STATE OF FLORIDA

2005
FLEXIBLE PAVEMENT CONDITION SURVEY FACTS & FIGURES

FL/DOT/SMO/05-484
April 2005

STATE MATERIALS OFFICE

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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.

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

Once the Survey in a particular county is completed, a 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 25 percent increase in surveyed lane miles (refer to Chart on page 5).

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

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

The PCS is conducted to monitor three (3) specific distress criteria, namely, (1) ride quality, (2) rutting, and (3) cracking. 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 becomes eligible for rehabilitation.

Cracking is a subjective rating conducted visually either from windshield survey or from the roadway shoulder. Rut and ride are measured using an automated vehicle-mounted system called a Profiler 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 Standard E1489.

In order to ensure maximum accuracy and repeatability of the data collected, the testing equipment must be 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 to that of earlier years to review trends and identify potential errors are also performed. Furthermore, team members (raters) annually complete a comparative distress rating evaluation on selected pavement sections to enhance uniformity of the subjective Crack Rating. When necessary, and as appropriate, efforts have been made to upgrade the survey equipment and to improve the data analysis software resulting in increased efficiency of data collection, processing, and improved accuracy of the Survey results. 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.dot.state.fl.us/statematerialsoffice/pavement/pavementhome.htm

The facts and figures contained in this report are for flexible pavements only, which represent approximately 98% of the entire State Highway System.

Observations

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

1. The average Crack Rating has remained stable for the past fourteen years with a mean rating of 8.11 and a range of 8.02 to 8.21.
2. The average Rut Rating improved from 8.35 in 1992 to 8.91 in 1999. From 1999 to 2005 the rating has remained stable with an average of 8.89.
3. The average Ride Rating was between 8.02 in 1992, with an average rating of 8.03 in 1994. The Ride Ratings have steadily improved from an average of 8.08 in 1995 to an 8.24 in 1998. The average Ride Rating has steadily decreased since then, from an 8.20 in 1999 to a 7.62 in 2005. Note that's since 2004, the PCS data has been processed at a 6 in. interval compared to previous years, when data was processed at a 12 in. interval. This explains for the most part the drop in Ride Rating in 2004 compared to the 2003 rating.
4. 91.1% of the pavement sections rated in 2005 for cracking were within one point compared to the 2004 ratings. (2)
5. 99.8% of the pavement sections rated in 2005 for rutting were within one point compared to the 2004 ratings. (2)
6. 99.9% of the pavement sections rated in 2005 for ride were within one point compared to the 2004 ratings. (2)

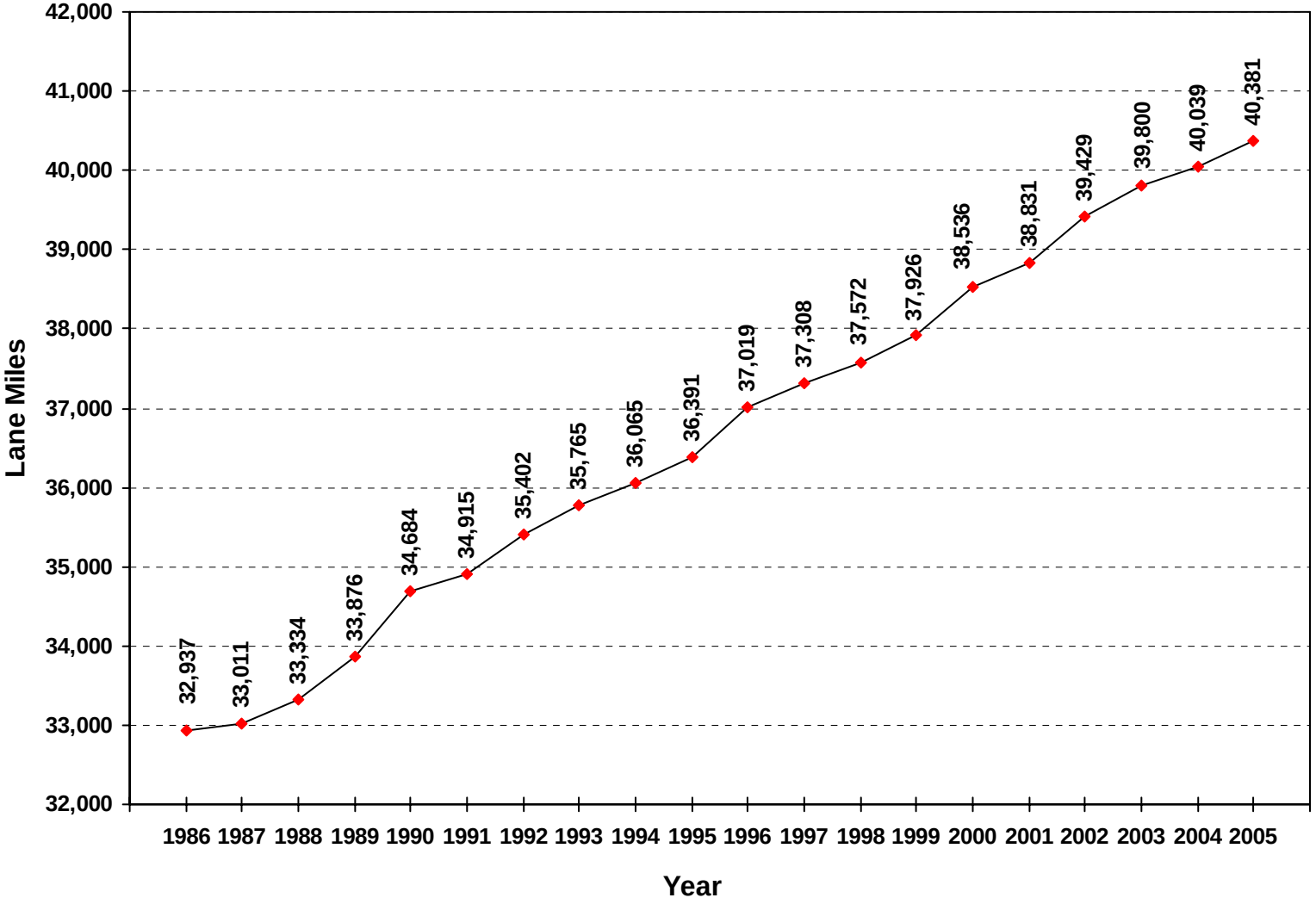
* Note 1: Laser sensors were implemented beginning with the 1999 PCS , along with the use of RN as a ride quality index. .

* Note 2: Sections that had undergone notable changes such as new construction, or total rehabilitation were excluded from the analysis.

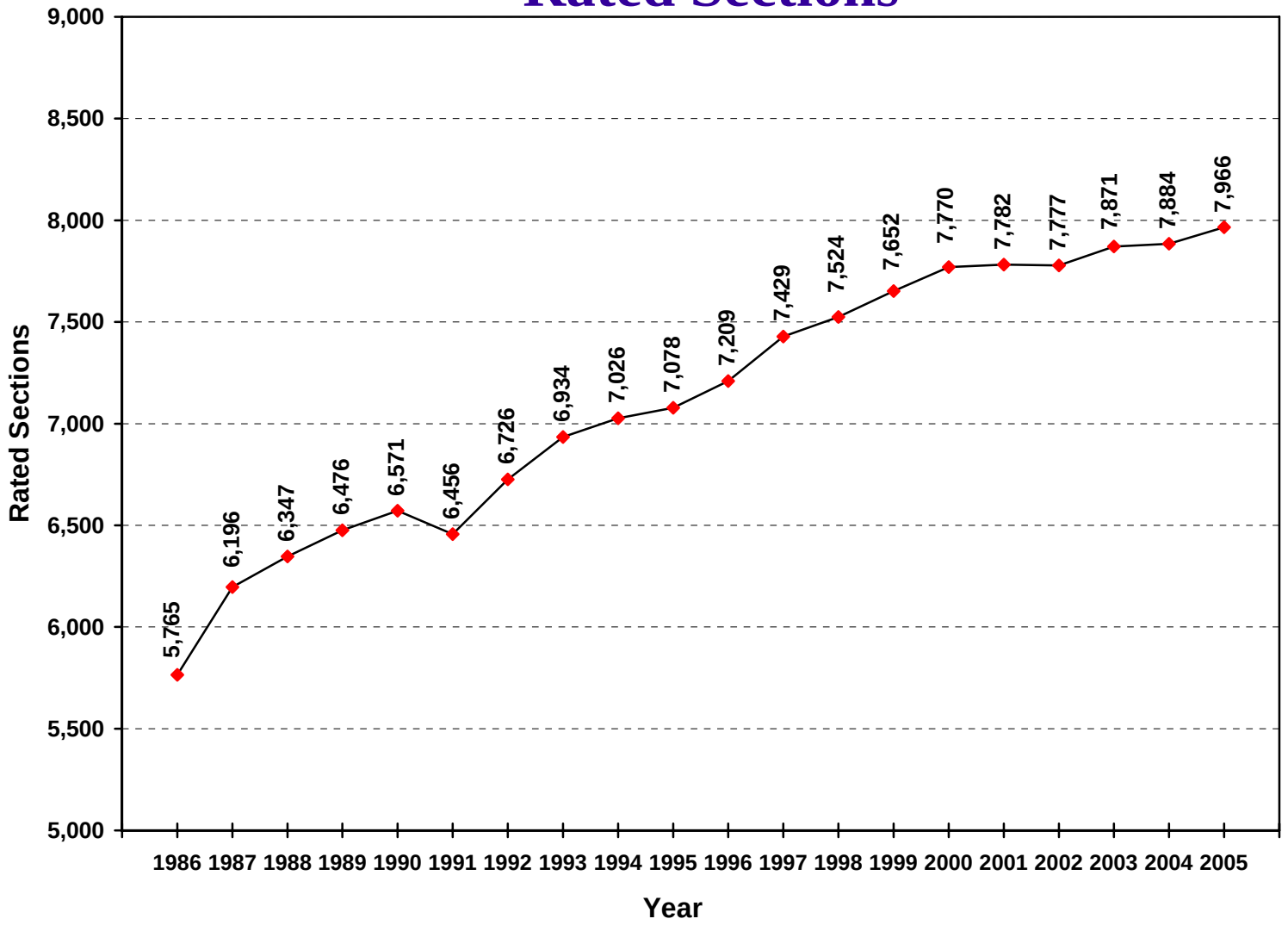
General Notes

1. For multi-lane roadways: The worst lane in each direction is rated (normally the outermost traffic lane).
2. For 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. Ride Rating and Rut Rating data are collected automatically using four identical inertial profilers.
5. Crack Rating is subjective and collected visually, as a windshield survey or from the roadway shoulder.
6. Crack Rating is rated based on the severity and extent of the distress for area inside and outside the wheel paths.

Flexible Pavement Condition Survey
Production History
Lane Miles



Flexible Pavement Condition Survey
Production History
Rated Sections

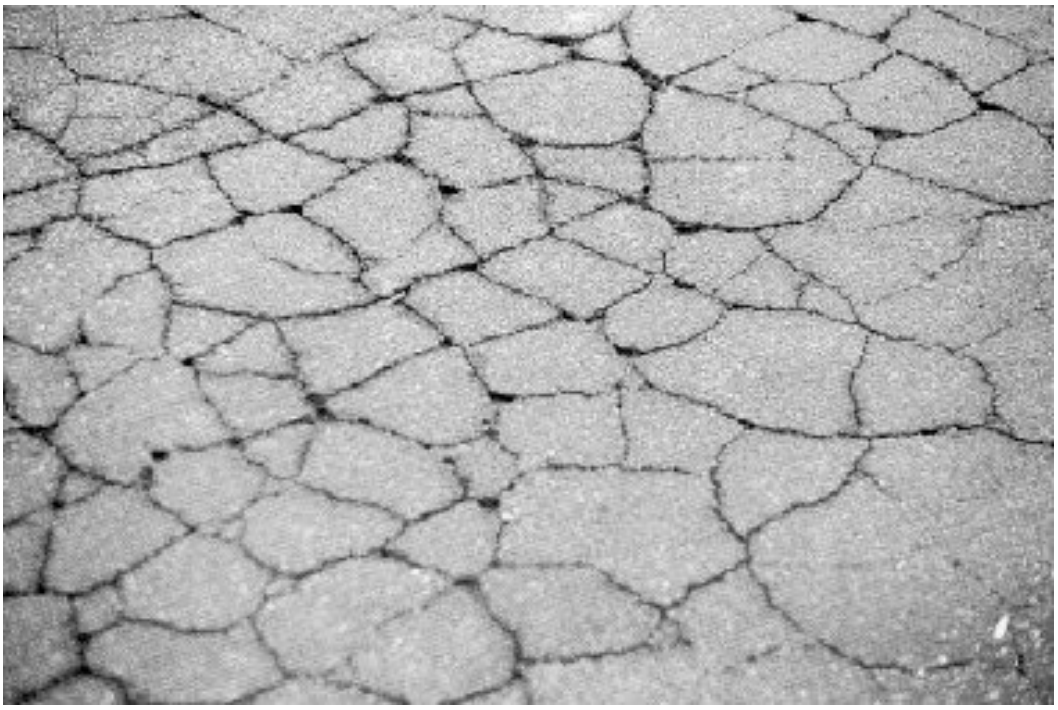


SECTION II

CRACK RATING

BY

SYSTEM AND DISTRICT



SECTION II

Crack Rating by System and District

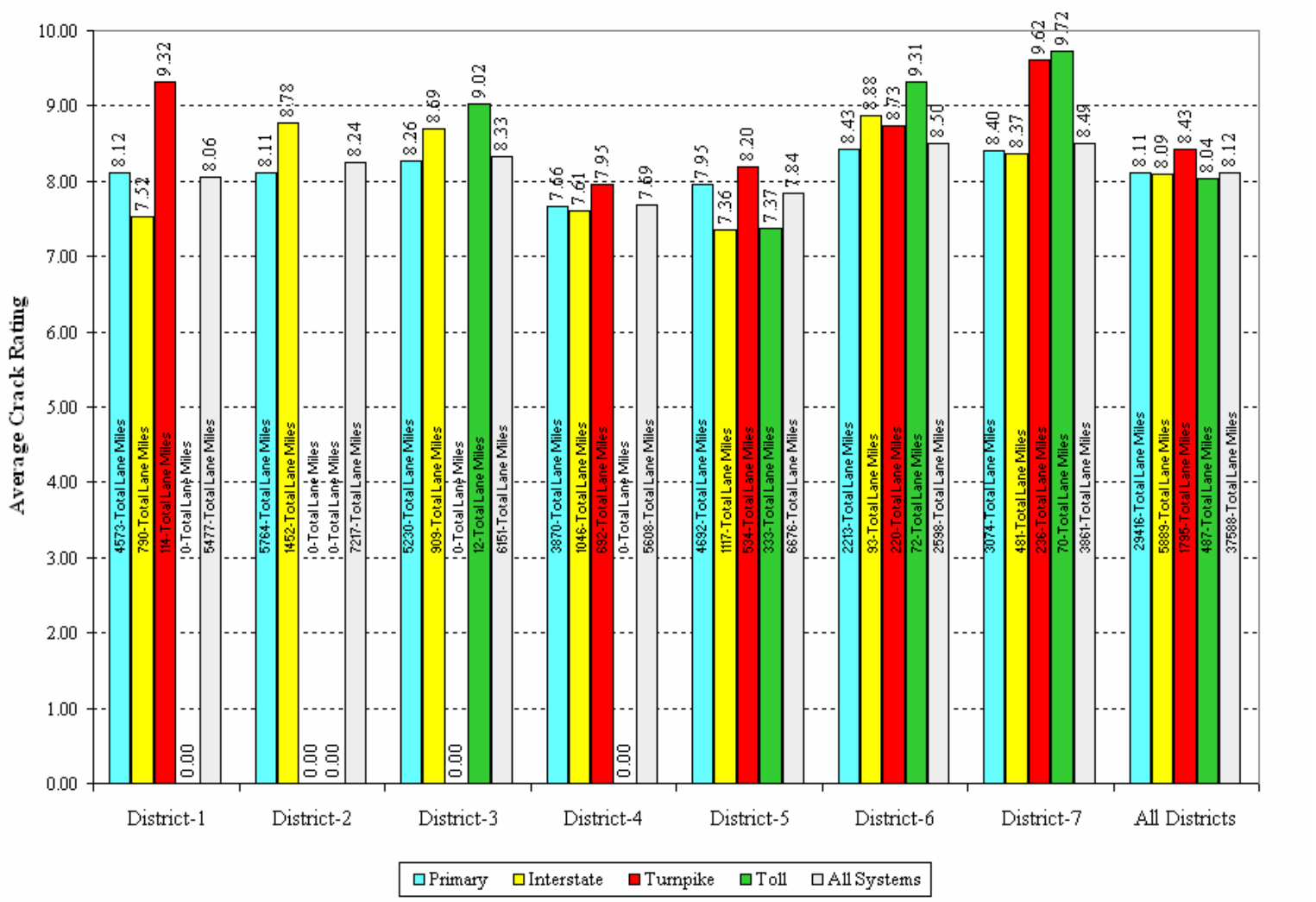
Crack Rating Criteria

- 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.
- There are three classes of cracking; the ratings of which are based upon severity level: 1B, II and III.
- Only the predominate type 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.
- 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.
- The Crack Rating is subtracted from a perfect score of 10.

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

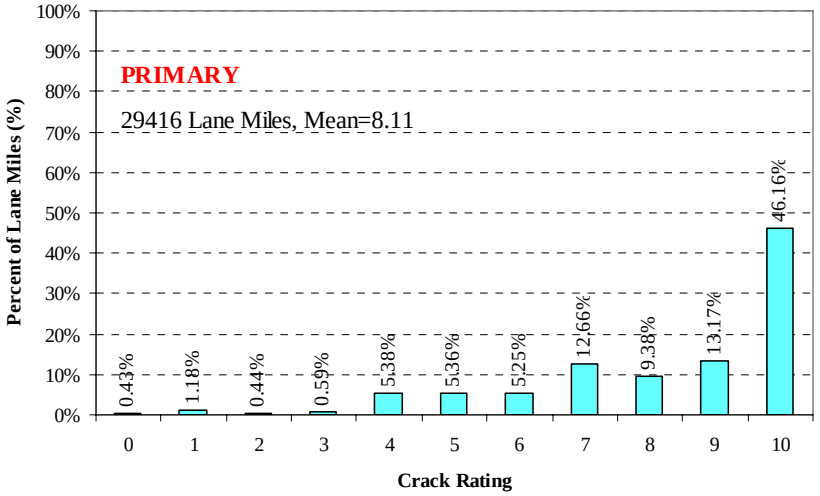
Where: CW and CO are numerical factors for cracking within the wheel paths (CW) and outside of the wheel paths (CO). These factors are based on the severity and extent of the type of cracking.

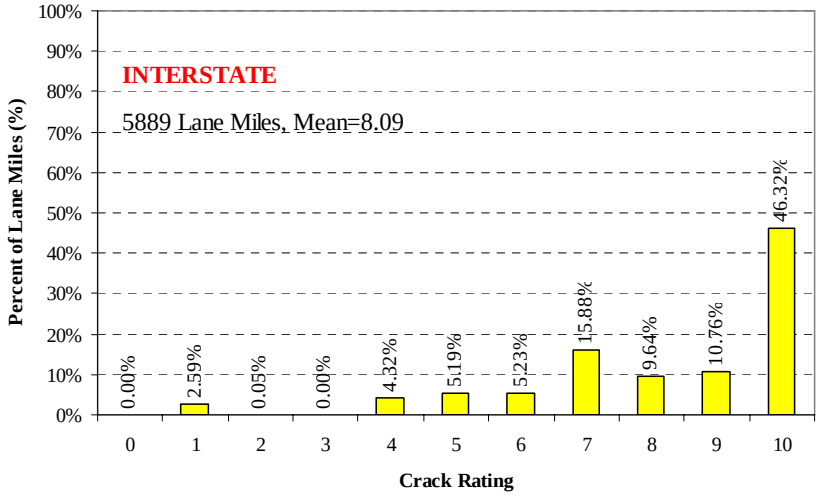
2005 Crack Rating by System and District

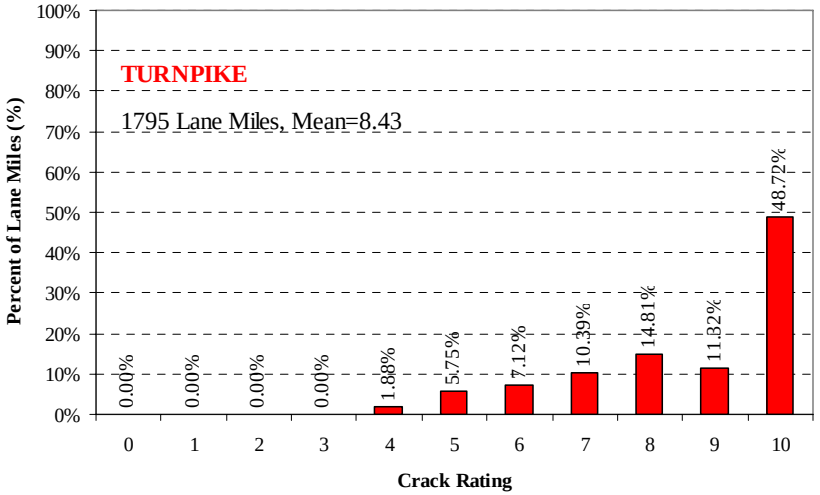


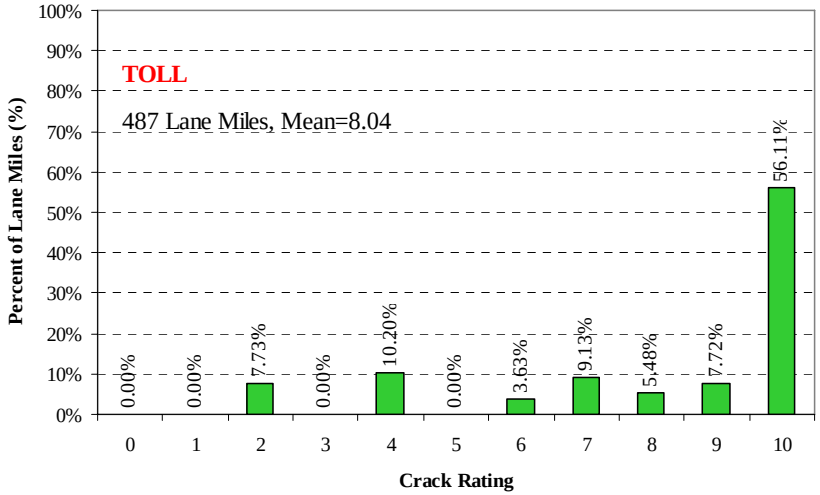
2005 Crack Distribution by System

Statewide



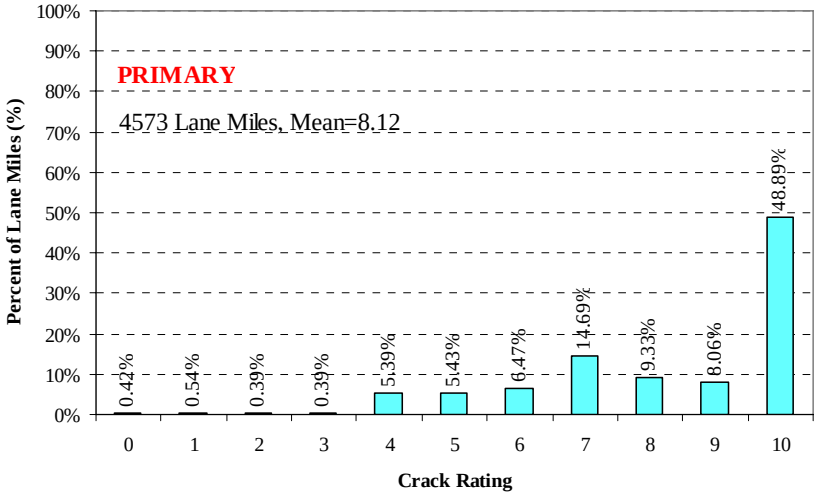


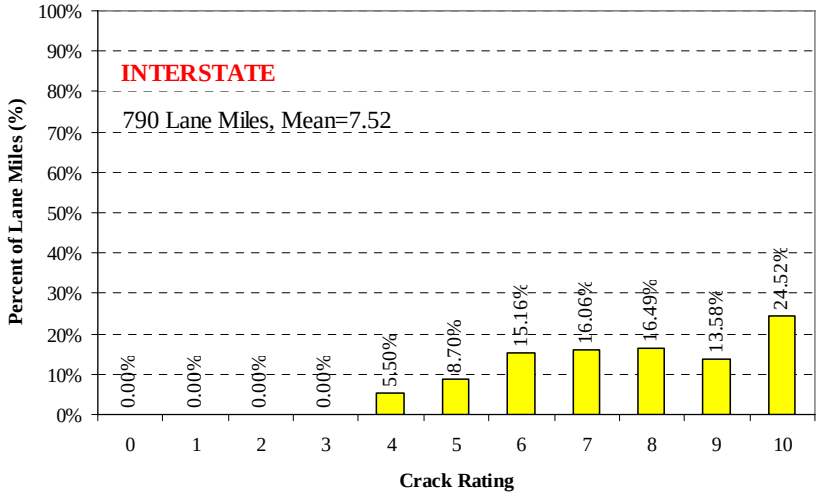


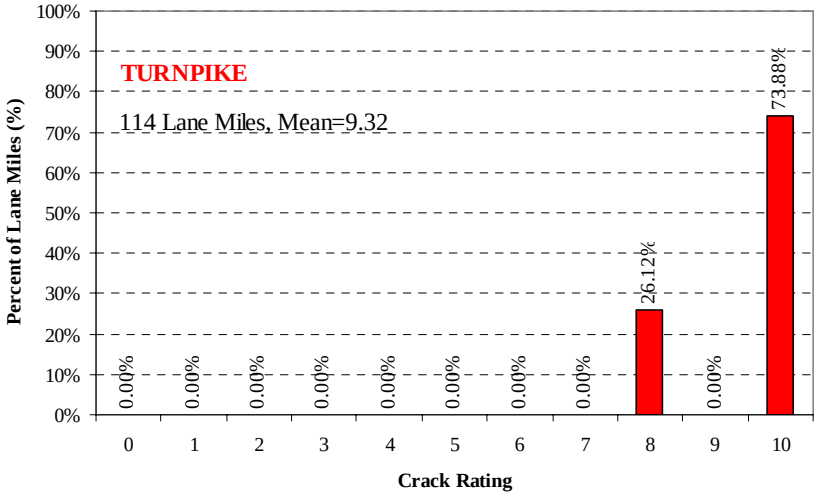


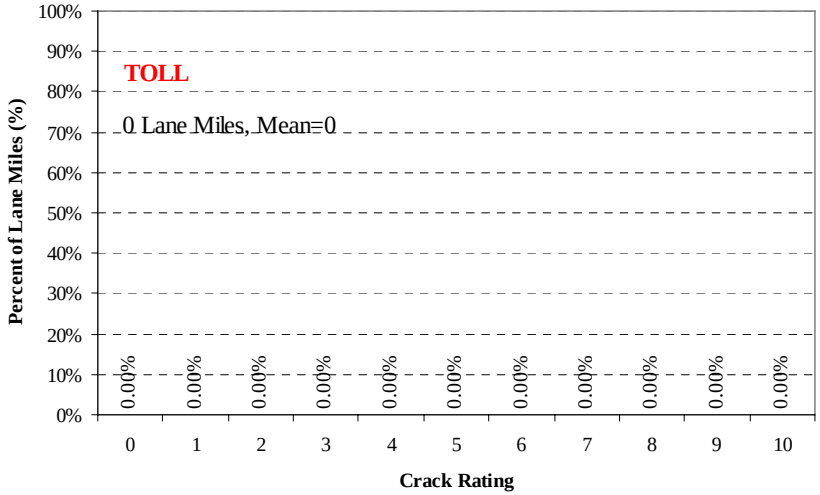
2005 Crack Distribution by System

District 1

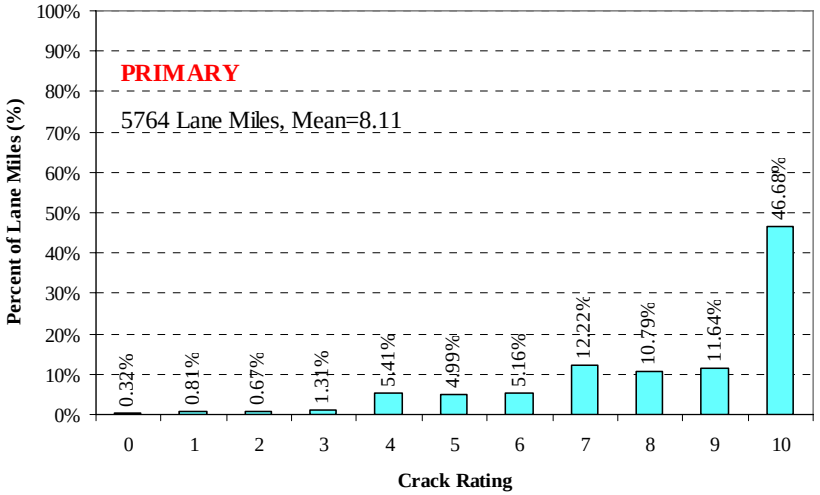


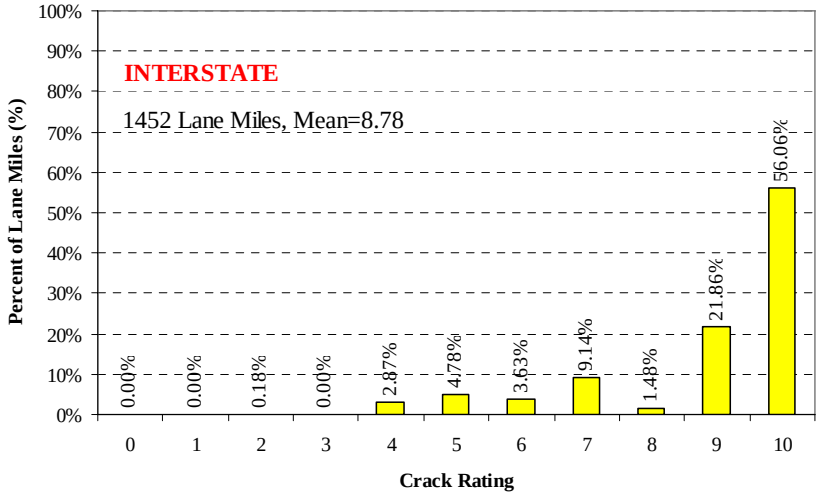


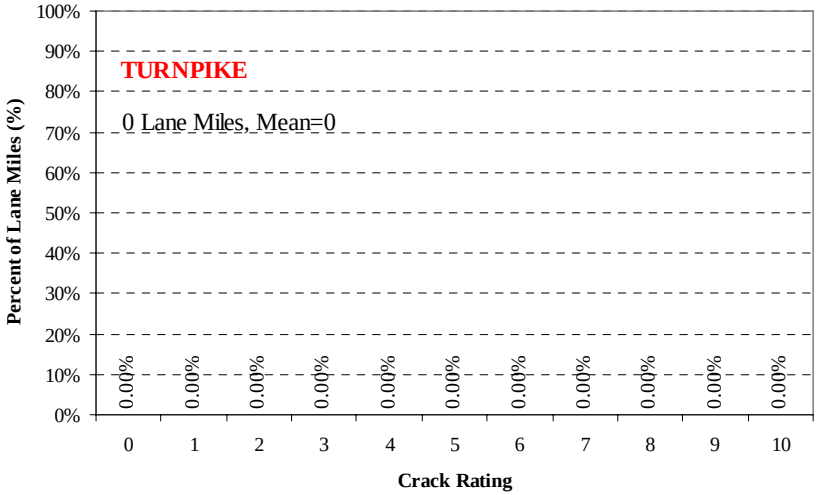


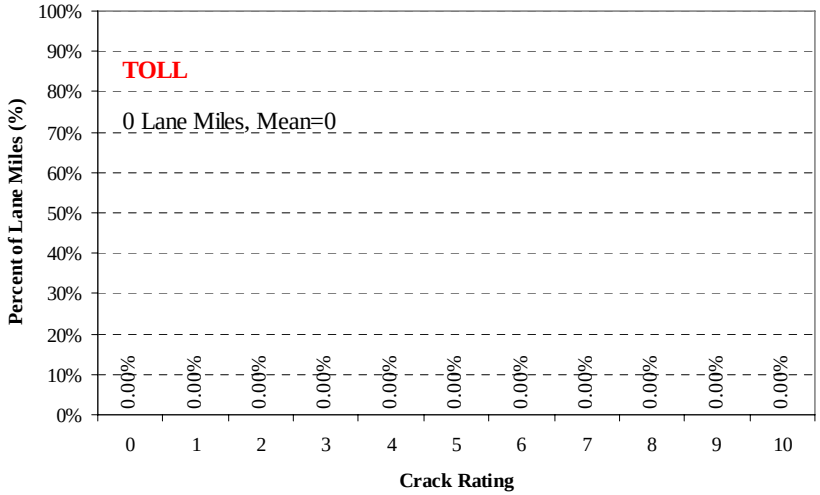


2005 Crack Distribution by System
District 2

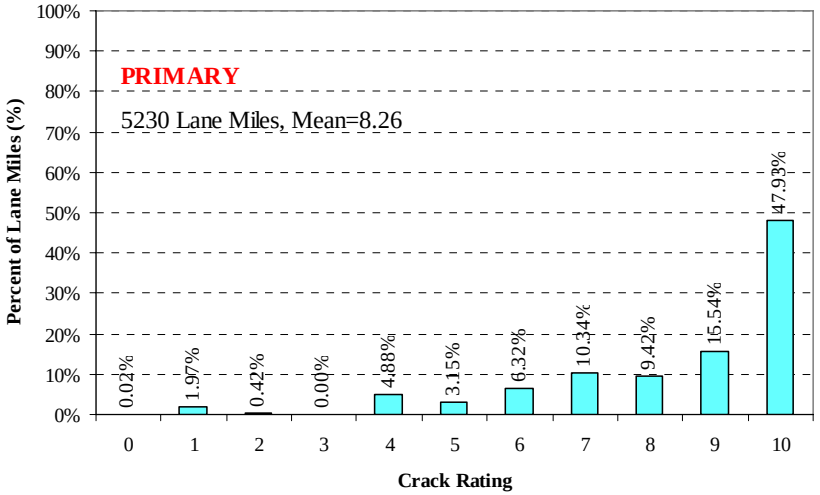


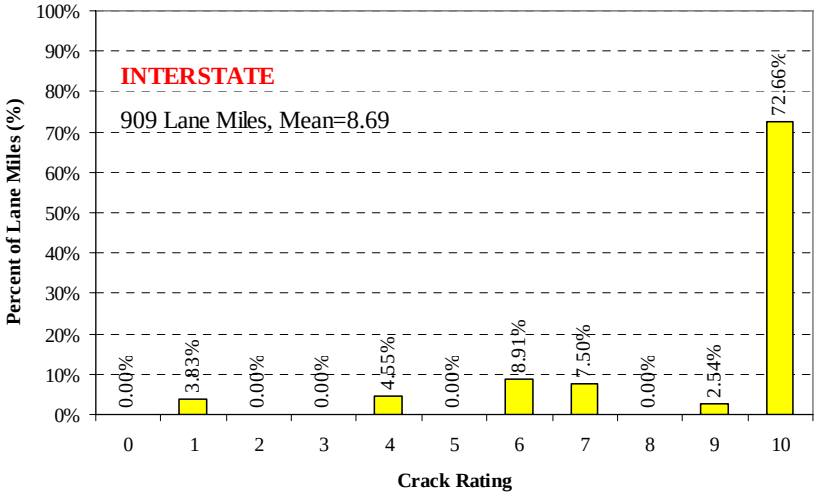


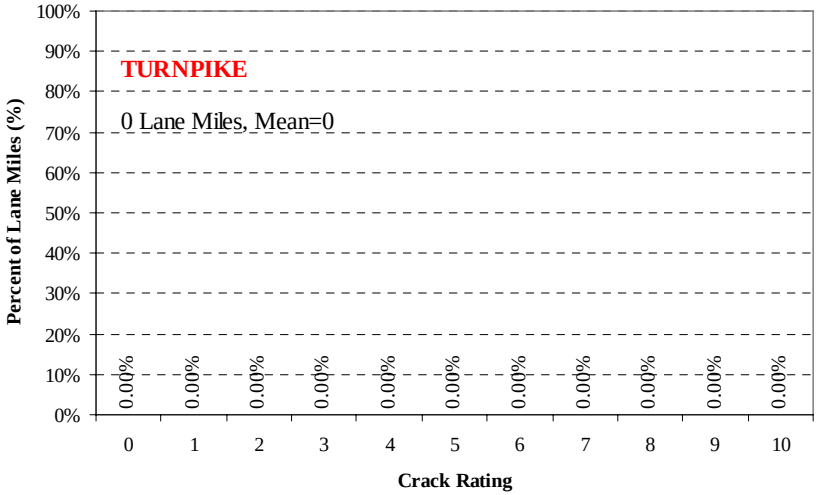


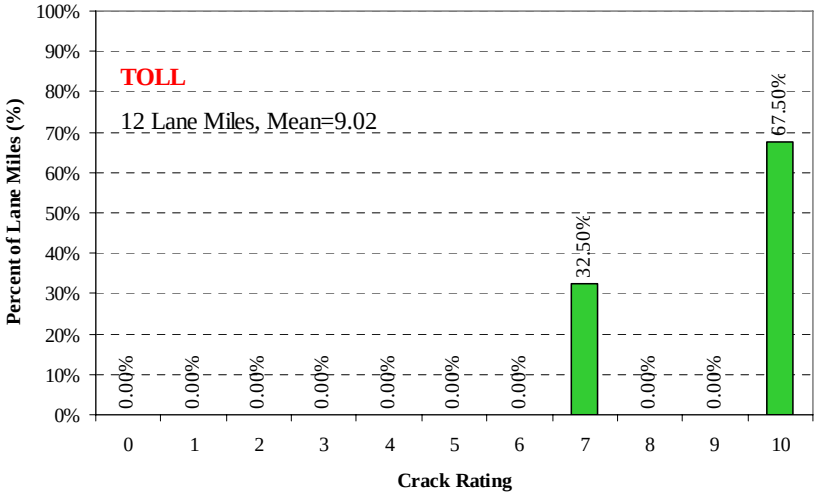


2005 Crack Distribution by System
District 3



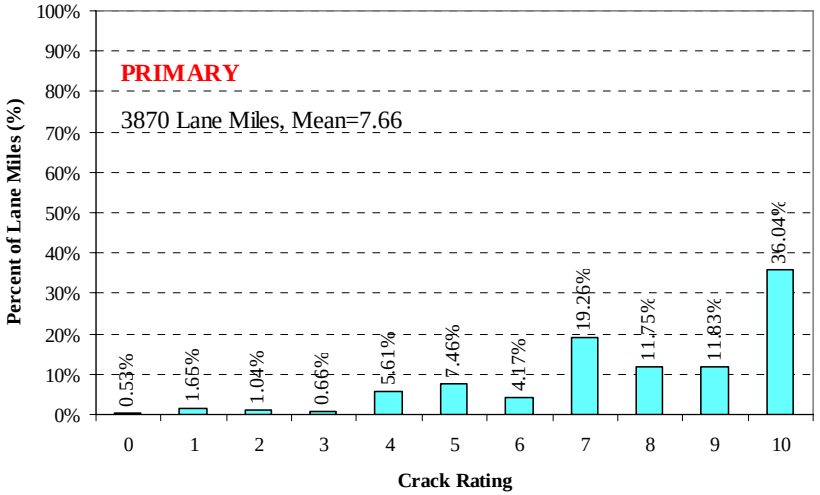


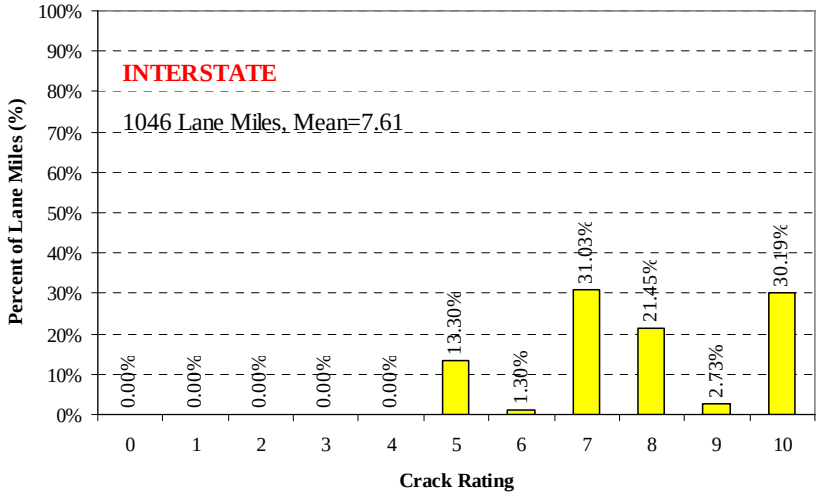


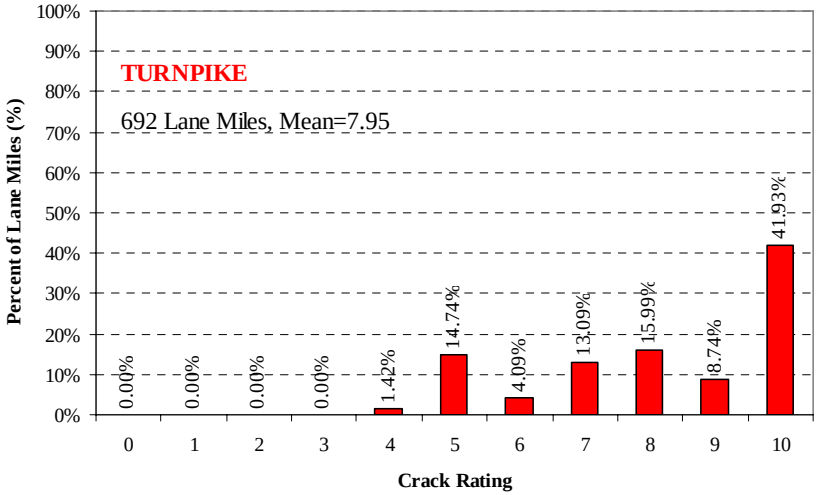


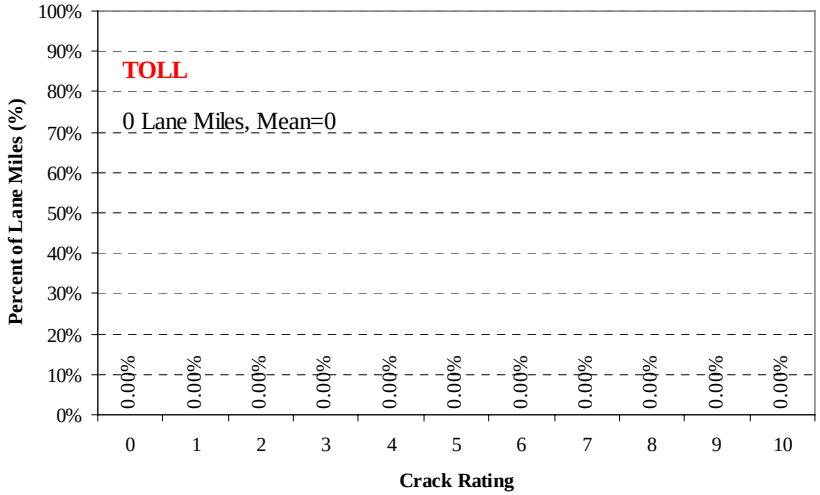
2005 Crack Distribution by System

District 4



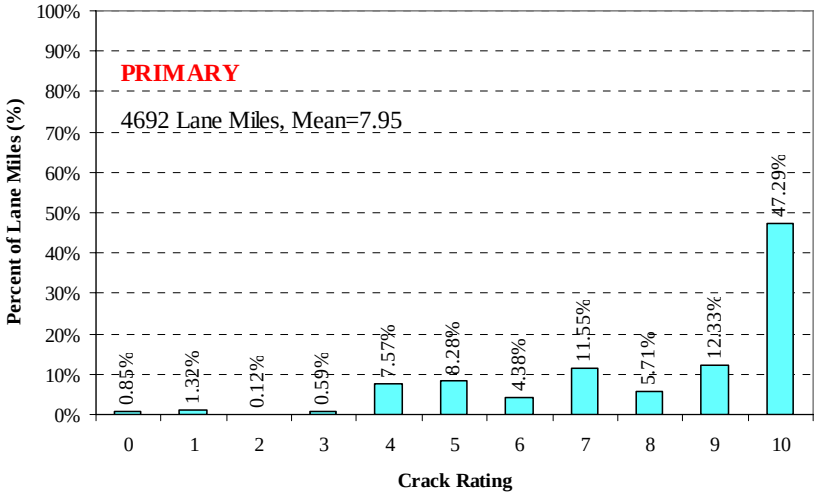


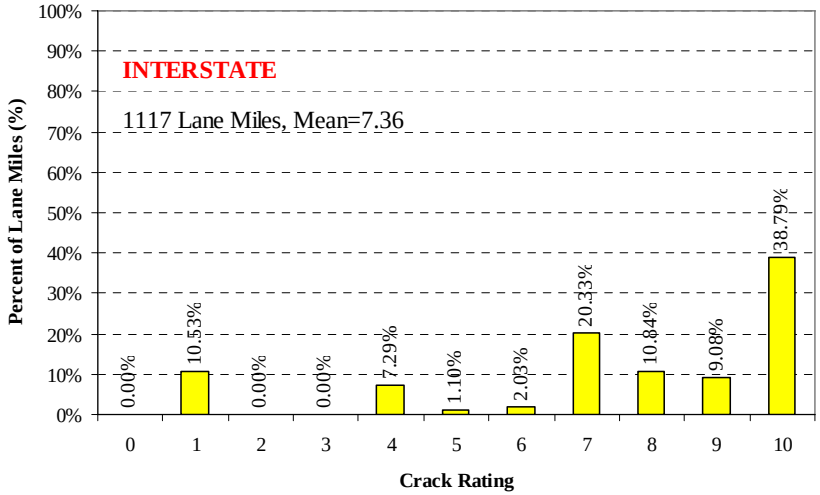


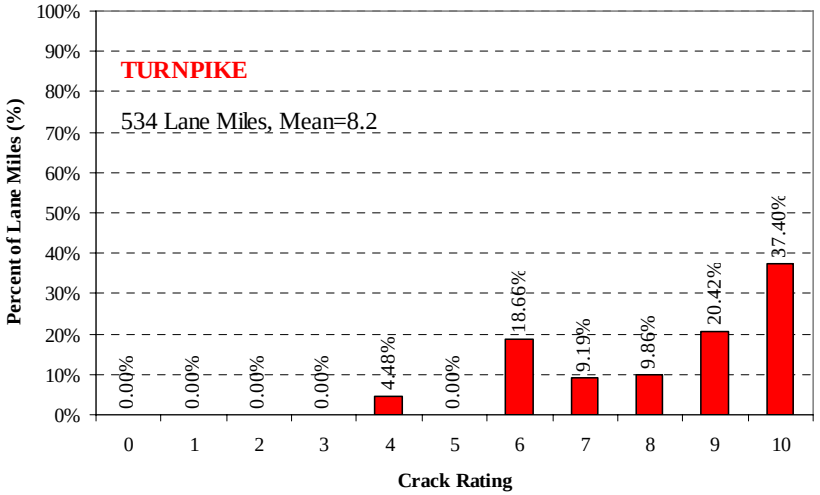


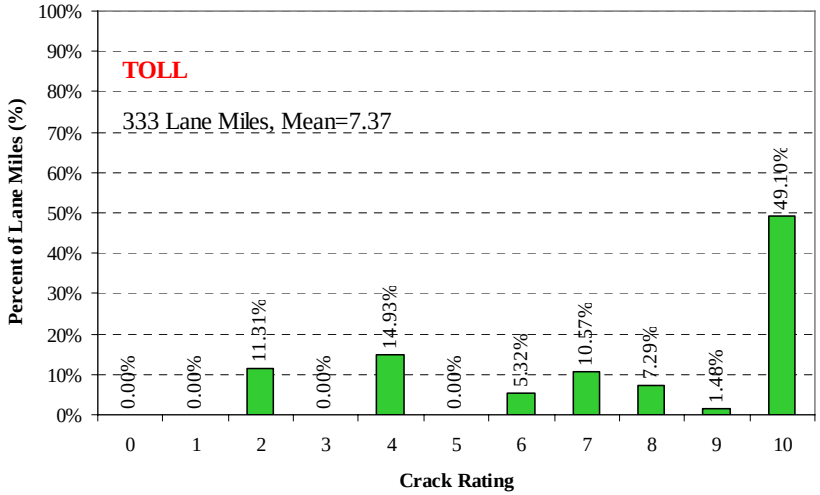
2005 Crack Distribution by System

District 5



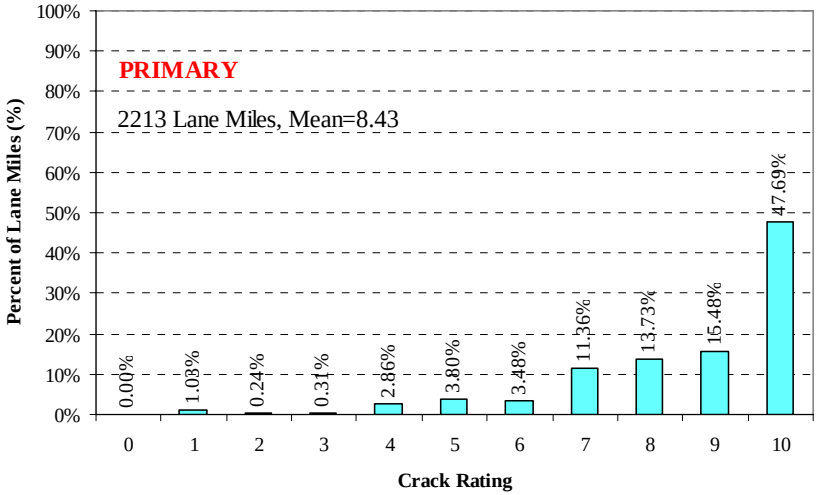


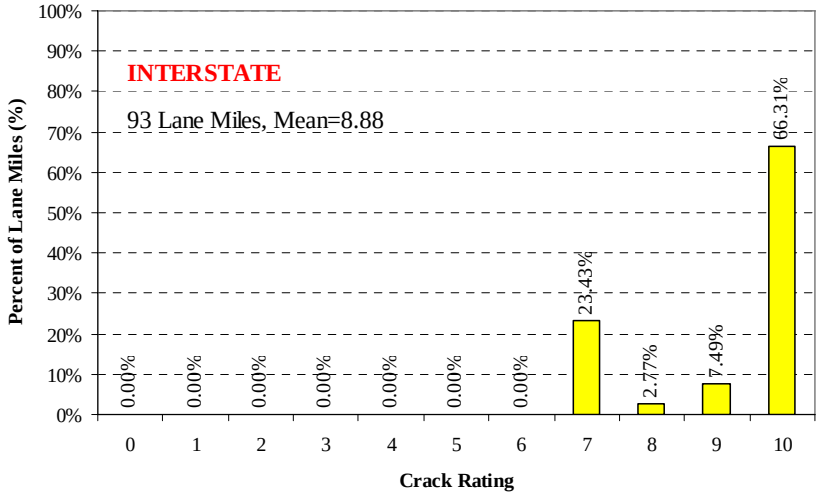


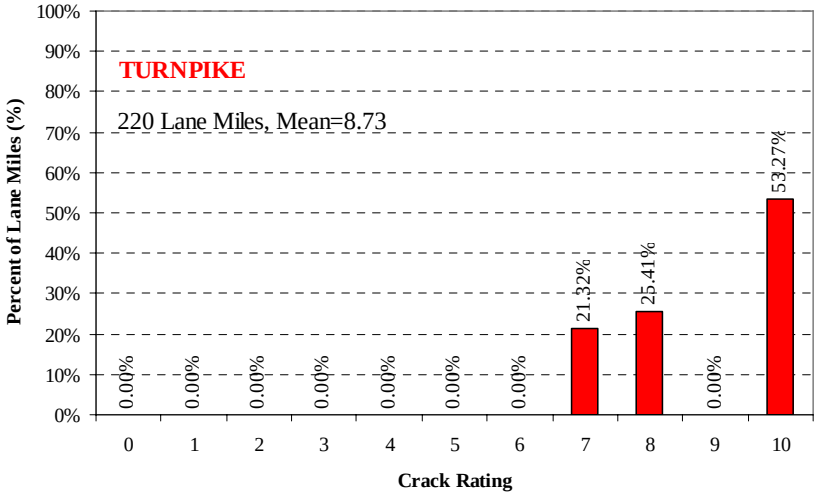


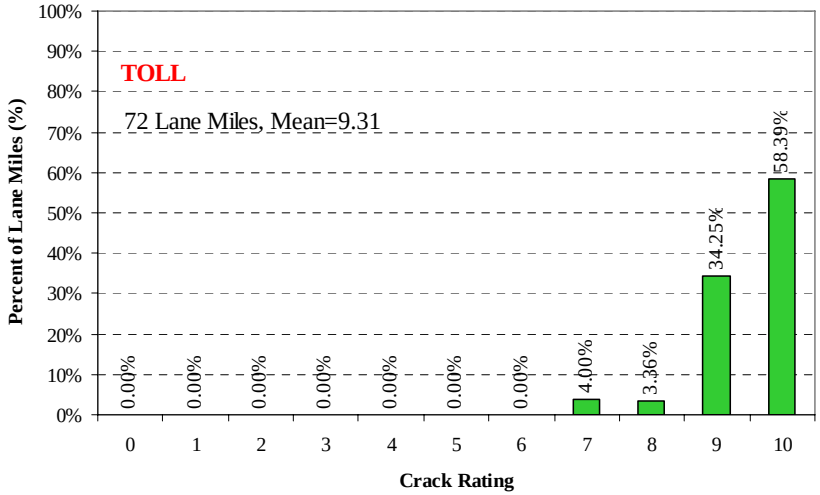
2005 Crack Distribution by System

District 6

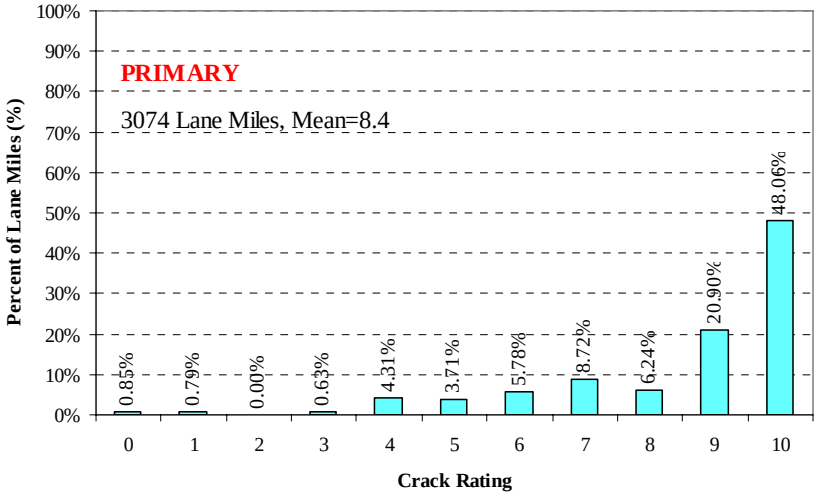


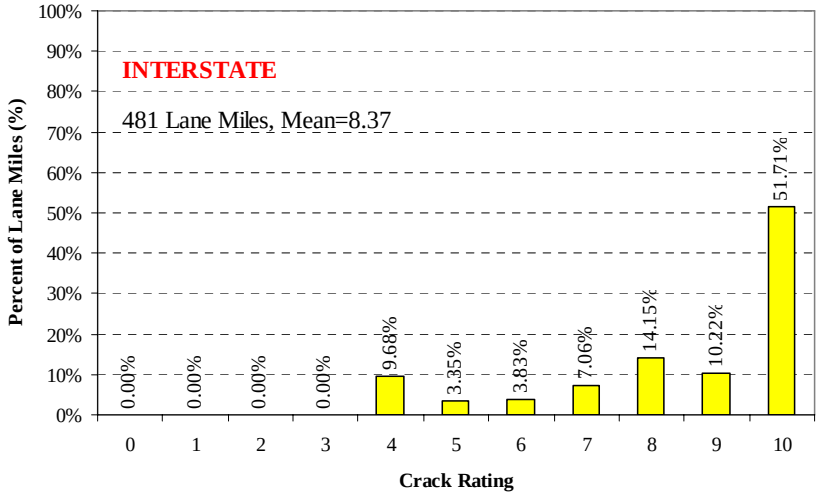


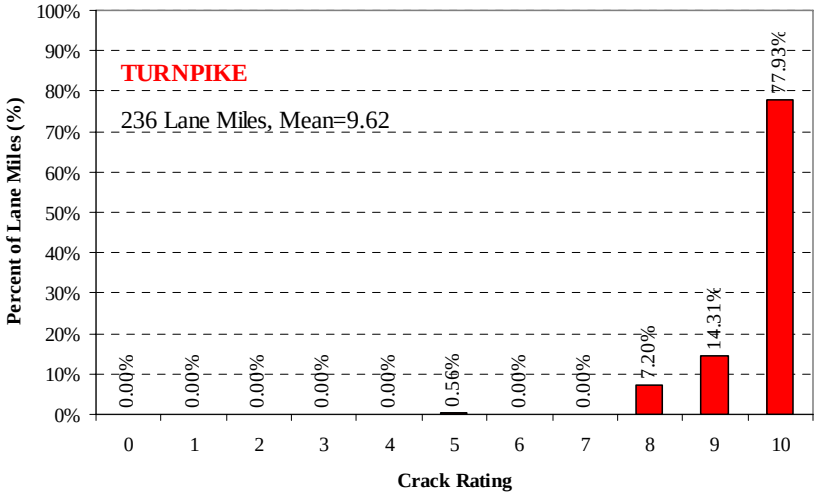


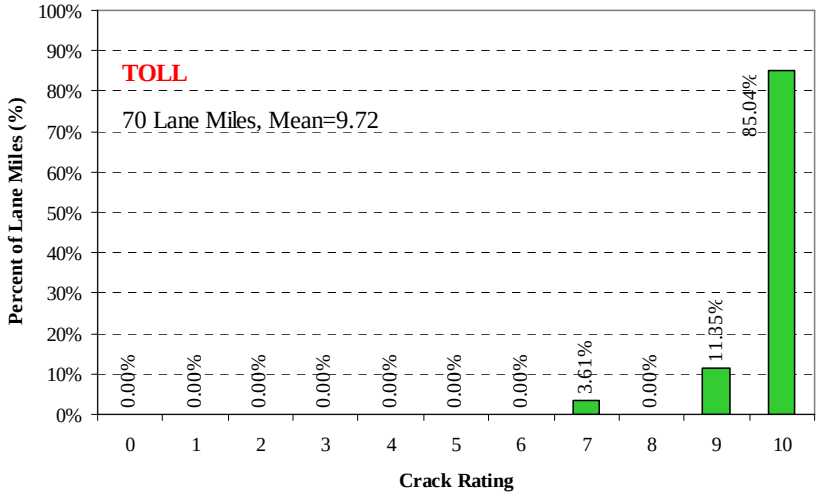


2005 Crack Distribution by System
District 7









SECTION III

RUT RATING

BY

SYSTEM AND DISTRICT

SECTION III

Rut Rating by System and District

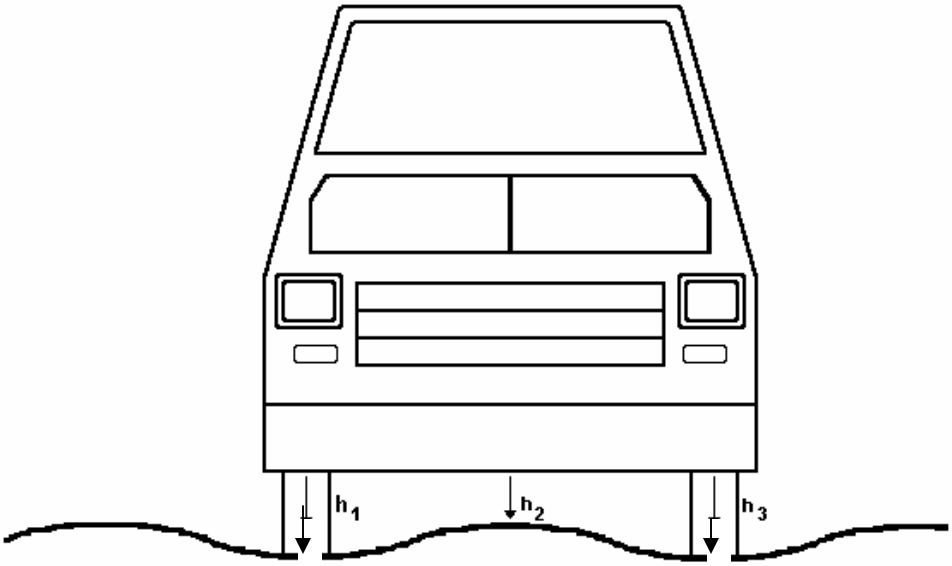
Rut Rating Criteria

- 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.
- A rut depth is defined herein as the difference in elevation between the center of the wheel path and the center of the travel lane.
- Rut depth is measured simultaneously with the ride values using an inertial profiler. See illustration on page 20.
- 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.
- 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.
- 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:

$$\textbf{Rut Depth} = \frac{(h_1 - h_2) + (h_3 - h_2)}{2}$$

Where: h_1, h_2, and h_3, are the respective distances between the sensor locations and the roadway surface directly below each sensor. See diagram on page 20.

INERTIAL PROFILER

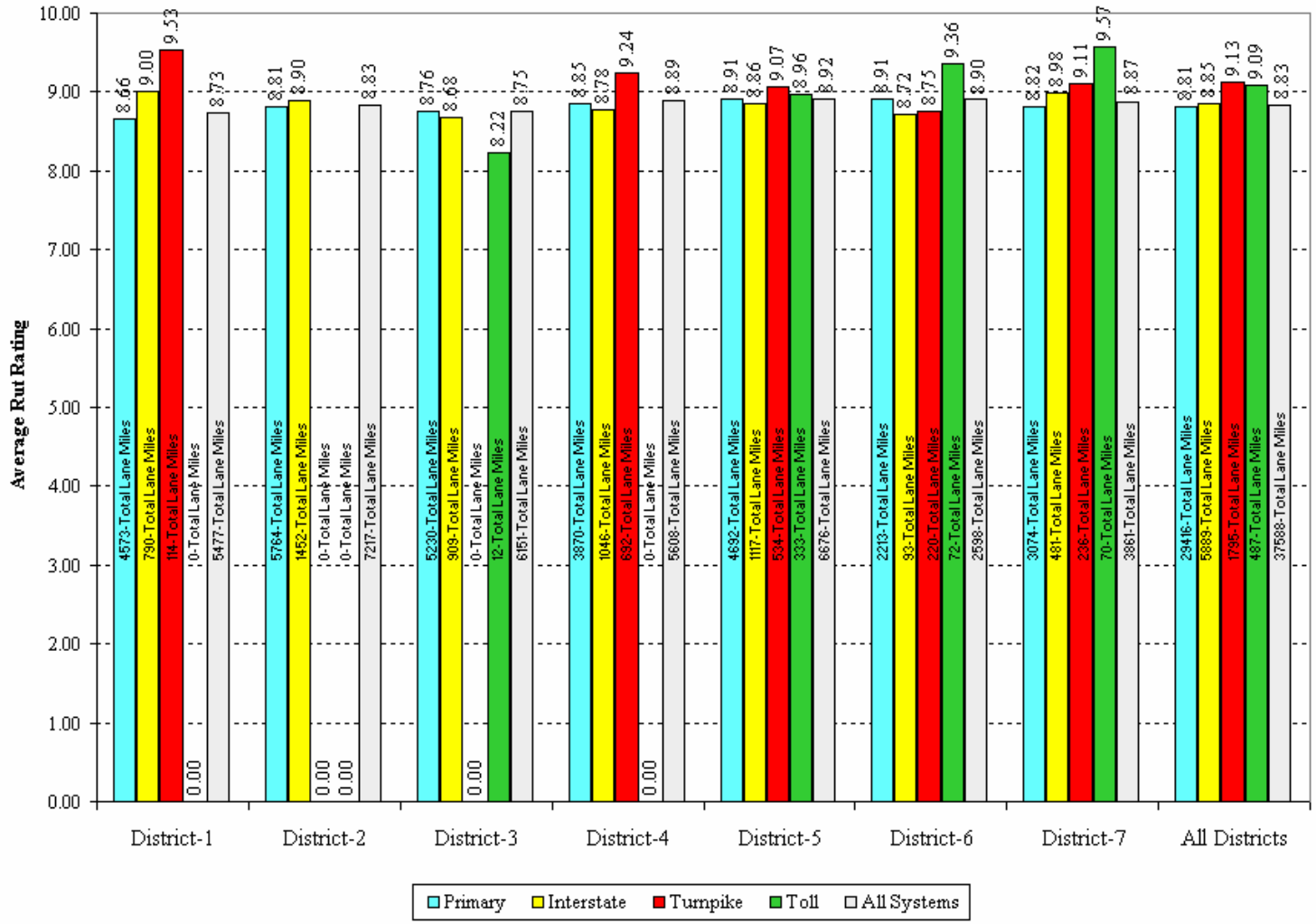


FRONT VIEW

$$\text{Rut Depth} = \frac{(h_1 - h_2) + (h_3 - h_2)}{2}$$

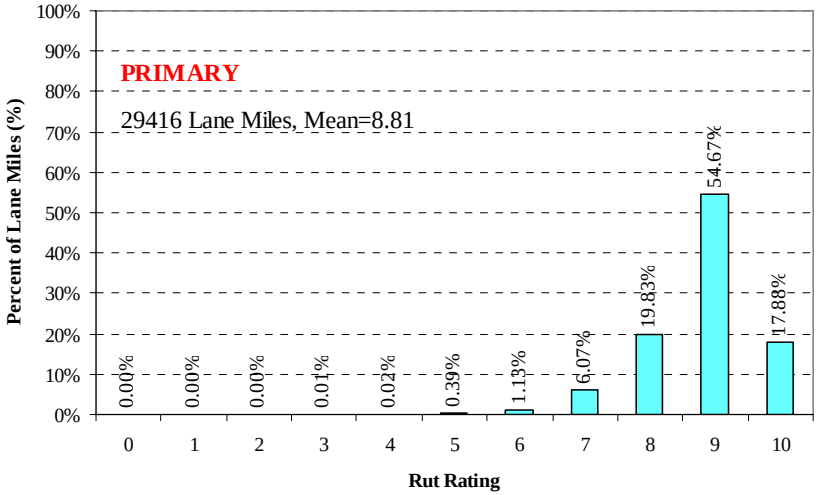
FDOT inertial profilers have three laser sensors (to measure ride and rut), combined with two accelerometers and a data acquisition computer system that measures and stores a pavement's longitudinal and transverse profiles while in motion.

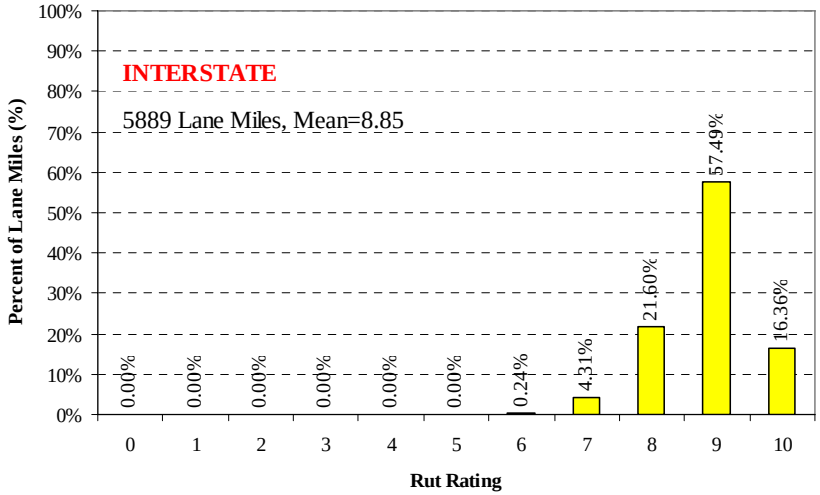
2005 Rut Rating by System and District

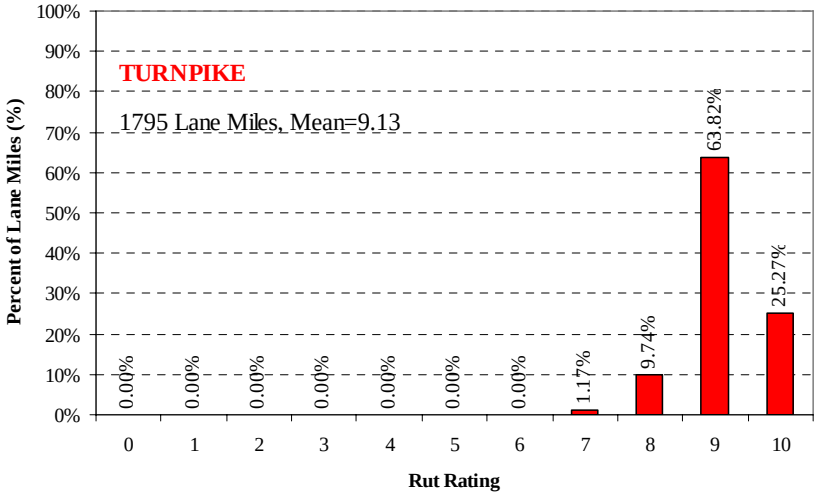


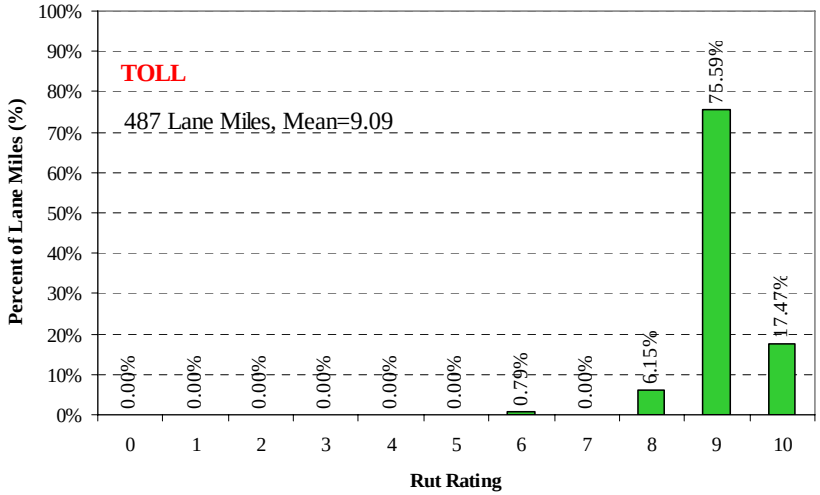
2005 Rut Distribution by System

Statewide

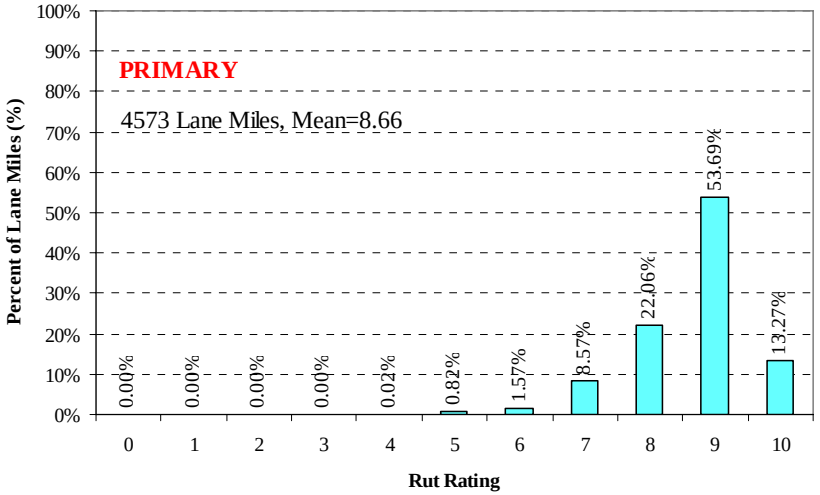


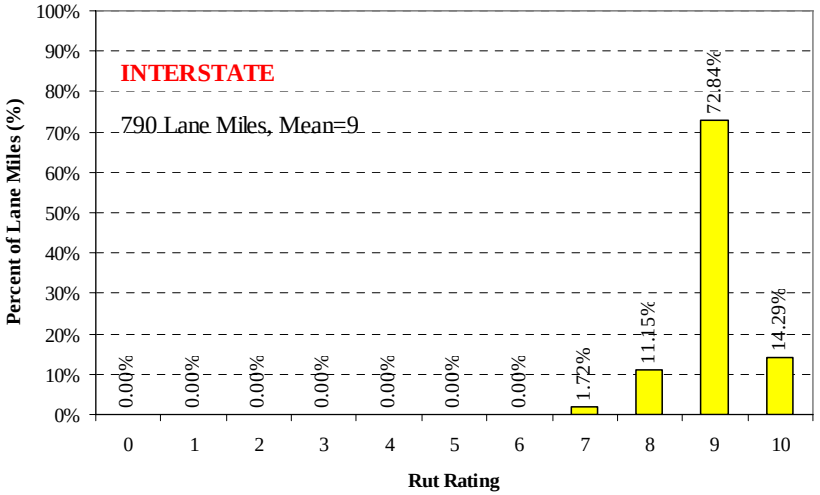


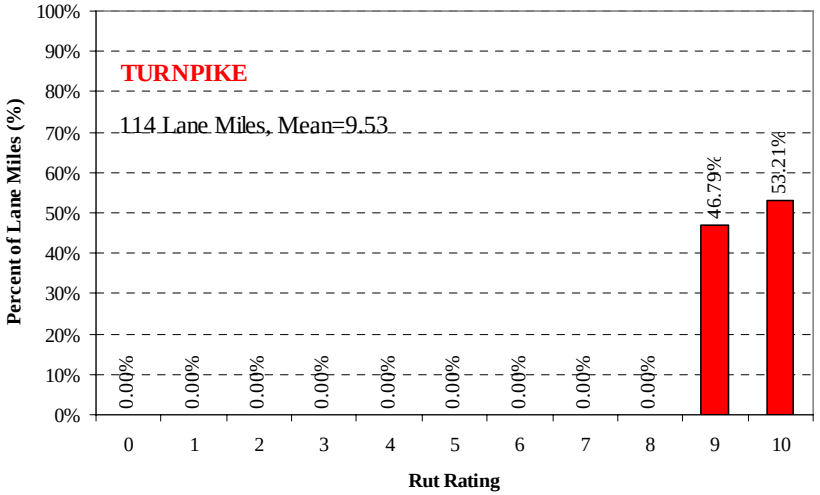


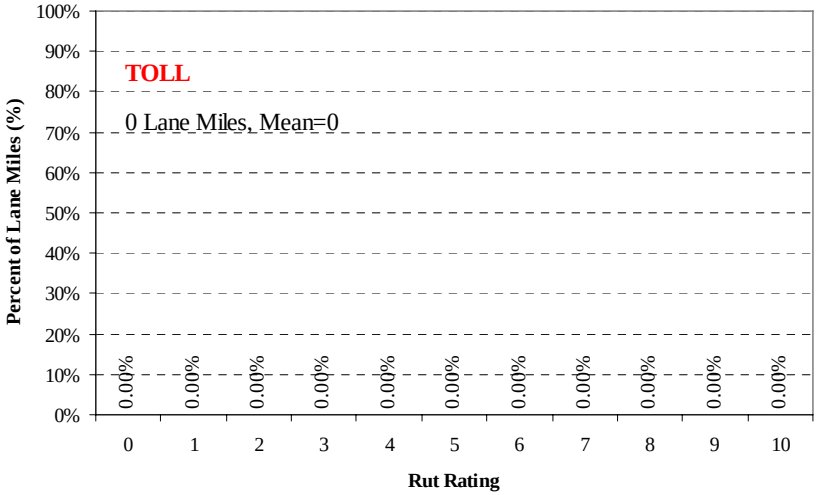


2005 Rut Distribution by System
District 1

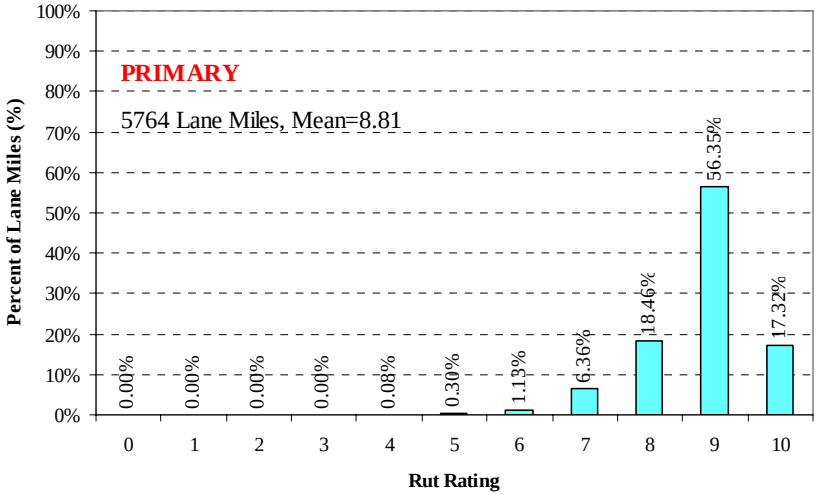


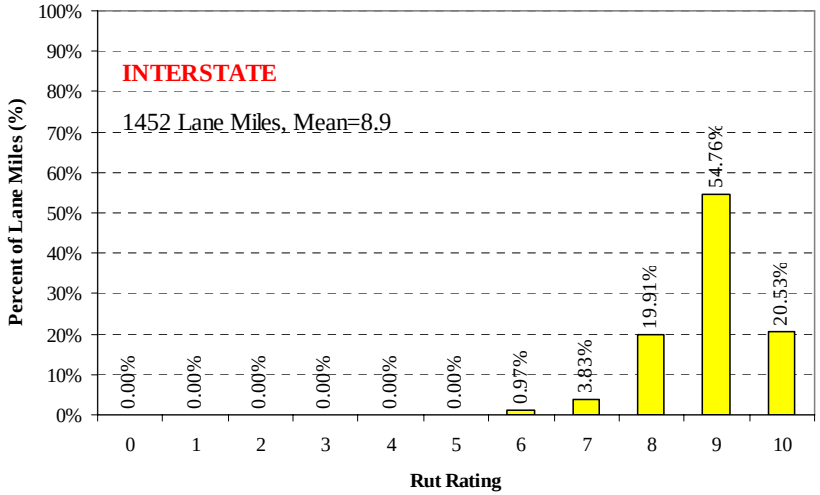


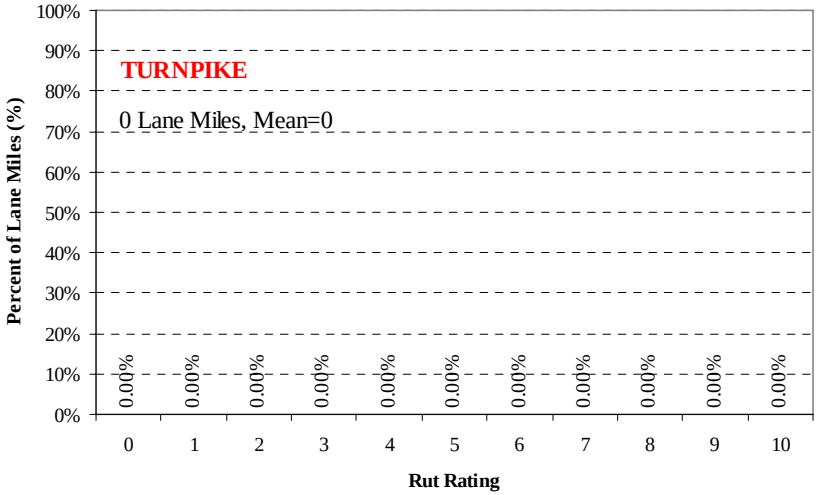


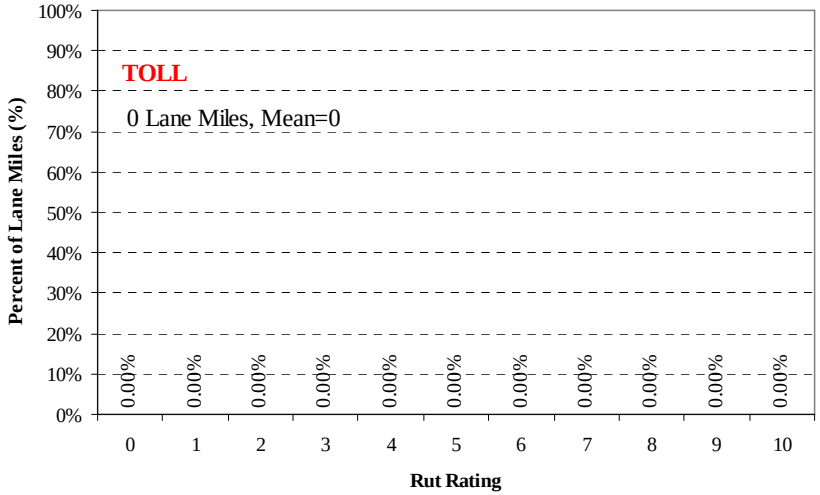


2005 Rut Distribution by System
District 2

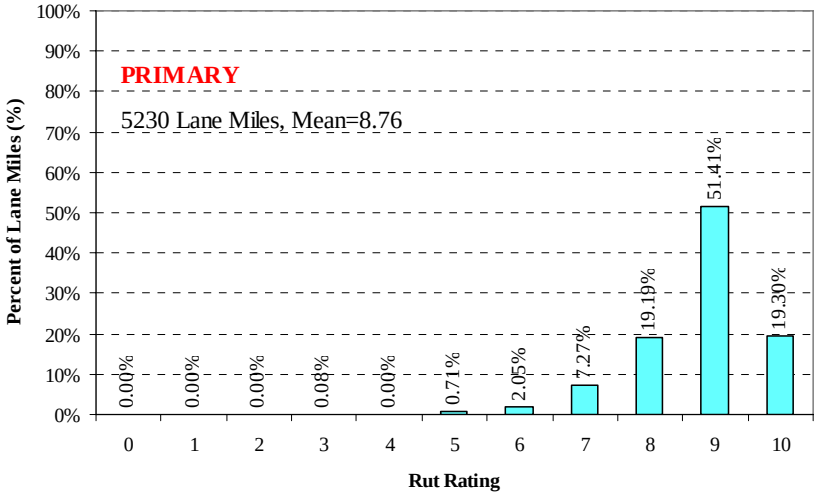


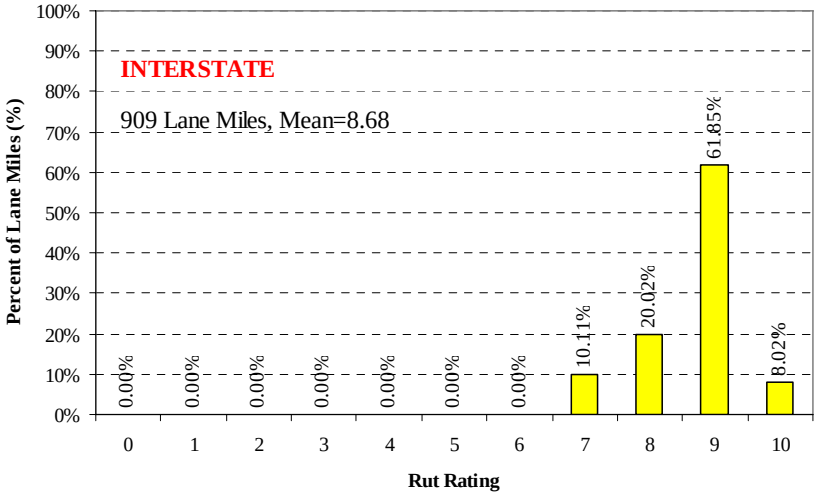


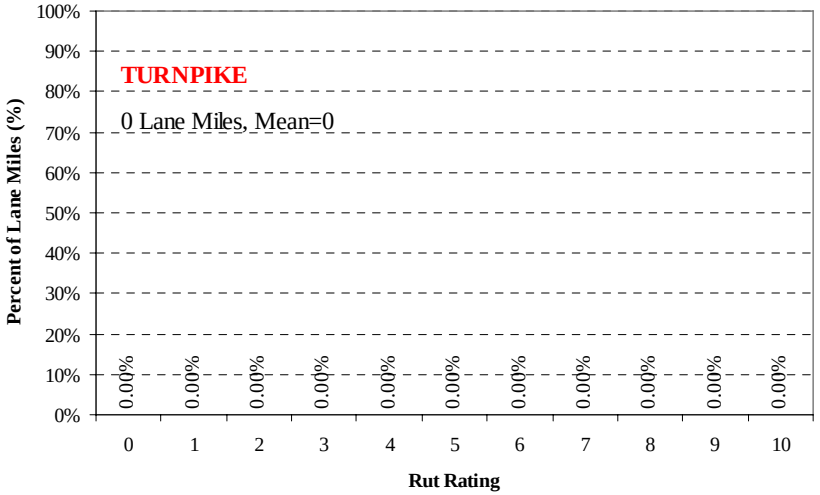


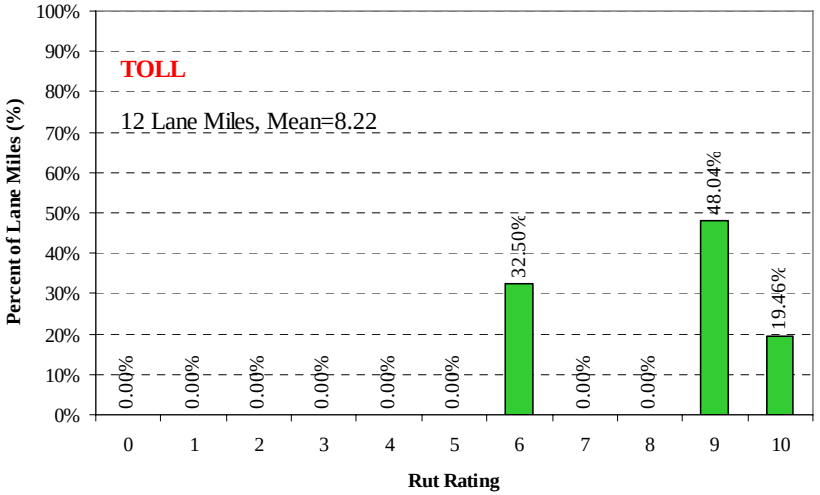


2005 Rut Distribution by System
District 3



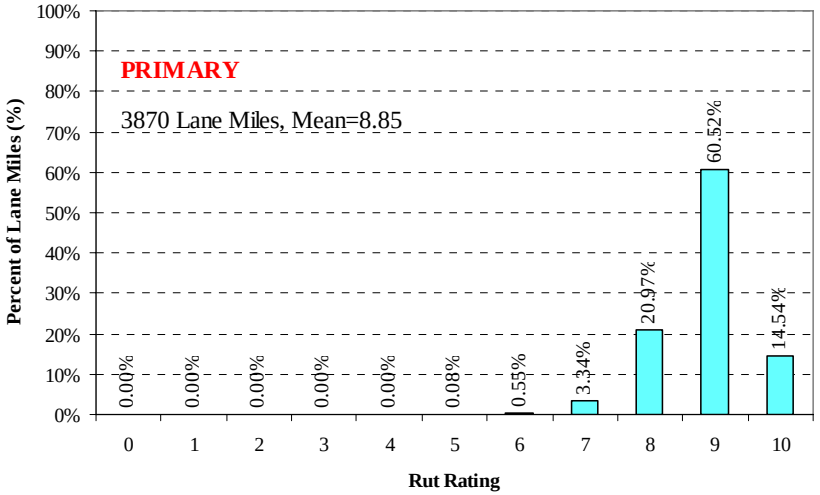


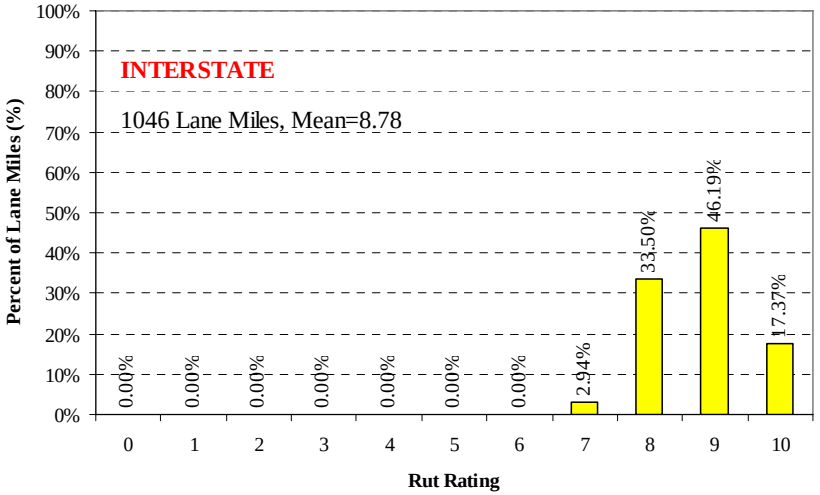


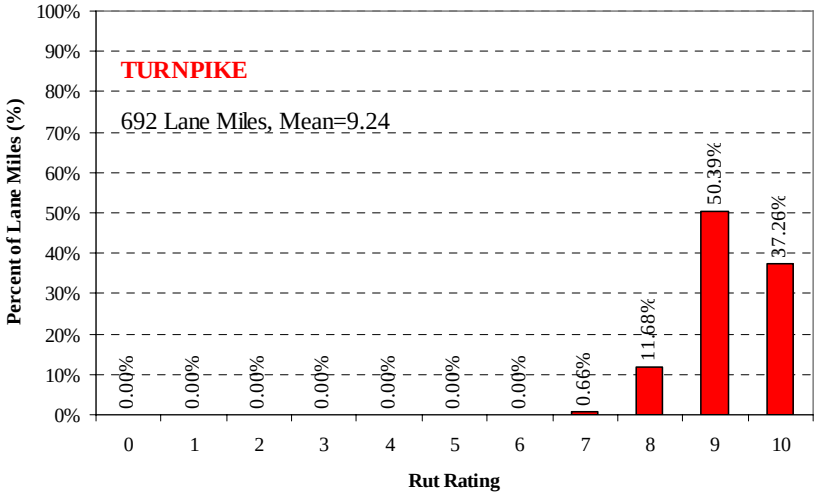


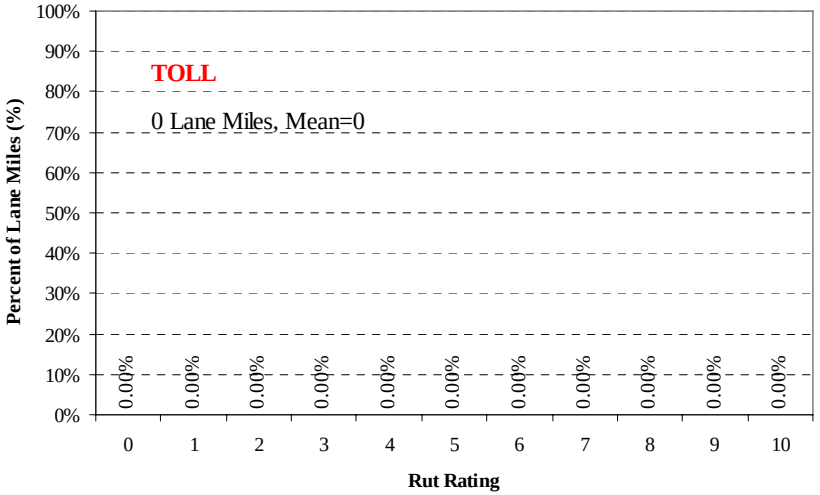
2005 Rut Distribution by System

District 4



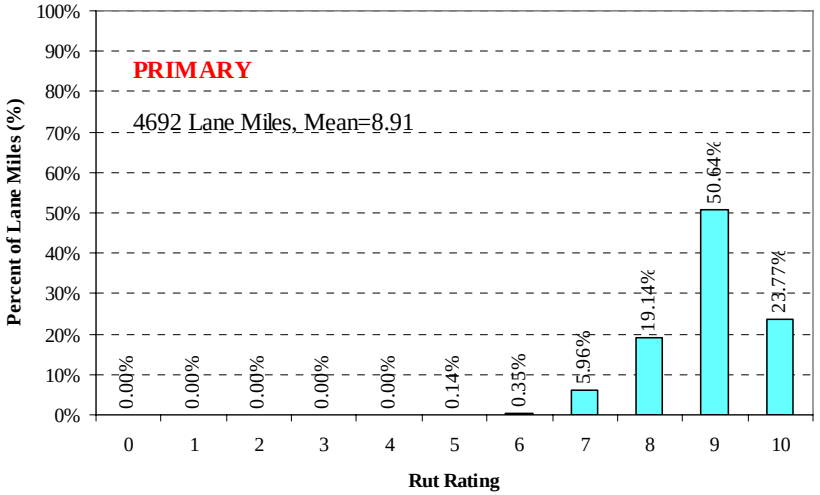


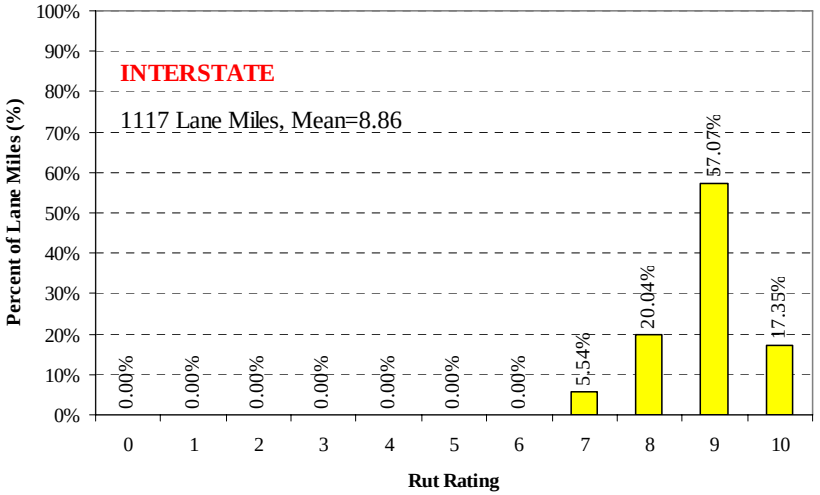


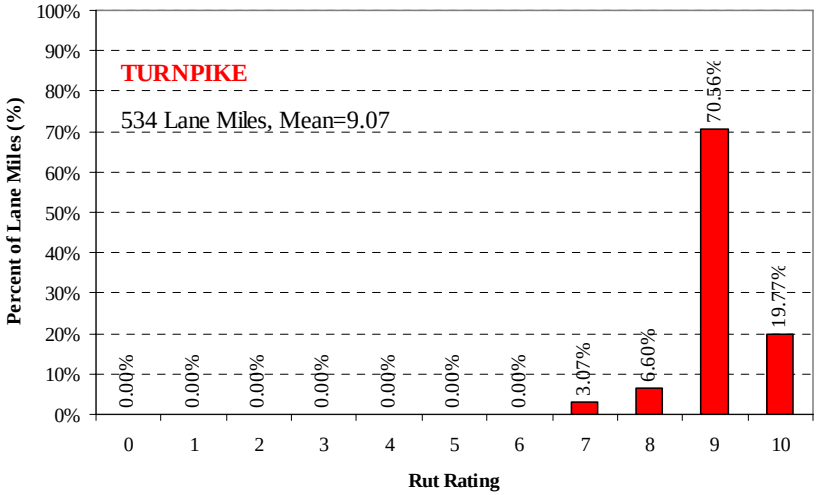


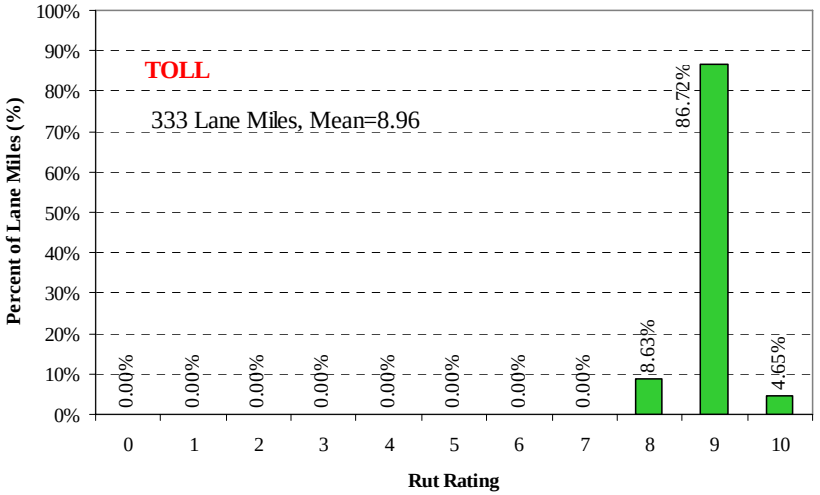
2005 Rut Distribution by System

District 5

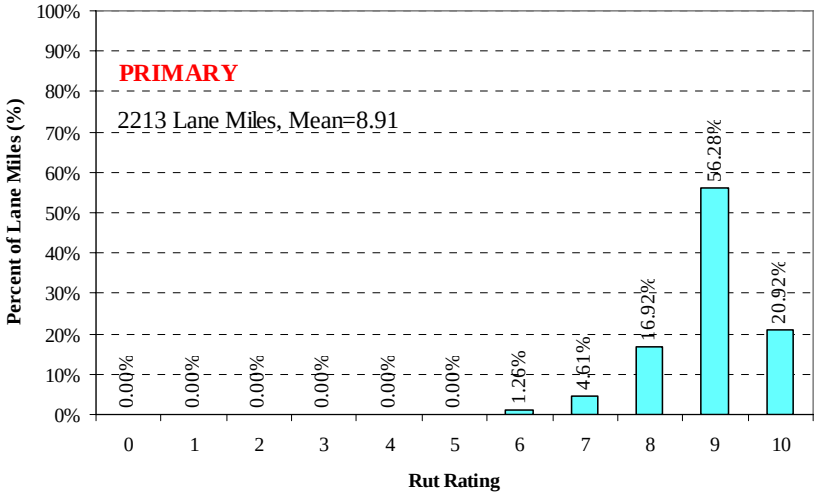


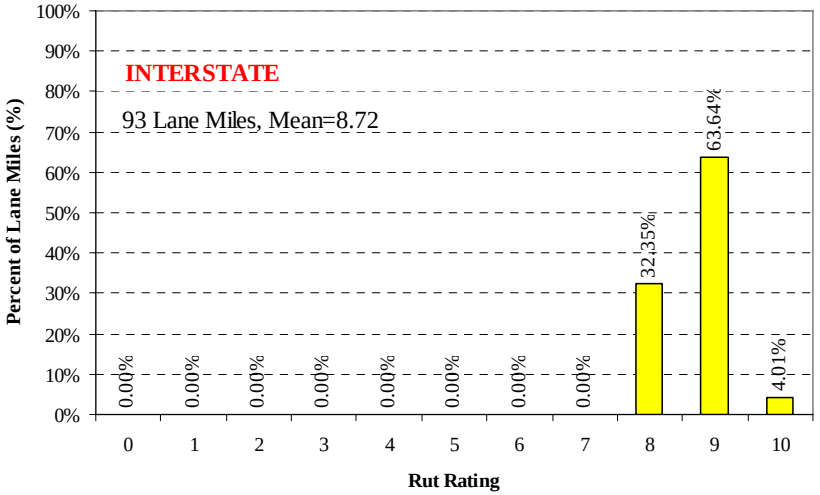


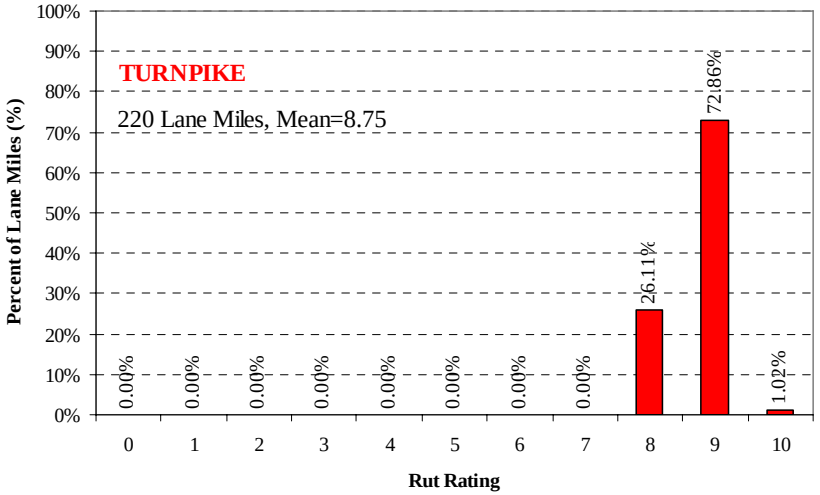


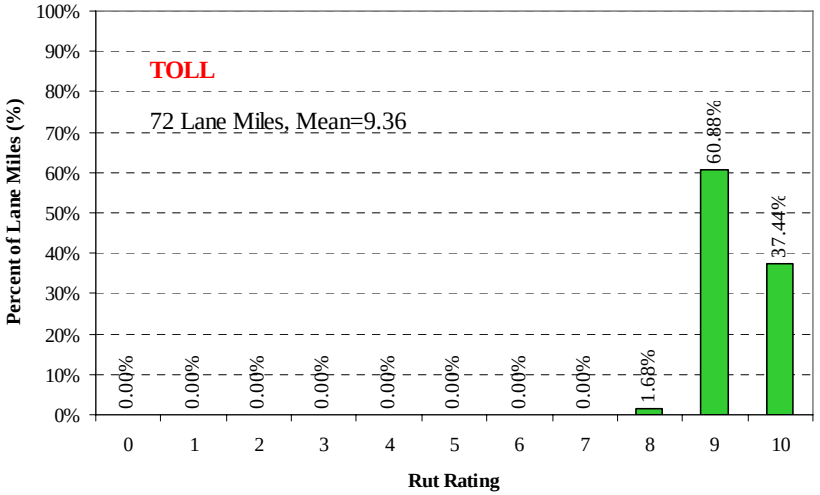


2005 Rut Distribution by System
District 6

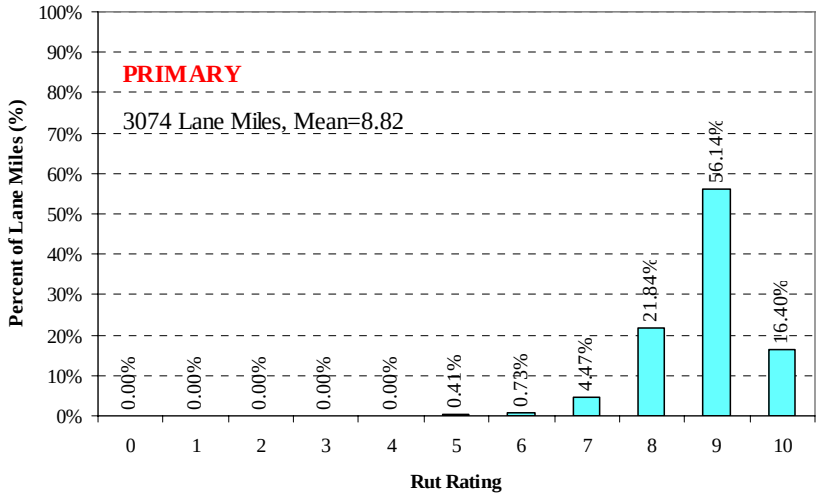


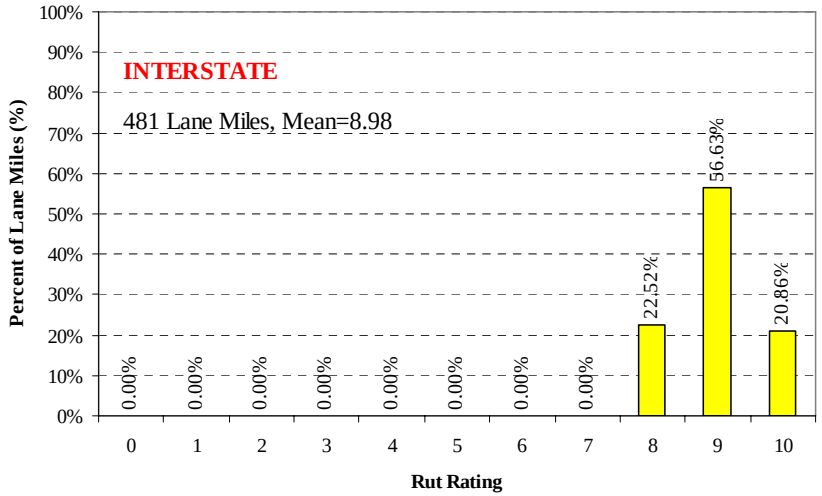


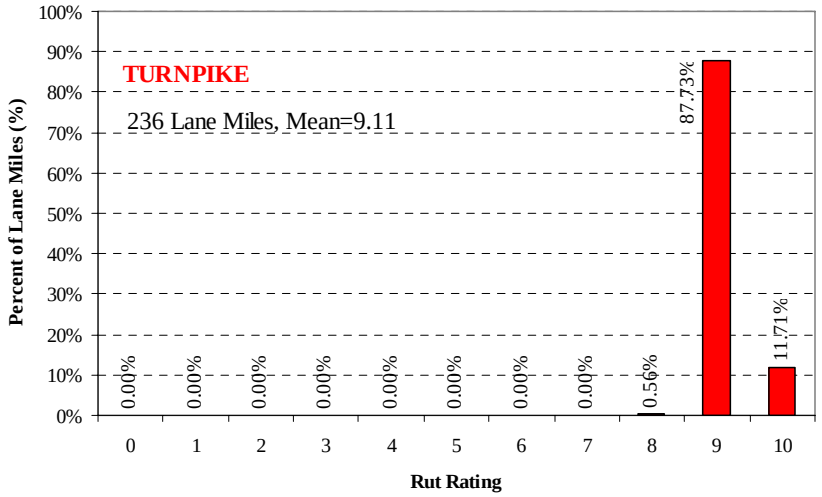


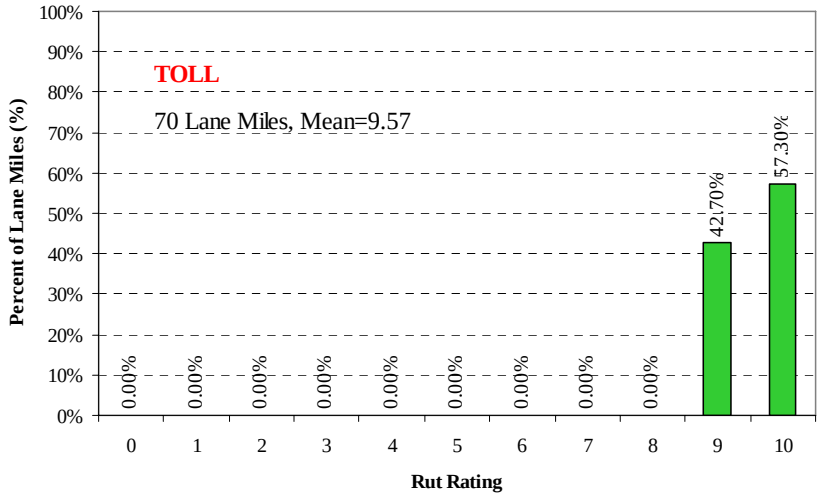


2005 Rut Distribution by System
District 7









SECTION IV

RIDE RATING

BY

SYSTEM AND DISTRICT

SECTION IV

Ride Rating by System and District

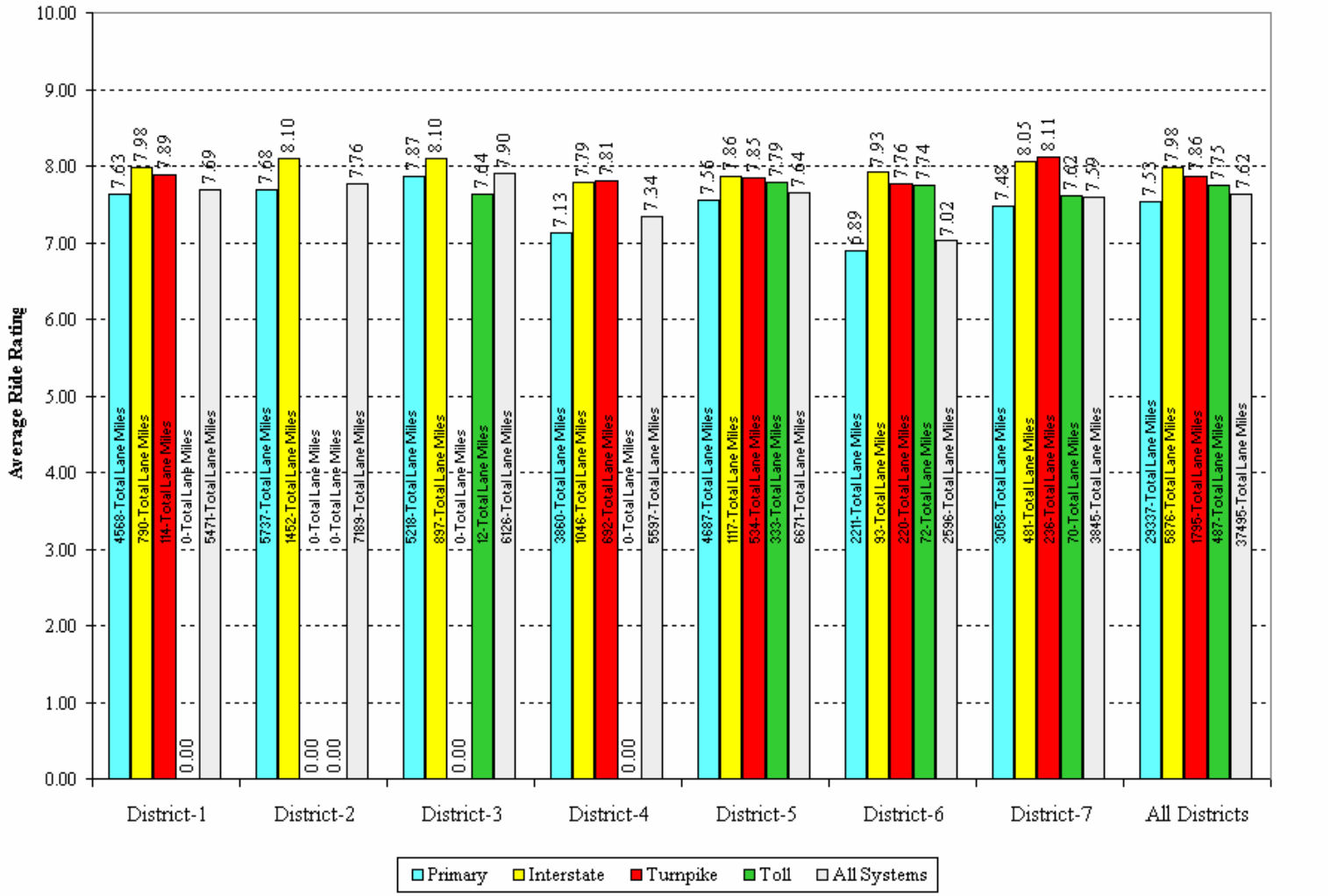
Ride Rating Criteria

- 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.
- A Ride Rating is calculated from RN.

  Ride Rating = RN*2

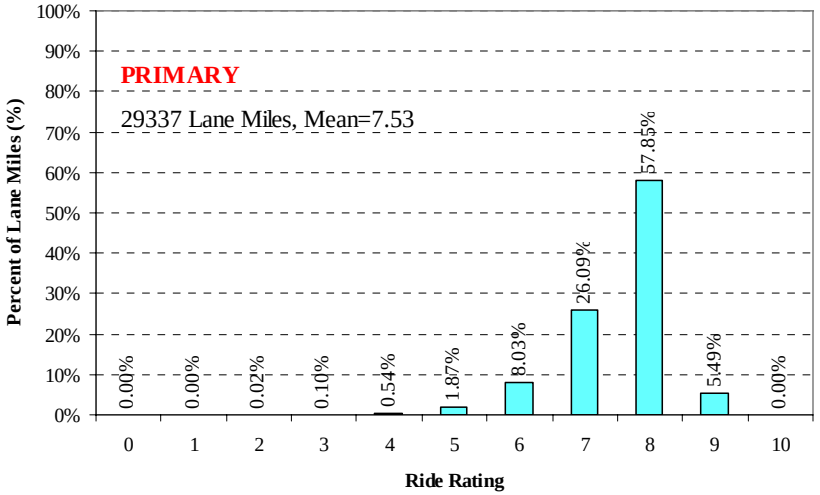
  RN is a mathematical processing of longitudinal profile measurements to produce an estimate of a driver's subjective perception of the ride quality of a roadway. The RN is based on an algorithm published in National Cooperative Highway Research Project (NCHRP) 1-23. RN is defined in ASTM Standard E-1489.
- 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
- 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.
- 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.

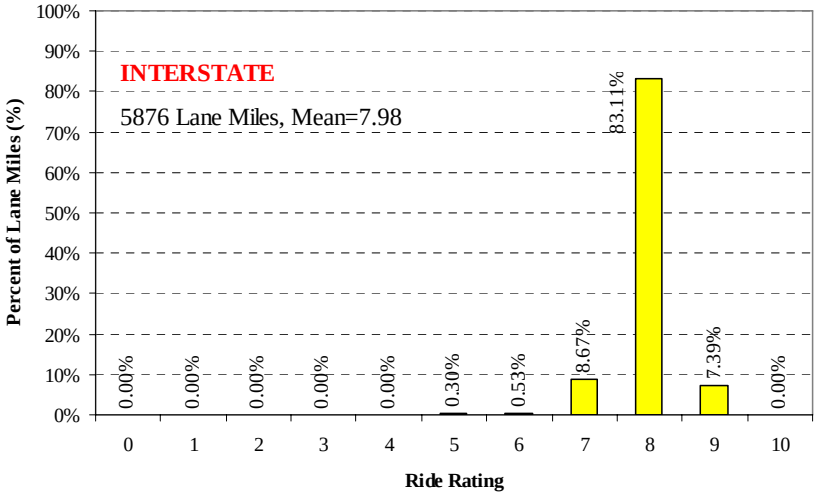
2005 Ride Rating by System and District

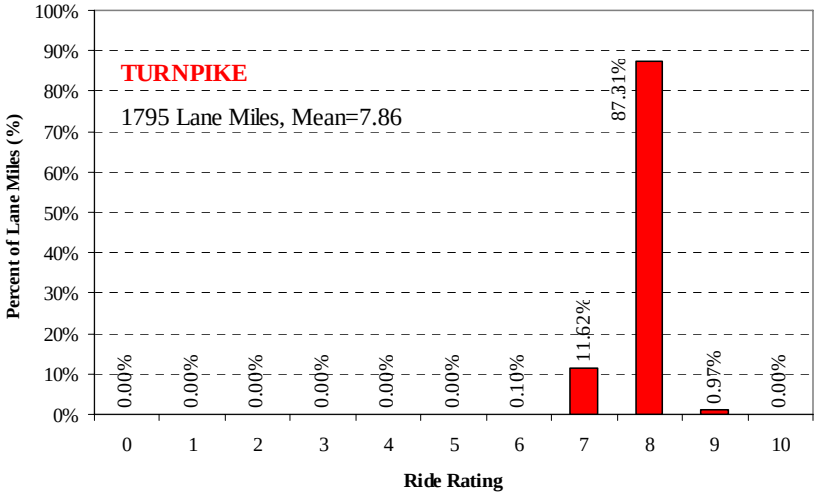


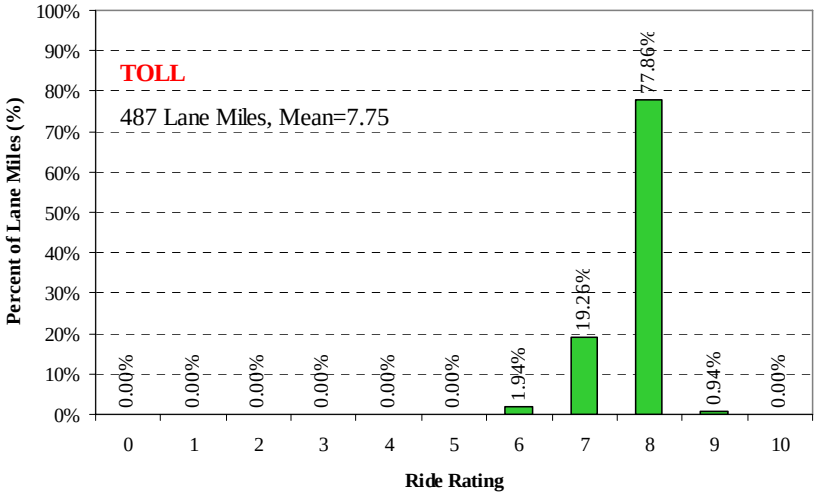
2005 Ride Distribution by System

Statewide



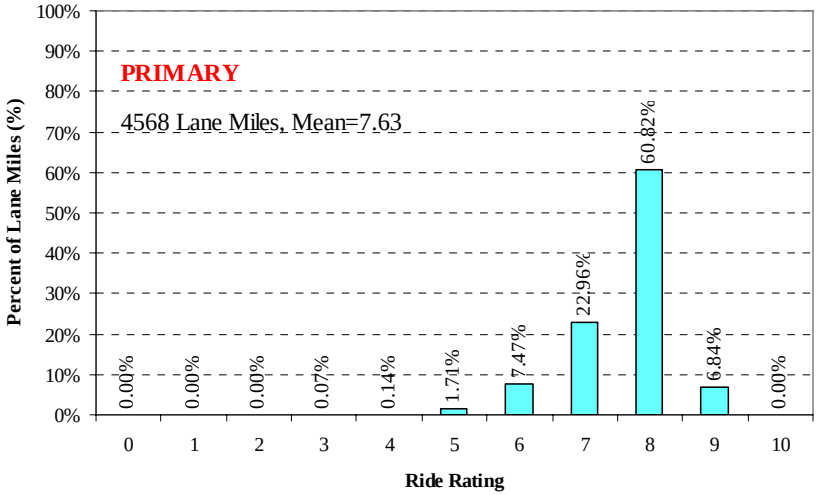


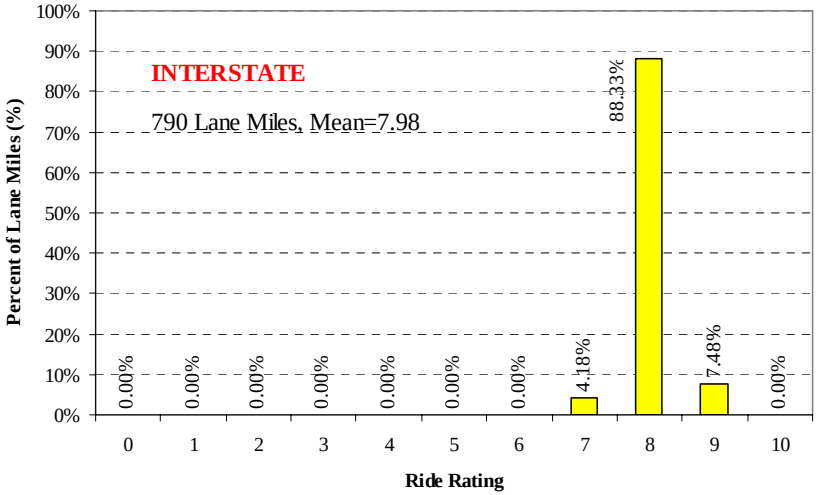


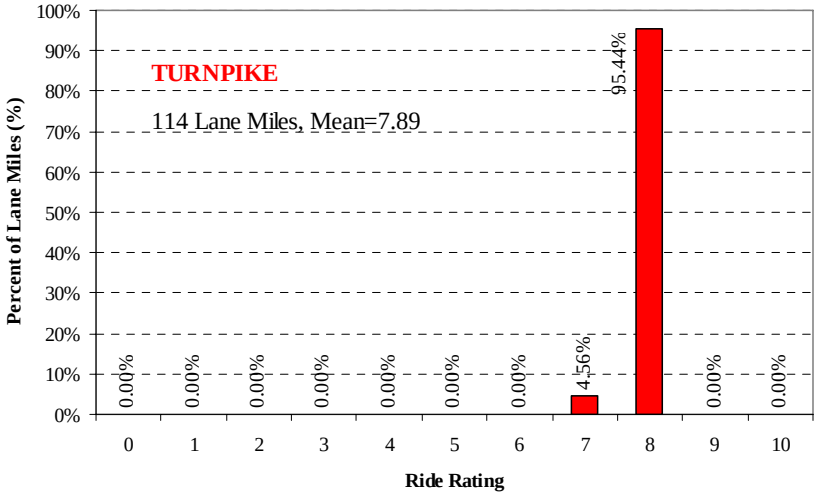


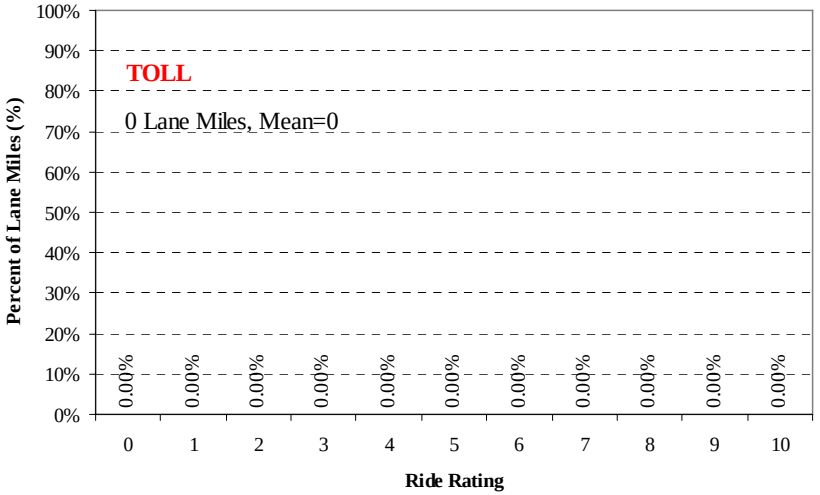
2005 Ride Distribution by System

District 1

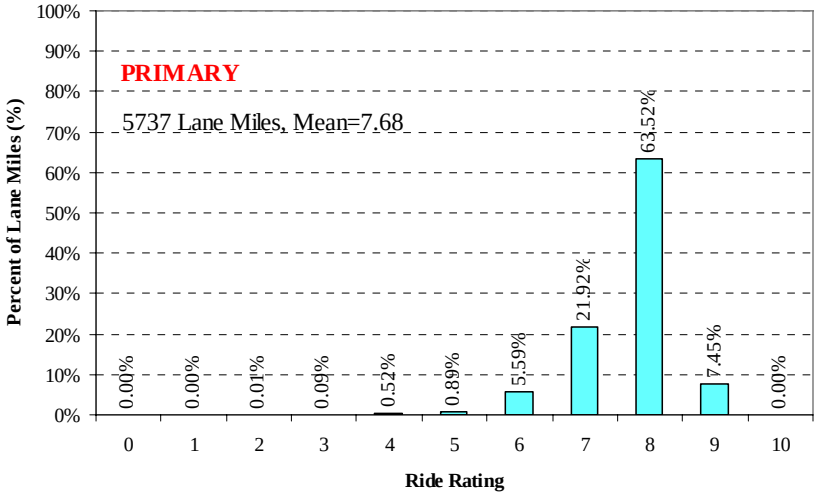


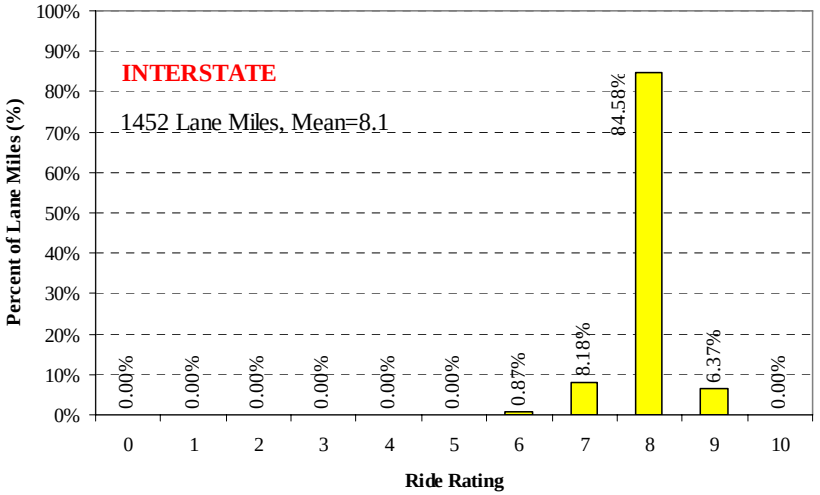


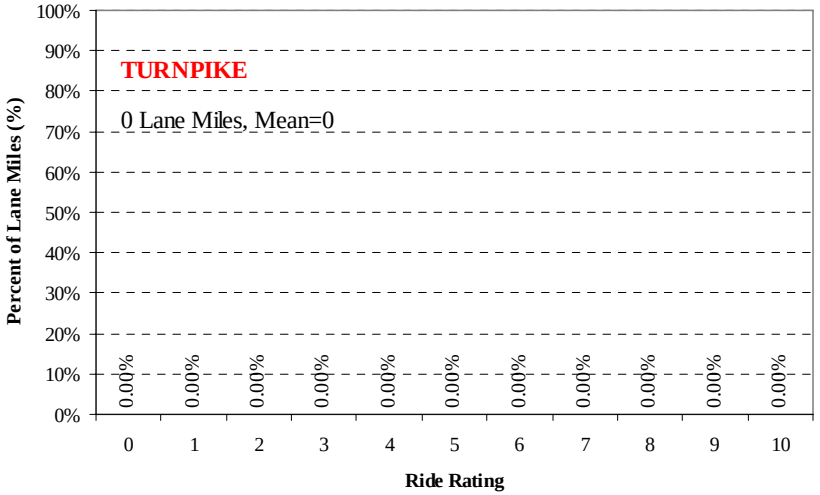


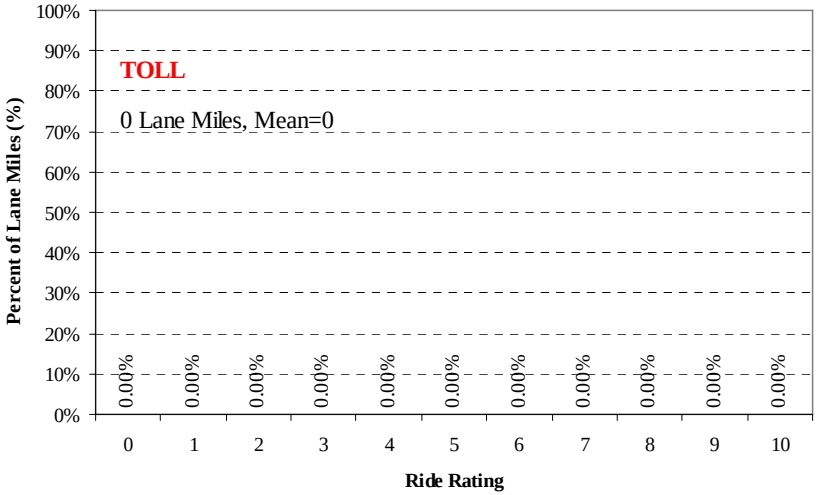


2005 Ride Distribution by System
District 2

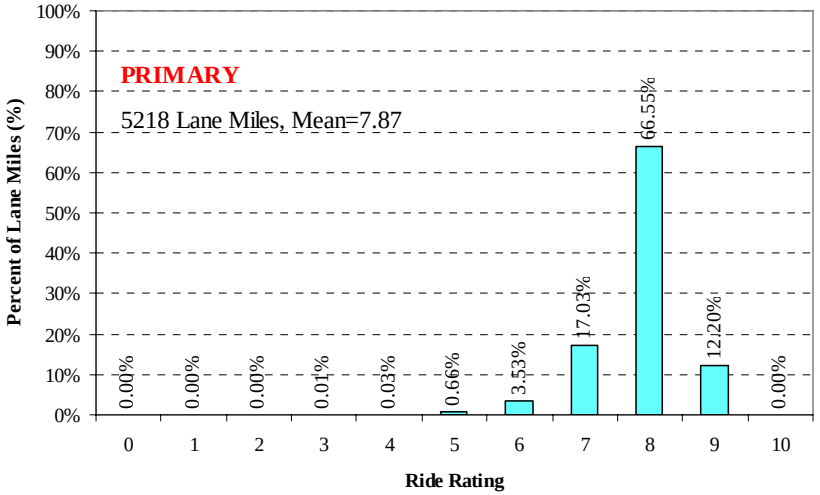


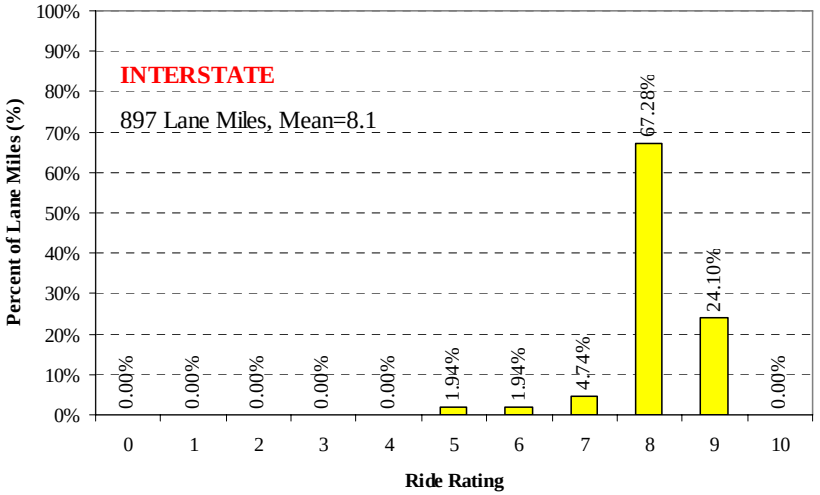


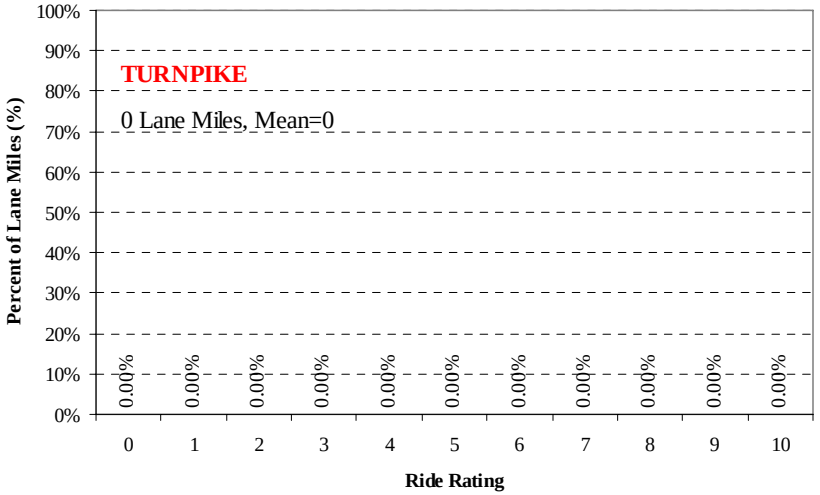


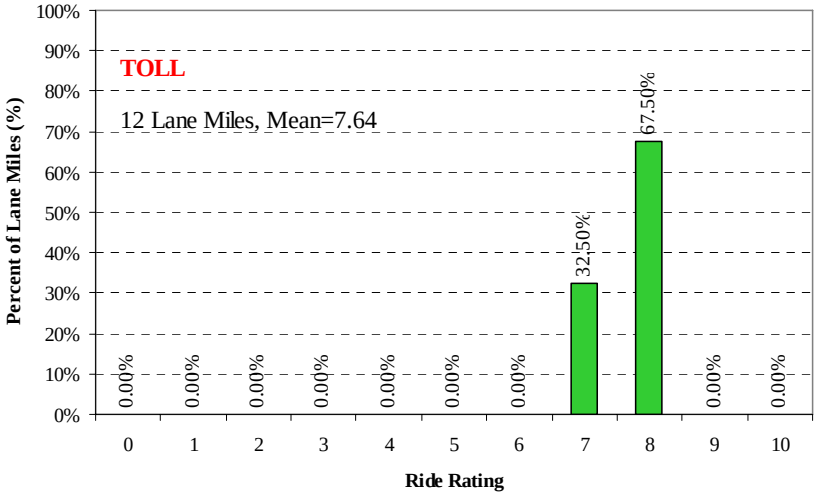


2005 Ride Distribution by System
District 3

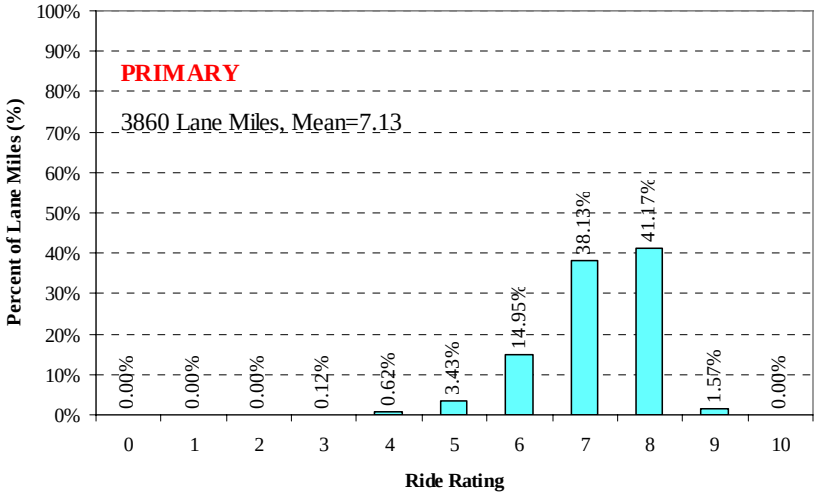


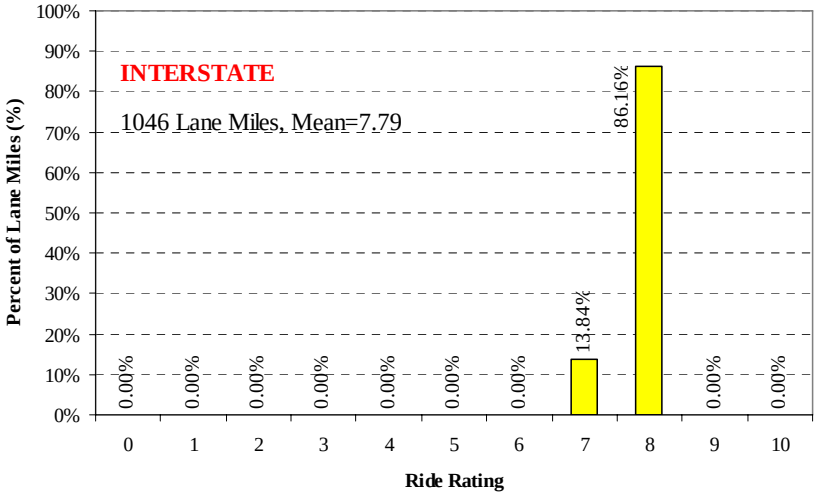


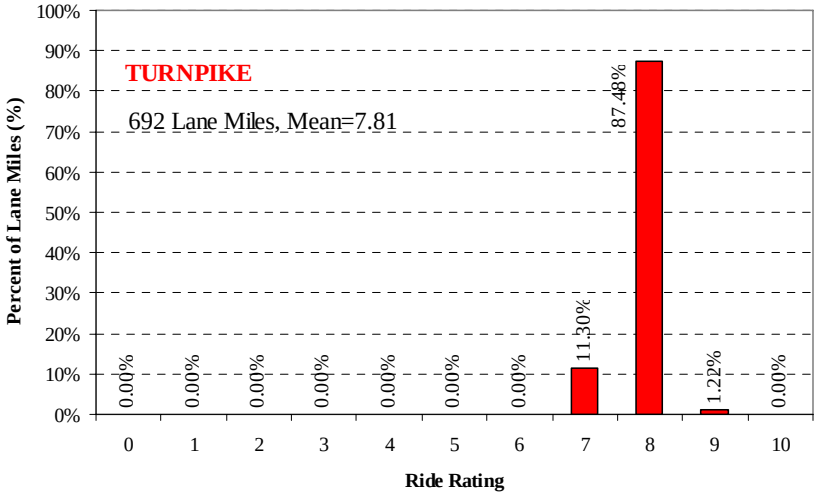


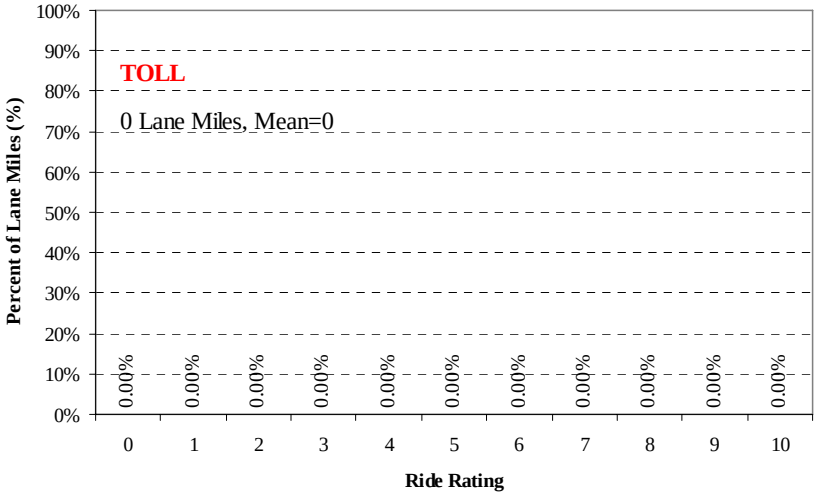


2005 Ride Distribution by System
District 4

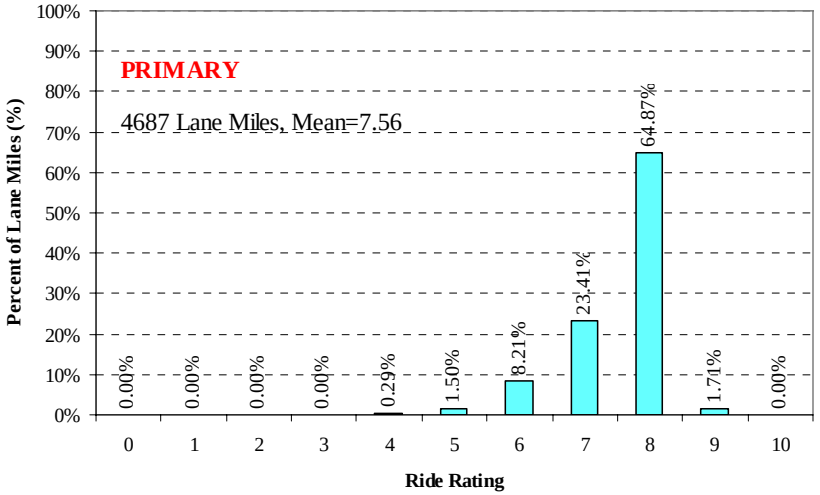


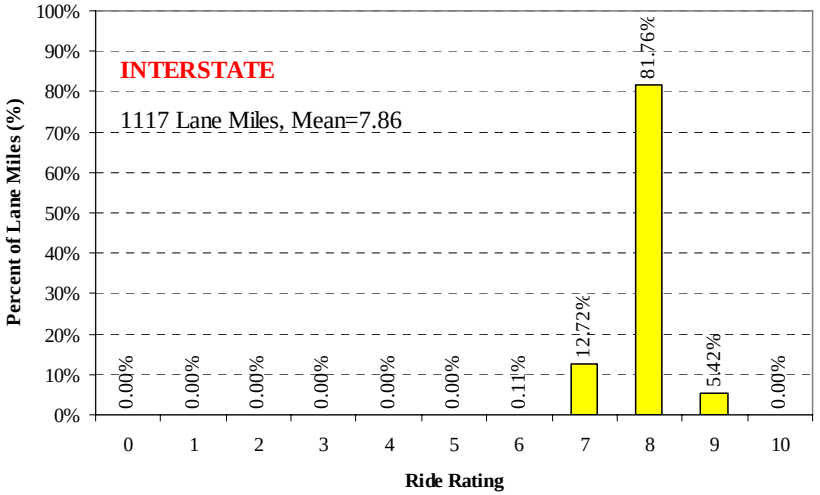


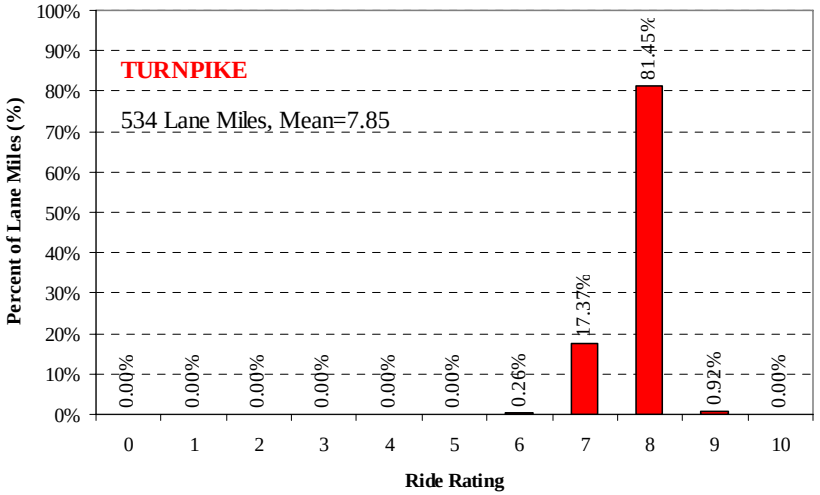


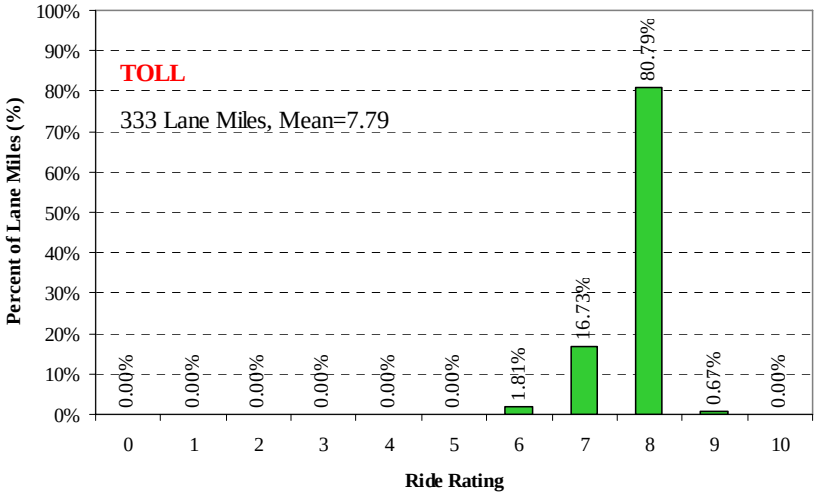


2005 Ride Distribution by System
District 5



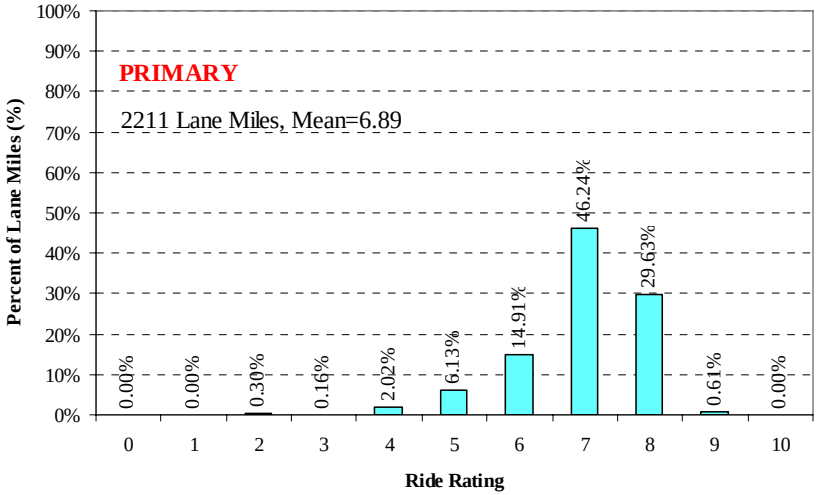


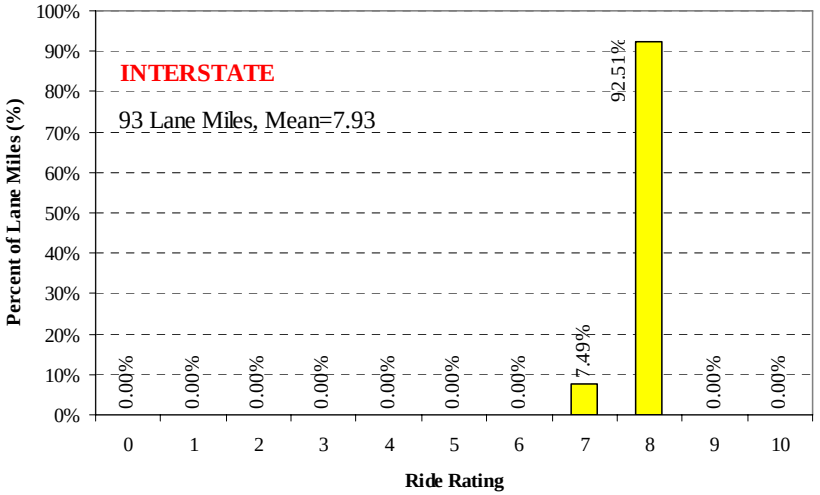


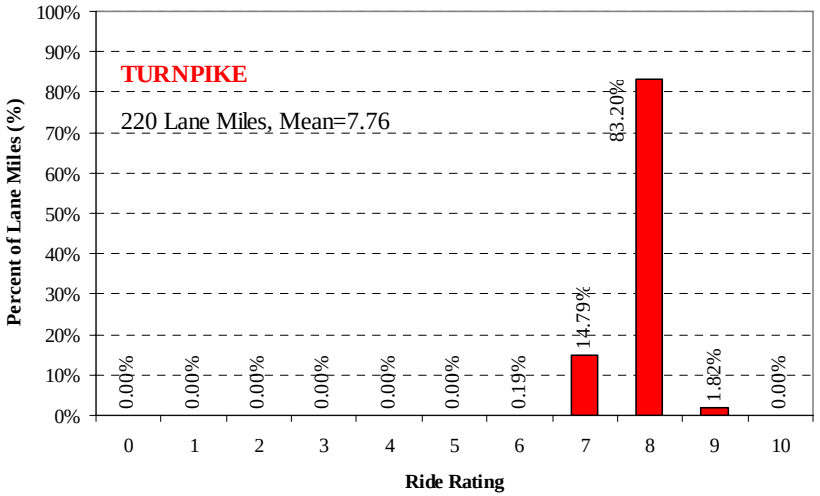


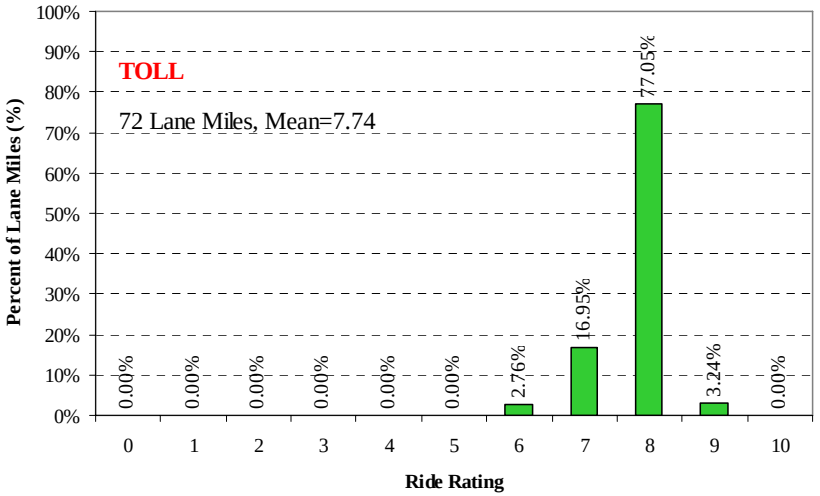
2005 Ride Distribution by System

District 6

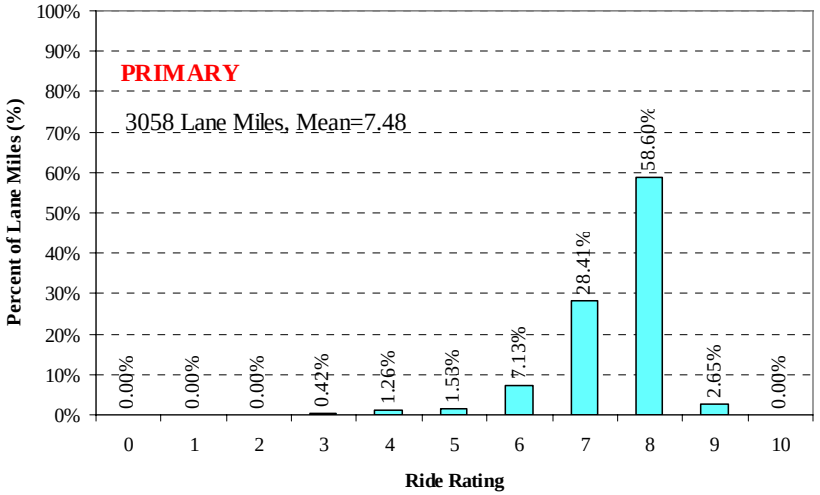


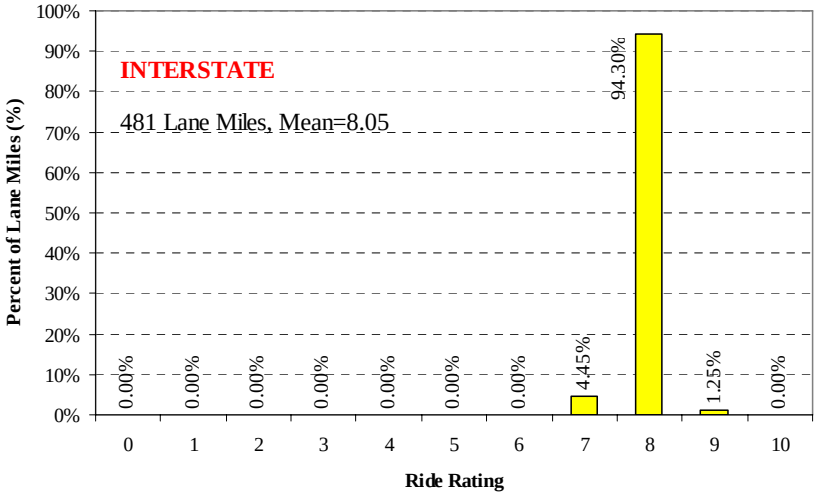


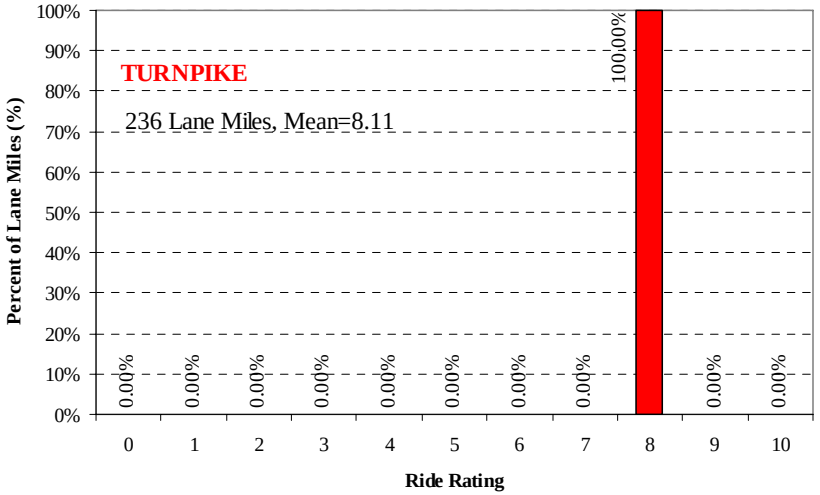


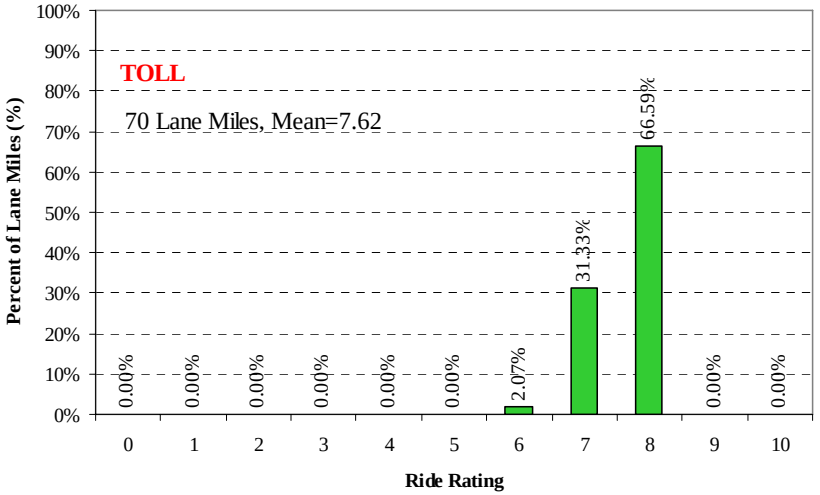


2005 Ride Distribution by System
District 7









SECTION V

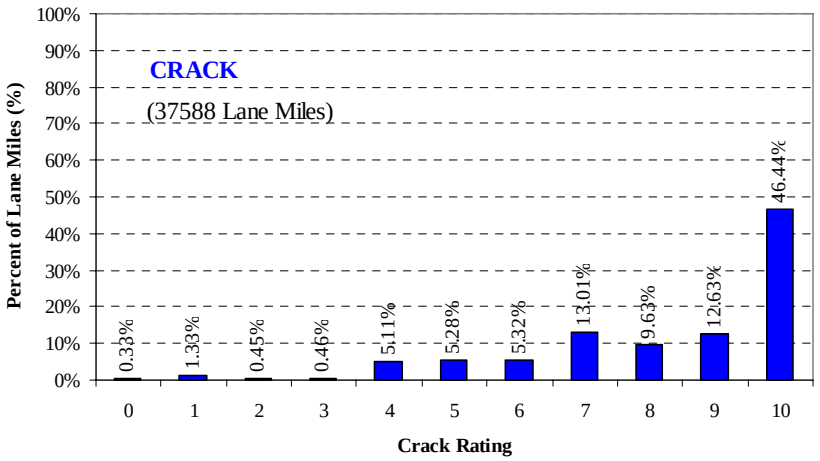
CRACK, RUT AND RIDE

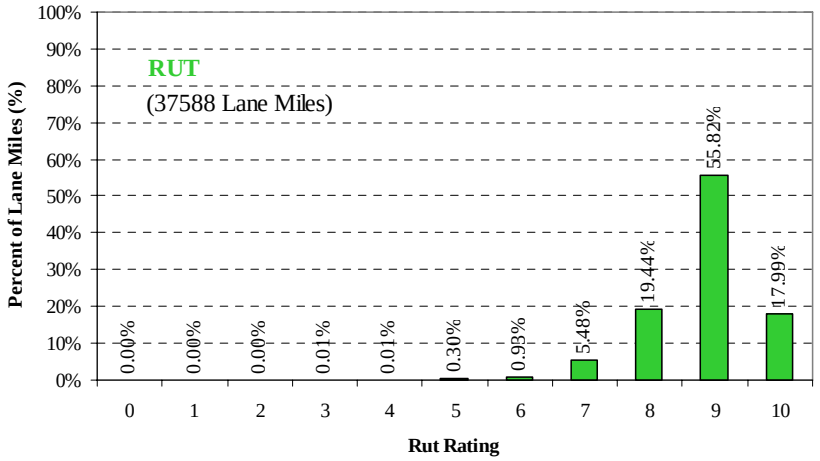
DISTRIBUTIONS

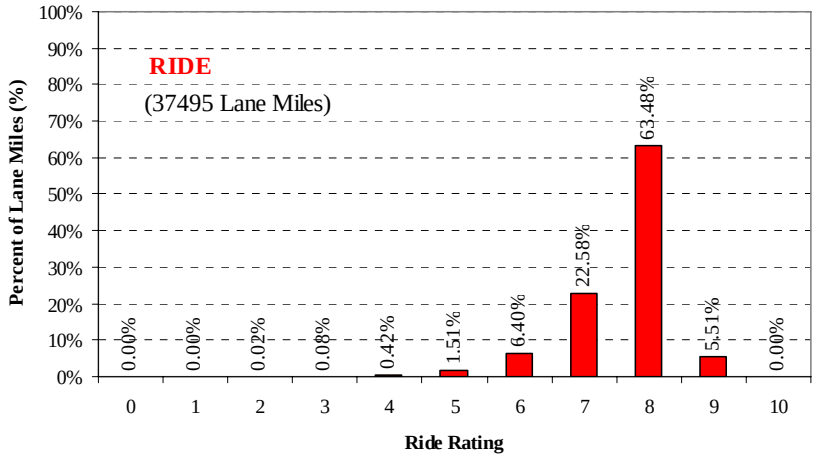
BY

DISTRICT

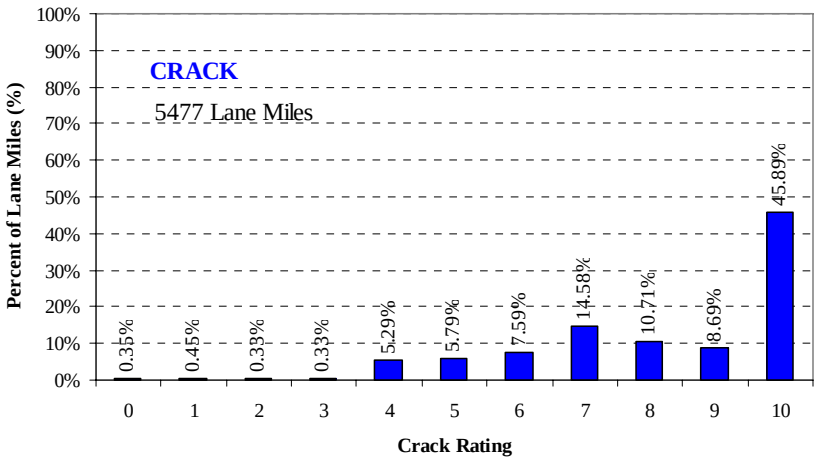
2005 Crack, Rut, and Ride Distribution
Statewide (All Systems)

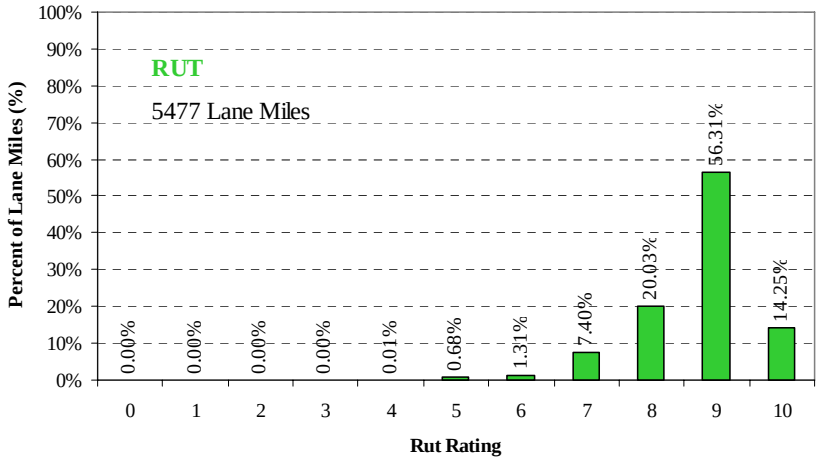


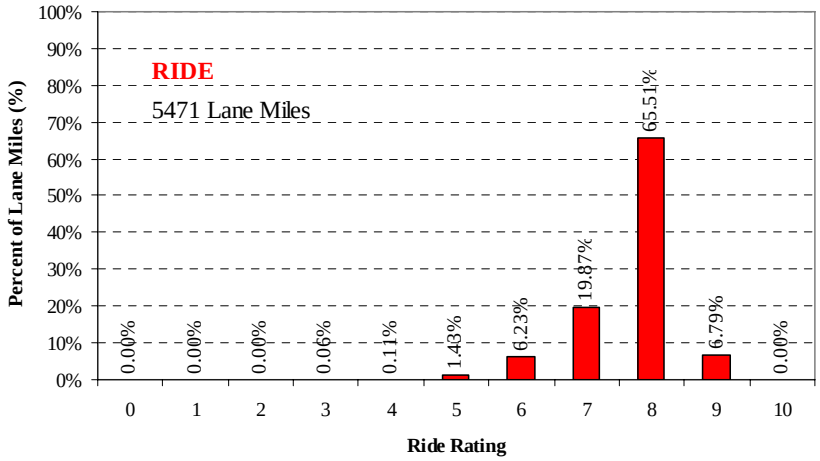




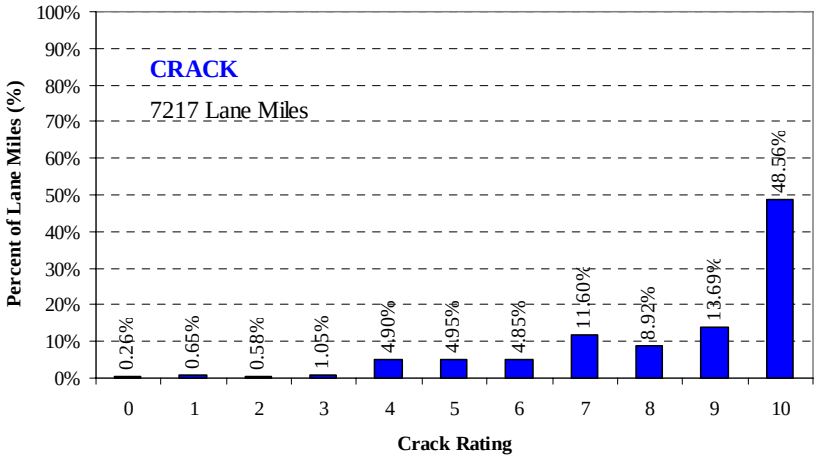
2005 Crack, Rut, and Ride Distribution
District 1 (All Systems)

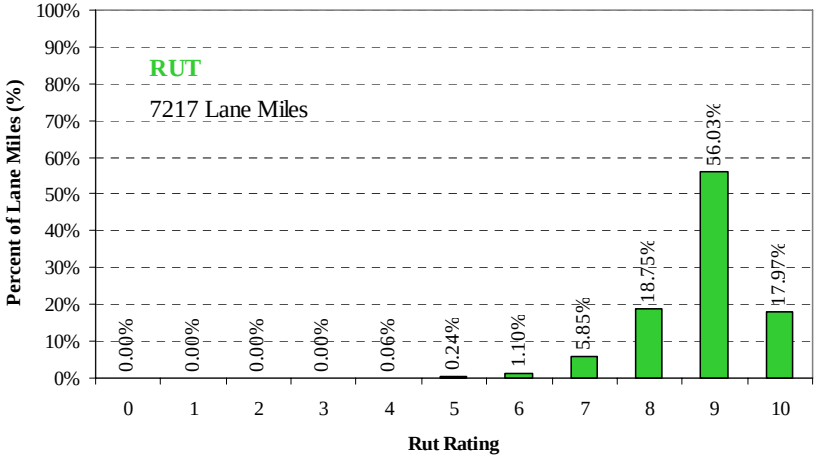


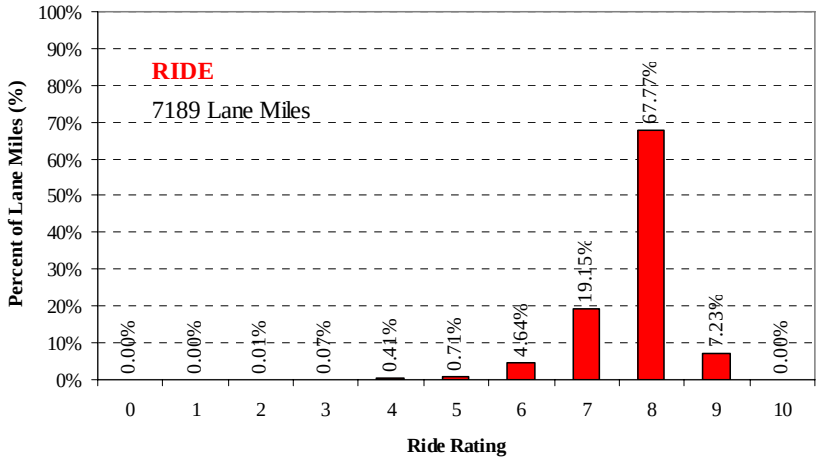




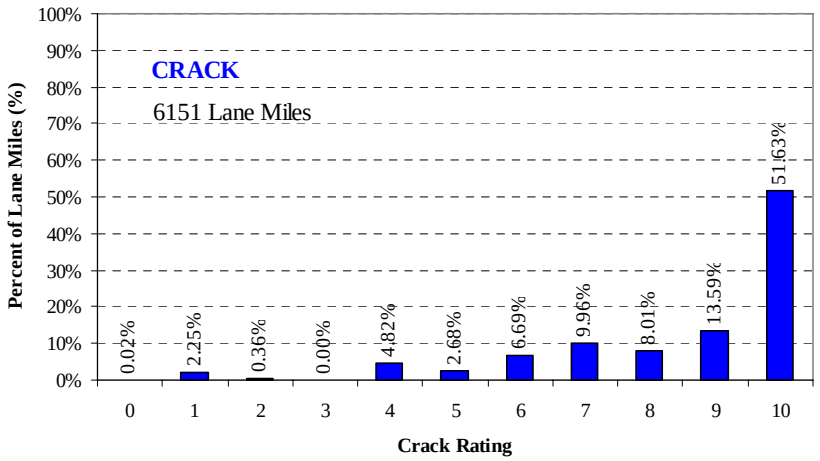
2005 Crack, Rut, and Ride Distribution
District 2 (All Systems)

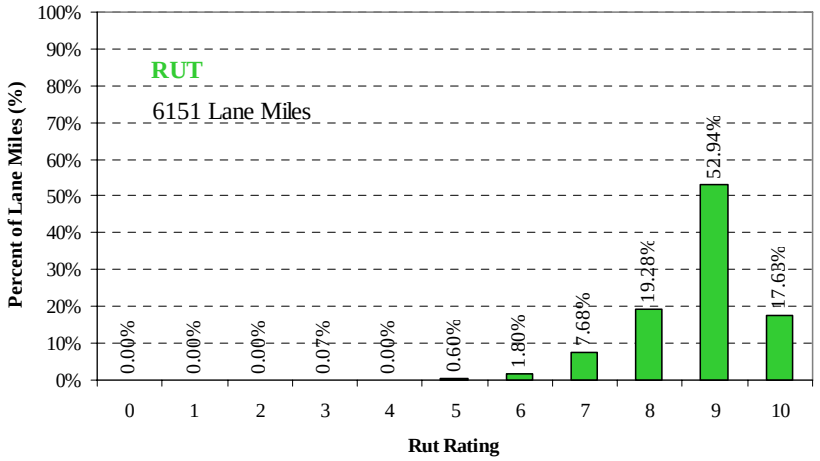


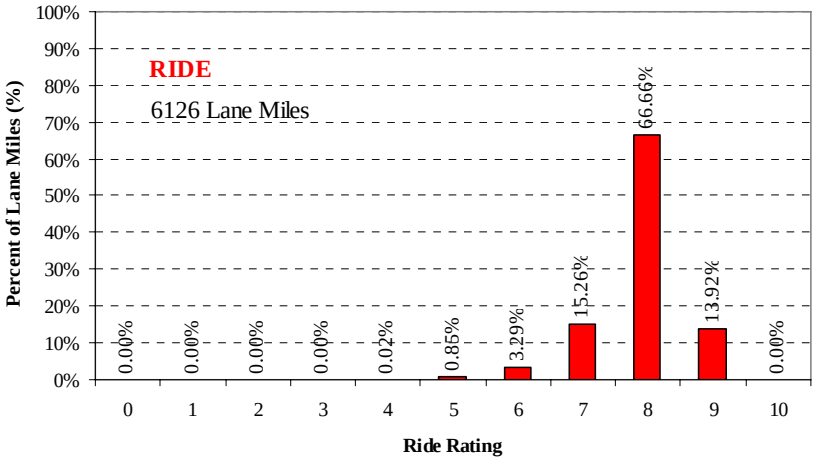




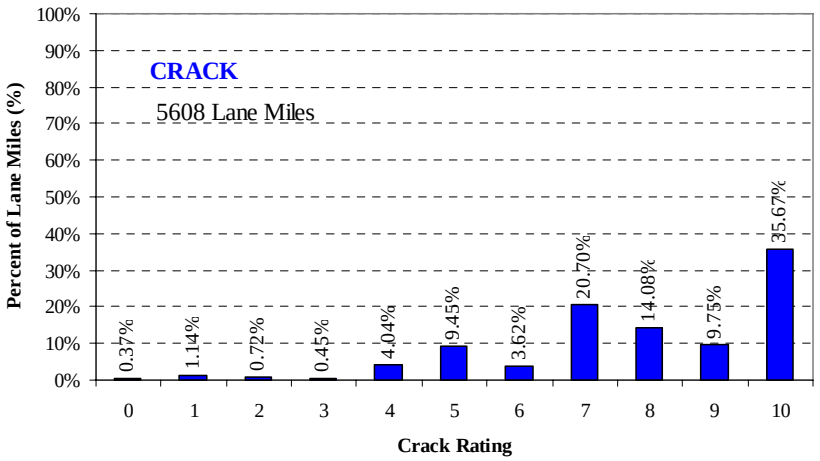
2005 Crack, Rut, and Ride Distribution
District 3 (All Systems)

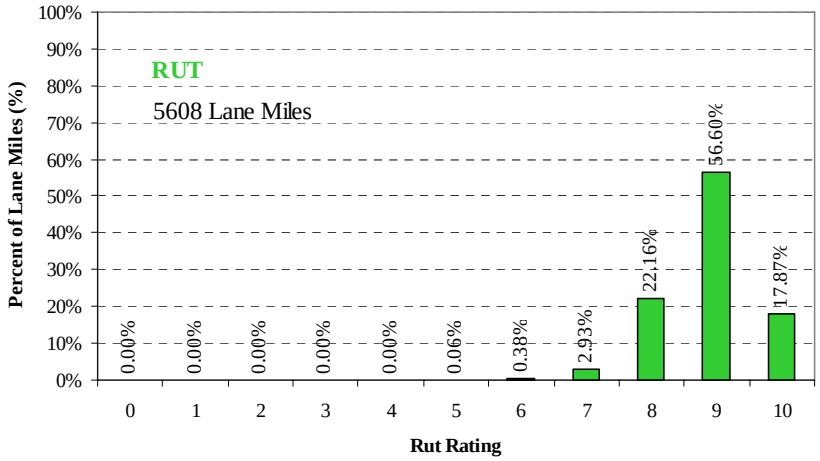


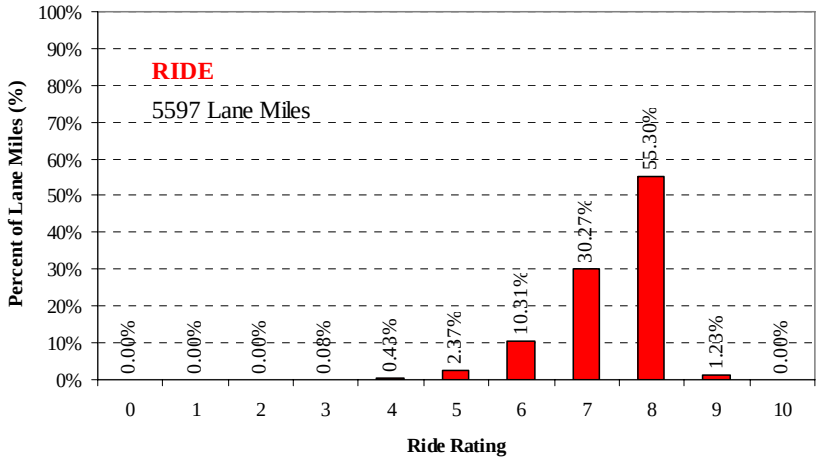




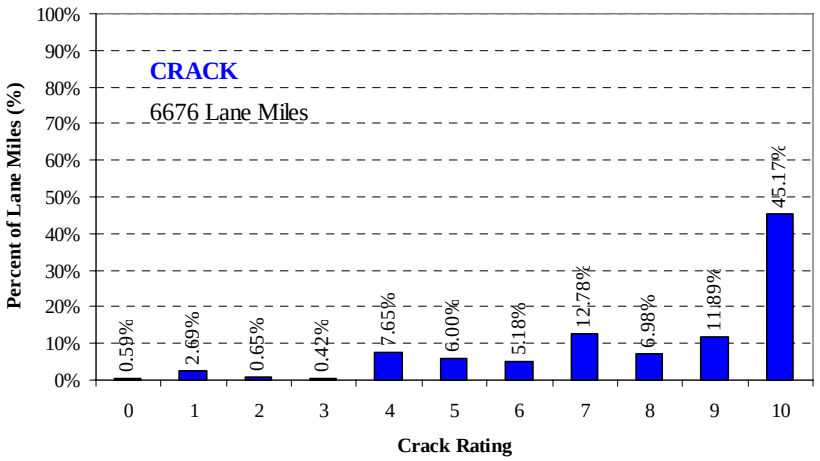
2005 Crack, Rut, and Ride Distribution
District 4 (All Systems)

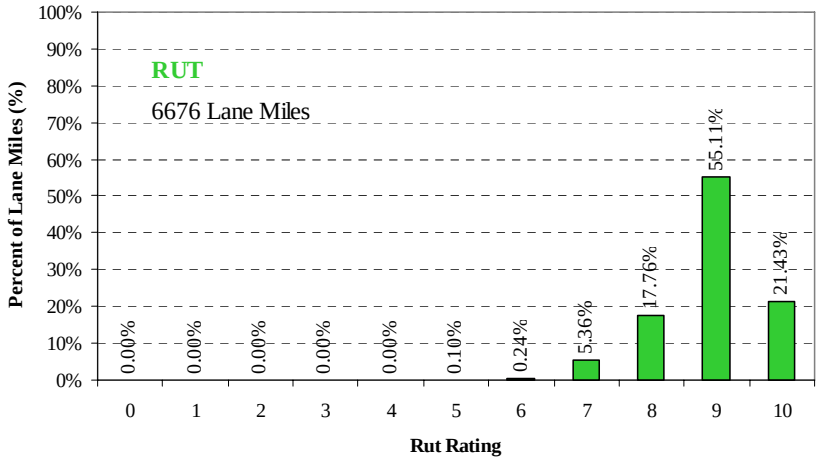


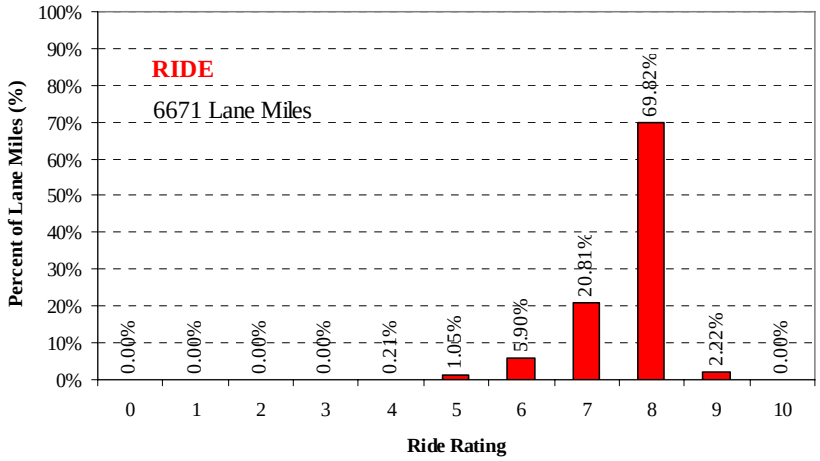




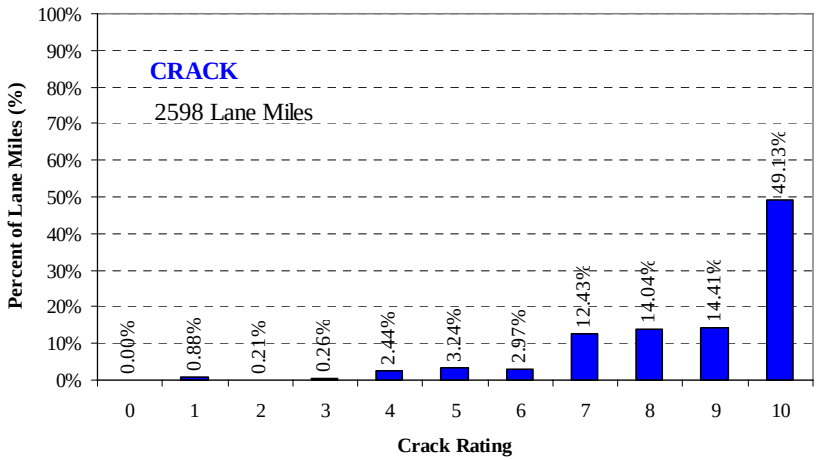
2005 Crack, Rut, and Ride Distribution
District 5 (All Systems)

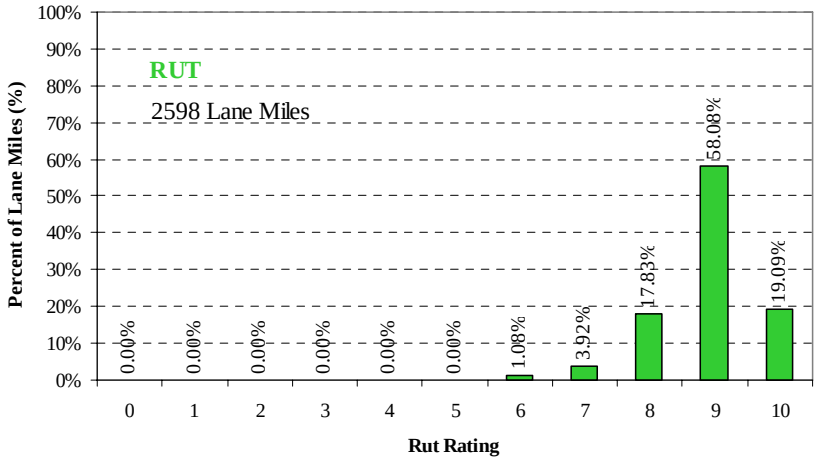


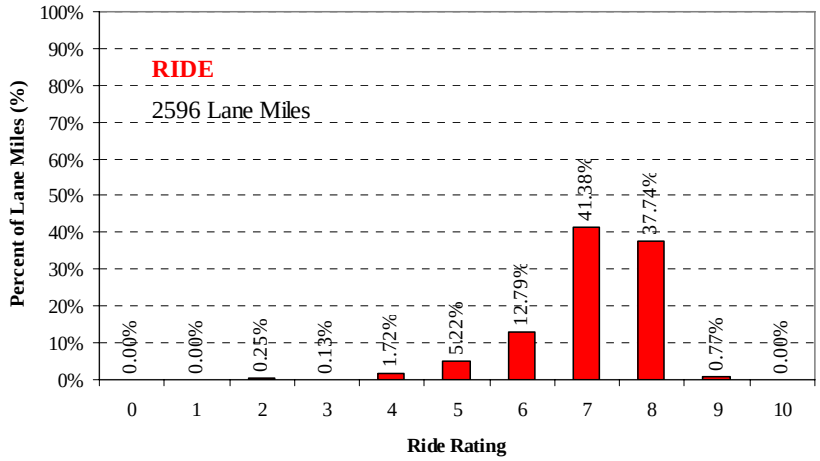




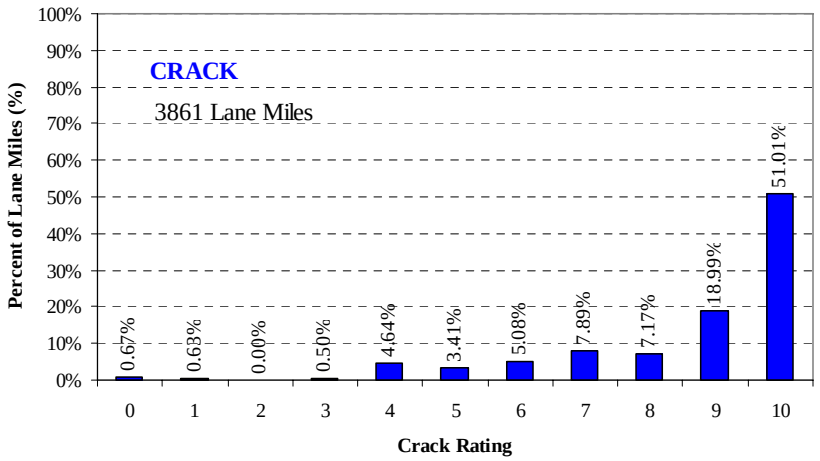
2005 Crack, Rut, and Ride Distribution
District 6 (All Systems)

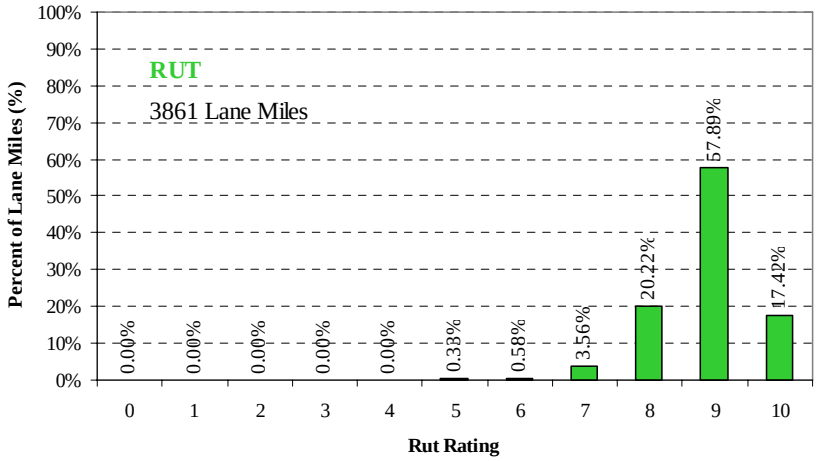


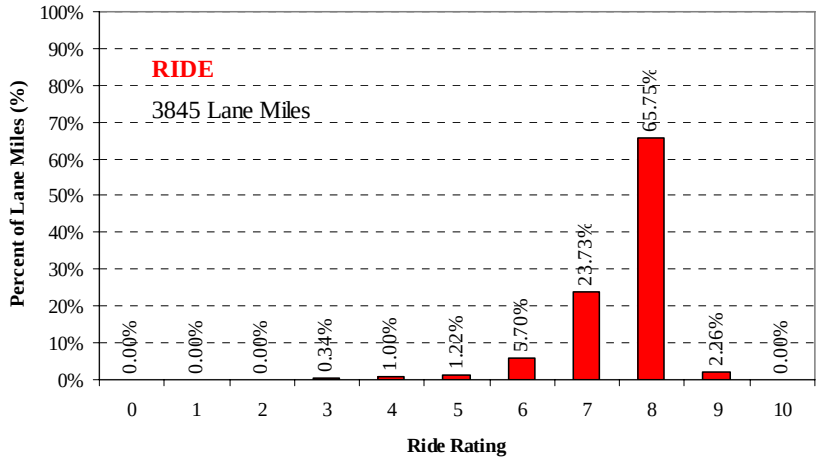




2005 Crack, Rut, and Ride Distribution
District 7 (All Systems)







SECTION VI

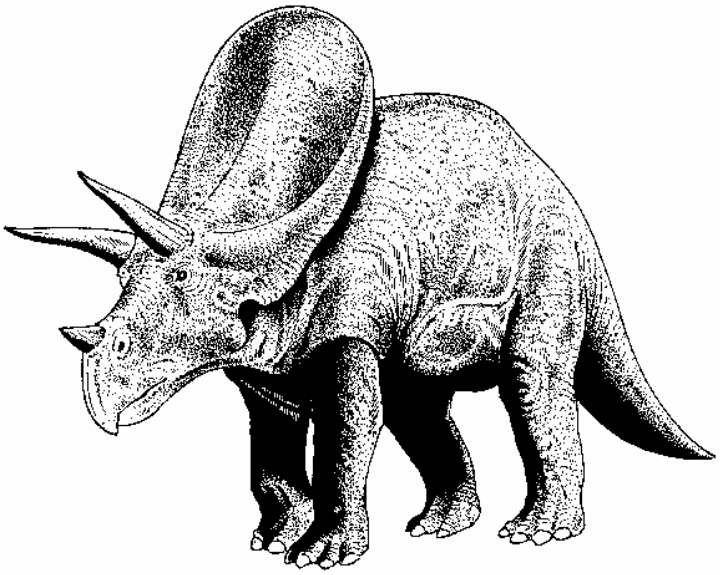
HISTORICAL

DISTRESS RATINGS

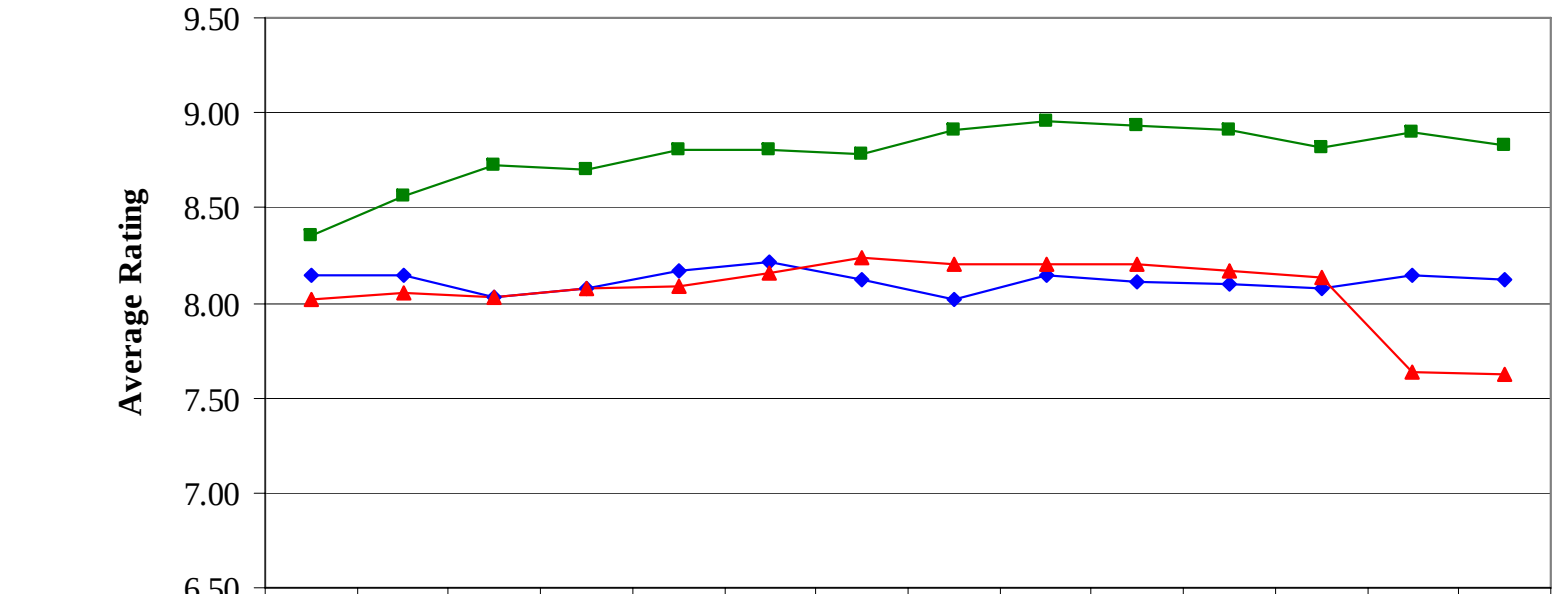
BY

DISTRICT

1992-2005

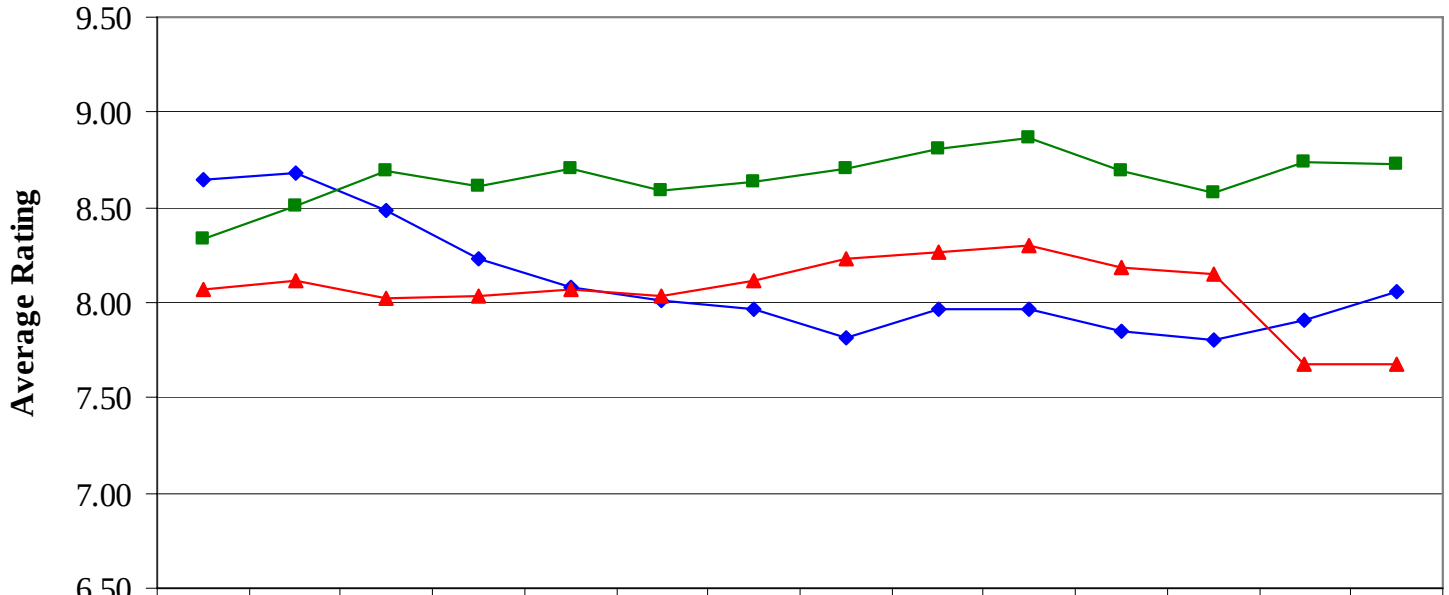


Historical Distress Ratings
Statewide (All Systems)



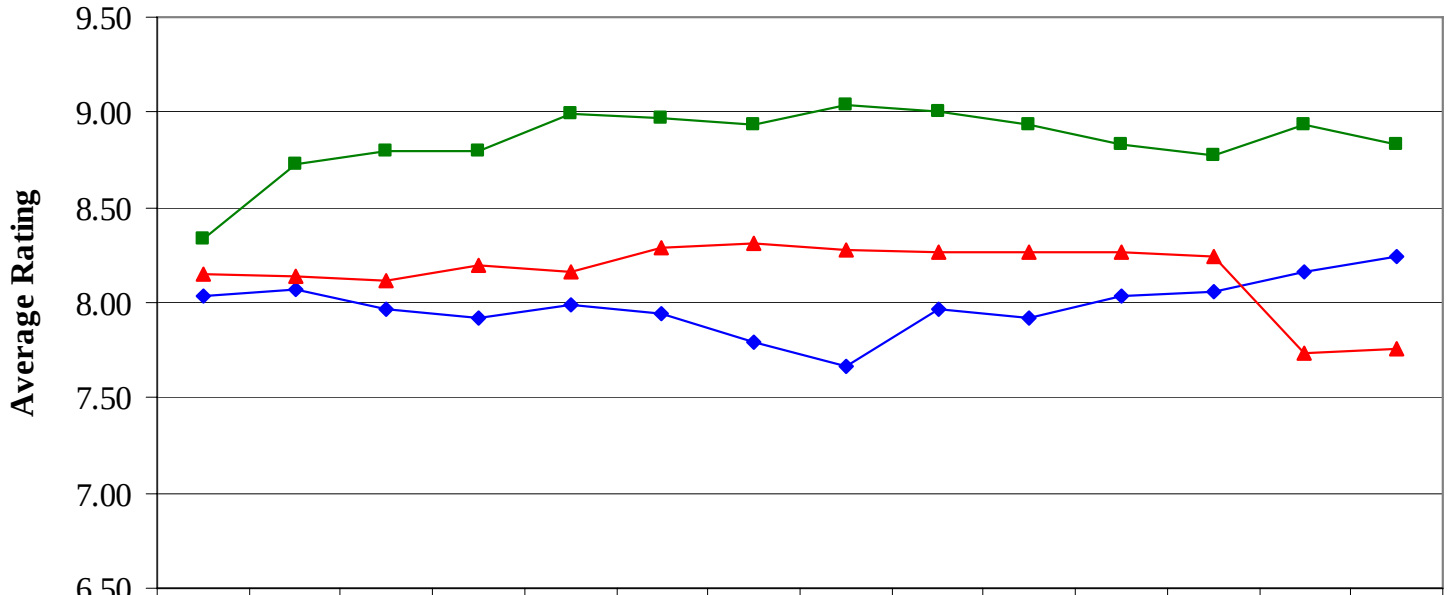
	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Crack Rating	8.15	8.15	8.03	8.07	8.17	8.21	8.12	8.02	8.14	8.11	8.10	8.07	8.14	8.12
Rut Rating	8.35	8.56	8.72	8.70	8.81	8.81	8.78	8.91	8.96	8.93	8.91	8.82	8.90	8.83
Ride Rating	8.02	8.05	8.03	8.08	8.09	8.16	8.24	8.20	8.20	8.20	8.17	8.13	7.63	7.62

Historical Distress Ratings
District 1 (All Systems)



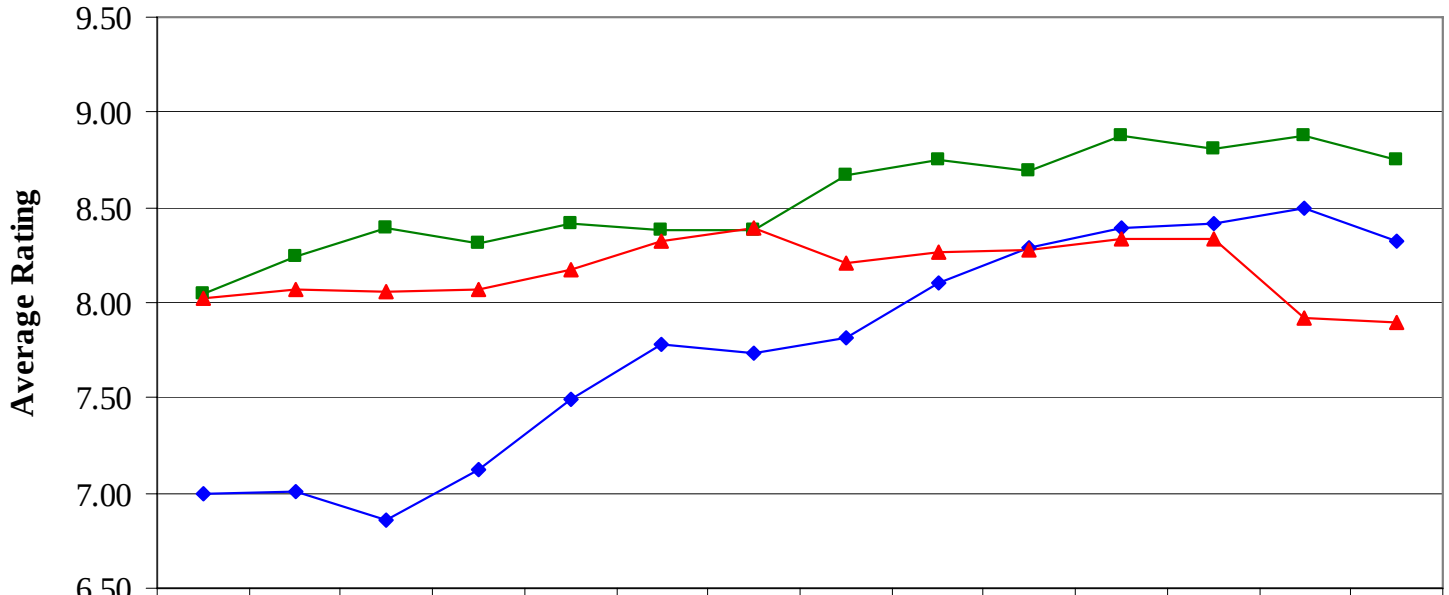
	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Crack Rating	8.65	8.68	8.48	8.23	8.08	8.01	7.97	7.81	7.96	7.97	7.85	7.80	7.91	8.06
Rut Rating	8.34	8.51	8.69	8.61	8.70	8.59	8.63	8.70	8.81	8.87	8.69	8.58	8.74	8.73
Ride Rating	8.07	8.11	8.02	8.03	8.07	8.03	8.12	8.23	8.26	8.30	8.19	8.15	7.68	7.68

Historical Distress Ratings
District 2 (All Systems)



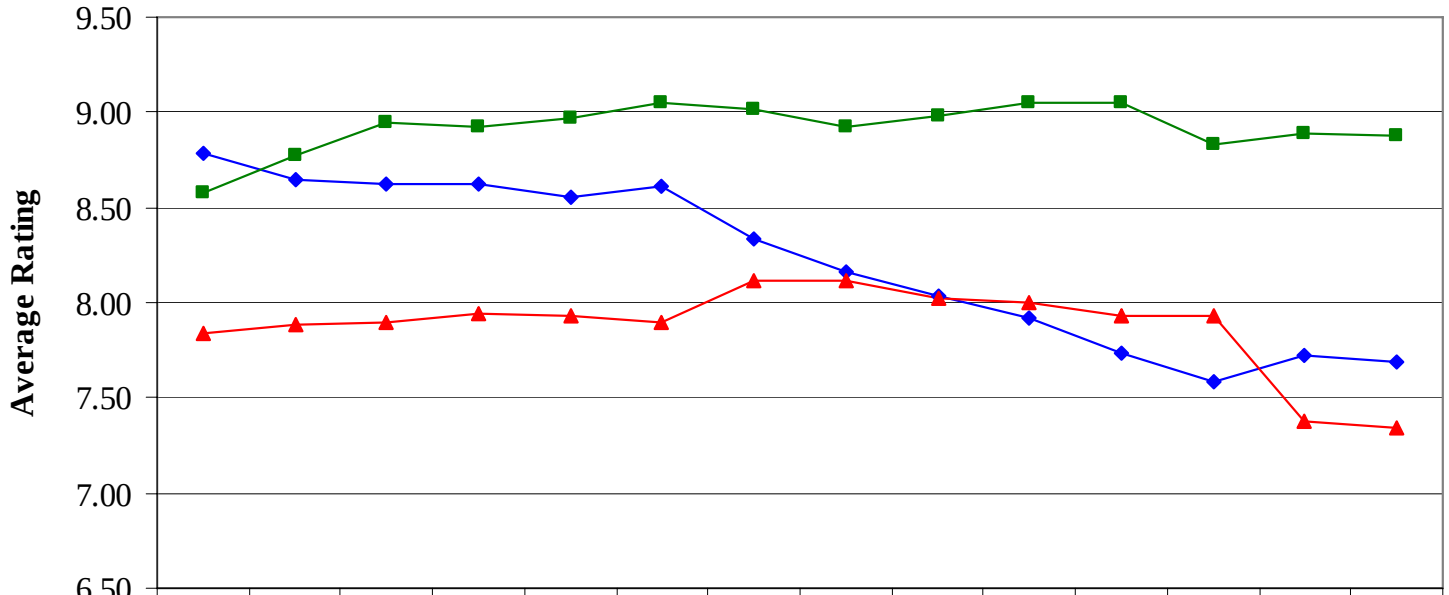
	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Crack Rating	8.03	8.07	7.96	7.92	7.99	7.94	7.79	7.67	7.96	7.92	8.04	8.06	8.16	8.24
Rut Rating	8.34	8.73	8.80	8.80	8.99	8.97	8.94	9.04	9.00	8.94	8.83	8.77	8.94	8.83
Ride Rating	8.15	8.14	8.12	8.20	8.16	8.29	8.31	8.28	8.27	8.27	8.26	8.24	7.74	7.76

Historical Distress Ratings
District 3 (All Systems)



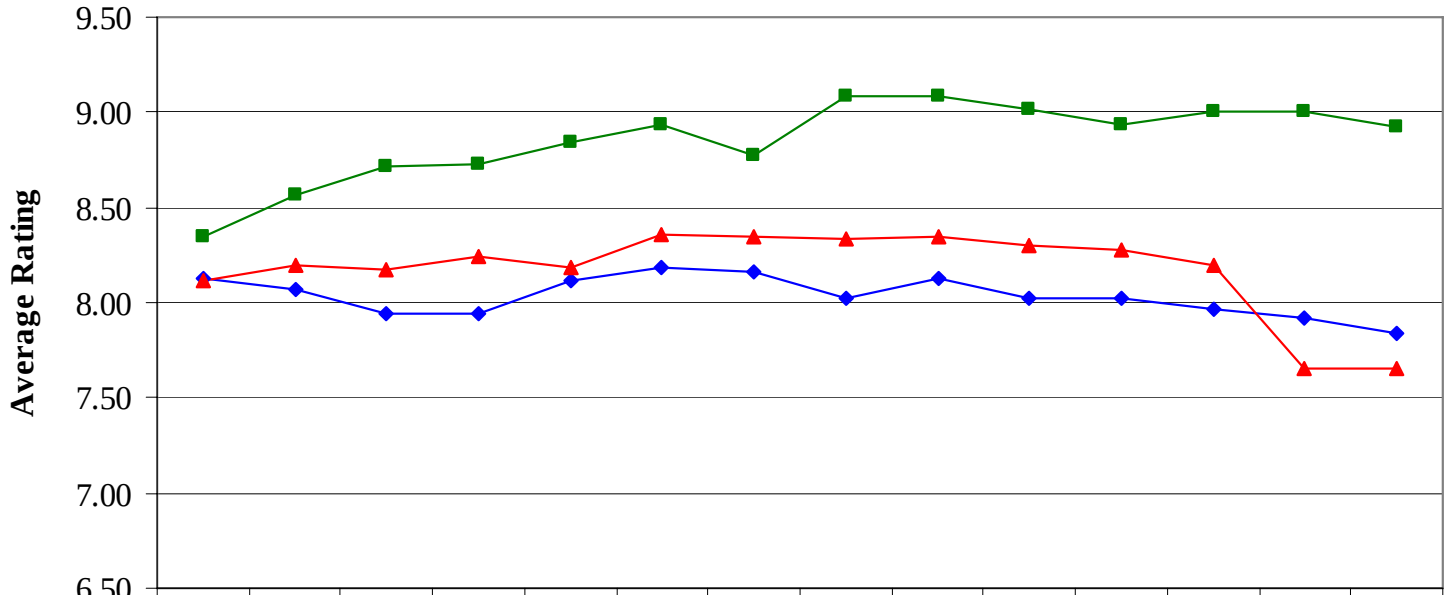
	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Crack Rating	7.00	7.01	6.86	7.12	7.49	7.78	7.73	7.81	8.10	8.29	8.39	8.41	8.50	8.32
Rut Rating	8.05	8.24	8.39	8.31	8.41	8.38	8.38	8.67	8.75	8.69	8.88	8.81	8.88	8.75
Ride Rating	8.02	8.07	8.06	8.07	8.17	8.32	8.39	8.21	8.27	8.28	8.33	8.33	7.92	7.90

Historical Distress Ratings
District 4 (All Systems)



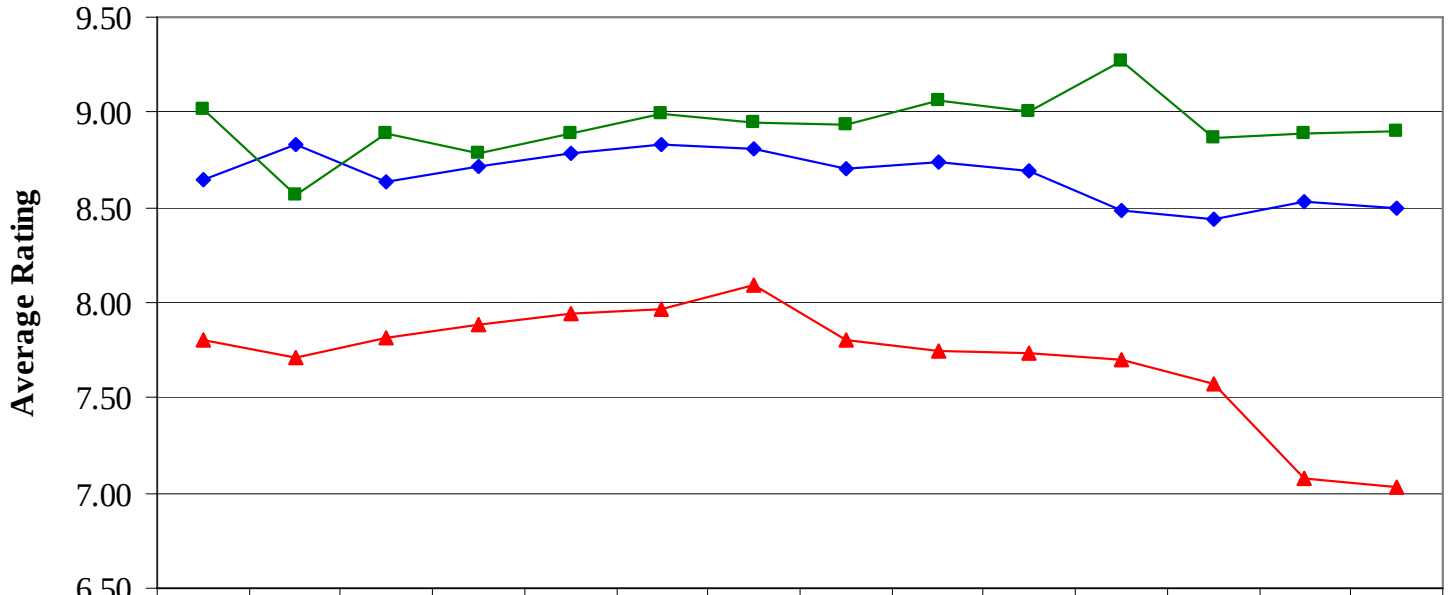
	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Crack Rating	8.78	8.65	8.62	8.62	8.55	8.61	8.33	8.16	8.03	7.92	7.74	7.58	7.72	7.69
Rut Rating	8.58	8.77	8.95	8.92	8.97	9.05	9.01	8.92	8.98	9.05	9.05	8.83	8.89	8.88
Ride Rating	7.84	7.88	7.90	7.94	7.93	7.90	8.12	8.11	8.02	8.00	7.93	7.93	7.38	7.34

Historical Distress Ratings
District 5 (All Systems)



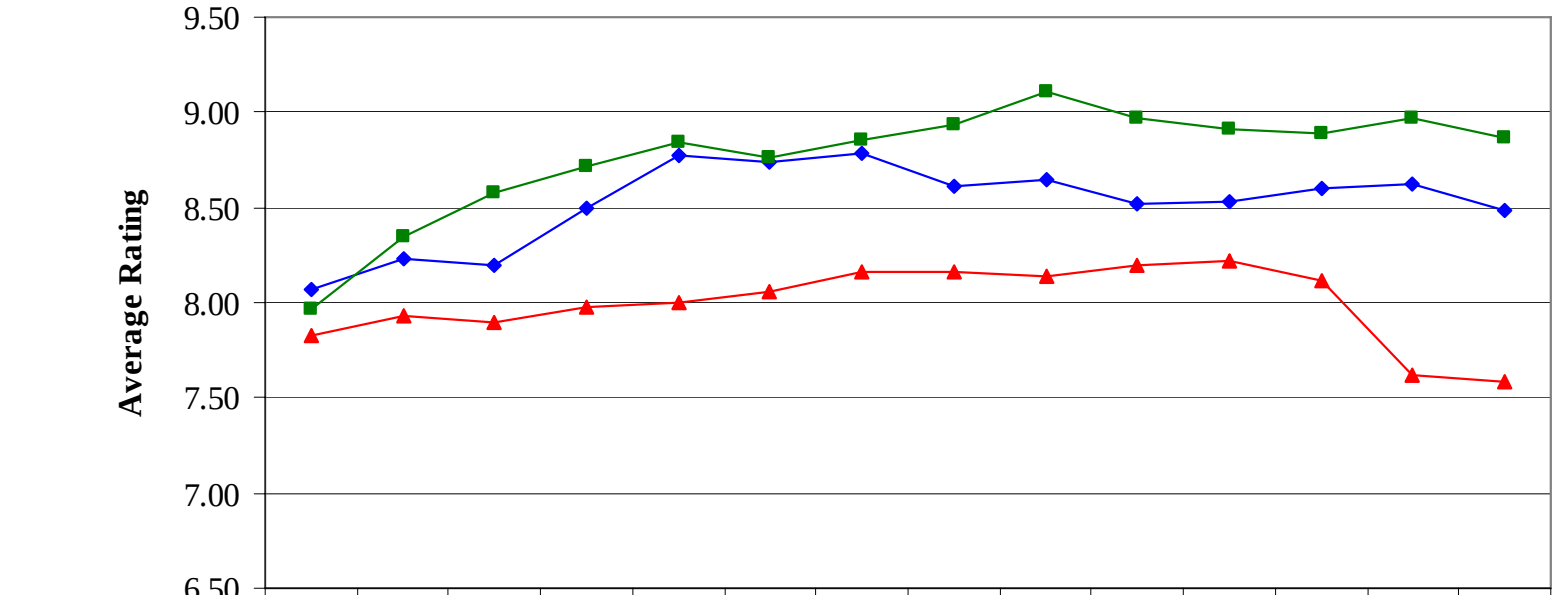
	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Crack Rating	8.13	8.07	7.94	7.94	8.12	8.18	8.16	8.02	8.13	8.02	8.02	7.96	7.92	7.84
Rut Rating	8.35	8.57	8.72	8.73	8.84	8.94	8.77	9.08	9.09	9.02	8.93	9.00	9.00	8.92
Ride Rating	8.12	8.20	8.17	8.24	8.19	8.36	8.35	8.33	8.35	8.30	8.28	8.20	7.65	7.65

Historical Distress Ratings
District 6 (All Systems)



	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Crack Rating	8.65	8.83	8.63	8.71	8.78	8.83	8.81	8.70	8.74	8.69	8.49	8.44	8.53	8.50
Rut Rating	9.02	8.57	8.89	8.79	8.89	8.99	8.95	8.94	9.06	9.00	9.27	8.87	8.89	8.90
Ride Rating	7.80	7.71	7.81	7.88	7.94	7.96	8.09	7.80	7.75	7.74	7.70	7.57	7.08	7.03

Historical Distress Ratings
District 7 (All Systems)



	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Crack Rating	8.07	8.23	8.20	8.50	8.77	8.74	8.79	8.61	8.65	8.52	8.53	8.60	8.62	8.49
Rut Rating	7.97	8.35	8.58	8.71	8.84	8.76	8.85	8.93	9.11	8.97	8.91	8.89	8.97	8.87
Ride Rating	7.83	7.93	7.90	7.98	8.00	8.06	8.16	8.16	8.14	8.20	8.22	8.12	7.62	7.59

SECTION VII

HISTORICAL

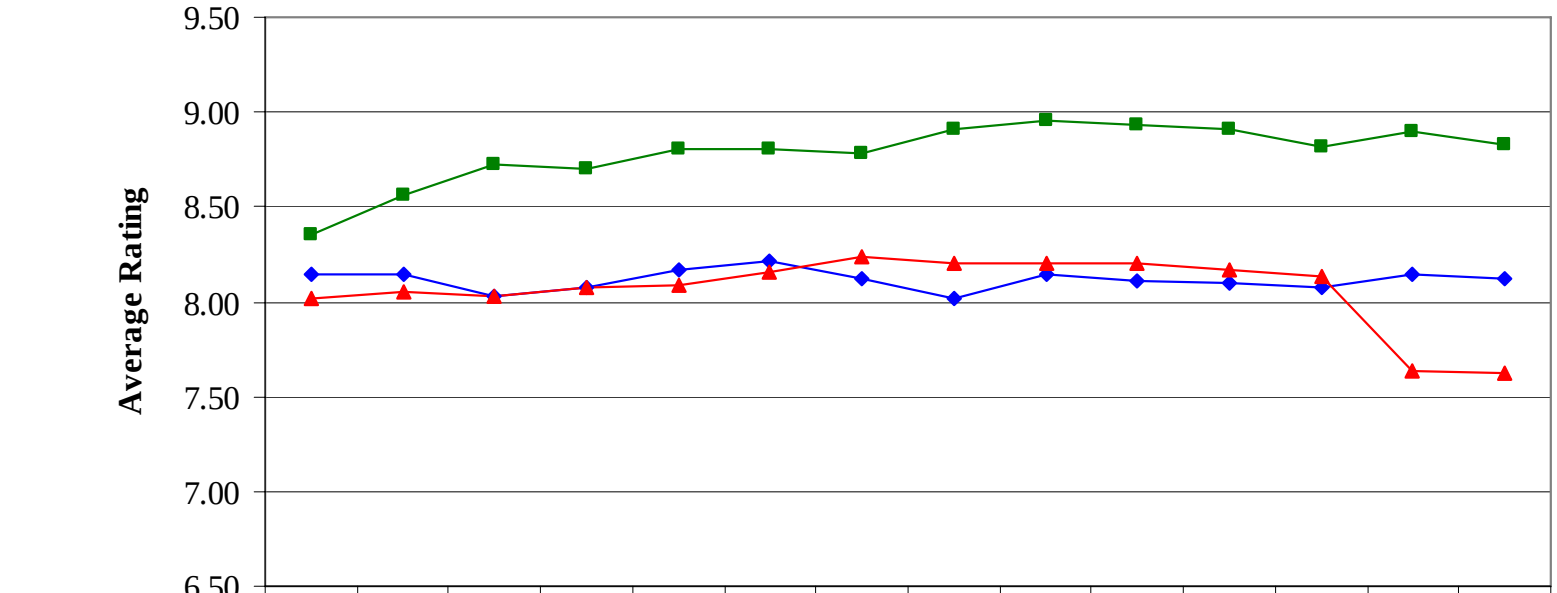
DISTRESS RATINGS

BY

SYSTEM

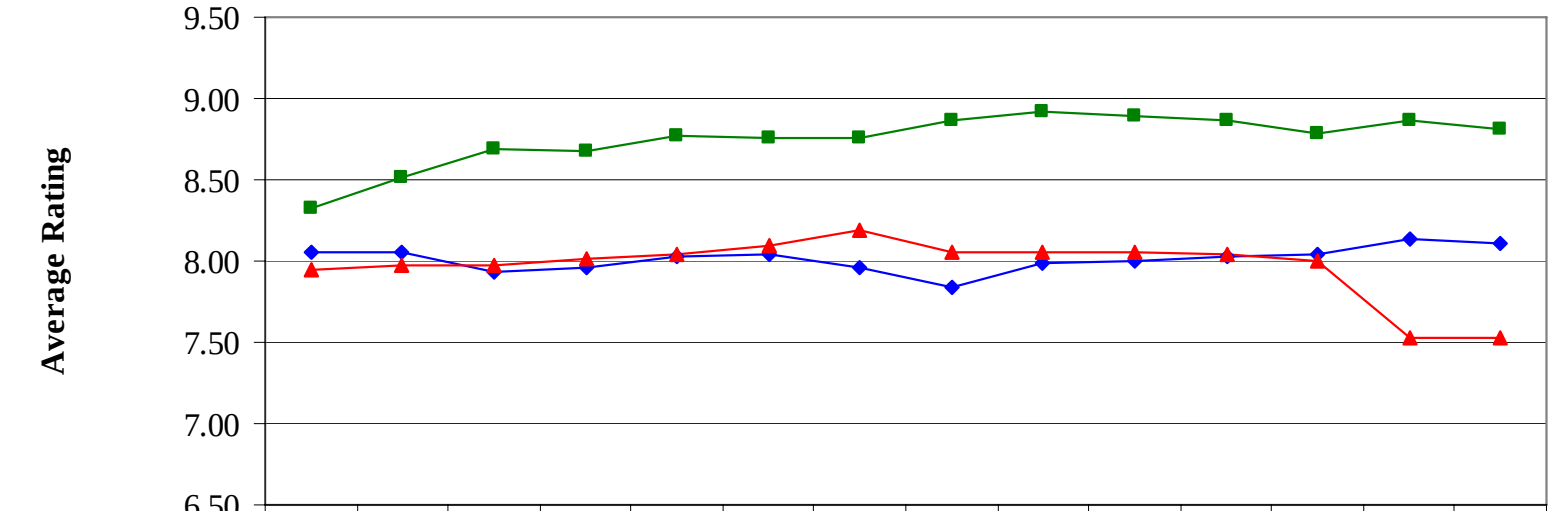
1992-2005

Historical Distress Ratings
All Systems (All Districts)



	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Crack Rating	8.15	8.15	8.03	8.07	8.17	8.21	8.12	8.02	8.14	8.11	8.10	8.07	8.14	8.12
Rut Rating	8.35	8.56	8.72	8.70	8.81	8.81	8.78	8.91	8.96	8.93	8.91	8.82	8.90	8.83
Ride Rating	8.02	8.05	8.03	8.08	8.09	8.16	8.24	8.20	8.20	8.20	8.17	8.13	7.63	7.62

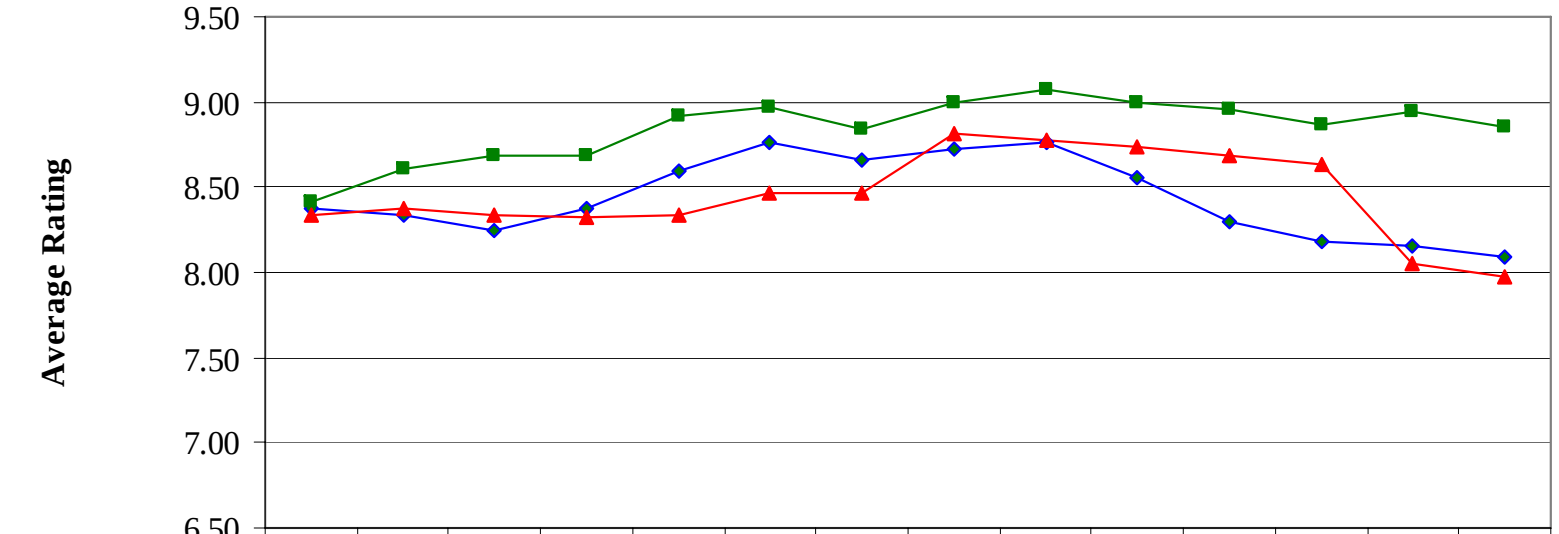
Historical Distress Ratings
Primary System (All Districts)



	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Crack Rating	8.05	8.06	7.93	7.96	8.03	8.04	7.96	7.84	7.99	8.00	8.03	8.04	8.13	8.11
Rut Rating	8.33	8.52	8.69	8.68	8.77	8.76	8.76	8.87	8.92	8.89	8.87	8.78	8.87	8.81
Ride Rating	7.95	7.97	7.97	8.02	8.04	8.10	8.19	8.06	8.06	8.06	8.04	8.00	7.53	7.53

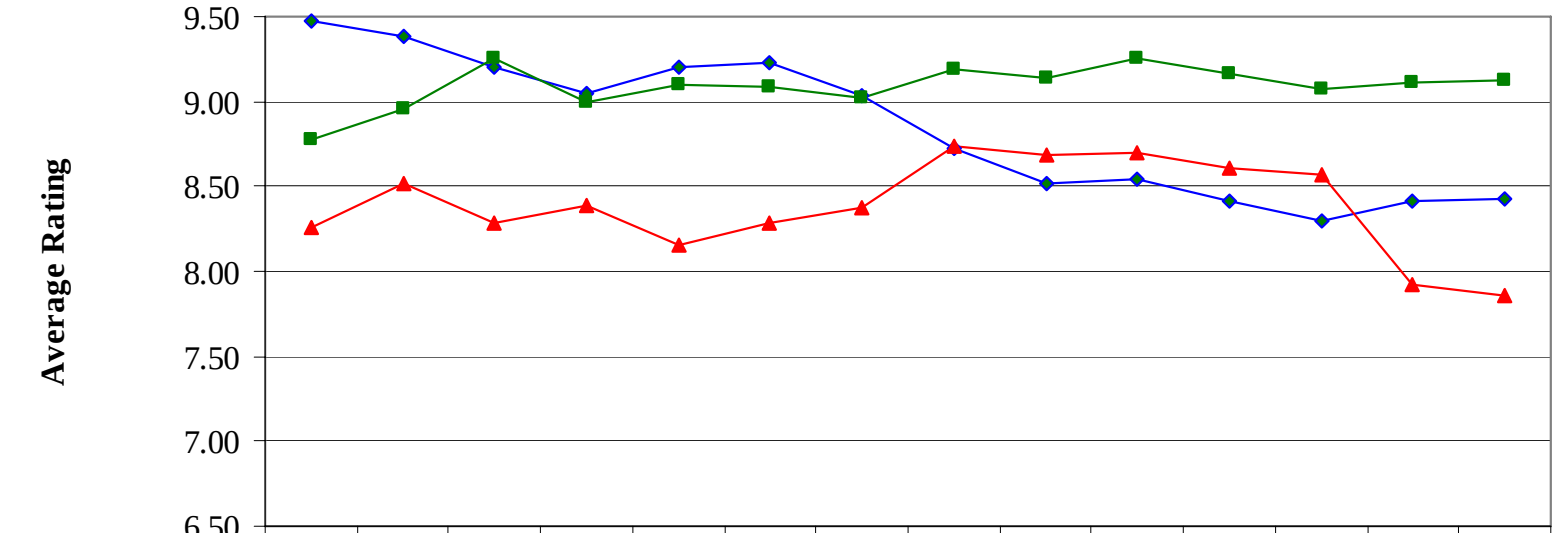
Historical Distress Ratings

Interstate System (All Districts)



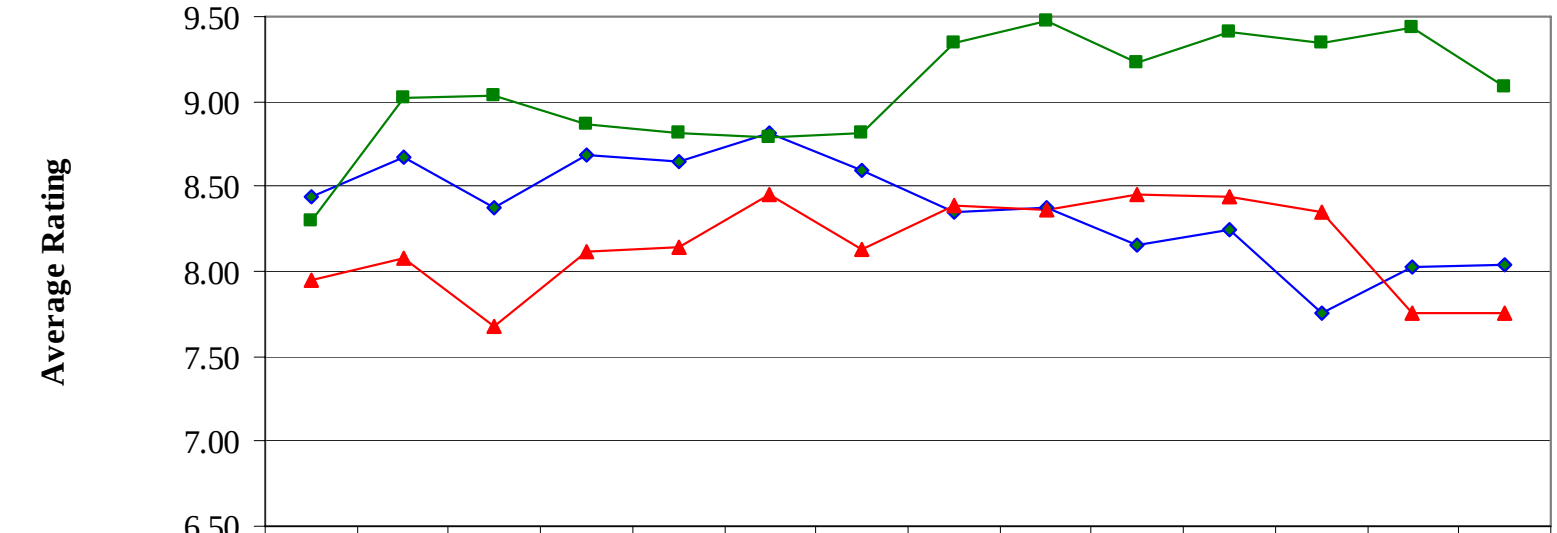
	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Crack Rating	8.38	8.34	8.24	8.38	8.60	8.76	8.66	8.73	8.76	8.55	8.30	8.18	8.15	8.09
Rut Rating	8.41	8.61	8.69	8.69	8.92	8.97	8.84	8.99	9.07	9.00	8.96	8.87	8.95	8.85
Ride Rating	8.34	8.38	8.34	8.32	8.34	8.47	8.46	8.81	8.78	8.74	8.68	8.63	8.05	7.98

Historical Distress Ratings
Turnpike System (All Districts)



	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Crack Rating	9.48	9.39	9.20	9.05	9.20	9.23	9.04	8.72	8.52	8.54	8.42	8.30	8.41	8.43
Rut Rating	8.77	8.96	9.26	9.00	9.10	9.08	9.02	9.19	9.14	9.25	9.17	9.07	9.11	9.13
Ride Rating	8.26	8.52	8.29	8.39	8.16	8.28	8.38	8.74	8.69	8.70	8.61	8.57	7.92	7.86

Historical Distress Ratings
Toll System (All Districts)



	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Crack Rating	8.44	8.67	8.37	8.68	8.65	8.82	8.60	8.35	8.37	8.15	8.25	7.76	8.02	8.04
Rut Rating	8.30	9.02	9.04	8.86	8.82	8.79	8.81	9.35	9.48	9.23	9.41	9.35	9.44	9.09
Ride Rating	7.95	8.08	7.68	8.12	8.14	8.45	8.13	8.39	8.36	8.45	8.44	8.35	7.76	7.75

SECTION VIII

RAVELING

DISTRIBUTION BY

DISTRICT AND SYSTEM

SECTION VIII

Raveling

Raveling Rating Criteria

- 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.
- Raveling for a rated section is combined with the Crack Rating.
- 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
- Raveling became a noticeable defect by raters and was required to be listed in their comments as of 1992.
- Since 1995, Raveling was rated by severity level (light, moderate, and severe) and percent of affected area, where only the 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; loss of fine aggregate and some loss of coarse aggregate exists.
    - Severe Raveling occurs when the aggregate and/or binder has worn away and the surface texture is very rough and pitted; loss of coarse aggregate is very noticeable.

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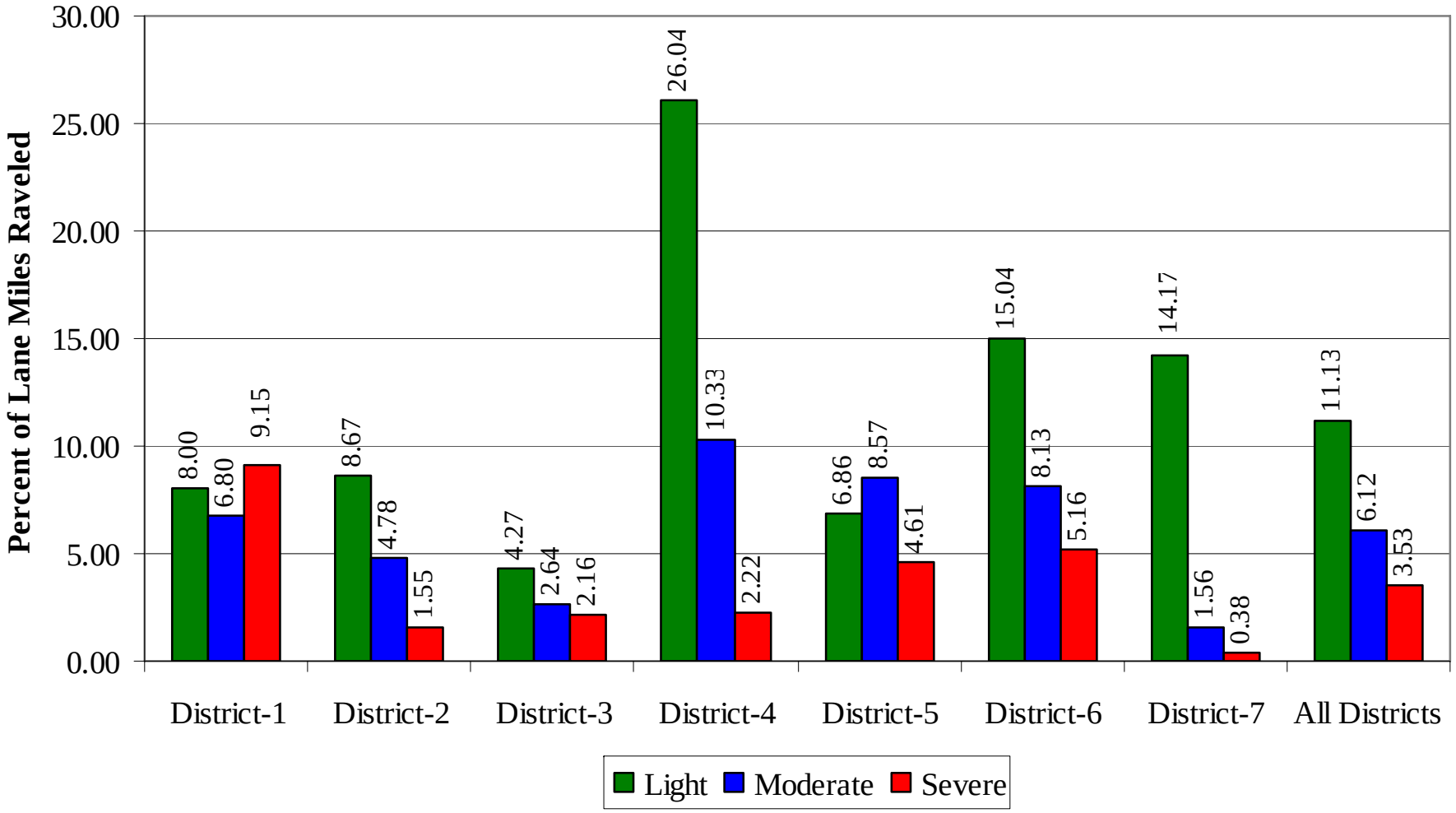
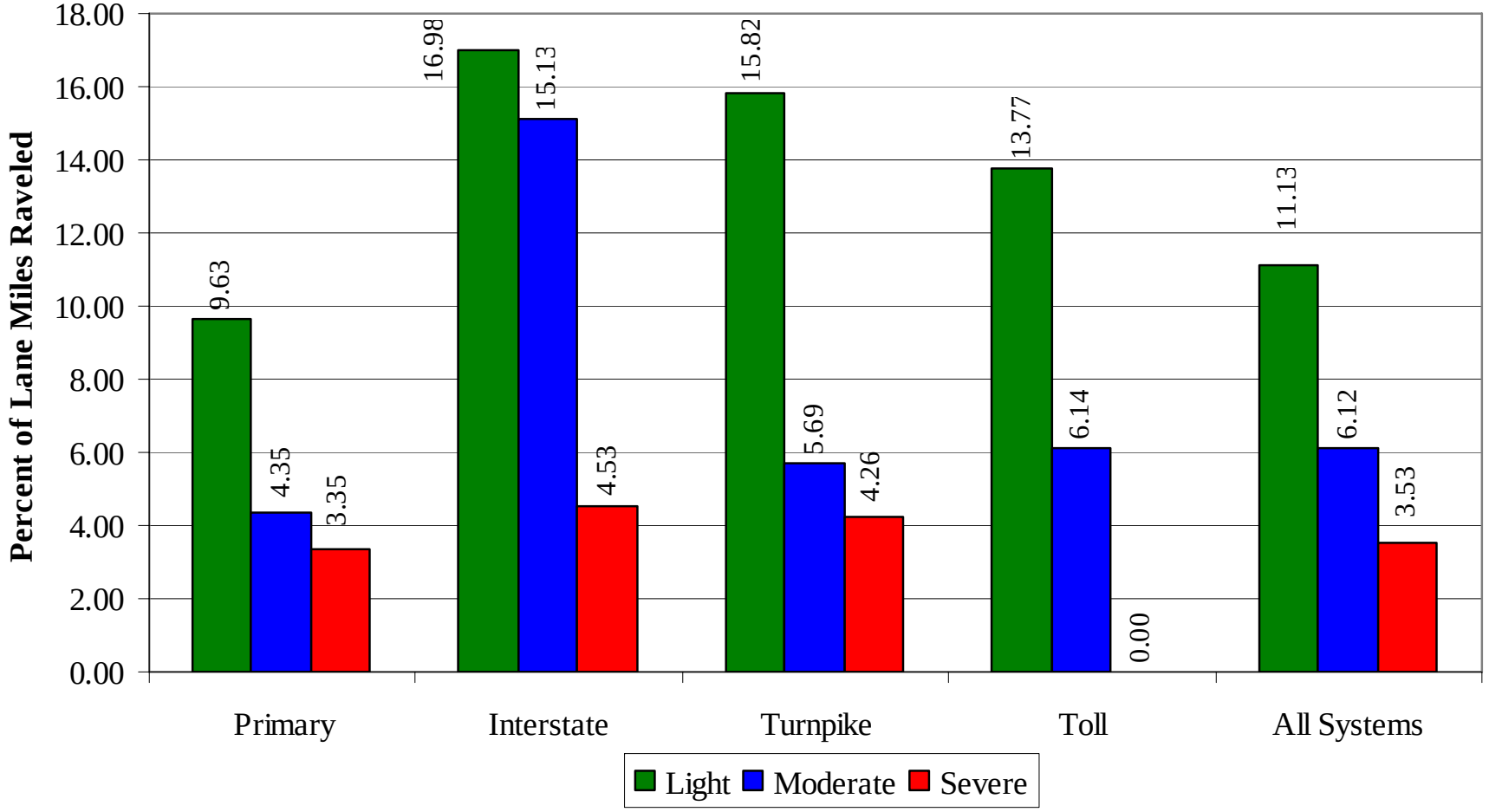
2005 Raveling Survey by District

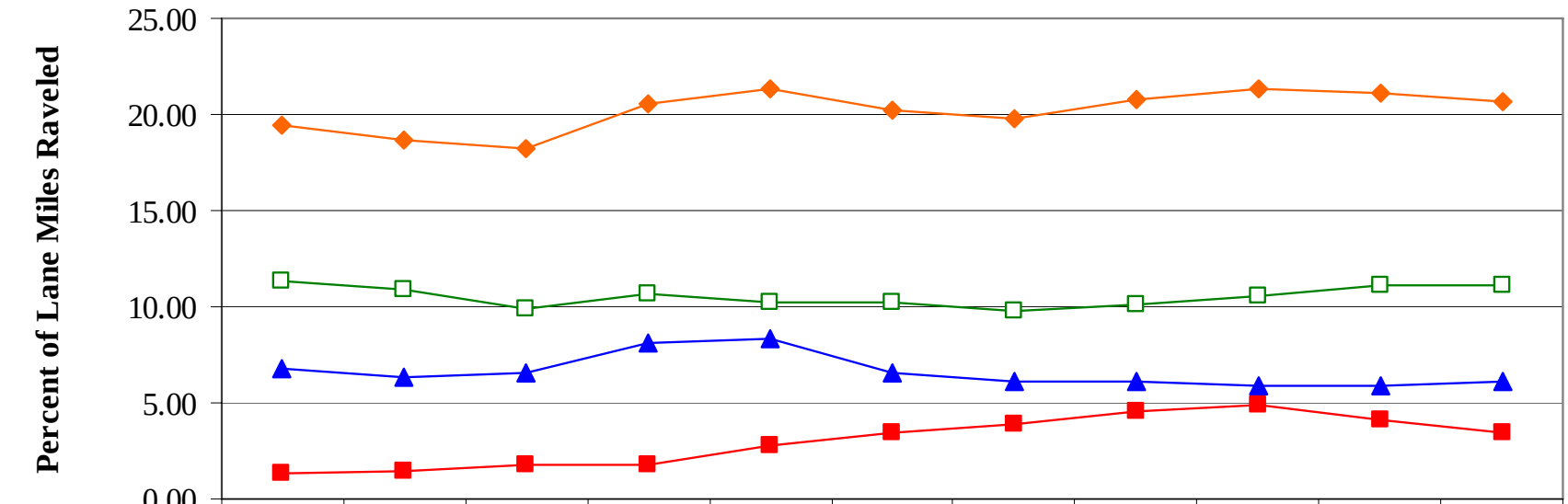
All Systems



2005 Raveling Survey by System
All Districts



Raveling Survey History
All Systems Combined (All Districts)



	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Combined	19.42	18.62	18.22	20.59	21.33	20.21	19.74	20.76	21.34	21.11	20.68
Light	11.34	10.89	9.85	10.65	10.26	10.17	9.78	10.12	10.53	11.09	11.13
Moderate	6.79	6.28	6.59	8.14	8.34	6.60	6.08	6.11	5.90	5.94	6.06
Severe	1.29	1.45	1.78	1.80	2.73	3.44	3.88	4.53	4.91	4.08	3.49

SECTION IX

DISTRESS

RATINGS COMPARISON

2004 VS 2005

SECTION IX

Crack, Rut, and Ride Ratings Comparison

Rating Comparison Criteria

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 4 - Rigid Pavements

Type 5 - New Construction

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

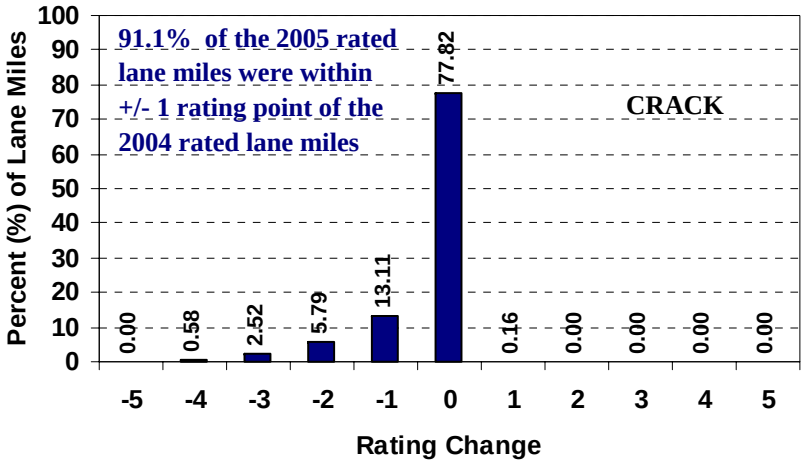
Type 7 - New Pavement (Overlays)

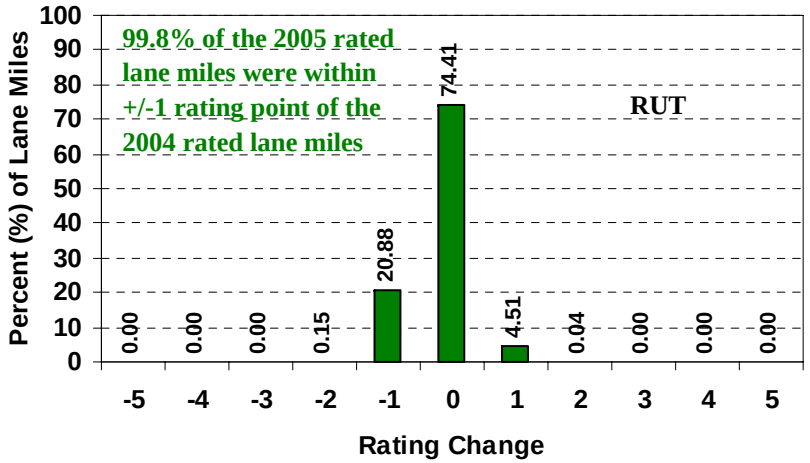
Type 8 - Under Construction

Type 9 - Structures or exceptions that are State-maintained

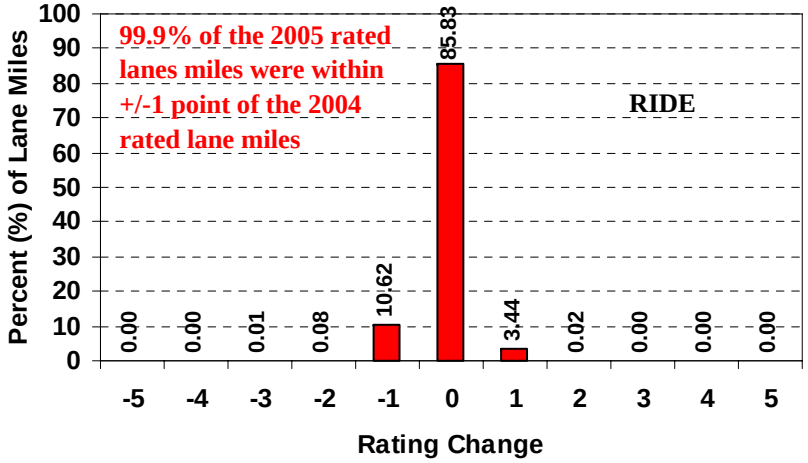
Crack, Rut and Ride Rating Changes

2004 Compared to 2005





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

2005 Flexible Pavement Condition Survey
Facts and Figures
Customer Service Form

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

(Optional)
Your name: _____ Title: _____
Company/Office/Organization: _____
Address: _____ City/State/Zip: _____
Phone: (_____)_____ — SunCom:_____ e-mail: _____

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

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

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
Attn: Abdenour Nazef
5007 NE 39th Ave.
Gainesville, FL 32609
Or send via email to: abdenour.nazef@dot.state.fl.us