

Condition of Texas Pavements



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Pavement Management Information System (PMIS)

Annual Report FY 2008-2011



Prepared by
Texas Department of Transportation
Construction Division, Materials and Pavements Section

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How Data Was Analyzed In This Report...

- Data for this report is based on all PMIS sections, mainlanes and frontage roads, Condition Scores greater than 0, excluding sections under construction. Annual Reports published before FY 2009 used mainlanes only, so some of the results from those reports might not match values shown in this report.

Cover Photo:

Westbound on U.S. Highway 90 Entering Lozier Canyon in Terrell County
Photo by Randall Maxwell / TxDOT



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Condition of Texas Pavements Summary

PMIS Annual Report, FY 2008-2011

This report describes the condition of Texas pavements in Fiscal Year 2011 and during the four-year FY 2008-2011 period, based on analysis of Pavement Management Information System (PMIS) distress ratings and ride quality measurements. The report includes the percentage of lane miles in “Good” or better condition, trends for the major highway systems (IH, US, SH and FM) and pavement types (ACP, CRCP and JCP), trends for pavement distress types, and maintenance level of service information.

PMIS pavement evaluations are conducted during the Fall and Winter months of each fiscal year.

Percentage of Lane Miles in “Good” or Better Condition (Chapter 1)

86.66 percent of Texas pavements are in “Good” or better condition, down from **86.97 percent** in FY 2010. This is the third drop in pavement condition percentage in the last four years. But it is still higher than the **84.22 percent** in FY 2002 when the Texas Transportation Commission established the statewide pavement condition goal.

Statewide Trends for FY 2011 (Chapter 3)

Overall Pavement condition in Texas got slightly worse in FY 2011 because of decreased ride quality and increased distress on asphalt pavements. The percentage of lane miles in “Very Good” Ride Score category decreased and the percentage in “Fair” to “Very Poor” Ride Score categories increased in FY 2011, causing the decline of statewide ride quality. Even though concrete pavements have less distress than the previous year, the distress on asphalt pavements increased. Because asphalt pavements make up most of the Texas road network, the increased distress on asphalt pavements further dragged down the statewide percentage of lane miles in “Good” or better condition in FY 2011.

Highway System Trends for FY 2011 (Chapter 3)

IH routes improved in Shallow Distress, but got worse in Condition, Distress, Deep Distress and Ride Quality.

U.S. highways improved in all categories except for Ride Quality.

SH routes improved in Distress and Deep Distress, but got worse in Condition, Shallow Distress and Ride Quality.

FM roads got worse in all categories.

These trends are based on the percentage of lane miles “Good” or better.

Pavement Type Trends for FY 2011 (Chapter 3)

Asphalt Concrete Pavement (ACP) got worse in all categories.

Continuously-Reinforced Concrete Pavement (CRCP) improved in Distress, Shallow Distress and Deep Distress, and got worse in Condition and Ride Quality.

Jointed Concrete Pavement (JCP) also improved in Distress, Shallow Distress and Deep Distress, and got worse in Condition and Ride Quality.

These trends are based on the percentage of lane miles “Good” or better.



Pavement Distress Trends for FY 2011 (Chapter 4)

ACP, Alligator Cracking, Failures, Longitudinal Cracking, Block Cracking, Patching and Transverse Cracking got worse. Shallow Rutting and Deep Rutting improved.

CRCP, Spalled Cracks, Punchouts, Asphalt Patches, and Concrete Patches all improved.

JCP and Failures improved. Failed Joints and Cracks, Shattered Slabs, Slabs with Longitudinal Cracks and Concrete Patches got worse.

These trends are based on the amount of distress rated or measured (that is, greater than zero).

Maintenance Level of Service Trends for FY 2011 (Chapter 5)

The overall “Combined” level of service maintained on Texas flexible (ACP) pavements got worse in FY 2011. Alligator Cracking got better, but Rutting and Ride Quality got worse.

PMIS Total Lane Miles and Data Storage Sample (Chapter 6)

The total number of lane miles in PMIS continued to slowly increase. PMIS contained 196,322.4 lane miles in FY 2011, up from 193,925.8 lane miles in FY 2008. PMIS contained Condition Score data on approximately 97.17 percent of all TxDOT-maintained lane miles in FY 2011. This percentage is the second highest since FY 2002.



Discussion

Present Condition

The statewide percentage of lane miles in “Good” or better condition dropped slightly from 86.97 in FY 2010 to 86.66 in FY 2011. Most of the statewide drop is mainly because of the ongoing extreme drought condition and increased oilfield development traffic. TxDOT achieved this accomplishment by maintaining the statewide percent lane miles “Good” or better at 86.66, despite the CTR predicted percentage of 81.58, due to the continued emphasis on pavement maintenance, sharing best practices and improved management techniques. These efforts allowed TxDOT to treat additional lane miles with the same available funding, keep the pavement network in better overall condition and more importantly reduce the long-term cost of maintaining pavements.

Translating the additional treatment allowed by the efforts described above into quantifiable terms is important and recognizes the overall benefit to the system and available funding. Research and various reports indicate the ratio of pavement rehabilitation cost to pavement preventive maintenance cost is approximately 6 to 1¹. These efforts have yielded 5.1 percent more lane miles “Good” or better than originally predicted by the latest deterioration models. Using the 6 to 1 ratio and local costs for major rehabilitation, it can be shown that these efforts have also delayed the expenditure of approximately \$2.5 billion of highway funds.

Continuing Improvements in Pavement Management Practices

TxDOT continued to improve pavement management, maintenance and rehabilitation techniques. These efforts helped reduce the amount of observed pavement deterioration. Specific details about these efforts are provided below:

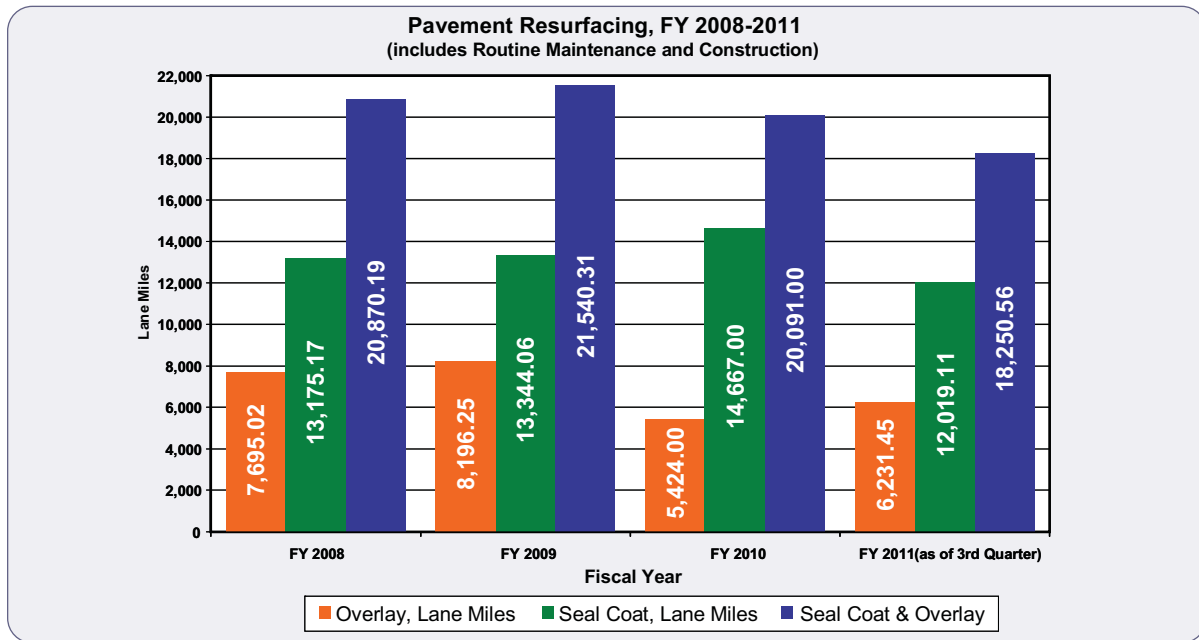
- ◆ Starting from FY 2008, TxDOT required each district to produce a **Four-Year Pavement Management Plan** each year that includes all aspects of pavement-related work. These are project-specific and financially constrained plans which map out the pavement work needed, along with expected changes in pavement condition. This has had the immediate benefit of giving districts a tool to plan out the pavement preservation and maintenance work rather than being reactive to it.
- ◆ TxDOT also implemented a **“Pennies to the Pavement”** initiative in FY 2008 that focused maintenance funding on pavements instead of on other areas, to get the greatest possible pavement benefit from limited funding. TxDOT districts have embraced this initiative and found innovative ways to “stretch” pavement dollars and improve pavement condition.
- ◆ In FY 2009, TxDOT began a series of **Peer Reviews** of each district’s pavement maintenance program. These Peer Reviews have made it easier for districts to share “best practices” to use resources to improve the effectiveness of pavement maintenance.

¹ Hicks, R. G., S. B. Seeds, and D. G. Peshkin, *Selecting a Preventive Maintenance Treatment for Flexible Pavements*, FHWA-IF-00-027, U.S. Department of Transportation, Federal Highway Administration, Aug. 2000.



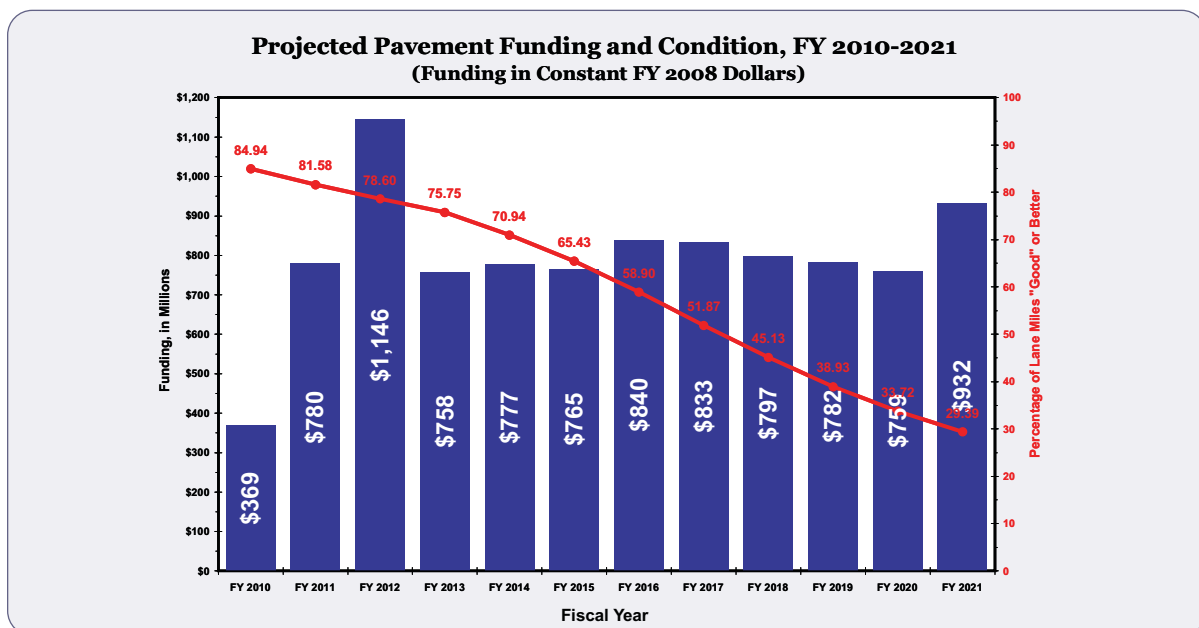
Additional Savings

Additional savings were achieved in summer 2010 from lower unit bid prices and innovative letting processes. These savings allowed TxDOT to treat more mileage with the same amount of money, which helped reduce the amount of observed pavement deterioration. Figure 1 shows TxDOT resurfacing lane miles in the last four years. This resurfacing helped reduce the amount of the decline.



Predicted Future Condition

Figure 2 shows expected pavement funding and predicted condition for FY 2010-2021, as furnished by the Center of Transportation, University of Texas at Austin. Although the statewide percentage of lane miles in “Good” or better condition dropped in FY 2011, it was still higher than the predicted FY 2011 percentage (81.58).



Source: Center for Transportation Research, University of Texas at Austin.



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Definitions

“Distress,” “Ride Quality” and “Condition” Definitions

Distress refers to various types of pavement deterioration (such as ruts, cracks, potholes/failures and patches). It can be subdivided into “Shallow Distress” and “Deep Distress.”

Shallow Distress refers to distress types which can usually be repaired by surface-type preventive maintenance. “Shallow” distress types are:

Shallow Distress Types, By Pavement Type		
ACP	CRCP	JCP
Shallow Rutting	Spalled Cracks	Failed Joints and Cracks
Patching	Concrete Patches	Concrete Patches
Block Cracking		
Transverse Cracking		

Deep Distress refers to distress types which usually require sub-surface rehabilitation. “Deep” distress types are:

Deep Distress Types, By Pavement Type		
ACP	CRCP	JCP
Deep Rutting	Punchouts	Failures
Failures	Asphalt Patches	Shattered Slabs
Alligator Cracking		Slabs with Longitudinal Cracks
Longitudinal Cracking		

Chapter 4 gives more information about pavement distress types.

Ride Quality refers to the smoothness of the pavement surface.

Condition is a mathematical combination of the “Distress” and “Ride Quality” data that describes perception of pavement quality.

PMIS Score Definitions

Category	Distress Score	Ride Score	Condition Score
	describes “distress”	describes “ride”	describes “condition”
“Very Good”	90 to 100	4.0 to 5.0	90 to 100
“Good”	80 to 89	3.0 to 3.9	70 to 89
“Fair”	70 to 79	2.0 to 2.9	50 to 69
“Poor”	60 to 69	1.0 to 1.9	35 to 49
“Very Poor”	1 to 59	0.1 to 0.9	1 to 34

Please note that a pavement section with Condition Score of 70 or above is considered to be in “Good” or better condition.



History of PMIS Changes (FY 1993-2001)

- FY 1993: PMIS begins (uses 0.5-mile sections, 100 percent IH sample, 50 percent non-IH sample); first estimates of statewide pavement needs (lane miles and dollars).
- FY 1996: First automated rut measurements. PMIS Shallow Rutting and Deep Rutting values increased because the automated equipment was able to “see” ruts that raters missed.
Increased Shallow Rutting and Deep Rutting values; lowered Distress Scores and Condition Scores.
- FY 1997: Automated rut measurements much higher than FY 1996 because of “old” acoustic sensors that had been used in the previous year (sensors replaced every year afterwards because of this problem). Also, beginning of ride quality equipment conversion to laser profiler (IRI) that was completed in FY 1999.
Increased Shallow Rutting and Deep Rutting values; lowered Distress Scores. Conversion to laser profiler lowered Ride Scores. Mixed effect on Condition Scores.
- FY 1998: Second third of ride quality equipment converted to laser profiler (IRI).
Lowered Ride Scores and Condition Scores.
- FY 1999: Remainder of ride quality equipment converted to laser profiler (IRI).
Lowered Ride Scores and Condition Scores.
- FY 2000: CRCP Spalled Cracks definition changed to count only large spalled cracks (3-inch instead of 1-inch); Distress Score weighting factors (“utility values”) changed from percentage spalled to number per mile.
Definition change increased Distress Scores and Condition Scores. Weighting factor change decreased Distress Scores and Condition Scores. Mixed effect on Distress Scores and Condition Scores overall.
- FY 2001: Switch to distress ratings done by contractors; sample increased to 100 percent of all mileage, which raised the actual rating sample to about 95 percent (some mileage is not rated because of construction or other issues); rutting definitions changed (Shallow Rutting changed from $\frac{1}{2}$ -1 inch to $\frac{1}{4}$ - $\frac{1}{2}$ inch, Deep Rutting changed from 1-3 inch to $\frac{1}{2}$ -1 inch; Severe Rutting added as 1-2 inch; Failure Rutting added as greater than 3-inch; rut gap left from 2-3 inch); Texas Transportation Commission proposes statewide pavement condition goal (90 percent “Good” or better in ten years).
Minimal effect on PMIS distress data, Distress Scores and Condition Scores.



History of PMIS Changes (FY 2002-2011)

- FY 2002: Rut gap from 2-3 inches closed, Failure Rutting changed from greater than 3-inch to greater than 2-inch; two- and ten-year district goals established to meet Texas Transportation Commission's statewide pavement condition goal.
Affected Failure Rutting results, but they are not used in PMIS Score definitions, so no effect on Distress Scores or Condition Scores.
- FY 2006: Changed Rutbar dynamic calibration procedure to produce truer "zero" rut depths on concrete at highway speeds, but then subtracted 0.1 inches from each rut depth measurement to reduce effects of signal noise.
Mixed effect on Shallow Rutting and Deep Rutting; minimal effect on Distress Scores and Condition Scores. Calibration procedure produced large increases in Shallow Rutting and Deep Rutting, but subtraction of 0.1 inches from rut depth measurements more or less cancelled out the calibration procedure increases.
- FY 2007: Changed maintenance level of service definition for Rutting to move 1 percent Rutting from the "Acceptable" category to the "Desirable" category to account for sensor "noise" typically observed in the acoustic sensors used to measure Rutting.
No change in PMIS Scores, but increases in the amount of "Acceptable" and "Desirable" Rutting.
- FY 2010: TxDOT certifies all of its laser profilers for use in the statewide smoothness (ride quality) specification.
Slight increase in Ride Scores and Condition Scores.
- FY 2011: No changes.

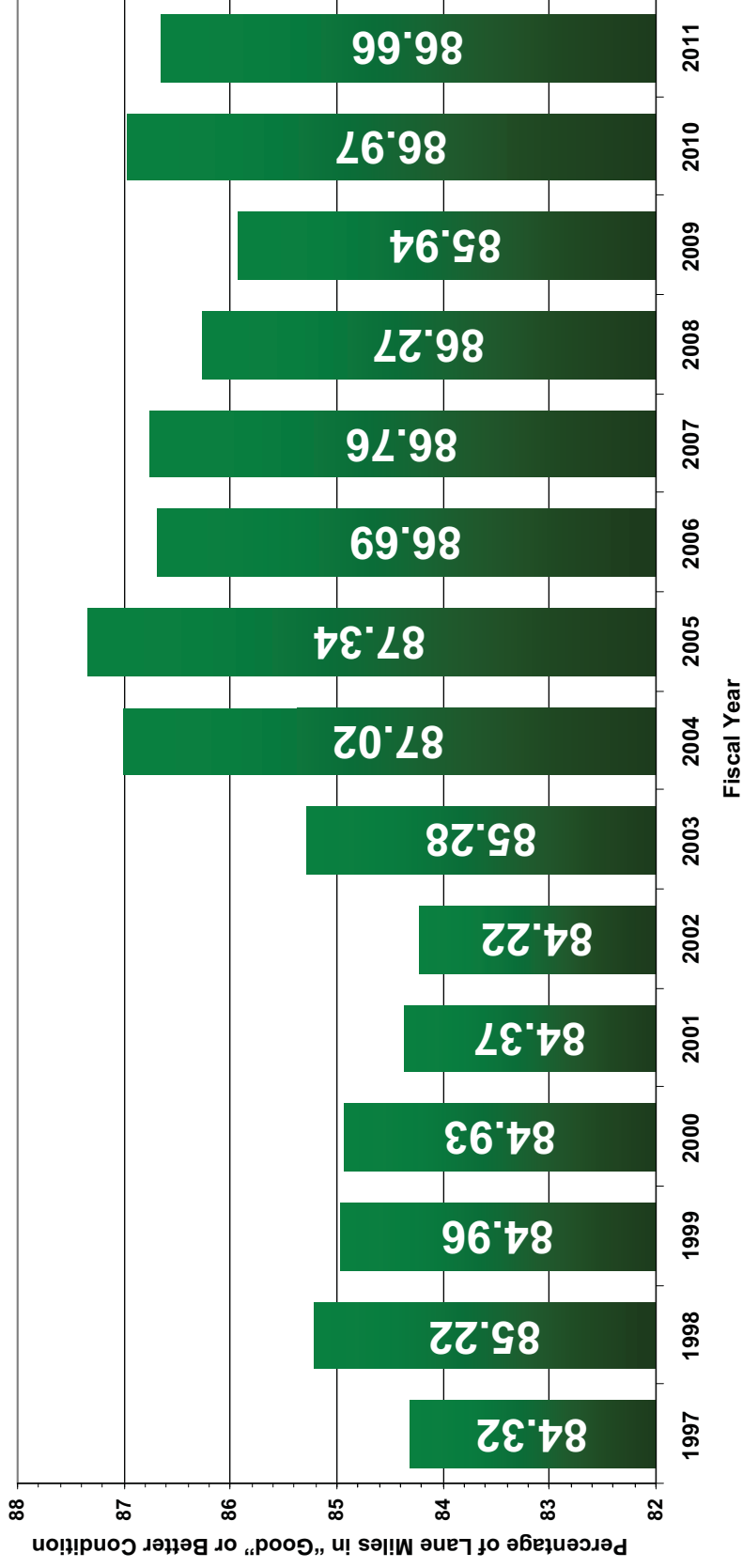


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Chapter 1 — Status of Statewide Pavement Condition Goal

90 Percent of Lane Miles in “Good” or Better Condition by FY 2012

Statewide Pavement Condition, FY 1997-2011 Chart



Chapter 1 — Status of Statewide Pavement Condition Goal

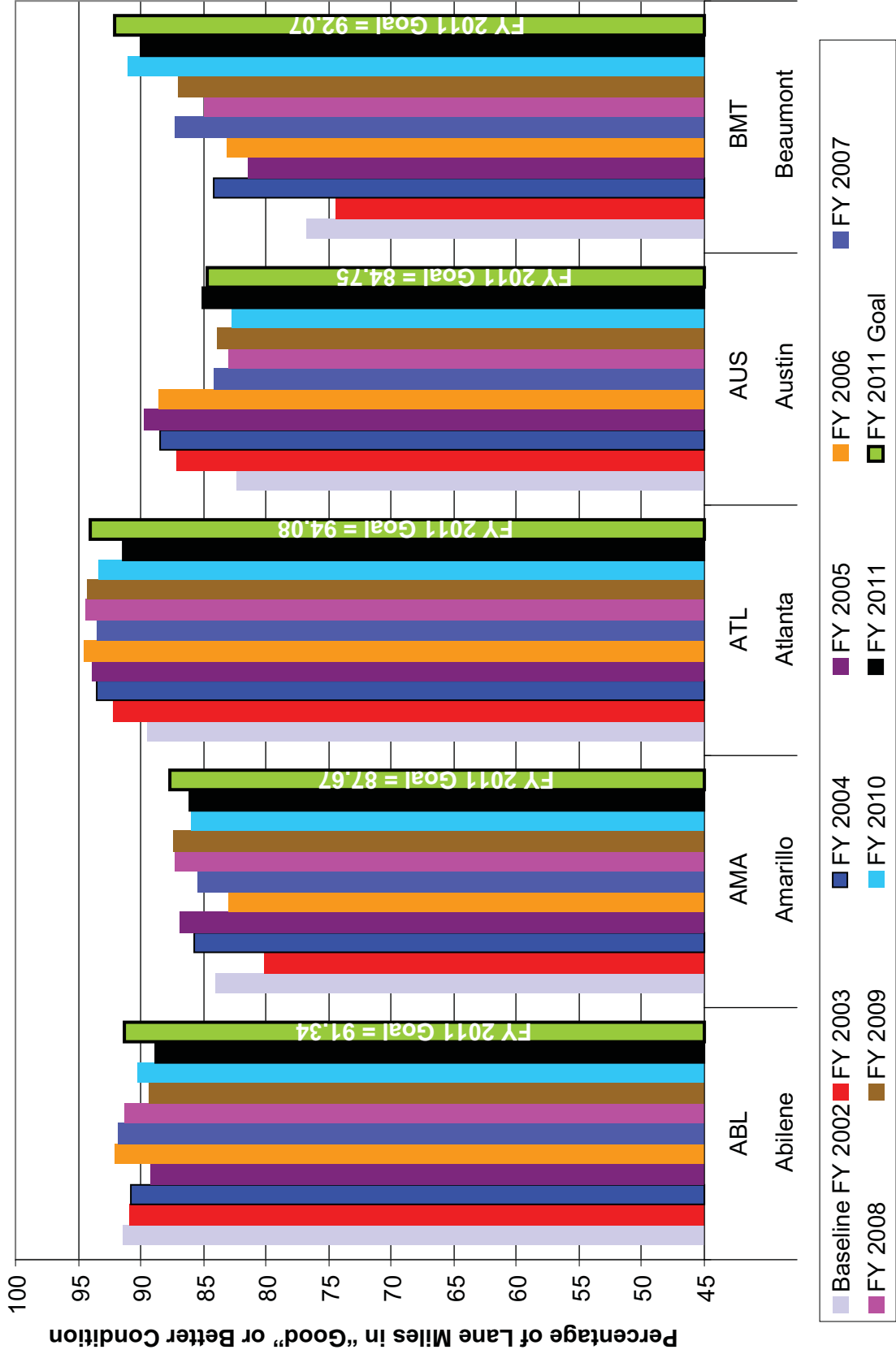
Status of Statewide Pavement Condition Goal, FY 2002-2011 Table

District	Baseline FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2011 Goal	Change FY 2010-2011	FY 2011 Goal Status
Ablilene	91.49	90.87	90.83	89.23	92.09	91.89	91.32	89.31	90.22	88.79	91.34	-1.43	-2.55
Amarillo	84.01	80.17	85.67	86.89	83.02	85.46	87.25	87.41	86.04	86.13	87.67	0.09	-1.54
Atlanta	89.56	92.24	93.48	93.94	94.57	93.57	94.43	94.25	93.35	91.38	94.08	-1.97	-2.70
Austin	82.42	87.10	88.50	89.81	88.62	84.18	83.00	83.95	82.71	85.04	84.75	2.33	0.29
Beaumont	76.83	74.40	84.24	81.47	83.10	87.25	84.93	86.98	91.06	89.97	92.07	-1.09	-2.10
Brownwood	90.98	94.27	95.74	94.28	94.56	93.27	93.21	91.17	93.44	95.34	94.16	1.90	1.18
Bryan	83.36	86.09	84.42	84.50	81.85	86.80	86.10	87.57	86.38	87.49	87.97	1.11	-0.48
Childress	92.95	90.63	90.62	92.17	91.33	92.59	91.69	91.48	89.53	87.67	90.73	-1.86	-3.06
Corpus Christi	80.01	81.14	82.24	78.15	81.48	80.68	82.02	83.57	81.58	83.15	83.76	1.57	-0.61
Dallas	63.55	72.62	76.14	77.53	71.93	74.48	70.74	75.27	78.31	76.13	80.89	-2.18	-4.76
El Paso	84.66	85.03	87.99	83.36	83.76	90.17	87.12	87.35	89.01	90.54	90.27	1.53	0.27
Fort Worth	86.84	85.81	85.41	84.75	85.50	83.41	83.01	81.44	85.52	86.70	87.21	1.18	-0.51
Houston	75.14	73.82	73.51	77.54	77.93	80.14	79.71	75.80	76.01	75.09	76.87	-0.92	-3.78
Laredo	82.73	80.42	83.43	83.30	84.60	86.89	85.37	85.37	85.69	74.64	87.36	-11.05	-12.72
Lubbock	84.18	86.13	88.68	89.82	90.03	91.39	88.83	86.40	87.36	86.40	88.83	-0.96	-2.43
Lufkin	83.12	85.99	86.21	87.25	88.65	88.26	88.94	87.87	89.30	88.62	90.53	-0.68	-1.91
Odessa	94.96	96.15	95.04	95.55	94.83	96.15	94.15	93.33	93.33	94.14	94.06	0.81	0.08
Paris	76.57	82.24	86.07	85.60	85.11	77.26	72.68	74.92	80.60	82.68	82.90	2.08	-0.22
Pharr	89.44	90.66	90.26	88.43	87.93	83.77	80.95	80.38	84.07	82.64	85.94	-1.43	-3.30
San Angelo	92.35	94.10	95.27	95.93	96.42	94.89	94.63	94.58	95.23	95.11	95.73	-0.12	-0.62
San Antonio	83.69	84.94	83.64	82.98	85.08	81.76	87.27	83.03	84.82	86.51	86.60	1.69	-0.09
Tyler	85.18	81.34	88.75	90.88	86.17	89.91	86.33	92.28	93.85	94.77	94.52	0.92	0.25
Waco	88.13	87.98	90.14	91.55	92.04	90.90	90.95	86.72	87.54	85.95	86.99	-1.59	-3.04
Wichita Falls	87.59	90.39	91.05	93.00	90.38	91.76	93.40	92.98	93.18	92.60	93.93	-0.58	-1.33
Yoakum	83.51	85.31	87.88	90.54	83.81	81.94	86.03	86.08	87.86	88.17	89.27	0.31	-1.10
Statewide ALL	84.22	85.28	87.02	87.34	86.69	86.76	86.27	85.94	86.97	86.66	88.49	-0.31	-1.83

Notes: "Good or better condition" is Pavement Management Information System (PMIS) Condition Score greater than or equal to 70.

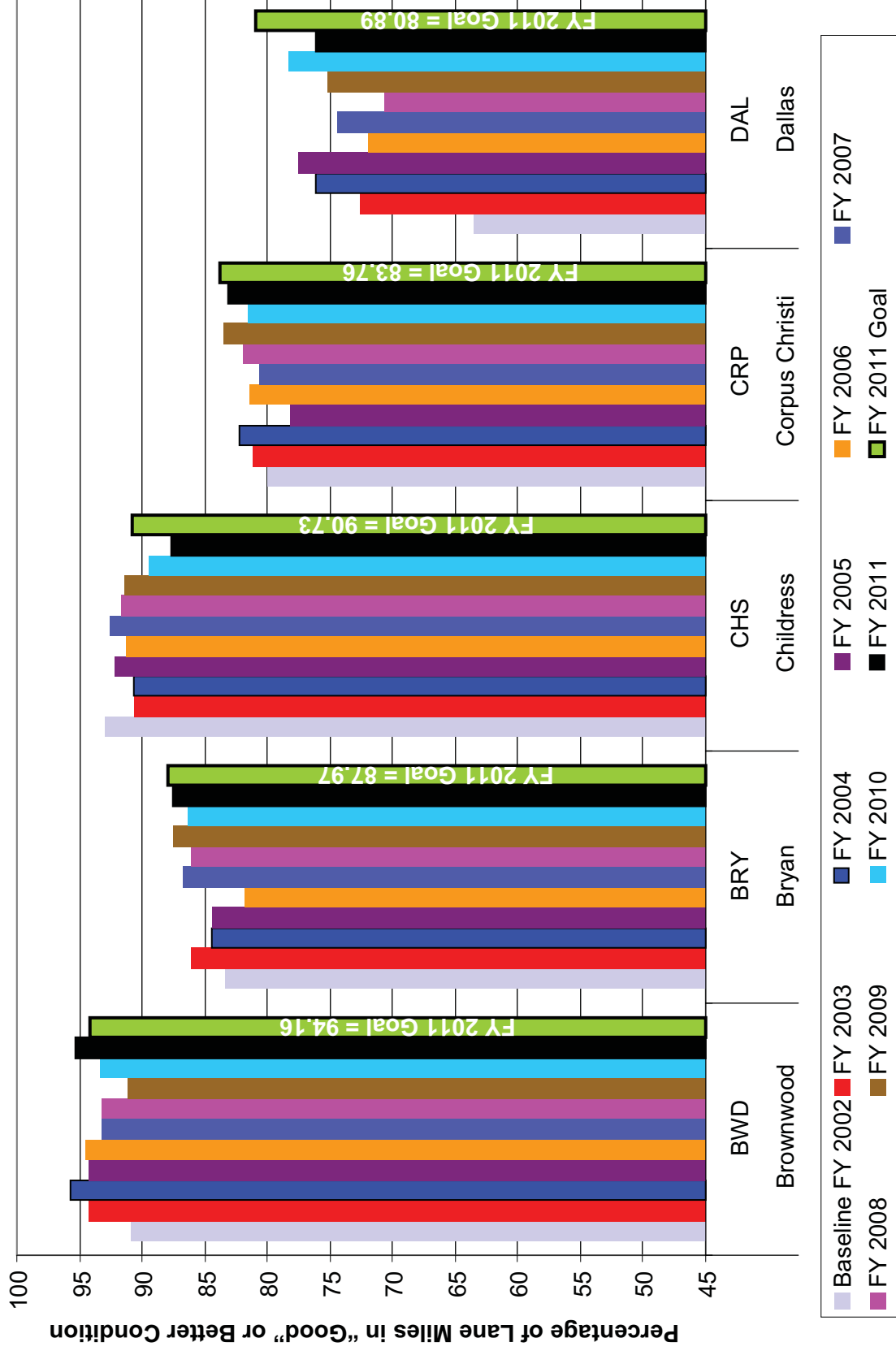
Chapter 1 — Status of Statewide Pavement Condition Goal

Pavement Condition Trends, by District, FY 2002-2011
(Abilene through Beaumont)



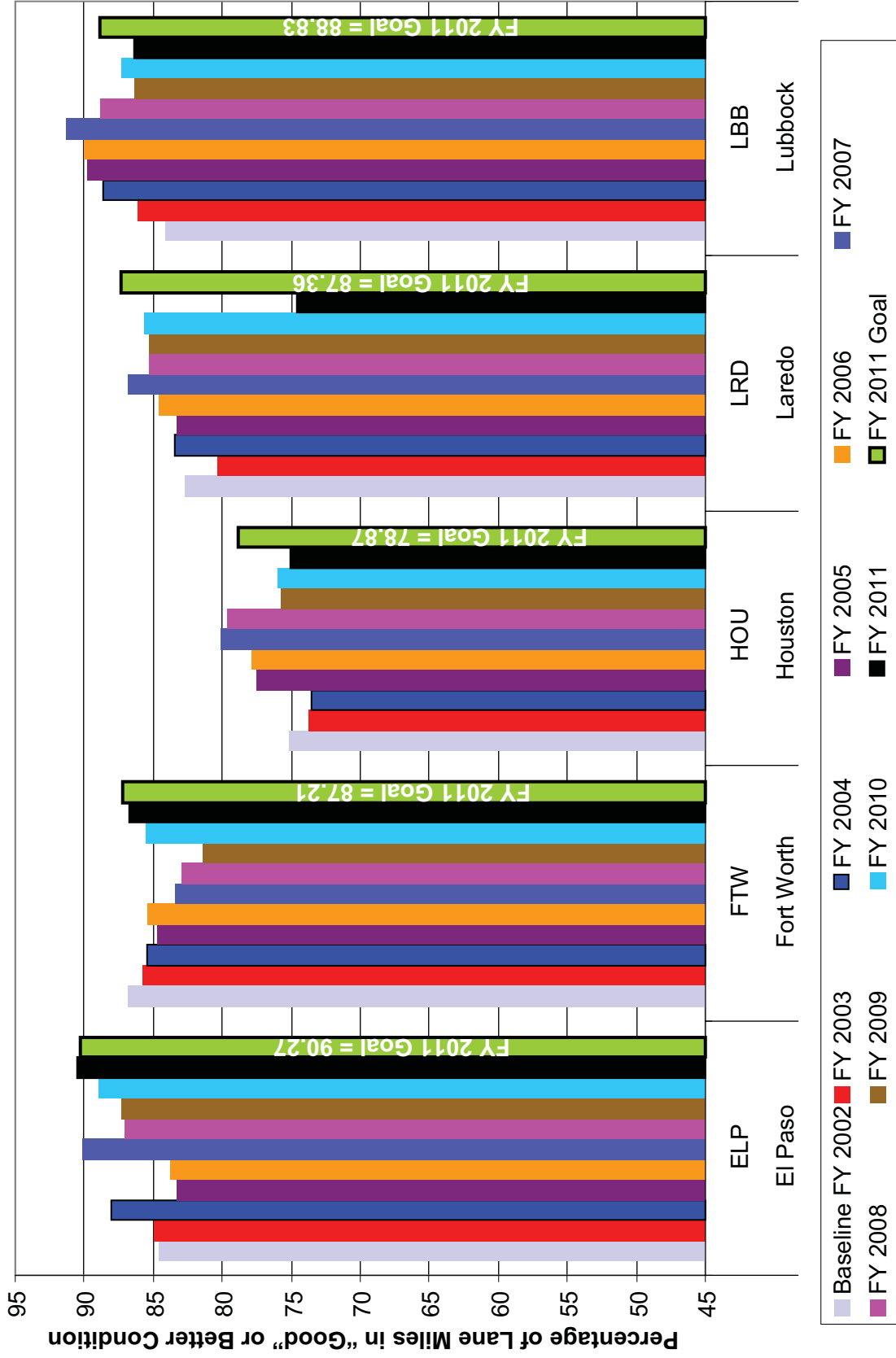
Chapter 1 — Status of Statewide Pavement Condition Goal

Pavement Condition Trends, by District, FY 2002-2011
(Brownwood through Dallas)



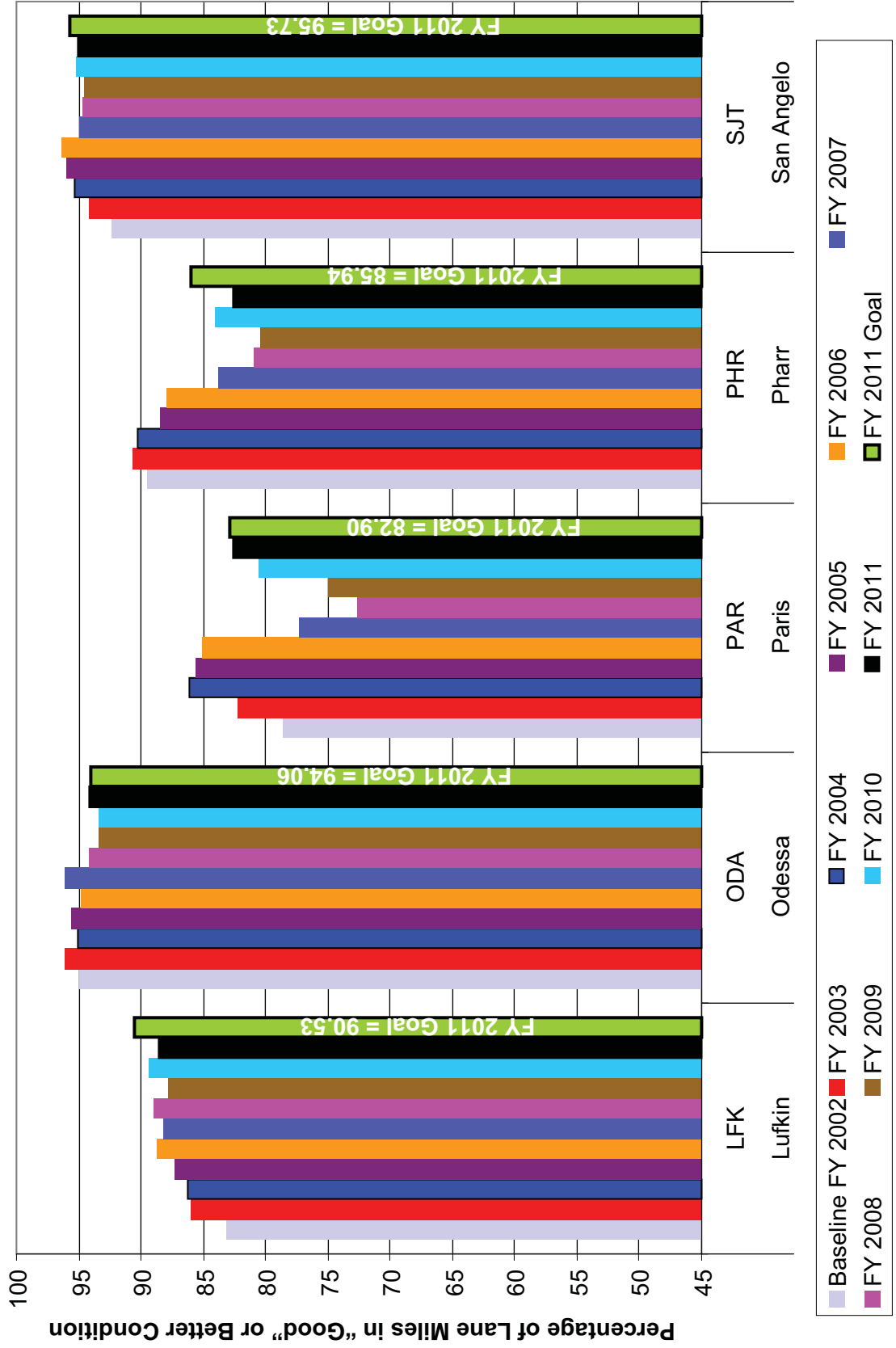
Chapter 1 — Status of Statewide Pavement Condition Goal

Pavement Condition Trends, by District, FY 2002-2011
(El Paso through Lubbock)



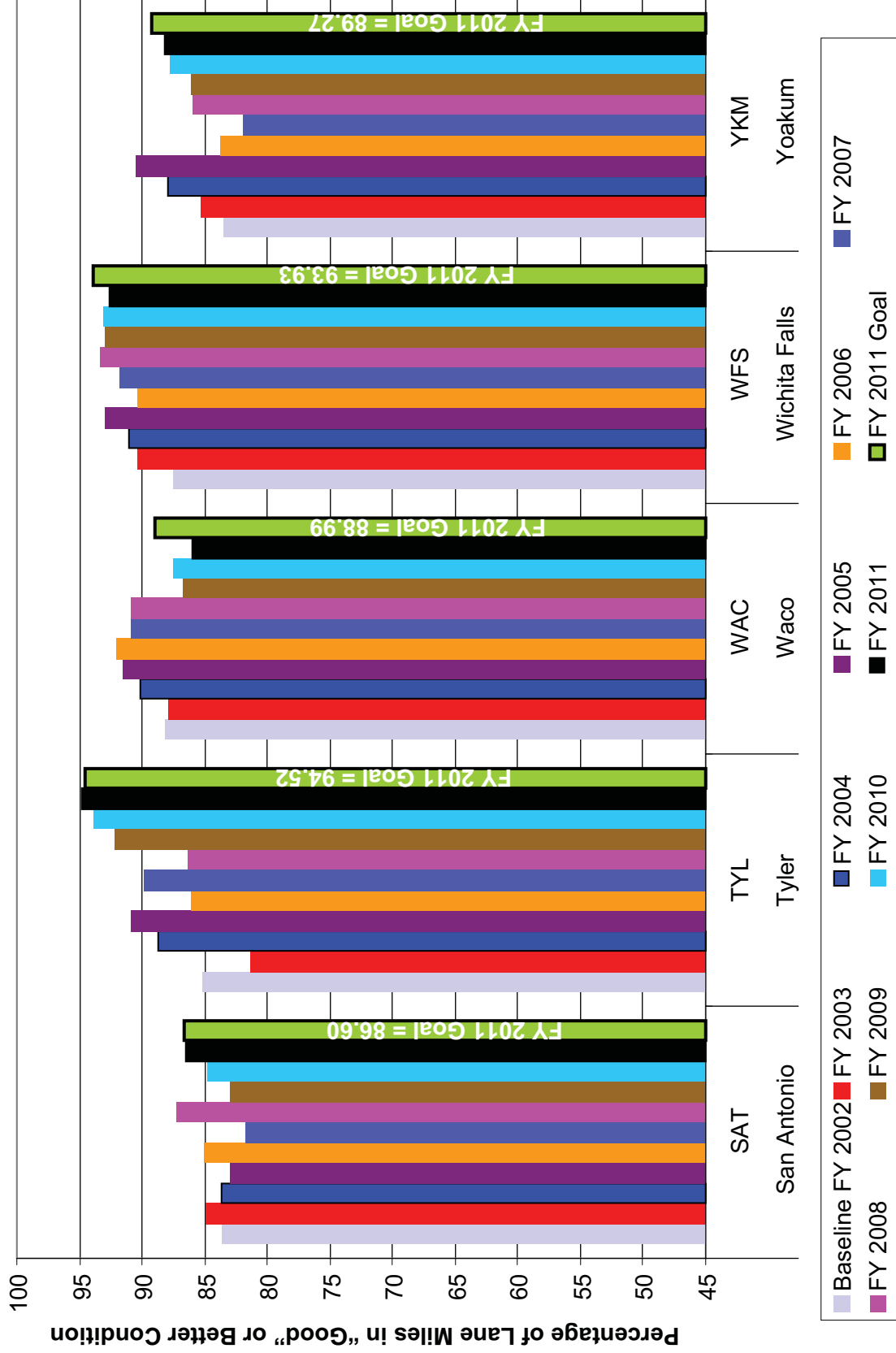
Chapter 1 — Status of Statewide Pavement Condition Goal

Pavement Condition Trends, by District, FY 2002-2011
(Lufkin through San Angelo)



Chapter 1 — Status of Statewide Pavement Condition Goal

Pavement Condition Trends, by District, FY 2002-2010
(San Antonio through Yoakum)





The longest highway in Texas is U.S. 83. It extends from the Oklahoma state line in the Panhandle near Perryton to the Mexico border at Brownsville, 889 miles away.

Chapter 2 — Substandard Condition Scores



This chapter contains the FY 2008-2011 summary version of the Substandard Condition Reports that were used in previous *Status of Statewide Pavement Condition Goal* reports. The summary reports show distress types, in order of importance, that need to be fixed to increase the percentage of lane miles in “good” or better condition.

PMIS Condition Score of 70 or above is the “good or better condition” standard established by the Texas Transportation Commission in August 2001. We have 86.66 percent of pavements meeting this standard in FY 2011. In order to meet the Commission’s goal to have 90 percent of Texas pavements in “Good” or better condition by FY 2012, the next step is to identify sections with distresses that need to be fixed. The summary version of the Substandard Condition report is created to serve this purpose.

The Substandard Condition report can appear overly complex at first glance. Therefore a brief explanation is given below.

A pavement section can have a PMIS Condition Score less than 70 because of too much distress or too much roughness or both. For example, an ACP section can have too much Deep Rutting or too many Failures; a CRCP section can have too many Punchouts; or a JCP section can be too rough. Each pavement distress type (and ride quality) has weighting factors which lower the Condition Score as the distress or ride quality worsens.

These weighting factors are known as “utility values” in PMIS. “Utility” may be thought of as the value of the service provided by the pavement in use with a particular level of damage. PMIS utility values range from 0.0 (least valuable) to 1.0 (most valuable). All other things being equal, whenever the utility value for one distress type or ride quality on a PMIS section drops below 0.7, that section will have a Condition Score below 70 and thus fall below the “good or better condition” standard.

The simplest approach is to search for any PMIS section that has a single distress type or ride quality utility value below 0.7. “Fixing” that distress type or ride quality will raise the PMIS section’s Condition Score above 70 and thus make progress towards the 90 percent goal. Fixing enough of these sections statewide (or in a district) will meet the pavement condition goal.

It is possible for a PMIS section to have multiple distress types – none of which have utility values below 0.7 – that combine to drop the Condition Score below 70. These reports do not consider “fixing” these sections. Usually these sections are less than 10 percent of the total lane mileage, so the “90 percent good or better” goal can be met without fixing those sections.

PMIS Condition Scores are also influenced by traffic and speed limit, so those factors must be considered when estimating funding needs. It typically takes more expensive treatments to repair distress or ride quality under high traffic because of the increased traffic loading.

These detailed reports are developed using the simplest approach to show the distress types and their lane mileages that need to be fixed to increase the percentage of lane miles in “good” or better condition.

Chapter 2 — Substandard Condition Scores

Texas Department of Transportation Pavement Management Information System (PMIS)

Statewide FY2008 PMIS Substandard Condition Scores (Less Than 70)

Highway Systems: All
 Mainlane Roadbeds:
 All Roadbeds: IH, US, SH, BR, FM, PR, PA
 Construction Project Limits Used: No
 ACP Patching Used: Yes
 Federal Funding: Both Eligible and Ineligible
 Rating Cycle: Annual

Utility	Overall Utility Average	Substandard Utility (<0.70) Lane Miles	Traffic Utility Average (ADT * Speed Limit)			Highway Systems Utility Average						
			1-27,500 LOW	27,501-165,000 MEDIUM	> 165,000 HIGH	IH	US	SH	BR	FM	PR	PA
			ACP Ride	81.98	6,186.1	89.56	83.29	78.20	85.34	86.06	80.25	69.38
JCP Ride	53.58	1,444.3	83.96	62.48	51.76	58.47	55.85	51.28	59.52	44.34		64.58
ACP Patching	87.90	4,919.3	83.86	85.91	90.75	90.19	86.00	90.42	95.15	86.63	94.06	87.33
ACP Alligator Cracking	89.88	3,661.0	91.86	91.76	87.89	90.40	87.60	88.07	90.12	91.41	93.29	100.00
CRCP Ride	67.18	1,055.9	87.90	72.94	66.70	71.08	64.87	63.29	74.41	63.49		71.48
ACP Failures	92.69	3,185.8	87.78	91.95	95.07	89.00	95.33	94.57	95.44	91.29	96.55	100.00
CRCP Portland Concrete Patching	79.87	644.7	68.50	73.97	80.28	74.18	81.16	87.68	54.79	83.85		87.36
JCP Portland Concrete Patching	78.94	570.3	85.11	77.14	78.93	81.23	77.89	75.68	83.99	88.58		100.00
ACP Longitudinal Cracking	96.31	817.8	98.64	98.18	94.20	93.33	95.04	94.72	92.94	98.27	97.95	99.71
JCP Failures	88.35	254.0	61.57	78.04	90.20	86.72	89.53	86.60	93.61	94.62		100.00
CRCP Punchouts	91.31	200.4	79.48	84.55	91.77	89.80	92.52	93.54	100.00	87.53		91.72
ACP Block Cracking	99.10	342.7	99.76	99.36	98.68	98.40	98.68	98.85	98.04	99.59	99.15	100.00
ACP Transverse Cracking	98.86	138.3	99.53	98.96	98.53	98.39	98.33	98.30	97.12	99.51	99.62	100.00
CRCP Spalled Cracks	98.01	38.9	94.87	96.34	98.12	98.84	98.07	97.16	100.00	95.84		100.00
CRCP Asphalt Concrete Patching	98.68	35.7	97.00	96.84	98.79	99.30	98.21	97.89	100.00	99.42		90.04
JCP Failed Joints & Cracks	98.32	11.0	96.16	97.26	98.50	98.69	97.38	98.48	99.64	98.97		100.00
ACP Deep Rutting	99.47	33.4	99.22	99.25	99.71	99.57	99.41	99.68	99.94	99.36	99.84	100.00
ACP Shallow Rutting	98.75	0.0	98.72	98.38	99.00	98.74	98.81	98.82	99.32	98.66	99.10	100.00
JCP Longitudinal Cracks	99.65	0.0	99.58	99.30	99.68	99.32	99.80	99.63	99.99	99.95		100.00
JCP Shattered Slabs	99.99	0.0	100.00	99.96	99.99	99.98	99.97	100.00	100.00	100.00		100.00

Pavement Type	Lane Miles				Percent Substandard
	Rated		Substandard		
Asphalt Concrete	170,722.7	92.30%	21,750.9	85.64%	12.74%
Continuously Reinforced Concrete	10,403.9	5.62%	1,840.8	7.25%	17.69%
Jointed Concrete	3,844.4	2.08%	1,805.7	7.11%	46.97%
Total:	184,971.0		25,397.4		13.73%

86.27 Percent of Lane Miles in "Good" or Better Condition

Average includes all lane miles with Condition Scores below 70.

Substandard Utility Lane Miles are totaled lane miles of PMIS sections that have Condition Scores below 70 and a utility value less than 0.70.

Chapter 2 — Substandard Condition Scores



Texas Department of Transportation Pavement Management Information System (PMIS)

Statewide FY2009 PMIS Substandard Condition Scores (Less Than 70)

Highway Systems: All
 Mainlane Roadbeds:
 All Roadbeds: IH, US, SH, BR, FM, PR, PA
 Construction Project Limits Used: No
 ACP Patching Used: Yes
 Federal Funding: Both Eligible and Ineligible
 Rating Cycle: Annual

Utility	Overall Utility Average	Substandard Utility (<0.70) Lane Miles	Traffic Utility Average (ADT * Speed Limit)			Highway Systems Utility Average						
			1-27,500	27,501-165,000	> 165,000	IH	US	SH	BR	FM	PR	PA
			LOW	MEDIUM	HIGH							
ACP Ride	84.02	5,764.9	90.47	85.27	80.53	85.93	88.81	82.64	70.19	83.41	70.21	51.48
ACP Patching	87.64	5,362.5	83.88	85.67	90.46	88.63	86.24	89.14	95.94	86.81	94.07	100.00
JCP Ride	53.51	1,318.5	84.01	66.46	51.45	61.97	52.11	51.00	60.74	48.43		
ACP Alligator Cracking	88.78	4,471.6	90.03	90.37	87.25	92.31	86.30	86.95	88.96	89.86	90.15	100.00
CRCP Ride	70.28	976.0	95.28	74.19	69.91	75.12	69.87	64.26	71.19	67.26		66.91
ACP Failures	92.17	3,657.1	88.00	91.04	94.62	89.61	95.39	94.69	95.70	90.11	90.04	100.00
CRCP Portland Concrete Patching	79.17	693.3	57.97	73.98	79.58	73.62	80.05	86.90	64.92	81.22		82.31
JCP Portland Concrete Patching	79.35	526.3	81.60	70.55	80.18	79.77	78.27	76.35	84.03	92.22		
ACP Longitudinal Cracking	96.12	843.0	98.75	97.67	94.04	93.32	93.69	95.15	92.96	98.13	97.55	98.89
JCP Failures	88.95	225.6	68.73	83.08	90.04	87.32	88.26	88.65	91.47	94.32		
CRCP Punchouts	92.22	191.5	76.06	84.85	92.73	91.31	92.11	92.95	100.00	93.32		88.40
ACP Block Cracking	99.06	415.2	99.62	99.52	98.54	99.12	98.55	98.74	96.72	99.54	99.54	100.00
CRCP Asphalt Concrete Patching	98.02	57.9	90.35	97.60	98.09	98.59	96.13	98.12	96.27	99.43		86.06
CRCP Spalled Cracks	97.42	42.2	92.21	92.78	97.71	98.12	98.28	96.25	100.00	95.50		100.00
ACP Transverse Cracking	99.00	58.3	99.61	99.14	98.66	98.64	98.45	98.56	97.48	99.55	99.46	100.00
JCP Failed Joints & Cracks	97.84	23.6	89.68	97.23	98.11	97.92	97.97	97.22	99.03	99.59		
ACP Deep Rutting	99.60	49.6	99.59	99.51	99.66	99.59	99.41	99.79	99.82	99.58	99.92	100.00
ACP Shallow Rutting	99.22	0.0	99.19	99.10	99.31	99.24	99.08	99.33	99.16	99.23	99.73	99.24
JCP Longitudinal Cracks	99.62	0.0	99.09	99.03	99.70	99.08	99.82	99.71	99.82	99.80		
JCP Shattered Slabs	100.00	0.0	100.00	99.95	100.00	99.98	100.00	100.00	100.00	100.00		

Pavement Type	Lane Miles				Percent Substandard
	Rated		Substandard		
Asphalt Concrete	172,223.1	92.01%	22,731.9	86.38%	13.20%
Continuously Reinforced Concrete	11,233.6	6.00%	1,873.7	7.12%	16.68%
Jointed Concrete	3,721.9	1.99%	1,711.7	6.50%	45.99%
Total:	187,178.6		26,317.3		14.06%

85.94 Percent of Lane Miles in "Good" or Better Condition

Average includes all lane miles with Condition Scores below 70.

Substandard Utility Lane Miles are totaled lane miles of PMIS sections that have Condition Scores below 70 and a utility value less than 0.70.

Chapter 2 — Substandard Condition Scores

Texas Department of Transportation Pavement Management Information System (PMIS)

Statewide FY2010 PMIS Substandard Condition Scores (Less Than 70)

Highway Systems: All
 Mainlane Roadbeds:
 All Roadbeds: IH, US, SH, BR, FM, PR, PA
 Construction Project Limits Used: No
 ACP Patching Used: Yes
 Federal Funding: Both Eligible and Ineligible
 Rating Cycle: Annual

Utility	Overall Utility Average	Substandard Utility (<0.70) Lane Miles	Traffic Utility Average (ADT * Speed Limit)			Highway Systems Utility Average						
			1-27,500 LOW	27,501-165,000 MEDIUM	> 165,000 HIGH	IH	US	SH	BR	FM	PR	PA
ACP Patching	86.53	5,690.6	83.03	84.95	89.08	86.64	83.98	89.08	95.61	85.78	94.99	99.34
ACP Ride	85.84	4,711.9	91.33	86.72	82.89	88.81	90.37	84.35	72.85	85.05	69.36	92.79
ACP Alligator Cracking	88.49	4,377.3	90.98	89.69	86.62	93.28	87.62	85.66	87.87	89.22	91.25	84.42
JCP Ride	59.43	1,091.6	89.54	69.68	57.38	64.46	60.25	57.73	63.39	49.95		
CRCP Ride	71.59	867.2	93.98	76.22	71.15	76.02	73.32	65.84	50.66	65.99		
ACP Failures	93.74	2,714.7	89.53	92.81	96.17	92.93	96.13	95.27	96.96	91.98	94.69	80.46
JCP Portland Concrete Patching	76.15	559.5	91.66	70.52	76.34	78.31	73.12	74.11	82.02	86.57		
CRCP Portland Concrete Patching	79.81	639.8	74.23	71.46	80.31	74.52	79.40	88.30	93.69	79.27		
ACP Longitudinal Cracking	95.88	935.6	98.33	97.29	93.89	92.37	93.70	95.24	91.94	98.01	97.01	82.51
JCP Failures	86.46	264.0	51.83	80.10	88.21	83.84	89.26	85.05	84.04	93.10		
CRCP Punchouts	91.58	202.8	76.47	86.98	91.96	91.14	91.26	91.71	95.91	93.66		
ACP Block Cracking	98.85	460.0	99.56	99.17	98.34	98.47	98.63	98.04	96.94	99.50	99.68	100.00
CRCP Asphalt Concrete Patching	96.27	98.9	92.84	97.29	96.25	95.61	95.55	96.81	96.54	99.81		
ACP Transverse Cracking	99.02	71.6	99.54	99.17	98.70	98.36	98.55	98.65	97.41	99.61	99.99	100.00
JCP Failed Joints & Cracks	98.11	12.2	90.38	97.38	98.42	98.03	97.79	97.98	99.46	99.43		
CRCP Spalled Cracks	98.48	14.9	96.67	95.81	98.63	98.65	99.17	97.67	100.00	98.63		
ACP Deep Rutting	99.72	12.8	99.62	99.61	99.83	99.65	99.93	99.79	99.91	99.59	99.99	100.00
JCP Shattered Slabs	99.97	0.2	99.71	99.93	99.98	99.94	100.00	100.00	99.51	100.00		
ACP Shallow Rutting	99.36	0.0	99.38	99.23	99.43	99.13	99.53	99.38	99.63	99.29	99.87	100.00
JCP Longitudinal Cracks	99.49	0.0	99.03	98.96	99.57	99.12	99.65	99.59	99.43	99.64		

Pavement Type	Lane Miles		Substandard	Percent Substandard
	Rated	Substandard		
Asphalt Concrete	174,691.6	91.75%	21,479.1	86.57%
Continuously Reinforced Concrete	11,920.6	6.26%	1,765.3	7.12%
Jointed Concrete	3,783.3	1.99%	1,566.0	6.31%
Total:	190,395.5		24,810.4	13.03%

86.97 Percent of Lane Miles in "Good" or Better Condition

Average includes all lane miles with Condition Scores below 70.

Substandard Utility Lane Miles are totaled lane miles of PMIS section that have Condition Scores below 70 and a utility value less than 0.70.

Chapter 2 — Substandard Condition Scores



Texas Department of Transportation Pavement Management Information System (PMIS)

Statewide FY2011 PMIS Substandard Condition Scores (Less Than 70)

Highway Systems: All
 Mainlane Roadbeds:
 All Roadbeds: IH, US, SH, BR, FM, PR, PA
 Construction Project Limits Used: No
 ACP Patching Used: Yes
 Federal Funding: Both Eligible and Ineligible
 Rating Cycle: Annual

Utility	Overall Utility Average	Substandard Utility (<0.70) Lane Miles	Traffic Utility Average (ADT * Speed Limit)			Highway Systems Utility Average						
			1-27,500 LOW	27,501-165,000 MEDIUM	> 165,000 HIGH	IH	US	SH	BR	FM	PR	PA
ACP Patching	86.51	5,874.0	82.95	84.68	89.50	88.23	84.13	88.24	95.94	85.73	92.73	100.00
ACP Ride	85.10	5,134.4	91.78	86.38	80.91	87.67	88.69	83.51	70.80	84.96	73.26	49.98
JCP Ride	56.36	1,173.5	90.63	63.92	54.45	62.83	57.51	54.20	53.46	47.18		47.80
ACP Alligator Cracking	89.45	3,950.3	92.03	90.21	87.65	92.29	87.58	87.67	88.65	90.47	92.35	99.78
CRCP Ride	67.67	1,085.9	80.20	75.51	67.21	72.35	66.25	62.60	63.04	65.18		53.07
ACP Failures	93.16	3,031.4	87.06	92.61	96.60	89.93	97.34	96.01	96.07	90.67	93.00	100.00
CRCP Portland Concrete Patching	80.58	704.2	73.61	66.77	81.26	75.14	81.10	88.26	84.50	79.20		100.00
JCP Portland Concrete Patching	77.65	534.2	87.03	71.67	78.07	78.21	75.42	75.49	88.18	87.58		100.00
ACP Longitudinal Cracking	95.95	865.5	98.73	97.69	93.41	92.58	94.31	94.49	93.18	98.01	96.70	92.55
JCP Failures	87.83	230.8	51.21	83.24	89.47	84.83	88.70	88.18	86.24	92.21		100.00
CRCP Punchouts	92.58	189.0	92.34	85.69	92.90	91.36	94.31	92.79	95.87	93.32		100.00
ACP Block Cracking	98.87	446.6	99.62	98.91	98.47	98.66	98.39	98.48	95.39	99.50	99.21	100.00
CRCP Asphalt Concrete Patching	98.09	57.5	91.52	100.00	98.05	98.39	98.31	97.00	100.00	100.00		100.00
ACP Transverse Cracking	99.02	58.3	99.43	99.15	98.73	98.62	98.67	98.64	97.36	99.50	99.92	100.00
CRCP Spalled Cracks	98.38	27.4	95.07	94.63	98.57	98.28	99.15	97.97	99.95	97.95		100.00
ACP Deep Rutting	99.67	57.2	99.41	99.54	99.88	99.90	99.87	99.78	99.97	99.47	99.99	100.00
JCP Failed Joints & Cracks	98.24	7.3	93.27	97.31	98.50	98.43	98.00	97.85	99.48	99.68		100.00
JCP Longitudinal Cracks	99.45	0.6	99.09	98.90	99.53	98.79	99.65	99.68	99.66	99.57		100.00
ACP Shallow Rutting	99.49	0.0	99.35	99.41	99.62	99.73	99.58	99.59	99.49	99.37	99.78	100.00
JCP Shattered Slabs	100.00	0.0	99.96	99.98	100.00	100.00	99.99	100.00	100.00	100.00		100.00

Pavement Type	Lane Miles		Substandard	Percent Substandard
	Rated	Substandard		
Asphalt Concrete	174,344.5	91.39%	21,879.1	86.00%
Continuously Reinforced Concrete	12,715.0	6.67%	1,969.8	7.74%
Jointed Concrete	3,699.9	1.94%	1,591.9	6.26%
Total:	190,759.4		25,440.8	13.34%

86.66 Percent of Lane Miles in "Good" or Better Condition

Average includes all lane miles with Condition Scores below 70.

Substandard Utility Lane Miles are totaled lane miles of PMIS sections that have Condition Scores below 70 and a utility value less than 0.70.



On January 20, 1974, the maximum speed limit in Texas was reduced to 55 mph. About 17,200 signs were changed at a cost of about \$621,000. In December 1995, the speed limit returned to 70 mph, costing TxDOT about \$8 million.

Chapter 3 — PMIS Score Trends



This chapter shows FY 2008-2011 statewide trends for PMIS Scores using two methods:

Percentage of Lane Miles “Good” or Better

This method shows the percentage of Texas lane miles above an arbitrary “Good” value. This is basically a “pass/fail” value – it does not describe how far the mileage is above “passing” or below “failing.”

For example, in FY 2011, **86.66 percent** of Texas lane miles were in “Good” or better condition – that is, had a PMIS Condition Score of 70 or above. However, all of that mileage could have had Condition Score of 70 or 100, and the percentage (86.66 percent) would have been the same.

This is the method used in the statewide pavement condition goal (90 percent of lane miles in “Good” or better condition).

PMIS Score Classes

This method shows how Texas lane miles fall within the range of a PMIS Score value. For example, PMIS Condition Score ranges from 1 (worst) to 100 (best), but all mileage does not have the same value. The PMIS Score Classes method defines five “classes” for each PMIS Score – as shown in the tables below – and then shows the percentage of Texas lane miles that fall within each class.

In FY 2011, the percentage of lane miles in the “Very Good” (90 to 100) Condition Score class decreased, while the percentage of lane miles in all other Condition Score classes increased. The increase of Condition Score classes in “Fair” to “Very Poor” dragged down the statewide percentage of lane miles in “Good” or better condition.

Category	Distress Score	Ride Score	Condition Score
	describes “distress”	describes “ride”	describes “condition”
“Very Good”	90 to 100	4.0 to 5.0	90 to 100
“Good”	80 to 89	3.0 to 3.9	70 to 89
“Fair”	70 to 79	2.0 to 2.9	50 to 69
“Poor”	60 to 69	1.0 to 1.9	35 to 49
“Very Poor”	1 to 59	0.1 to 0.9	1 to 34

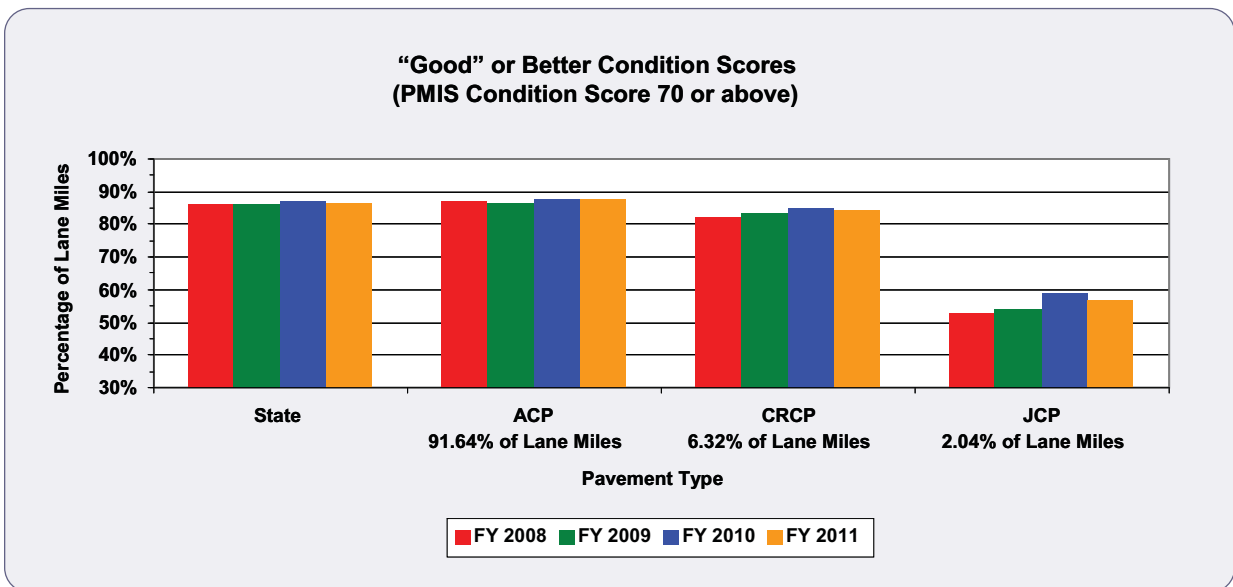
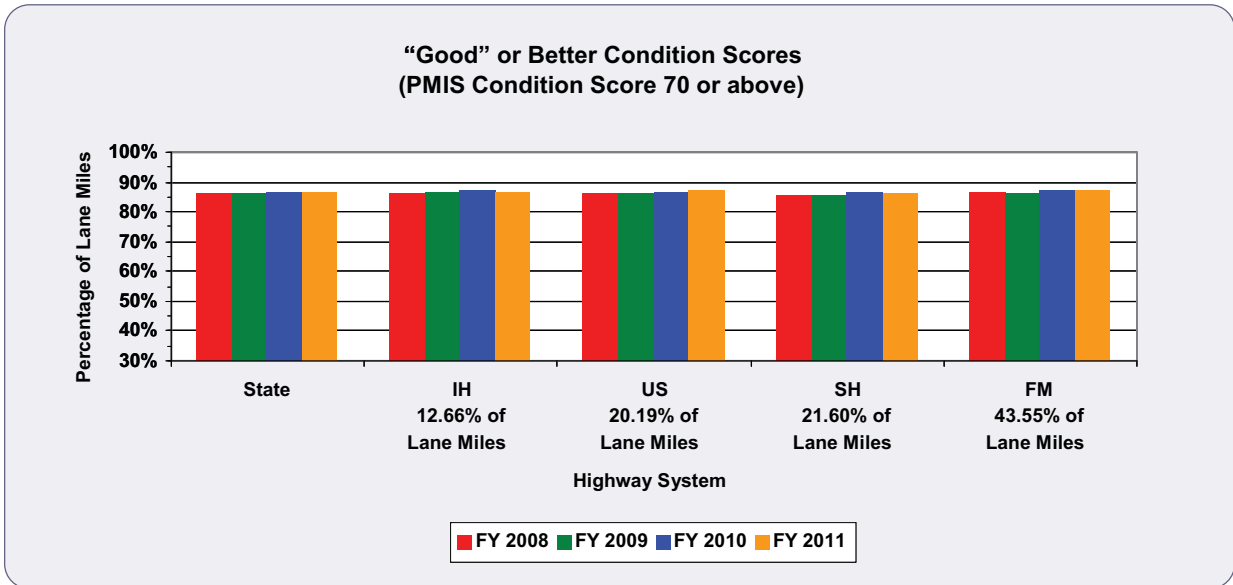
Category	Distress Score	Shallow Distress Score	Deep Distress Score
	describes “distress”	describes need for surface repair	describes need for sub-surface repair
“Very Good”	90 to 100	90 to 100	90 to 100
“Good”	80 to 89	80 to 89	80 to 89
“Fair”	70 to 79	70 to 79	70 to 79
“Poor”	60 to 69	60 to 69	60 to 69
“Very Poor”	1 to 59	1 to 59	1 to 59

Chapter 3 — PMIS Score Trends

Pavement Condition (Condition Scores)

Percentage of Lane Miles “Good” or Better – PMIS Condition Score 70 or above

Fiscal Year	Percentage of Lane Miles With “Good” or Better Condition Scores										
	State	IH	US	SH	FM	ACP	CRCP	JCP	IH ACP	IH CRCP	IH JCP
2008	86.27%	86.31%	86.28%	85.79%	86.99%	87.26%	82.31%	53.03%	88.87%	81.88%	62.67%
2009	85.94%	87.01%	86.28%	85.60%	86.16%	86.80%	83.32%	54.01%	89.16%	83.74%	67.06%
2010	86.97%	87.10%	86.93%	86.70%	87.58%	87.70%	85.19%	58.61%	89.34%	84.08%	65.42%
2011	86.66%	86.92%	87.07%	86.32%	87.05%	87.45%	84.51%	56.97%	89.14%	84.19%	64.03%
2010 - 2011 Change	-0.31%	-0.18%	+0.14%	-0.38%	-0.53%	-0.25%	-0.68%	-1.64%	-0.20%	+0.11%	-1.39%



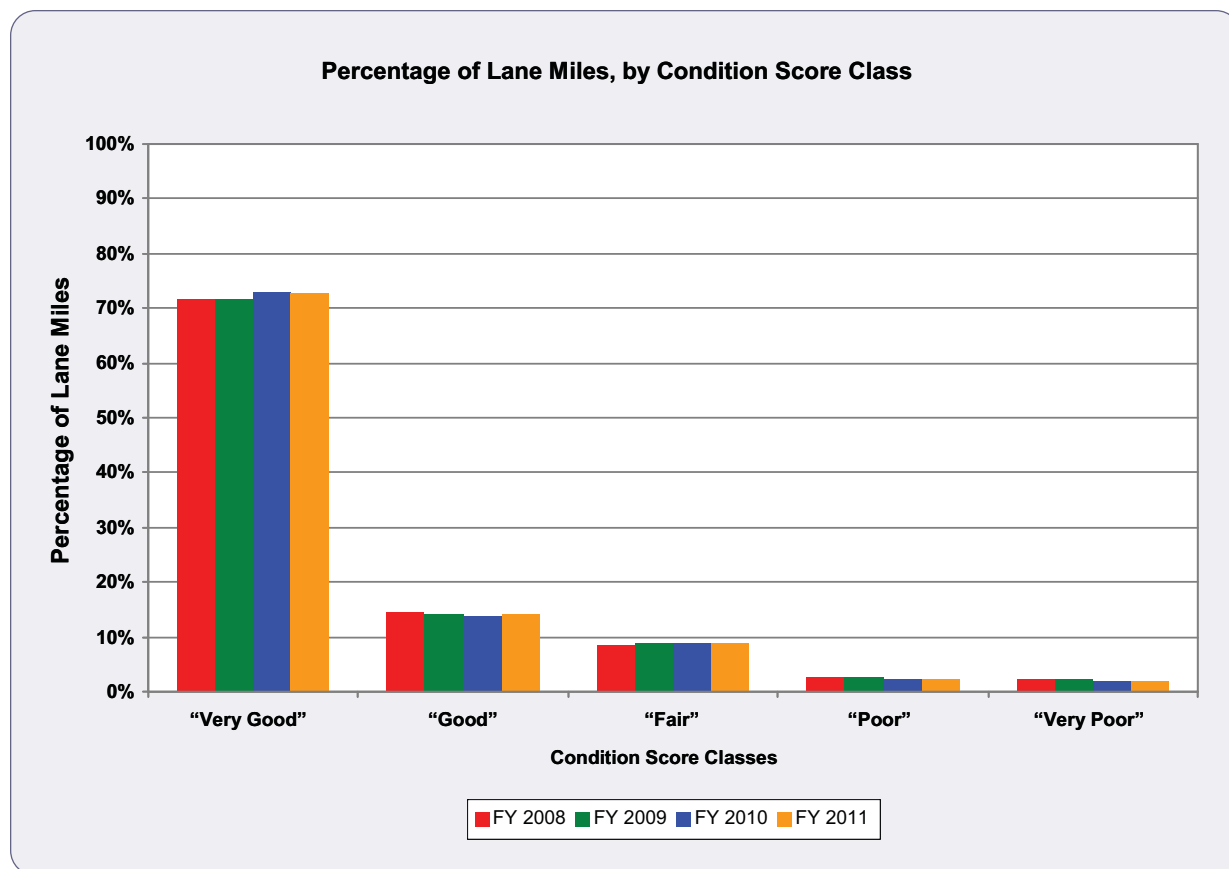
Chapter 3 — PMIS Score Trends



Pavement Condition (Condition Scores)

Percentage of Lane Miles, by Condition Score Class

Fiscal Year	Percentage of Lane Miles, by Condition Score Class				
	“Very Good”	“Good”	“Fair”	“Poor”	“Very Poor”
2008	71.65%	14.62%	8.57%	2.79%	2.37%
2009	71.81%	14.13%	8.98%	2.78%	2.30%
2010	73.18%	13.79%	8.76%	2.39%	1.88%
2011	72.64%	14.02%	8.84%	2.44%	2.06%
2010 - 2011 Change	-0.54%	+0.23%	+0.08%	+0.05%	+0.18%



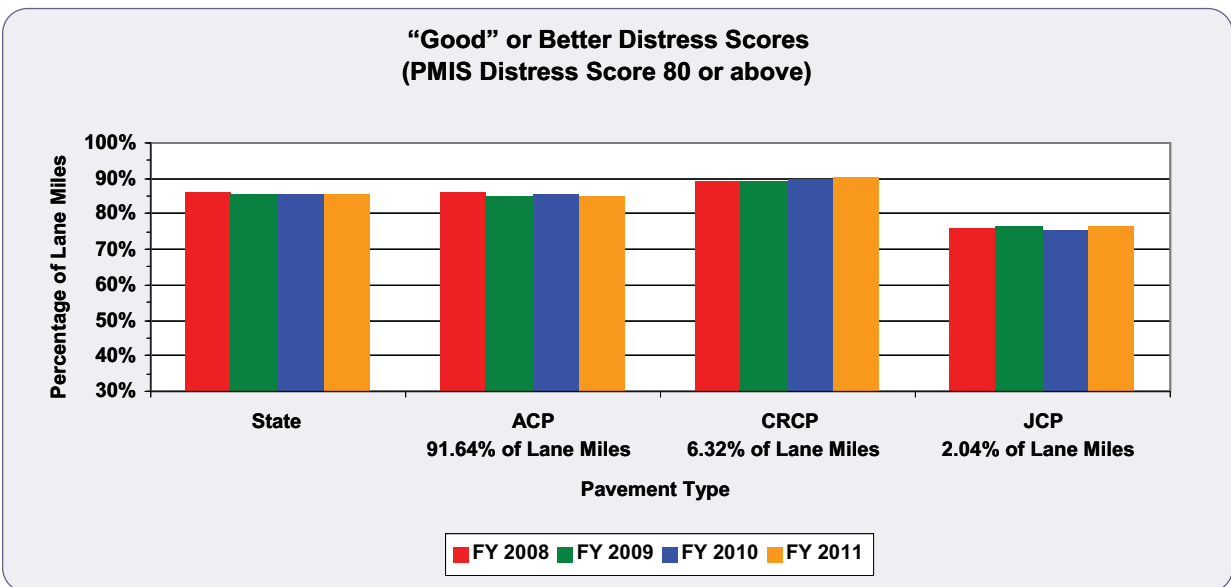
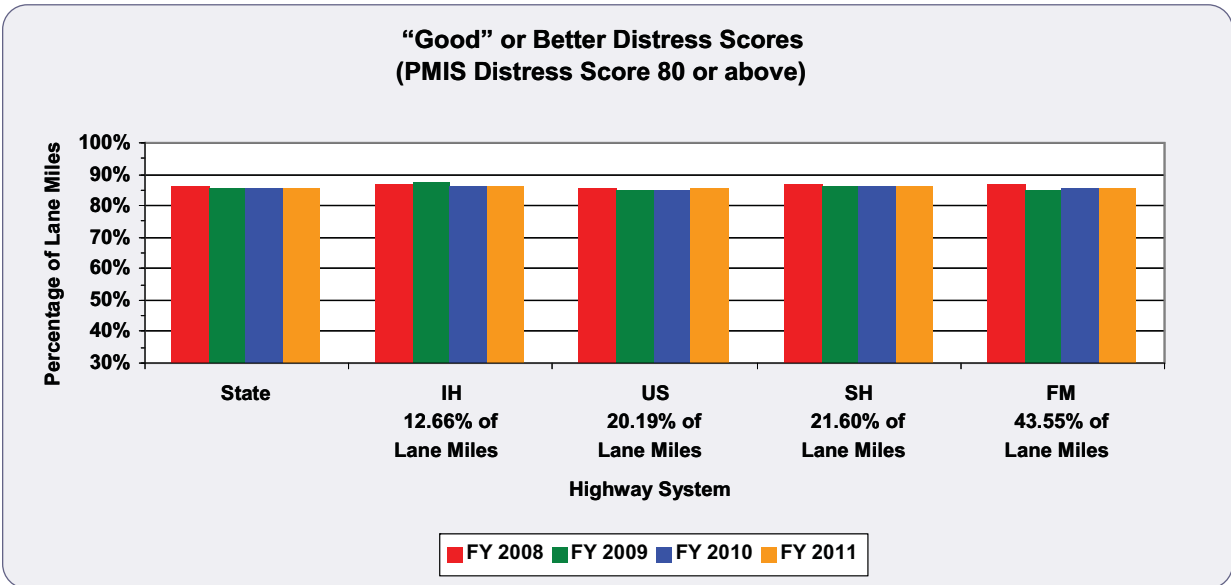
Condition Score	Class
90-100	“Very Good”
70-89	“Good”
50-69	“Fair”
35-49	“Poor”
1-34	“Very Poor”

Chapter 3 — PMIS Score Trends

Pavement Distress (Distress Scores)

Percentage of Lane Miles “Good” or Better – PMIS Distress Score 80 or above

Fiscal Year	Percentage of Lane Miles With “Good” or Better Distress Scores										
	State	IH	US	SH	FM	ACP	CRCP	JCP	IH ACP	IH CRCP	IH JCP
2008	86.19%	86.68%	85.24%	86.81%	86.45%	86.23%	89.36%	75.98%	87.02%	87.12%	79.14%
2009	85.32%	87.33%	84.65%	85.87%	85.04%	85.25%	89.35%	76.56%	87.50%	88.11%	80.96%
2010	85.62%	86.21%	84.89%	86.12%	85.81%	85.55%	89.84%	75.26%	86.30%	87.55%	78.16%
2011	85.47%	86.03%	85.35%	86.20%	85.25%	85.28%	90.56%	76.71%	85.72%	88.63%	78.20%
2010 - 2011											
Change	-0.15%	-0.18%	+0.46%	+0.08%	-0.56%	-0.27%	+0.72%	+1.45%	-0.58%	+1.08%	+0.04%



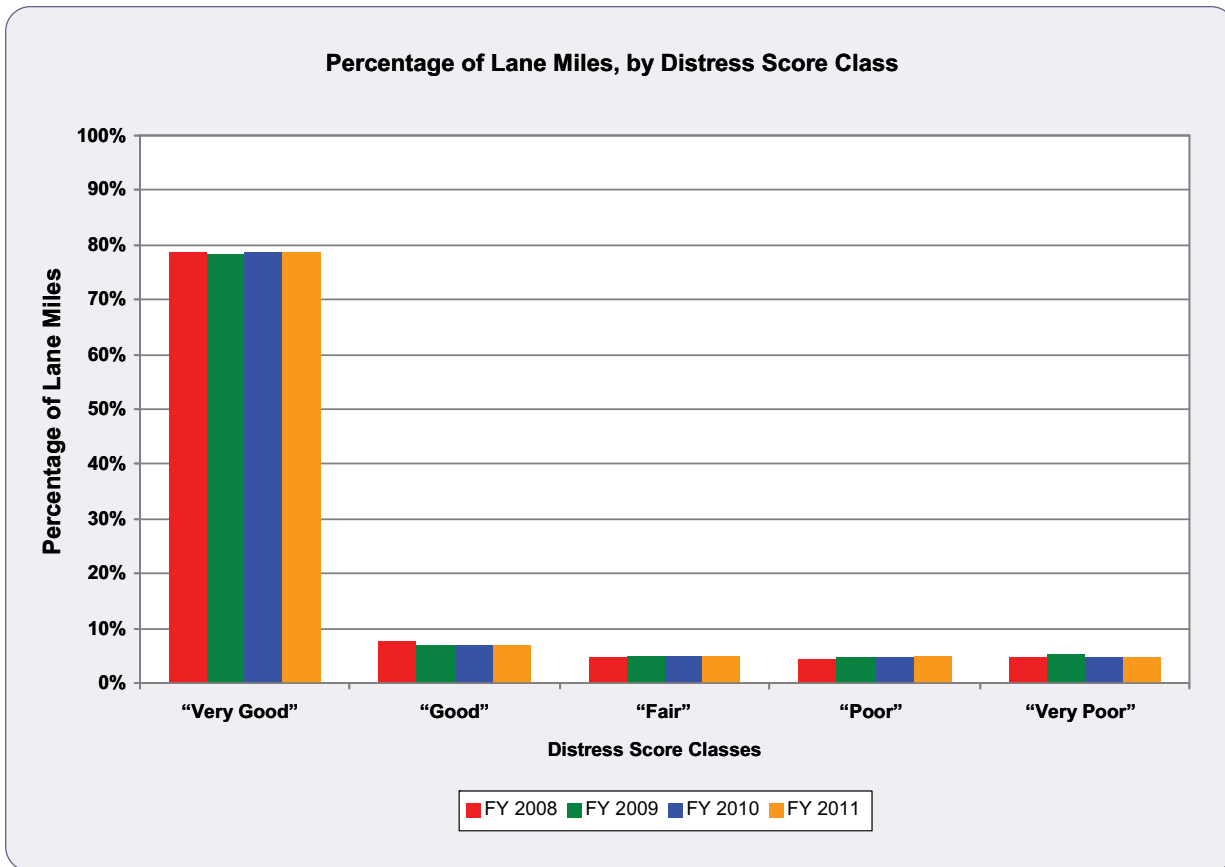
Chapter 3 — PMIS Score Trends



Pavement Distress (Distress Scores)

Percentage of Lane Miles, by Distress Score Class

Fiscal Year	Percentage of Lane Miles, by Distress Score Class				
	"Very Good"	"Good"	"Fair"	"Poor"	"Very Poor"
2008	78.53%	7.66%	4.75%	4.37%	4.68%
2009	78.25%	7.07%	4.88%	4.66%	5.14%
2010	78.76%	6.86%	4.92%	4.74%	4.73%
2011	78.63%	6.84%	5.06%	4.87%	4.59%
2010 - 2011 Change	-0.13%	-0.02%	+0.14%	+0.13%	-0.14%



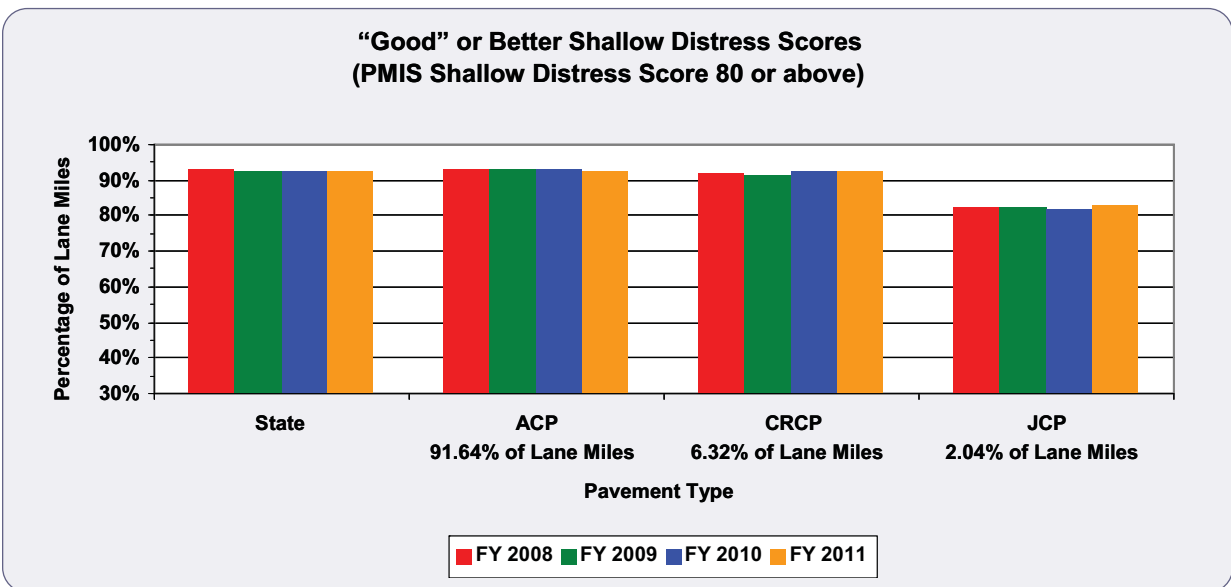
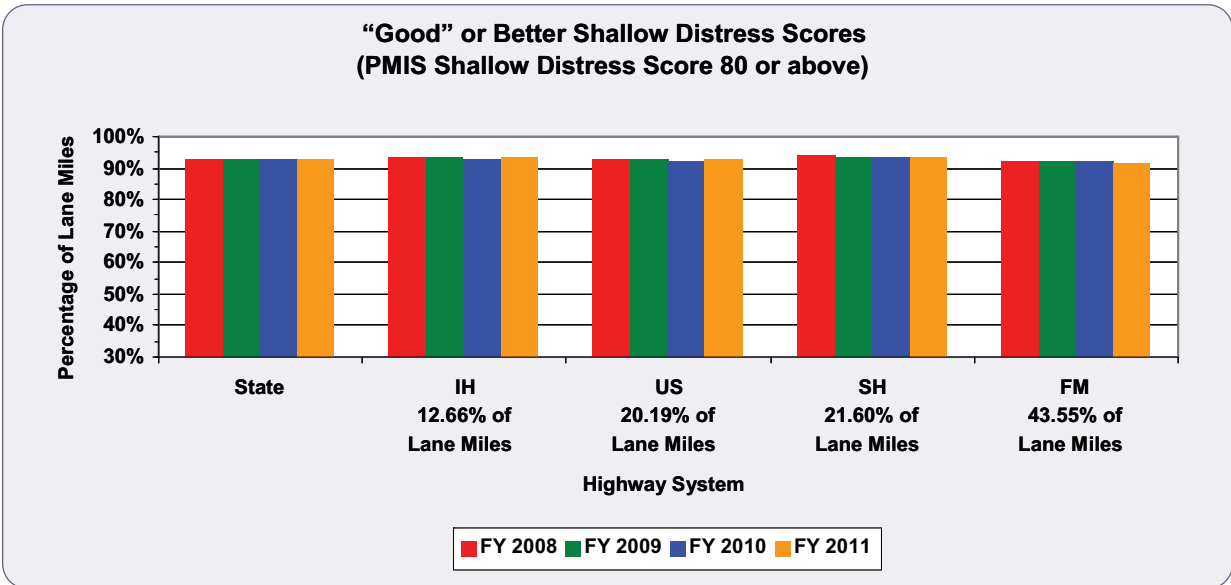
Distress Score	Class
90-100	"Very Good"
80-89	"Good"
70-79	"Fair"
60-69	"Poor"
1-59	"Very Poor"

Chapter 3 — PMIS Score Trends

Pavement Distress (Shallow Distress Scores)

Percentage of Lane Miles “Good” or Better – PMIS Shallow Distress Score 80 or above

Fiscal Year	Percentage of Lane Miles With “Good” or Better Shallow Distress Scores										
	State	IH	US	SH	FM	ACP	CRCP	JCP	IH ACP	IH CRCP	IH JCP
2008	92.94%	93.51%	92.66%	93.86%	92.45%	93.24%	91.87%	82.37%	94.82%	89.78%	87.58%
2009	92.66%	93.33%	92.93%	93.13%	92.09%	92.95%	91.68%	82.48%	94.56%	90.29%	87.55%
2010	92.57%	92.78%	92.17%	93.45%	92.18%	92.80%	92.64%	81.82%	93.80%	90.79%	85.90%
2011	92.52%	93.28%	92.50%	93.41%	91.81%	92.71%	92.71%	82.92%	94.42%	90.98%	86.00%
2010 - 2011 Change	-0.05%	+0.50%	+0.33%	-0.04%	-0.37%	-0.09%	+0.07%	+1.10%	+0.62%	+0.19%	+0.10%



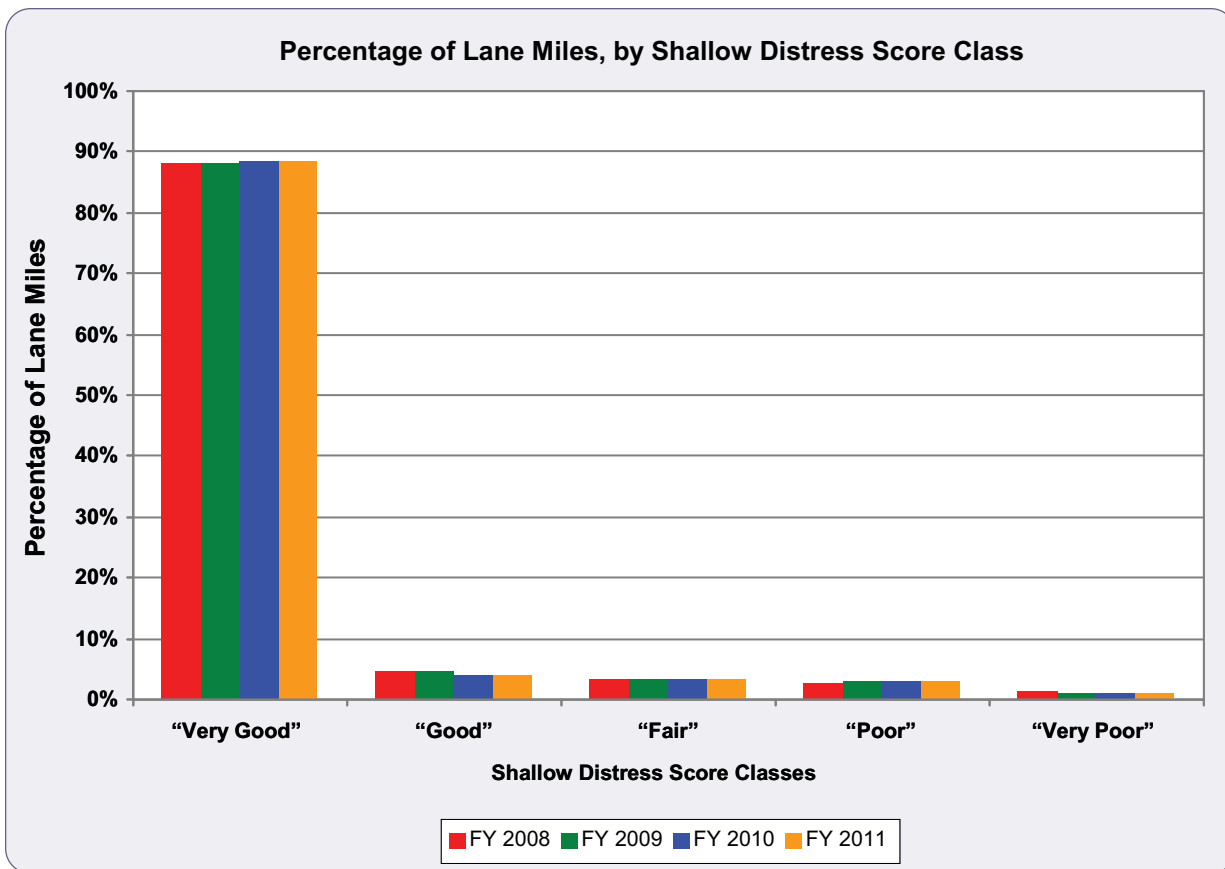
Chapter 3 — PMIS Score Trends



Pavement Distress (Shallow Distress Scores)

Percentage of Lane Miles, by Shallow Distress Score Class

Fiscal Year	Percentage of Lane Miles, by Shallow Distress Score Class				
	“Very Good”	“Good”	“Fair”	“Poor”	“Very Poor”
2008	88.23%	4.71%	3.20%	2.68%	1.19%
2009	88.21%	4.45%	3.36%	2.87%	1.11%
2010	88.49%	4.08%	3.33%	3.00%	1.10%
2011	88.44%	4.08%	3.33%	3.05%	1.10%
2010 - 2011 Change	-0.05%	0.00%	0.00%	+0.05%	0.00%



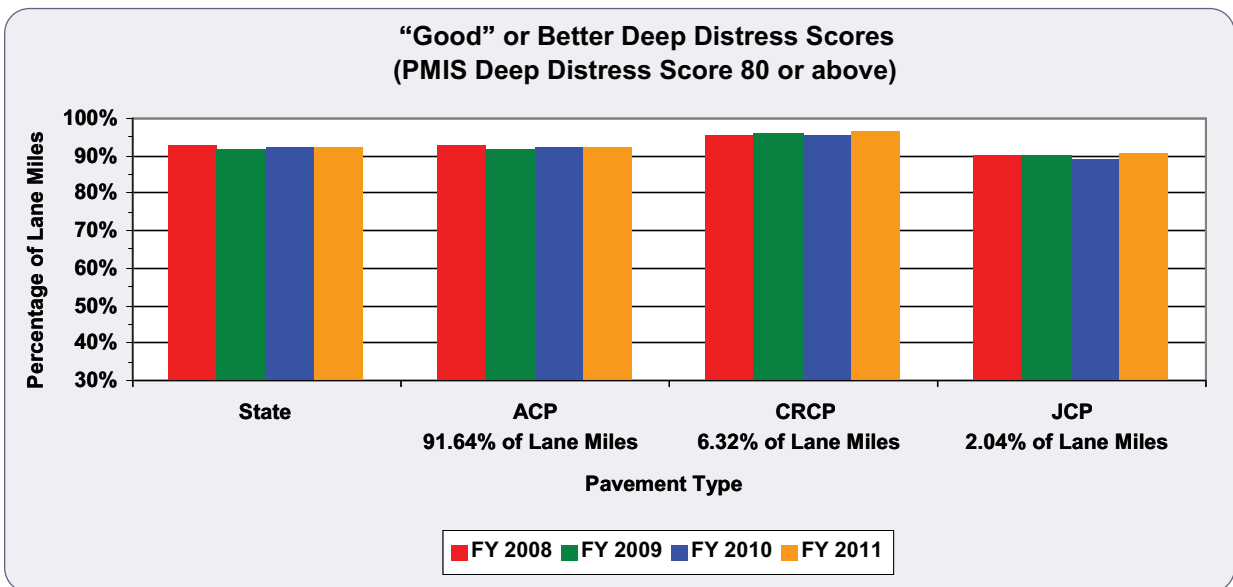
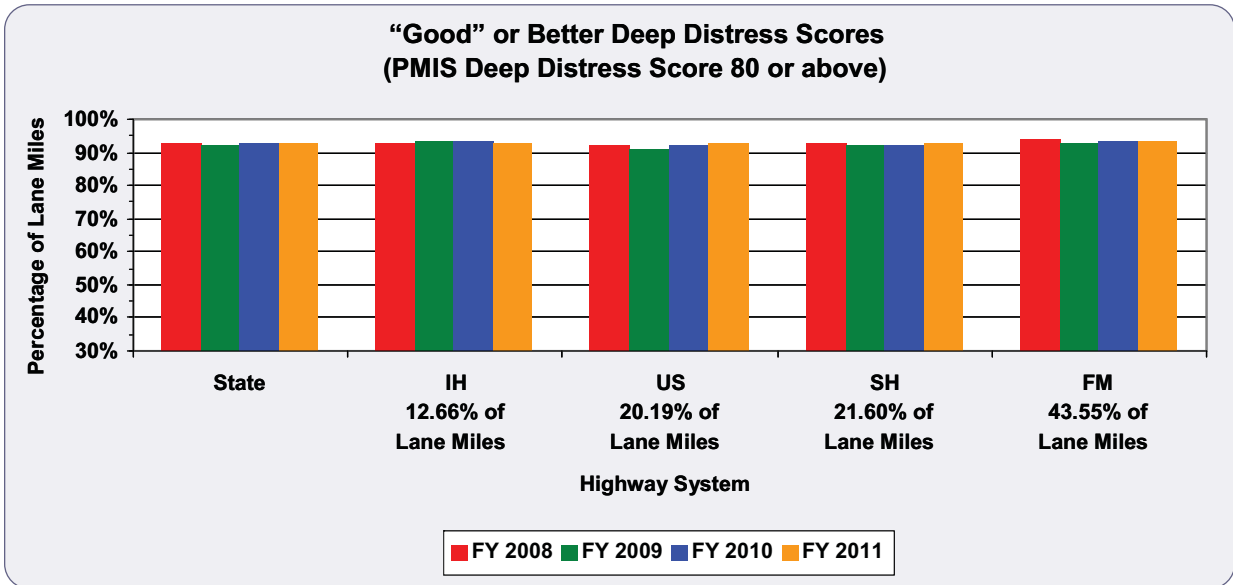
Shallow Distress Score	Class
90-100	“Very Good”
80-89	“Good”
70-79	“Fair”
60-69	“Poor”
1-59	“Very Poor”

Chapter 3 — PMIS Score Trends

Pavement Distress (Deep Distress Scores)

Percentage of Lane Miles “Good” or Better – PMIS Deep Distress Score 80 or above

Fiscal Year	Percentage of Lane Miles With “Good” or Better Deep Distress Scores										
	State	IH	US	SH	FM	ACP	CRCP	JCP	IH ACP	IH CRCP	IH JCP
2008	93.05%	92.57%	92.20%	92.76%	93.92%	92.96%	95.63%	90.20%	92.05%	95.09%	90.57%
2009	92.24%	93.41%	91.18%	92.36%	92.59%	92.02%	96.16%	90.33%	92.82%	95.88%	91.44%
2010	92.69%	93.33%	92.09%	92.20%	93.34%	92.54%	95.88%	89.45%	93.08%	95.10%	88.69%
2011	92.71%	92.56%	92.60%	92.68%	93.07%	92.46%	96.77%	90.73%	91.70%	95.88%	90.24%
2010 - 2011 Change	+0.02%	-0.77%	+0.51%	+0.48%	-0.27%	-0.08%	+0.89%	+1.28%	-1.38%	+0.78%	+1.55%



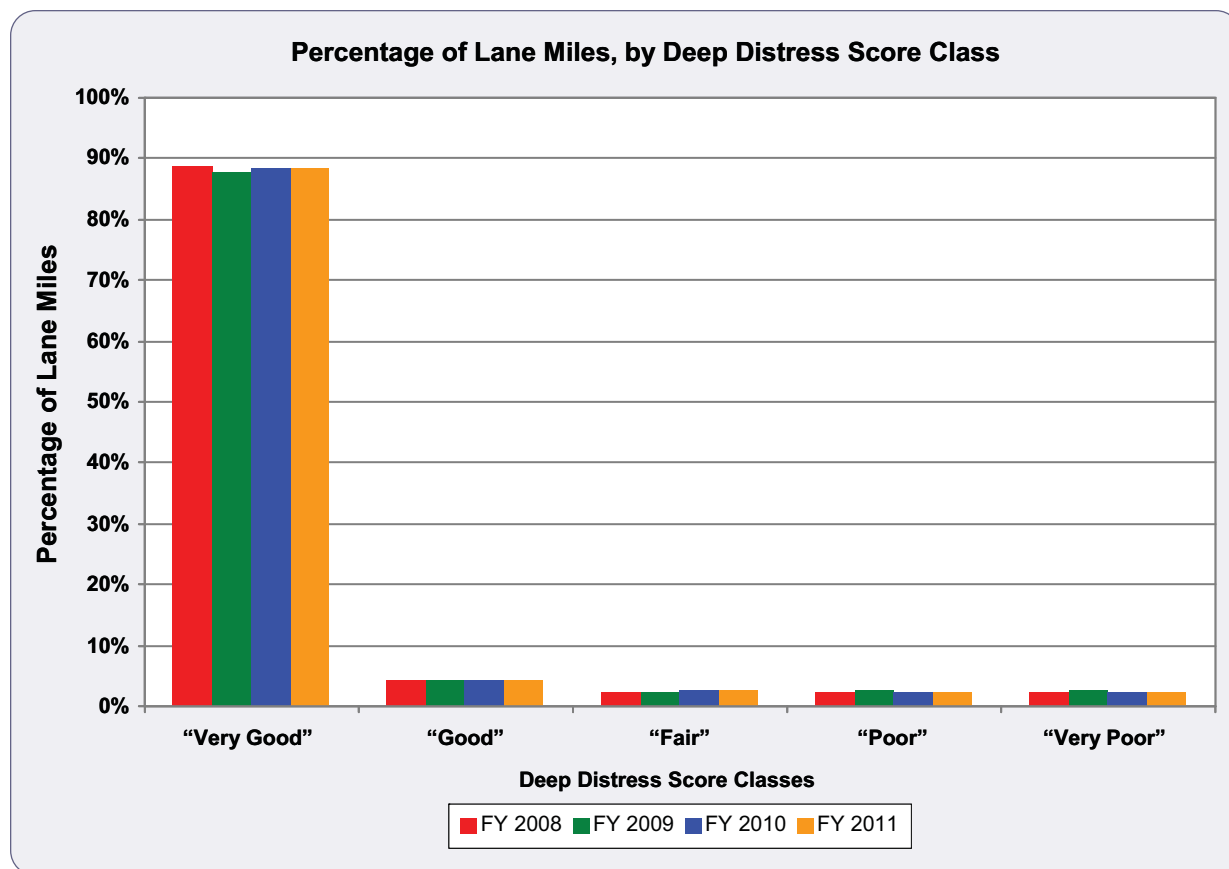
Chapter 3 — PMIS Score Trends



Pavement Distress (Deep Distress Scores)

Percentage of Lane Miles, by Deep Distress Score Class

Fiscal Year	Percentage of Lane Miles, by Deep Distress Score Class				
	“Very Good”	“Good”	“Fair”	“Poor”	“Very Poor”
2008	88.79%	4.27%	2.23%	2.31%	2.40%
2009	87.98%	4.25%	2.40%	2.59%	2.78%
2010	88.39%	4.30%	2.48%	2.38%	2.45%
2011	88.33%	4.38%	2.59%	2.33%	2.36%
2010 - 2011 Change	-0.06%	+0.08%	+0.11%	-0.05%	-0.09%



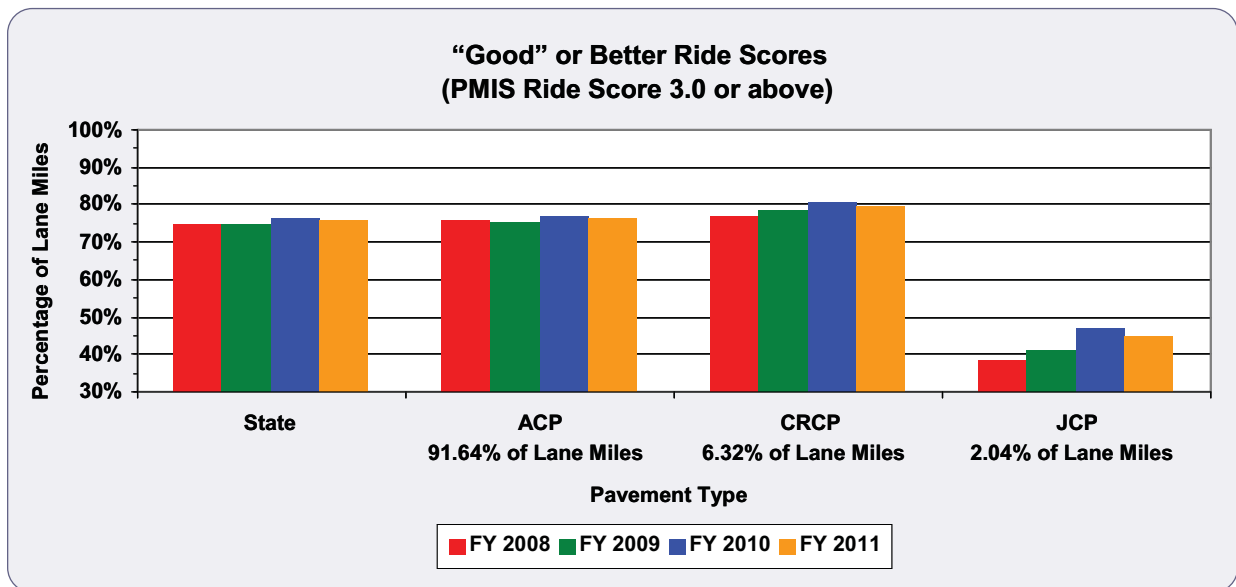
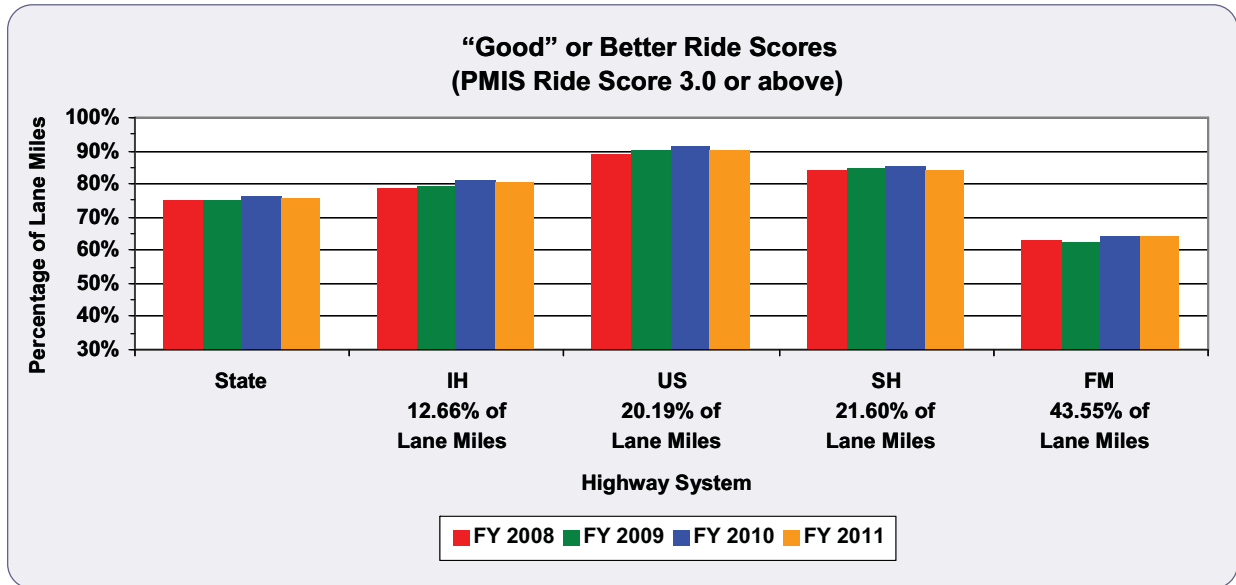
Deep Distress Score	Class
90-100	“Very Good”
80-89	“Good”
70-79	“Fair”
60-69	“Poor”
1-59	“Very Poor”

Chapter 3 — PMIS Score Trends

Pavement Ride Quality (Ride Scores)

Percentage of Lane Miles “Good” or Better – PMIS Ride Score 3.0 or above

Fiscal Year	Percentage of Lane Miles With “Good” or Better Ride Scores										
	State	IH	US	SH	FM	ACP	CRCP	JCP	IH ACP	IH CRCP	IH JCP
2008	75.00%	79.07%	89.29%	84.26%	63.35%	75.69%	77.18%	38.35%	80.84%	79.94%	46.01%
2009	75.05%	79.68%	90.45%	84.64%	62.57%	75.55%	78.64%	41.04%	80.64%	82.12%	52.17%
2010	76.65%	81.39%	91.40%	85.70%	64.45%	77.02%	80.69%	46.86%	82.71%	82.70%	53.62%
2011	76.01%	80.81%	90.23%	84.48%	64.11%	76.40%	79.64%	45.20%	81.94%	82.67%	52.92%
2010 - 2011 Change	-0.64%	-0.58%	-1.17%	-1.22%	-0.34%	-0.62%	-1.05%	-1.66%	-0.77%	-0.03%	-0.70%



Chapter 3 — PMIS Score Trends



Pavement Ride Quality (Ride Scores)

Percentage of Lane Miles, by Ride Score Class

Fiscal Year	Percentage of Lane Miles, by Ride Score Class				
	“Very Good”	“Good”	“Fair”	“Poor”	“Very Poor”
2008	24.36%	50.64%	22.97%	1.95%	0.08%
2009	24.98%	50.07%	23.06%	1.82%	0.07%
2010	26.59%	50.06%	21.76%	1.53%	0.06%
2011	25.32%	50.69%	22.20%	1.68%	0.10%
2010 - 2011 Change	-1.27%	+0.63%	+0.44%	+0.15%	+0.04%



Ride Score	Class
4.0-5.0	“Very Good”
3.0-3.9	“Good”
2.0-2.9	“Fair”
1.0-1.9	“Poor”
0.1-0.9	“Very Poor”



In 1930, the “Texas Highway Department” had only 18 districts (known then as “Divisions”), numbered 1 through 18. Districts numbered 19 through 25 (today’s Atlanta, Beaumont, Pharr, Laredo, Brownwood, El Paso and Childress districts) were established later.

A June 1917 map of the proposed Texas highway system identifies six state subdivisions, 26 state highways and one “combination” highway – the Henry Exall Memorial Highway (from Denison to Dallas to Houston to Galveston).

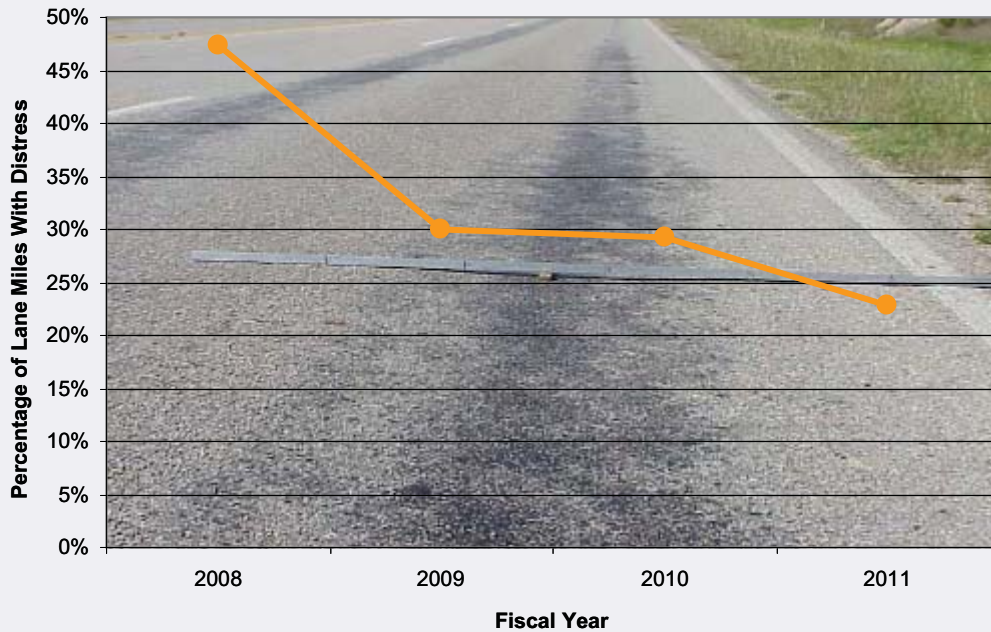
TxDOT officially calls the roads that parallel the Interstate mainlanes “frontage roads”; in Dallas-Fort Worth, “service” roads; in San Antonio, “access” roads; and in El Paso, “gateway” roads.

Source: Texas Transportation Institute

Chapter 4 — Pavement Distress Trends



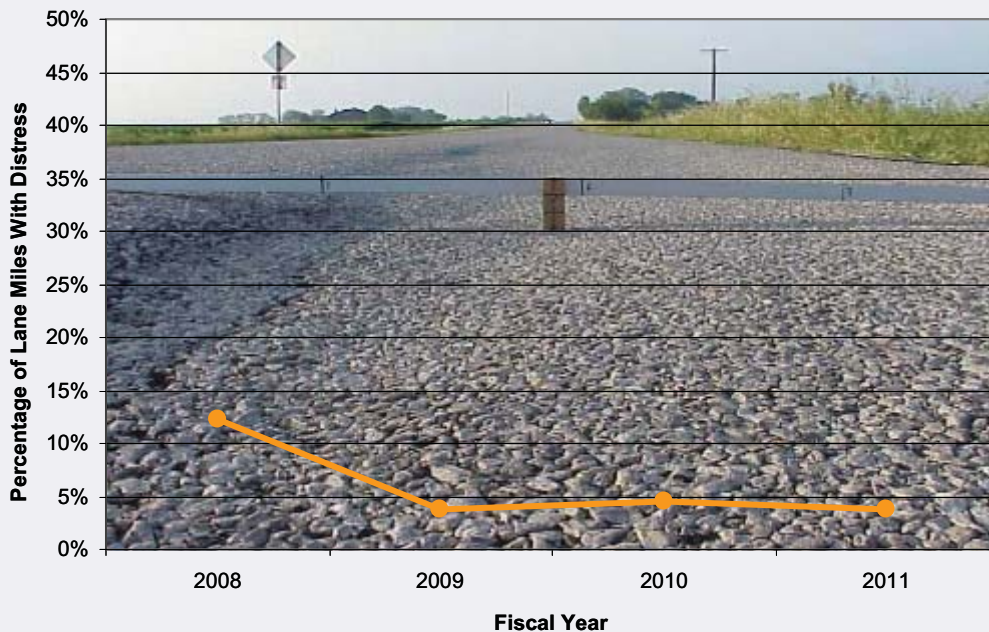
ACP Shallow Rutting (measured), FY 2008-2011



FY 2011 Trend: **Less**

22.89 percent of the lane miles contained Shallow Rutting

ACP Deep Rutting (measured), FY 2008-2011



FY 2011 Trend: **Less**

3.74 percent of the lane miles contained Deep Rutting



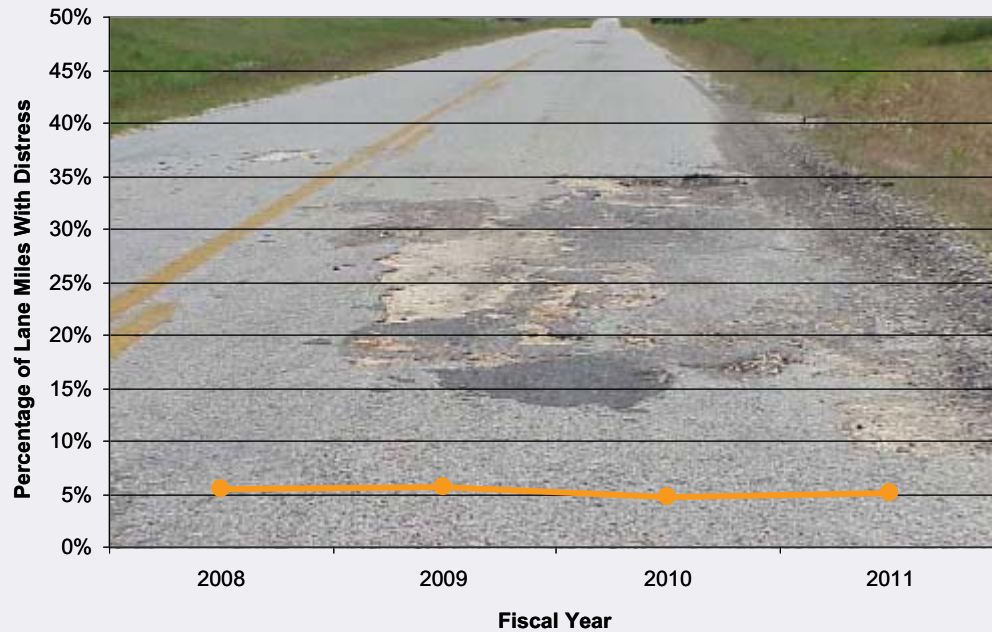
Chapter 4 — Pavement Distress Trends

ACP Alligator Cracking (rated), FY 2008-2011



FY 2011 Trend: **More** 18.00 percent of the lane miles contained Alligator Cracking

ACP Failures (rated), FY 2008-2011

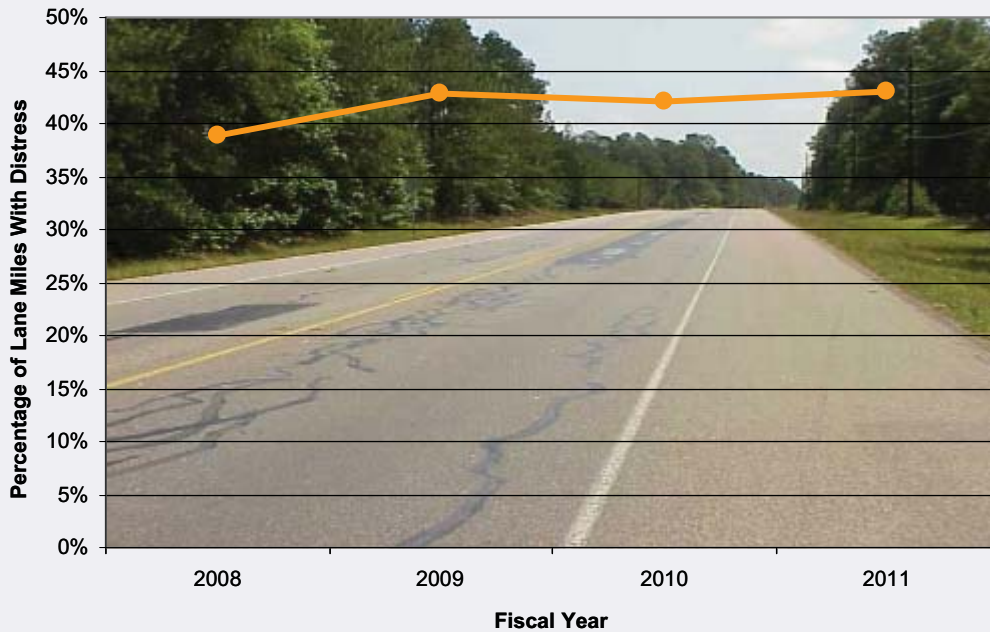


FY 2011 Trend: **More** 5.16 percent of the lane miles contained Failures

Chapter 4 — Pavement Distress Trends

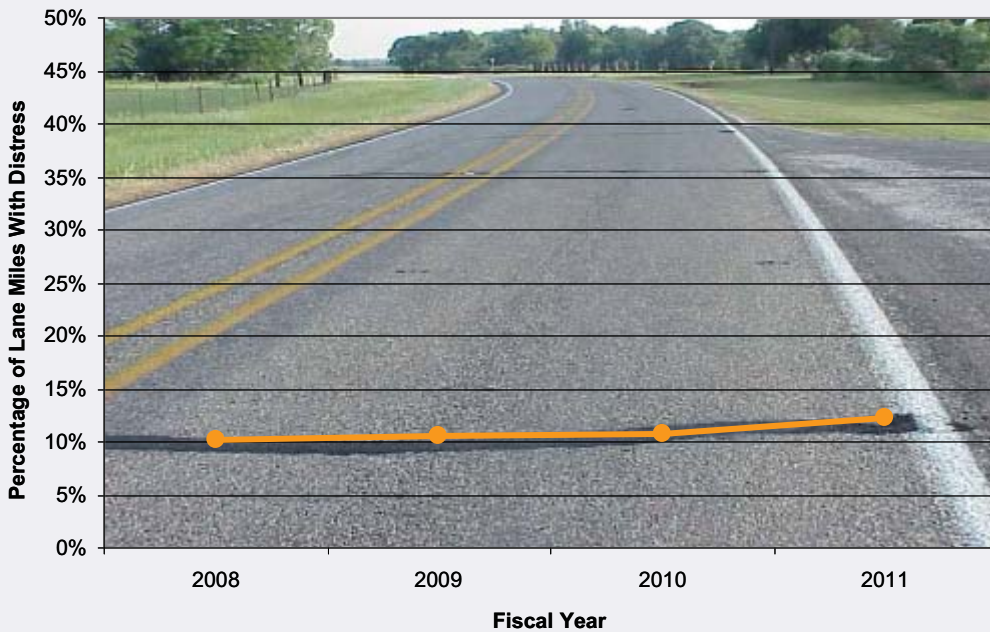


ACP Longitudinal Cracking (rated), FY 2008-2011



FY 2011 Trend: More **43.06 percent** of the lane miles contained Longitudinal Cracking

ACP Transverse Cracking (rated), FY 2008-2011



FY 2011 Trend: More **12.26 percent** of the lane miles contained Transverse Cracking



Chapter 4 — Pavement Distress Trends

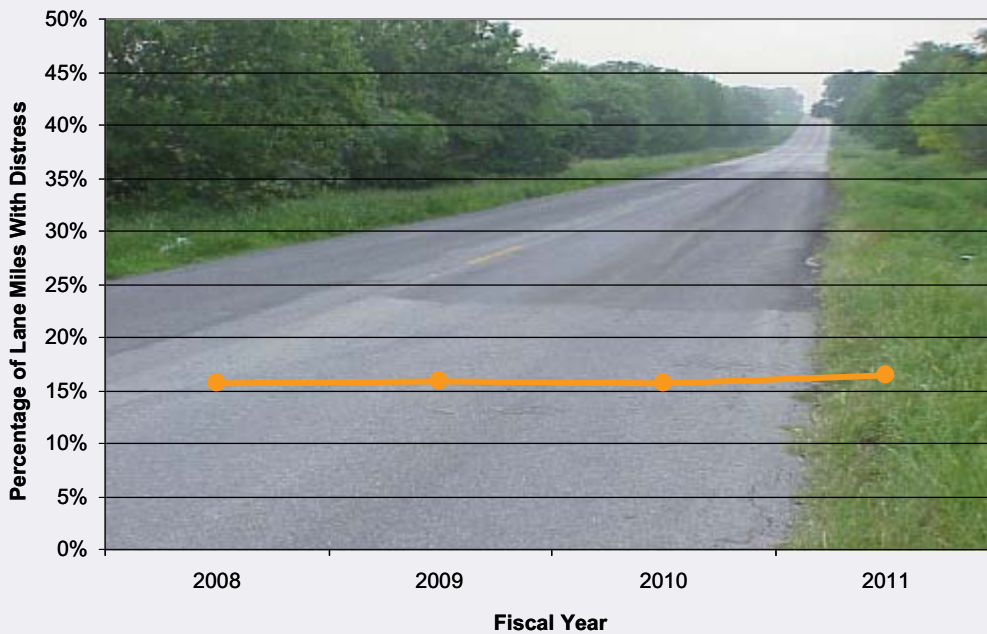
ACP Block Cracking (rated), FY 2008-2011



FY 2011 Trend: **More**

0.77 percent of the lane miles contained Block Cracking

ACP Patching (rated), FY 2008-2011



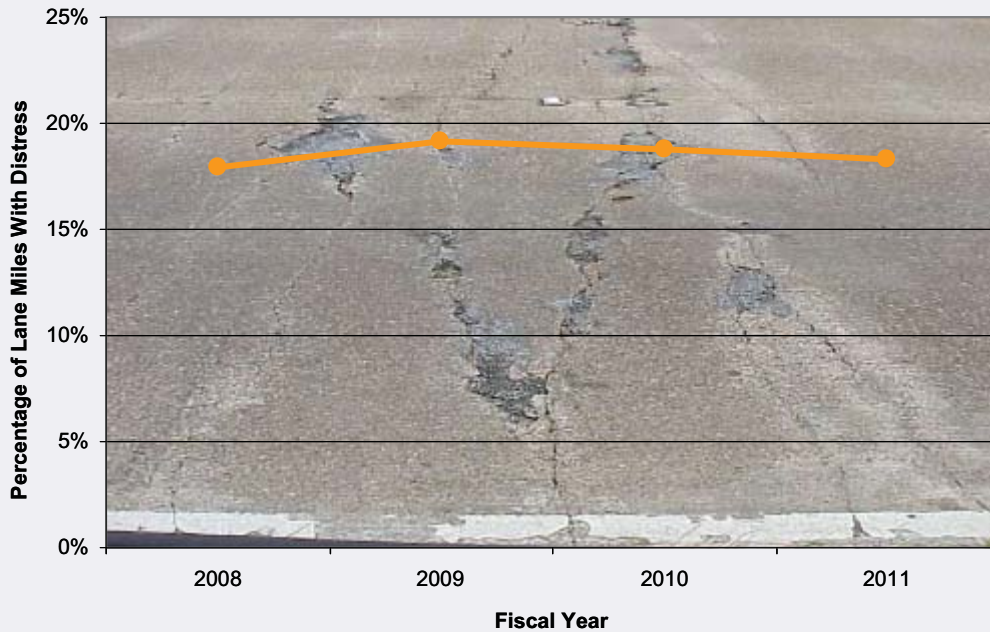
FY 2011 Trend: **More**

16.42 percent of the lane miles contained Patching

Chapter 4 — Pavement Distress Trends



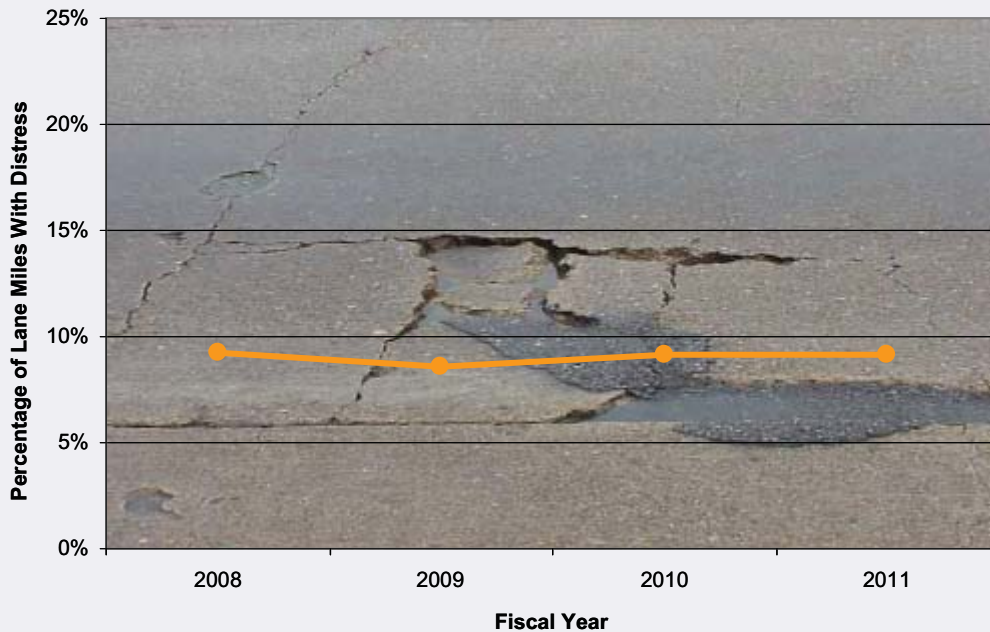
CRCP Spalled Cracks (rated), FY 2008-2011



FY 2011 Trend: **Less**

18.33 percent of the lane miles contained Spalled Cracks

CRCP Punchouts (rated), FY 2008-2011



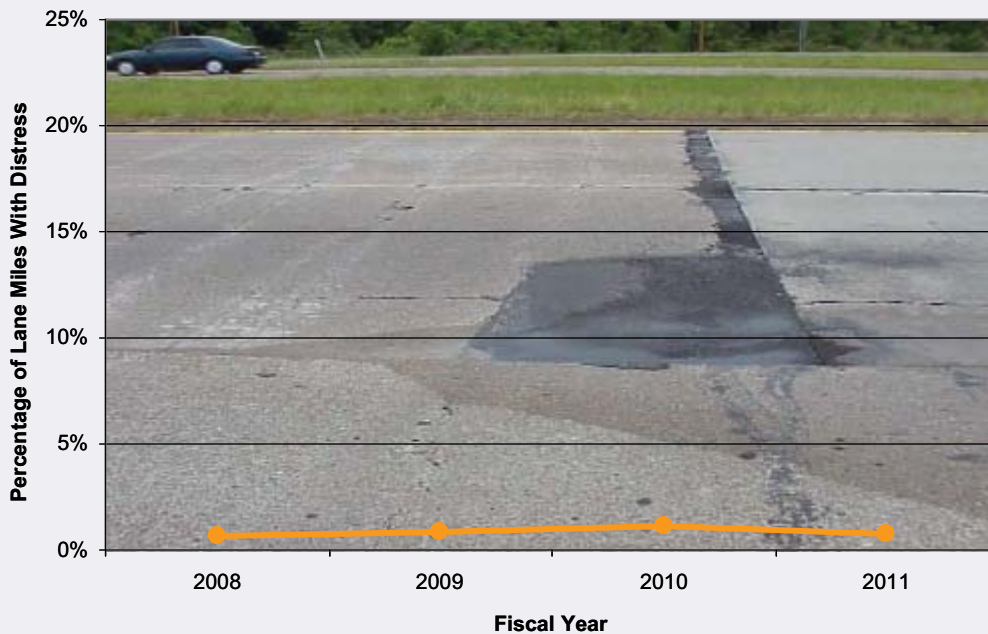
FY 2011 Trend: **Less**

9.13 percent of the lane miles contained Punchouts



Chapter 4 — Pavement Distress Trends

CRCP Asphalt Patches (rated), FY 2008-2011



FY 2011 Trend: **Less**

0.79 percent of the lane miles contained Asphalt Patches

CRCP Concrete Patches (rated), FY 2008-2011



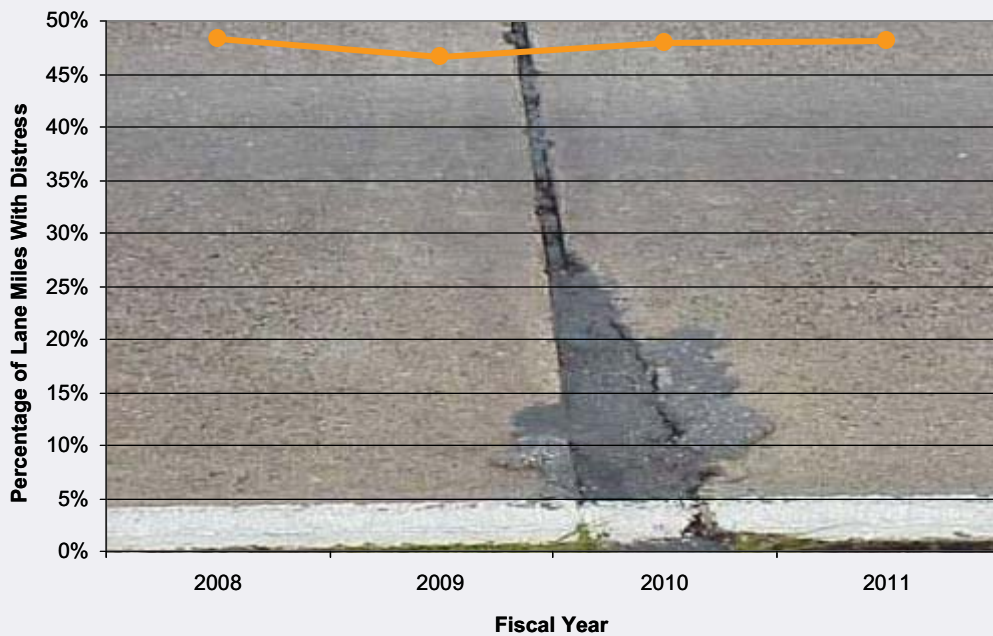
FY 2011 Trend: **Less**

14.14 percent of the lane miles contained Concrete Patches

Chapter 4 — Pavement Distress Trends



JCP Failed Joints and Cracks (rated), FY 2008-2011



FY 2011 Trend: More **48.09 percent** of the lane miles contained Failed Joints and Cracks

JCP Failures (rated), FY 2008-2011



FY 2011 Trend: Less **43.28 percent** of the lane miles contained Failures



Chapter 4 — Pavement Distress Trends

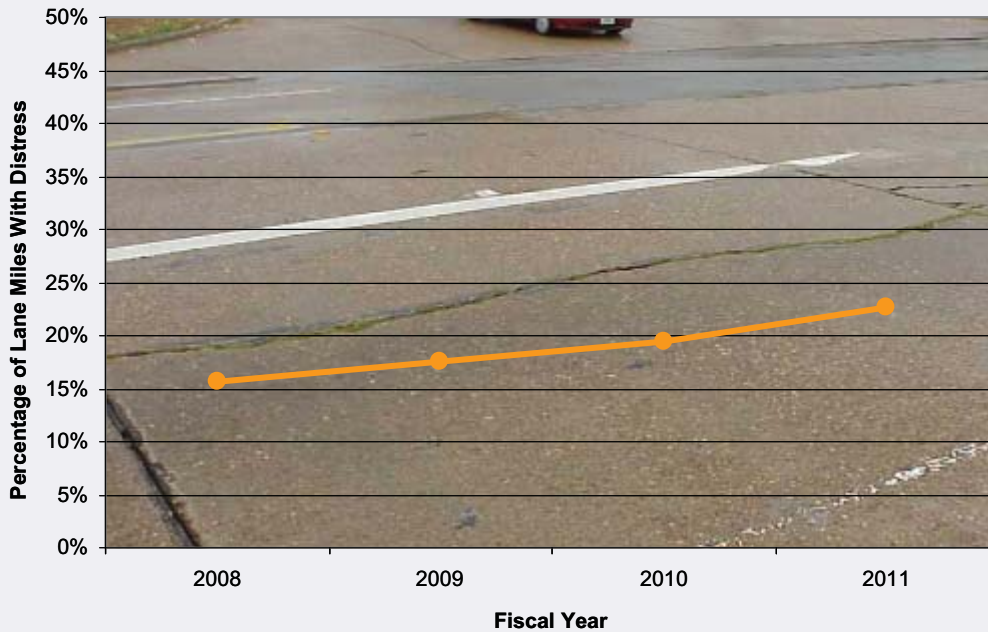
JCP Shattered Slabs (rated), FY 2008-2011



FY 2011 Trend: **More**

1.09 percent of the lane miles contained Shattered Slabs

JCP Slabs with Longitudinal Cracks (rated), FY 2008-2011



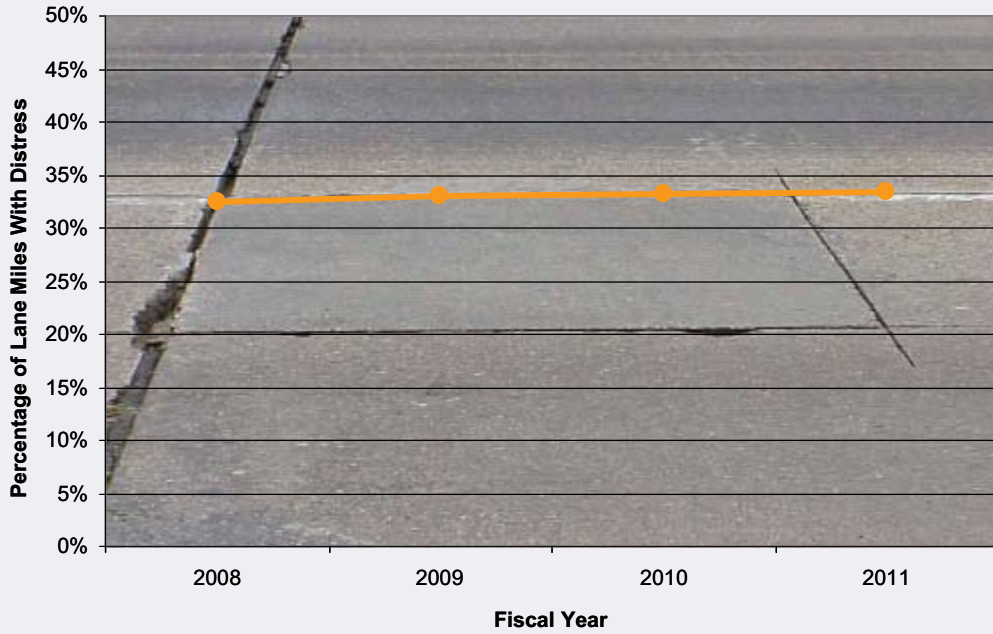
FY 2011 Trend: **More**

22.68 percent of the lane miles contained Slabs with Longitudinal Cracks

Chapter 4 — Pavement Distress Trends



JCP Concrete Patches (rated), FY 2008-2011



FY 2011 Trend: More

33.32 percent of the lane miles contained Concrete Patches



One- and two-digit Interstate highway numbers are reserved for routes between cities or states. Three-digit Interstate highway numbers are reserved for spurs and loops in urban areas. Spurs begin with an odd-number (for example, I-110 in El Paso), while loops begin with an even-number (for example, I-410 in San Antonio). The last two digits indicate the lowest-number Interstate highway that the spur or loop connects to.

Chapter 5 — Maintenance Level of Service Trends



This chapter shows FY 2008-2011 statewide maintenance level of service trends, according to the definitions shown below.

Please note that maintenance levels of service are only defined for flexible (“asphalt”) pavements. Rigid (“concrete”) pavements are not included in this chapter.

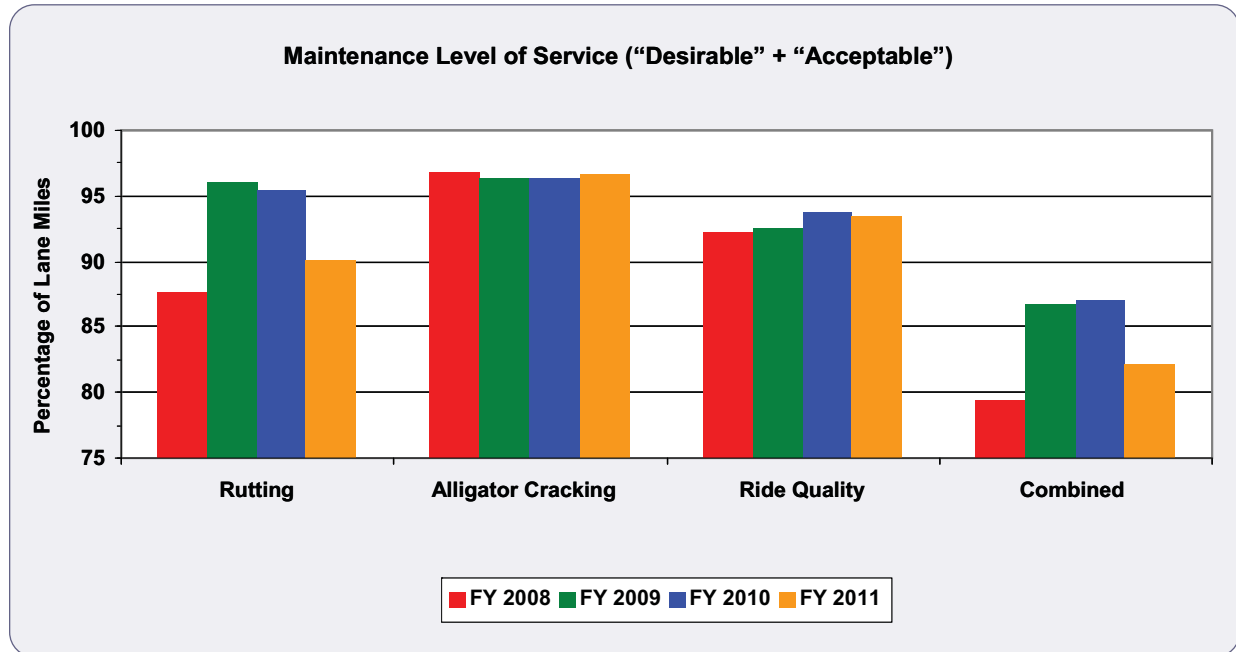
PMIS Distress Type	Traffic Category (ADT)	LEVEL OF SERVICE			
		“Desirable”	“Acceptable”	“Tolerable”	“Intolerable”
Rutting	Low (0-500)	0-1% Shallow & 0-1% Deep	2-50% Shallow & 0-1% Deep	51-100% Shallow & 0-1% Deep OR 0-50% Shallow & 2-25% Deep	51-100% Shallow & 2-25% Deep OR 26-100% Deep
	Medium (501-10,000)	0-1% Shallow & 0-1% Deep	2-50% Shallow & 0-1% Deep	51-100% Shallow & 0-1% Deep OR 0-50% Shallow & 2-25% Deep	51-100% Shallow & 2-25% Deep OR 26-100% Deep
	High (over 10,000)	0-1% Shallow & 0-1% Deep	2-25% Shallow & 0-1% Deep	26-50% Shallow & 0-1% Deep	51-100% Shallow & 0-1% Deep OR 2-100% Deep
Alligator Cracking	All Traffic	0%	1-10%	11-50%	51-100%
Ride Quality	Low (0-500)	2.6-5.0	2.1-2.5	1.6-2.0	0.1-1.5
	Medium (501-10,000)	3.1-5.0	2.6-3.0	2.1-2.5	0.1-2.0
	High (over 10,000)	3.6-5.0	3.1-3.5	2.6-3.0	0.1-2.5

Reference: *TxDOT Administrative Circular 5-92 (February 13, 1992)*

Chapter 5 — Maintenance Level of Service Trends

Maintenance Level of Service Trends, FY 2008-2011

Fiscal Year	Desirable + Acceptable Level of Service			
	Rutting	Alligator Cracking	Ride Quality	Combined
2008	87.70	96.84	92.29	79.41
2009	96.11	96.38	92.57	86.71
2010	95.50	96.32	93.78	87.10
2011	90.04	96.71	93.48	82.18
2010 - 2011 Change	-5.46	+0.39	-0.30	-4.92



Chapter 6 — PMIS Mileage



Total Lane Miles in PMIS, by Highway System, FY 2008-2011

Highway System	Fiscal Year			
	2008	2009	2010	2011
Interstate Highways, mainlanes only	15,154.7	15,184.6	15,294.8	15,295.5
Interstate Highways, frontage roads	9,364.8	9,377.6	9,429.5	9,441.4
United States Highways	39,024.1	39,213.6	39,437.9	39,754.5
State Highways	41,669.0	41,904.3	42,189.7	42,883.7
Farm-to-Market Roads	84,848.0	84,921.6	85,052.9	85,025.5
Business Routes	3,110.3	3,104.0	3,131.5	3,157.6
Park Roads	691.3	691.1	687.5	687.2
Principal Arterial Streets	63.6	63.6	63.6	77.0
STATEWIDE	193,925.8	193,925.8	195,287.4	196,322.4

Total Lane Miles in PMIS, by Pavement Type, FY 2008-2011

Pavement Type	Fiscal Year			
	2008	2009	2010	2011
Flexible or Asphalt Concrete Pavement (ACP)	178,490.0	178,591.5	178,953.8	179,318.3
Continuously Reinforced Concrete Pavement (CRCP)	11,170.9	11,770.5	12,345.1	13,109.1
Jointed Concrete Pavement (JCP)	4,264.9	4,098.4	3,988.5	3,895.0
STATEWIDE	193,925.8	194,460.4	195,287.4	196,322.4

Rated/Measured Mileage in PMIS, by Data/Score Type, FY 2008-2011

Data/Score Type	Fiscal Year			
	2008	2009	2010	2011
	Lane Miles	Lane Miles	Lane Miles	Lane Miles
Condition Score	184,971.0	187,178.6	190,395.5	190,759.4
Distress	188,853.6	190,647.5	193,094.3	193,143.3
Distress Score	186,022.7	188,059.2	191,024.3	191,344.9
Ride	189,071.4	190,291.5	192,215.9	193,538.4
Ride Score	189,071.4	190,291.5	192,215.9	193,538.4
Rut (ACP Only)	174,456.9	175,246.6	176,405.2	177,084.8

Rated/Measured Percentage in PMIS, by Data/Score Type, FY 2008-2011

Data/Score Type	Fiscal Year			
	2008	2009	2010	2011
	Lane Miles	Lane Miles	Lane Miles	Lane Miles
Condition Score	95.38%	96.26%	97.50%	97.17%
Distress	97.38%	98.04%	98.88%	98.38%
Distress Score	95.92%	96.71%	97.82%	97.46%
Ride	97.50%	97.86%	98.43%	98.58%
Ride Score	97.50%	97.86%	98.43%	98.58%
Rut (ACP Only)	89.96%	90.12%	90.33%	90.20%

Initial plans for the Interstate Highway System called for a network of up to six cross-country toll roads – three north-south and three east-west – back in the mid 1930s. Apparently President Franklin Delano Roosevelt was initially skeptical about the feasibility of one of the north-south routes, though. A *Washington Post* article dated February 20, 1935, quotes President Roosevelt telling Vice President Garner, “We’ll have to cut this highway short because Texas is impenetrable.”

Source: FHWA, Office of Program Administration



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