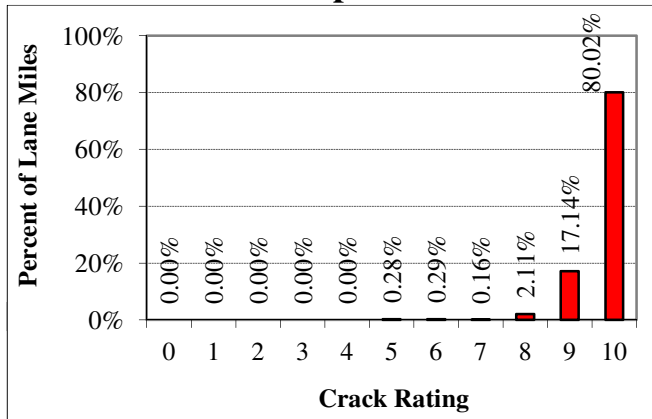
4051 Lane Miles, Mean = 8.99

Interstate



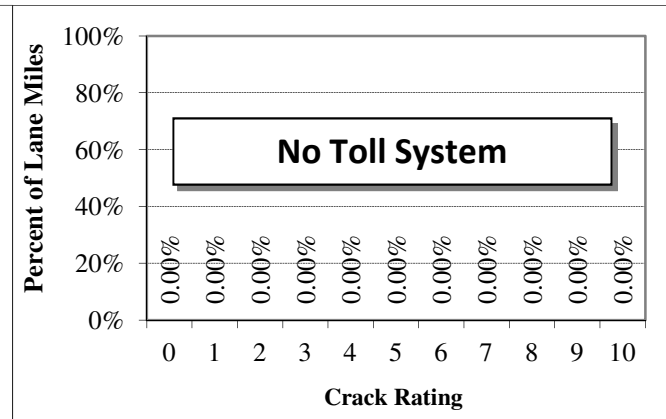
1191 Lane Miles, Mean = 9.4

Turnpike



702 Lane Miles, Mean = 9.62

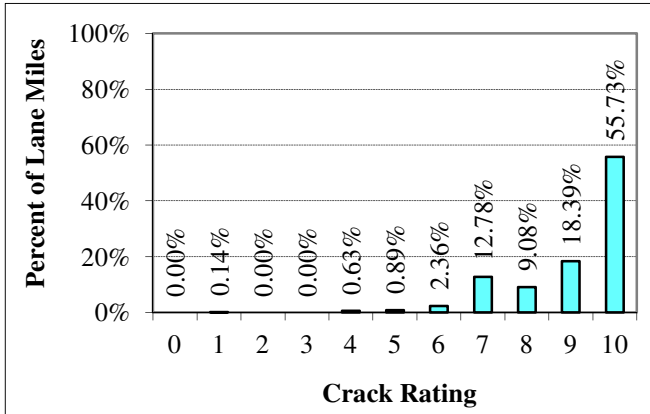
Toll



0 Lane Miles, Mean = N/A

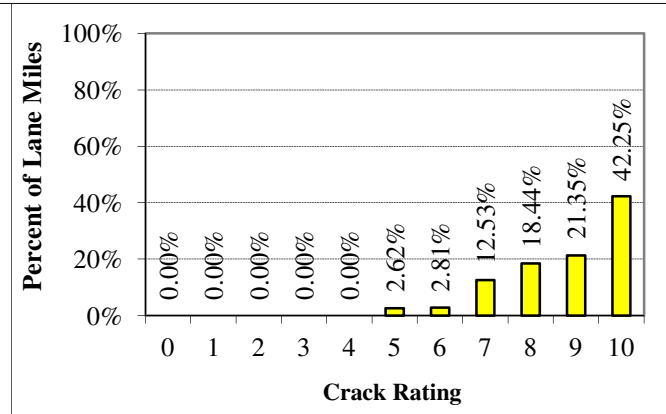
2013 Crack Distribution by System - District 5

Primary



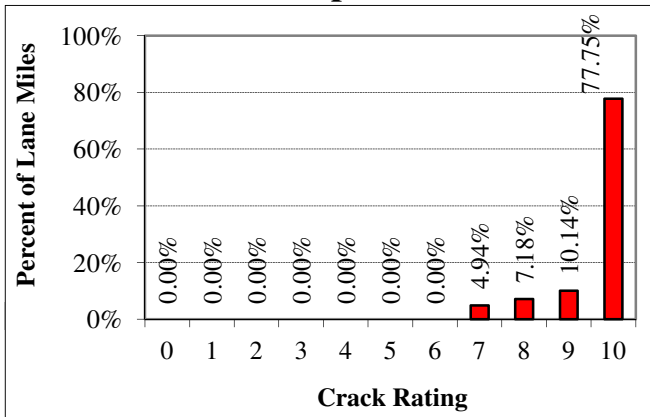
5242 Lane Miles, Mean = 8.93

Interstate



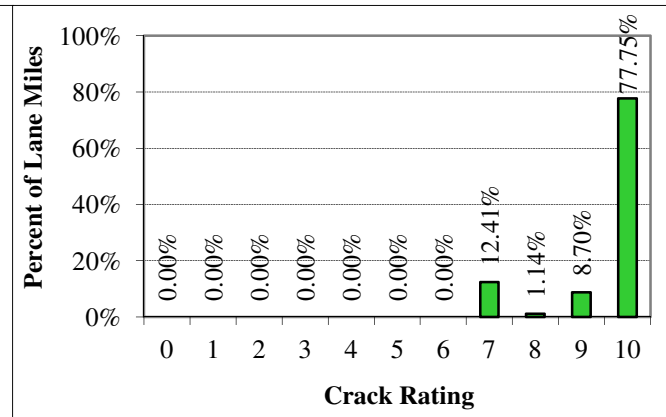
1268 Lane Miles, Mean = 8.62

Turnpike



717 Lane Miles, Mean = 9.49

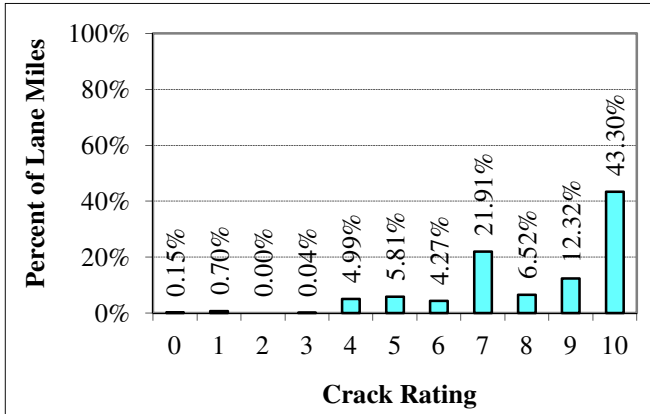
Toll



521 Lane Miles, Mean = 9.49

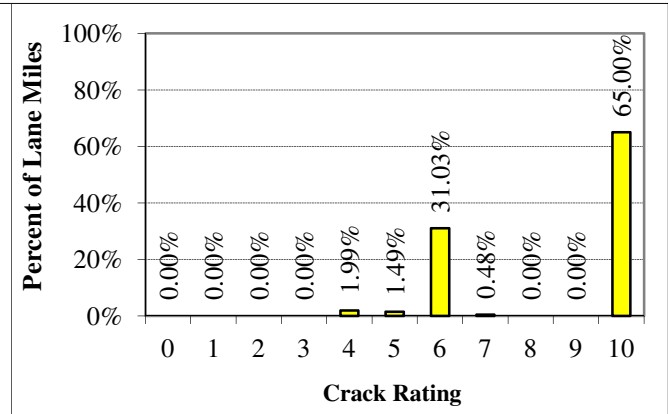
2013 Crack Distribution by System - District 6

Primary



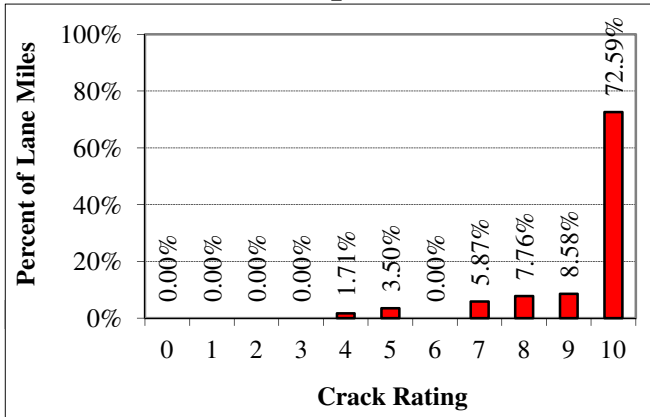
2197 Lane Miles, Mean = 8.04

Interstate



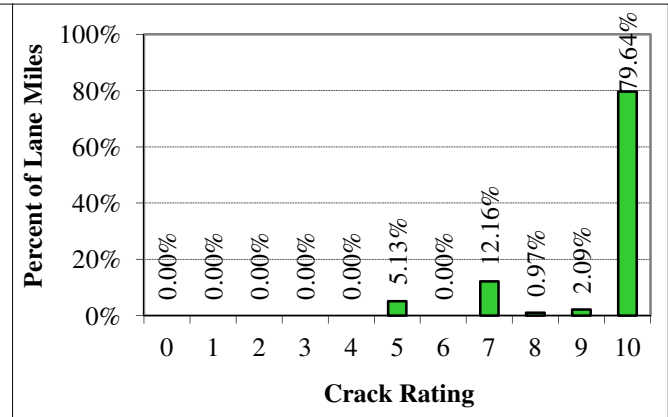
93 Lane Miles, Mean = 8.38

Turnpike



242 Lane Miles, Mean = 9.25

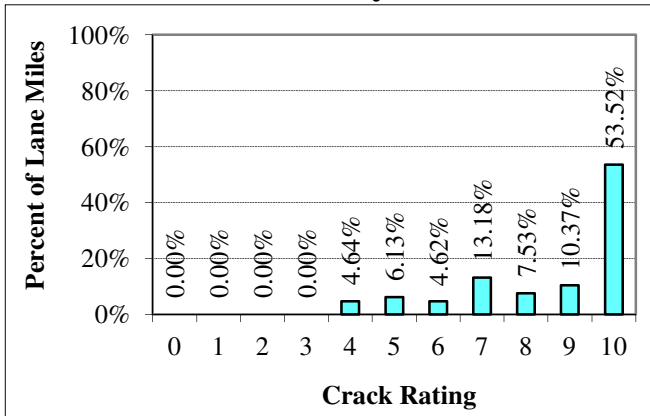
Toll



131 Lane Miles, Mean = 9.2

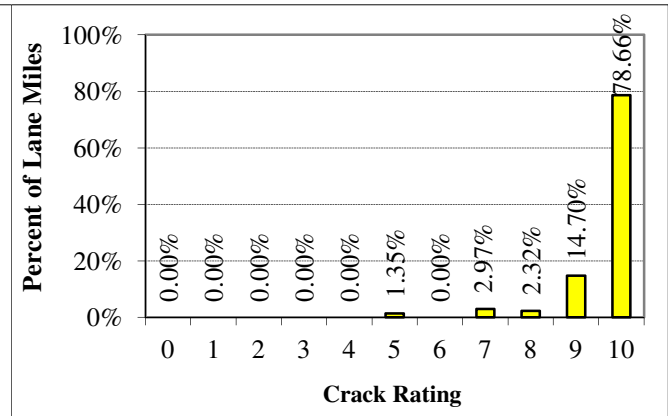
2013 Crack Distribution by System - District 7

Primary



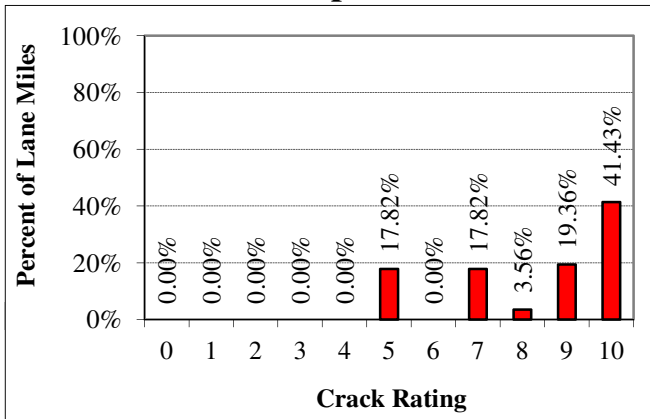
3051 Lane Miles, Mean = 8.41

Interstate



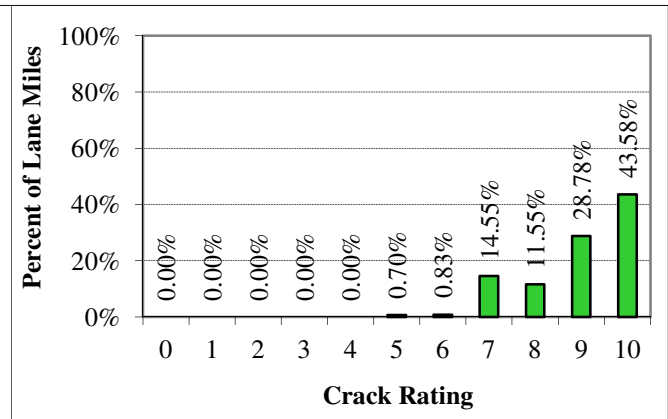
443 Lane Miles, Mean = 9.62

Turnpike



223 Lane Miles, Mean = 8.05

Toll



75 Lane Miles, Mean = 8.75

Section III
Rut Rating
By
System and District



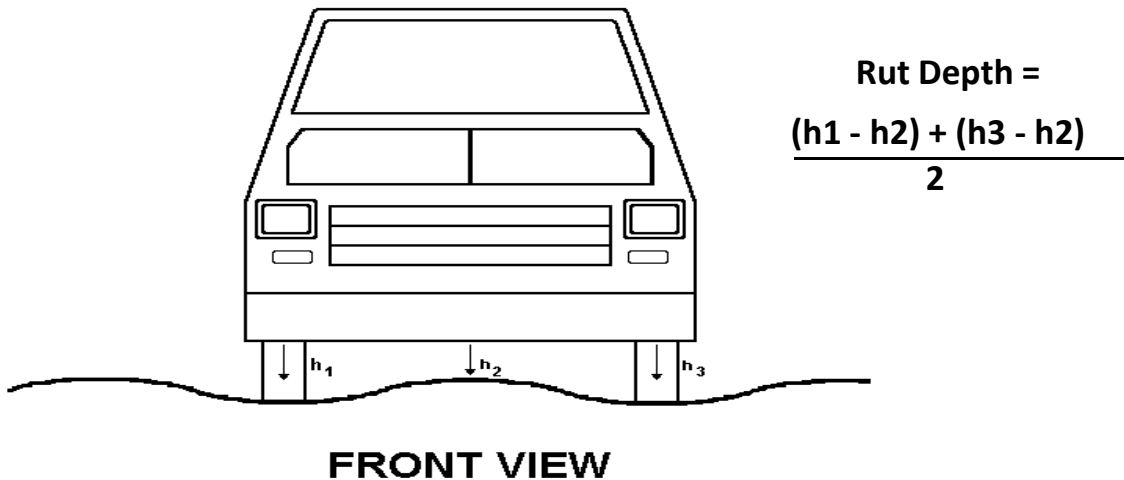
Section III

Rut Rating by System and District

Rut Rating Criteria

- 1 A rut is a continuous longitudinal depression deviating from a surface plane defined by transverse cross slope and longitudinal profile. This depression normally occurs in the wheel paths.
- 2 A rut depth is defined as the difference in elevation between the center of the wheel path and the center of the travel lane.
- 3 Rut depth is measured simultaneously with the ride values using an inertial profiler (see illustration on page 20).
- 4 FDOT inertial profilers measure rut depth at a frequency of 30 readings per inch when traveling at 60 mph. The measurements are then stored in 6 in. intervals for the survey.
- 5 The average rut depth for both wheel paths is recorded and then converted to a rating with a one point deduction for every eighth (1/8) in. rut depth.
- 6 Rut depth is rated on a 0 to 10 scale, where a 10 represents a pavement with no rutting, while a rating of 6 indicates 1/2 in. of rutting. Currently, pavement sections with rut ratings of 6 or less are eligible for rehabilitation.

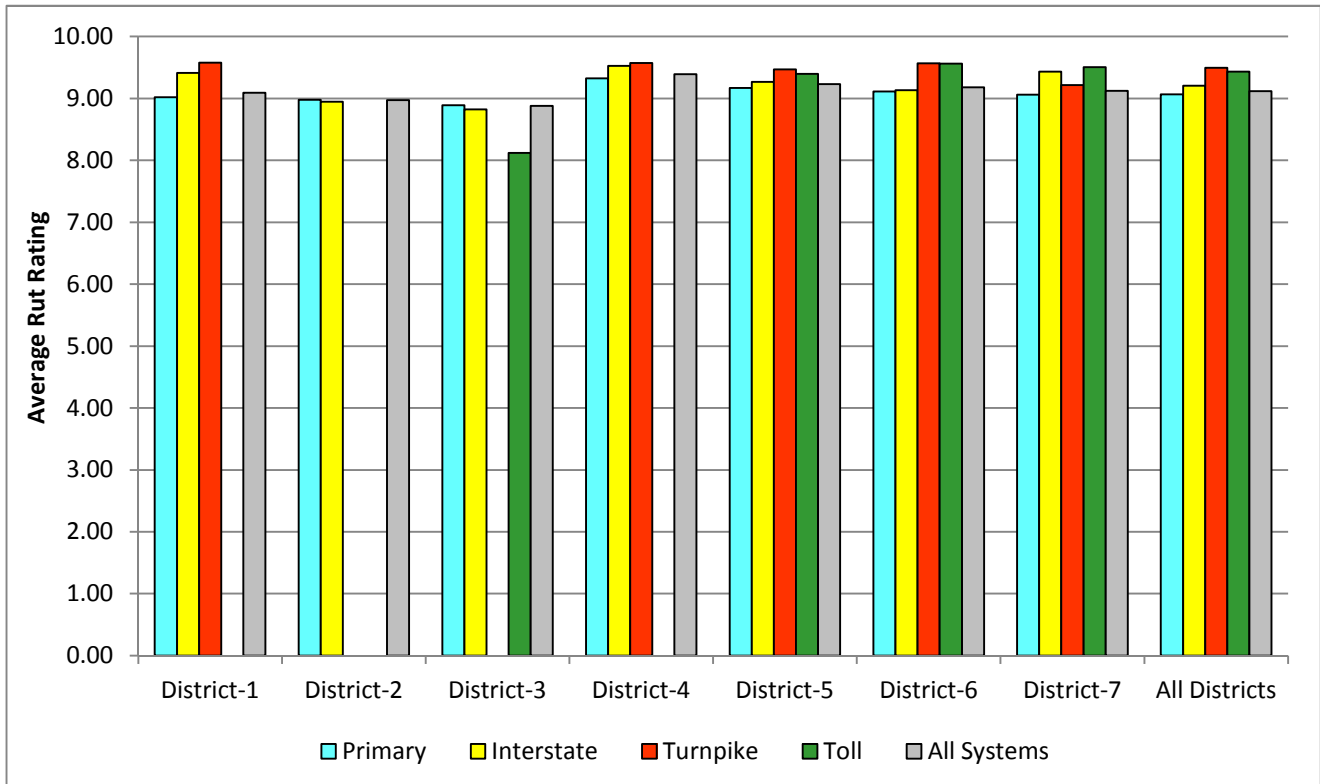
Rut depth for each measurement is calculated using the following equation:



Where: h1, h2, and h3, are the respective distances between the sensor locations and the roadway surface directly below each sensor (see diagram below).

FDOT inertial profilers have three laser sensors (to measure ride and rut), combined with two accelerometers and a data acquisition computer system that measures and stores a pavement's longitudinal and transverse profiles while in motion.

2013 Rut Rating by System and District



Lane Miles

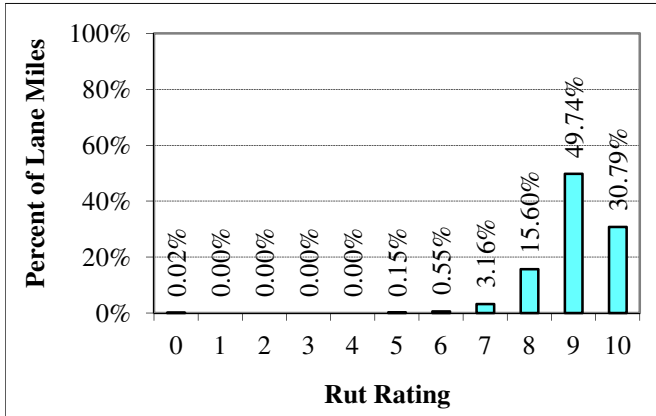
System	District-1	District-2	District-3	District-4	District-5	District-6	District-7	Statewide
Primary	4,774	6,115	5,296	4,051	5,242	2,197	3,051	30,726
Interstate	982	1,625	886	1,191	1,268	93	443	6,488
Turnpike	84	0	0	702	717	242	223	1,968
Toll	0	0	4	0	521	131	75	732
Statewide	5,839	7,741	6,185	5,945	7,748	2,663	3,792	39,913

Rut Rating

System	District-1	District-2	District-3	District-4	District-5	District-6	District-7	Statewide
Primary	9.02	8.98	8.89	9.32	9.17	9.11	9.06	9.06
Interstate	9.41	8.95	8.82	9.53	9.27	9.13	9.43	9.21
Turnpike	9.58			9.57	9.47	9.57	9.21	9.50
Toll			8.12		9.40	9.56	9.50	9.43
Statewide	9.09	8.97	8.88	9.39	9.23	9.18	9.12	9.12

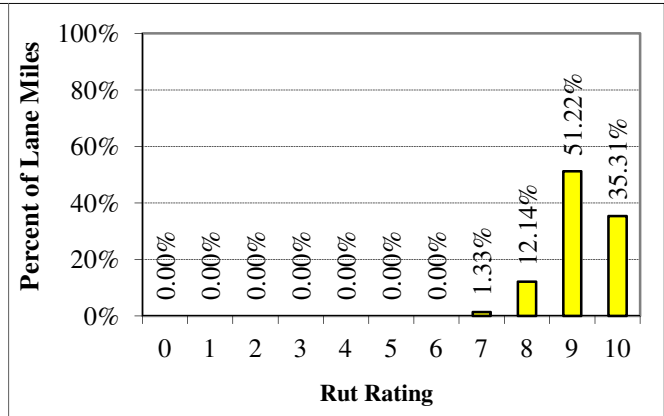
2013 Rut Distribution by System - Statewide

Primary



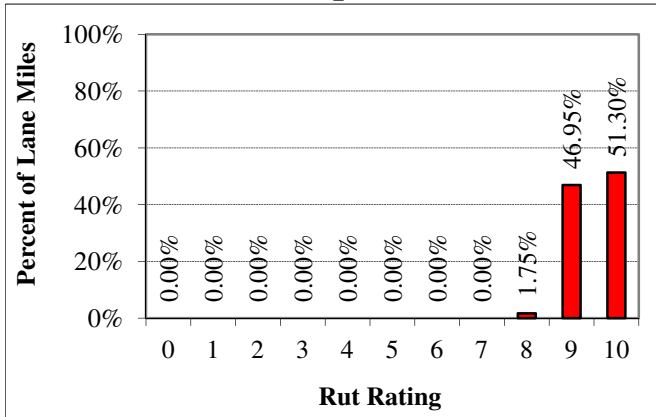
30726 Lane Miles, Mean = 9.06

Interstate



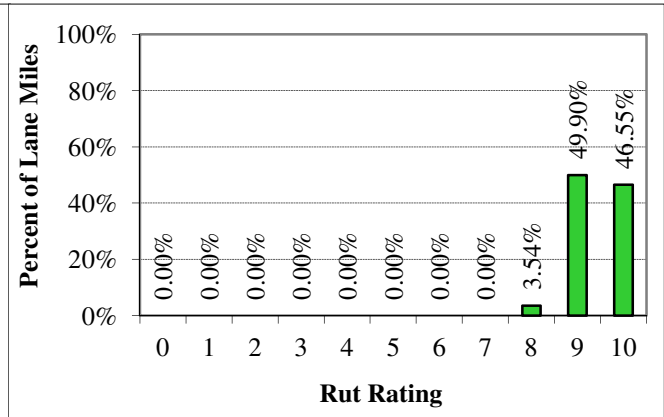
6488 Lane Miles, Mean = 9.21

Turnpike



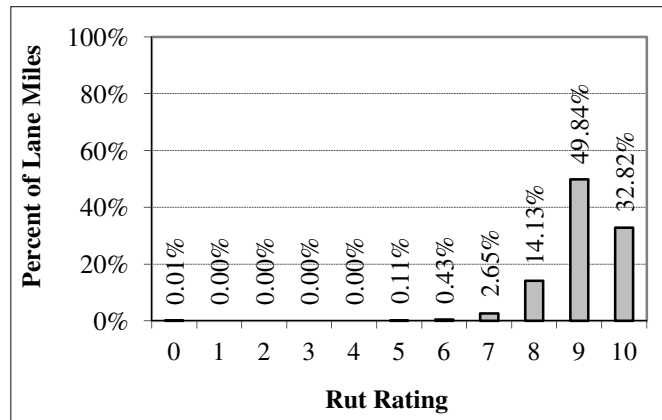
1968 Lane Miles, Mean = 9.5

Toll



732 Lane Miles, Mean = 9.43

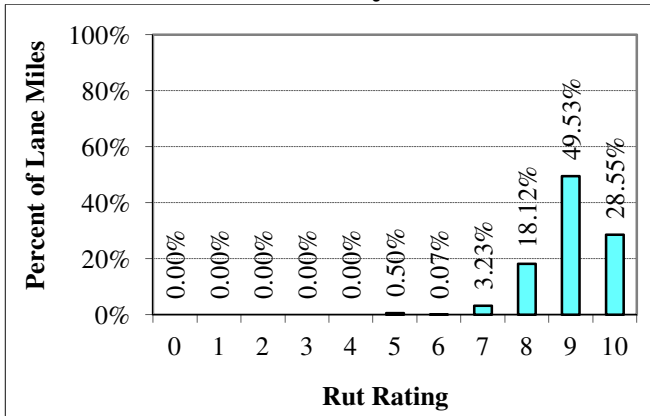
Statewide



39913 Lane Miles, Mean = 9.12

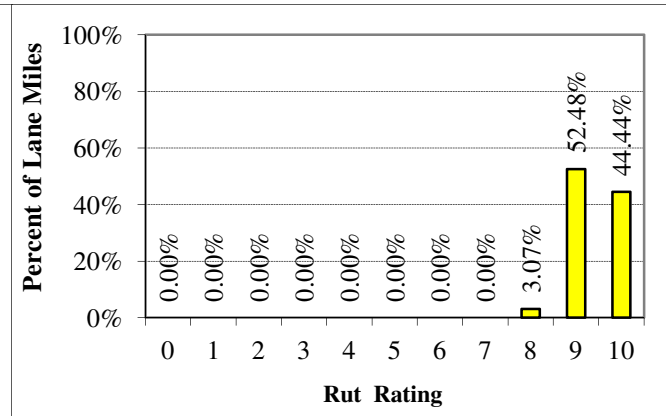
2013 Rut Distribution by System - District 1

Primary



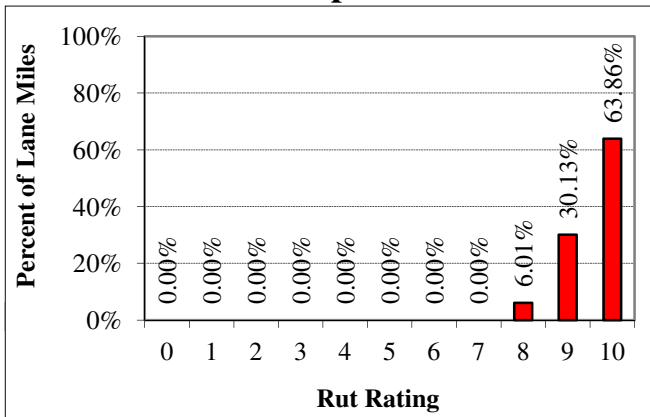
4774 Lane Miles, Mean = 9.02

Interstate



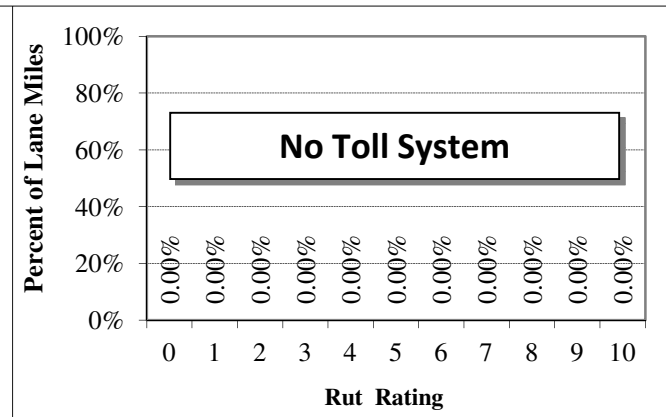
982 Lane Miles, Mean = 9.41

Turnpike



84 Lane Miles, Mean = 9.58

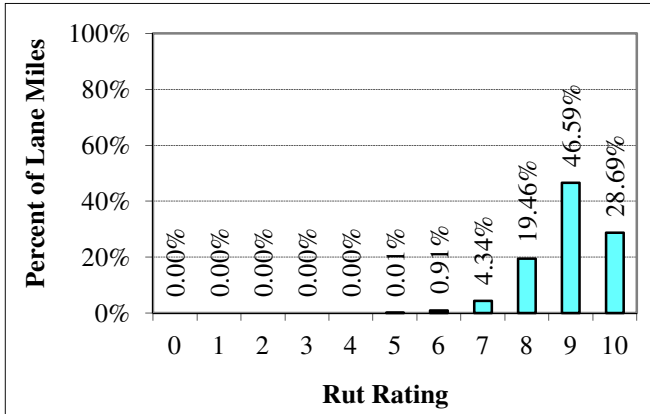
Toll



0 Lane Miles, Mean = N/A

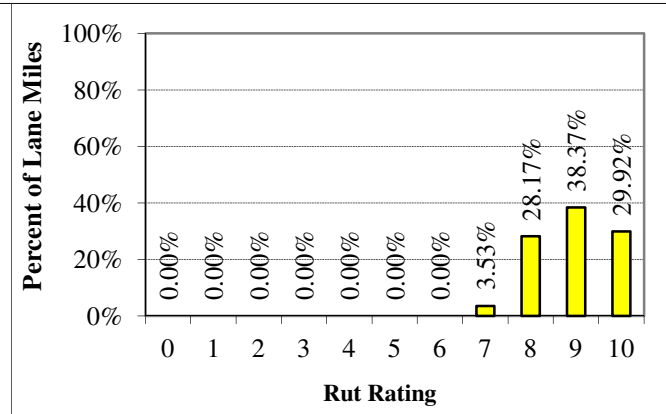
2013 Rut Distribution by System - District 2

Primary



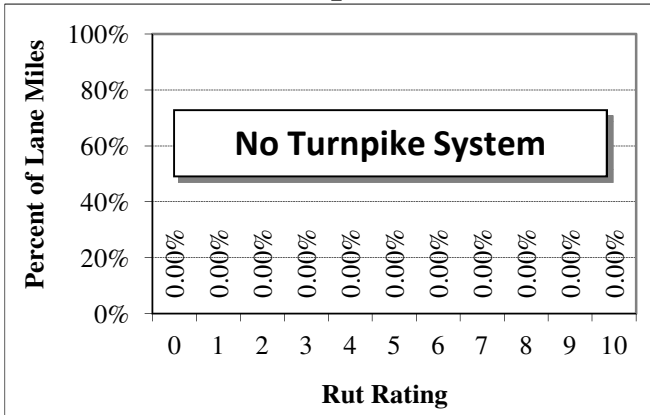
6115 Lane Miles, Mean = 8.98

Interstate



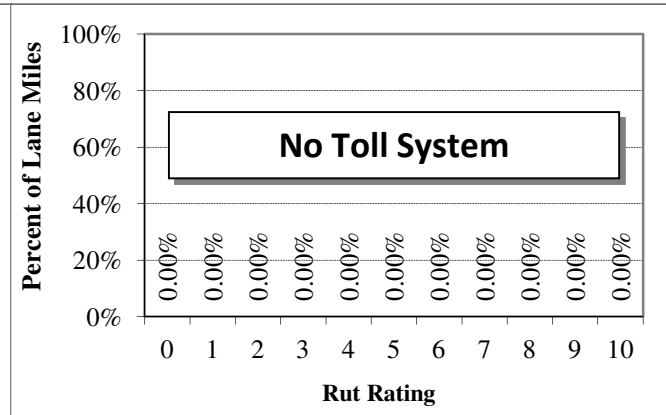
1625 Lane Miles, Mean = 8.95

Turnpike



0 Lane Miles, Mean = N/A

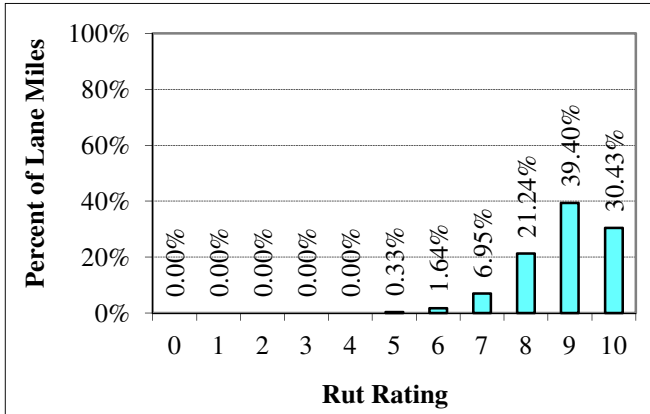
Toll



0 Lane Miles, Mean = N/A

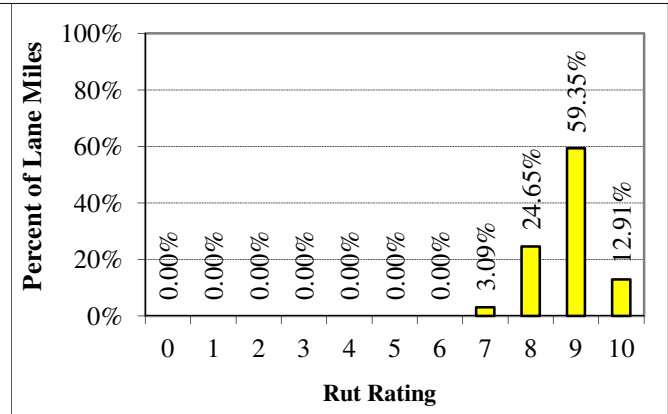
2013 Rut Distribution by System - District 3

Primary



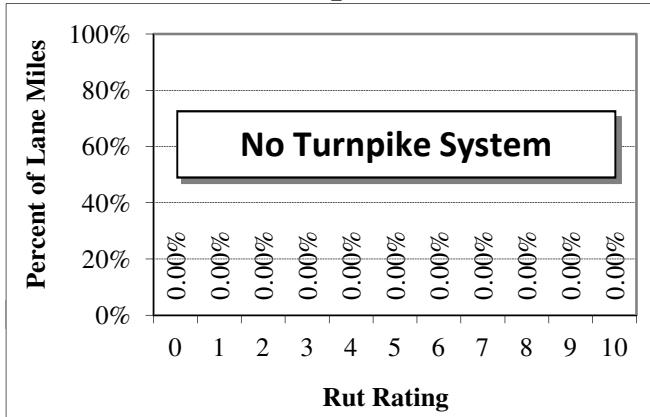
5296 Lane Miles, Mean = 8.89

Interstate



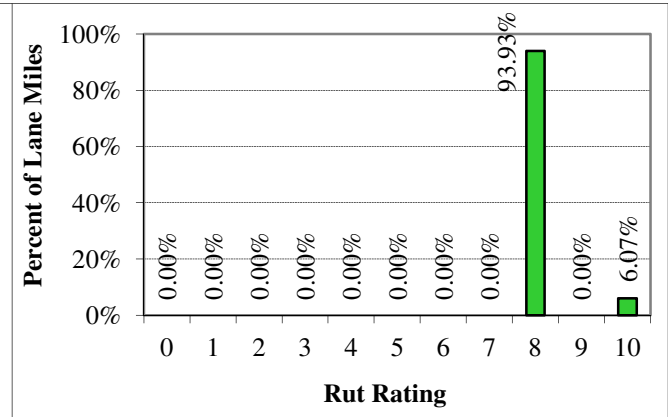
886 Lane Miles, Mean = 8.82

Turnpike



0 Lane Miles, Mean = N/A

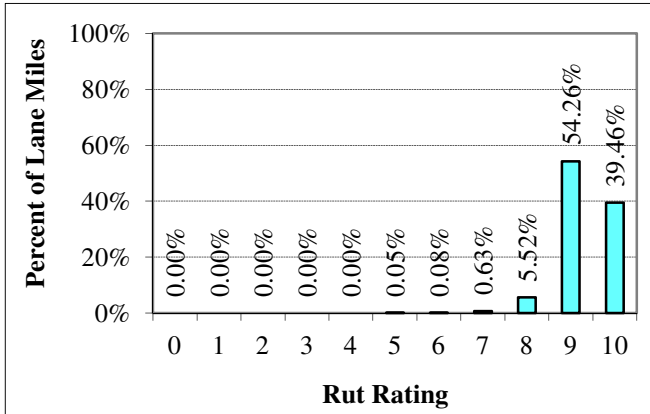
Toll



4 Lane Miles, Mean = 8.12

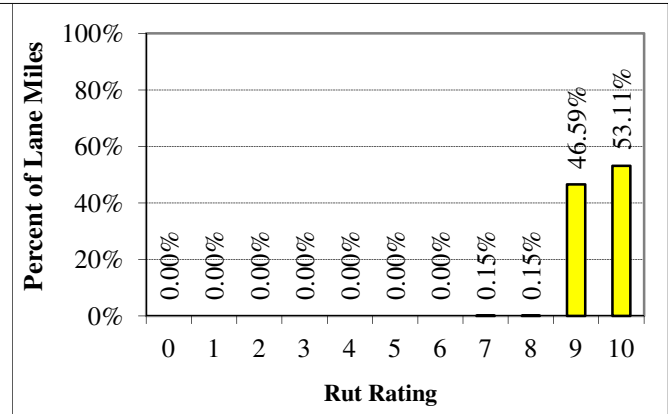
2013 Rut Distribution by System - District 4

Primary



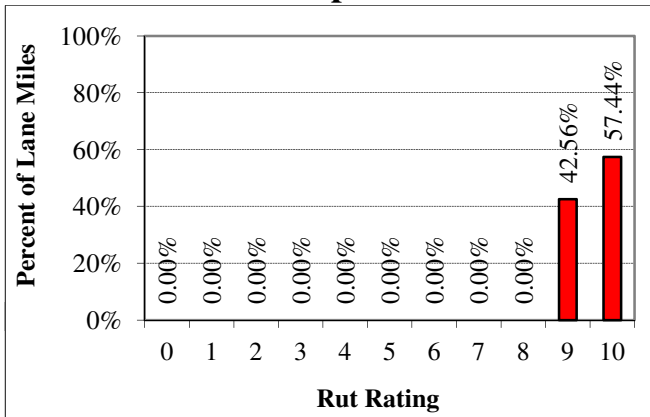
4051 Lane Miles, Mean = 9.32

Interstate



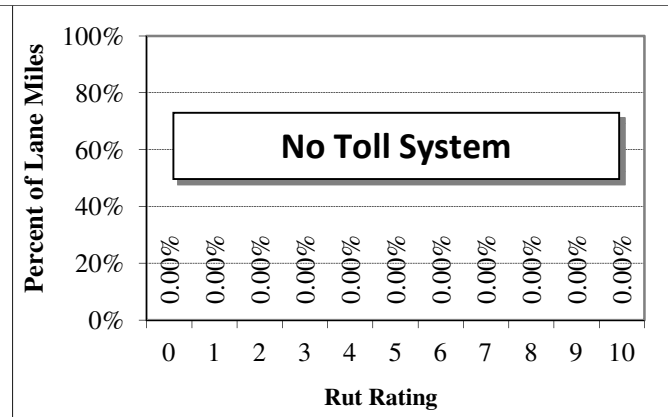
1191 Lane Miles, Mean = 9.53

Turnpike



702 Lane Miles, Mean = 9.57

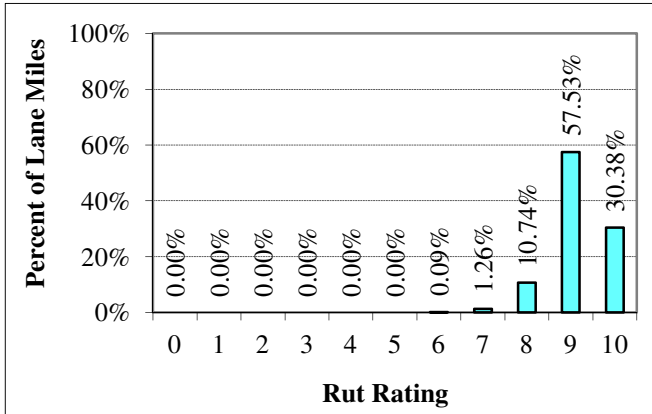
Toll



0 Lane Miles, Mean = N/A

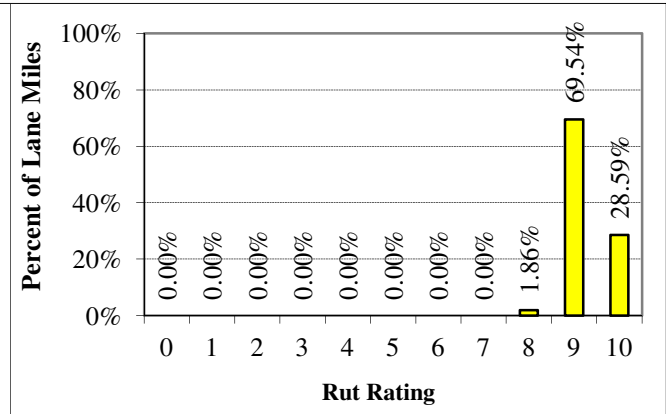
2013 Rut Distribution by System - District 5

Primary



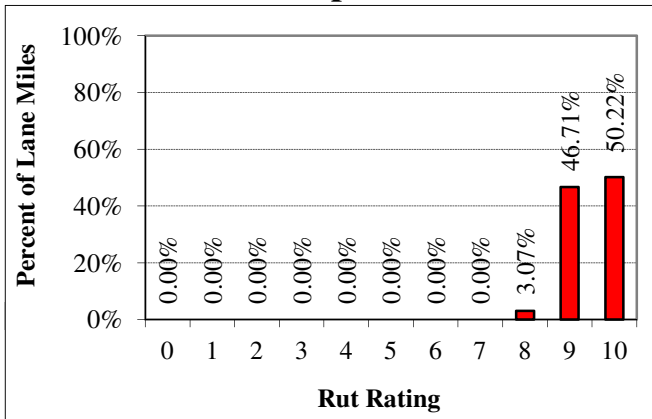
5242 Lane Miles, Mean = 9.17

Interstate



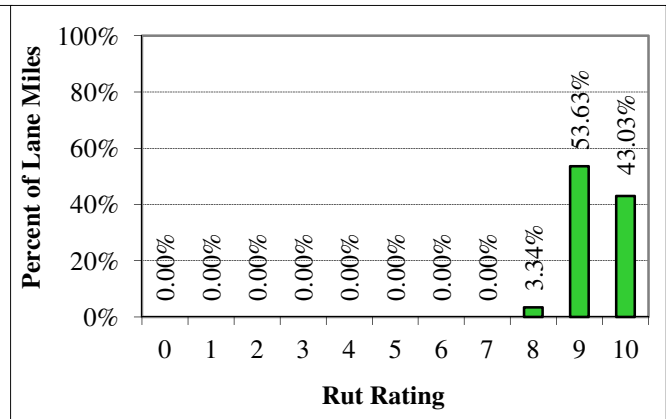
1268 Lane Miles, Mean = 9.27

Turnpike



717 Lane Miles, Mean = 9.47

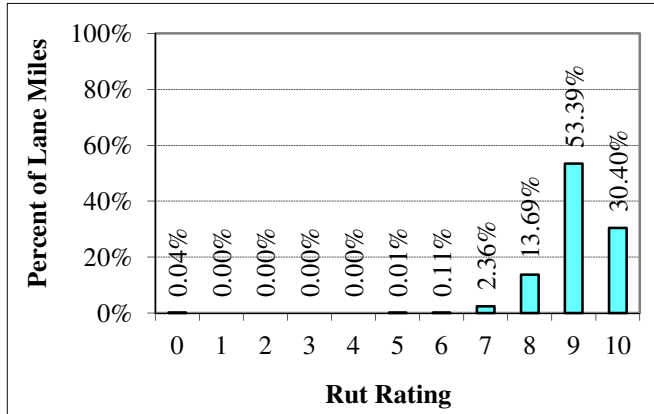
Toll



521 Lane Miles, Mean = 9.4

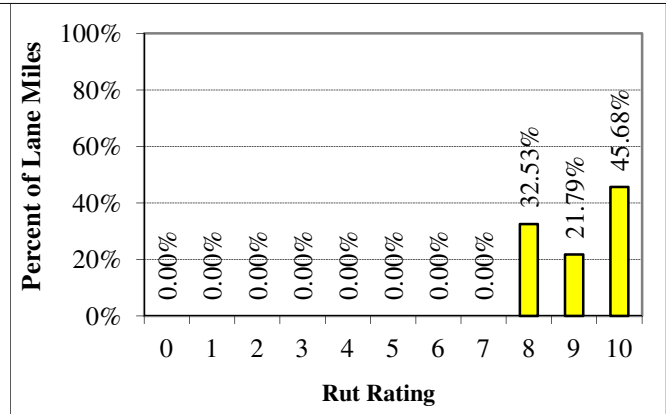
2013 Rut Distribution by System - District 6

Primary



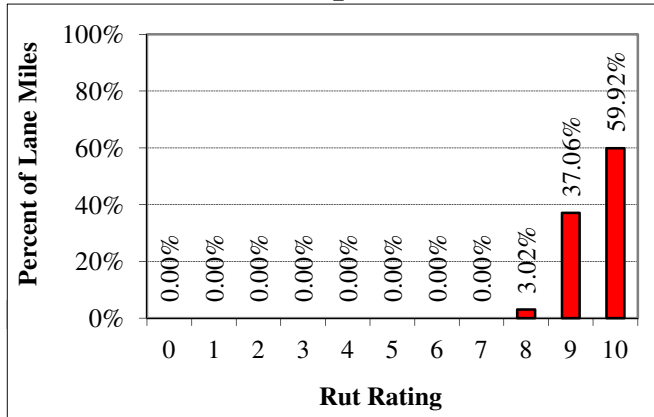
2197 Lane Miles, Mean = 9.11

Interstate



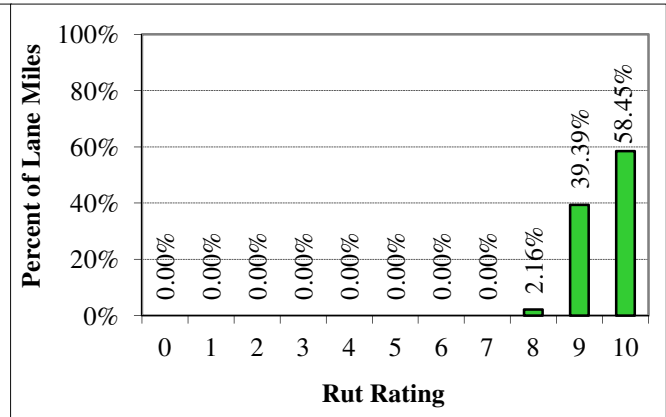
93 Lane Miles, Mean = 9.13

Turnpike



242 Lane Miles, Mean = 9.57

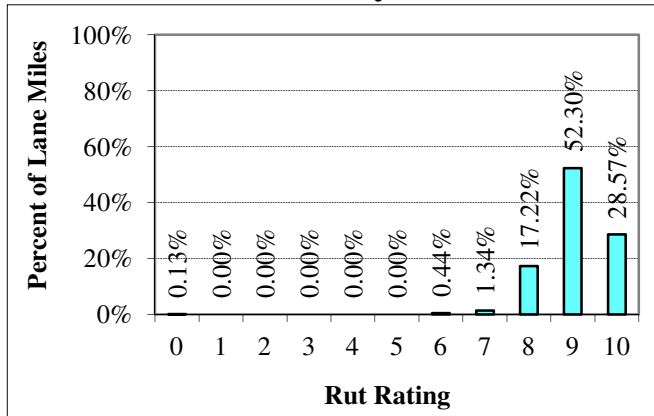
Toll



131 Lane Miles, Mean = 9.56

2013 Rut Distribution by System - District 7

Primary



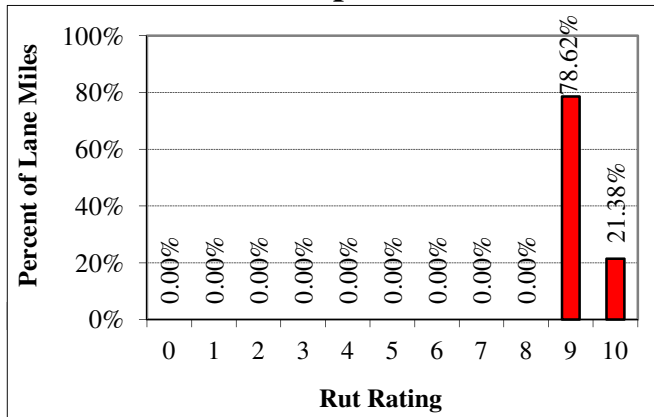
3051 Lane Miles, Mean = 9.06

Interstate



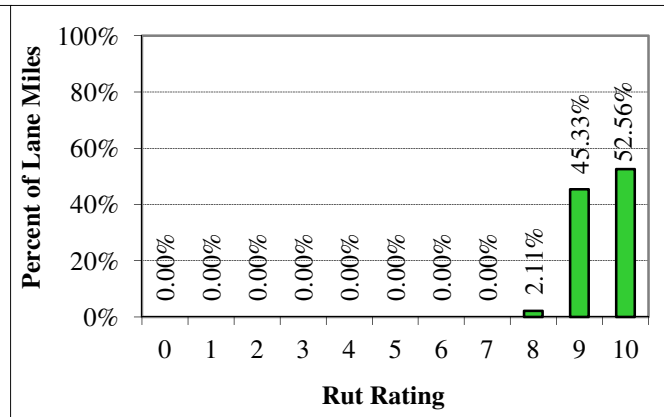
443 Lane Miles, Mean = 9.43

Turnpike



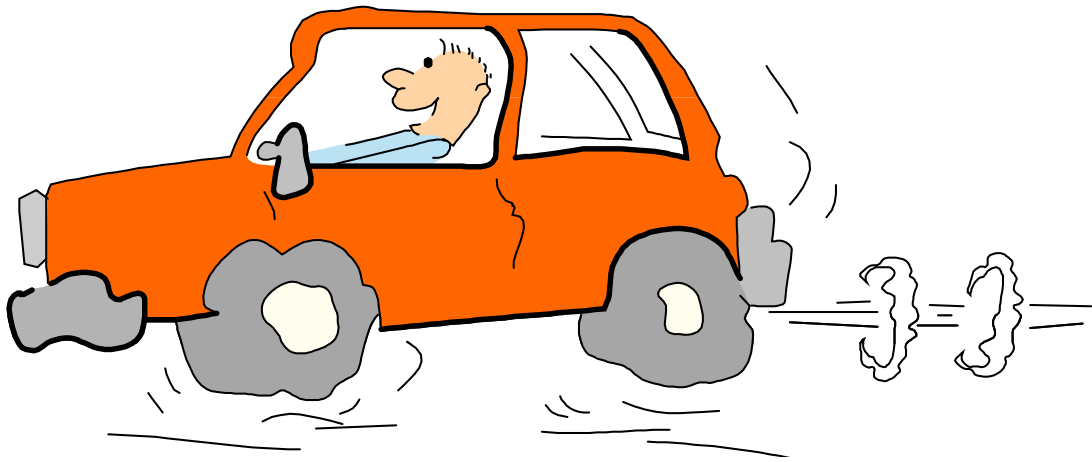
223 Lane Miles, Mean = 9.21

Toll



75 Lane Miles, Mean = 9.5

Section IV
Ride Rating
By
System and District



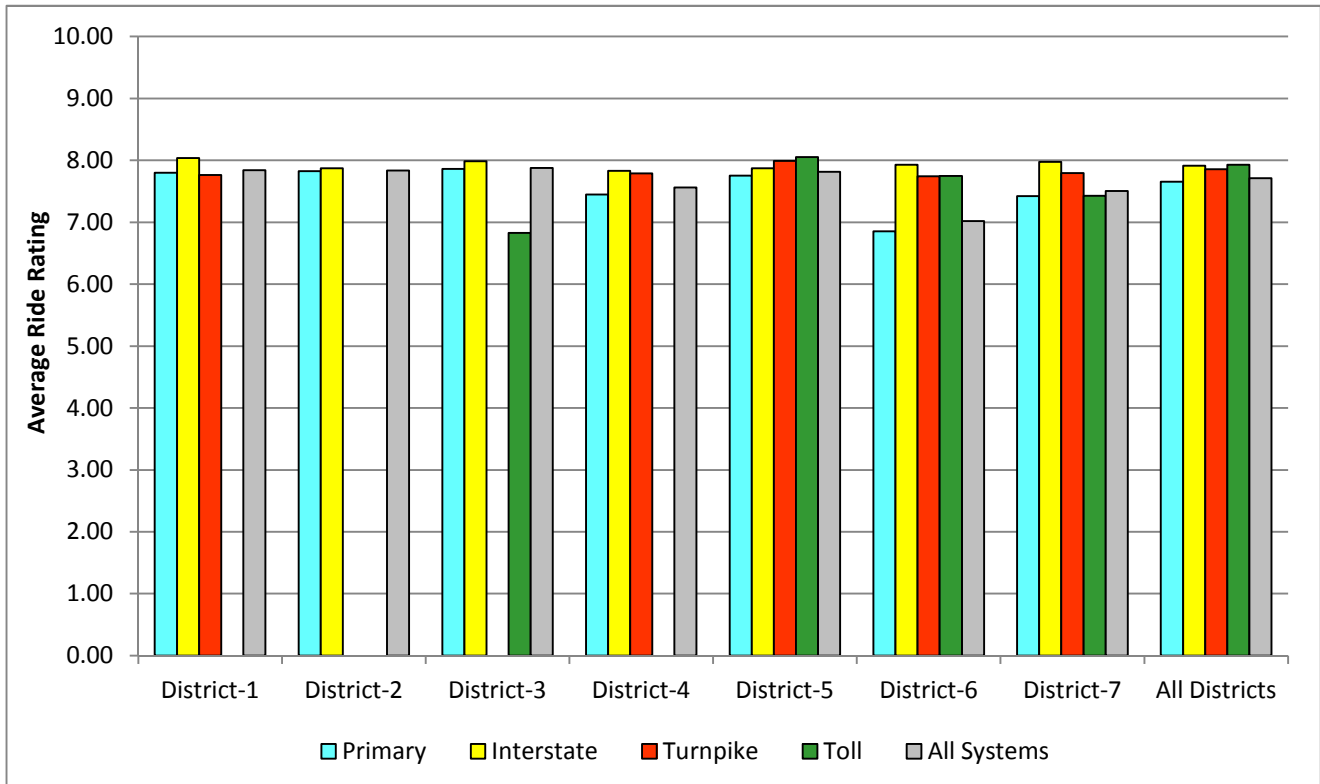
Section IV

Ride Rating by System and District

Ride Rating Criteria

- 1 A Ride Rating represents the ride quality of a pavement section. It is an indication of the degree of smoothness or roughness of the wearing surface.
- 2 A Ride Rating is calculated from Ride Number (RN). **Ride Rating = RN * 2**
RN is a mathematical processing of longitudinal profile measurements to produce an estimate of a driver's subjective perception of the ride quality of a roadway. The RN is based on an algorithm published in National Cooperative Highway Research Project (NCHRP) 1-23. RN is defined in ASTM Standard E-1489.
- 3 The ride quality of a roadway is greatly affected by, but not limited to, factors that include the following:
 - Original pavement profile
 - Profiles of intersecting roads
 - Utility patches and manhole covers
 - Surface and structural deterioration and deformation
- 4 Ride Rating is rated on a 0 to 10 scale, where 10 represents a pavement that is perfectly smooth, while a rating of 6 or less represents a relatively rough pavement.
- 5 Note that with the start of the 2004 PCS, the profile data was collected using a sampling rate of 6 in. compared to a 12 in. sample interval used in previous years.

2013 Ride Rating by System and District



Lane Miles

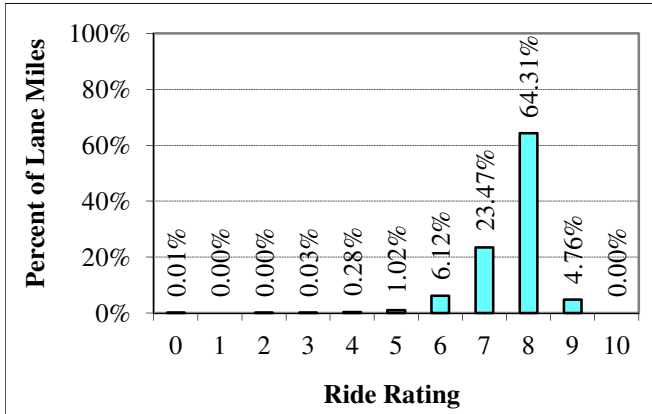
System	District-1	District-2	District-3	District-4	District-5	District-6	District-7	Statewide
Primary	4,767	6,101	5,284	4,038	5,231	2,180	3,038	30,637
Interstate	982	1,625	886	1,191	1,268	92	443	6,487
Turnpike	84	0	0	702	717	242	223	1,968
Toll	0	0	4	0	521	131	75	732
Statewide	5,832	7,727	6,174	5,932	7,737	2,645	3,778	39,825

Ride Rating

System	District-1	District-2	District-3	District-4	District-5	District-6	District-7	Statewide
Primary	7.80	7.83	7.86	7.45	7.75	6.85	7.42	7.66
Interstate	8.04	7.87	7.99	7.83	7.87	7.93	7.98	7.91
Turnpike	7.76			7.79	7.99	7.74	7.79	7.85
Toll			6.83		8.05	7.75	7.43	7.93
Statewide	7.84	7.84	7.88	7.56	7.81	7.02	7.51	7.71

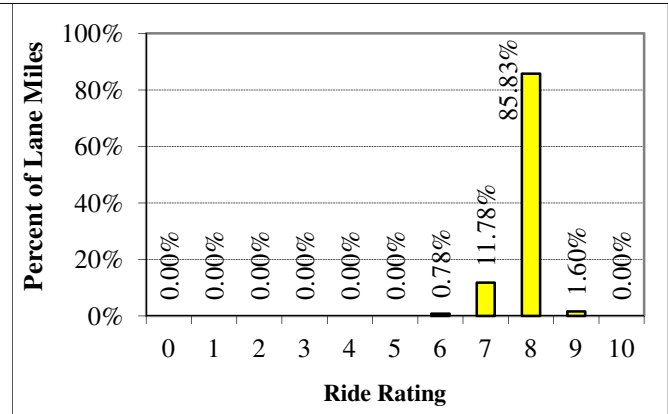
2013 Ride Distribution by System - Statewide

Primary



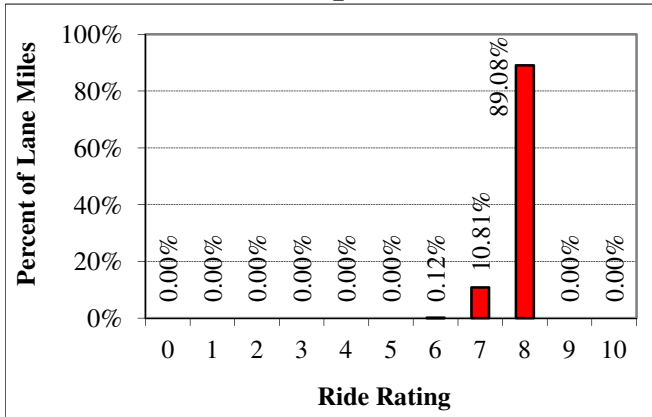
30637 Lane Miles, Mean = 7.66

Interstate



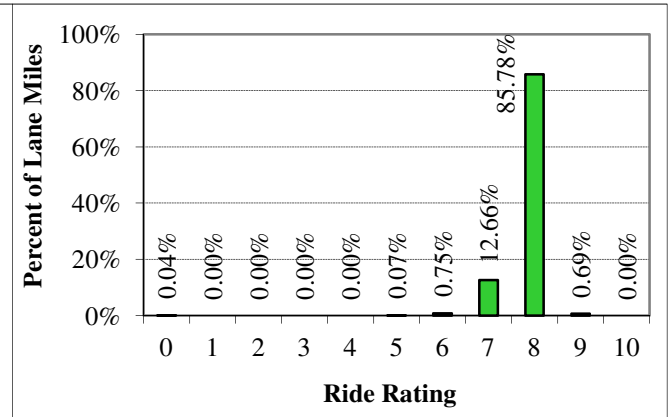
6487 Lane Miles, Mean = 7.91

Turnpike



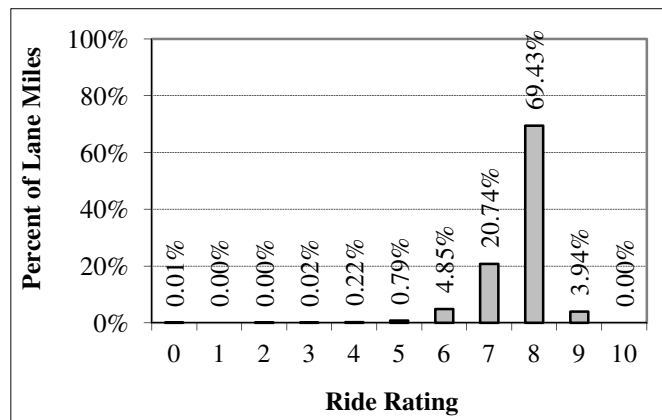
1968 Lane Miles, Mean = 7.85

Toll



732 Lane Miles, Mean = 7.93

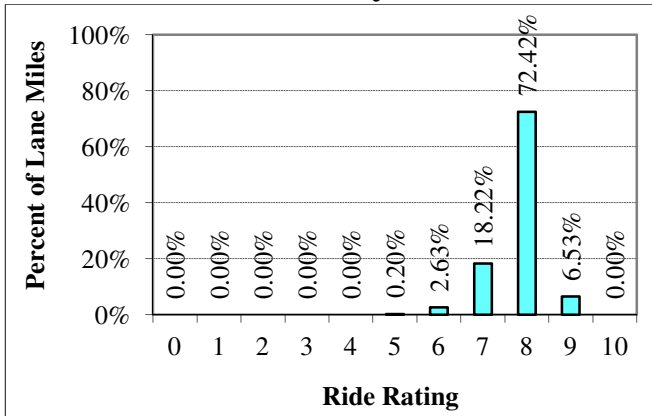
Statewide



39825 Lane Miles, Mean = 7.71

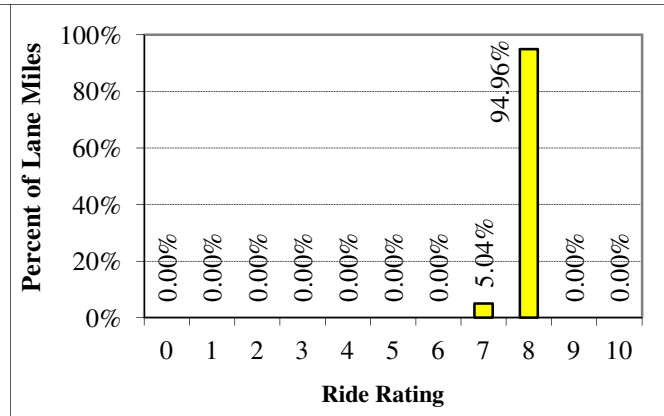
2013 Ride Distribution by System - District 1

Primary



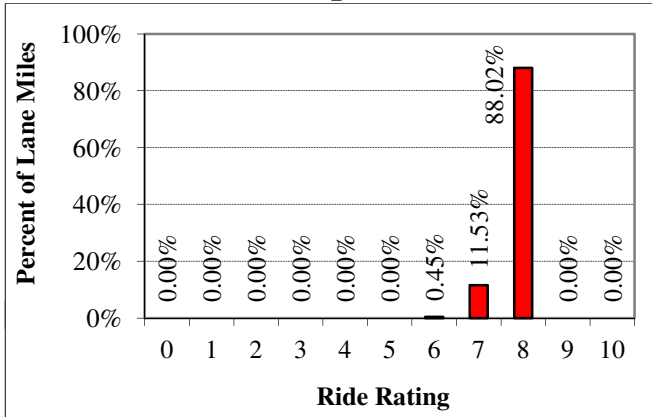
4767 Lane Miles, Mean = 7.8

Interstate



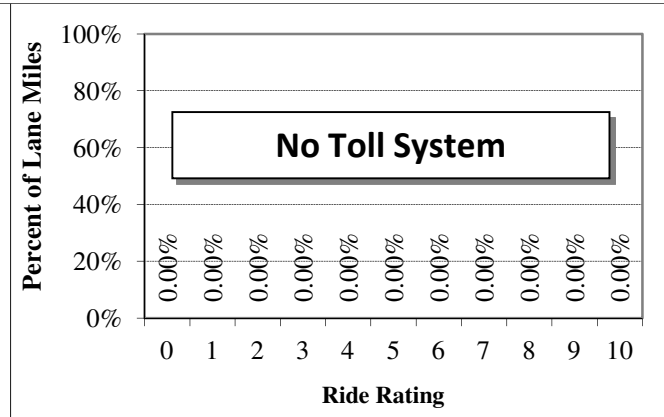
982 Lane Miles, Mean = 8.04

Turnpike



84 Lane Miles, Mean = 7.76

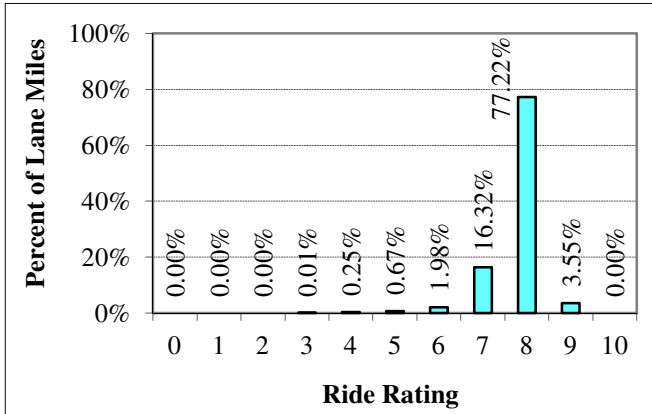
Toll



0 Lane Miles, Mean = N/A

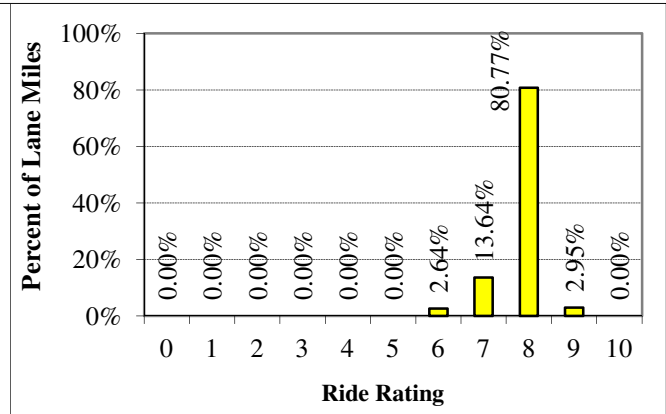
2013 Ride Distribution by System - District 2

Primary



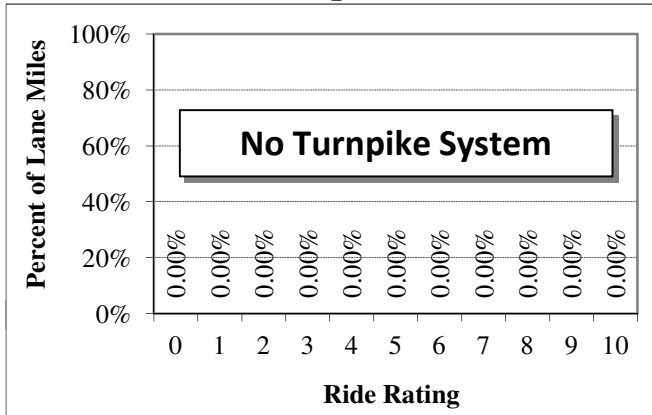
6101 Lane Miles, Mean = 7.83

Interstate



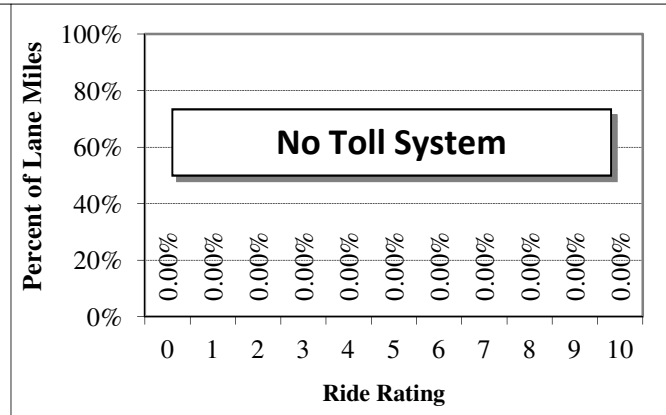
1625 Lane Miles, Mean = 7.87

Turnpike



0 Lane Miles, Mean = N/A

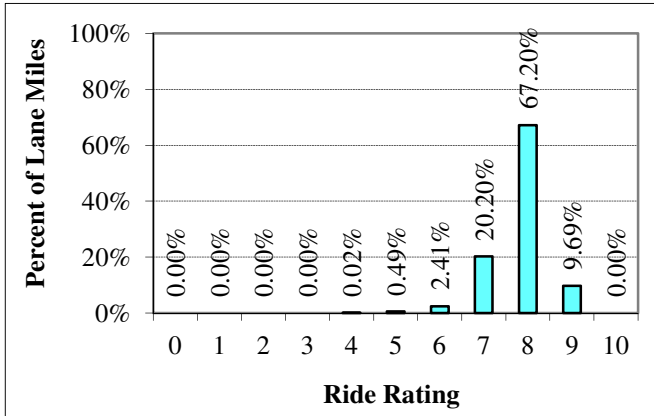
Toll



0 Lane Miles, Mean = N/A

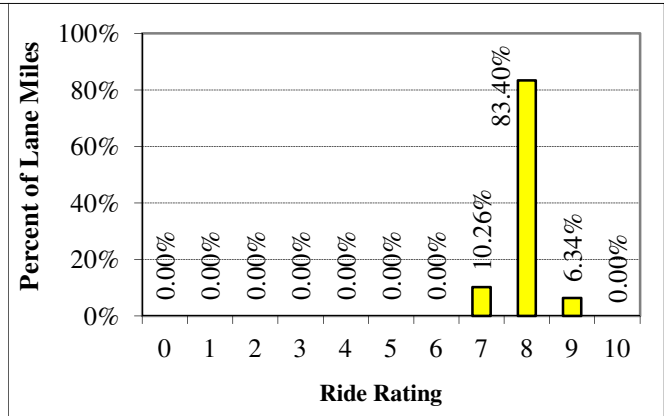
2013 Ride Distribution by System - District 3

Primary



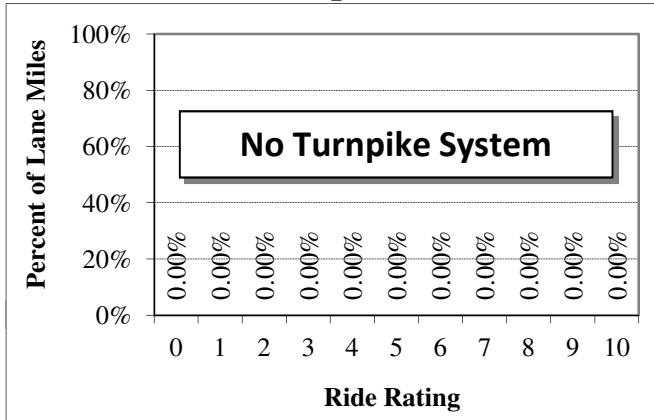
5284 Lane Miles, Mean = 7.86

Interstate



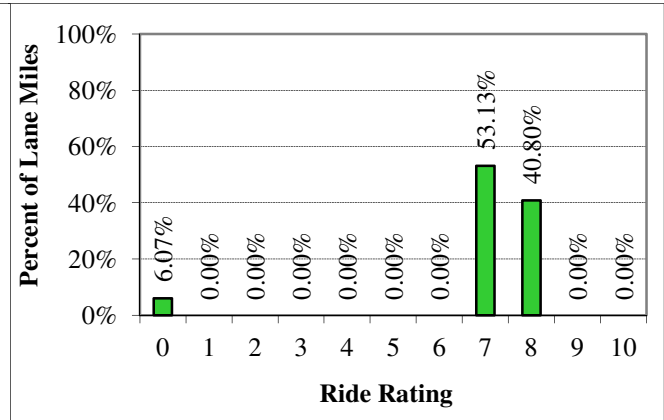
886 Lane Miles, Mean = 7.99

Turnpike



0 Lane Miles, Mean = N/A

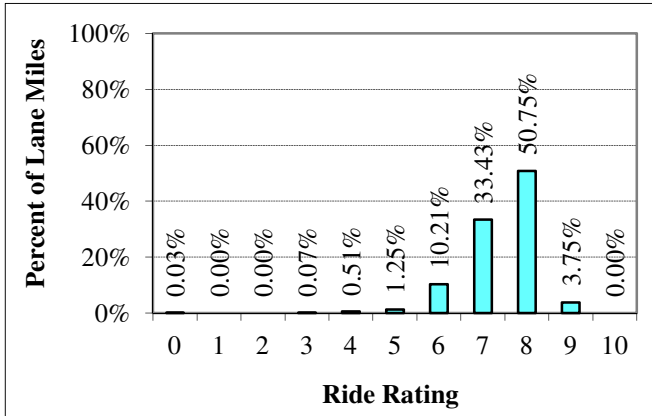
Toll



4 Lane Miles, Mean = 6.83

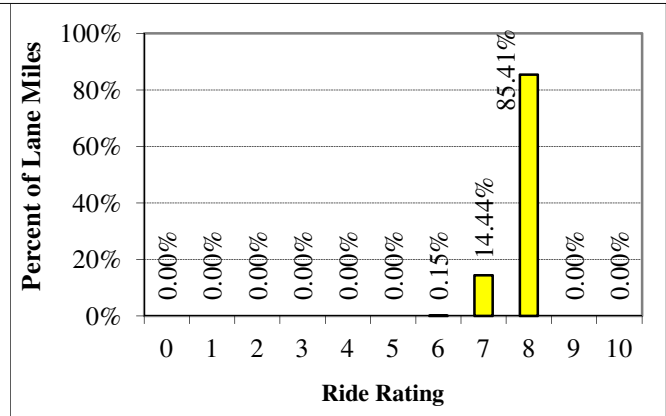
2013 Ride Distribution by System - District 4

Primary



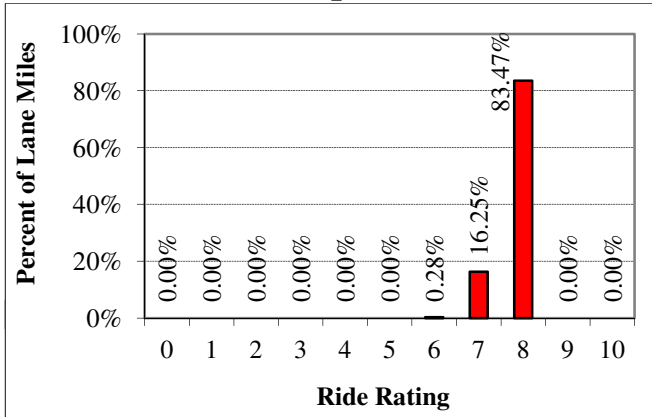
4038 Lane Miles, Mean = 7.45

Interstate



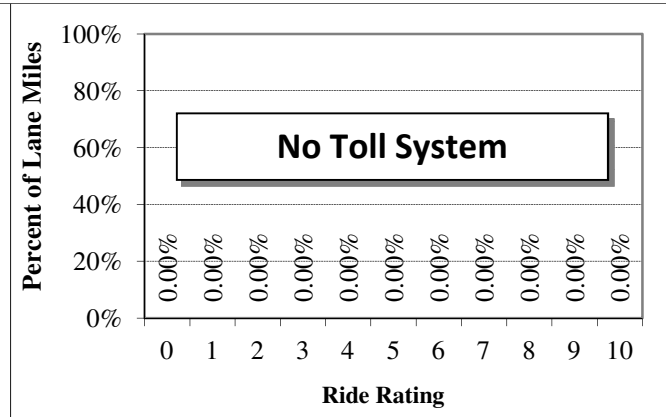
1191 Lane Miles, Mean = 7.83

Turnpike



702 Lane Miles, Mean = 7.79

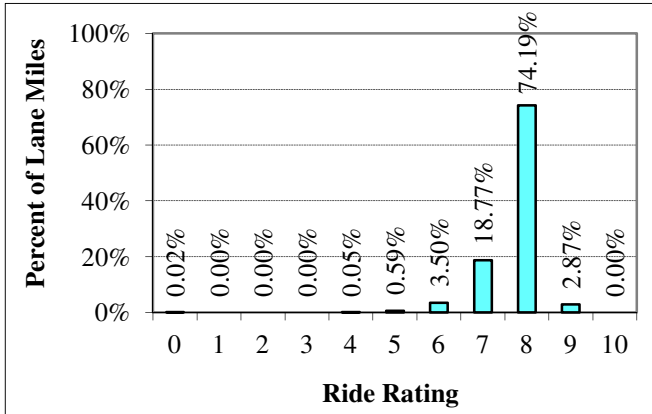
Toll



0 Lane Miles, Mean = N/A

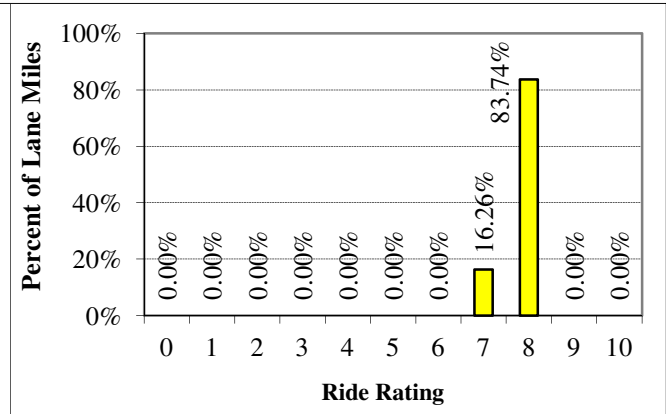
2013 Ride Distribution by System - District 5

Primary



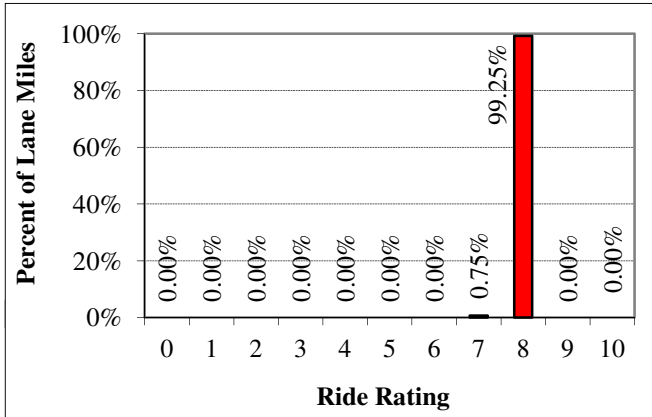
5231 Lane Miles, Mean = 7.75

Interstate



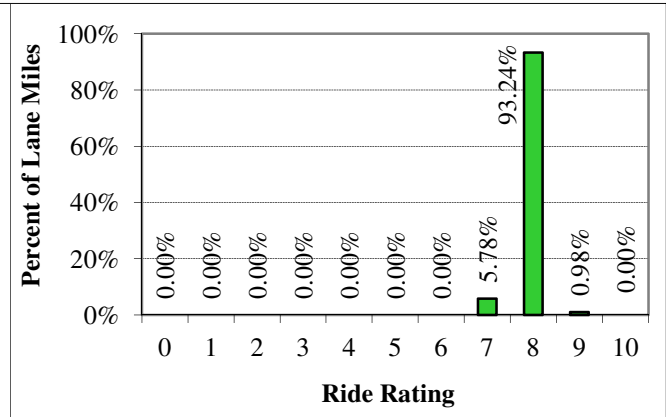
1268 Lane Miles, Mean = 7.87

Turnpike



717 Lane Miles, Mean = 7.99

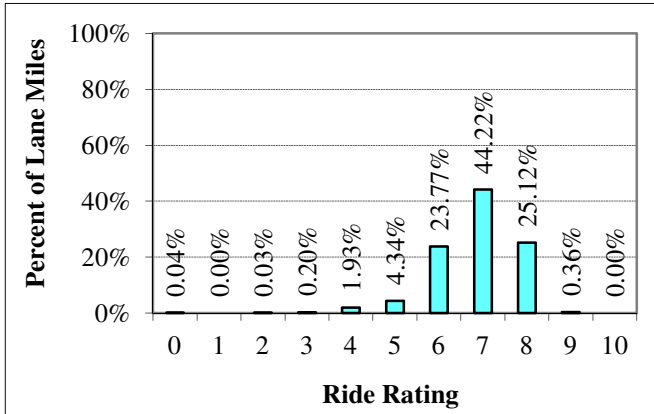
Toll



521 Lane Miles, Mean = 8.05

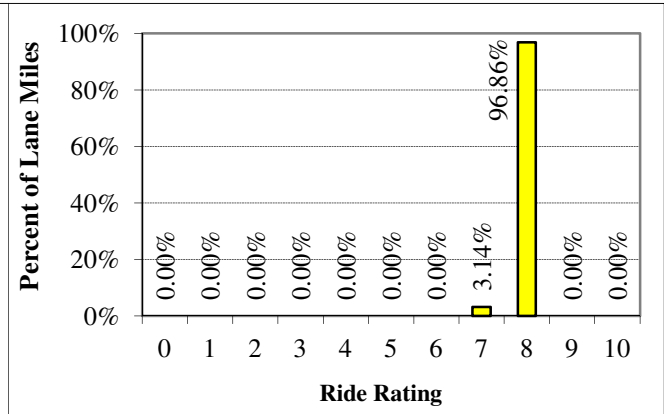
2013 Ride Distribution by System - District 6

Primary



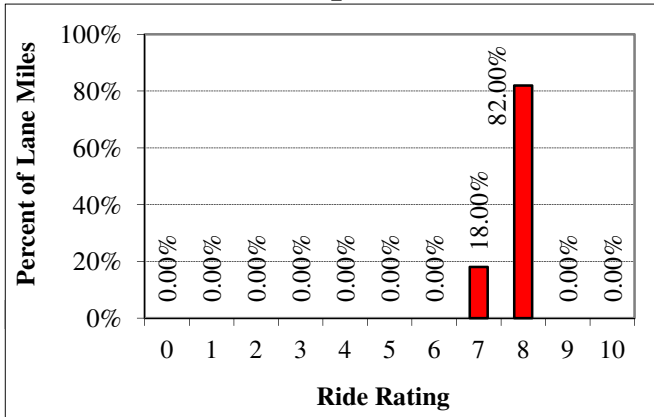
2180 Lane Miles, Mean = 6.85

Interstate



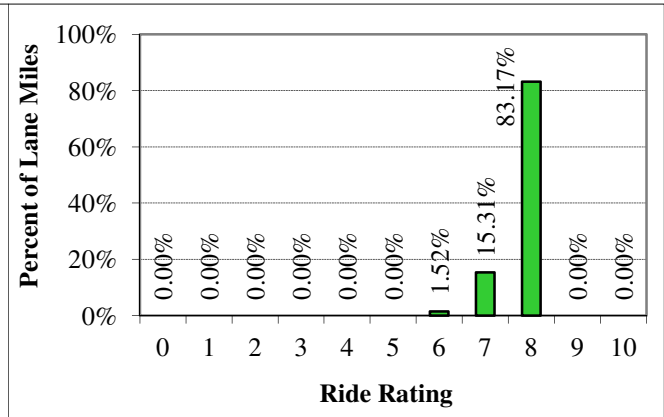
92 Lane Miles, Mean = 7.93

Turnpike



242 Lane Miles, Mean = 7.74

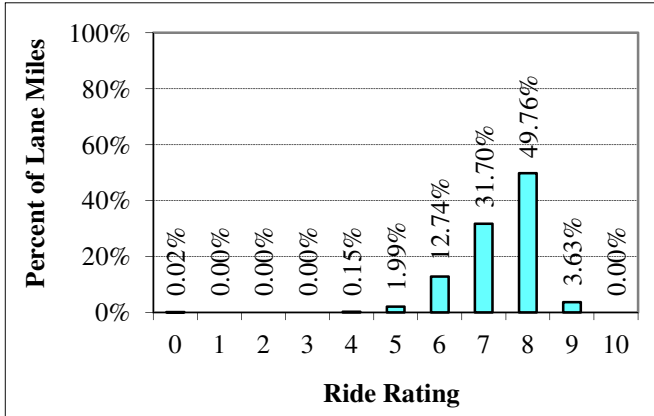
Toll



131 Lane Miles, Mean = 7.75

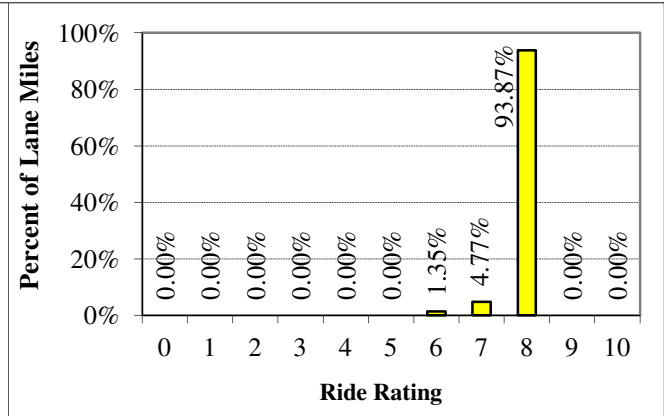
2013 Ride Distribution by System - District 7

Primary



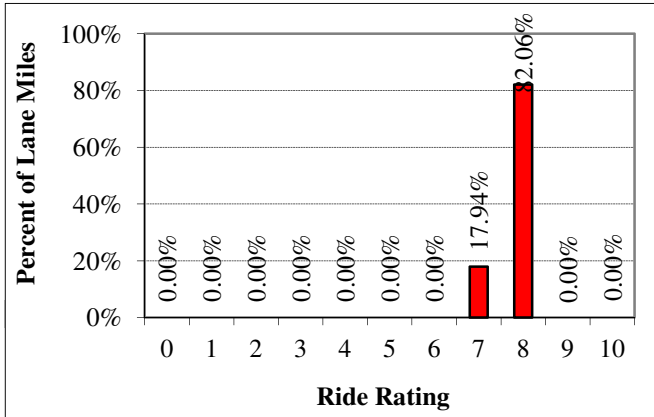
3038 Lane Miles, Mean = 7.42

Interstate



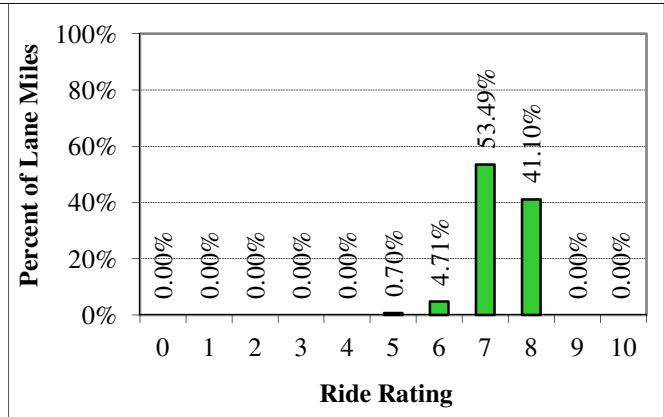
443 Lane Miles, Mean = 7.98

Turnpike



223 Lane Miles, Mean = 7.79

Toll

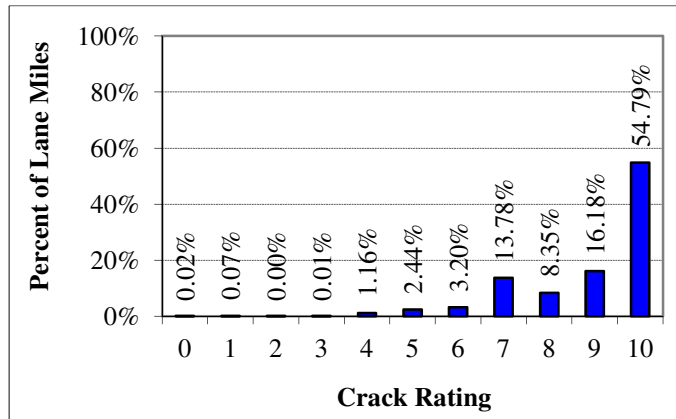


75 Lane Miles, Mean = 7.43

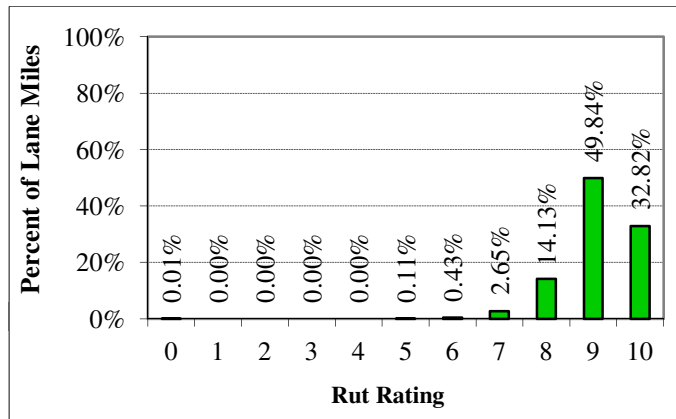
Section V
Crack, Rut, and Ride
Distributions by
District



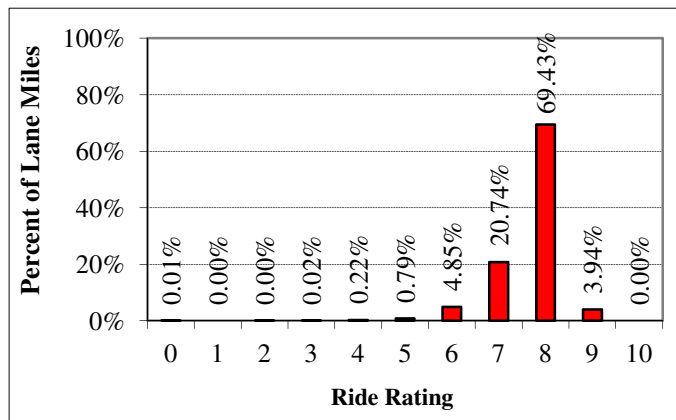
2013 Crack, Rut, and Ride Distribution - Statewide



39913 Lane Miles

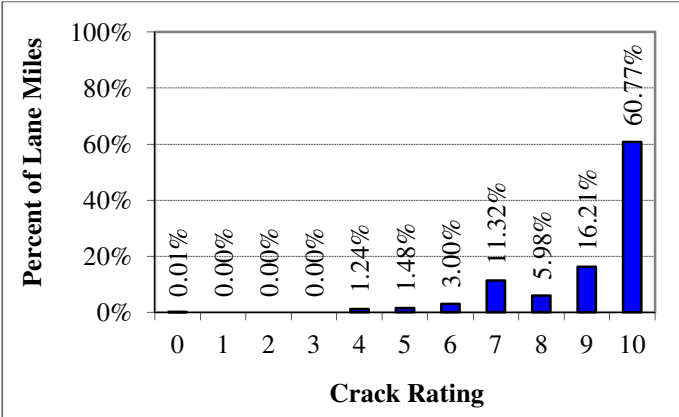


39913 Lane Miles

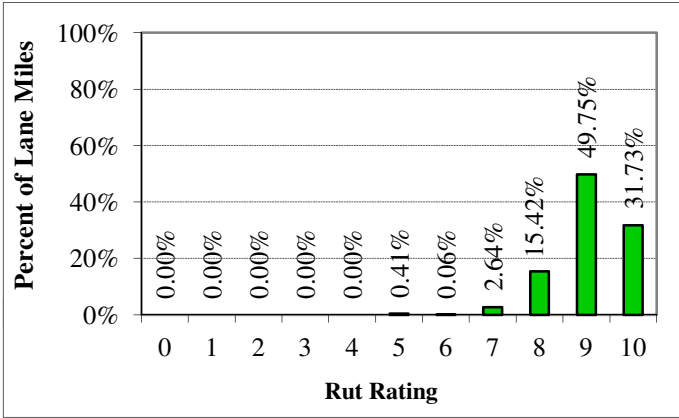


39825 Lane Miles

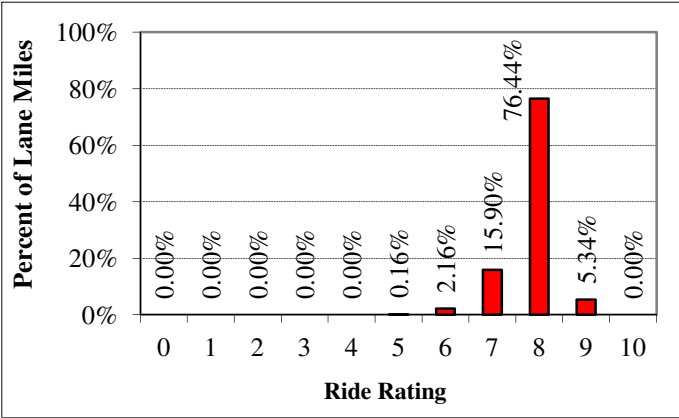
2013 Crack, Rut, and Ride Distribution - District 1



5839 Lane Miles

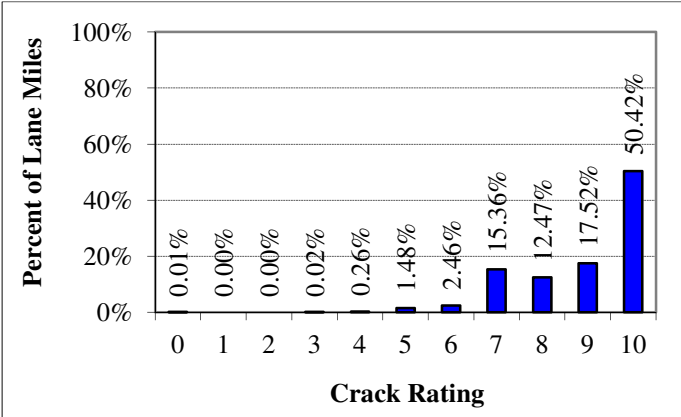


5839 Lane Miles

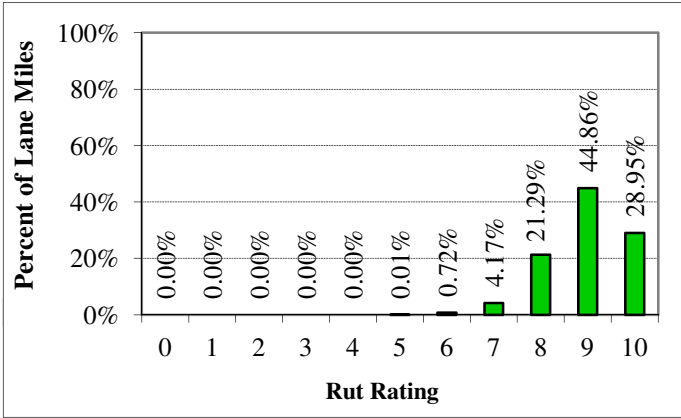


5832 Lane Miles

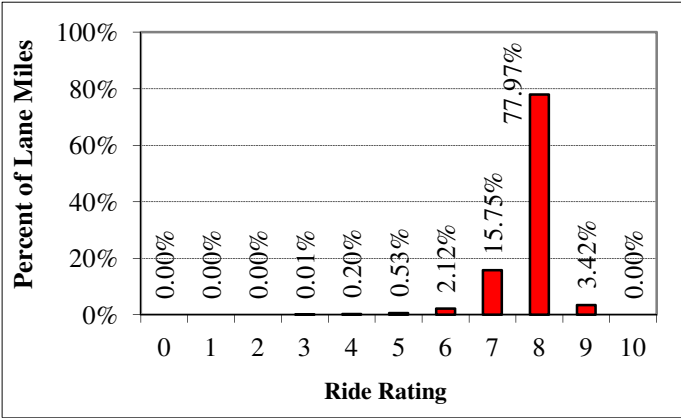
2013 Crack, Rut, and Ride Distribution - District 2



7741 Lane Miles

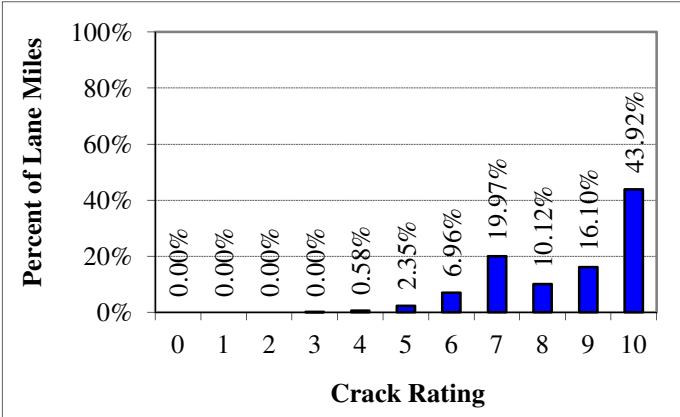


7741 Lane Miles

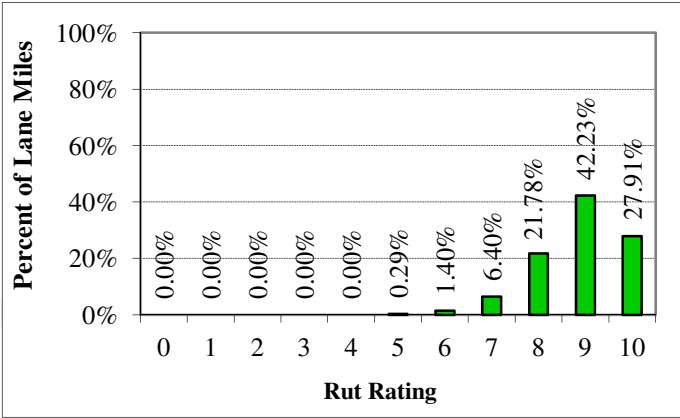


7727 Lane Miles

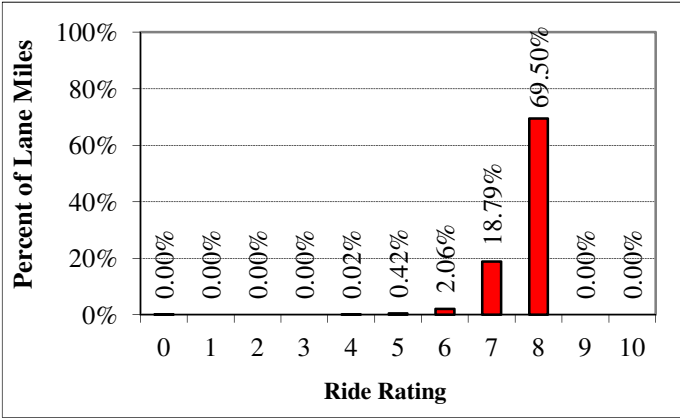
2013 Crack, Rut, and Ride Distribution - District 3



6185 Lane Miles

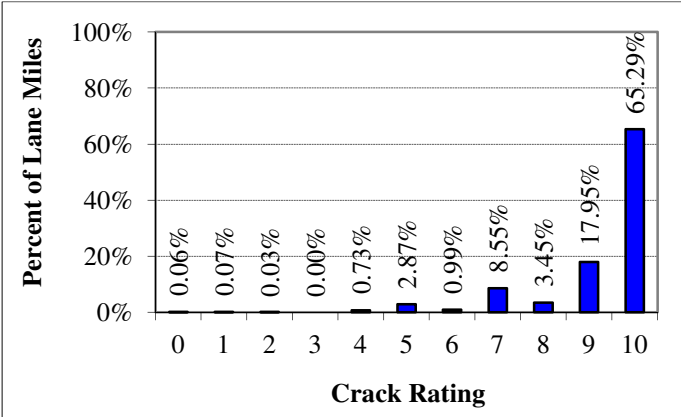


6185 Lane Miles

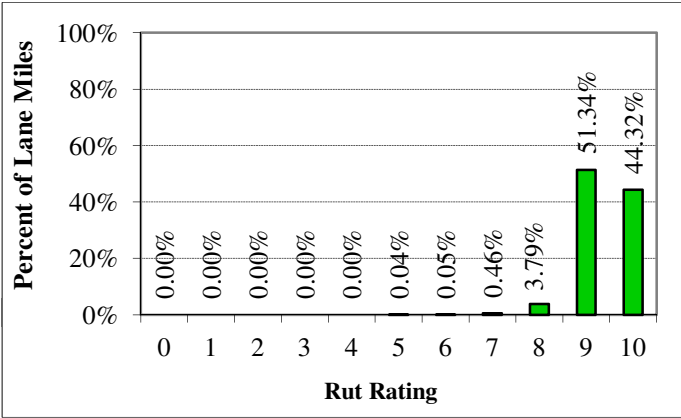


6174 Lane Miles

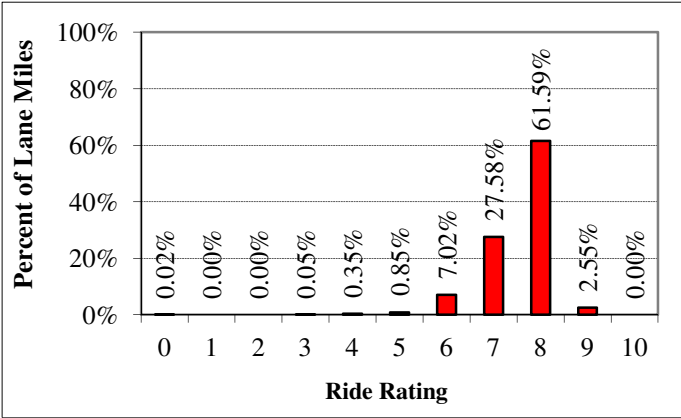
2013 Crack, Rut, and Ride Distribution - District 4



5945 Lane Miles

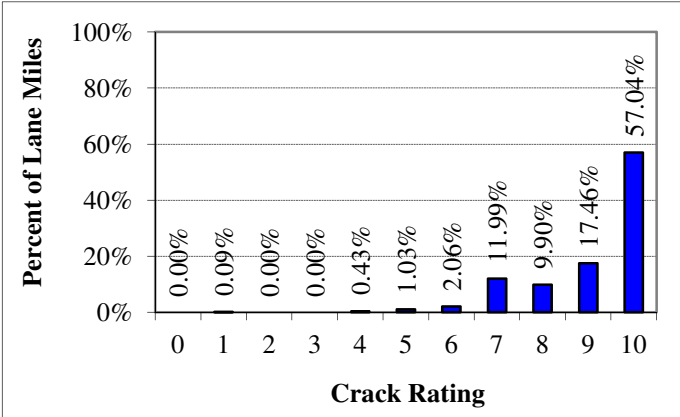


5945 Lane Miles

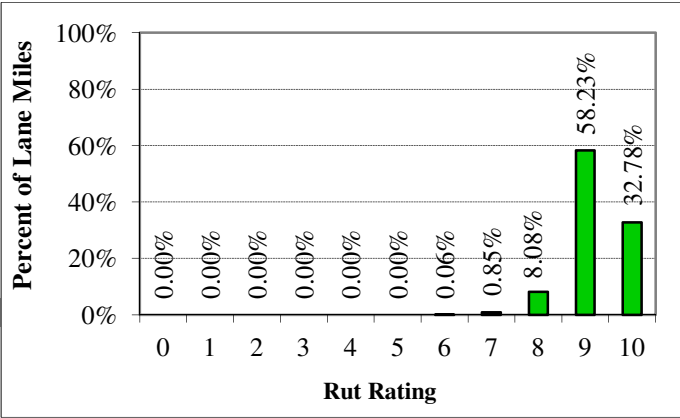


5932 Lane Miles

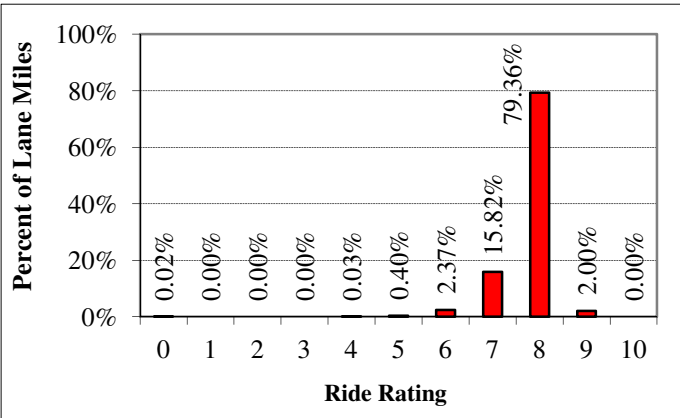
2013 Crack, Rut, and Ride Distribution - District 5



7748 Lane Miles

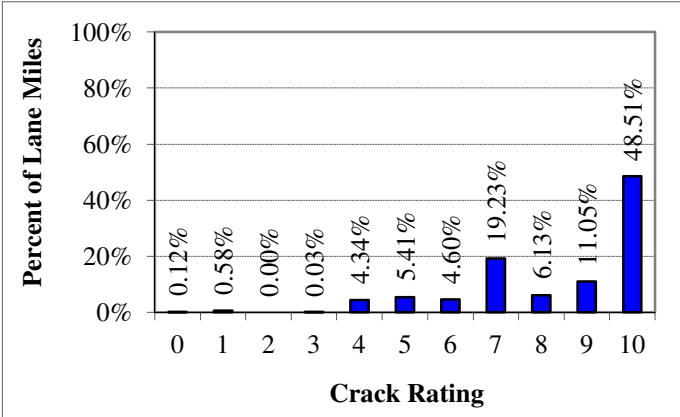


7748 Lane Miles

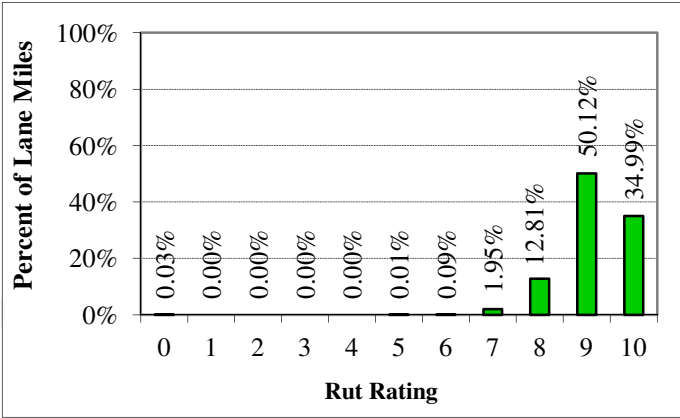


7737 Lane Miles

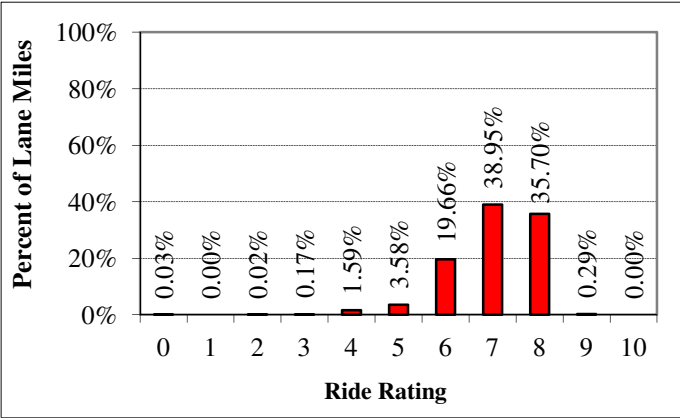
2013 Crack, Rut, and Ride Distribution - District 6



2663 Lane Miles

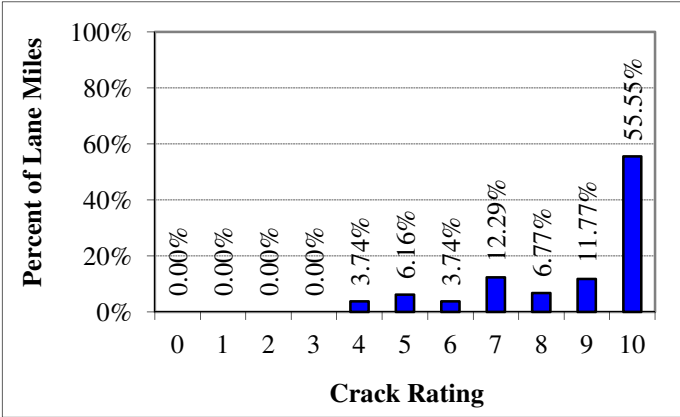


2663 Lane Miles

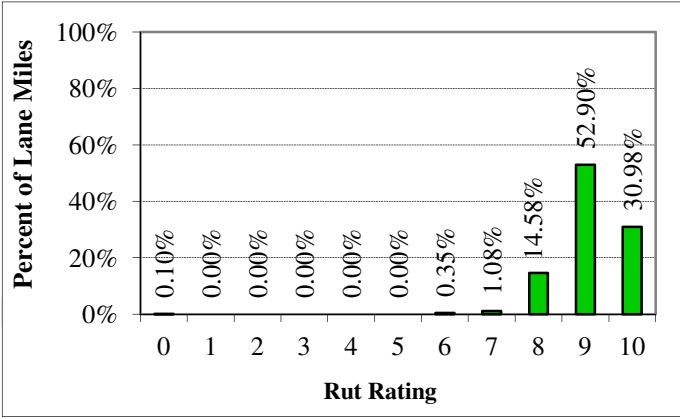


2645 Lane Miles

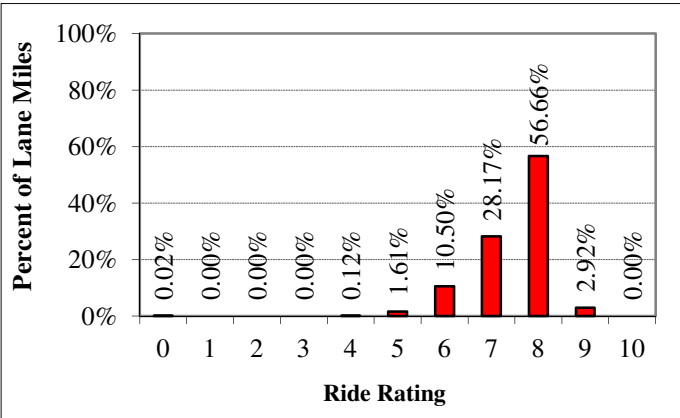
2013 Crack, Rut, and Ride Distribution - District 7



3792 Lane Miles

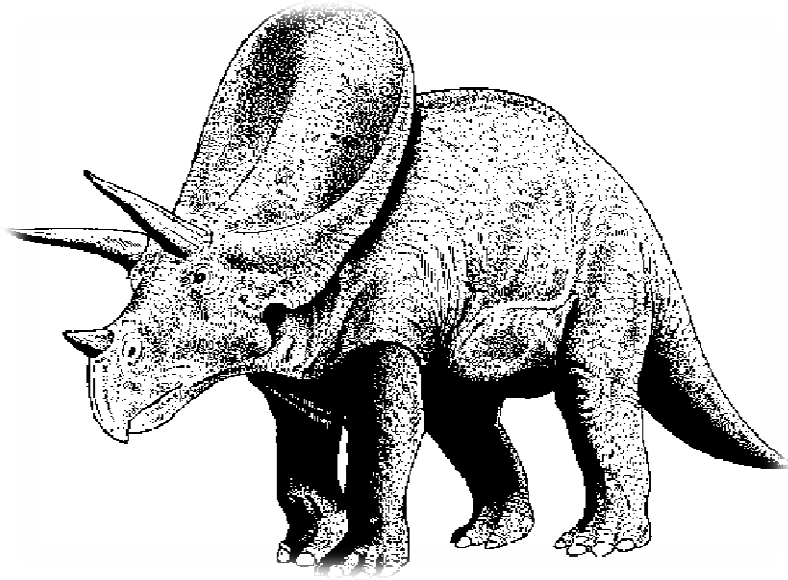


3792 Lane Miles



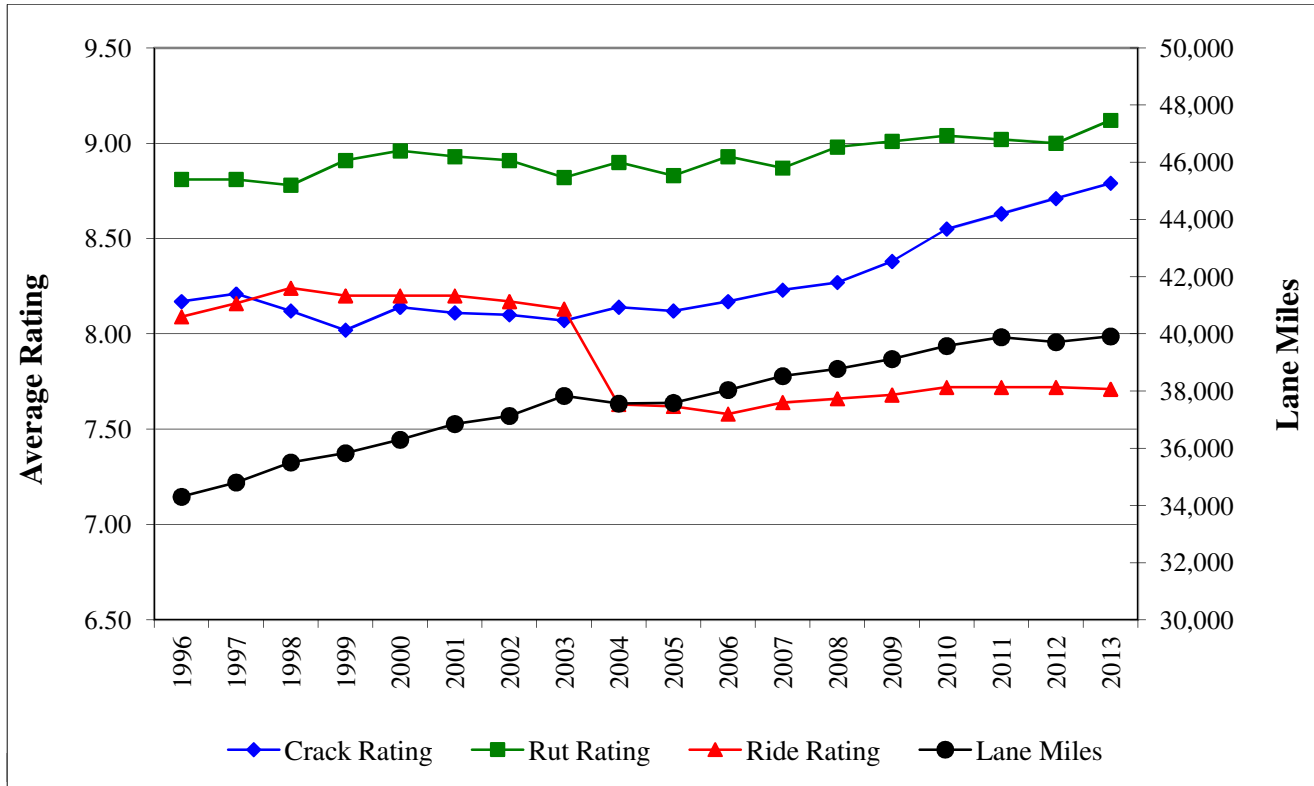
3778 Lane Miles

Section VI
Historical Distress Ratings
By District
1996 - 2013



Historical Distress Ratings - Statewide

All Systems - All Districts



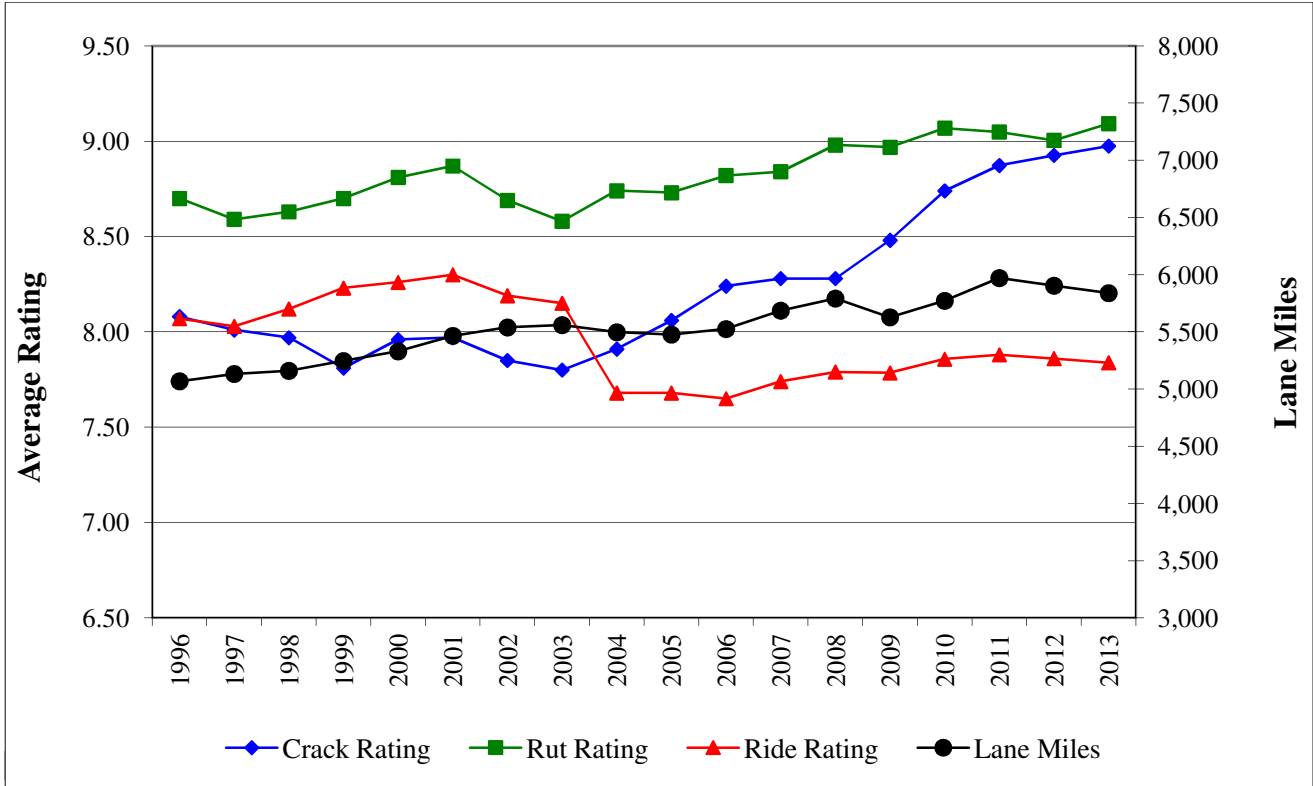
Year	1996	1997	1998	1999	2000	2001	2002	2003	2004
Crack Rating	8.17	8.21	8.12	8.02	8.14	8.11	8.10	8.07	8.14
Rut Rating	8.81	8.81	8.78	8.91	8.96	8.93	8.91	8.82	8.90
Ride Rating	8.09	8.16	8.24	8.20	8.20	8.20	8.17	8.13	7.63
Lane Miles	34305	34806	35506	35830	36298	36850	37132	37833	37563

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013
Crack Rating	8.12	8.17	8.23	8.27	8.38	8.55	8.63	8.71	8.79
Rut Rating	8.83	8.93	8.87	8.98	9.01	9.04	9.02	9.00	9.12
Ride Rating	7.62	7.58	7.64	7.66	7.68	7.72	7.72	7.72	7.71
Lane Miles	37588	38038	38524	38779	39121	39577	39887	39710	39913

Note that with the start of the 2004 PCS, the profile data was collected using a sampling rate of 6 in. compared to a 12 in. sample interval used in previous years.

Historical Distress Ratings - District 1

All Systems



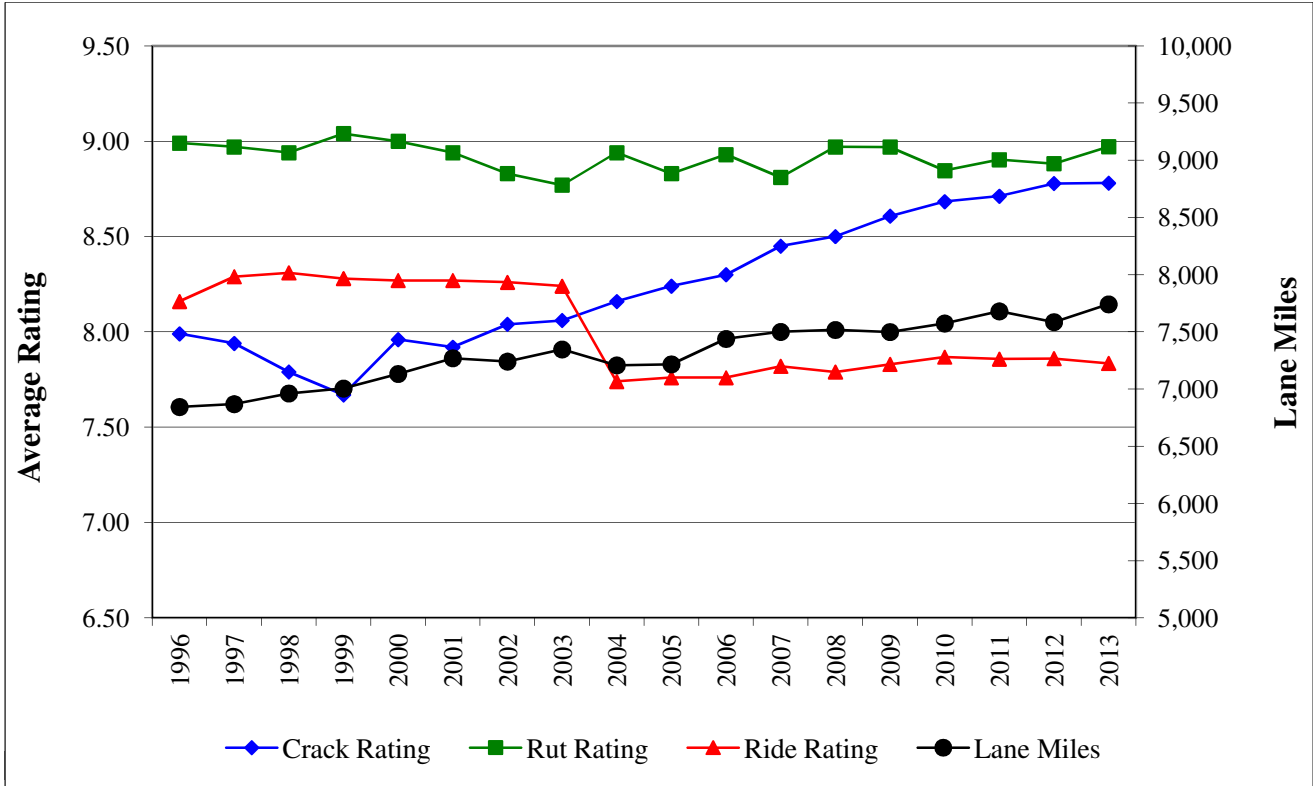
Year	1996	1997	1998	1999	2000	2001	2002	2003	2004
Crack Rating	8.08	8.01	7.97	7.81	7.96	7.97	7.85	7.80	7.91
Rut Rating	8.70	8.59	8.63	8.70	8.81	8.87	8.69	8.58	8.74
Ride Rating	8.07	8.03	8.12	8.23	8.26	8.30	8.19	8.15	7.68
Lane Miles	5069	5133	5160	5246	5330	5466	5539	5560	5497

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013
Crack Rating	8.06	8.24	8.28	8.28	8.48	8.74	8.87	8.93	8.97
Rut Rating	8.73	8.82	8.84	8.98	8.97	9.07	9.05	9.00	9.09
Ride Rating	7.68	7.65	7.74	7.79	7.79	7.86	7.88	7.86	7.84
Lane Miles	5477	5525	5686	5792	5628	5772	5971	5904	5839

Note that with the start of the 2004 PCS, the profile data was collected using a sampling rate of 6 in. compared to a 12 in. sample interval used in previous years.

Historical Distress Ratings - District 2

All Systems



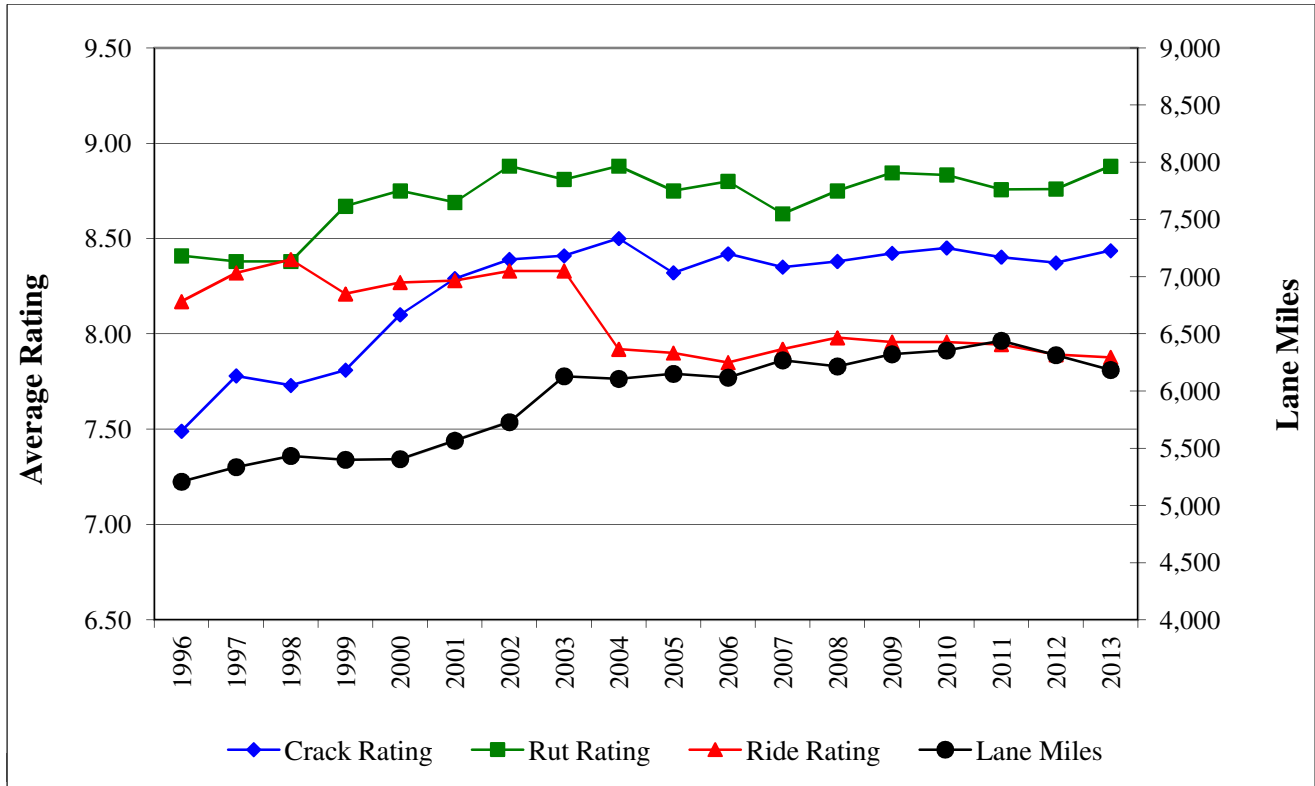
Year	1996	1997	1998	1999	2000	2001	2002	2003	2004
Crack Rating	7.99	7.94	7.79	7.67	7.96	7.92	8.04	8.06	8.16
Rut Rating	8.99	8.97	8.94	9.04	9.00	8.94	8.83	8.77	8.94
Ride Rating	8.16	8.29	8.31	8.28	8.27	8.27	8.26	8.24	7.74
Lane Miles	6844	6869	6962	7005	7133	7270	7241	7347	7208

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013
Crack Rating	8.24	8.30	8.45	8.50	8.61	8.68	8.71	8.78	8.78
Rut Rating	8.83	8.93	8.81	8.97	8.97	8.85	8.90	8.88	8.97
Ride Rating	7.76	7.76	7.82	7.79	7.83	7.87	7.86	7.86	7.84
Lane Miles	7217	7439	7500	7517	7499	7574	7680	7586	7741

Note that with the start of the 2004 PCS, the profile data was collected using a sampling rate of 6 in. compared to a 12 in. sample interval used in previous years.

Historical Distress Ratings - District 3

All Systems



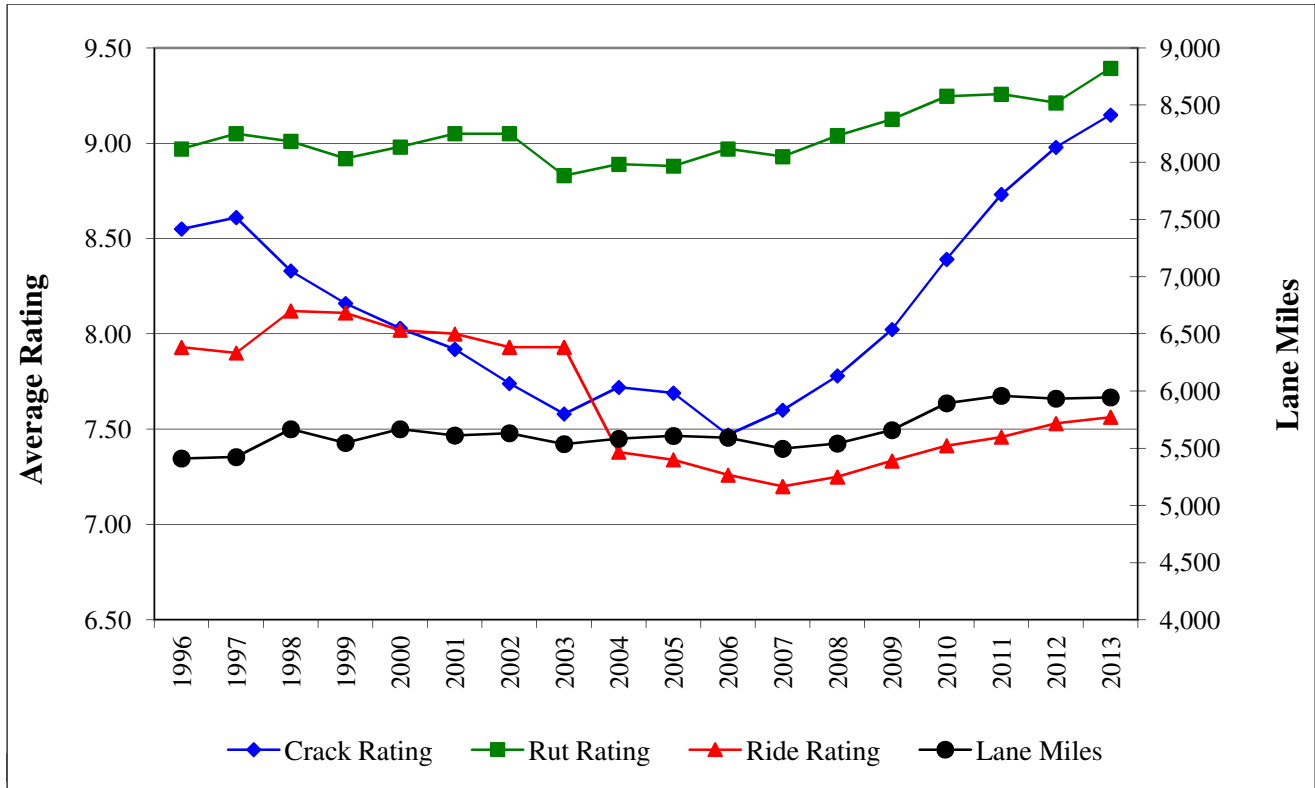
Year	1996	1997	1998	1999	2000	2001	2002	2003	2004
Crack Rating	7.49	7.78	7.73	7.81	8.10	8.29	8.39	8.41	8.50
Rut Rating	8.41	8.38	8.38	8.67	8.75	8.69	8.88	8.81	8.88
Ride Rating	8.17	8.32	8.39	8.21	8.27	8.28	8.33	8.33	7.92
Lane Miles	5208	5336	5434	5400	5406	5567	5729	6130	6107

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013
Crack Rating	8.32	8.42	8.35	8.38	8.42	8.45	8.40	8.37	8.44
Rut Rating	8.75	8.80	8.63	8.75	8.84	8.83	8.76	8.76	8.88
Ride Rating	7.90	7.85	7.92	7.98	7.96	7.96	7.94	7.89	7.88
Lane Miles	6151	6118	6269	6216	6322	6355	6440	6315	6185

Note that with the start of the 2004 PCS, the profile data was collected using a sampling rate of 6 in. compared to a 12 in. sample interval used in previous years.

Historical Distress Ratings - District 4

All Systems



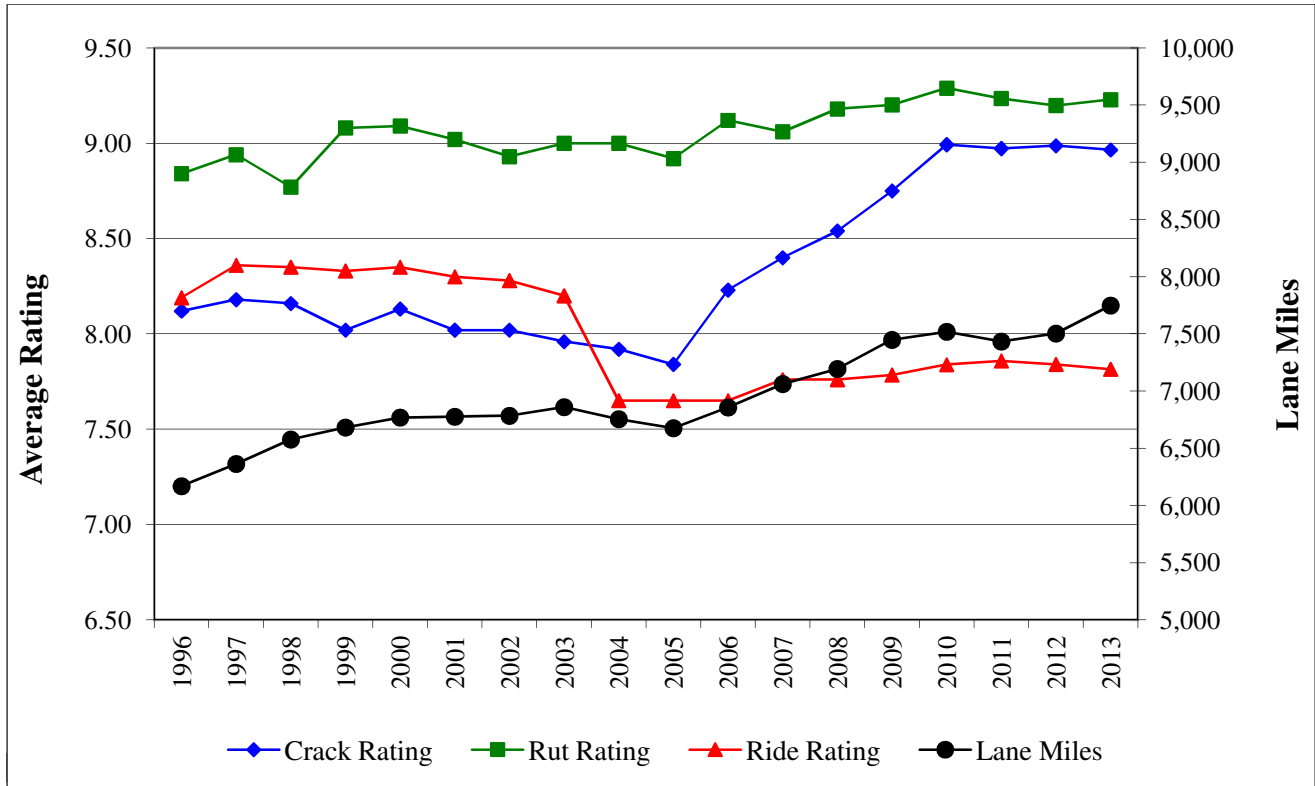
Year	1996	1997	1998	1999	2000	2001	2002	2003	2004
Crack Rating	8.55	8.61	8.33	8.16	8.03	7.92	7.74	7.58	7.72
Rut Rating	8.97	9.05	9.01	8.92	8.98	9.05	9.05	8.83	8.89
Ride Rating	7.93	7.90	8.12	8.11	8.02	8.00	7.93	7.93	7.38
Lane Miles	5411	5423	5667	5547	5667	5612	5632	5537	5583

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013
Crack Rating	7.69	7.47	7.60	7.78	8.02	8.39	8.73	8.98	9.15
Rut Rating	8.88	8.97	8.93	9.04	9.13	9.25	9.26	9.21	9.39
Ride Rating	7.34	7.26	7.20	7.25	7.33	7.41	7.46	7.53	7.56
Lane Miles	5608	5593	5496	5542	5659	5894	5959	5934	5945

Note that with the start of the 2004 PCS, the profile data was collected using a sampling rate of 6 in. compared to a 12 in. sample interval used in previous years.

Historical Distress Ratings - District 5

All Systems



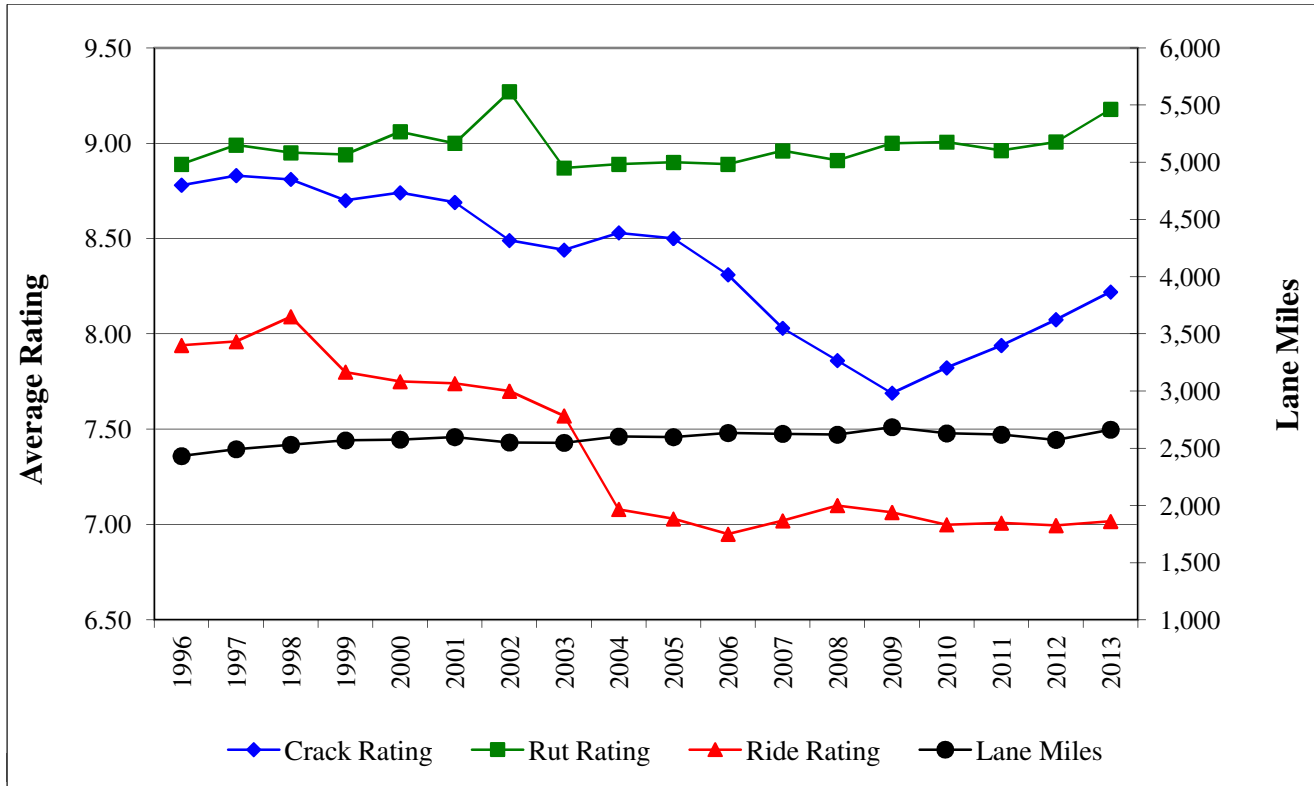
Year	1996	1997	1998	1999	2000	2001	2002	2003	2004
Crack Rating	8.12	8.18	8.16	8.02	8.13	8.02	8.02	7.96	7.92
Rut Rating	8.84	8.94	8.77	9.08	9.09	9.02	8.93	9.00	9.00
Ride Rating	8.19	8.36	8.35	8.33	8.35	8.30	8.28	8.20	7.65
Lane Miles	6169	6364	6577	6682	6769	6776	6784	6860	6755

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013
Crack Rating	7.84	8.23	8.40	8.54	8.75	8.99	8.97	8.99	8.96
Rut Rating	8.92	9.12	9.06	9.18	9.20	9.29	9.23	9.20	9.23
Ride Rating	7.65	7.65	7.76	7.76	7.78	7.84	7.86	7.84	7.81
Lane Miles	6676	6857	7062	7194	7448	7519	7433	7503	7748

Note that with the start of the 2004 PCS, the profile data was collected using a sampling rate of 6 in. compared to a 12 in. sample interval used in previous years.

Historical Distress Ratings - District 6

All Systems



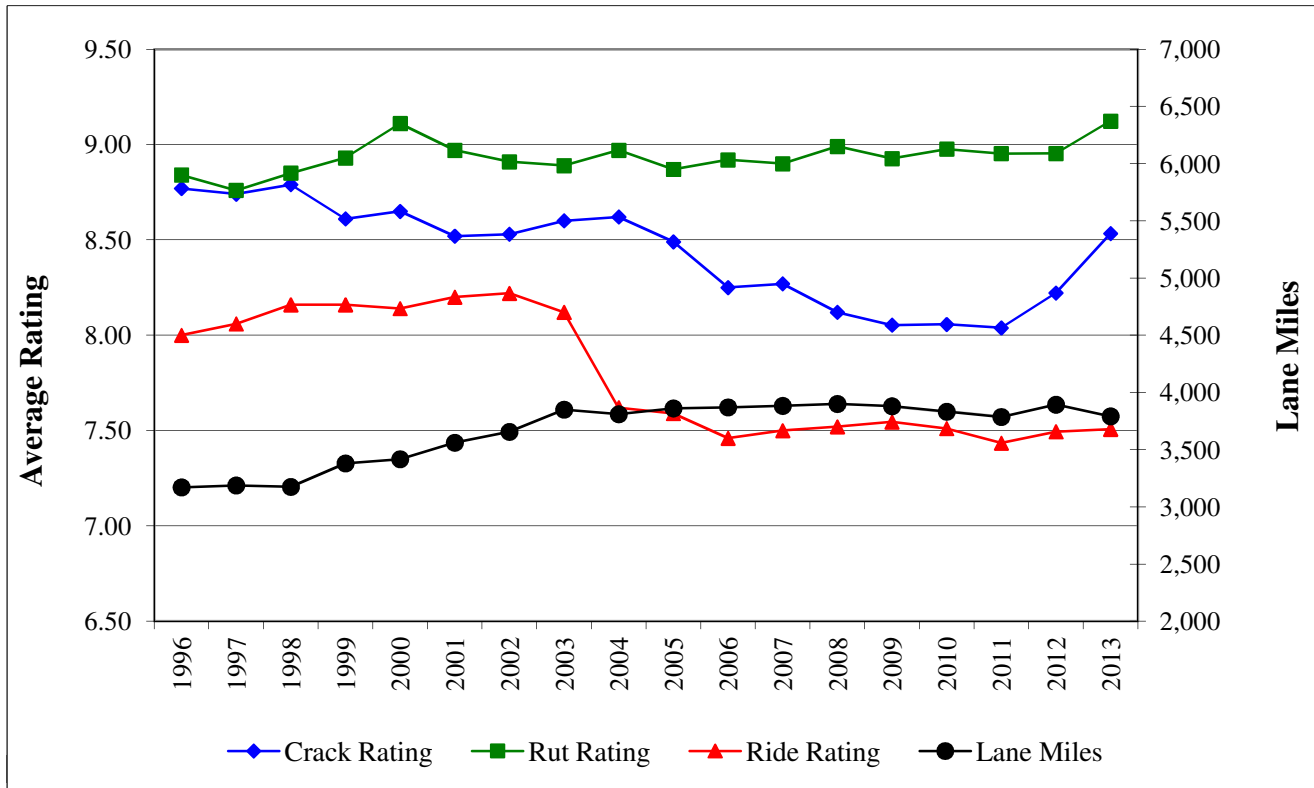
Year	1996	1997	1998	1999	2000	2001	2002	2003	2004
Crack Rating	8.78	8.83	8.81	8.70	8.74	8.69	8.49	8.44	8.53
Rut Rating	8.89	8.99	8.95	8.94	9.06	9.00	9.27	8.87	8.89
Ride Rating	7.94	7.96	8.09	7.80	7.75	7.74	7.70	7.57	7.08
Lane Miles	2432	2492	2531	2569	2576	2598	2551	2548	2603

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013
Crack Rating	8.50	8.31	8.03	7.86	7.69	7.82	7.94	8.07	8.22
Rut Rating	8.90	8.89	8.96	8.91	9.00	9.01	8.96	9.01	9.18
Ride Rating	7.03	6.95	7.02	7.10	7.06	7.00	7.01	7.00	7.02
Lane Miles	2598	2634	2627	2619	2685	2630	2619	2574	2663

Note that with the start of the 2004 PCS, the profile data was collected using a sampling rate of 6 in. compared to a 12 in. sample interval used in previous years.

Historical Distress Ratings - District 7

All Systems



Year	1996	1997	1998	1999	2000	2001	2002	2003	2004
Crack Rating	8.77	8.74	8.79	8.61	8.65	8.52	8.53	8.60	8.62
Rut Rating	8.84	8.76	8.85	8.93	9.11	8.97	8.91	8.89	8.97
Ride Rating	8.00	8.06	8.16	8.16	8.14	8.20	8.22	8.12	7.62
Lane Miles	3171	3188	3175	3380	3417	3561	3656	3850	3810

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013
Crack Rating	8.49	8.25	8.27	8.12	8.05	8.06	8.04	8.22	8.53
Rut Rating	8.87	8.92	8.90	8.99	8.93	8.98	8.95	8.95	9.12
Ride Rating	7.59	7.46	7.50	7.52	7.55	7.51	7.43	7.49	7.51
Lane Miles	3861	3870	3883	3900	3880	3832	3786	3893	3792

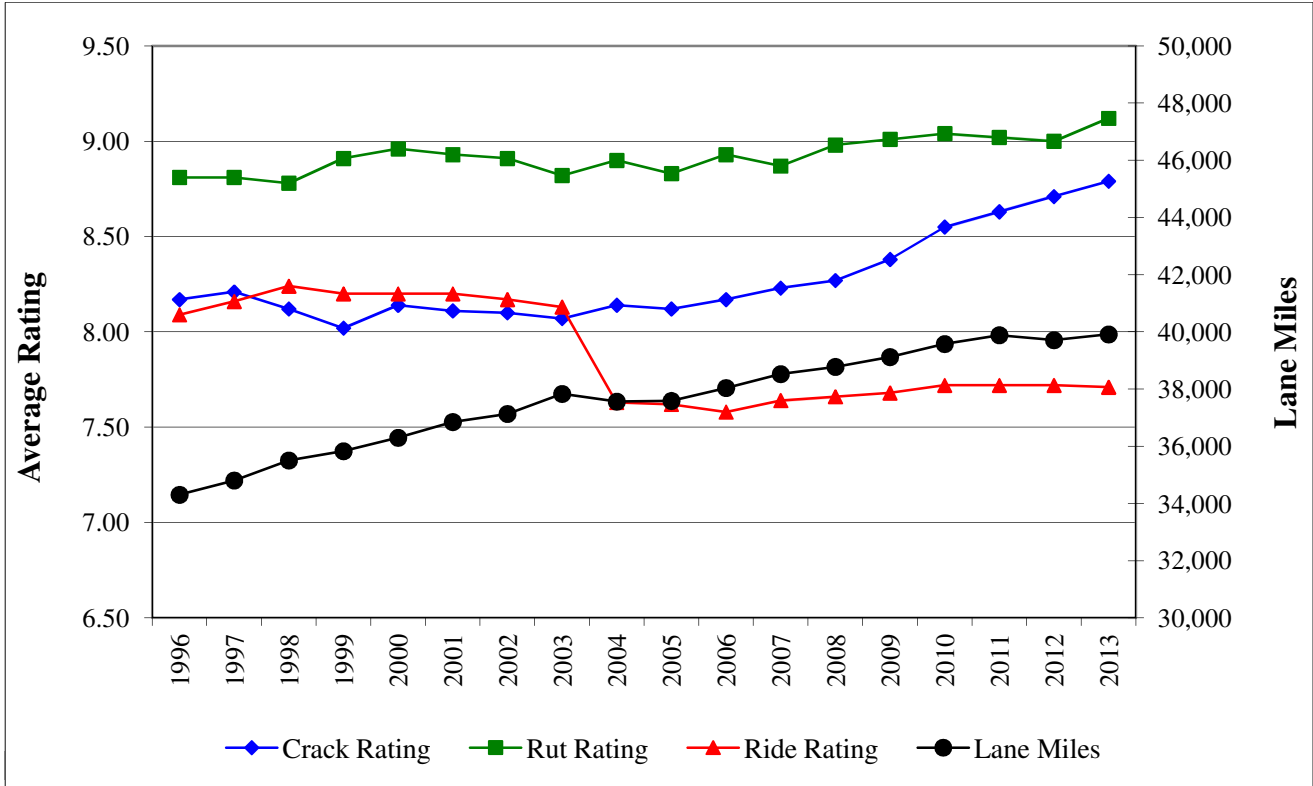
Note that with the start of the 2004 PCS, the profile data was collected using a sampling rate of 6 in. compared to a 12 in. sample interval used in previous years.

Section VII
Historical Distress Ratings
By System
1996 - 2013



Historical Distress Ratings - Statewide

All Systems - All Districts



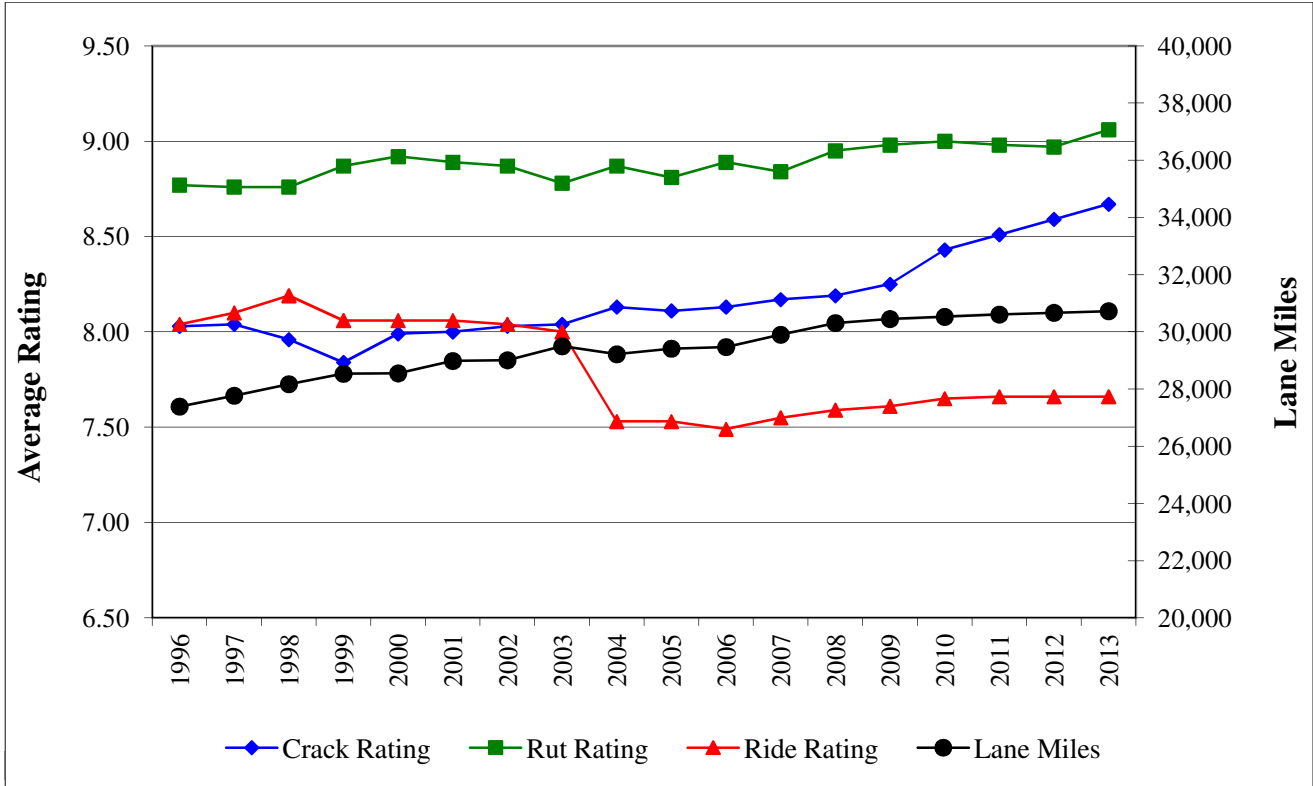
Year	1996	1997	1998	1999	2000	2001	2002	2003	2004
Crack Rating	8.17	8.21	8.12	8.02	8.14	8.11	8.10	8.07	8.14
Rut Rating	8.81	8.81	8.78	8.91	8.96	8.93	8.91	8.82	8.90
Ride Rating	8.09	8.16	8.24	8.20	8.20	8.20	8.17	8.13	7.63
Lane Miles	34305	34806	35506	35830	36298	36850	37132	37833	37563

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013
Crack Rating	8.12	8.17	8.23	8.27	8.38	8.55	8.63	8.71	8.79
Rut Rating	8.83	8.93	8.87	8.98	9.01	9.04	9.02	9.00	9.12
Ride Rating	7.62	7.58	7.64	7.66	7.68	7.72	7.72	7.72	7.71
Lane Miles	37588	38038	38524	38779	39121	39577	39887	39710	39913

Note that with the start of the 2004 PCS, the profile data was collected using a sampling rate of 6 in. compared to a 12 in. sample interval used in previous years.

Historical Distress Ratings - Primary System

All Districts



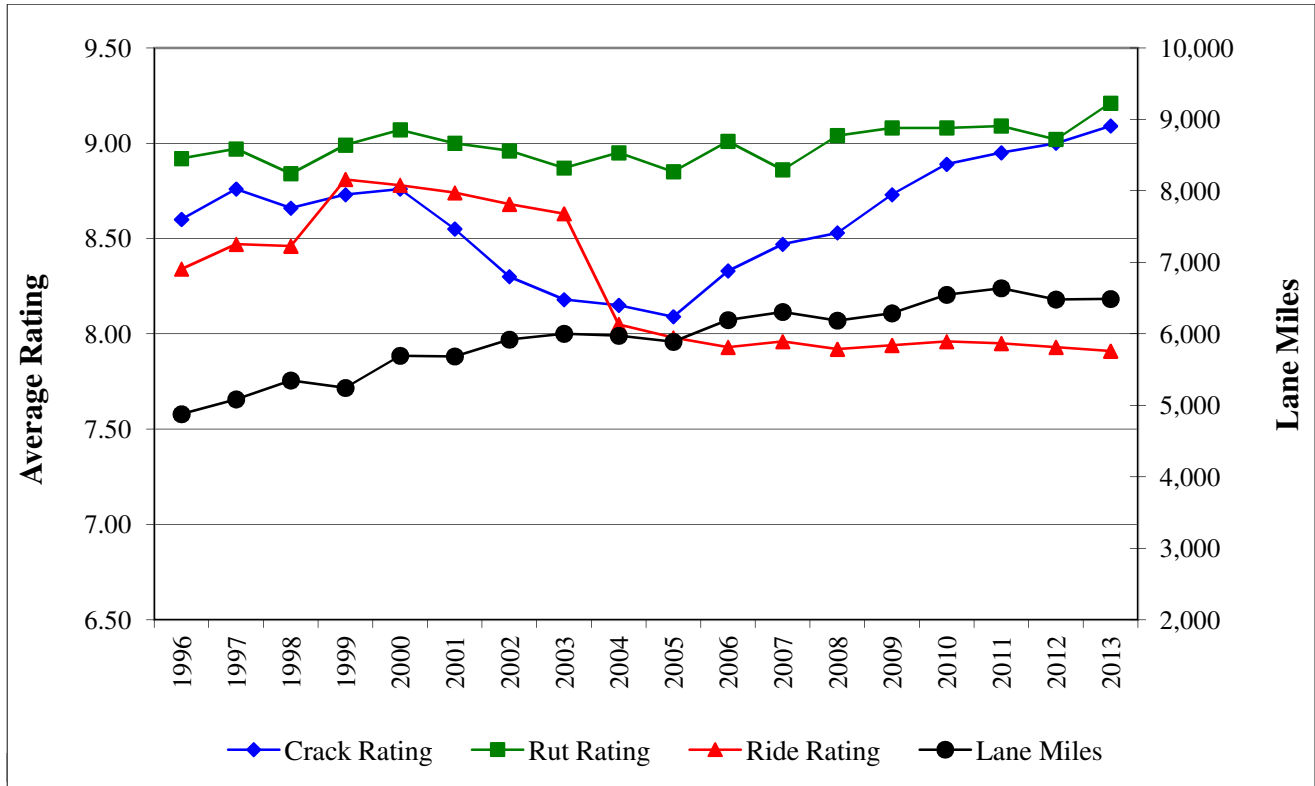
Year	1996	1997	1998	1999	2000	2001	2002	2003	2004
Crack Rating	8.03	8.04	7.96	7.84	7.99	8.00	8.03	8.04	8.13
Rut Rating	8.77	8.76	8.76	8.87	8.92	8.89	8.87	8.78	8.87
Ride Rating	8.04	8.10	8.19	8.06	8.06	8.06	8.04	8.00	7.53
Lane Miles	27390	27769	28174	28535	28551	28983	29010	29499	29219

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013
Crack Rating	8.11	8.13	8.17	8.19	8.25	8.43	8.51	8.59	8.67
Rut Rating	8.81	8.89	8.84	8.95	8.98	9.00	8.98	8.97	9.06
Ride Rating	7.53	7.49	7.55	7.59	7.61	7.65	7.66	7.66	7.66
Lane Miles	29416	29471	29900	30310	30452	30526	30607	30670	30726

Note that with the start of the 2004 PCS, the profile data was collected using a sampling rate of 6 in. compared to a 12 in. sample interval used in previous years.

Historical Distress Ratings - Interstate System

All Districts



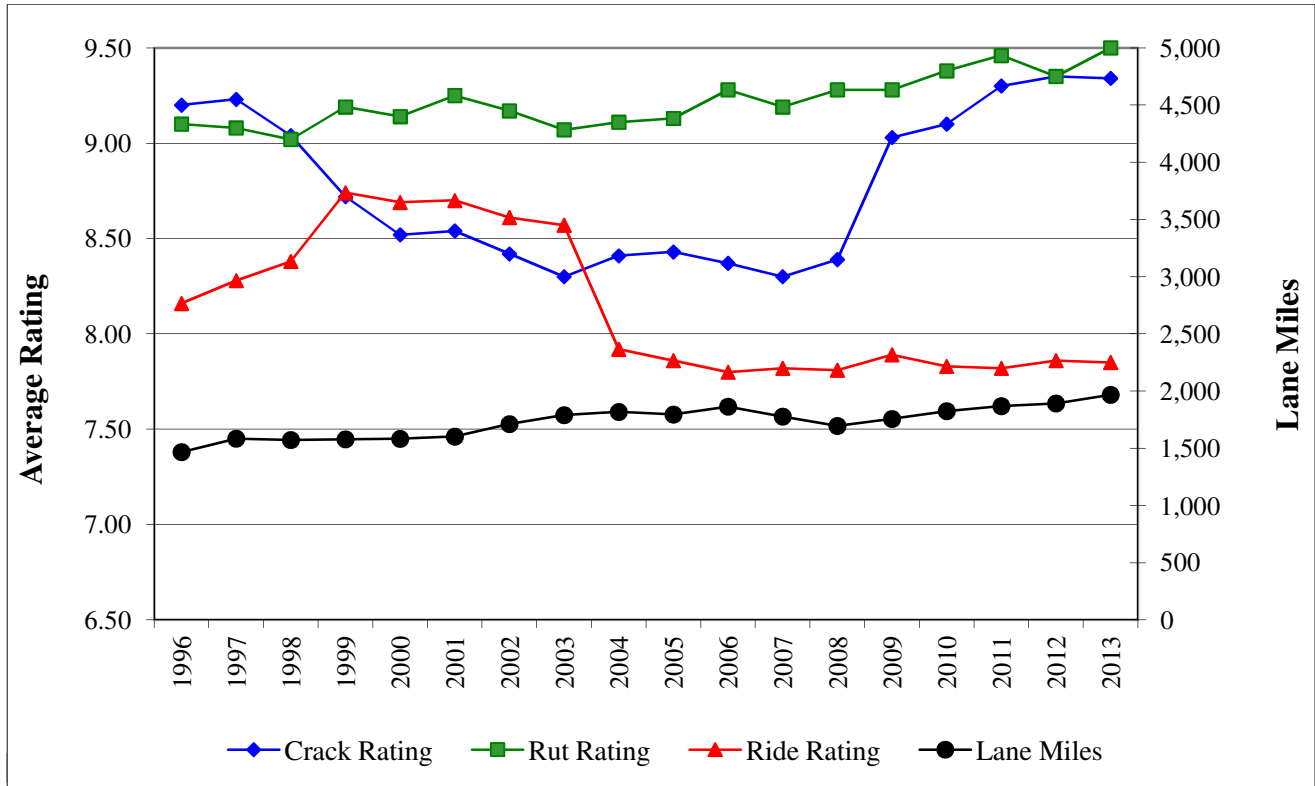
Year	1996	1997	1998	1999	2000	2001	2002	2003	2004
Crack Rating	8.60	8.76	8.66	8.73	8.76	8.55	8.30	8.18	8.15
Rut Rating	8.92	8.97	8.84	8.99	9.07	9.00	8.96	8.87	8.95
Ride Rating	8.34	8.47	8.46	8.81	8.78	8.74	8.68	8.63	8.05
Lane Miles	4877	5085	5349	5244	5695	5685	5920	6002	5974

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013
Crack Rating	8.09	8.33	8.47	8.53	8.73	8.89	8.95	9.00	9.09
Rut Rating	8.85	9.01	8.86	9.04	9.08	9.08	9.09	9.02	9.21
Ride Rating	7.98	7.93	7.96	7.92	7.94	7.96	7.95	7.93	7.91
Lane Miles	5889	6194	6307	6186	6288	6547	6639	6481	6488

Note that with the start of the 2004 PCS, the profile data was collected using a sampling rate of 6 in. compared to a 12 in. sample interval used in previous years.

Historical Distress Ratings - Turnpike System

All Districts



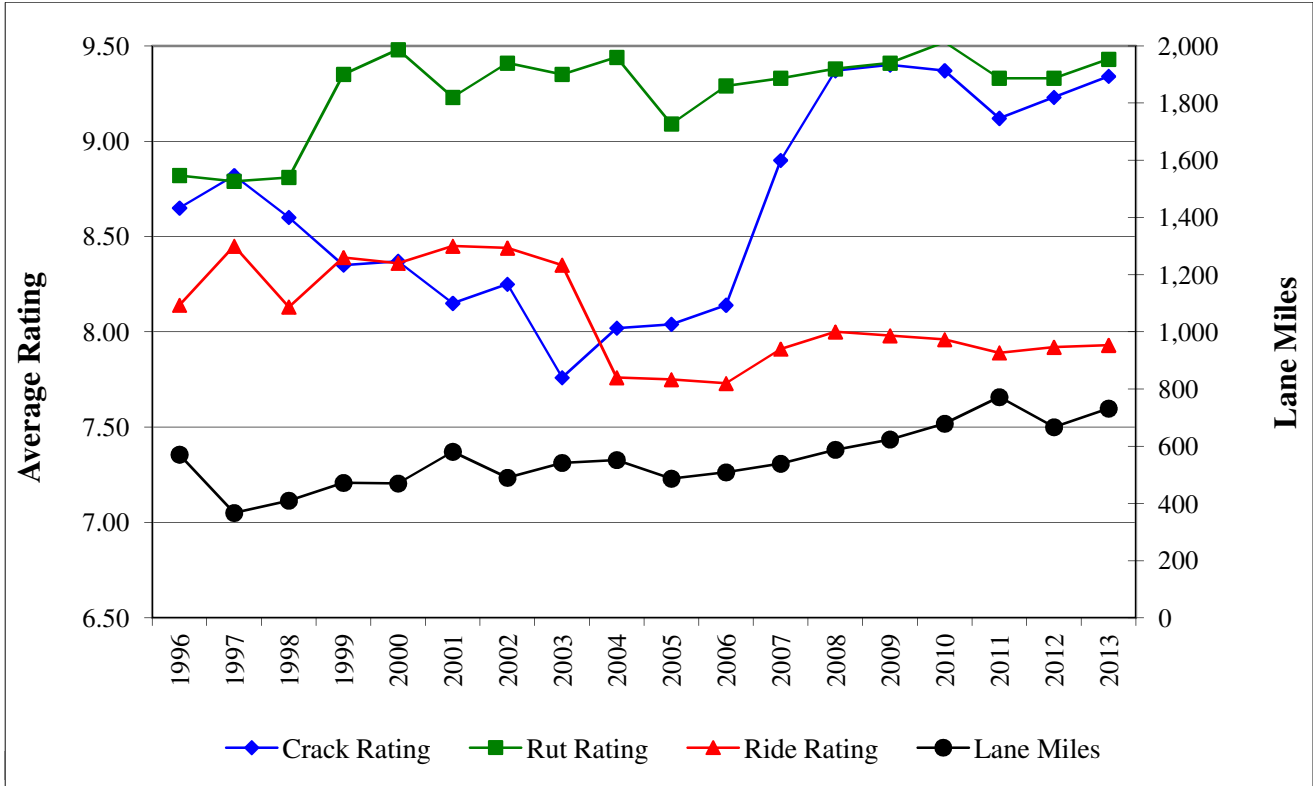
Year	1996	1997	1998	1999	2000	2001	2002	2003	2004
Crack Rating	9.20	9.23	9.04	8.72	8.52	8.54	8.42	8.30	8.41
Rut Rating	9.10	9.08	9.02	9.19	9.14	9.25	9.17	9.07	9.11
Ride Rating	8.16	8.28	8.38	8.74	8.69	8.70	8.61	8.57	7.92
Lane Miles	1467	1585	1573	1579	1583	1602	1712	1790	1818

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013
Crack Rating	8.43	8.37	8.30	8.39	9.03	9.10	9.30	9.35	9.34
Rut Rating	9.13	9.28	9.19	9.28	9.28	9.38	9.46	9.35	9.50
Ride Rating	7.86	7.80	7.82	7.81	7.89	7.83	7.82	7.86	7.85
Lane Miles	1795	1864	1778	1696	1757	1825	1869	1892	1968

Note that with the start of the 2004 PCS, the profile data was collected using a sampling rate of 6 in. compared to a 12 in. sample interval used in previous years.

Historical Distress Ratings - Toll System

All Districts



Year	1996	1997	1998	1999	2000	2001	2002	2003	2004
Crack Rating	8.65	8.82	8.60	8.35	8.37	8.15	8.25	7.76	8.02
Rut Rating	8.82	8.79	8.81	9.35	9.48	9.23	9.41	9.35	9.44
Ride Rating	8.14	8.45	8.13	8.39	8.36	8.45	8.44	8.35	7.76
Lane Miles	571	367	410	472	470	581	490	542	552

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013
Crack Rating	8.04	8.14	8.90	9.37	9.40	9.37	9.12	9.23	9.34
Rut Rating	9.09	9.29	9.33	9.38	9.41	9.52	9.33	9.33	9.43
Ride Rating	7.75	7.73	7.91	8.00	7.98	7.96	7.89	7.92	7.93
Lane Miles	487	509	539	588	624	679	772	667	732

Note that with the start of the 2004 PCS, the profile data was collected using a sampling rate of 6 in. compared to a 12 in. sample interval used in previous years.

Section VIII
Raveling Distribution
By District and System
1996 - 2013



Section VIII

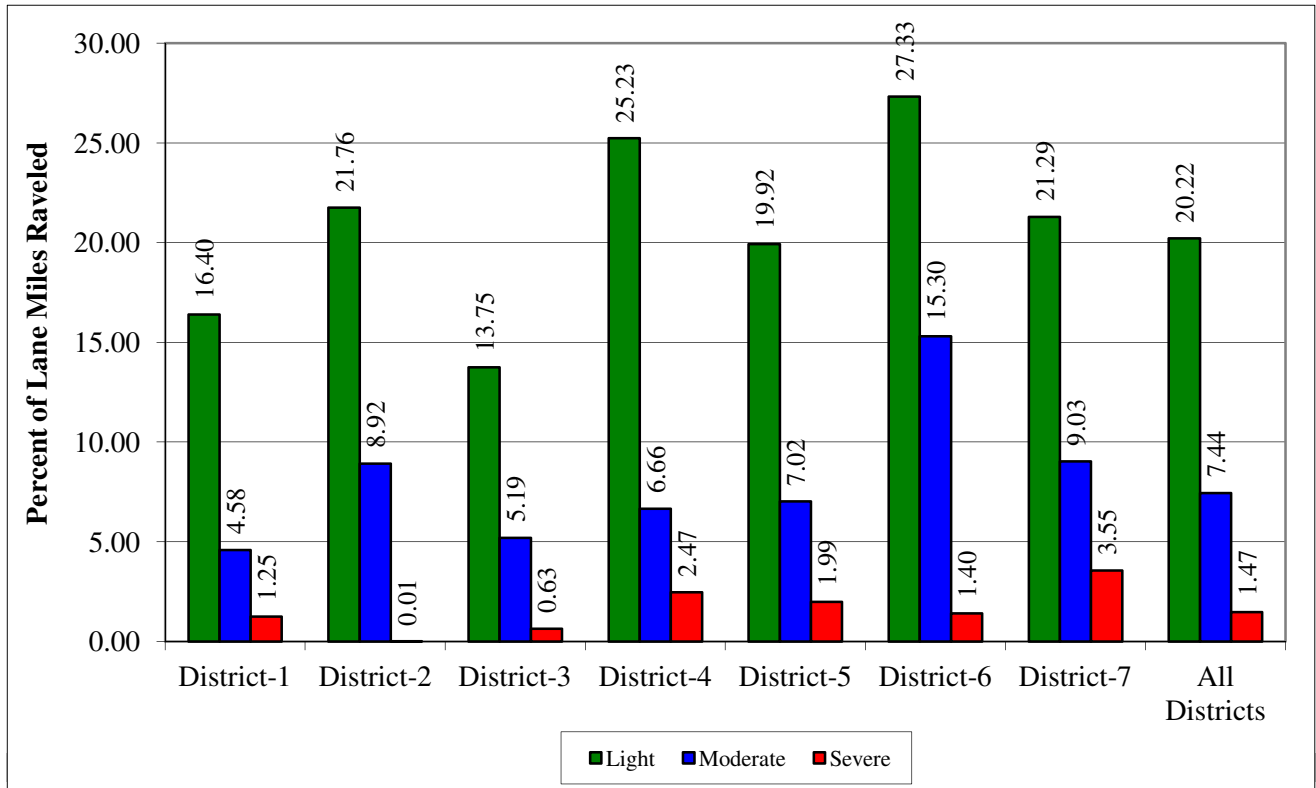
Raveling

Raveling Rating Criteria

- 1 Raveling is the wearing away of the pavement surface caused by the dislodging of aggregate particles and the loss of asphalt binder due to weathering.
- 2 Raveling for a rated section is combined with the Crack Rating.
- 3 Raveling and weathering may be caused by:
 - Hardening of the asphalt binder
 - Low adhesion of the asphalt binder
 - Low wear resistant aggregate in the mix or poor asphalt mix (dirty aggregate in the mix)
 - Water sensitive asphalt-aggregate mixture
 - Any combination of the above factors
- 4 Raveling became a noticeable defect by raters and was required to be listed in their comments as of 1992.
- 5 Since 1995, Raveling was rated by severity level (light, moderate, and severe) and percent of affected area, where only predominate severity level was recorded.
 - **Light Raveling** occurs when the aggregate and/or binder has begun to wear away but has not progressed significantly. Some loss of fine aggregate is present.
 - **Moderate Raveling** occurs when the aggregate and/or binder has worn away and the surface texture is becoming rough and pitted, loose particles generally exist, and loss of fine aggregate and some loss of coarse aggregate exists.
 - **Severe Raveling** occurs when the aggregate and/or binder have worn away and the surface texture is very rough and pitted; loss of coarse aggregate is very noticeable.

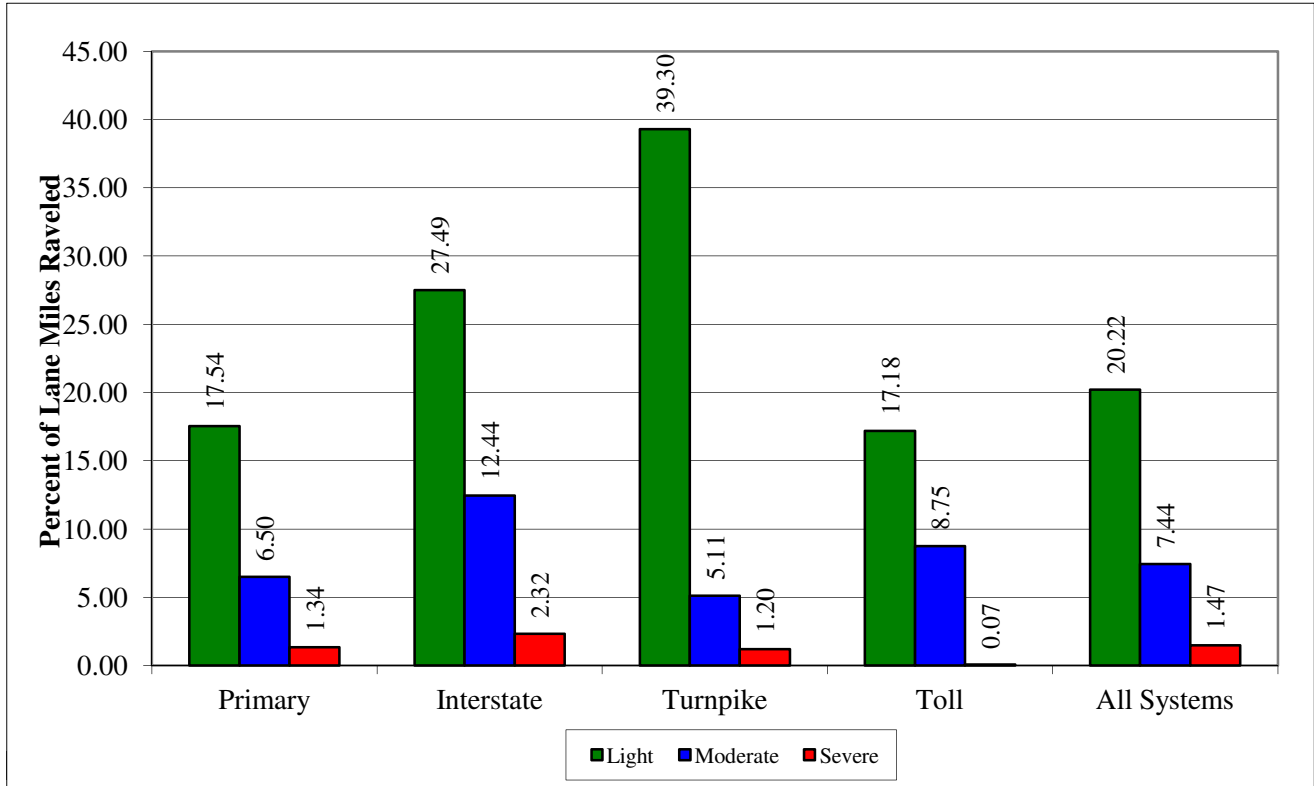
2013 Raveling Survey by District

All Systems



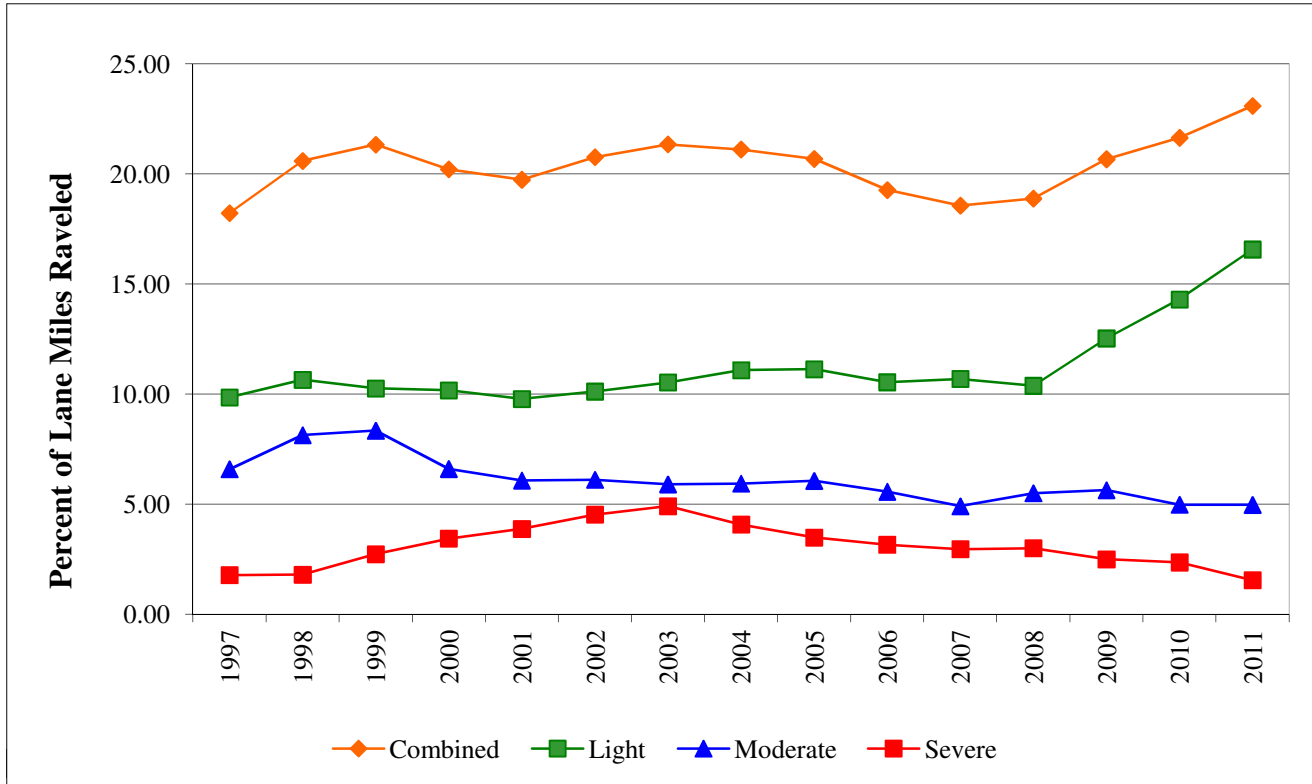
2013 Raveling Survey by System

All Districts



Raveling Survey History

All Systems and All Districts Combined



Year	1997	1998	1999	2000	2001	2002	2003	2004	2005
Combined	18.22	20.59	21.33	20.21	19.74	20.76	21.34	21.11	20.68
Light	9.85	10.65	10.26	10.17	9.78	10.12	10.53	11.09	11.13
Moderate	6.59	8.14	8.34	6.60	6.08	6.11	5.90	5.94	6.06
Severe	1.78	1.80	2.73	3.44	3.88	4.53	4.91	4.08	3.49

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014
Combined	19.27	18.56	18.88	20.67	21.64	23.09	27.25	29.13	29.13
Light	10.54	10.69	10.38	12.53	14.30	16.57	19.05	20.22	20.22
Moderate	5.57	4.91	5.50	5.64	4.98	4.97	6.47	7.44	7.44
Severe	3.16	2.96	3.00	2.50	2.36	1.55	1.73	1.47	1.47

Section IX
Distress Ratings
Comparison
2012 vs. 2013



Section IX

Crack, Rut, and Ride Ratings Comparison

Rating Comparison Criteria

Only Type 1 Flexible Pavements are included in the comparison. The following pavement types have been omitted from this comparison since they exhibit notable changes to the pavement surface as indicated below:

Type 0 - Pavement sections not State-maintained, duplicated under another county section number, or added under the Rigid PCS.

Type 2 - Surface Treatment or pavement improvement without new construction, such as intersection improvements, wheel path leveling, bridge approach or area resurfacing.

Type 3 - Skin Patch

Type 4 - Rigid Pavements

Type 5 - New Construction

Type 6 - No Ride taken for this section (normally because of length constraint)

Type 7 - New Pavement (Overlays)

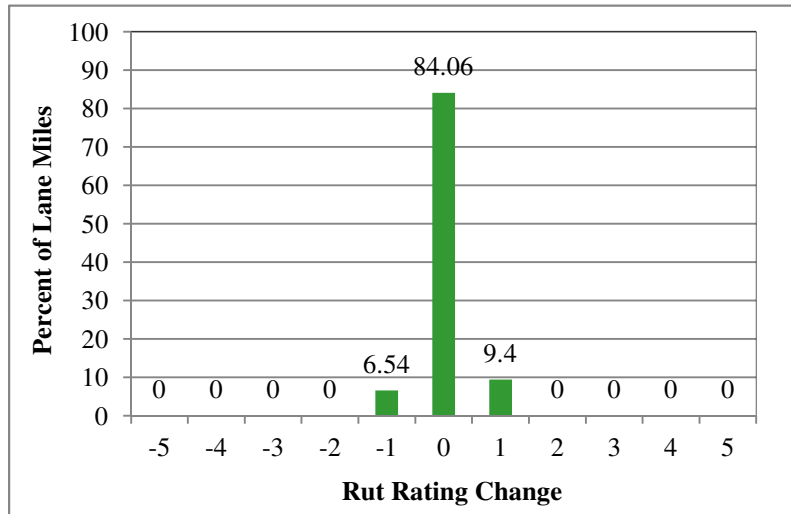
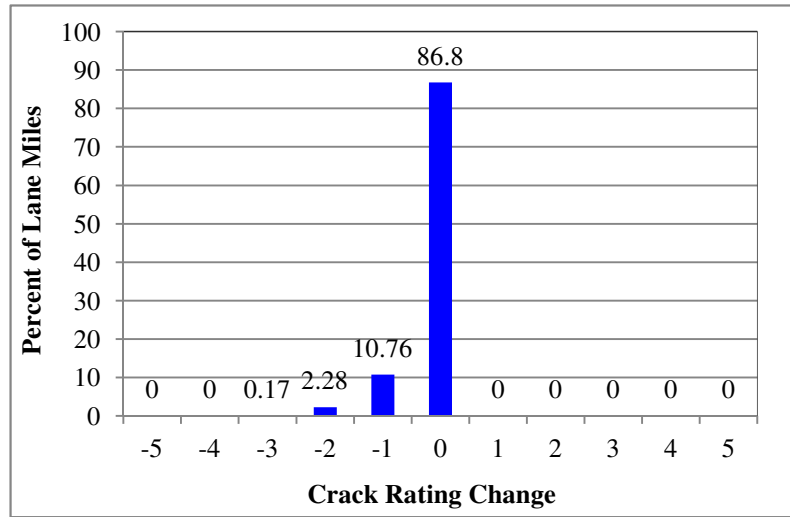
Type 8 - Under Construction

Type 9 - Structures or exceptions that are State-maintained

Crack, Rut, and Ride Rating Changes

2012 compared to 2013

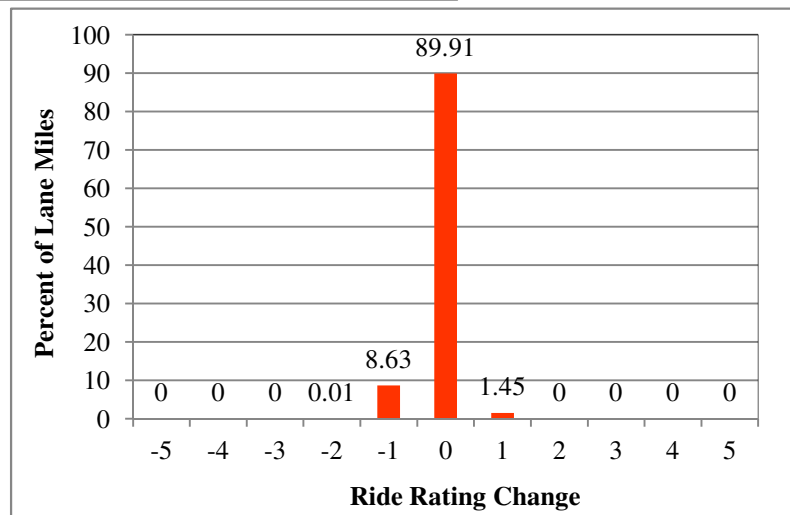
97.6% of the 2013 rated lane miles were within +/- 1 rating point of the 2012 rated lane miles



100% of the 2013 rated lane miles were within +/-1 rating point of the 2012 rated lane miles

100% of the 2013 rated lanes miles were within +/-1 point of the 2012 rated lane miles

Negative values are indicative of the deterioration in the pavement and/or the variability in the data collection process. Positive values are indicative of the variability in the data collection process.



Section X

Customer Service Survey



2013 Flexible Pavement Condition Survey

Facts and Figures

Customer Service Form

In an effort to continuously improve customer service, the Pavement Materials Section asks for your input by filling out and returning this survey form.

(Optional)

Name: _____ Title: _____
Company/Office: _____
Address: _____ City/State/Zip: _____
Phone: _____ E-mail: _____

*Please rate each of the following on the scale provided. **One** corresponds to **Very Poor**, and **Five** corresponds to **Excellent**.*

Usefulness of Content	1 2 3 4 5
	○ ○ ○ ○ ○
Organization of Information.....	1 2 3 4 5
	○ ○ ○ ○ ○
Clarity of Graphical Illustrations.....	1 2 3 4 5
	○ ○ ○ ○ ○
Format of Tables	1 2 3 4 5
	○ ○ ○ ○ ○
Overall Value of this Report	1 2 3 4 5
	○ ○ ○ ○ ○

Please provide an answer to the following questions. Attach an additional sheet(s) if needed.

What was the most useful/informative part of this report?

What was the least useful/informative part of this report?

What changes do you recommend to improve this report?

Detach and mail to:

State Materials Office, Attention: Stacy Scott, 5007 NE 39th Ave., Gainesville, FL 32609 or send via email to: stacy.scott@dot.state.fl.us