Florida Department of TRANSPORTATION

2016 Flexible Pavement Condition Survey Facts and Figures

FDOT Office
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This report is a result of the dedicated effort and contribution by the following individuals:

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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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Executive Summary

Since 1985, the Pavement Condition Unit of the State Materials office 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 Office's Pavement Management Section is responsible for the data processing and analysis, and for making the data available for use by the Department, consultants, and others.

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.fdot.gov/materials/

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Section I

Introduction

The Pavement Condition Unit is responsible for the Department's 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 five area staff specialists about 25 weeks of travel each year to complete. Since 1986, the PCS program has seen close to a 30 percent increase in surveyed lane miles.

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 a 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 International Roughness Index (IRI), which is defined in ASTM E1926. The IRI is then converted to a Ride Rating value that is based upon a scale of 0 (very rough) to 10 (very smooth).

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 used to test both the data accuracy and compliance with other known parameters. Comparisons of annual PCS data with earlier years to review trends and identify potential errors are also performed. When necessary, survey equipment and software is upgraded to improve the 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://www.fdot.gov/materials/pavement/performance/pcs/index.shtm

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

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Observations

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

1. The average Crack Rating has remained stable from 1999 to 2008 with a mean rating of 8.1 and a range of 8.0 to 8.3. Since then the rating has improved significantly and is now 8.7 in 2016. This change is attributed to a increase in the number of miles resurfaced beginning in 2008, implemented research, improved materials and improved construction methods.

2. The average Rut Rating has gradually improved from 8.9 in 1999 to 9.2 in 2016. The mean rating over this period is 9.0, or about 0.1 inches average rutting for the entire state maintained highway system.

3. The average Ride Rating remained stable from 1999 to 2003 having a mean rating of 8.2. 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 8.1 in 2003 to 7.6 in 2004. The Ride Rating has remained constant for the last 13 years with an average of 7.7.

4. 95% of the pavement sections rated in 2016 for cracking were within one point compared to the 2015 ratings.*

5. 100% of the pavement sections rated in 2016 for rutting were within one point compared to the 2015 ratings.*

6. 100% of the pavement sections rated in 2016 for ride were within one point compared to the 2015 ratings.*

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

General Notes

1. Multi-lane roadways: The worst lane in each direction is rated (normally the outermost traffic lane).

2. Two lane roadways: The worst lane is rated (normally the same lane tested the previous year).

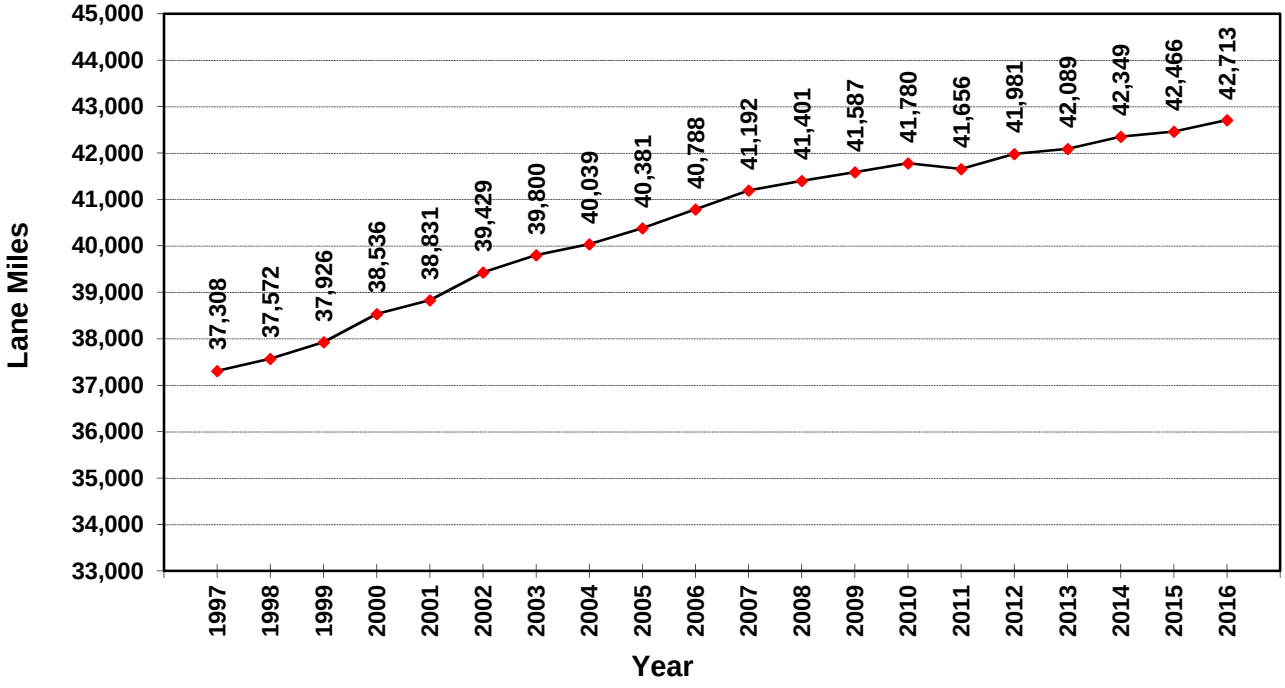
3. Rated sections are determined by construction limits or significant changes in visual condition of the pavement.

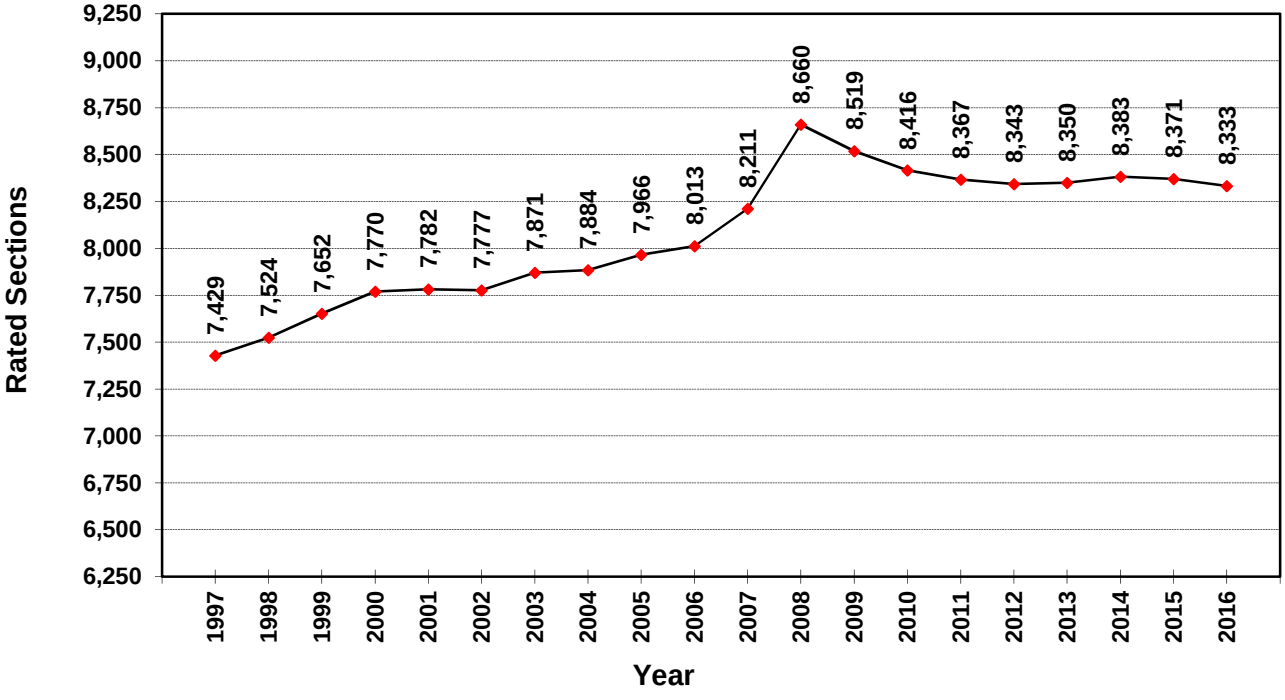
4. Crack Rating is subjective and collected visually, as a windshield survey or from the roadway shoulder. It is also rated based on the severity and extent of the distress for area inside and outside the wheel paths.

5. Flexible Pavement Condition Survey Production History (p. 4) is based on total lane miles, including the structures and sections under construction. All other graphs and tables are based on lane miles where given rating index (crack, rut, or ride) was measured.

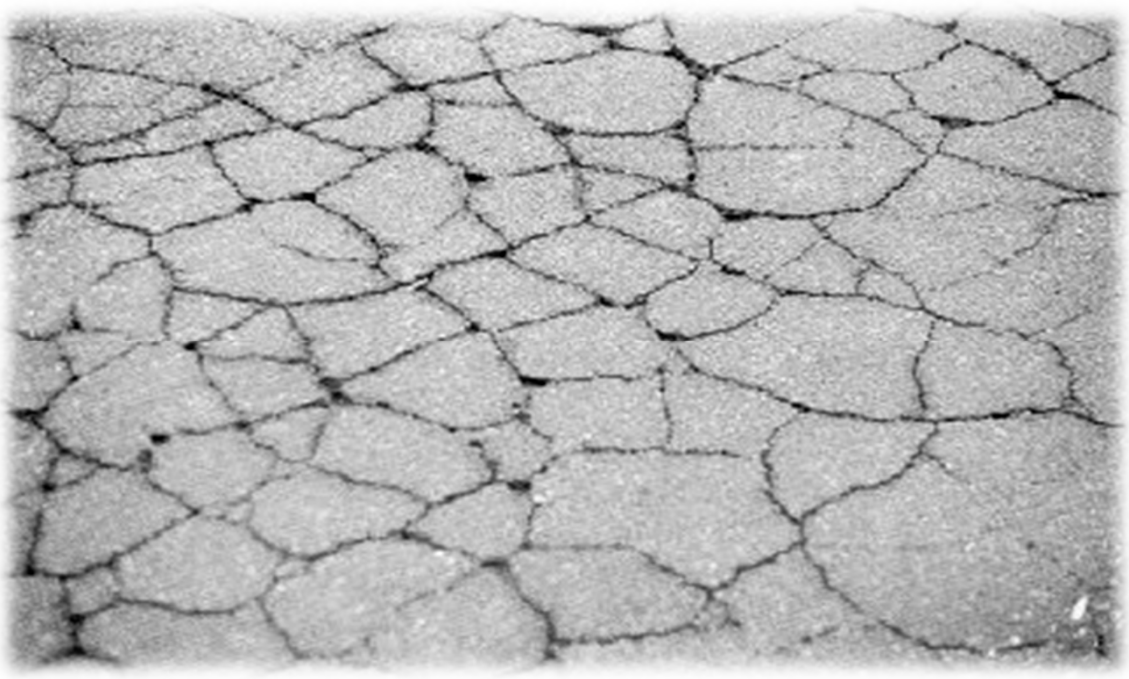
6. Historical Distress Ratings by District (Section V) and by System (Section VI) are based on Lane Miles for Crack Rating.

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.

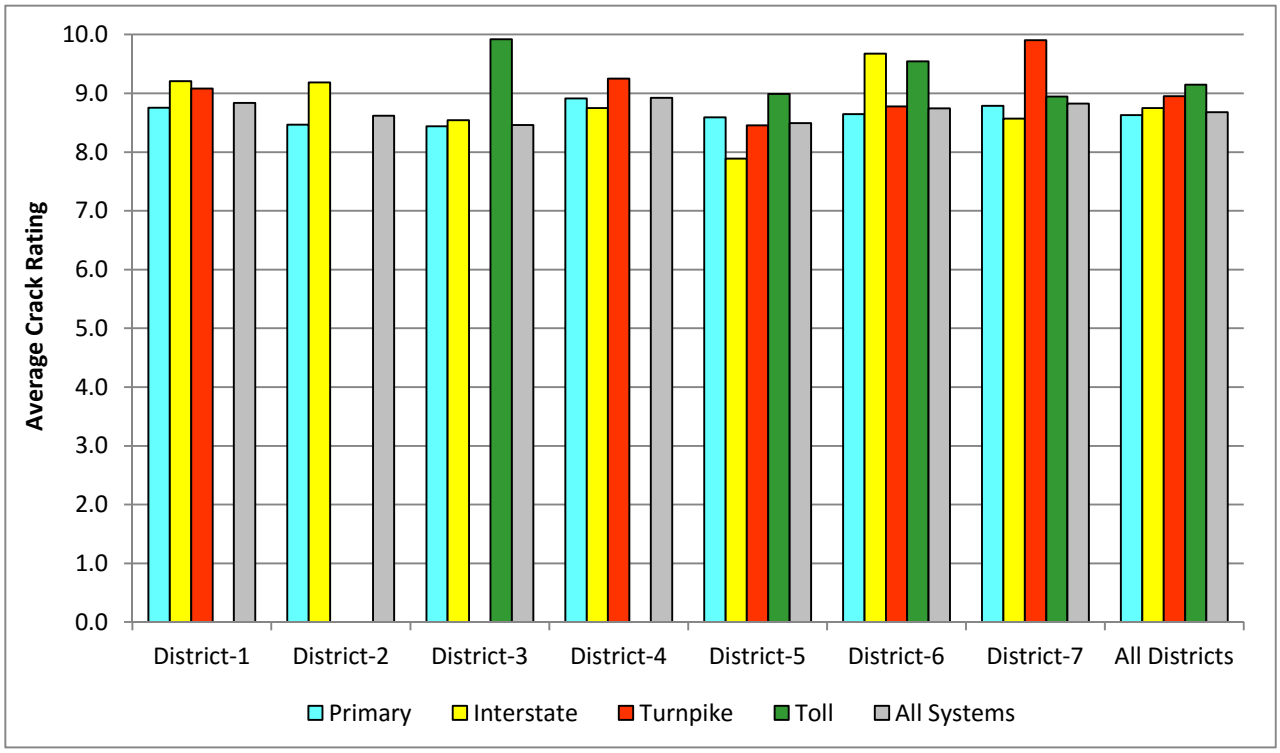
4. Crack Rating is rated on a 0 to 10 scale, where a rating of 10 represents a pavement in perfect condition. Currently, a rating of 6 or less makes pavement segments eligible for rehabilitation.

5. The Crack Rating is subtracted from a perfect score of 10.

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

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.

2016 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	4,928	6,063	5,441	4,077	5,157	2,109	3,018	30,792
Interstate	1,023	1,639	890	1,234	1,144	61	391	6,381
Turnpike	119	0	0	811	790	199	181	2,100
Toll	0	0	33	0	473	175	88	769
Total	6,070	7,702	6,364	6,121	7,564	2,543	3,678	40,042

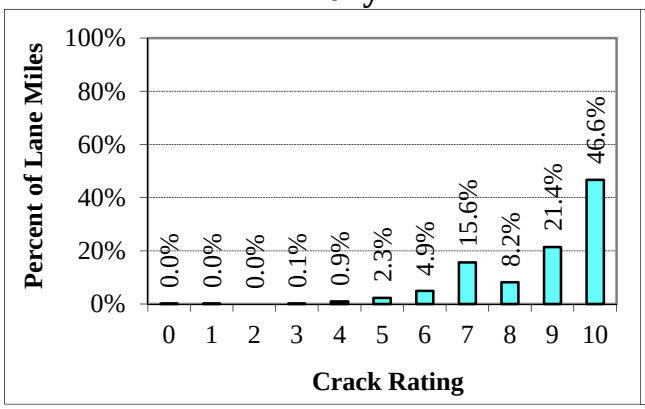
Crack Rating

System	District-1	District-2	District-3	District-4	District-5	District-6	District-7	Statewide
Primary	8.8	8.5	8.4	8.9	8.6	8.7	8.8	8.6
Interstate	9.2	9.2	8.5	8.8	7.9	9.7	8.6	8.8
Turnpike	9.1			9.3	8.5	8.8	9.9	9.0
Toll			9.9		9.0	9.5	9.0	9.2
Average	8.8	8.6	8.5	8.9	8.5	8.7	8.8	8.7

* All averages and Statewide (by System) values are weighted by miles

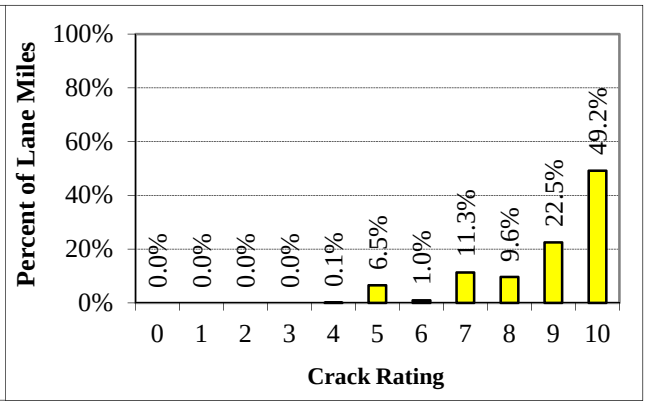
2016 Crack Distribution by System - Statewide

Primary



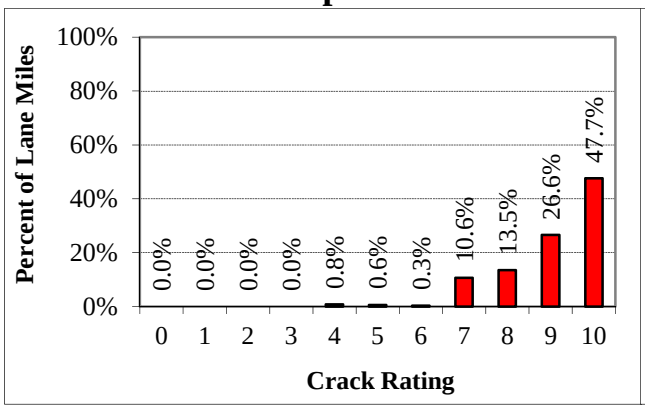
30,792 Lane Miles, Mean = 8.6

Interstate



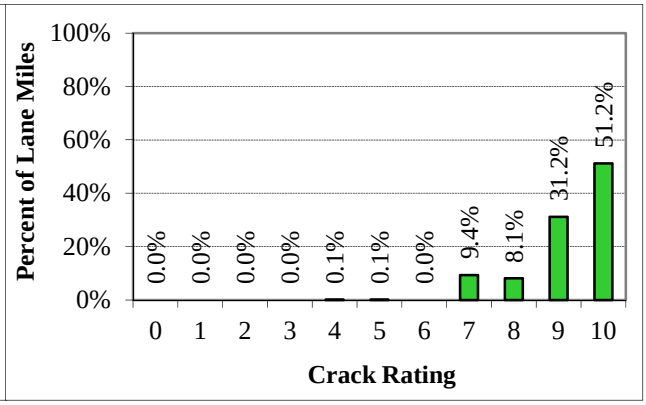
6,381 Lane Miles, Mean = 8.8

Turnpike



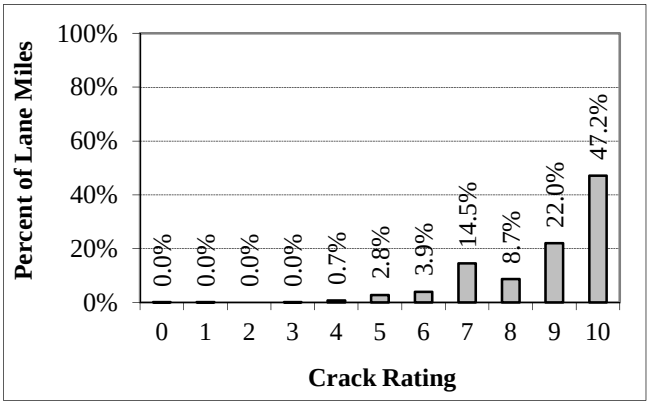
2,100 Lane Miles, Mean = 9.0

Toll



769 Lane Miles, Mean = 9.2

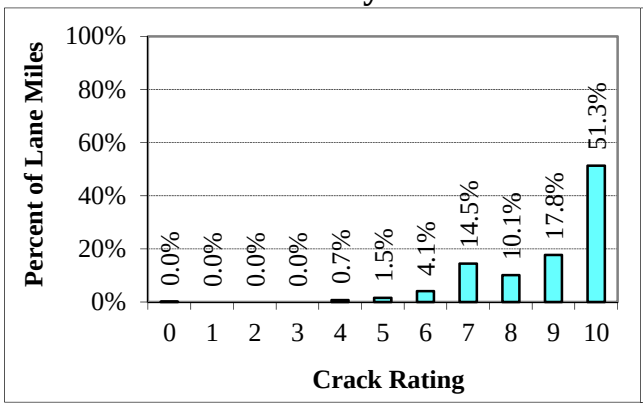
Statewide



40,042 Lane Miles, Mean = 8.7

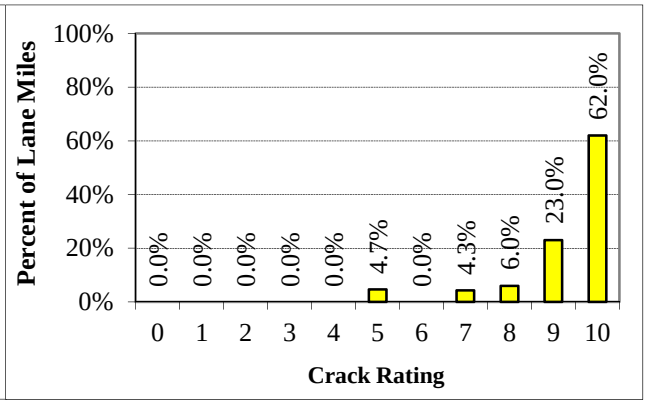
2016 Crack Distribution by System - District 1

Primary



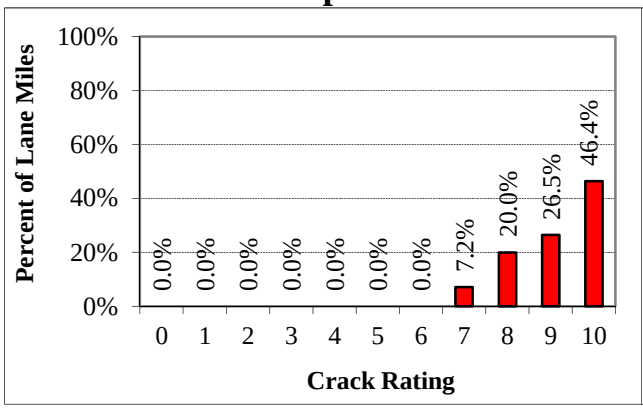
4,928 Lane Miles, Mean = 8.8

Interstate



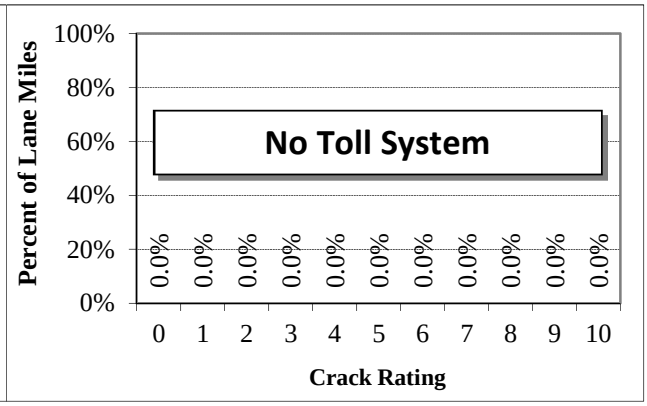
1,023 Lane Miles, Mean = 9.2

Turnpike



119 Lane Miles, Mean = 9.1

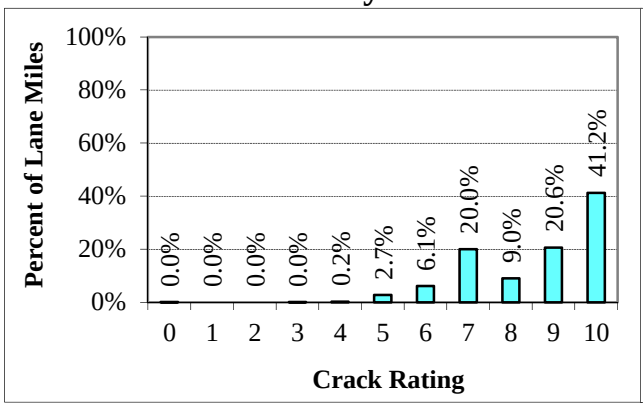
Toll



0 Lane Miles, Mean = N/A

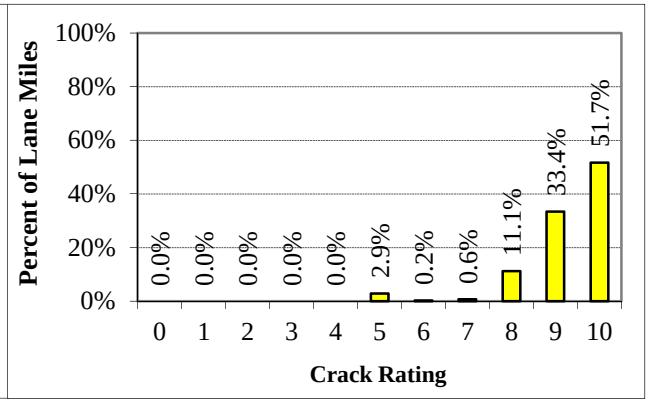
2016 Crack Distribution by System - District 2

Primary



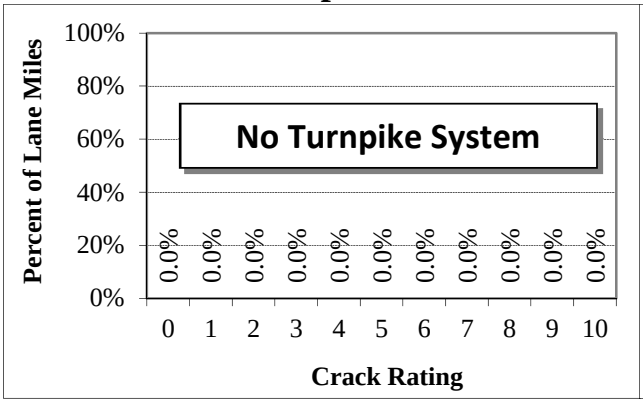
6,063 Lane Miles, Mean = 8.5

Interstate



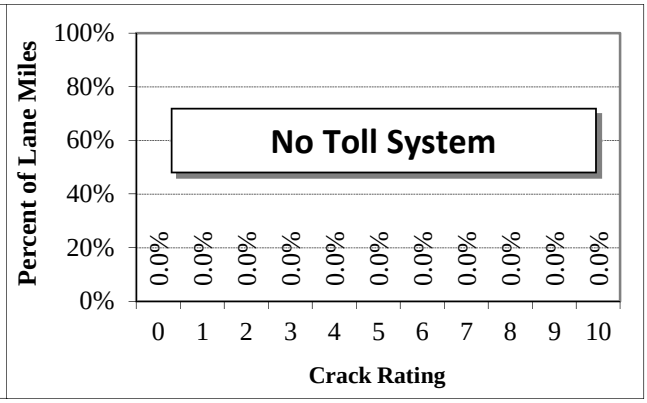
1,639 Lane Miles, Mean = 9.2

Turnpike



0 Lane Miles, Mean = N/A

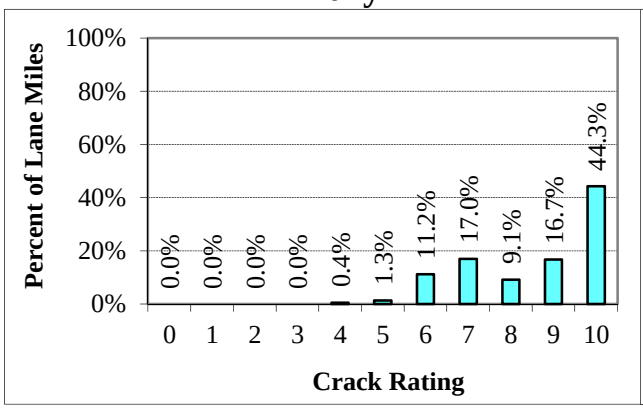
Toll



0 Lane Miles, Mean = N/A

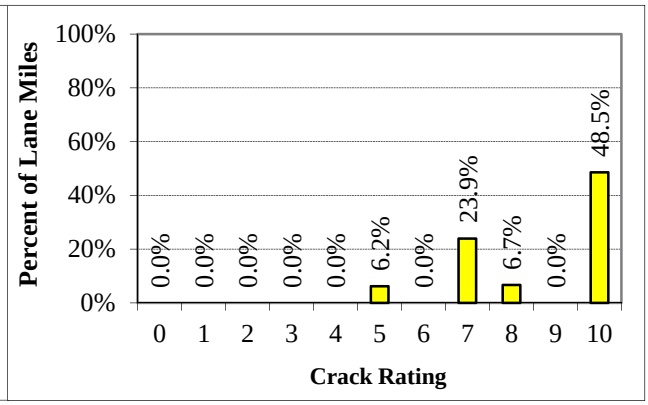
2016 Crack Distribution by System - District 3

Primary



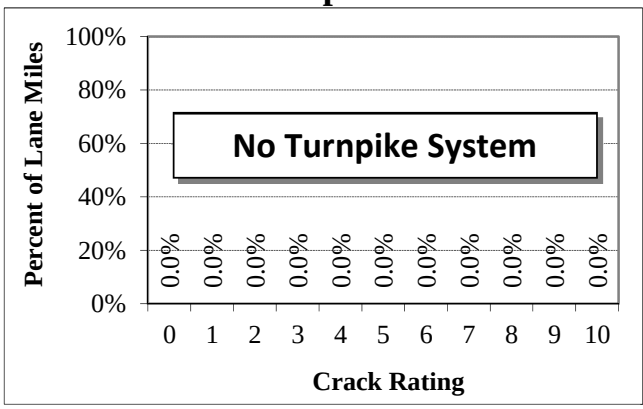
5,441 Lane Miles, Mean = 8.4

Interstate



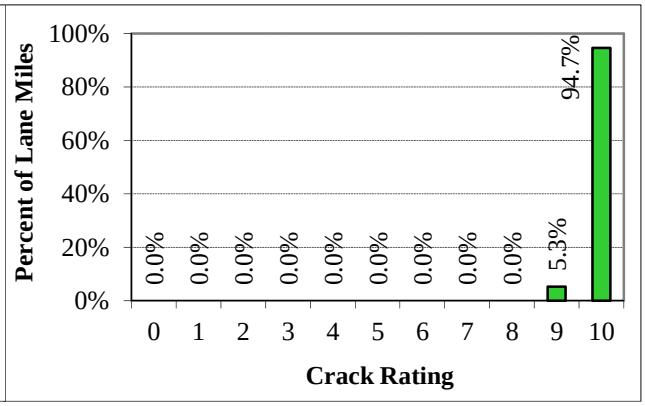
890 Lane Miles, Mean = 8.5

Turnpike



0 Lane Miles, Mean = N/A

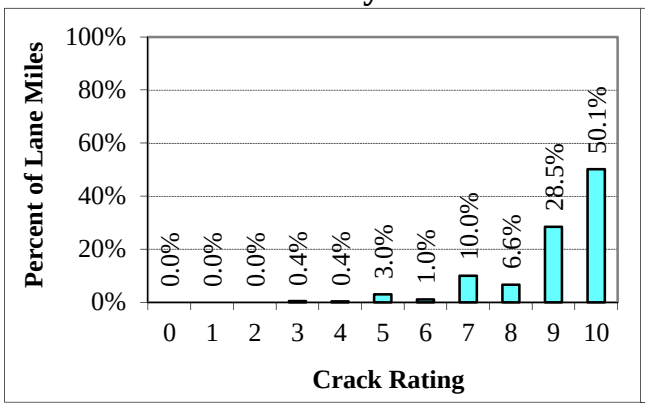
Toll



33 Lane Miles, Mean = 9.9

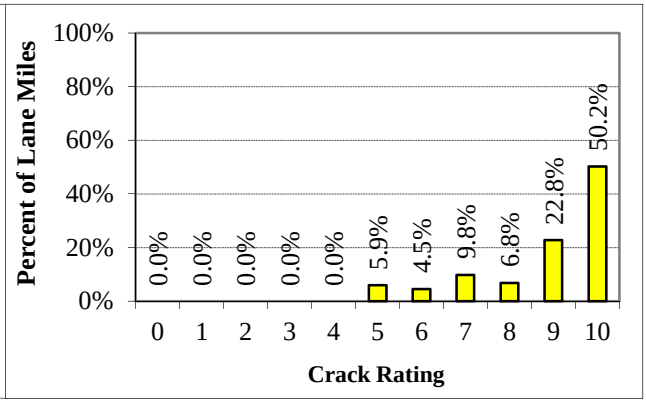
2016 Crack Distribution by System - District 4

Primary



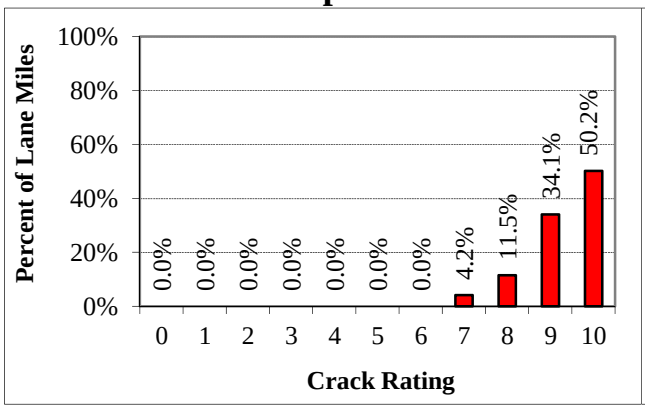
4,077 Lane Miles, Mean = 8.9

Interstate



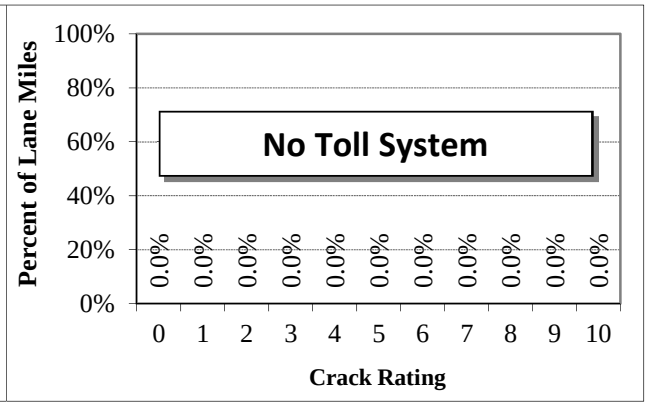
1,234 Lane Miles, Mean = 8.7

Turnpike



811 Lane Miles, Mean = 9.3

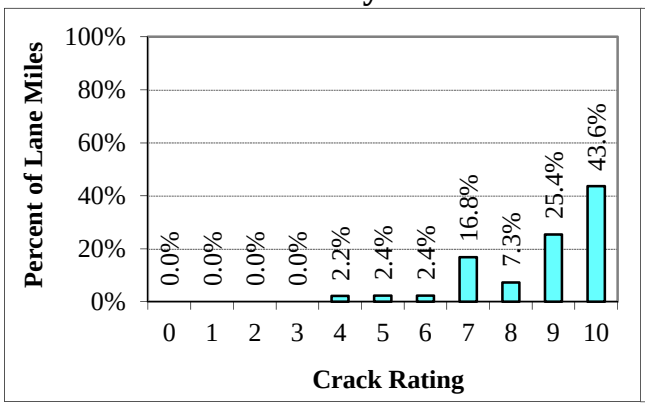
Toll



0 Lane Miles, Mean = N/A

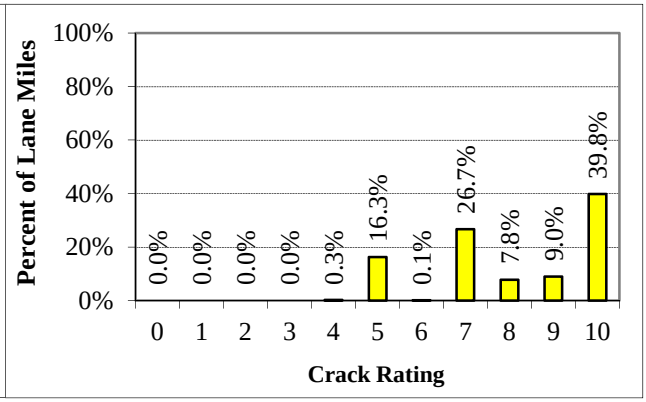
2016 Crack Distribution by System - District 5

Primary



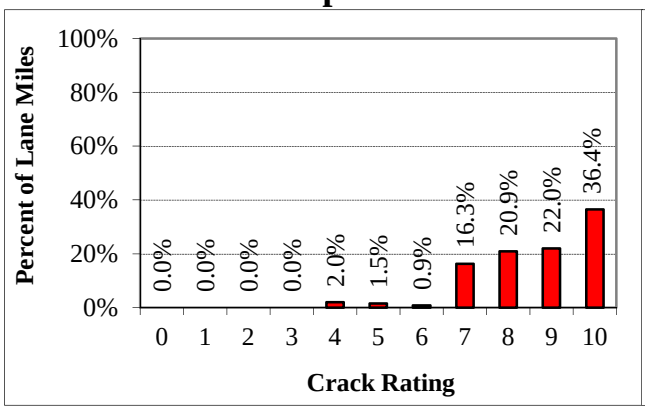
5,157 Lane Miles, Mean = 8.6

Interstate



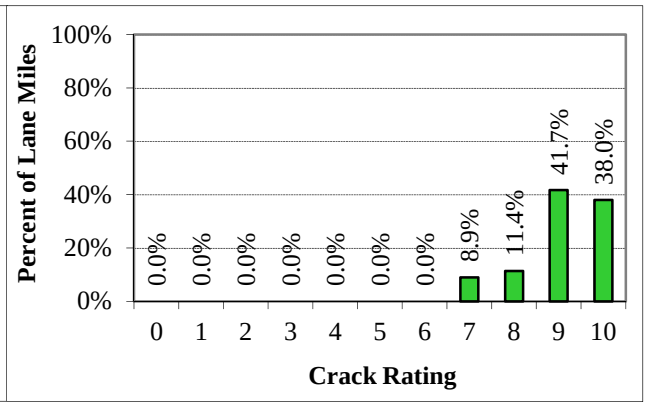
1,144 Lane Miles, Mean = 7.9

Turnpike



790 Lane Miles, Mean = 8.5

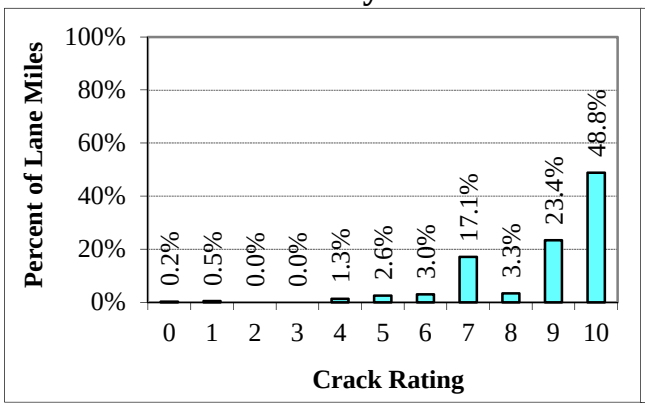
Toll



473 Lane Miles, Mean = 9.0

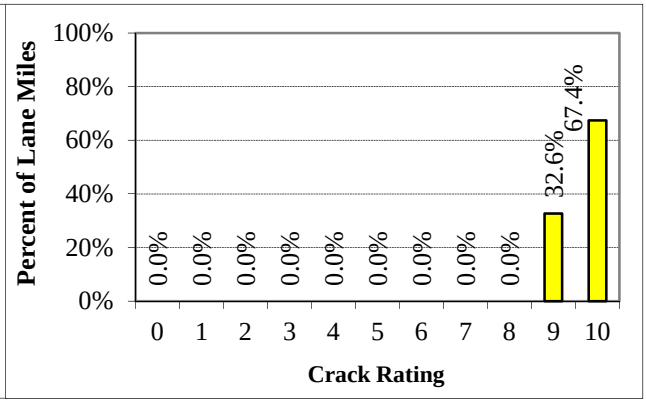
2016 Crack Distribution by System - District 6

Primary



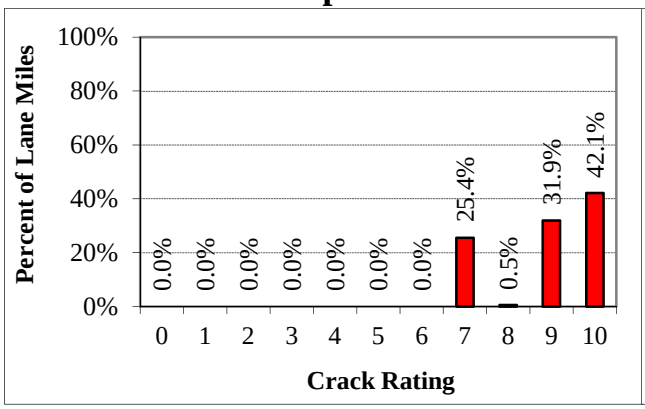
2,109 Lane Miles, Mean = 8.6

Interstate



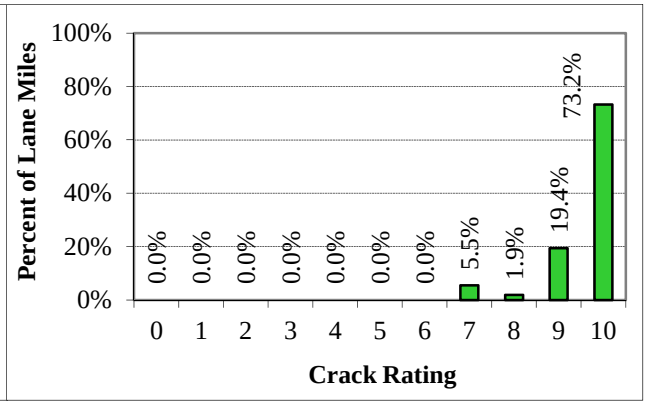
61 Lane Miles, Mean = 9.7

Turnpike



199 Lane Miles, Mean = 8.8

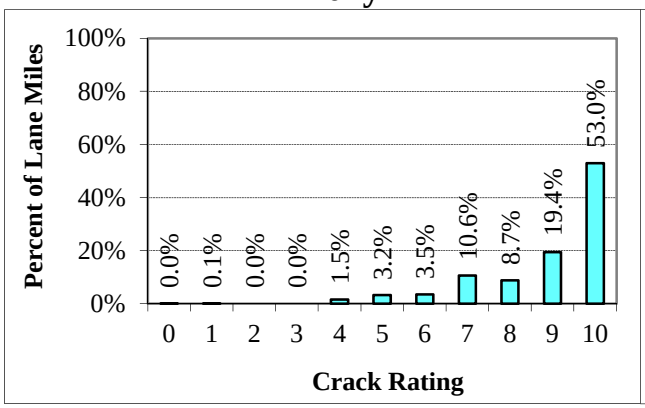
Toll



175 Lane Miles, Mean = 9.5

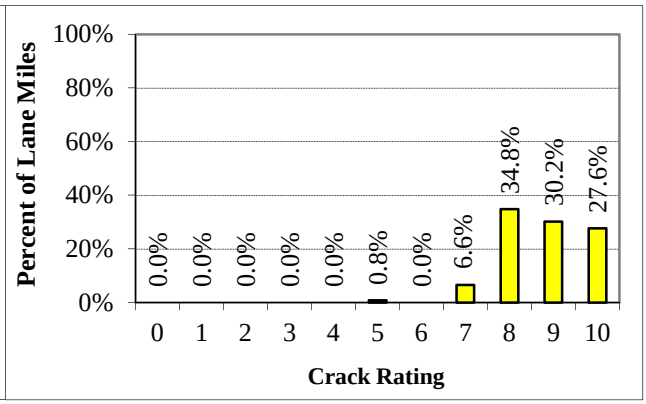
2016 Crack Distribution by System - District 7

Primary



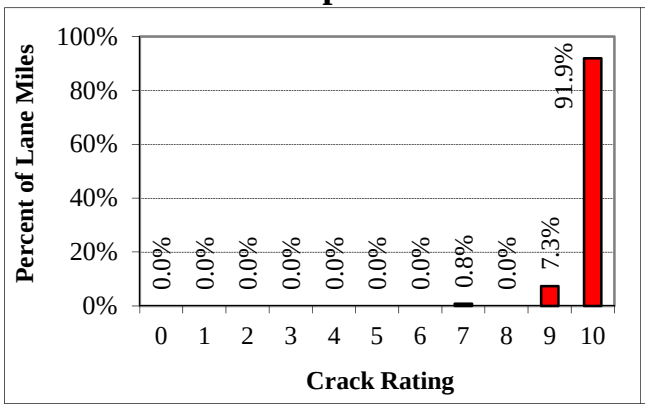
3,018 Lane Miles, Mean = 8.8

Interstate



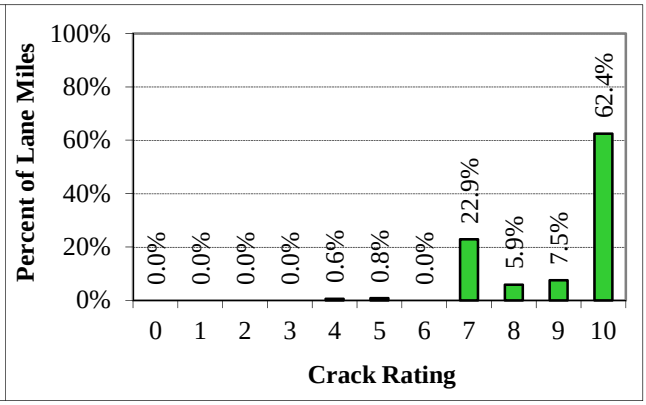
391 Lane Miles, Mean = 8.6

Turnpike



181 Lane Miles, Mean = 9.9

Toll



88 Lane Miles, Mean = 8.9

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Section III
Rut Rating
By
System and District

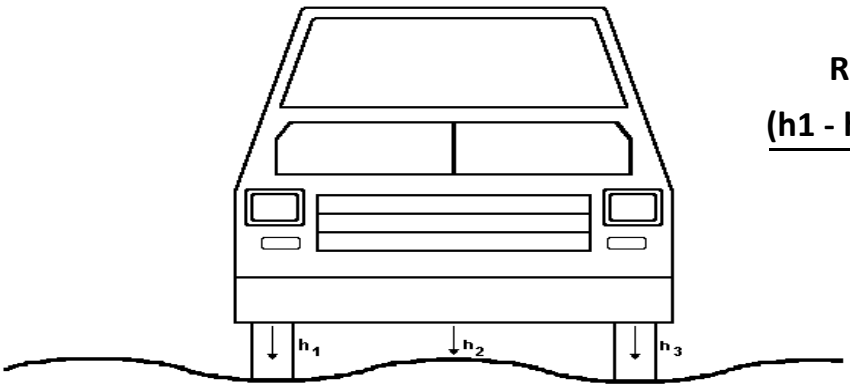
Section III

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.
4. FDOT inertial profilers measure rut depth at a frequency of 30 readings per in. 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:



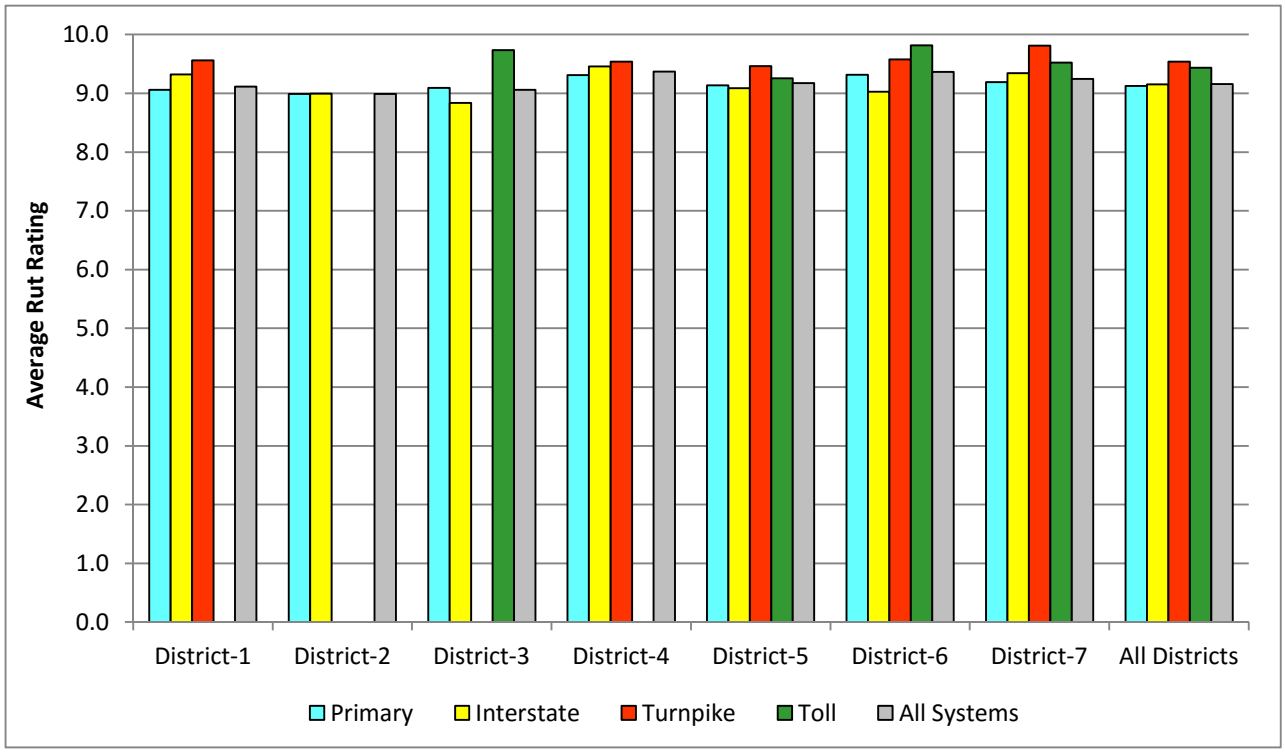
FRONT VIEW

$$\text{Rut Depth} = \frac{(h1 - h2) + (h3 - h2)}{2}$$

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.

2016 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	4,928	6,063	5,441	4,077	5,157	2,109	3,018	30,792
Interstate	1,023	1,639	890	1,234	1,144	61	391	6,381
Turnpike	119	0	0	811	790	199	181	2,100
Toll	0	0	33	0	473	175	88	769
Total	6,070	7,702	6,364	6,121	7,564	2,543	3,678	40,042

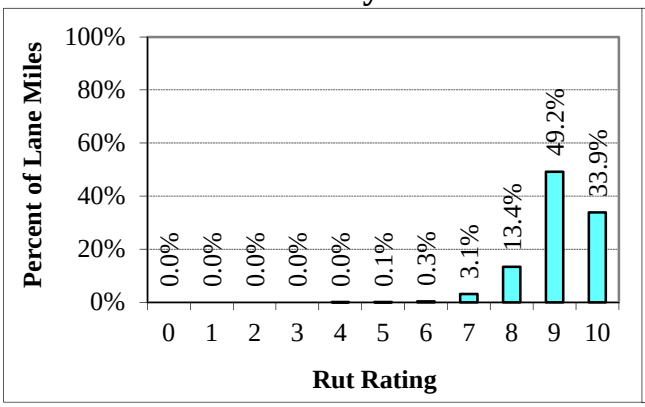
Rut Rating

System	District-1	District-2	District-3	District-4	District-5	District-6	District-7	Statewide
Primary	9.1	9.0	9.1	9.3	9.1	9.3	9.2	9.1
Interstate	9.3	9.0	8.8	9.5	9.1	9.0	9.3	9.2
Turnpike	9.6			9.5	9.5	9.6	9.8	9.5
Toll			9.7		9.3	9.8	9.5	9.4
Average	9.1	9.0	9.1	9.4	9.2	9.4	9.3	9.2

* All averages and Statewide (by System) values are weighted by miles

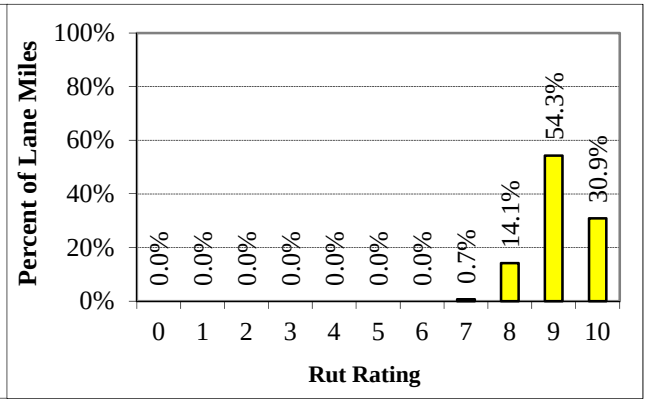
2016 Rut Distribution by System - Statewide

Primary



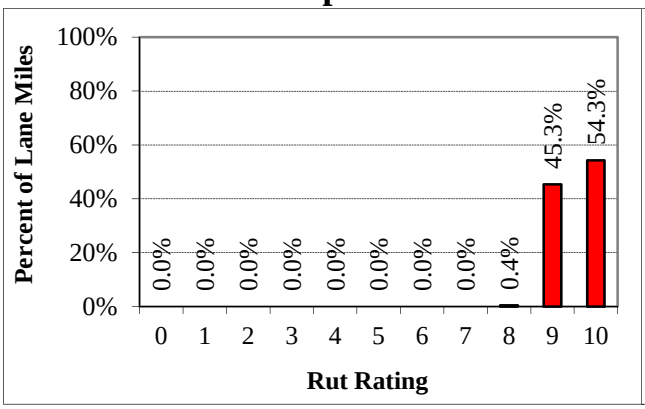
30,792 Lane Miles, Mean = 9.1

Interstate



6,381 Lane Miles, Mean = 9.2

Turnpike

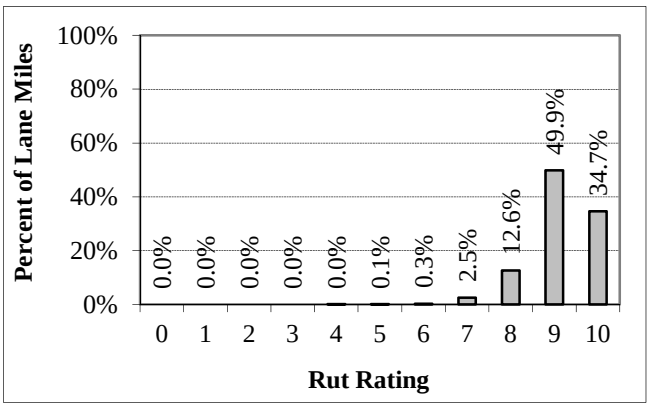


2,100 Lane Miles, Mean = 9.5

Toll

769 Lane Miles, Mean = 9.4

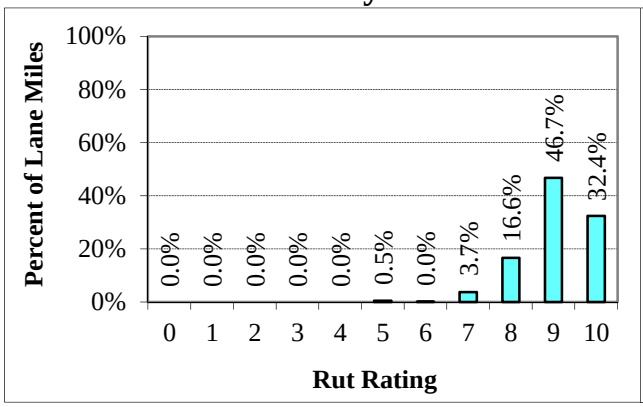
Statewide



40,042 Lane Miles, Mean = 9.2

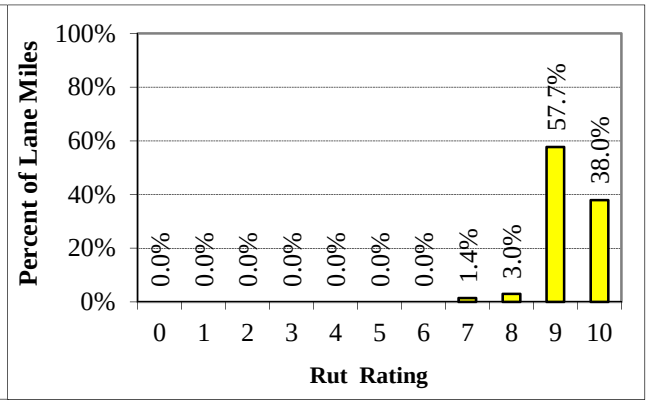
2016 Rut Distribution by System - District 1

Primary



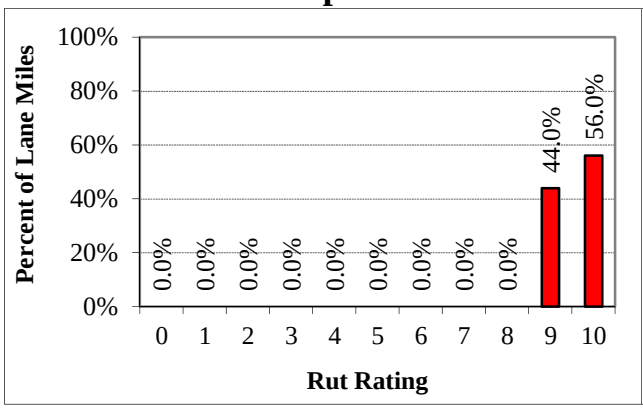
4,928 Lane Miles, Mean = 9.1

Interstate



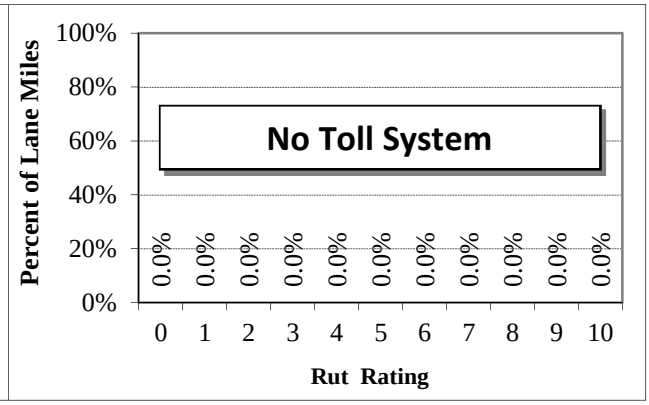
1,023 Lane Miles, Mean = 9.3

Turnpike



119 Lane Miles, Mean = 9.6

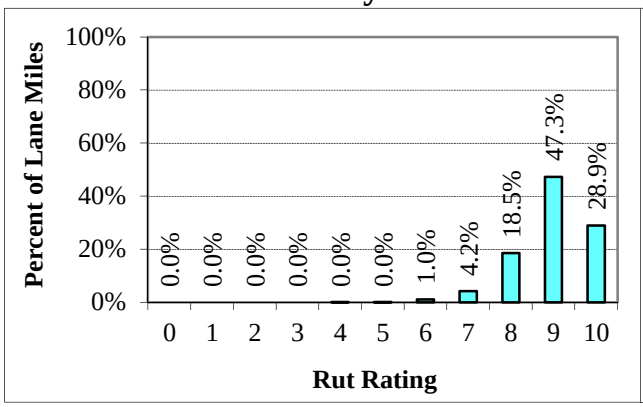
Toll



0 Lane Miles, Mean = N/A

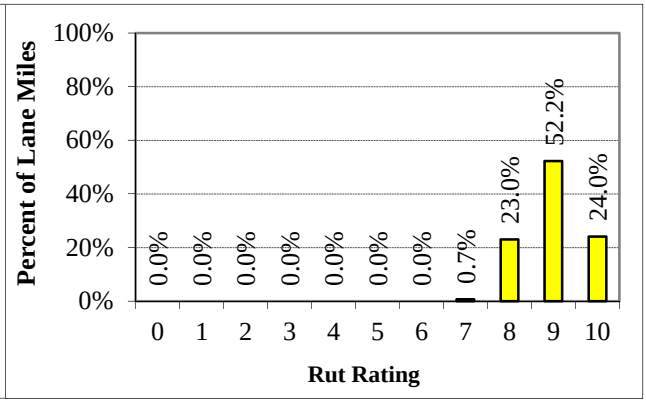
2016 Rut Distribution by System - District 2

Primary



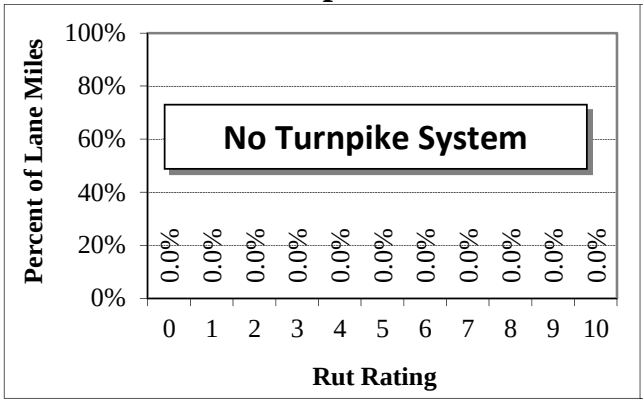
6,063 Lane Miles, Mean = 9.0

Interstate



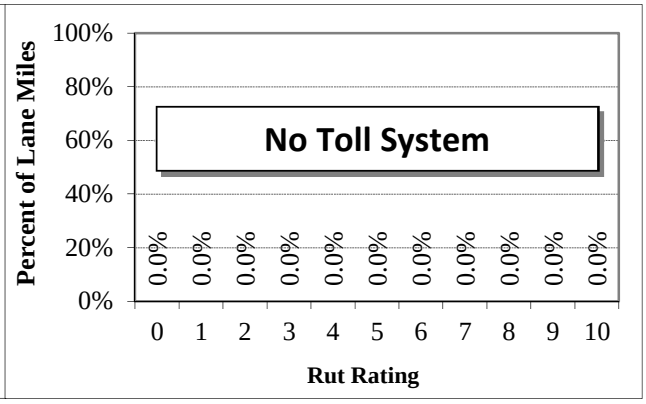
1,639 Lane Miles, Mean = 9.0

Turnpike



0 Lane Miles, Mean = N/A

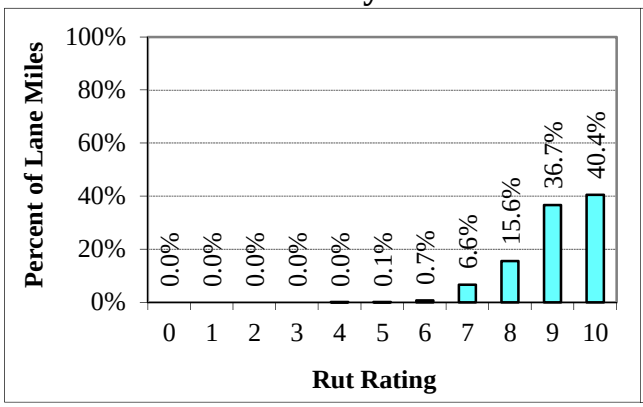
Toll



0 Lane Miles, Mean = N/A

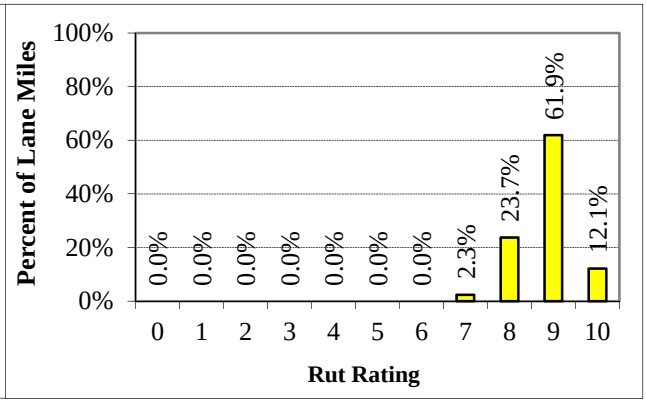
2016 Rut Distribution by System - District 3

Primary



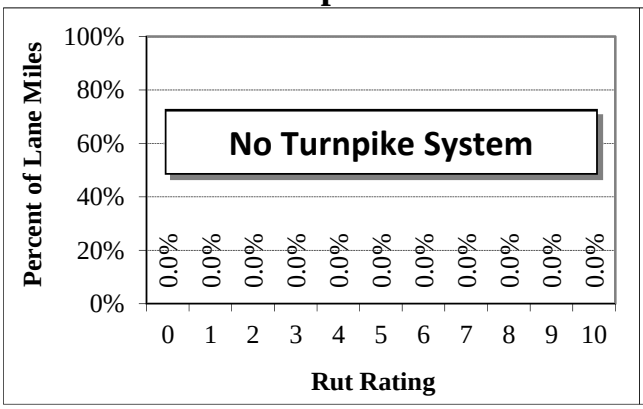
5,441 Lane Miles, Mean = 9.1

Interstate



890 Lane Miles, Mean = 8.8

Turnpike



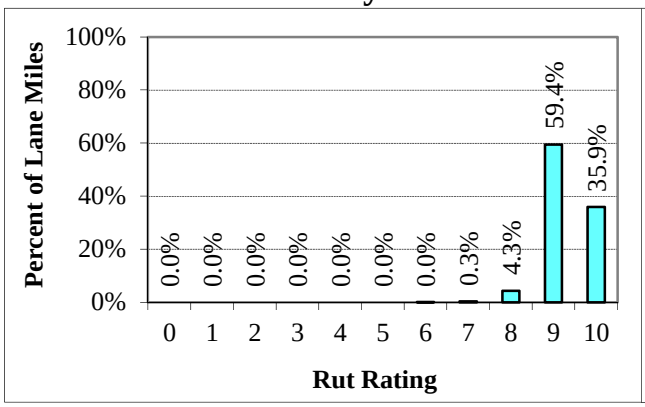
0 Lane Miles, Mean = N/A

Toll

33 Lane Miles, Mean = 9.7

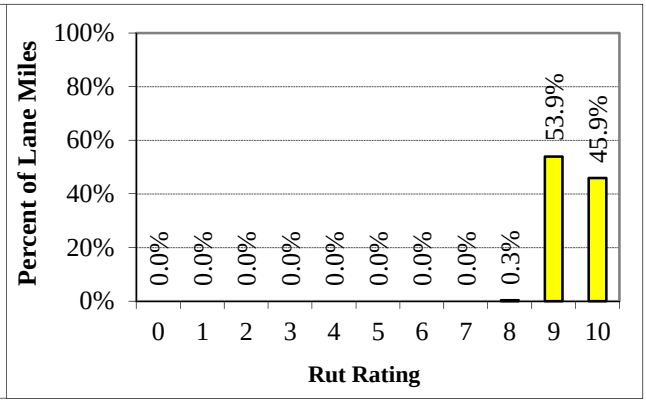
2016 Rut Distribution by System - District 4

Primary



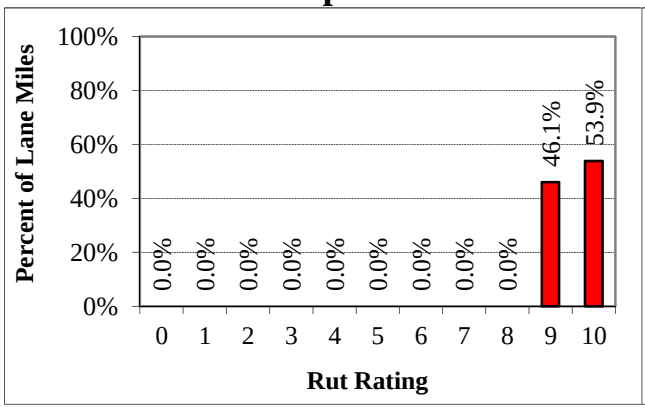
4,077 Lane Miles, Mean = 9.3

Interstate



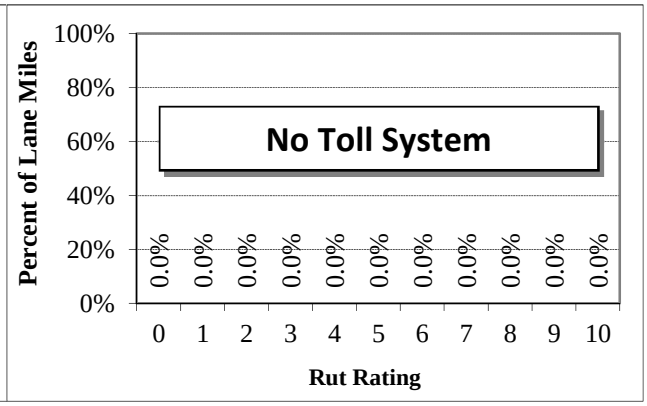
1,234 Lane Miles, Mean = 9.5

Turnpike



811 Lane Miles, Mean = 9.5

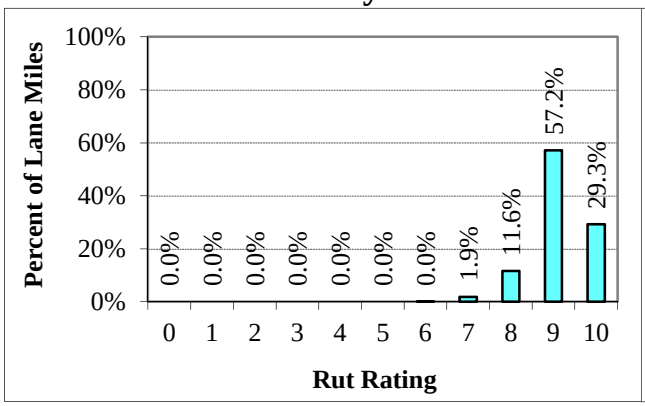
Toll



0 Lane Miles, Mean = N/A

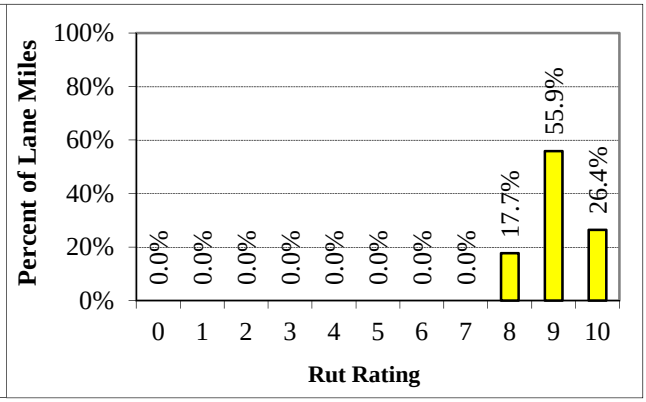
2016 Rut Distribution by System - District 5

Primary



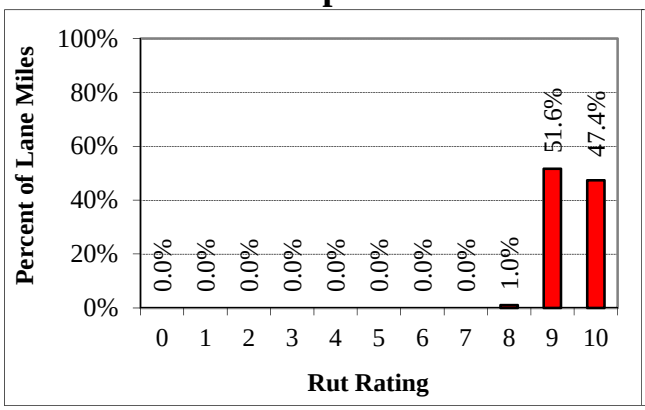
5,157 Lane Miles, Mean = 9.1

Interstate



1,144 Lane Miles, Mean = 9.1

Turnpike



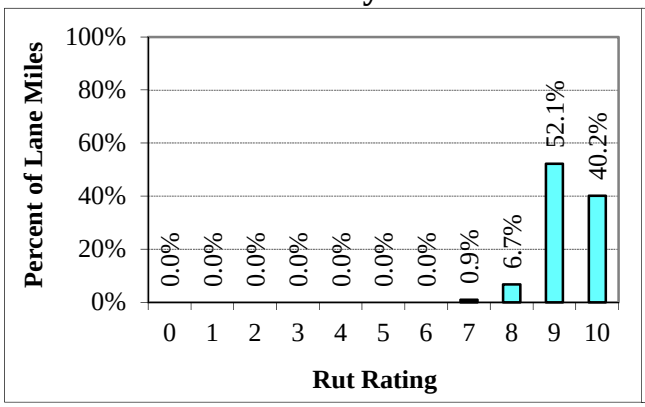
790 Lane Miles, Mean = 9.5

Toll

473 Lane Miles, Mean = 9.3

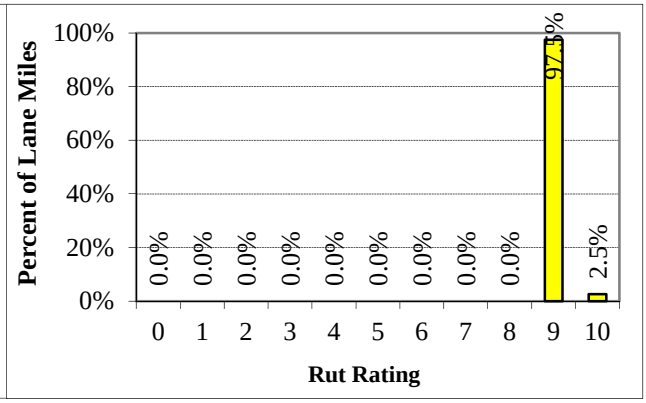
2016 Rut Distribution by System - District 6

Primary



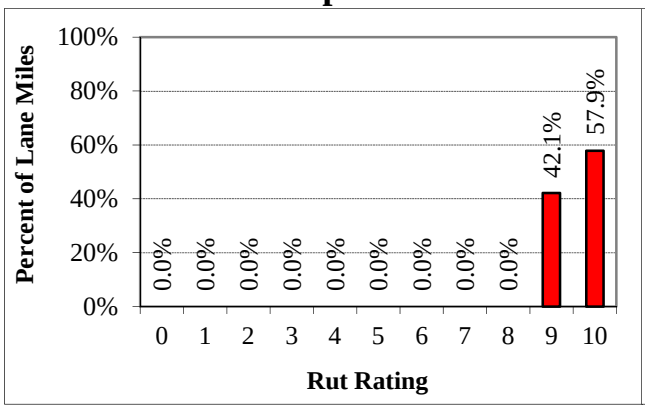
2,109 Lane Miles, Mean = 9.3

Interstate



61 Lane Miles, Mean = 9.0

Turnpike



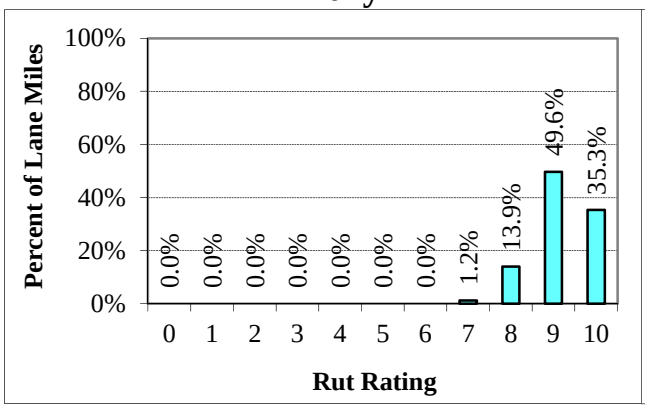
199 Lane Miles, Mean = 9.6

Toll

175 Lane Miles, Mean = 9.8

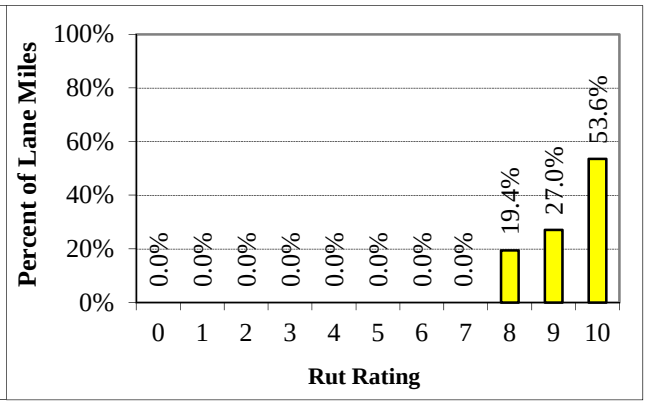
2016 Rut Distribution by System - District 7

Primary



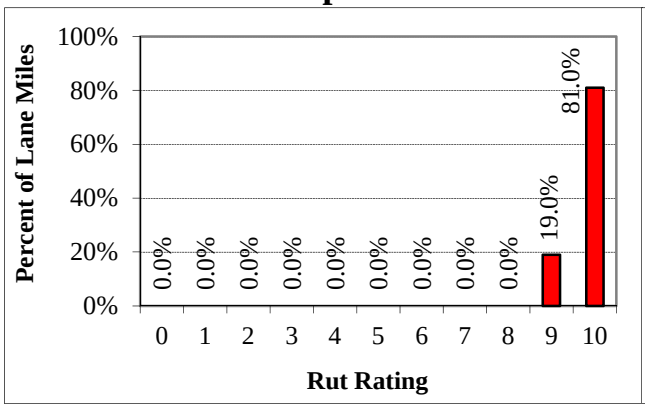
3,018 Lane Miles, Mean = 9.2

Interstate



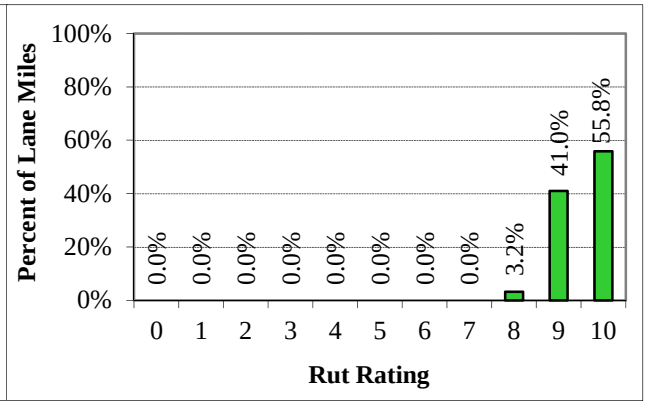
391 Lane Miles, Mean = 9.3

Turnpike



181 Lane Miles, Mean = 9.8

Toll



88 Lane Miles, Mean = 9.5

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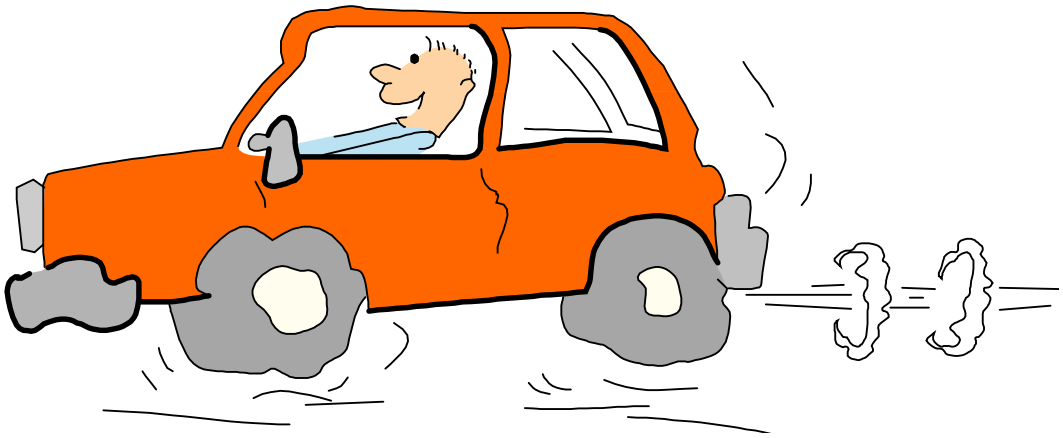
Section IV
Ride Rating
By
System and District



Section IV

Ride Rating by System and District

Ride Rating Criteria

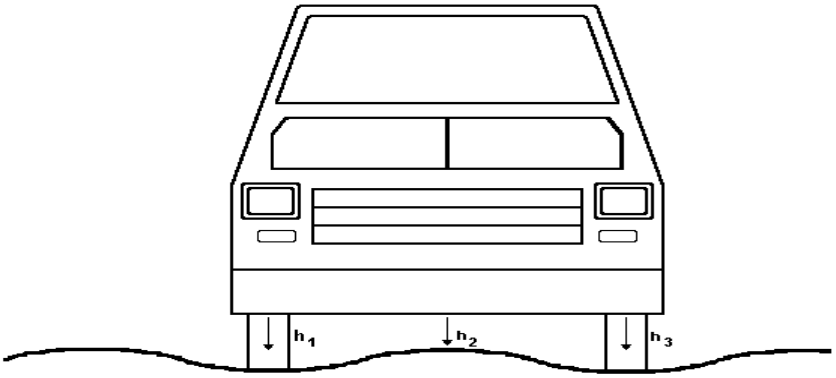
1. The Ride Rating represents the ride quality of a pavement section. It is an indication of the degree of smoothness or roughness of the wearing surface.

2. The Ride Rating is based on a scale of 0 to 10 scale, where 10 represents a pavement with no roughness while ratings of 6 or less represent a pavement with an undesirable ride quality. Ride Rating is determined by the International Roughness Index (IRI). IRI is a standard practice for computing and reporting road roughness (ASTM E1926). IRI is reported in units of inches per mile (in/mi) and is scaled with 0 being the smoothest and the upper limit being infinite.

3. The ride quality of a roadway is greatly affected by, but not limited to, factors that include the following:

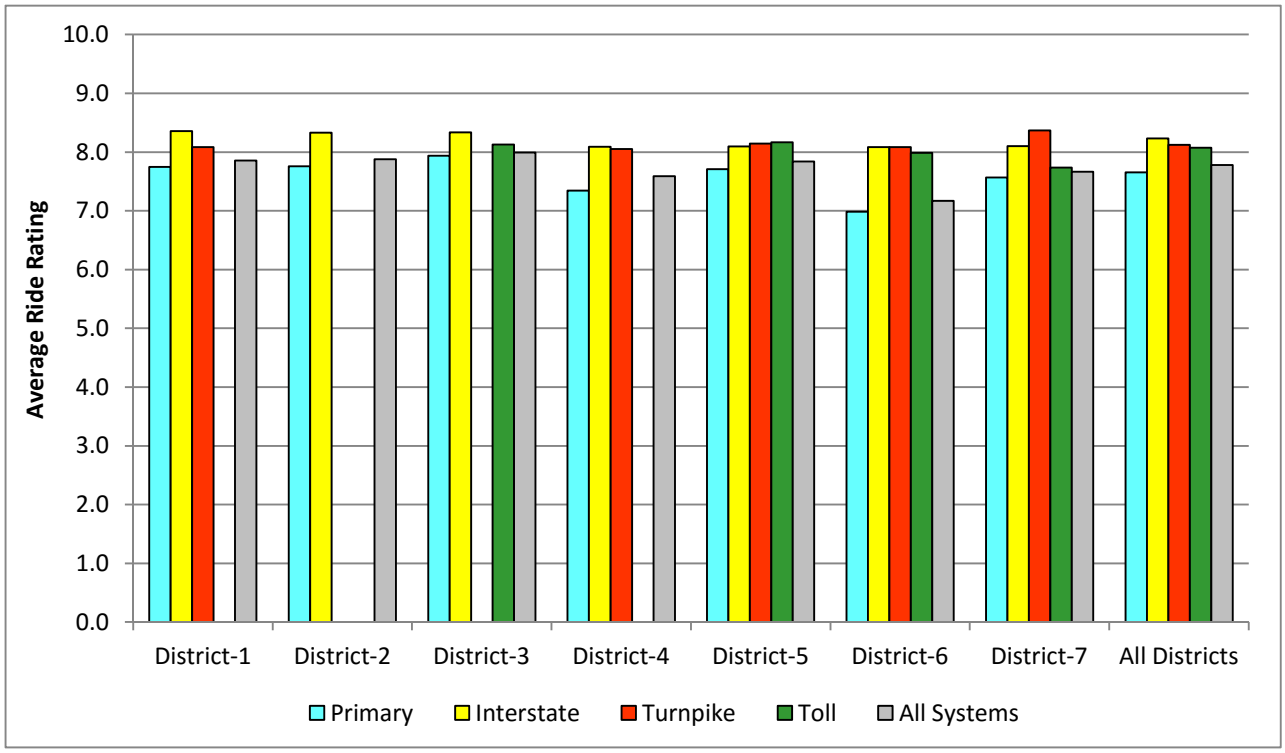
   - Original pavement profile
   - Profiles of intersecting roads
   - Utility patches and manhole covers
   - Surface and structural deterioration and deformation

   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.



FRONT VIEW

2016 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	4,907	6,040	5,418	4,049	5,131	2,074	2,980	30,600
Interstate	1,023	1,639	890	1,234	1,144	60	391	6,381
Turnpike	119	0	0	811	788	198	181	2,098
Toll	0	0	33	0	473	174	86	765
Total	6,049	7,679	6,342	6,094	7,536	2,506	3,638	39,843

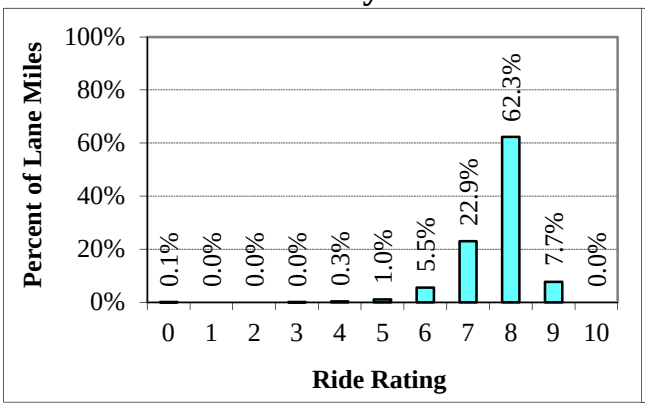
Ride Rating

System	District-1	District-2	District-3	District-4	District-5	District-6	District-7	Statewide
Primary	7.8	7.8	7.9	7.4	7.7	7.0	7.6	7.7
Interstate	8.4	8.3	8.3	8.1	8.1	8.1	8.1	8.2
Turnpike	8.1			8.1	8.2	8.1	8.4	8.1
Toll			8.1		8.2	8.0	7.7	8.1
Average	7.9	7.9	8.0	7.6	7.8	7.2	7.7	7.8

* All averages and Statewide (by System) values are weighted by miles

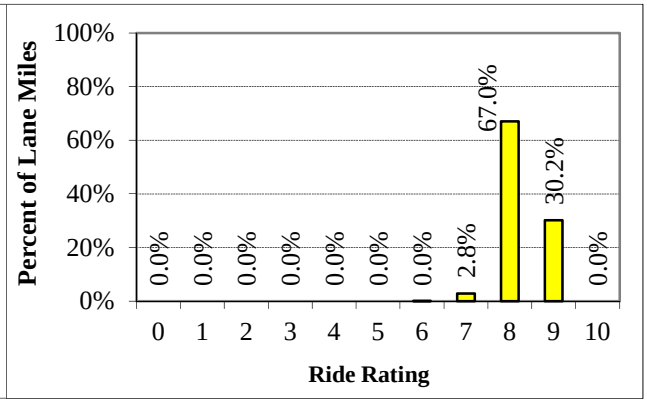
2016 Ride Distribution by System - Statewide

Primary



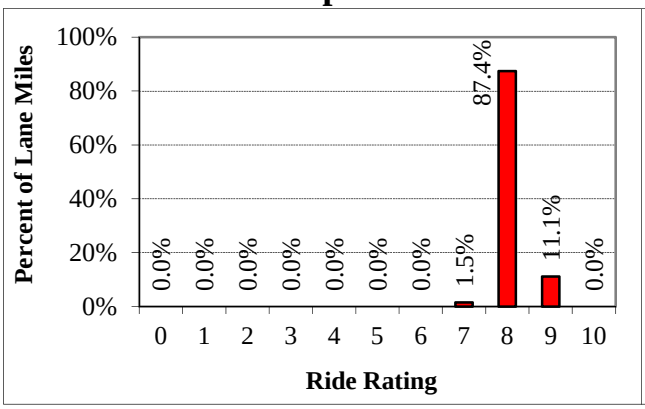
30,600 Lane Miles, Mean = 7.7

Interstate



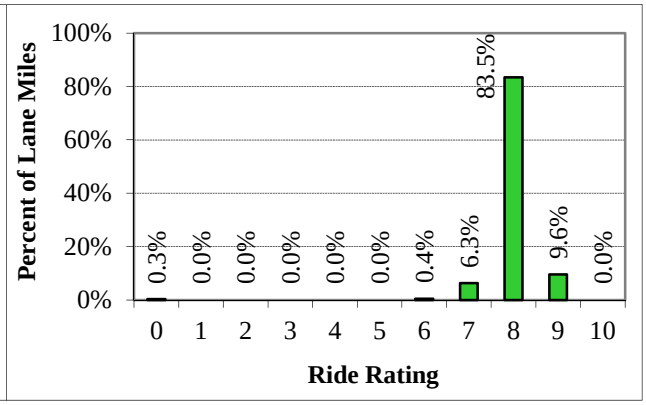
6,381 Lane Miles, Mean = 8.2

Turnpike



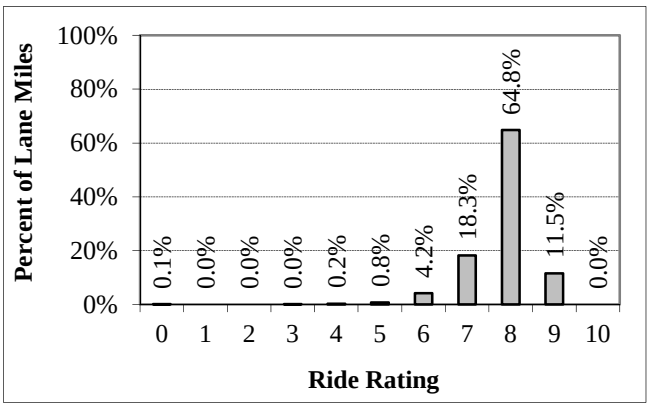
2,098 Lane Miles, Mean = 8.1

Toll



765 Lane Miles, Mean = 8.1

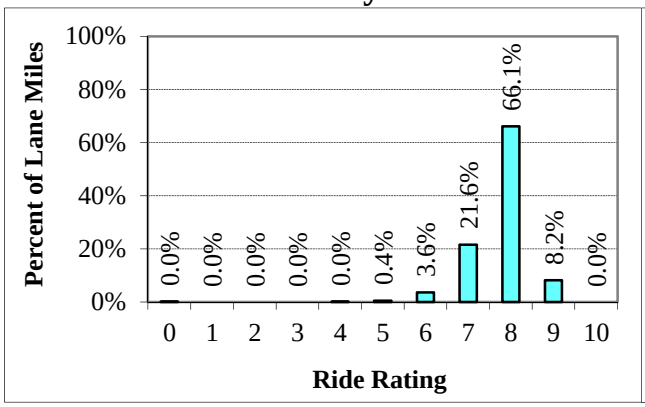
Statewide



39,843 Lane Miles, Mean = 7.8

2016 Ride Distribution by System - District 1

Primary

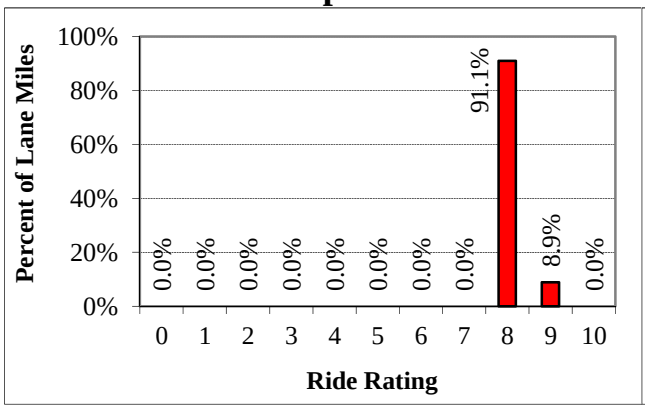


4,907 Lane Miles, Mean = 7.7

Interstate

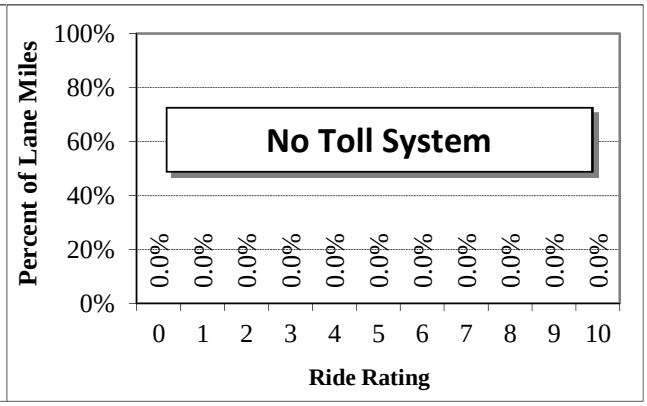
1,023 Lane Miles, Mean = 8.4

Turnpike



119 Lane Miles, Mean = 8.1

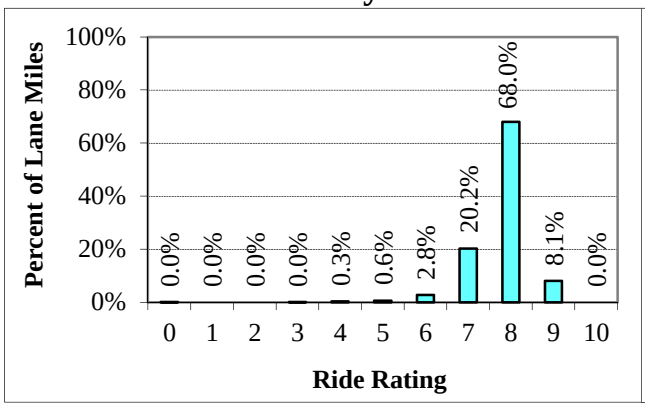
Toll



0 Lane Miles, Mean = N/A

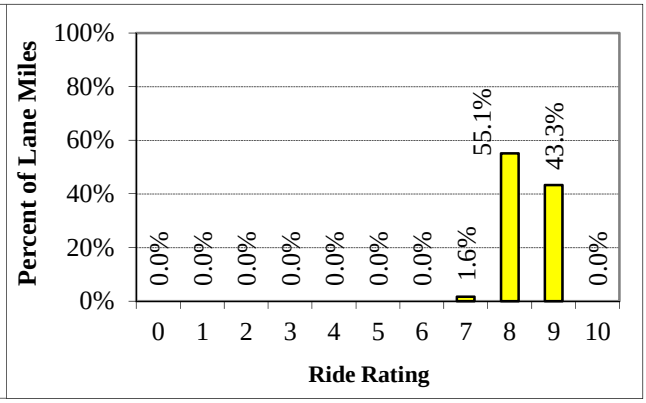
2016 Ride Distribution by System - District 2

Primary



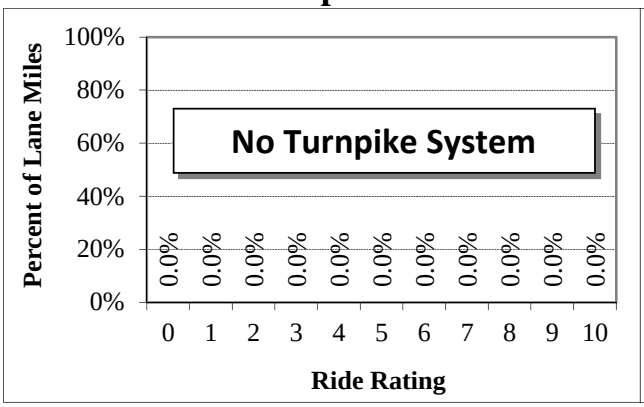
6,040 Lane Miles, Mean = 7.8

Interstate



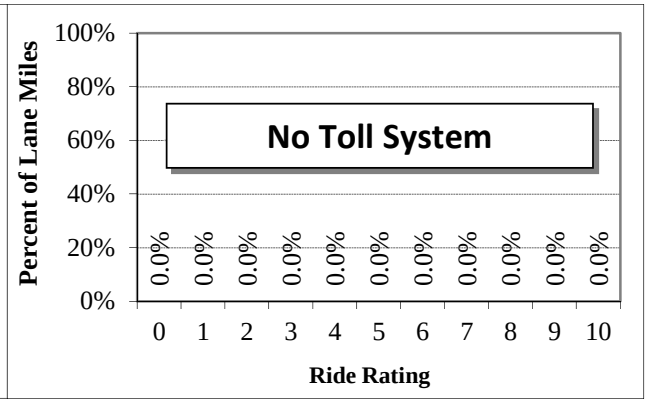
1,639 Lane Miles, Mean = 8.3

Turnpike



0 Lane Miles, Mean = N/A

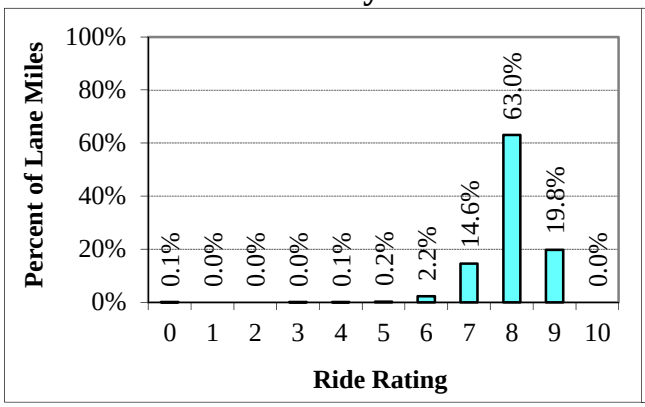
Toll



0 Lane Miles, Mean = N/A

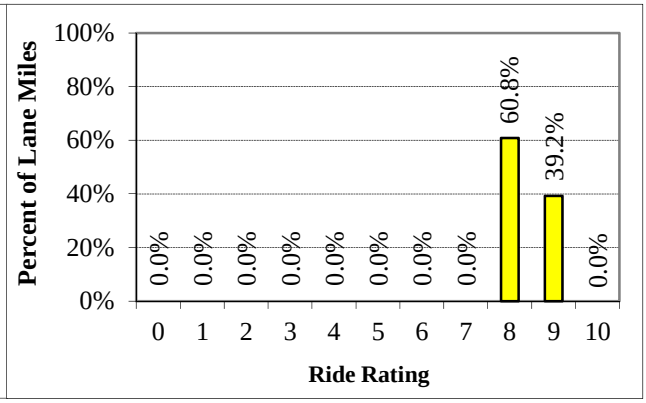
2016 Ride Distribution by System - District 3

Primary



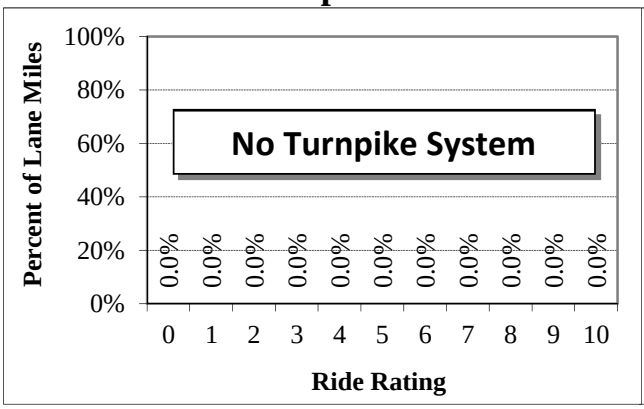
5,418 Lane Miles, Mean = 7.9

Interstate



890 Lane Miles, Mean = 8.3

Turnpike



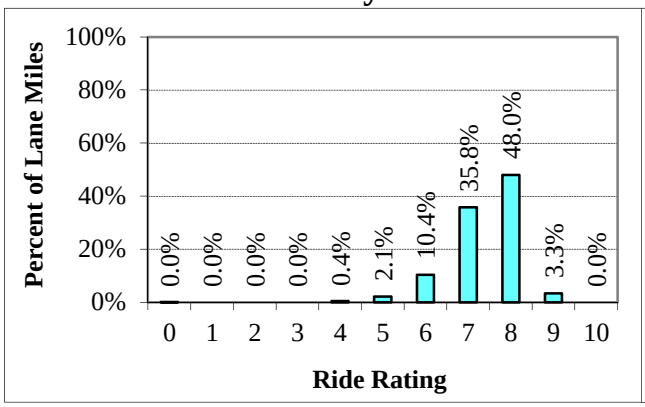
0 Lane Miles, Mean = N/A

Toll

33 Lane Miles, Mean = 8.1

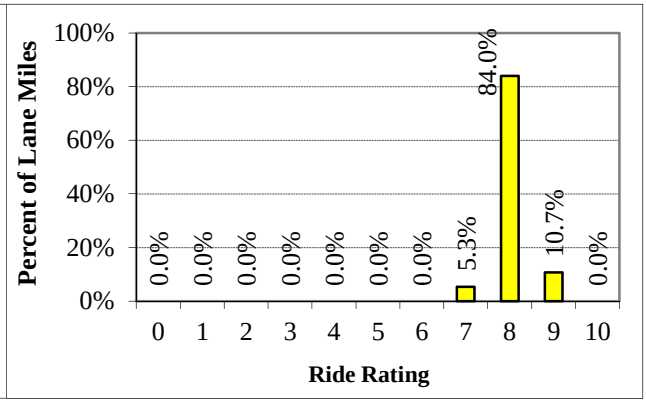
2016 Ride Distribution by System - District 4

Primary



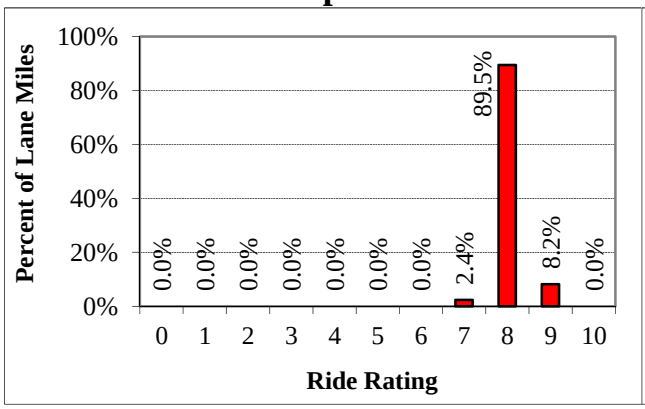
4,049 Lane Miles, Mean = 7.3

Interstate



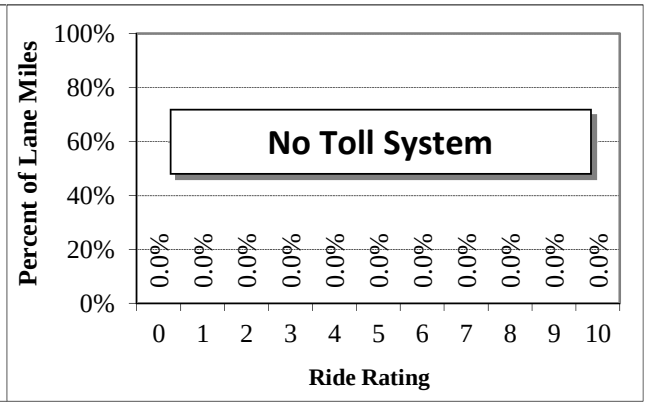
1,234 Lane Miles, Mean = 8.1

Turnpike



811 Lane Miles, Mean = 8.1

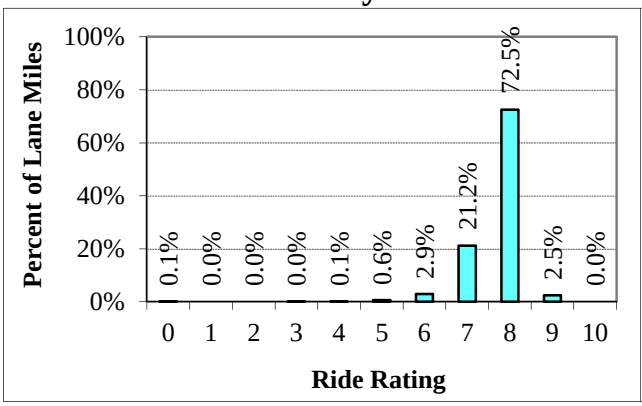
Toll



0 Lane Miles, Mean = N/A

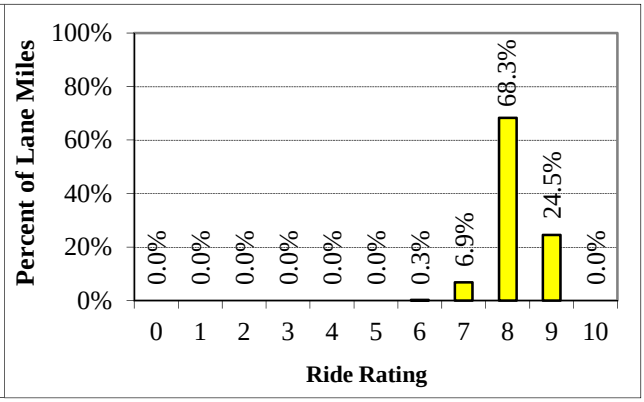
2016 Ride Distribution by System - District 5

Primary



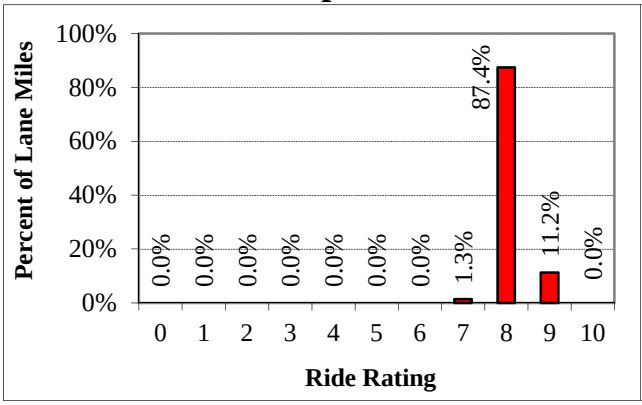
5,131 Lane Miles, Mean = 7.7

Interstate



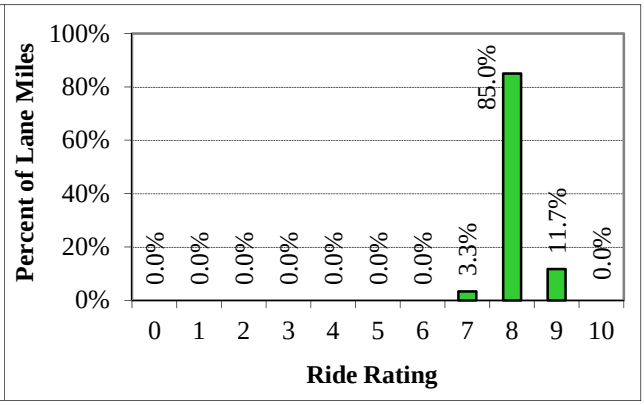
1,144 Lane Miles, Mean = 8.1

Turnpike



788 Lane Miles, Mean = 8.1

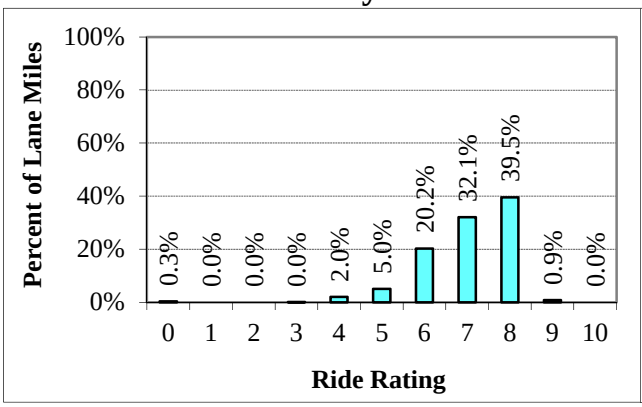
Toll



473 Lane Miles, Mean = 8.2

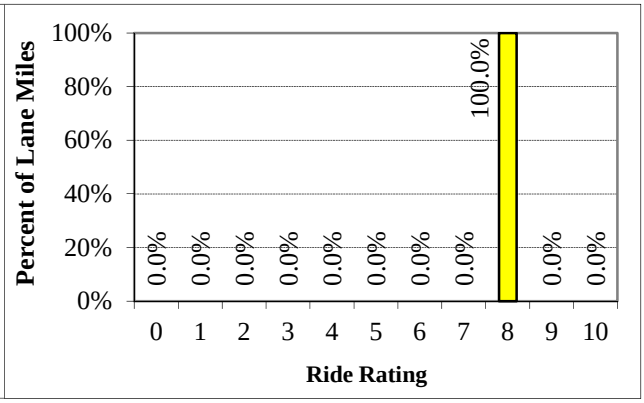
2016 Ride Distribution by System - District 6

Primary



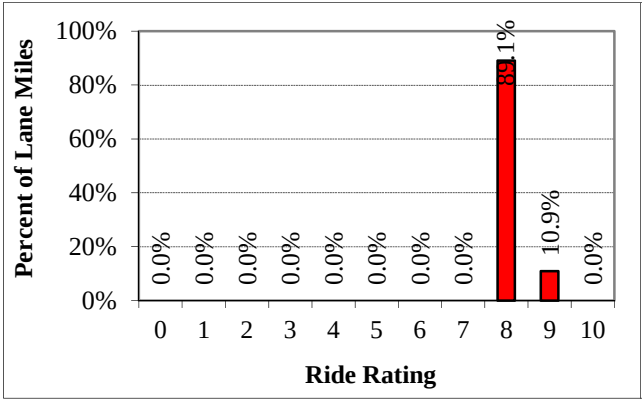
2,074 Lane Miles, Mean = 7.0

Interstate



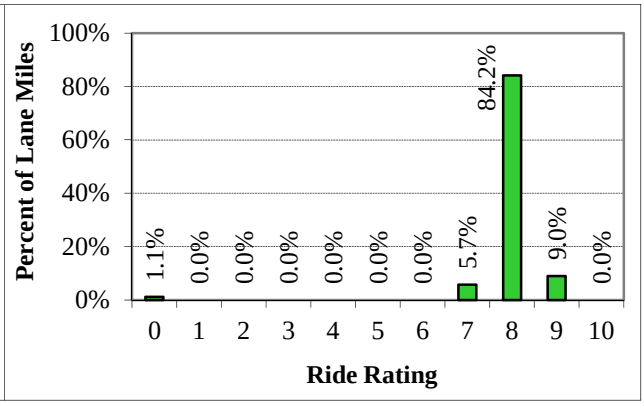
60 Lane Miles, Mean = 8.1

Turnpike



198 Lane Miles, Mean = 8.1

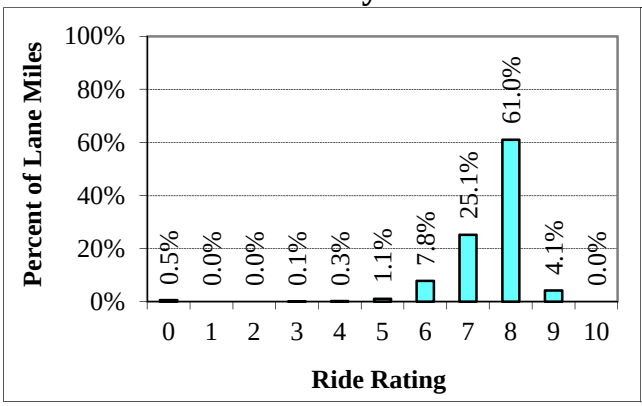
Toll



174 Lane Miles, Mean = 8.0

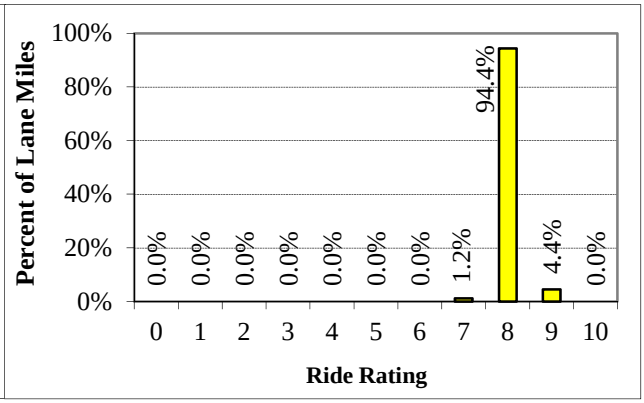
2016 Ride Distribution by System - District 7

Primary



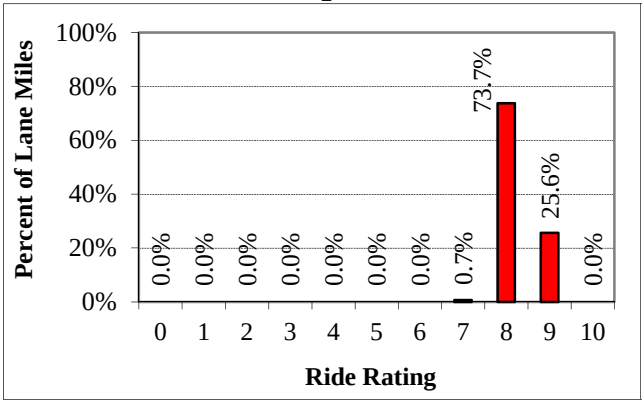
2,980 Lane Miles, Mean = 7.6

Interstate



391 Lane Miles, Mean = 8.1

Turnpike



181 Lane Miles, Mean = 8.4

Toll

86 Lane Miles, Mean = 7.7

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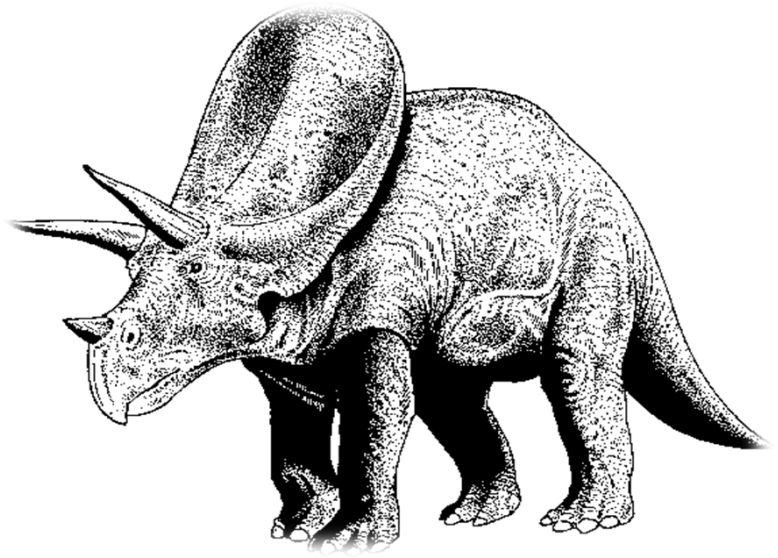
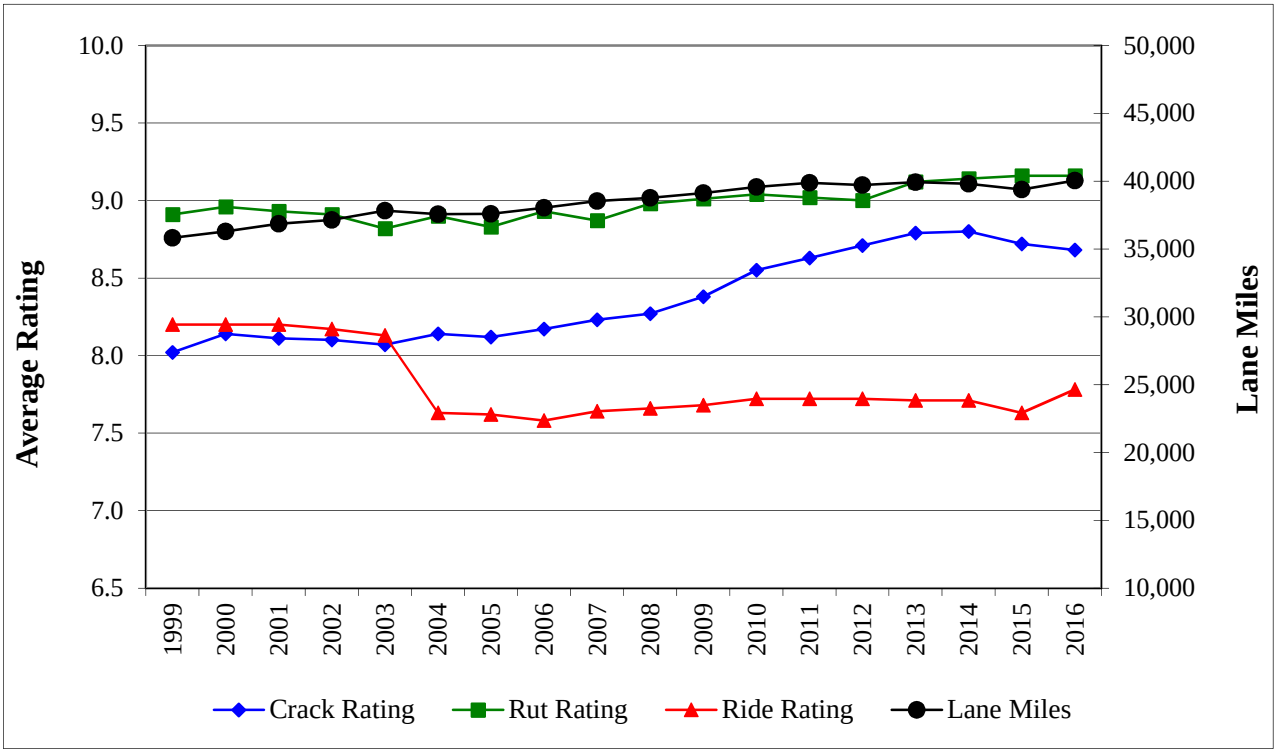
Section V
Historical Distress Ratings
By District
1999 - 2016



Historical Distress Ratings - Statewide

All Systems - All Districts



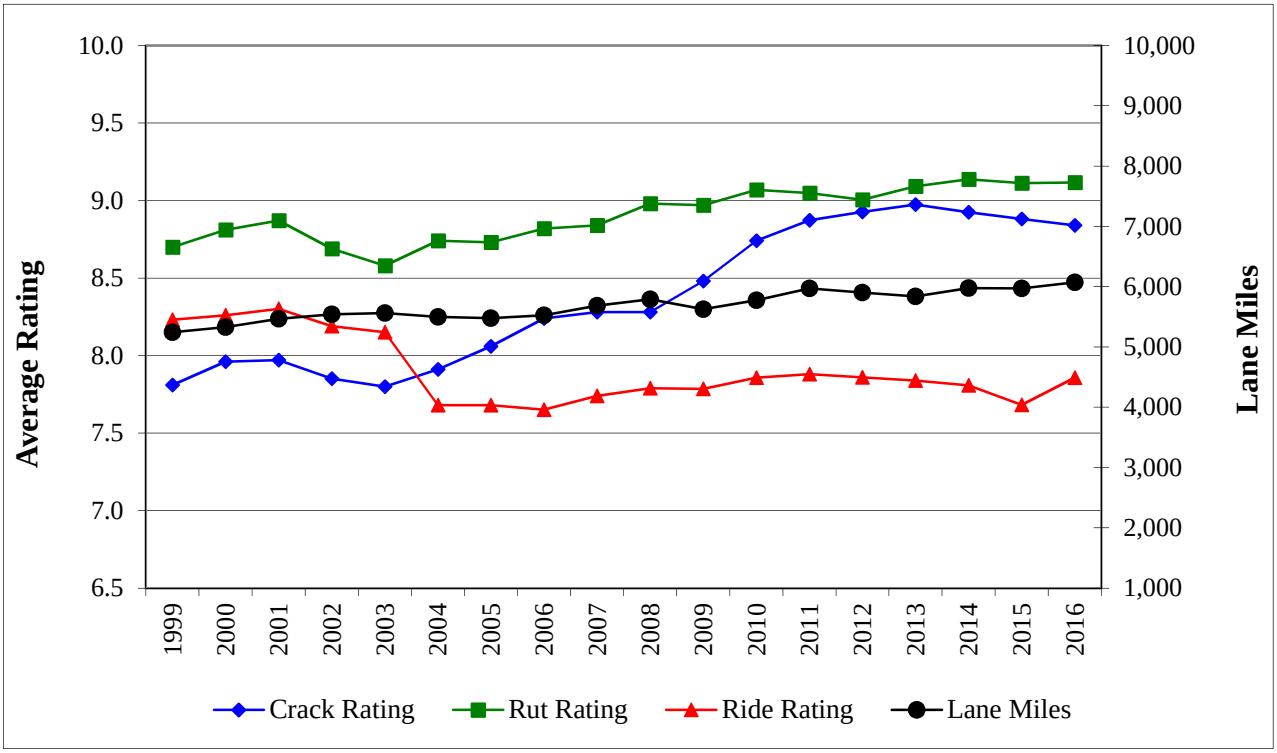
Year	1999	2000	2001	2002	2003	2004	2005	2006	2007
Crack Rating	8.0	8.1	8.1	8.1	8.1	8.1	8.1	8.2	8.2
Rut Rating	8.9	9.0	8.9	8.9	8.8	8.9	8.8	8.9	8.9
Ride Rating	8.2	8.2	8.2	8.2	8.1	7.6	7.6	7.6	7.6
Lane Miles	35,830	36,298	36,850	37,132	37,833	37,563	37,588	38,038	38,524

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016
Crack Rating	8.3	8.4	8.6	8.6	8.7	8.8	8.8	8.7	8.7
Rut Rating	9.0	9.0	9.0	9.0	9.0	9.1	9.1	9.2	9.2
Ride Rating	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.6	7.8
Lane Miles	38,779	39,121	39,577	39,887	39,710	39,913	39,806	39,384	40,042

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



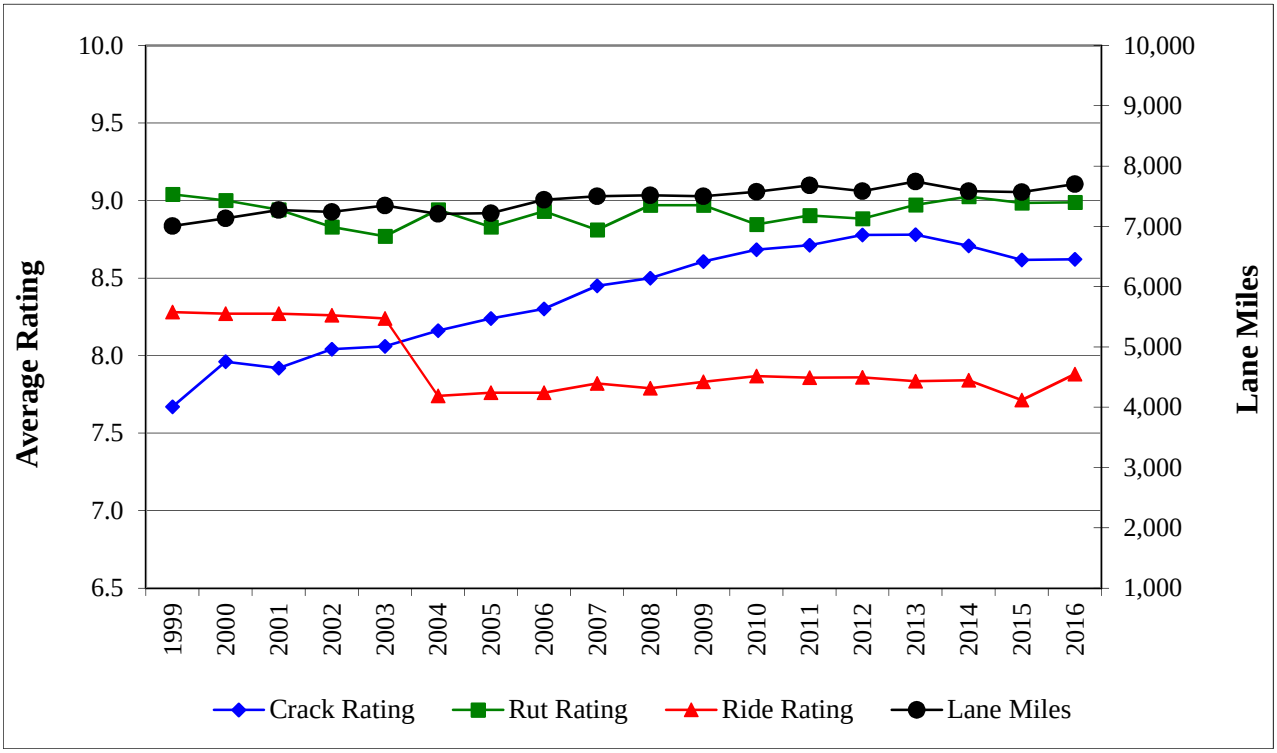
Year	1999	2000	2001	2002	2003	2004	2005	2006	2007
Crack Rating	7.8	8.0	8.0	7.9	7.8	7.9	8.1	8.2	8.3
Rut Rating	8.7	8.8	8.9	8.7	8.6	8.7	8.7	8.8	8.8
Ride Rating	8.2	8.3	8.3	8.2	8.2	7.7	7.7	7.7	7.7
Lane Miles	5,246	5,330	5,466	5,539	5,560	5,497	5,477	5,525	5,686

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016
Crack Rating	8.3	8.5	8.7	8.9	8.9	9.0	8.9	8.9	8.8
Rut Rating	9.0	9.0	9.1	9.0	9.0	9.1	9.1	9.1	9.1
Ride Rating	7.8	7.8	7.9	7.9	7.9	7.8	7.8	7.7	7.9
Lane Miles	5,792	5,628	5,772	5,971	5,904	5,839	5,977	5,969	6,070

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



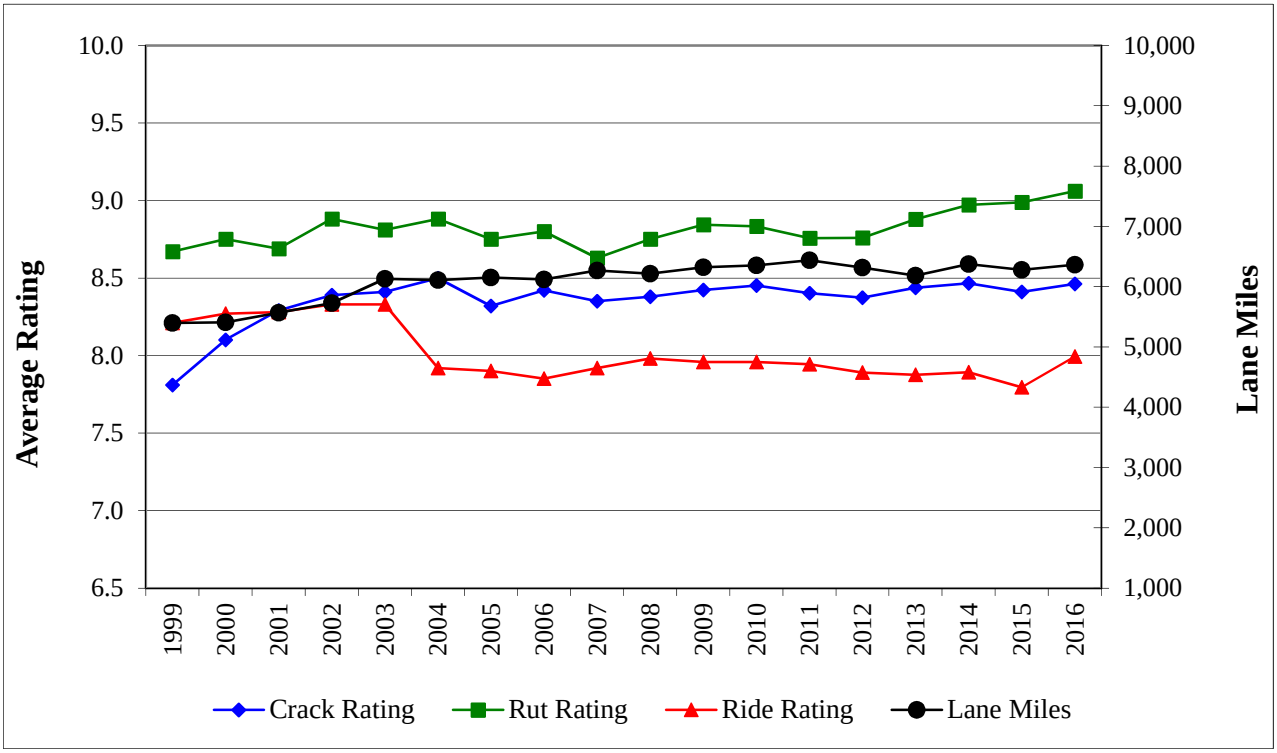
Year	1999	2000	2001	2002	2003	2004	2005	2006	2007
Crack Rating	7.7	8.0	7.9	8.0	8.1	8.2	8.2	8.3	8.5
Rut Rating	9.0	9.0	8.9	8.8	8.8	8.9	8.8	8.9	8.8
Ride Rating	8.3	8.3	8.3	8.3	8.2	7.7	7.8	7.8	7.8
Lane Miles	7,005	7,133	7,270	7,241	7,347	7,208	7,217	7,439	7,500

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016
Crack Rating	8.5	8.6	8.7	8.7	8.8	8.8	8.7	8.6	8.6
Rut Rating	9.0	9.0	8.8	8.9	8.9	9.0	9.0	9.0	9.0
Ride Rating	7.8	7.8	7.9	7.9	7.9	7.8	7.8	7.7	7.9
Lane Miles	7,517	7,499	7,574	7,680	7,586	7,741	7,584	7,566	7,702

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



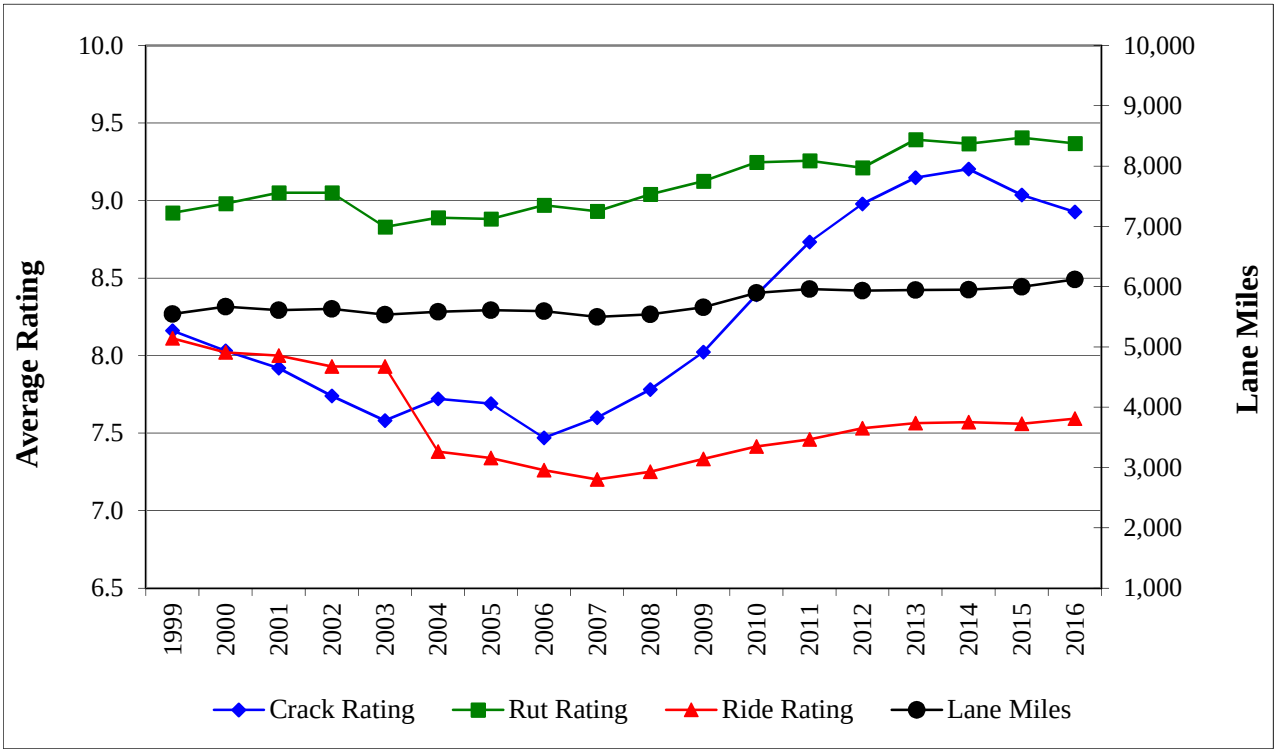
Year	1999	2000	2001	2002	2003	2004	2005	2006	2007
Crack Rating	7.8	8.1	8.3	8.4	8.4	8.5	8.3	8.4	8.4
Rut Rating	8.7	8.8	8.7	8.9	8.8	8.9	8.8	8.8	8.6
Ride Rating	8.2	8.3	8.3	8.3	8.3	7.9	7.9	7.9	7.9
Lane Miles	5,400	5,406	5,567	5,729	6,130	6,107	6,151	6,118	6,269

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016
Crack Rating	8.4	8.4	8.5	8.4	8.4	8.4	8.5	8.4	8.5
Rut Rating	8.8	8.8	8.8	8.8	8.8	8.9	9.0	9.0	9.1
Ride Rating	8.0	8.0	8.0	7.9	7.9	7.9	7.9	7.8	8.0
Lane Miles	6,216	6,322	6,355	6,440	6,315	6,185	6,375	6,281	6,364

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



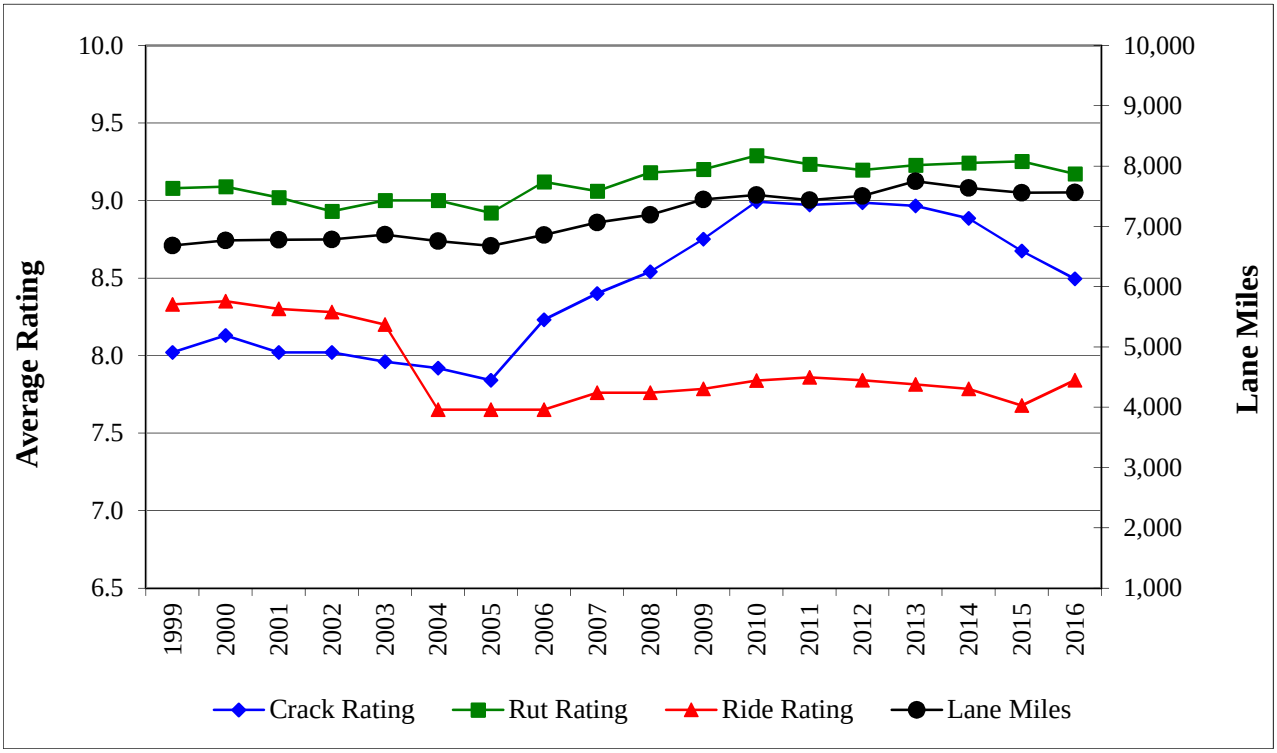
Year	1999	2000	2001	2002	2003	2004	2005	2006	2007
Crack Rating	8.2	8.0	7.9	7.7	7.6	7.7	7.7	7.5	7.6
Rut Rating	8.9	9.0	9.1	9.1	8.8	8.9	8.9	9.0	8.9
Ride Rating	8.1	8.0	8.0	7.9	7.9	7.4	7.3	7.3	7.2
Lane Miles	5,547	5,667	5,612	5,632	5,537	5,583	5,608	5,593	5,496

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016
Crack Rating	7.8	8.0	8.4	8.7	9.0	9.1	9.2	9.0	8.9
Rut Rating	9.0	9.1	9.2	9.3	9.2	9.4	9.4	9.4	9.4
Ride Rating	7.3	7.3	7.4	7.5	7.5	7.6	7.6	7.6	7.6
Lane Miles	5,542	5,659	5,894	5,959	5,934	5,945	5,948	5,999	6,121

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



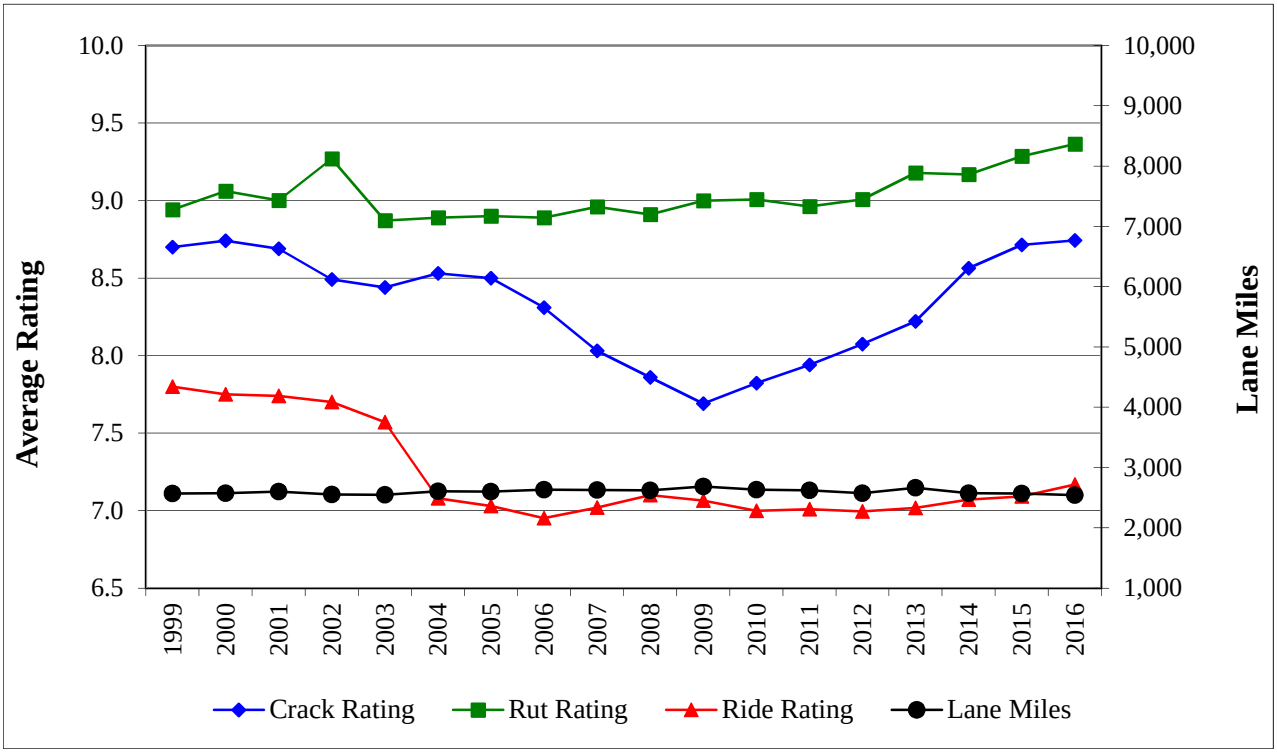
Year	1999	2000	2001	2002	2003	2004	2005	2006	2007
Crack Rating	8.0	8.1	8.0	8.0	8.0	7.9	7.8	8.2	8.4
Rut Rating	9.1	9.1	9.0	8.9	9.0	9.0	8.9	9.1	9.1
Ride Rating	8.3	8.4	8.3	8.3	8.2	7.7	7.7	7.7	7.8
Lane Miles	6,682	6,769	6,776	6,784	6,860	6,755	6,676	6,857	7,062

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016
Crack Rating	8.5	8.7	9.0	9.0	9.0	9.0	8.9	8.7	8.5
Rut Rating	9.2	9.2	9.3	9.2	9.2	9.2	9.2	9.3	9.2
Ride Rating	7.8	7.8	7.8	7.9	7.8	7.8	7.8	7.7	7.8
Lane Miles	7,194	7,448	7,519	7,433	7,503	7,748	7,639	7,559	7,564

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



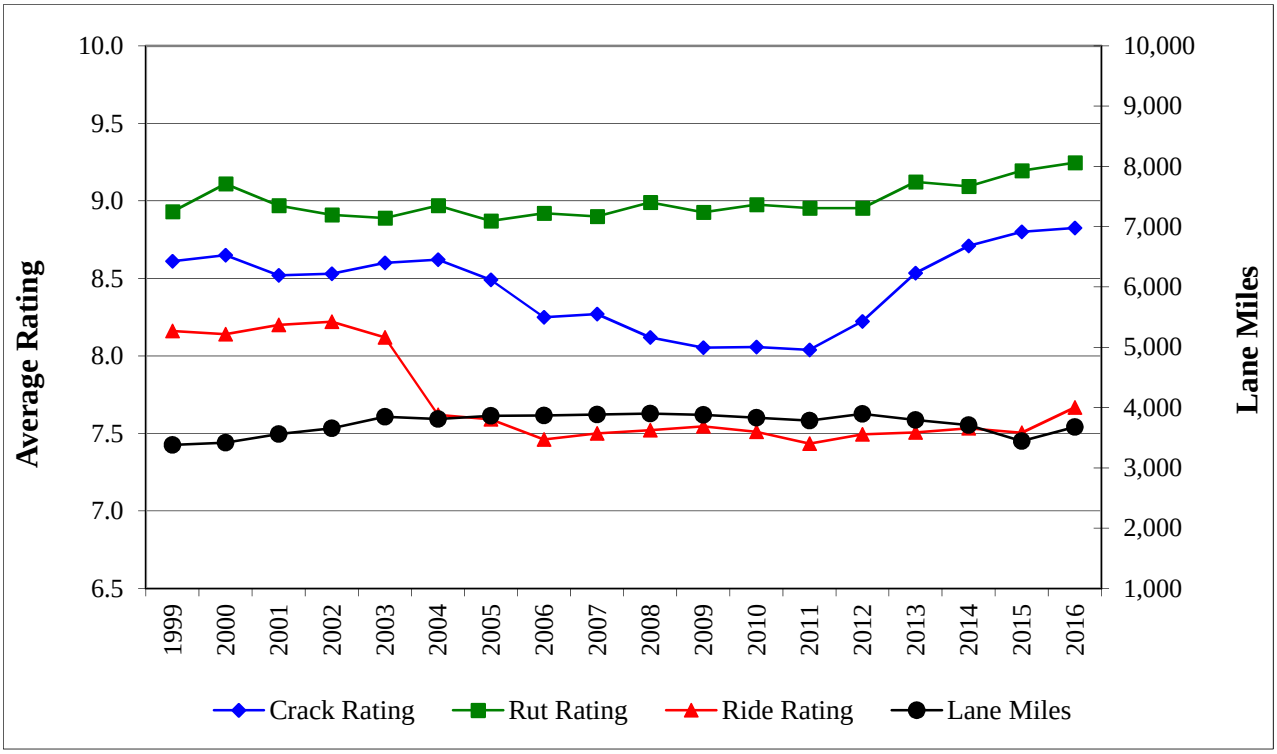
Year	1999	2000	2001	2002	2003	2004	2005	2006	2007
Crack Rating	8.7	8.7	8.7	8.5	8.4	8.5	8.5	8.3	8.0
Rut Rating	8.9	9.1	9.0	9.3	8.9	8.9	8.9	8.9	9.0
Ride Rating	7.8	7.8	7.7	7.7	7.6	7.1	7.0	7.0	7.0
Lane Miles	2,569	2,576	2,598	2,551	2,548	2,603	2,598	2,634	2,627

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016
Crack Rating	7.9	7.7	7.8	7.9	8.1	8.2	8.6	8.7	8.7
Rut Rating	8.9	9.0	9.0	9.0	9.0	9.2	9.2	9.3	9.4
Ride Rating	7.1	7.1	7.0	7.0	7.0	7.0	7.1	7.1	7.2
Lane Miles	2,619	2,685	2,630	2,619	2,574	2,663	2,576	2,566	2,543

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	1999	2000	2001	2002	2003	2004	2005	2006	2007
Crack Rating	8.6	8.7	8.5	8.5	8.6	8.6	8.5	8.3	8.3
Rut Rating	8.9	9.1	9.0	8.9	8.9	9.0	8.9	8.9	8.9
Ride Rating	8.2	8.1	8.2	8.2	8.1	7.6	7.6	7.5	7.5
Lane Miles	3,380	3,417	3,561	3,656	3,850	3,810	3,861	3,870	3,883

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016
Crack Rating	8.1	8.1	8.1	8.0	8.2	8.5	8.7	8.8	8.8
Rut Rating	9.0	8.9	9.0	9.0	9.0	9.1	9.1	9.2	9.2
Ride Rating	7.5	7.5	7.5	7.4	7.5	7.5	7.5	7.5	7.7
Lane Miles	3,900	3,880	3,832	3,786	3,893	3,792	3,708	3,445	3,678

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.

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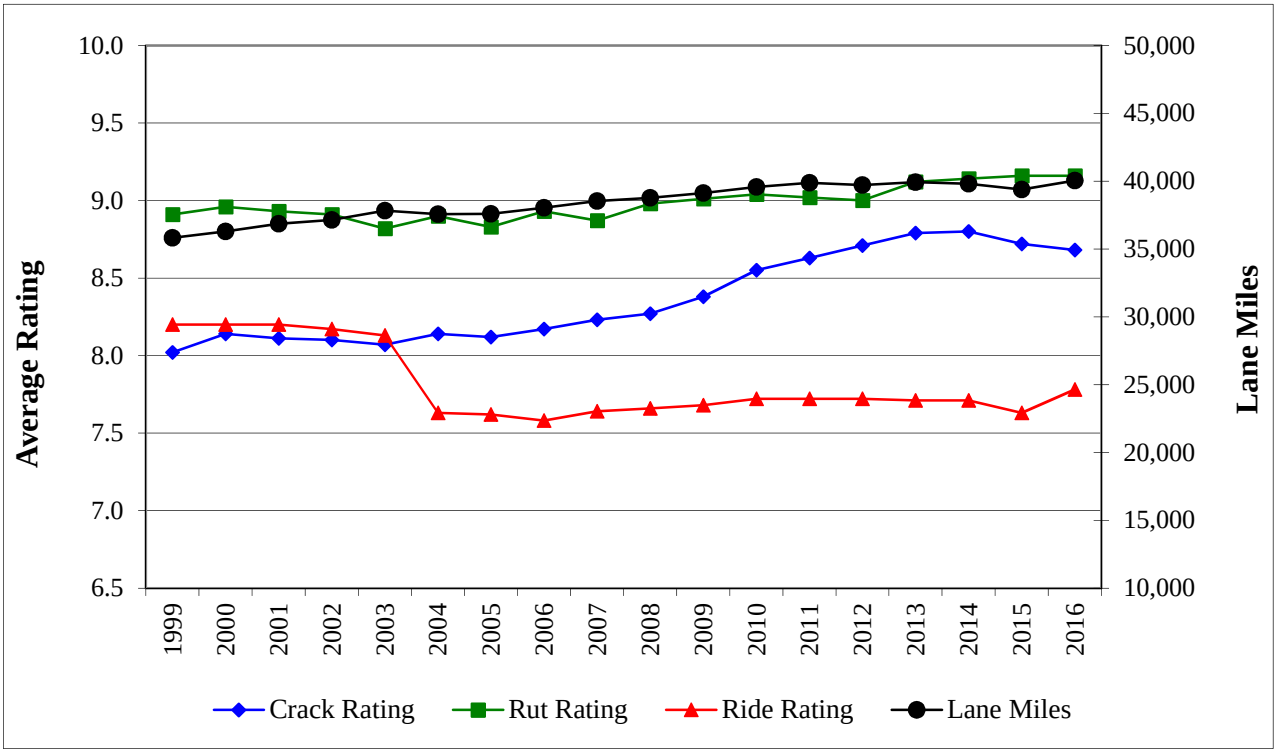
Section VI
Historical Distress Ratings
By System
1999 - 2016

Historical Distress Ratings - Statewide

All Systems - All Districts



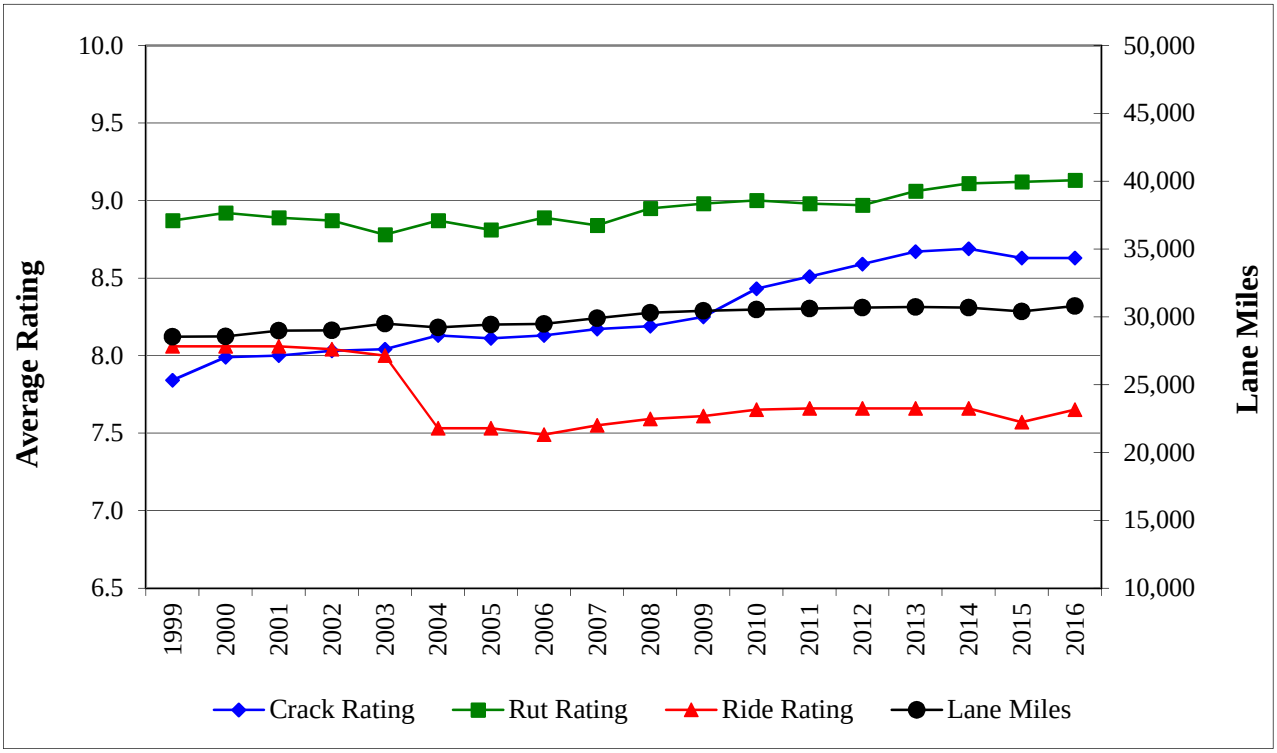
Year	1999	2000	2001	2002	2003	2004	2005	2006	2007
Crack Rating	8.0	8.1	8.1	8.1	8.1	8.1	8.1	8.2	8.2
Rut Rating	8.9	9.0	8.9	8.9	8.8	8.9	8.8	8.9	8.9
Ride Rating	8.2	8.2	8.2	8.2	8.1	7.6	7.6	7.6	7.6
Lane Miles	35,830	36,298	36,850	37,132	37,833	37,563	37,588	38,038	38,524

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016
Crack Rating	8.3	8.4	8.6	8.6	8.7	8.8	8.8	8.7	8.7
Rut Rating	9.0	9.0	9.0	9.0	9.0	9.1	9.1	9.2	9.2
Ride Rating	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.6	7.8
Lane Miles	38,779	39,121	39,577	39,887	39,710	39,913	39,806	39,384	40,042

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



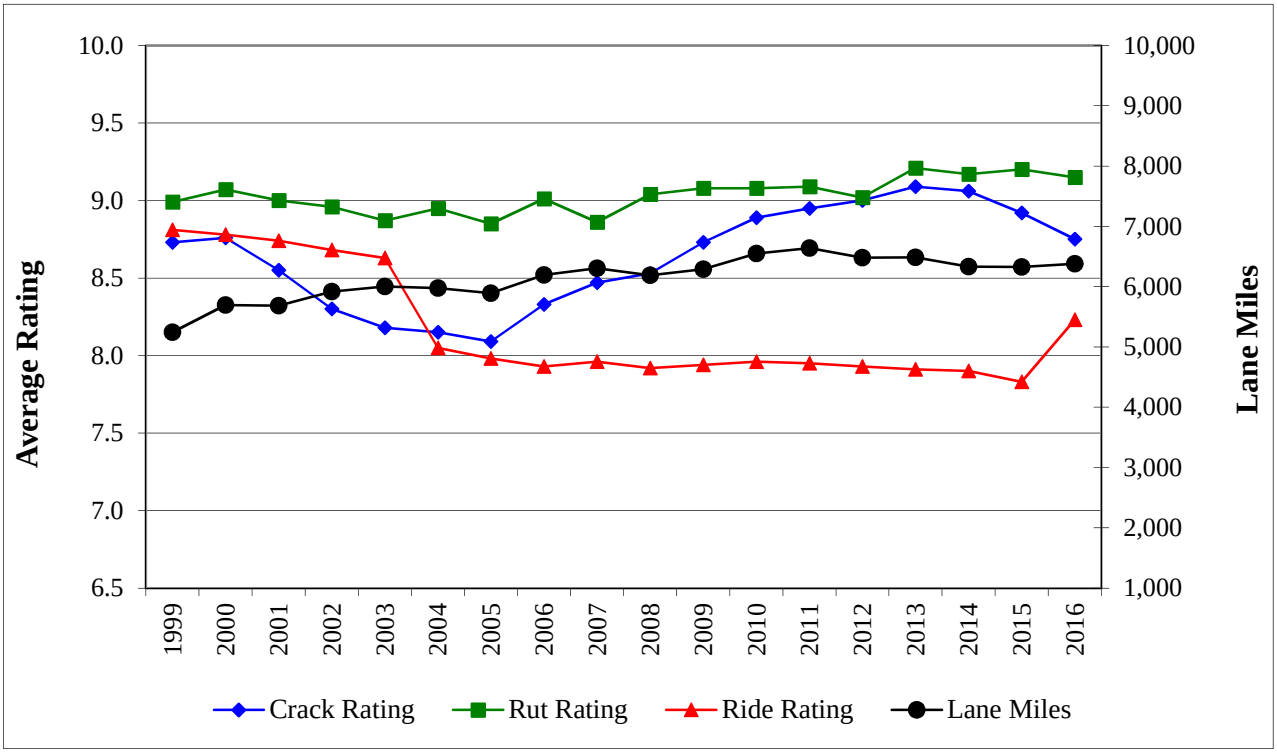
Year	1999	2000	2001	2002	2003	2004	2005	2006	2007
Crack Rating	7.8	8.0	8.0	8.0	8.0	8.1	8.1	8.1	8.2
Rut Rating	8.9	8.9	8.9	8.9	8.8	8.9	8.8	8.9	8.8
Ride Rating	8.1	8.1	8.1	8.0	8.0	7.5	7.5	7.5	7.6
Lane Miles	28,535	28,551	28,983	29,010	29,499	29,219	29,416	29,471	29,900

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016
Crack Rating	8.2	8.3	8.4	8.5	8.6	8.7	8.7	8.6	8.6
Rut Rating	9.0	9.0	9.0	9.0	9.0	9.1	9.1	9.1	9.1
Ride Rating	7.6	7.6	7.7	7.7	7.7	7.7	7.7	7.6	7.7
Lane Miles	30,310	30,452	30,526	30,607	30,670	30,726	30,686	30,392	30,792

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



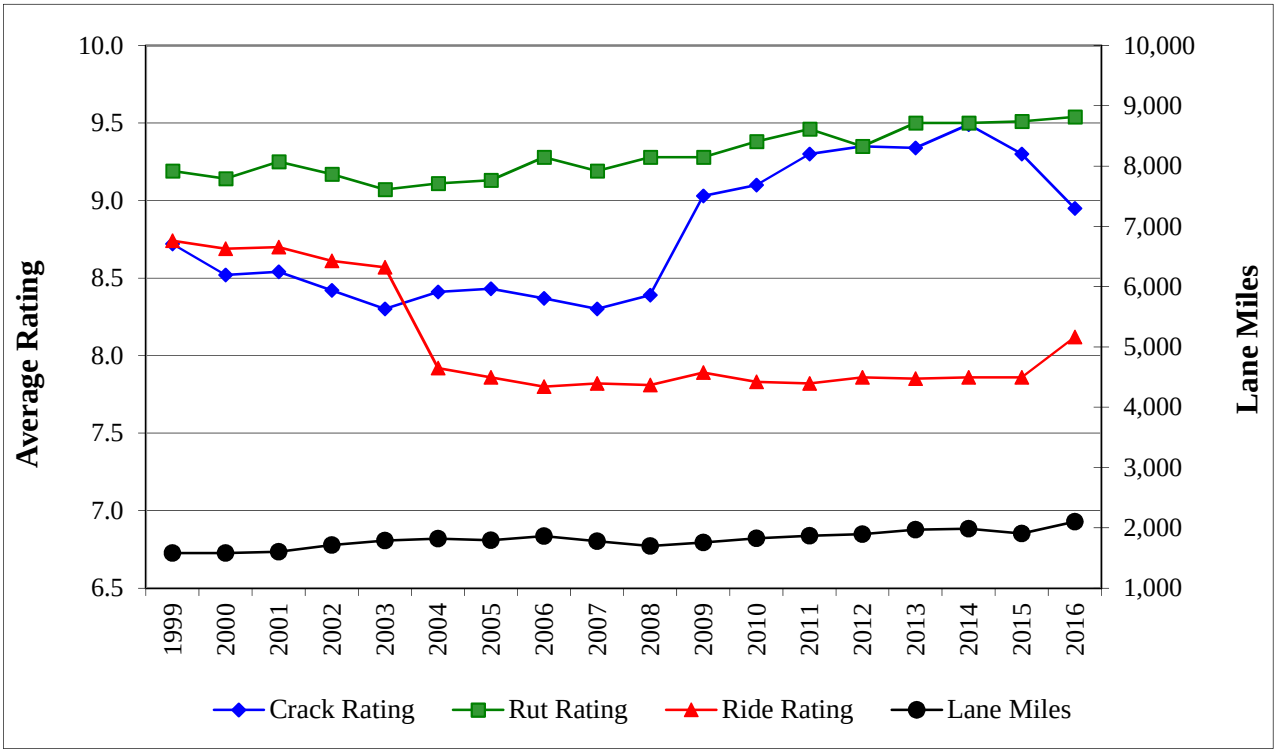
Year	1999	2000	2001	2002	2003	2004	2005	2006	2007
Crack Rating	8.7	8.8	8.6	8.3	8.2	8.2	8.1	8.3	8.5
Rut Rating	9.0	9.1	9.0	9.0	8.9	9.0	8.9	9.0	8.9
Ride Rating	8.8	8.8	8.7	8.7	8.6	8.1	8.0	7.9	8.0
Lane Miles	5,244	5,695	5,685	5,920	6,002	5,974	5,889	6,194	6,307

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016
Crack Rating	8.5	8.7	8.9	9.0	9.0	9.1	9.1	8.9	8.8
Rut Rating	9.0	9.1	9.1	9.1	9.0	9.2	9.2	9.2	9.2
Ride Rating	7.9	7.9	8.0	8.0	7.9	7.9	7.9	7.8	8.2
Lane Miles	6,186	6,288	6,547	6,639	6,481	6,488	6,330	6,326	6,381

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



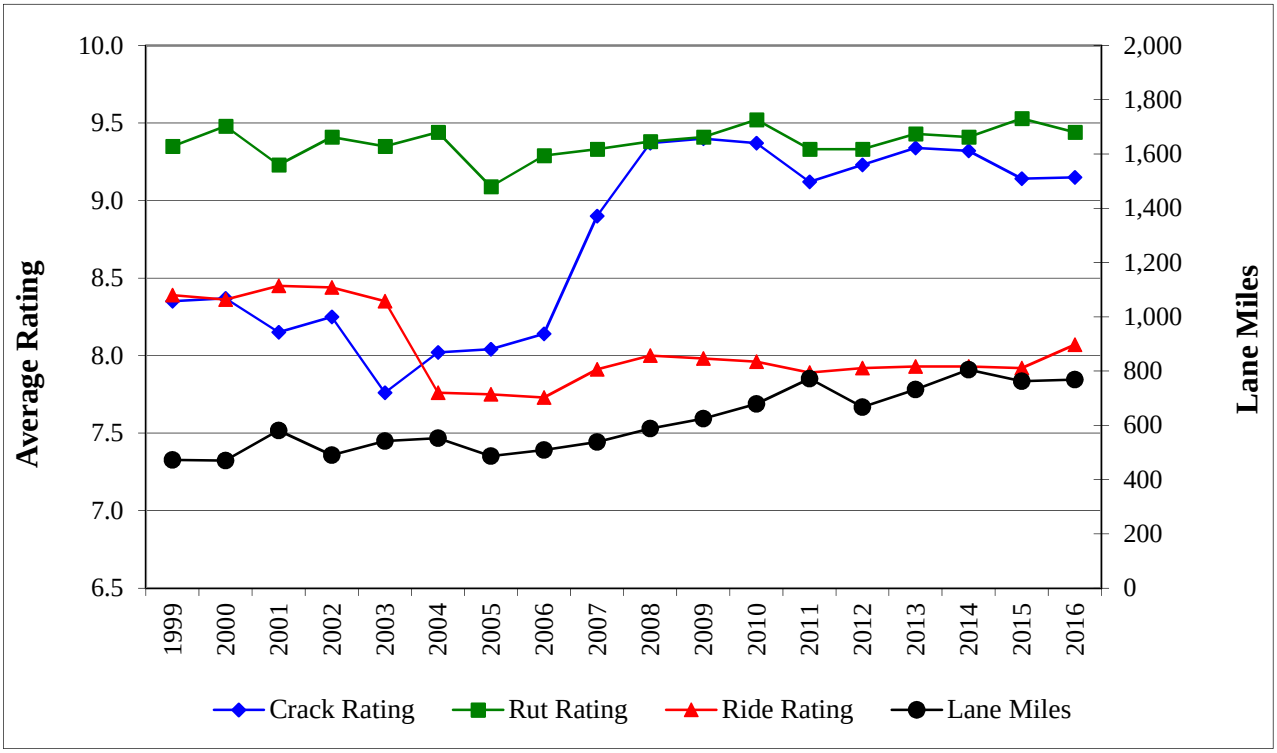
Year	1999	2000	2001	2002	2003	2004	2005	2006	2007
Crack Rating	8.7	8.5	8.5	8.4	8.3	8.4	8.4	8.4	8.3
Rut Rating	9.2	9.1	9.3	9.2	9.1	9.1	9.1	9.3	9.2
Ride Rating	8.7	8.7	8.7	8.6	8.6	7.9	7.9	7.8	7.8
Lane Miles	1,579	1,583	1,602	1,712	1,790	1,818	1,795	1,864	1,778

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016
Crack Rating	8.4	9.0	9.1	9.3	9.4	9.3	9.5	9.3	9.0
Rut Rating	9.3	9.3	9.4	9.5	9.4	9.5	9.5	9.5	9.5
Ride Rating	7.8	7.9	7.8	7.8	7.9	7.9	7.9	7.9	8.1
Lane Miles	1,696	1,757	1,825	1,869	1,892	1,968	1,986	1,904	2,100

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	1999	2000	2001	2002	2003	2004	2005	2006	2007
Crack Rating	8.4	8.4	8.2	8.3	7.8	8.0	8.0	8.1	8.9
Rut Rating	9.4	9.5	9.2	9.4	9.4	9.4	9.1	9.3	9.3
Ride Rating	8.4	8.4	8.5	8.4	8.4	7.8	7.8	7.7	7.9
Lane Miles	472	470	581	490	542	552	487	509	539

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016
Crack Rating	9.4	9.4	9.4	9.1	9.2	9.3	9.3	9.1	9.2
Rut Rating	9.4	9.4	9.5	9.3	9.3	9.4	9.4	9.5	9.4
Ride Rating	8.0	8.0	8.0	7.9	7.9	7.9	7.9	7.9	8.1
Lane Miles	588	624	679	772	667	732	805	763	769

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
Raveling Distribution
By District and System
1999 - 2016

Section VII

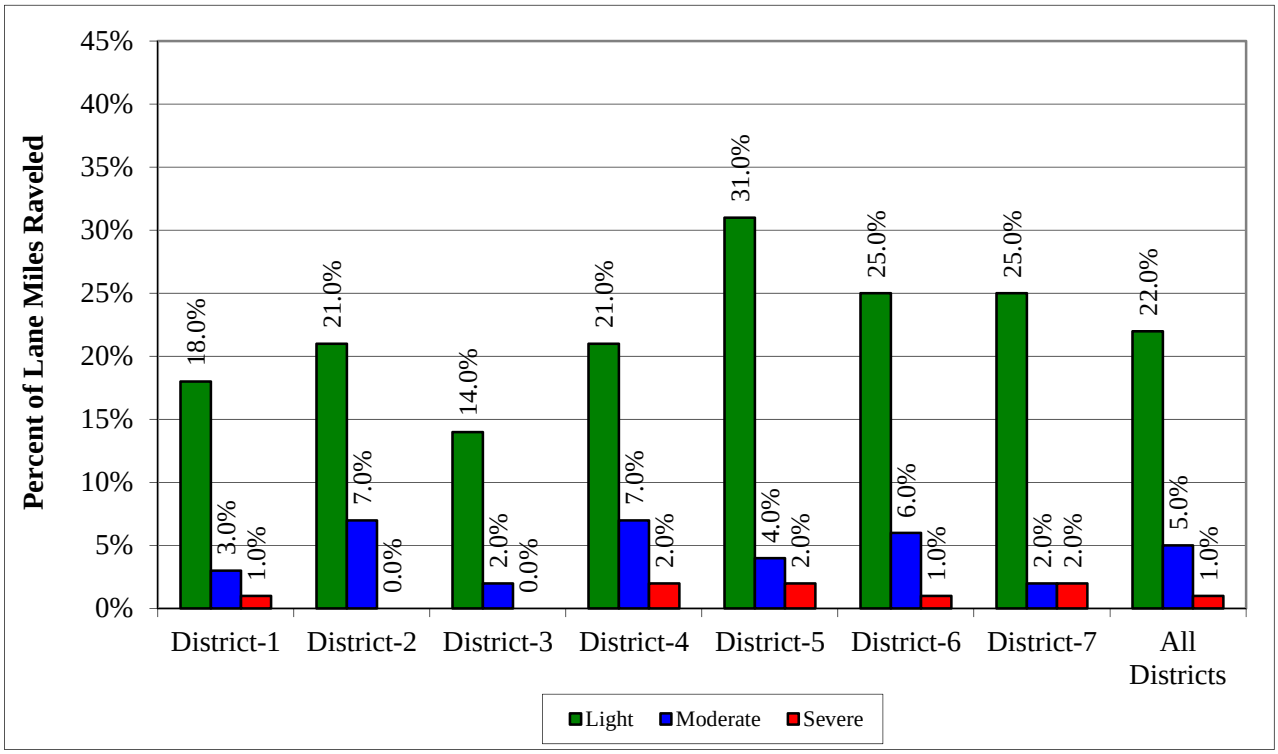
Raveling

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.

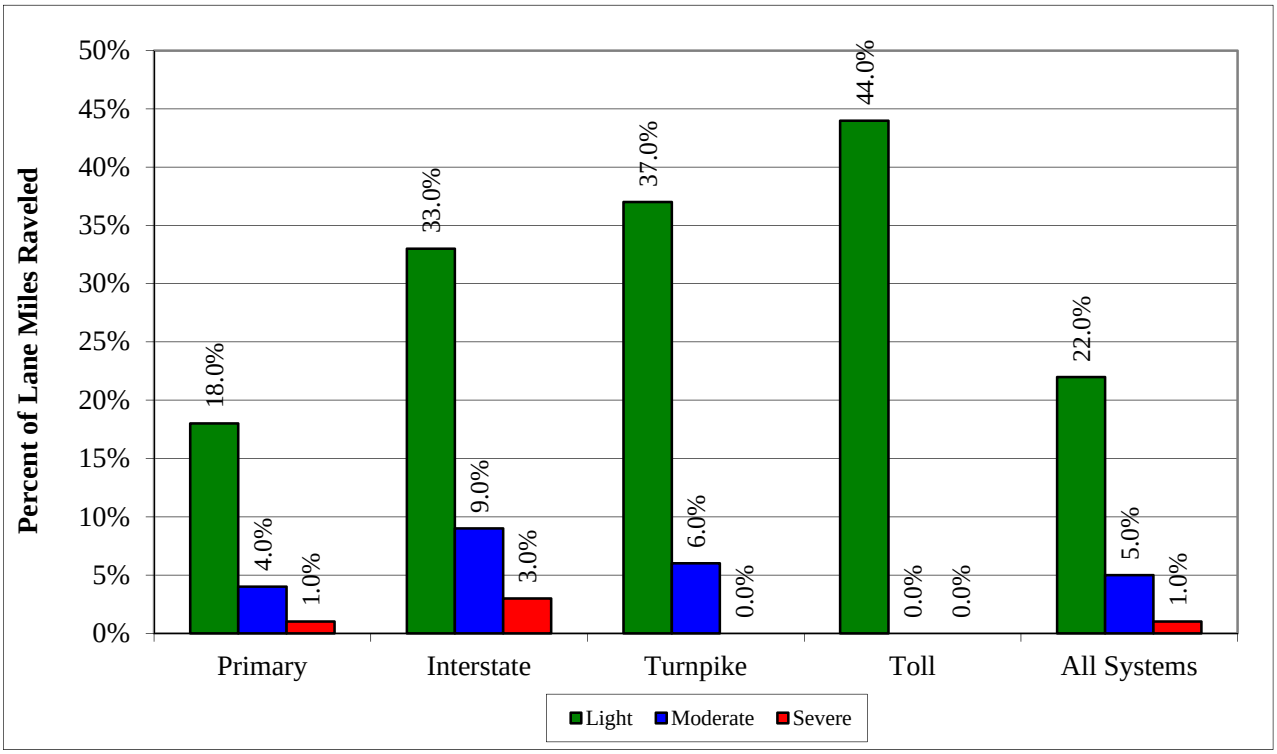
2016 Raveling Survey by District

All Systems



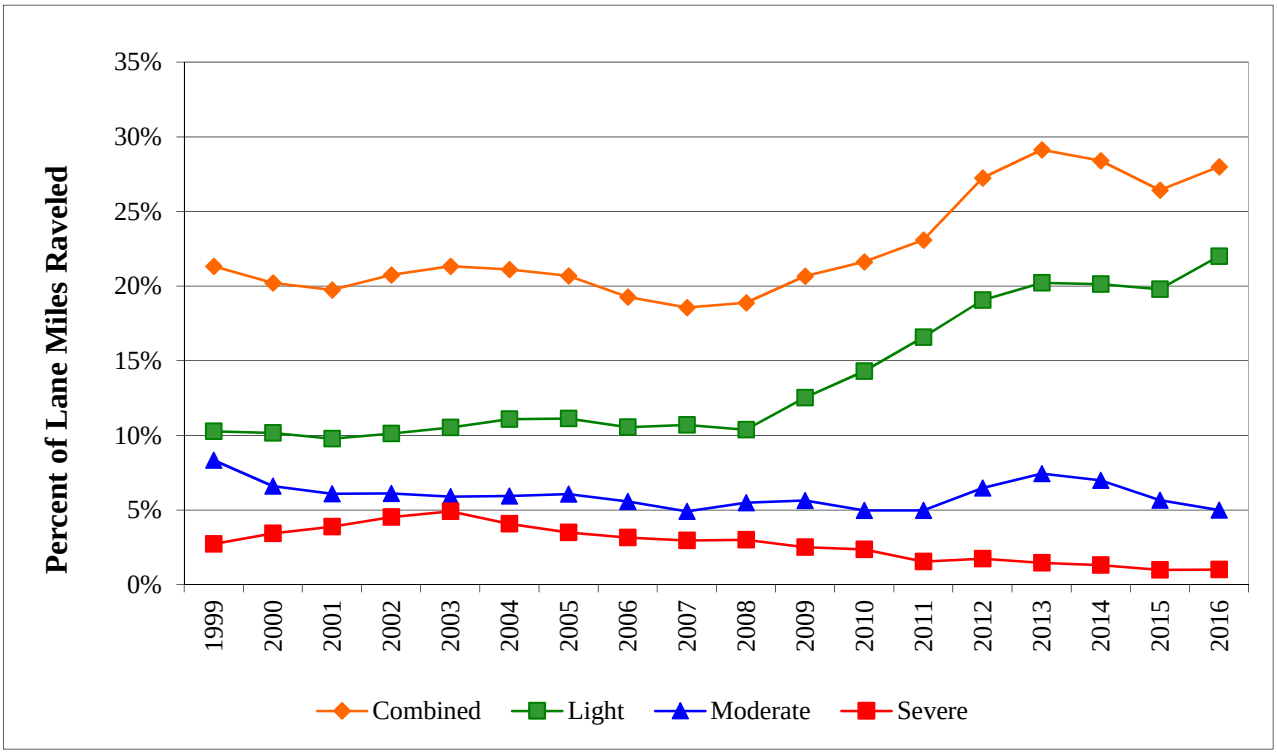
2016 Raveling Survey by System

All Districts



Raveling Survey History

All Systems and All Districts Combined



Year	1999	2000	2001	2002	2003	2004	2005	2006	2007
Combined	21.3%	20.2%	19.7%	20.8%	21.3%	21.1%	20.7%	19.3%	18.6%
Light	10.3%	10.2%	9.8%	10.1%	10.5%	11.1%	11.1%	10.5%	10.7%
Moderate	8.3%	6.6%	6.1%	6.1%	5.9%	5.9%	6.1%	5.6%	4.9%
Severe	2.7%	3.4%	3.9%	4.5%	4.9%	4.1%	3.5%	3.2%	3.0%

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016
Combined	18.9%	20.7%	21.6%	23.1%	27.3%	29.1%	28.4%	26.4%	28.0%
Light	10.4%	12.5%	14.3%	16.6%	19.1%	20.2%	20.1%	19.8%	22.0%
Moderate	5.5%	5.6%	5.0%	5.0%	6.5%	7.4%	7.0%	5.7%	5.0%
Severe	3.0%	2.5%	2.4%	1.6%	1.7%	1.5%	1.3%	1.0%	1.0%

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Section VIII
Distress Ratings
Comparison
2015 vs. 2016

Section VIII

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)

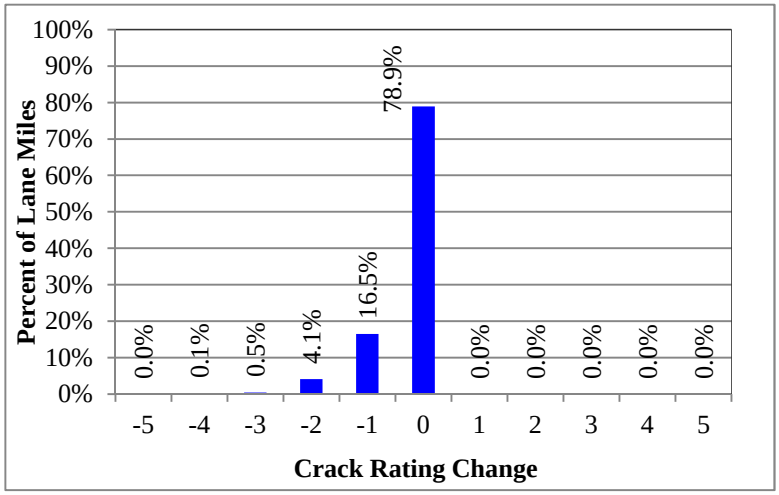
Type 8 - Under Construction

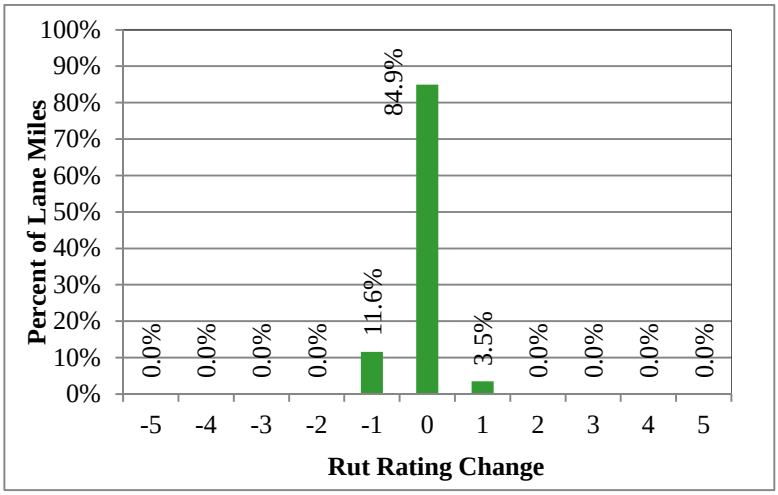
Type 9 - Structures or exceptions that are State-maintained

Crack, Rut, and Ride Rating Changes

2015 compared to 2016

95% of the 2016 lane miles were within +/- 1 point compared to 2015 survey

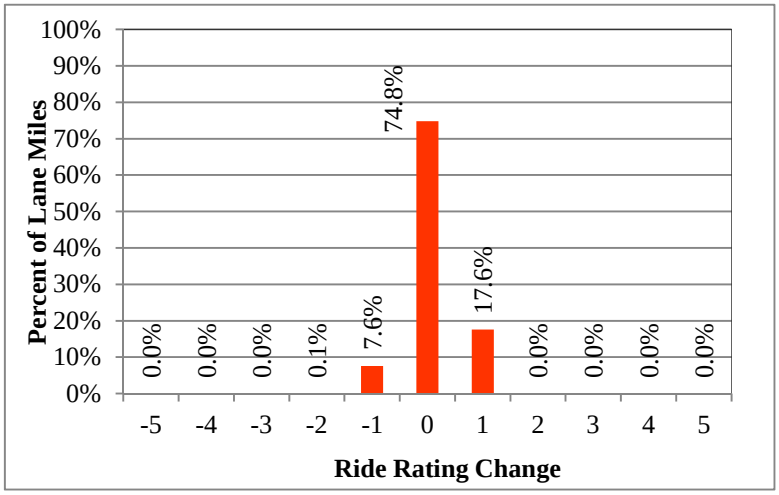




100% of the 2016 lane miles were within +/-1 point compared to 2015 survey

100% of the 2016 lanes miles were within +/-1 point compared to 2015 survey

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.



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Section IX
Customer Service Survey

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2016 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 by circling the appropriate number. ***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