TEXAS DEPARTMENT OF TRANSPORTATION

Condition of Texas Pavements

PMIS Annual Report FY 2009-2012

Condition of Texas Pavements

Pavement Management Information Systems (PMIS)
Annual Report FY 2009-2012

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

August 29, 2012

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:

RR 170, also known as El Camino del Rio (the River Road), in Brewster County a few miles west of Terlingua
Photo by J. Griffis Smith / TxDOT.

Table of Contents

Condition of Texas Pavements Summary

PMIS Annual Report, FY 2009-2012

This report describes the condition of Texas pavements in Fiscal Year 2012 and during the four-year FY 2009-2012 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)

86.47 percent of Texas pavements are in "Good" or better condition, down from **86.66 percent** in FY 2011. This is the third drop in the last four years.

Although **86.47 percent** is higher than the **84.22 percent** condition present when the Texas Transportation Commission established the statewide pavement condition goal in FY 2002, it does not meet the goal of 90 percent "Good" or better that was set for FY 2012.

Substandard Condition Scores (Chapter 2)

Substandard Condition Score reports show distress types that need to be fixed to increase the percentage of lane miles in "Good" or better condition. For FY 2012, ACP Ride Quality was the biggest cause of mileage not being in "Good" or better condition.

Substandard mileage of ACP Failures, ACP Longitudinal Cracking and ACP Transverse Cracking also increased in FY 2012. The increased amount of these moisture-sensitive distresses reflected the impact of the record-setting drought Texas experienced last year.

Statewide Trends Based on Percentage "Good" or Better for FY 2011-2012 (Chapter 3)

Fiscal Year 2011-2012	Condition Score	Ride Score	Distress Score	Shallow Distress	Deep Distress
Statewide	↓	↓	↑	↓	↑
IH	↓	↓	↑	↑	↓
US	↑	↑	↑	↑	↑
SH	↑	↓	↑	↑	↑
FM	↓	↓	↓	↓	↑
ACP	↓	↓	↑	↓	↑
CRCP	↓	↓	↑	↓	↑
JCP	↑	↑	↓	↓	↑

Pavement Distress Trends for FY 2011-2012 (Chapter 4)

Pavement Type	Distress	Percentage of Lane Miles with Distress
ACP	Shallow Rutting	More
	Deep Rutting	More
	Alligator Cracking	Less
	Failures	More
	Longitudinal Cracking	More
	Transverse Cracking	More
	Block Cracking	Less
	Patching	Less
CRCP	Spalled Cracks	Less
	Punchouts	Less
	Asphalt Patches	More
	Concrete Patches	More
JCP	Failed Joints and Cracks	Less
	Failures	Less
	Shattered Slabs	Less
	Slabs with Longitudinal Cracks	Less
	Concrete Patches	More

Maintenance Level of Service Trends for FY 2012 (Chapter 5)

The overall "Combined" level of service maintained on Texas flexible (ACP) pavements got worse in FY 2012. Alligator Cracking got better, but Rutting and Ride Quality got worse.

The level of service for Rutting got worse in FY 2012 because of increases in the amount of Shallow Rutting and Deep Rutting. The rougher statewide Ride Quality decreased the level of service for Ride Quality.

Please note that the level of service definitions in this report were changed to treat one percent Rutting the same as zero percent Rutting. This was done to account for sensor "noise" typically observed in the acoustic sensors used to measure Rutting. This change reduced – but did not reverse – the increase in the amount of Rutting.

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

The total number of lane miles in PMIS continued to slowly increase. PMIS contained 196,821.4 lane miles in FY 2012, up from 194,460.4 lane miles in FY 2009.

PMIS contained Condition Score data on approximately 97.00 percent of all TxDOT-maintained lane miles in FY 2012. This percentage is the third highest since FY 2002.

Discussion

Overview

The statewide percentage of lane miles in "Good" or better condition dropped from 86.66 in FY 2011 to 86.47 in FY 2012. Although the FY 2012 pavement condition goal of 90 percent "Good" or better was not met, TxDOT still managed to improve overall condition during the last four years and during the 10-year period since the condition goal was established in FY 2002.

Overall pavement condition dropped in FY 2012 because of decreased ride quality and increased deterioration of FM roads. The percentages of lane miles in "Very Good" and "Good" Ride Score categories decreased and the percentages in "Fair" to "Poor" Ride Score categories increased in FY 2012, causing the decline of statewide Ride Quality. FM roads got worse in Ride Quality and Distress. Even though Distress on other major highway systems (such as IH, US and SH) decreased in FY 2012; Distress on FM roads increased (especially Shallow Distress). Because FM roads make up 43.25 percent of Texas road network, their increased Distress and rougher Ride Quality pulled the statewide percentage of lane miles in "Good" or better condition down in FY 2012.

Increased oil and gas field development traffic and a record-setting drought contributed to the decline of the statewide pavement condition, but TxDOT managed to offset some of the decline by continuing improvements in pavement management practices and achieving additional savings from ongoing project under-runs and innovative letting processes.

Increased Oil and Gas Field Development

Growth in energy sector development, especially oil and gas drilling activities, contributed to the statewide pavement condition decline. Although robust development of energy sources benefits local and state economies, it reduces the service life of existing pavements.

Oil and gas drilling activities have been ongoing in many parts of the state. The Permian Basin in West Texas has been active since the 1920s. Besides West Texas, Texas has four major areas of shale oil and gas activities: the Barnett in the Fort Worth region, the Granite Wash in the Panhandle stretching into Oklahoma, the Haynesville-Bossier in East Texas and the Eagle Ford in South Texas. These four shale formations only recently became economically viable because of two innovative drilling technologies: horizontal drilling and hydraulic fracturing. The booming drilling activities in these four shale areas are generating large amounts of heavy truck traffic on roads which were not designed or constructed to accomodate heavy loads. The result has been increased pavement distress and reduced pavement life.

Record Setting Drought

Texas suffered the worst one-year drought in recorded history last year. Figure 1 shows the drought severity in Texas every three months since December 2010. Exceptional (D4) drought conditions covered most of Texas throughout the Summer of 2011. Lack of moisture caused soils to shrink drastically, resulting in wide and deep shrinkage cracks and other types of pavement damage. When FY 2012 PMIS pavement evaluations began in September 2011, the prolonged drought was at its peak. Increased lane miles of moisture-sensitive distresses, such as Rutting, Failures, Longitudinal

Cracking, and Transverse Cracking, were observed in FY 2012 as the result of the prolonged drought.

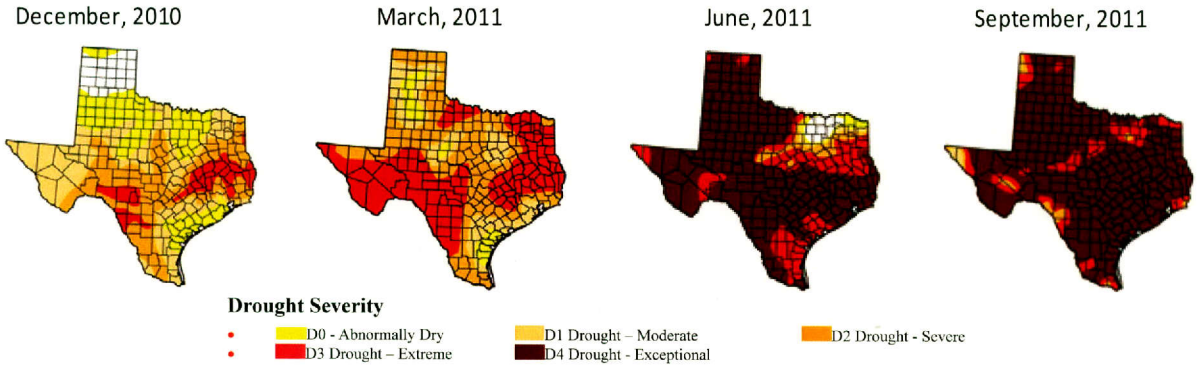


Figure 1. Texas Drought Severity Map (Source: http://droughtmonitor.unl.edu/archive.html)

Continuing Improvements in Pavement Management Practices

TxDOT continued to improve pavement management, maintenance and rehabilitation techniques. These management efforts allowed TxDOT to treat additional lane miles with the same available funding, kept the pavement network in better overall condition and (more importantly) reduced the long-term cost of maintaining pavements. Specific details about these efforts are provided below:

- Starting in 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 continued its **"Pennies to the Pavement"** initiative that it began in FY 2008 to focus 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 have found innovative ways to "stretch" limited pavement dollars.
- TxDOT also continued a series of **Peer Reviews** of each district's pavement maintenance program that it began in FY 2009. The Peer Reviews have made it easier for districts to share "best practices" to use resources to improve the effectiveness of pavement maintenance.

Additional Savings from Ongoing Project Under-runs and Innovative Letting Processes

Additional cost savings were achieved from ongoing projects that went to contract with under-runs from the originally obligated funds and innovative letting processes. The lower construction and material costs caused bids for many projects to come in below projections. These savings allowed TxDOT to treat more mileage with the same amount of money. Figure 2 shows TxDOT resurfacing centerline miles in the last four years. This resurfacing helped reduce the amount of pavement condition decline.

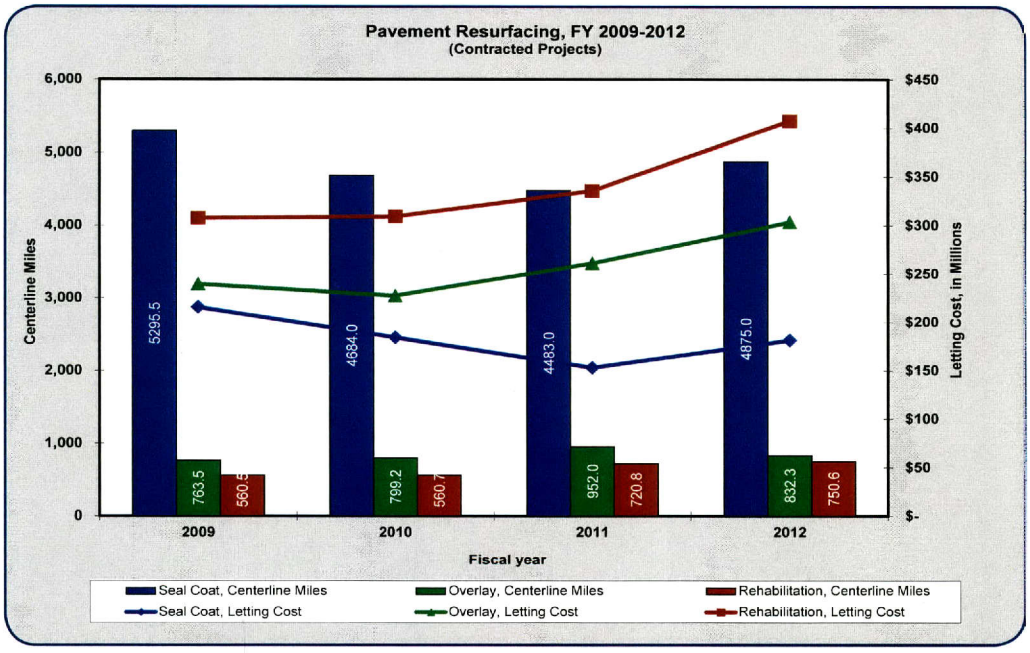


Figure 2. Pavement Resurfacing, FY 2009-2012

Predicted Future Condition

Figure 3 shows statewide overall pavement performance for FY 2002-2015, 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 2012, it was still higher than the predicted FY 2012 percentage (85.76).

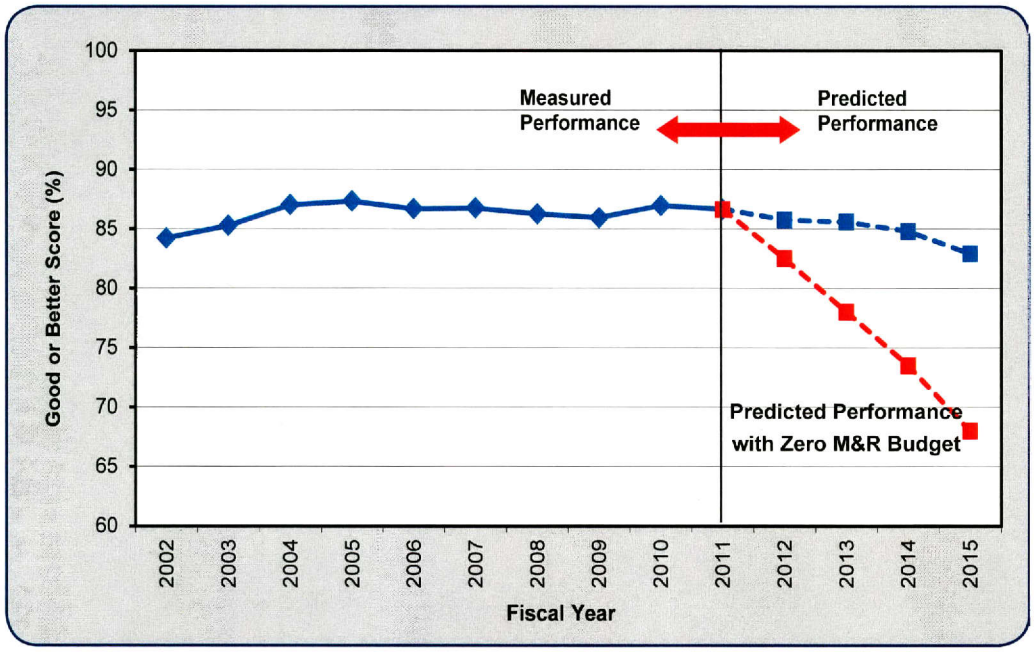
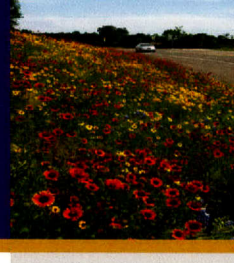


Figure 3. Statewide Overall Pavement Performance for FY 2002-2015

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



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 describes "distress"	Ride Score describes "ride"	Condition Score 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 ½-1 inch to ¼-½ inch, Deep Rutting changed from 1-3 inch to ½-1 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 2002-2012)

FY 2002: Rut gap from 2-3 inches closed, Failure Rutting changed from greater than 3-inch to greater than 2-inch; two- and 10-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 one 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 2012: TxDOT continues to certify laser profilers every year.
No additional change in PMIS Scores.

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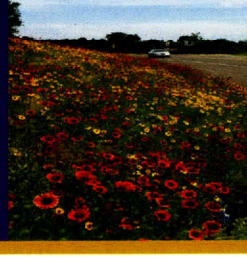
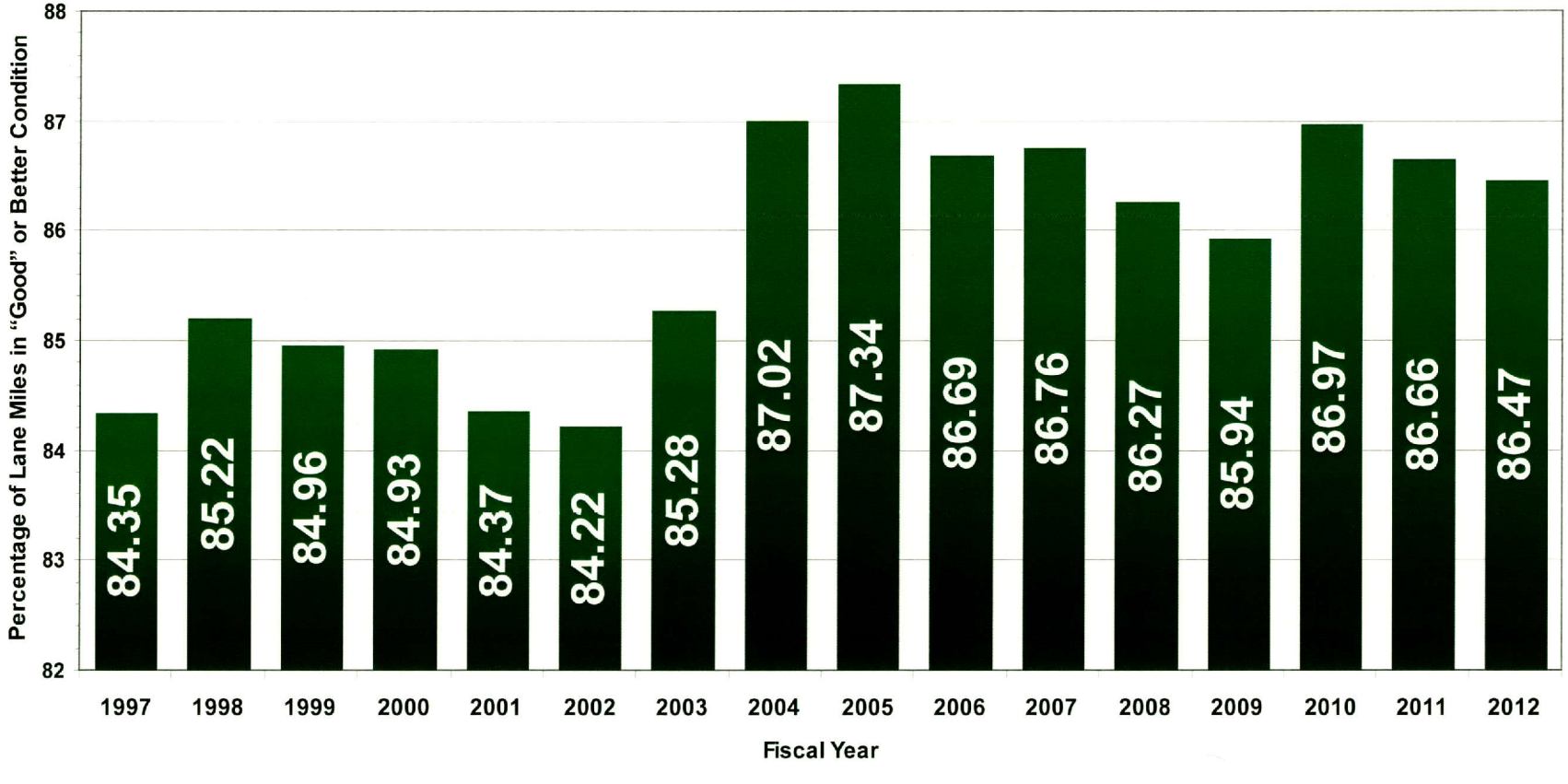
Chapter 1 — Status of Statewide Pavement Condition Goal

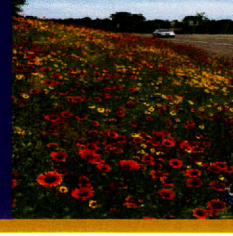
90 Percent of Lane Miles in "Good" or Better Condition by FY 2012



Statewide Pavement Condition, FY 1997-2012 Chart



Chapter 1 — Status of Statewide Pavement Condition Goal



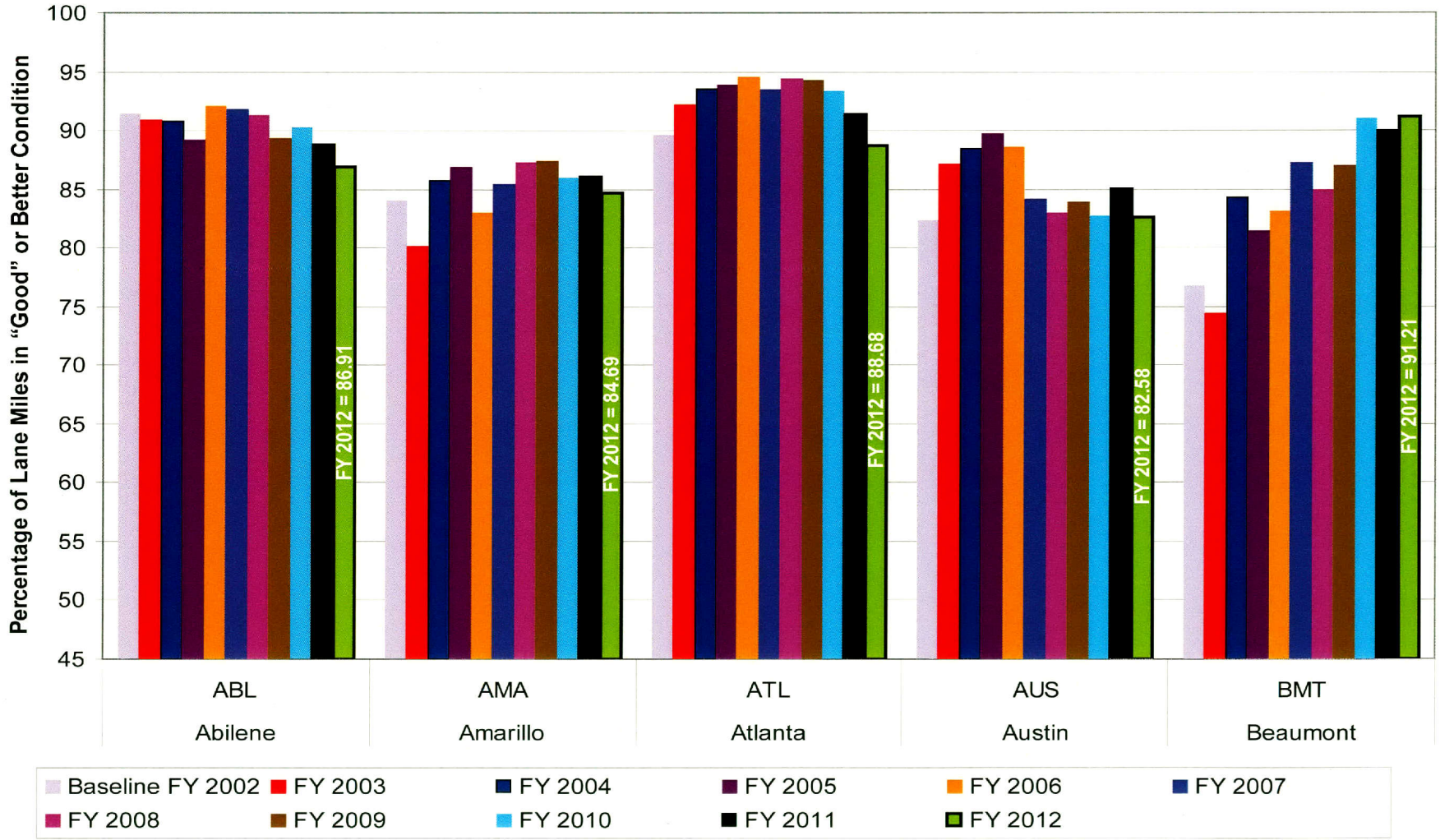
Status of Statewide Pavement Condition Goal, FY 2002-2012 Table

District		Baseline FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	Change FY 2011-2012
Abilene	ABL	91.49	90.87	90.83	89.23	92.09	91.89	91.32	89.31	90.22	88.79	86.91	-1.88
Amarillo	AMA	84.01	80.17	85.67	86.89	83.02	85.46	87.25	87.41	86.04	86.13	84.69	-1.44
Atlanta	ATL	89.56	92.24	93.48	93.94	94.57	93.57	94.43	94.25	93.35	91.38	88.68	-2.70
Austin	AUS	82.42	87.10	88.50	89.81	88.62	84.18	83.00	83.95	82.71	85.04	82.58	-2.46
Beaumont	BMT	76.83	74.40	84.24	81.47	83.10	87.25	84.93	86.98	91.06	89.97	91.21	1.24
Brownwood	BWD	90.98	94.27	95.74	94.28	94.56	93.27	93.21	91.17	93.44	95.34	92.47	-2.87
Bryan	BRY	83.36	86.09	84.42	84.50	81.85	86.80	86.10	87.57	86.38	87.49	83.80	-3.69
Childress	CHS	92.95	90.63	90.62	92.17	91.33	92.59	91.69	91.48	89.53	87.67	91.12	3.45
Corpus Christi	CRP	80.01	81.14	82.24	78.15	81.48	80.68	82.02	83.57	81.58	83.15	78.15	-5.00
Dallas	DAL	63.55	72.62	76.14	77.53	71.93	74.48	70.74	75.27	78.31	76.13	75.63	-0.50
El Paso	ELP	84.66	85.03	87.99	83.36	83.76	90.17	87.12	87.35	89.01	90.54	90.34	-0.20
Fort Worth	FTW	86.84	85.81	85.41	84.75	85.50	83.41	83.01	81.44	85.52	86.70	87.79	1.09
Houston	HOU	75.14	73.82	73.51	77.54	77.93	80.14	79.71	75.80	76.01	75.09	79.75	4.66
Laredo	LRD	82.73	80.42	83.43	83.30	84.60	86.89	85.37	85.37	85.69	74.64	81.78	7.14
Lubbock	LBB	84.18	86.13	88.68	89.82	90.03	91.39	88.83	86.40	87.36	86.40	87.90	1.50
Lufkin	LFK	83.12	85.99	86.21	87.25	88.65	88.26	88.94	87.87	89.30	88.62	88.96	0.34
Odessa	ODA	94.96	96.15	95.04	95.55	94.83	96.15	94.15	93.33	93.33	94.14	95.45	1.31
Paris	PAR	78.57	82.24	86.07	85.60	85.11	77.26	72.68	74.92	80.60	82.68	81.36	-1.32
Pharr	PHR	89.44	90.66	90.26	88.43	87.93	83.77	80.95	80.38	84.07	82.64	86.55	3.91
San Angelo	SJT	92.35	94.10	95.27	95.93	96.42	94.89	94.63	94.58	95.23	95.11	95.15	0.04
San Antonio	SAT	83.69	84.94	83.64	82.98	85.08	81.76	87.27	83.03	84.82	86.51	84.67	-1.84
Tyler	TYL	85.18	81.34	88.75	90.88	86.17	89.91	86.33	92.28	93.85	94.77	93.75	-1.02
Waco	WAC	88.13	87.98	90.14	91.55	92.04	90.90	90.95	86.72	87.54	85.95	84.76	-1.19
Wichita Falls	WFS	87.59	90.39	91.05	93.00	90.38	91.76	93.40	92.98	93.18	92.60	92.43	-0.17
Yoakum	YKM	83.51	85.31	87.88	90.54	83.81	81.94	86.03	86.08	87.86	88.17	86.63	-1.54
Statewide	**ALL**	**84.22**	**85.28**	**87.02**	**87.34**	**86.69**	**86.76**	**86.27**	**85.94**	**86.97**	**86.66**	**86.47**	**-0.19**

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

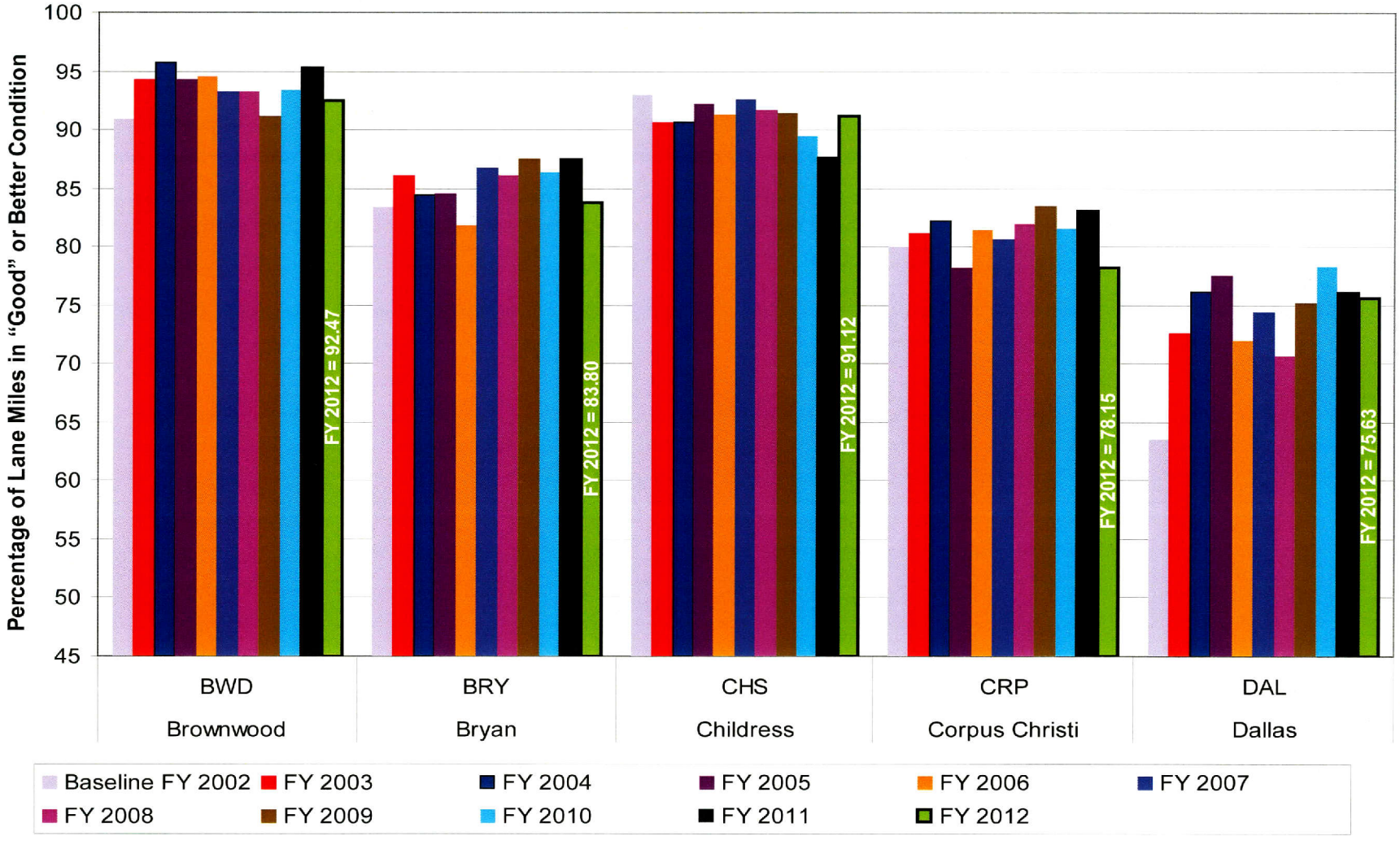
Pavement Condition Trends, by District, FY 2002-2012

(Abilene through Beaumont)



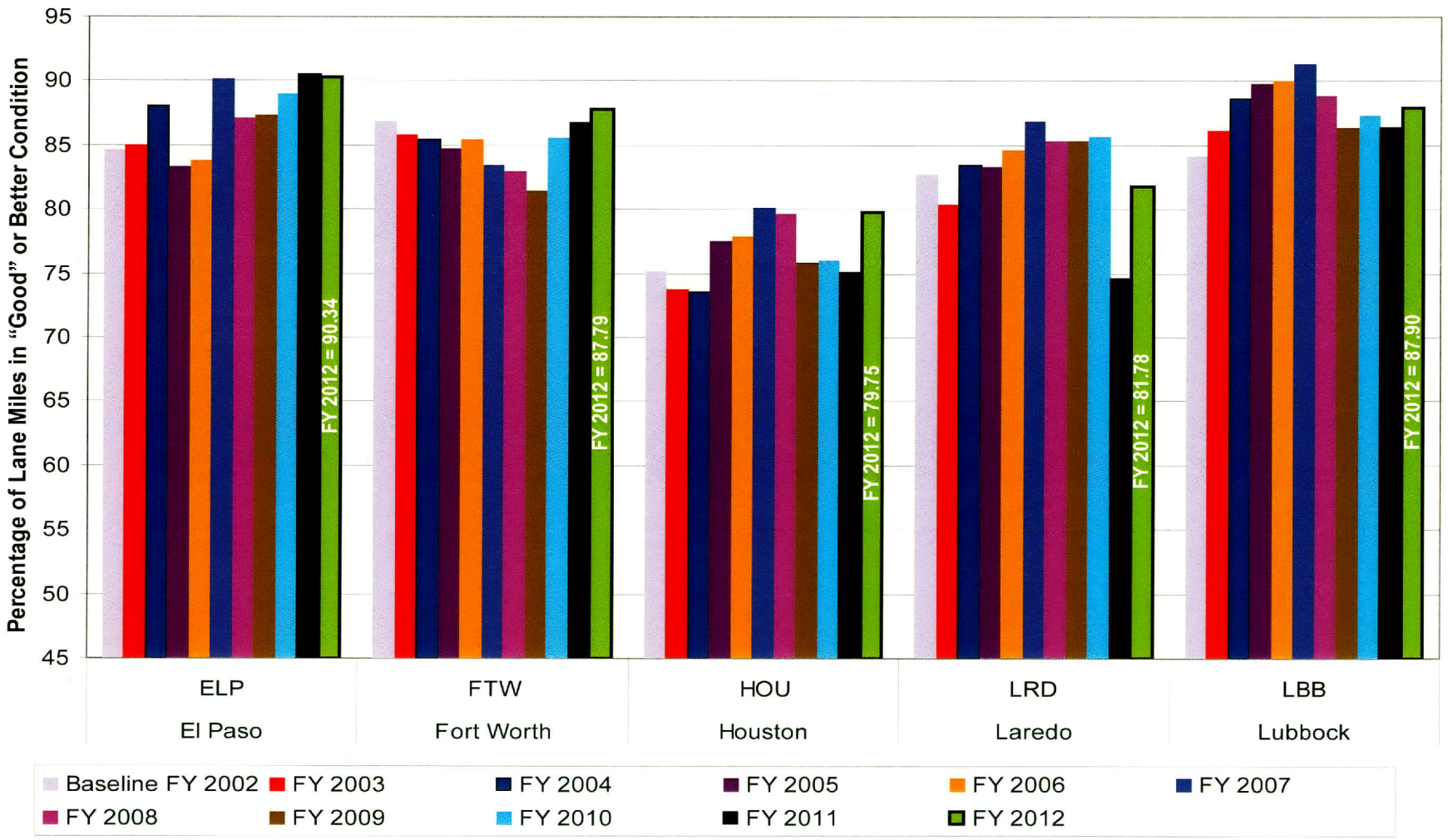
Pavement Condition Trends, by District, FY 2002-2012

(Brownwood through Dallas)



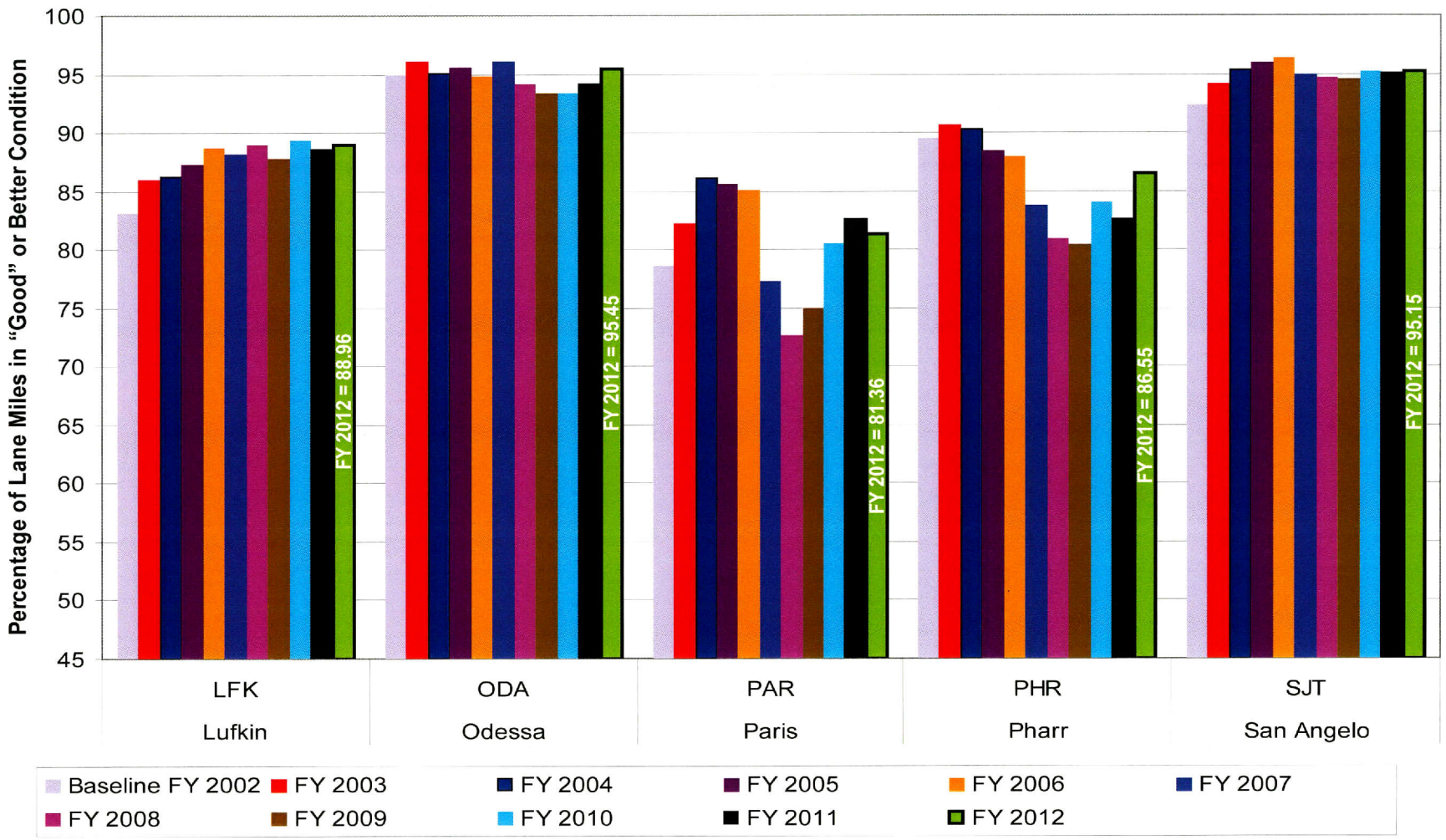
Pavement Condition Trends, by District, FY 2002-2012

(El Paso through Lubbock)



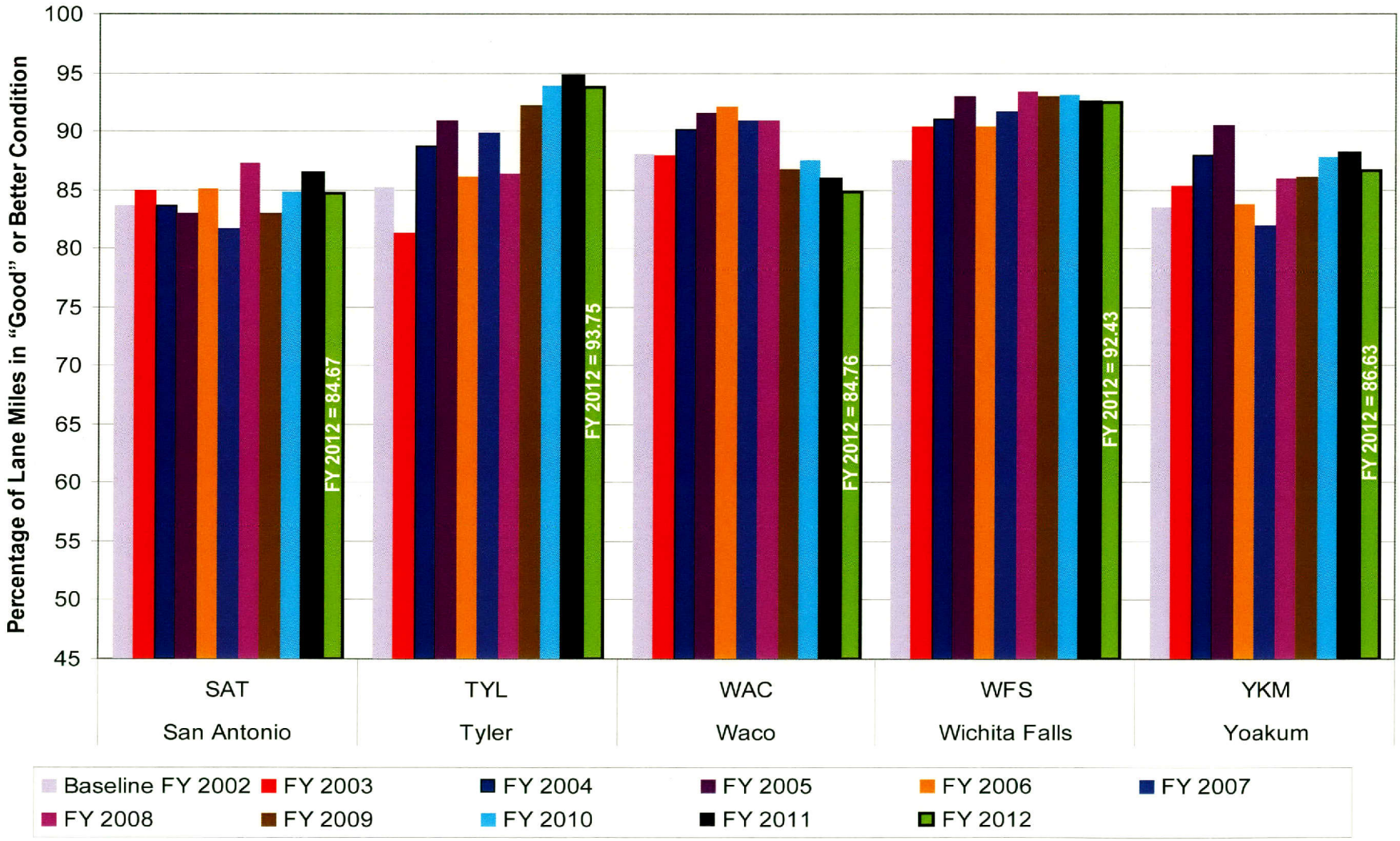
Pavement Condition Trends, by District, FY 2002-2012

(Lufkin through San Angelo)



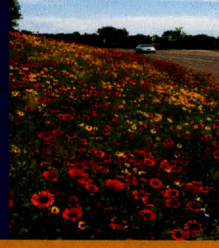
Pavement Condition Trends, by District, FY 2002-2012

(San Antonio through Yoakum)



Texas has 17 Interstate Highway routes. According to the Federal Highway Administration (FHWA), these routes total 3,233.45 miles - more than any other state.

Chapter 2 — Substandard Condition Scores



This chapter contains the FY 2009-2012 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 86.47 percent of pavements meeting this standard in FY 2012. In order to meet the Commission's goal to have 90 percent of Texas pavements in "Good" or better condition, we need 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 of 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 FY 2009
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	>165,000 HIGH	IH	US	SH	BR	FM	PR	PA
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 And 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		

	Lane Miles				Percent
Pavement Type	Rated		Substandard		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 Score below 70 and a utility value less than 0.70.

Texas Department of Transportation

Pavement Management Information System (PMIS)

Statewide FY 2010

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 And 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		

	Lane Miles				Percent
Pavement Type	Rated		Substandard		Substand
Asphalt Concrete	174,691.6	91.75%	21,479.1	86.57%	12.30%
Continuously Reinforced Concrete	11,920.6	6.26%	1,765.3	7.12%	14.81%
Jointed Concrete	3,783.3	1.99%	1,566.0	6.31%	41.39%
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 sections that have Condition Score 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 FY 2011
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 And 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

	Lane Miles				Percent
Pavement Type	Rated		Substandard		Substandard
Asphalt Concrete	174,344.5	91.39%	21,879.1	86.00%	12.55%
Continuously Reinforced Concrete	12,715.0	6.67%	1,969.8	7.74%	15.49%
Jointed Concrete	3,699.9	1.94%	1,591.9	6.26%	43.03%
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 Score below 70 and a utility value less than 0.70.

Texas Department of Transportation
Pavement Management Information System (PMIS)

Statewide FY 2012
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	84.01	5,682.4	89.59	85.79	79.48	85.67	88.51	80.45	72.57	84.31	64.58	82.68
ACP Patching	86.36	6,071.2	82.64	84.13	90.17	90.71	84.64	89.08	95.41	84.63	96.17	100.00
JCP Ride	56.64	1,182.1	91.46	60.92	55.24	63.23	56.57	54.91	56.36	48.36		51.87
CRCP Ride	69.68	1,014.1	85.18	73.07	69.38	73.78	70.37	64.18	58.58	62.30		61.84
ACP Alligator Cracking	91.27	3,034.6	92.71	91.65	90.17	92.17	89.56	90.17	89.77	92.26	89.14	99.39
ACP Failures	92.63	3,374.7	87.66	91.45	96.37	90.03	96.83	95.73	98.62	90.06	89.97	100.00
CRCP Portland Concrete Patching	77.82	746.4	76.11	66.80	78.37	72.31	75.89	87.77	73.09	82.51		100.00
JCP Portland Concrete Patching	73.84	629.2	89.83	66.47	74.26	73.75	67.27	72.39	83.49	94.25		100.00
ACP Longitudinal Cracking	95.46	1,031.7	98.45	97.41	92.28	91.79	93.00	93.52	91.40	97.89	97.42	74.81
CRCP Punchouts	93.57	154.9	90.18	92.95	93.63	93.06	92.76	95.18	100.00	92.21		100.00
JCP Failures	95.05	84.5	50.14	96.60	96.06	92.62	95.51	95.10	96.14	99.32		100.00
ACP Block Cracking	99.32	251.2	99.85	99.44	98.92	98.56	99.16	98.81	97.52	99.79	100.00	100.00
CRCP Asphalt Concrete Patching	98.11	51.9	95.18	100.00	98.04	97.27	99.75	97.94	100.00	99.80		100.00
ACP Transverse Cracking	98.93	75.9	99.47	99.18	98.44	98.25	98.37	98.43	96.51	99.57	100.00	100.00
CRCP Spalled Cracks	98.45	28.6	95.10	94.63	98.66	99.02	98.90	97.05	100.00	98.62		100.00
JCP Failed Joints And Cracks	98.25	10.4	93.60	97.48	98.46	98.59	98.40	97.58	98.93	99.85		100.00
ACP Deep Rutting	99.67	25.8	99.50	99.62	99.81	99.80	99.69	99.64	99.91	99.64	100.00	100.00
ACP Shallow Rutting	99.29	0.0	99.16	99.30	99.36	99.53	99.21	99.35	99.52	99.24	99.79	99.92
JCP Longitudinal Cracks	99.97	0.0	99.99	99.86	99.98	99.94	99.98	99.99	100.00	99.89		100.00
JCP Shattered Slabs	99.99	0.0	99.68	100.00	100.00	99.97	100.00	100.00	100.00	100.00		100.00

Pavement Type	Lane Miles				Percent Substandard
	Rated		Substandard		
Asphalt Concrete	174,498.6	91.40%	22,370.9	86.61%	12.82%
Continuously Reinforced Concrete	12,798.9	6.70%	1,898.7	7.35%	14.83%
Jointed Concrete	3,620.7	1.90%	1,558.5	6.03%	43.04%
Total:	190,918.2		25,828.1		13.53%

86.47 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 Score below 70 and a utility value less than 0.70.

Texas first urban expressway was the Gulf Freeway (I-45) in Houston. The first major portion of this road opened in 1952.

Chapter 3 — PMIS Score Trends

This Chapter shows FY 2009-2012 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 2012, **86.47 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 (86.47 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 2012, 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 except for "Very Poor". The increase of Condition Score classes in the "Fair" and "Poor" classes dragged down the statewide percentage of lane miles in "Good" or better condition.

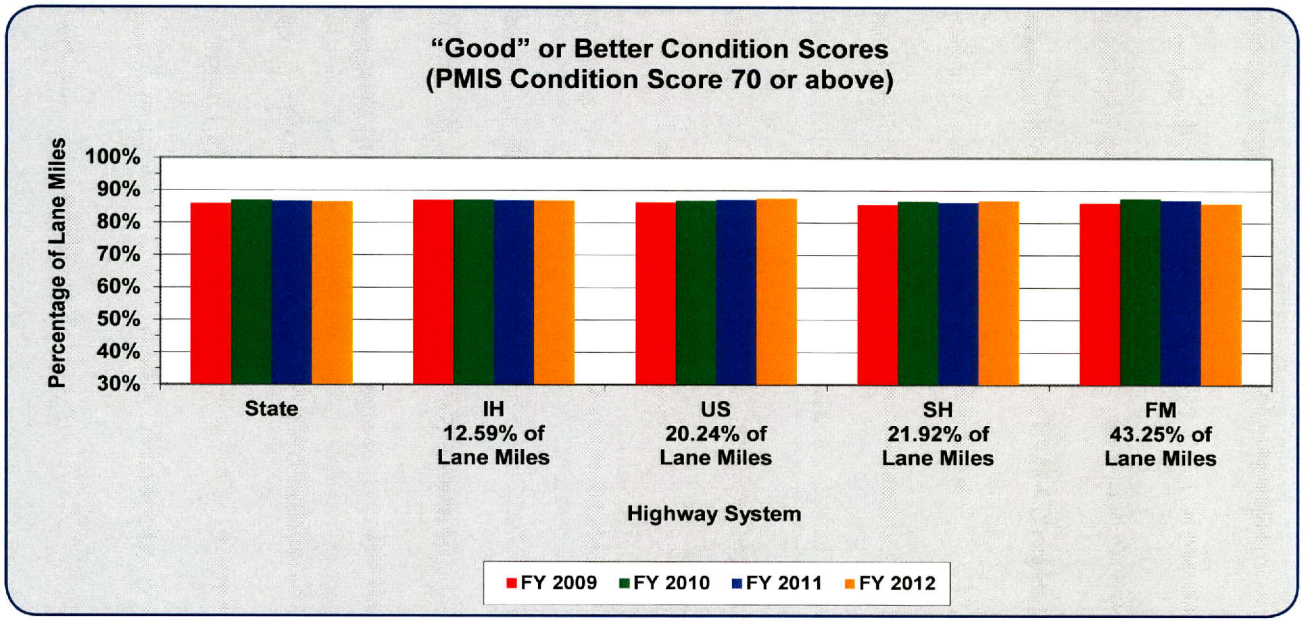
Category	Distress Score	Ride Score	Condition Score
	describes "distress"	describes "ride"	describes "condition"
"Very Good"	90 to 100	4.0 to 5.0	90 to 100
"Good"	80 to 89	3.0 to 3.9	70 to 89
"Fair"	70 to 79	2.0 to 2.9	50 to 69
"Poor"	60 to 69	1.0 to 1.9	35 to 49
"Very Poor"	1 to 59	0.1 to 0.9	1 to 34

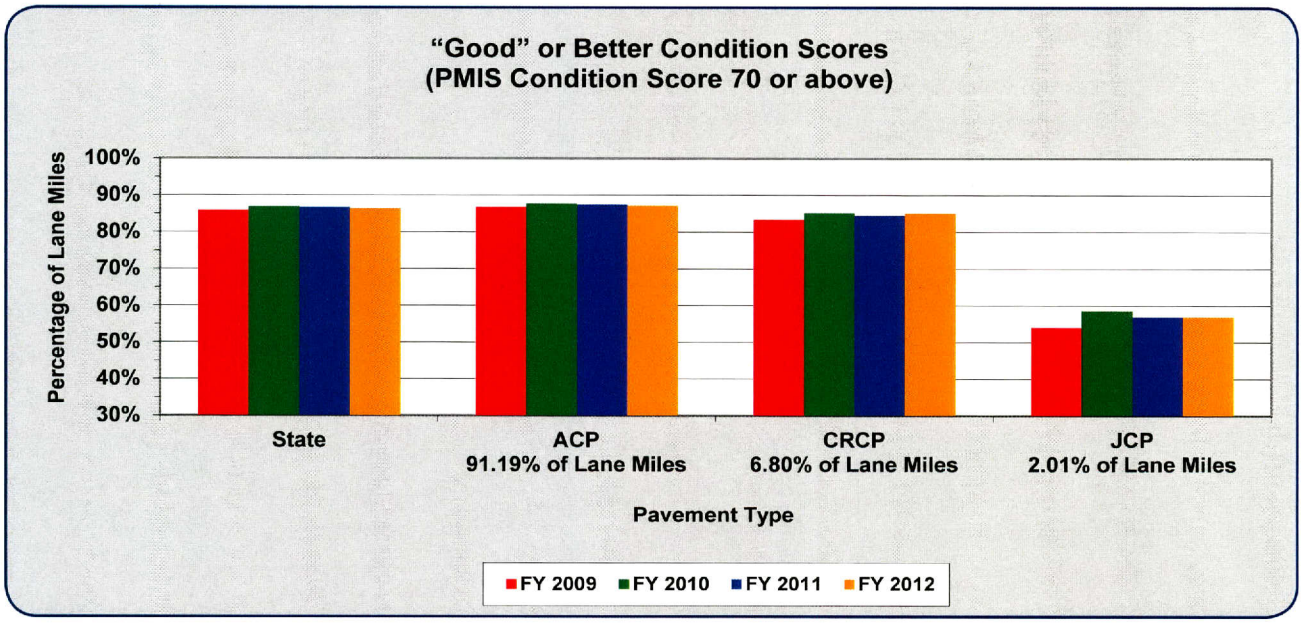
Category	Distress Score	Shallow Distress Score	Deep Distress Score
	describes "distress"	describes need for surface repair	describes need for sub-surface repair
"Very Good"	90 to 100	90 to 100	90 to 100
"Good"	80 to 89	80 to 89	80 to 89
"Fair"	70 to 79	70 to 79	70 to 79
"Poor"	60 to 69	60 to 69	60 to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

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
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%
2012	86.47%	86.89%	87.57%	86.85%	86.05%	87.18%	85.17%	56.96%	89.37%	82.99%	64.42%
2011-2012 Change	-0.19%	-0.03%	+0.50%	+0.53%	-1.00%	-0.27%	+0.66%	-0.01%	+0.23%	-1.20%	+0.39%

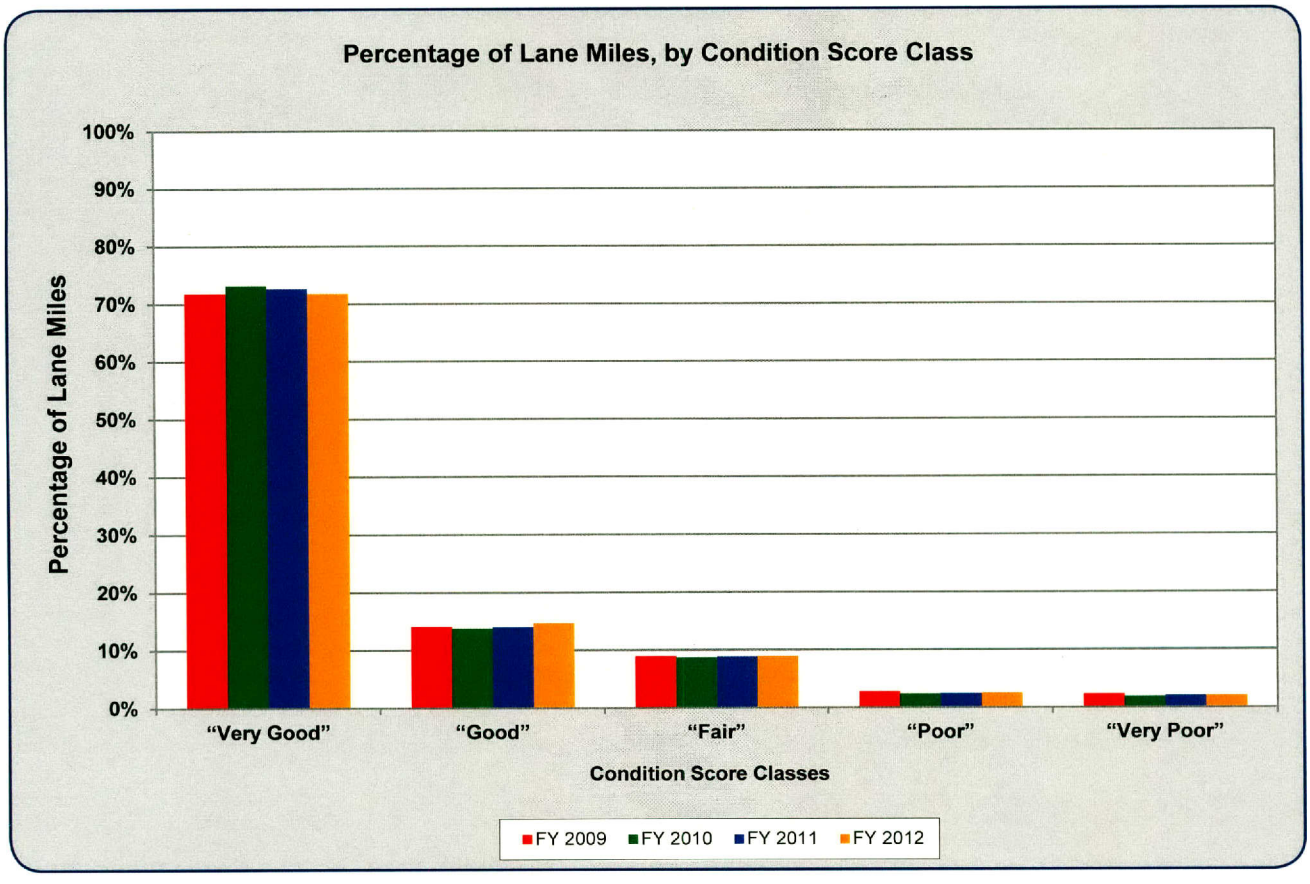




Pavement Condition (Condition Scores)

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"
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%
2012	71.79%	14.69%	8.96%	2.52%	2.05%
2011-2012 Change	**-0.85%**	**+0.67%**	**+0.12%**	**+0.08%**	**-0.01%**



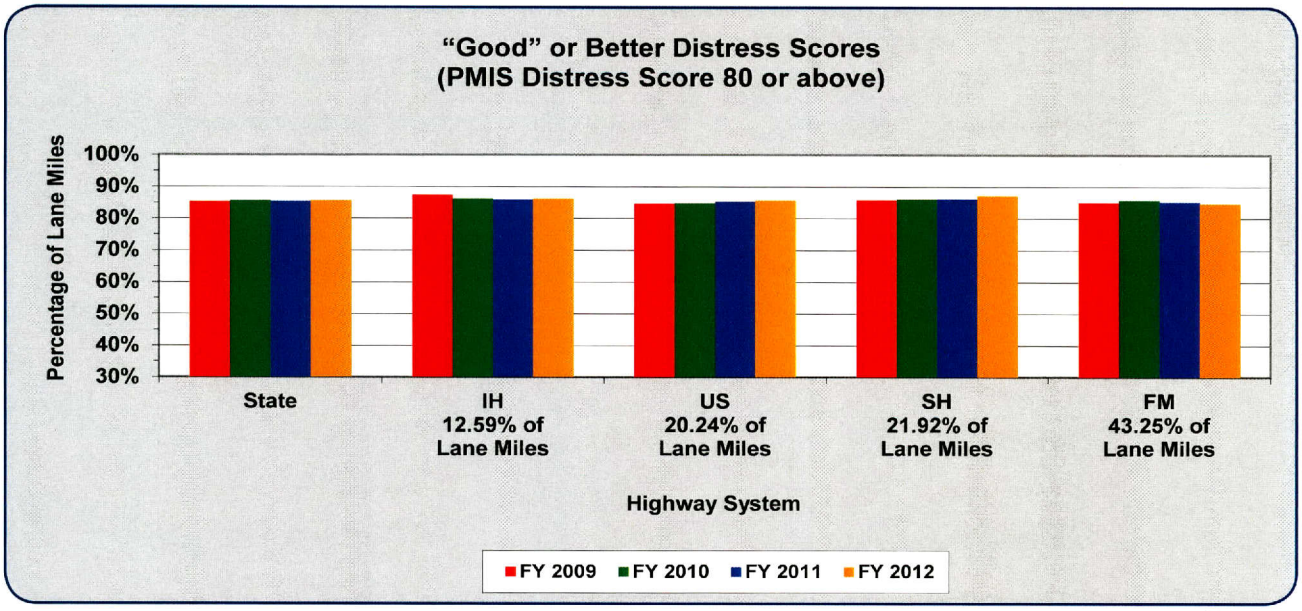
Condition Score	Class
90-100	**"Very Good"**
70-89	**"Good"**
50-69	"Fair"
35-49	"Poor"
1-34	"Very Poor"

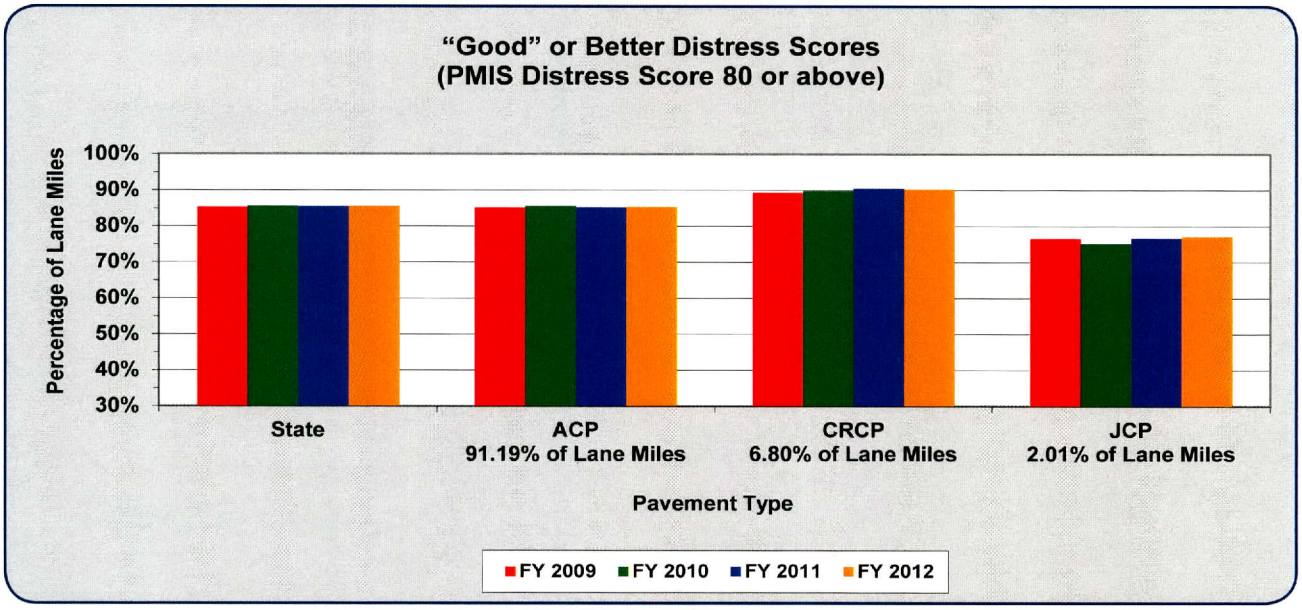
Chapter 3 — PMIS Score Trends

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
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%
2012	85.60%	86.19%	85.71%	87.19%	84.74%	85.42%	90.35%	77.23%	86.25%	87.37%	79.08%
2011-2012 Change	+0.13%	+0.16%	+0.36%	+0.99%	-0.51%	+0.14%	-0.21%	+0.52%	+0.53%	-1.26%	+0.88%

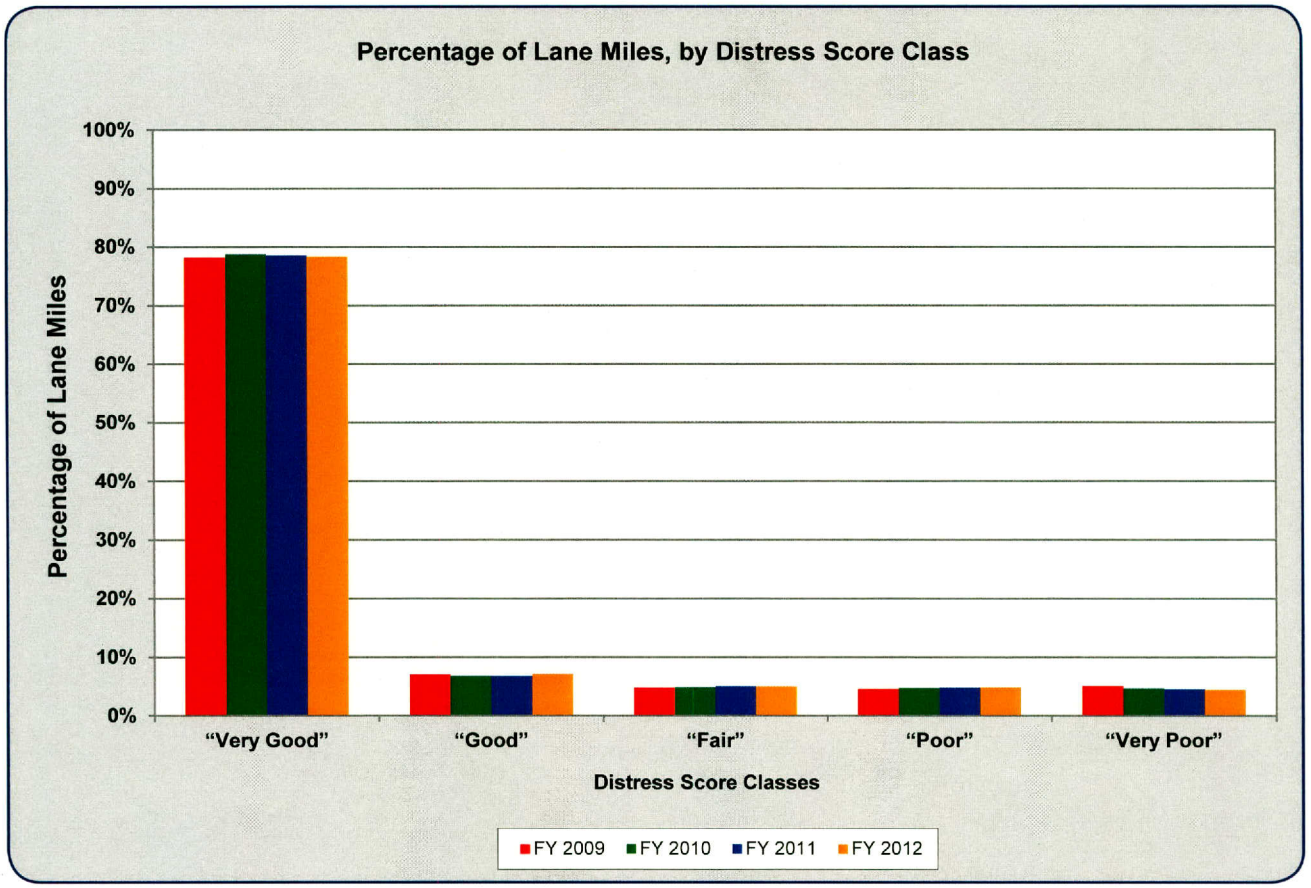




Pavement Distress (Distress Scores)

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"
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%
2012	78.42%	7.18%	5.07%	4.89%	4.44%
2011-2012 Change	**-0.21%**	**+0.34%**	**+0.01%**	**+0.02%**	**-0.15%**



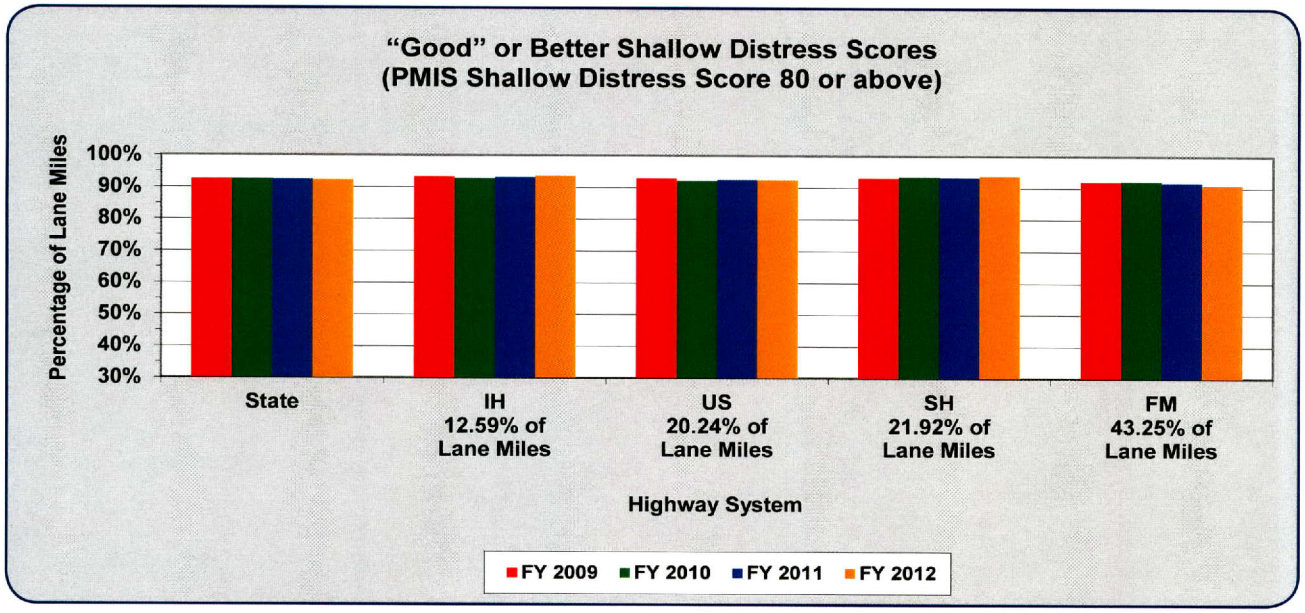
Distress Score	Class
90-100	**"Very Good"**
80-89	**"Good"**
70-79	"Fair"
60-69	"Poor"
1-59	"Very Poor"

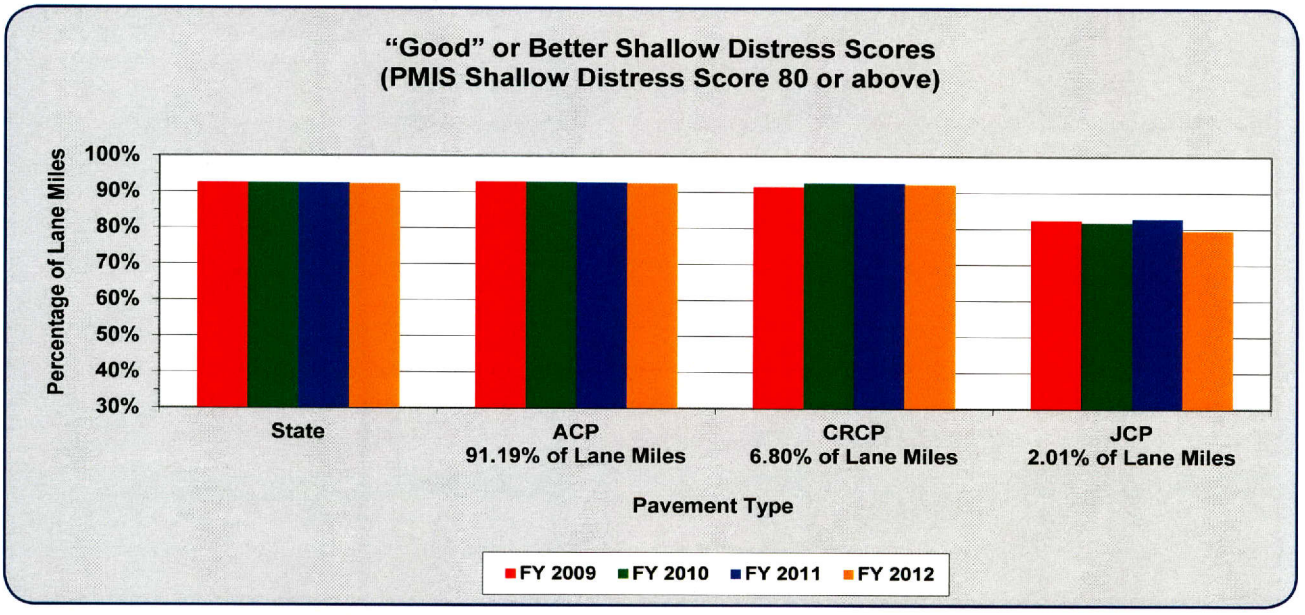
Chapter 3 — PMIS Score Trends

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
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%
2012	92.35%	93.61%	92.53%	93.83%	91.08%	92.61%	92.35%	79.58%	95.35%	89.85%	83.18%
2011-2012 Change	-0.17%	+0.33%	+0.03%	+0.42%	-0.73%	-0.10%	-0.36%	-3.34%	+0.93%	-1.13%	-2.82%

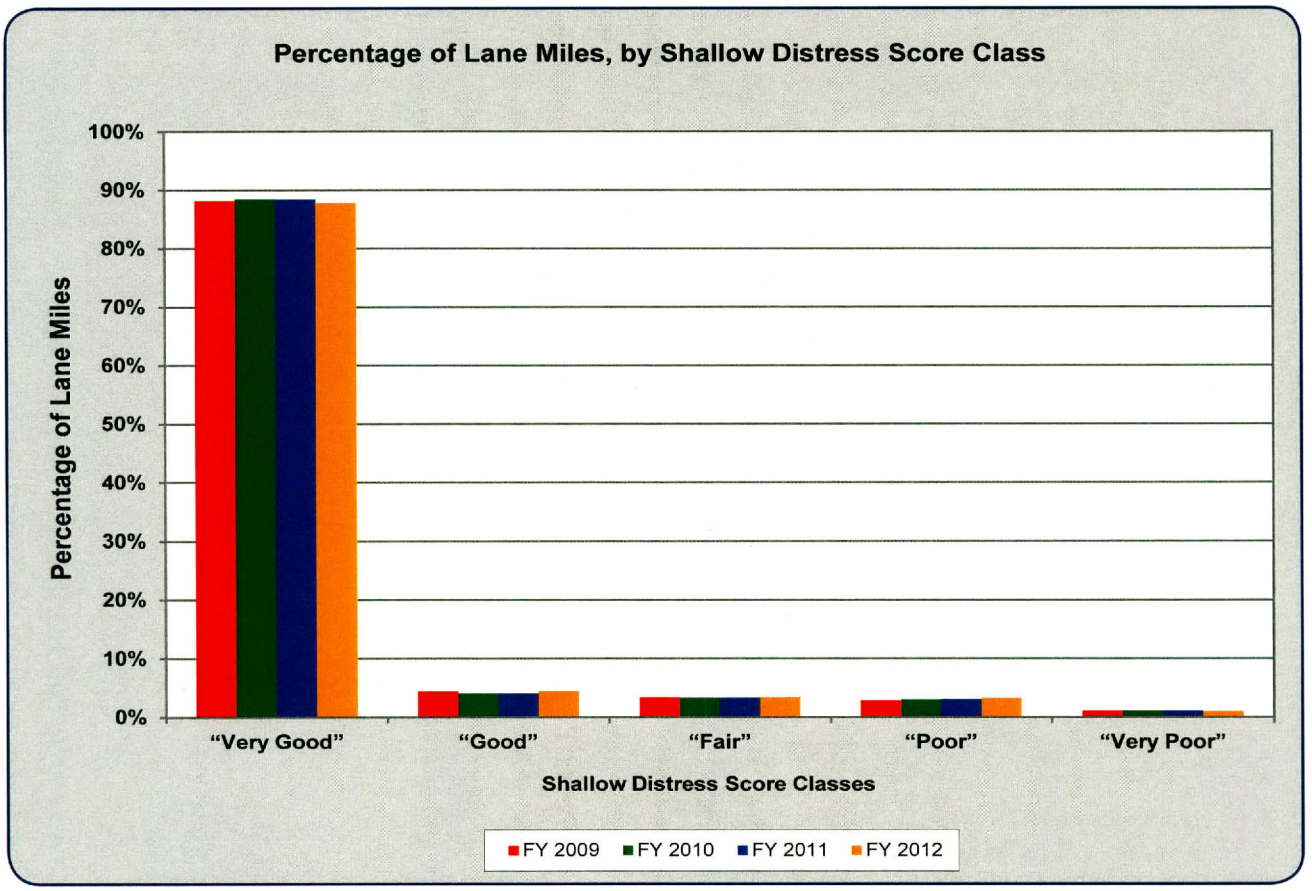




Pavement Distress (Shallow Distress Scores)

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"
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%
2012	87.87%	4.48%	3.38%	3.23%	1.04%
2011-2012 Change	**-0.57%**	**+0.40%**	**+0.05%**	**+0.18%**	**-0.06%**



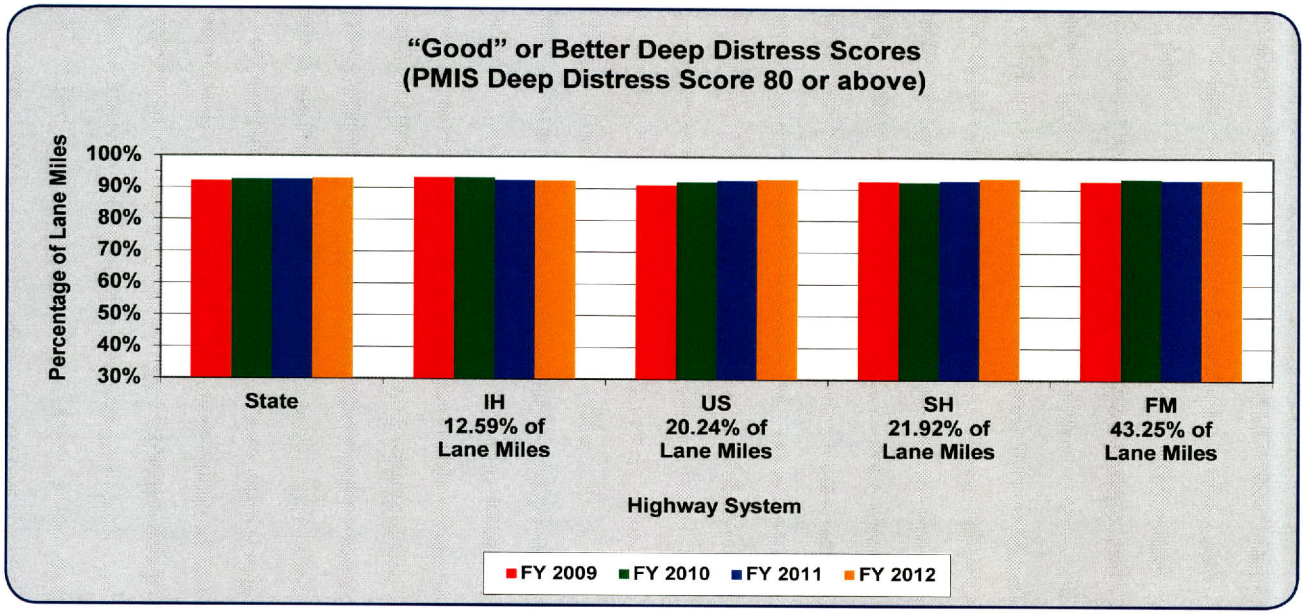
Shallow Distress Score	Class
90-100	**"Very Good"**
80-89	**"Good"**
70-79	"Fair"
60-69	"Poor"
1-59	"Very Poor"

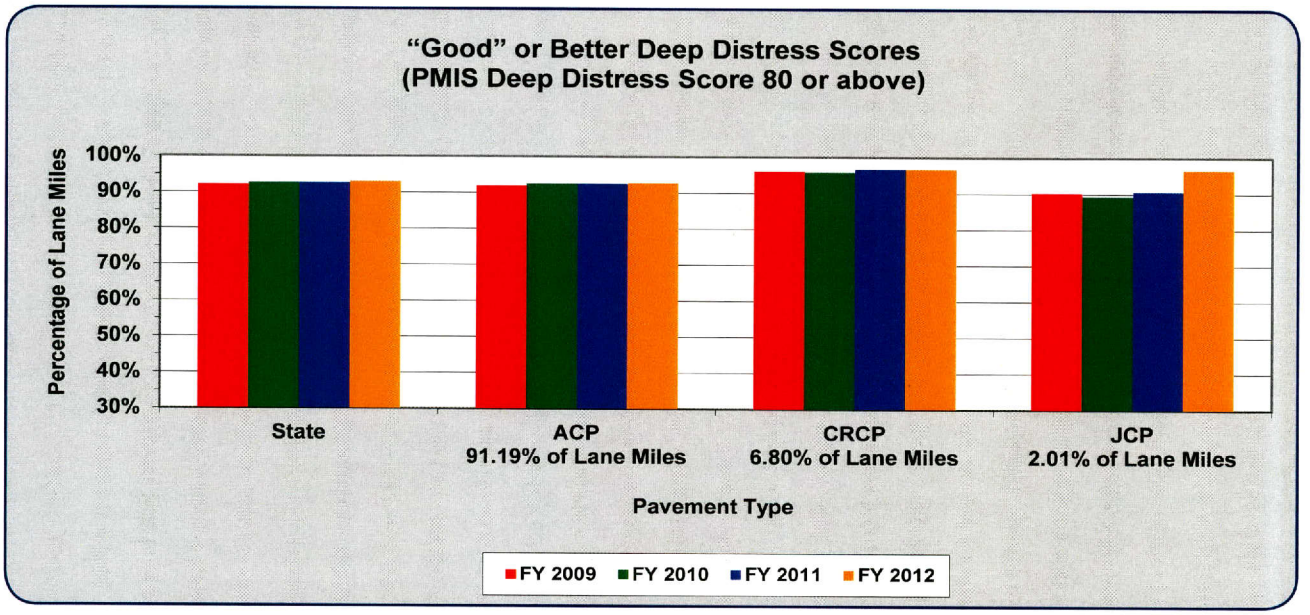
Chapter 3 — PMIS Score Trends

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
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%
2012	93.08%	92.51%	93.02%	93.50%	93.28%	92.73%	96.80%	96.66%	91.37%	95.68%	95.72%
2011-2012 Change	+0.37%	-0.05%	+0.42%	+0.82%	+0.21%	+0.27%	+0.03%	+5.93%	-0.33%	-0.20%	+5.48%

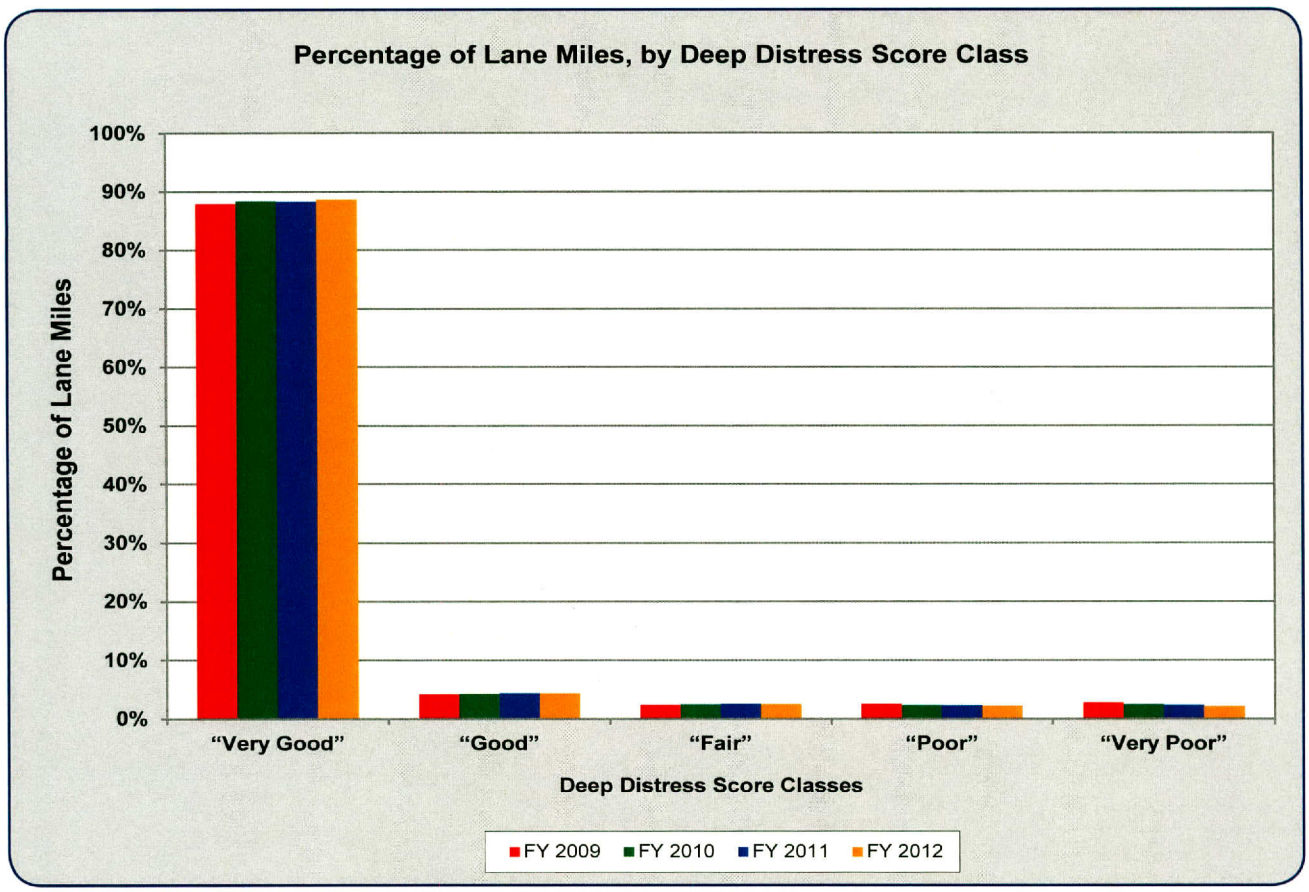




Pavement Distress (Deep Distress Scores)

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"
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%
2012	88.67%	4.41%	2.51%	2.25%	2.16%
2011-2012 Change	**+0.34%**	**+0.03%**	**-0.08%**	**-0.08%**	**-0.20%**



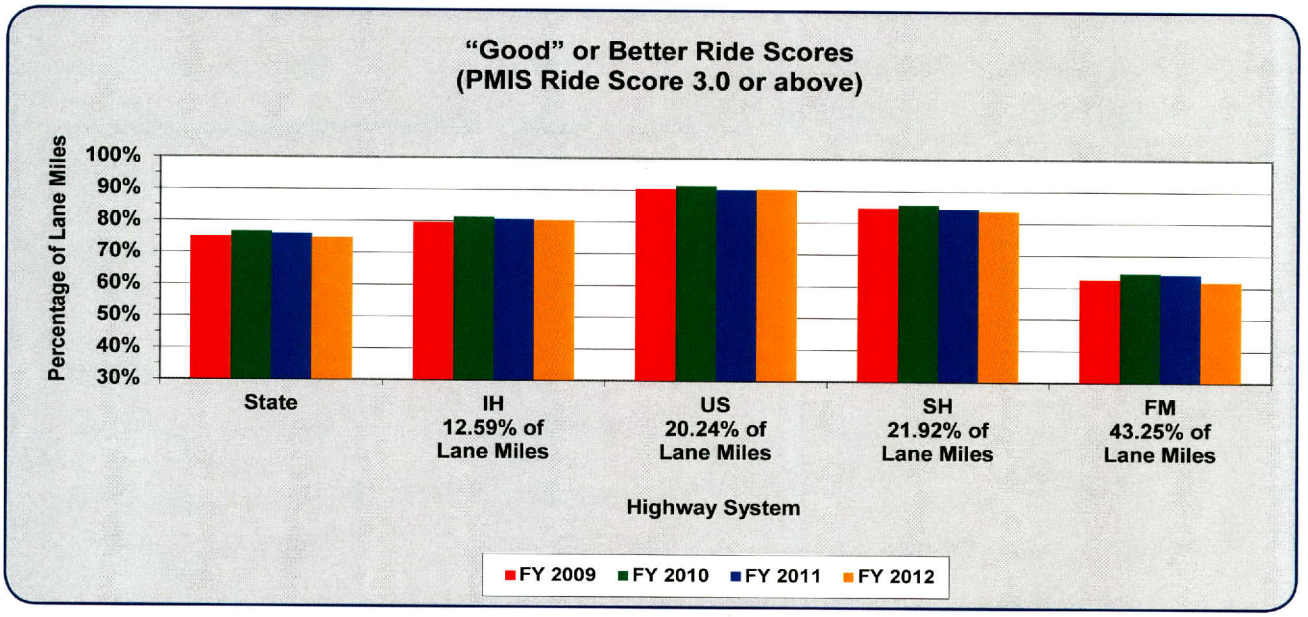
Deep Distress Score	Class
90-100	**"Very Good"**
80-89	**"Good"**
70-79	"Fair"
60-69	"Poor"
1-59	"Very Poor"

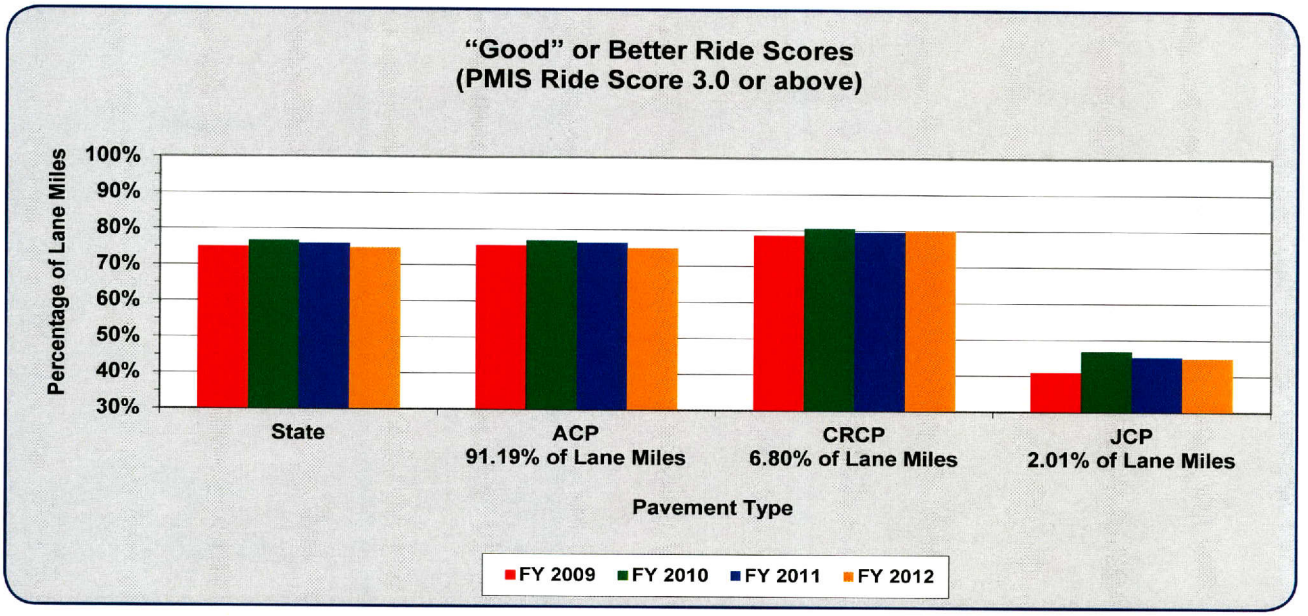
Chapter 3 — PMIS Score Trends

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
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%	90.24%	84.48%	64.11%	76.40%	79.64%	45.20%	81.94%	82.67%	52.92%
2012	74.83%	80.52%	90.45%	83.76%	61.82%	75.07%	80.03%	44.96%	81.79%	81.59%	52.91%
2011-2012 Change	-1.18%	-0.29%	+0.21%	-0.72%	-2.29%	-1.33%	+0.39%	-0.24%	-0.15%	-1.08%	-0.01%

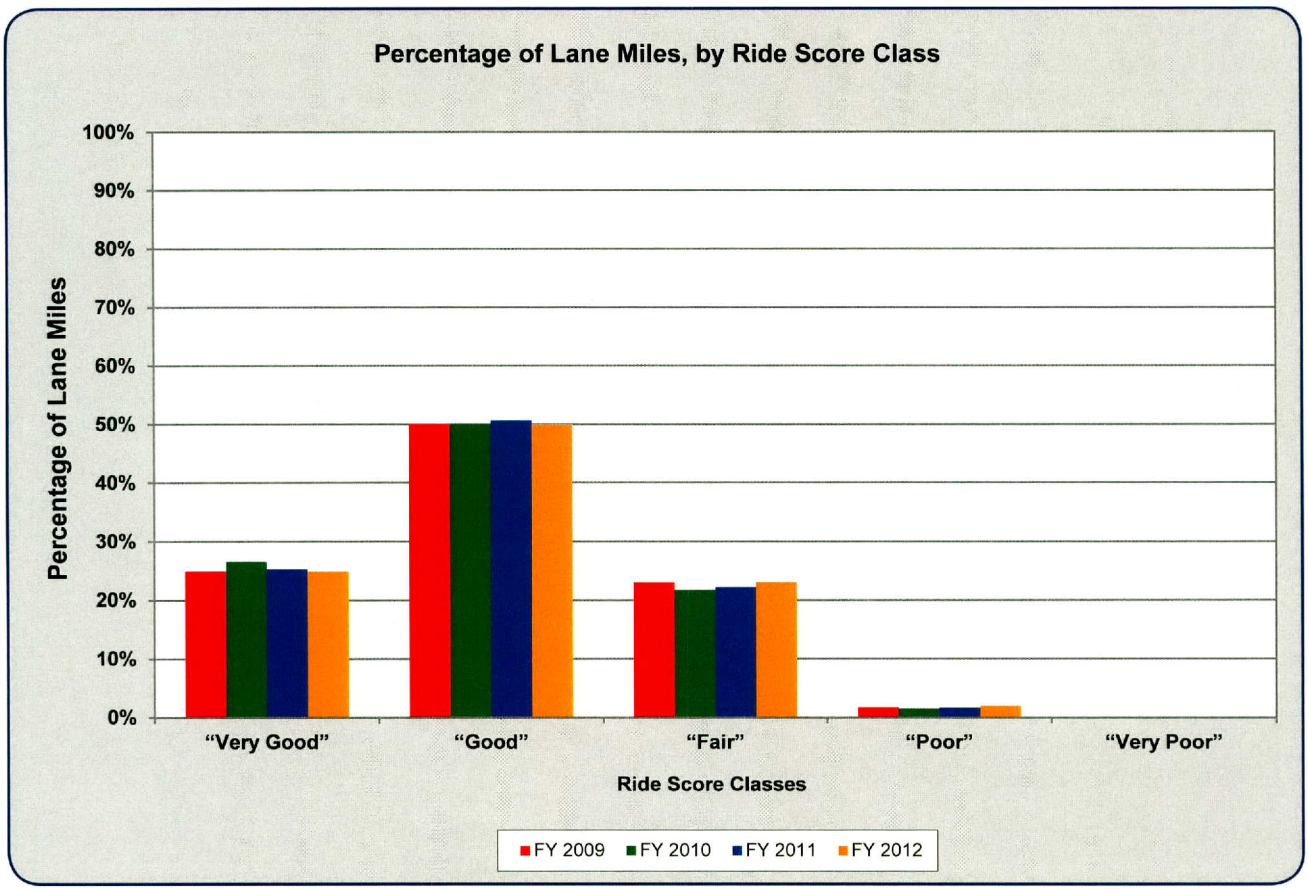




Pavement Ride Quality (Ride Scores)

Percentage of Lane Miles, by Ride Score Class

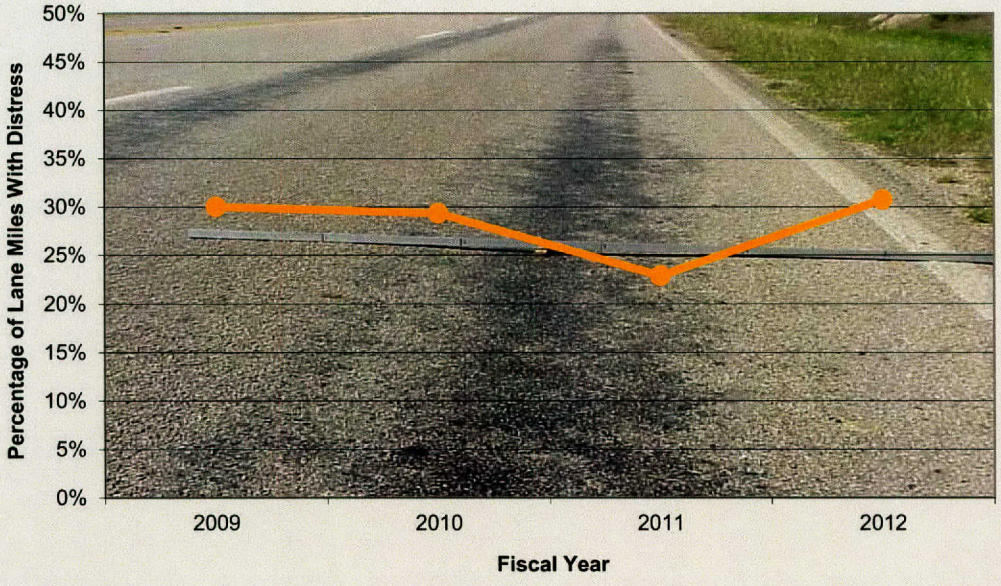
Fiscal Year	Percentage of Lane Miles, by Ride Score Class				
	"Very Good"	"Good"	"Fair"	"Poor"	"Very Poor"
2009	24.98%	50.07%	23.06%	1.82%	0.07%
2010	26.59%	50.06%	21.76%	1.53%	0.06%
2011	25.32%	50.69%	22.20%	1.68%	0.10%
2012	24.91%	49.92%	23.09%	2.00%	0.08%
2011-2012 Change	**-0.41%**	**-0.77%**	**+0.89%**	**+0.32%**	**-0.02%**



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"

Bats' use of bridges as roosts first came to TxDOT's attention in 1980 when a colony of Mexican Free-tail bats moved into the crevices beneath the newly renovated Congress Avenue bridge in downtown Austin, Texas. Now, more than 1.5 million Mexican Free-tail bats live under the bridge. On a typical summer night, the Congress Avenue bats eat over 20,000 pounds of insects.

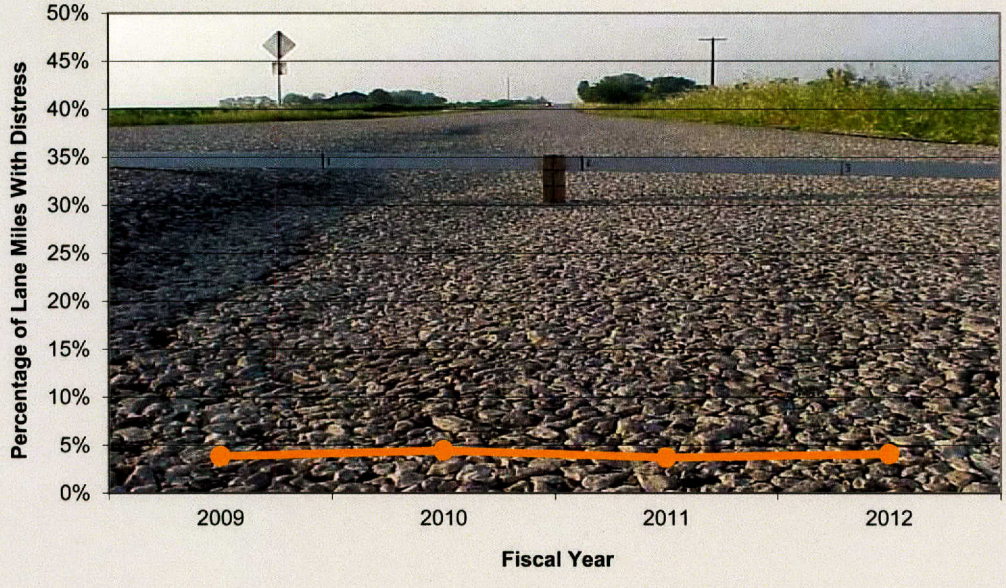
ACP Shallow Rutting (measured), FY 2009-2012



FY 2012 Trend: More

30.73 percent of the lane miles contained Shallow Rutting

ACP Deep Rutting (measured), FY 2009-2012

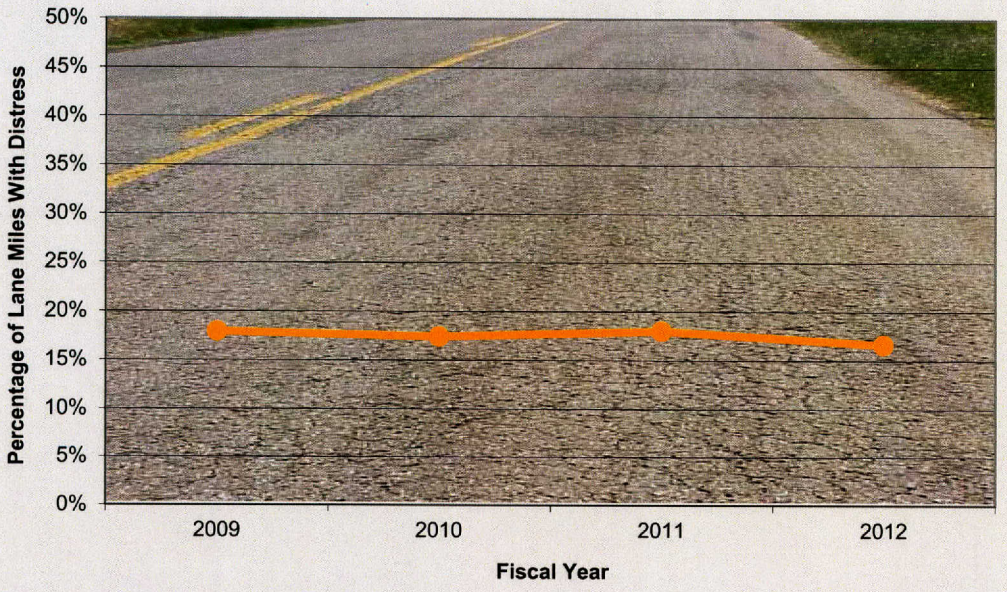


FY 2012 Trend: More

4.11 percent of the lane miles contained Deep Rutting

Chapter 4 — Pavement Distress Trends

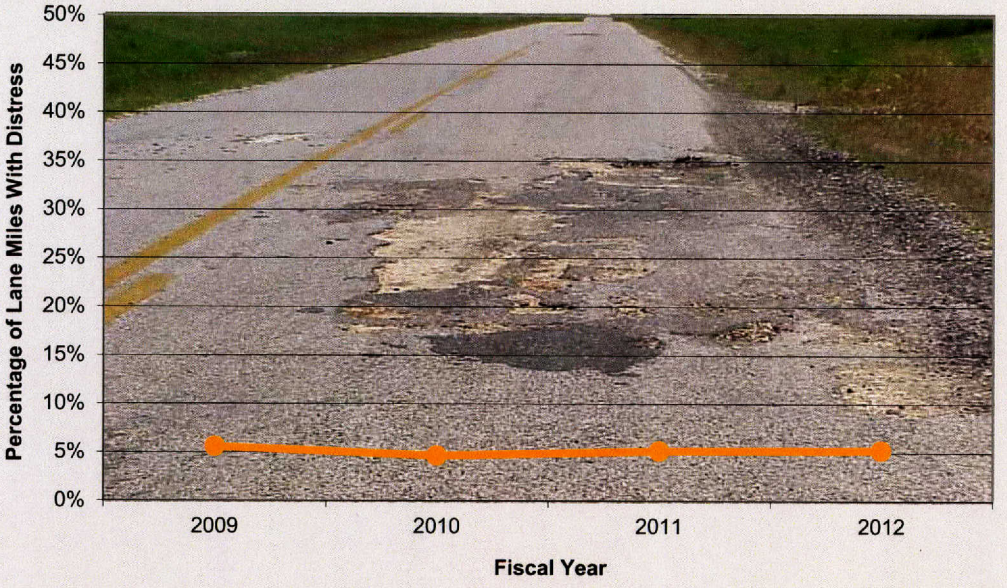
ACP Alligator Cracking (rated), FY 2009-2012



FY 2012 Trend: Less

16.63 percent of the lane miles contained Alligator Cracking

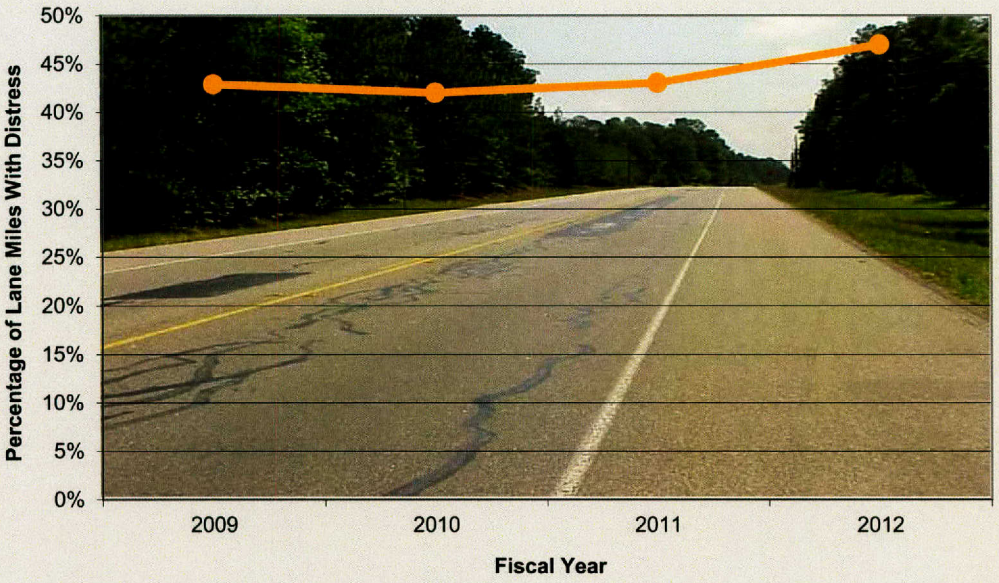
ACP Failures (rated), FY 2009-2012



FY 2012 Trend: More

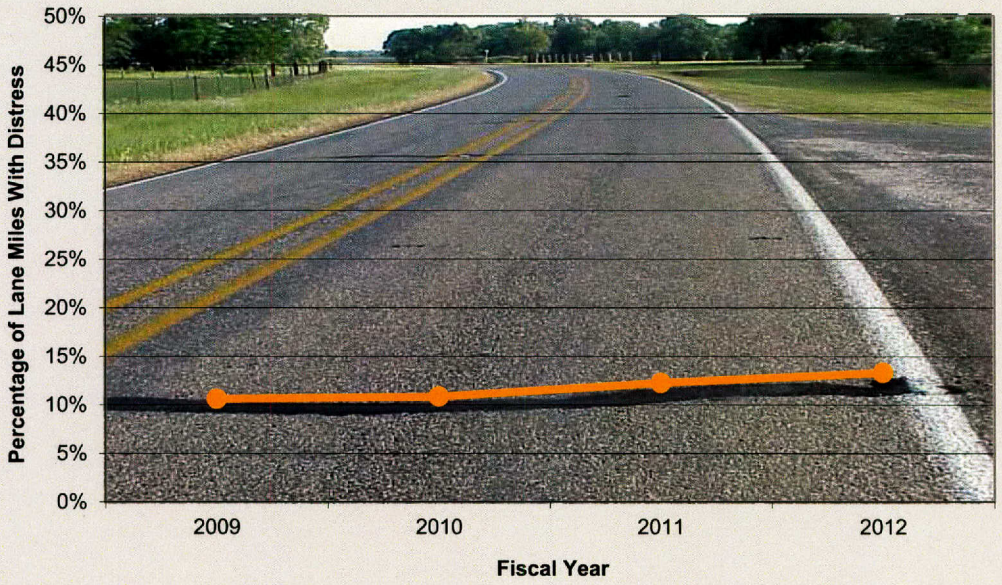
5.23 percent of the lane miles contained Failures

ACP Longitudinal Cracking (rated), FY 2009-2012

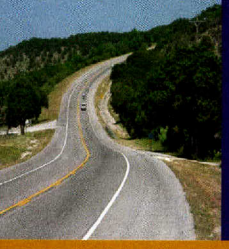


FY 2012 Trend: More **47.00 percent** of the lane miles contained Longitudinal Cracking

ACP Transverse Cracking (rated), FY 2009-2012

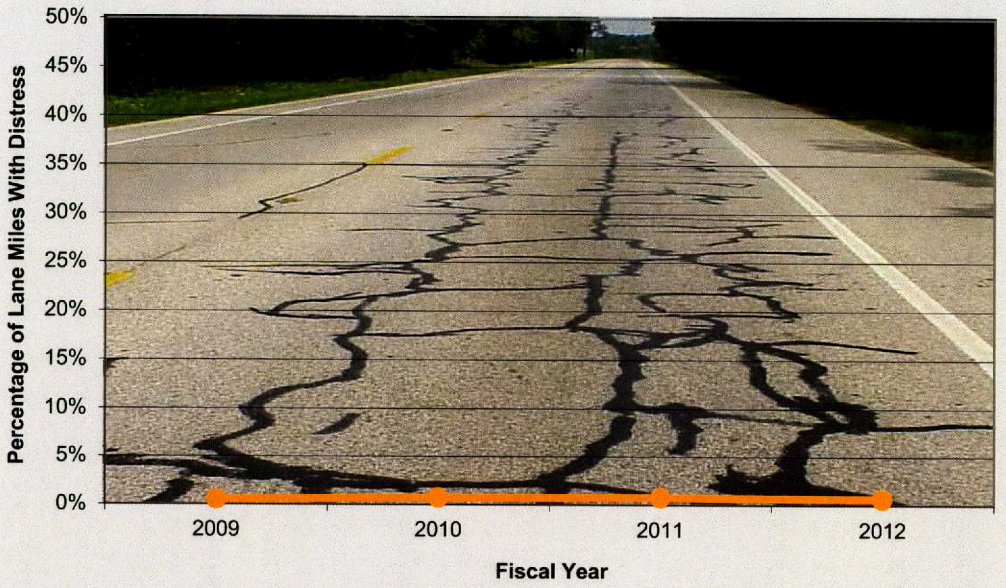


FY 2012 Trend: More **13.31 percent** of the lane miles contained Transverse Cracking



Chapter 4 — Pavement Distress Trends

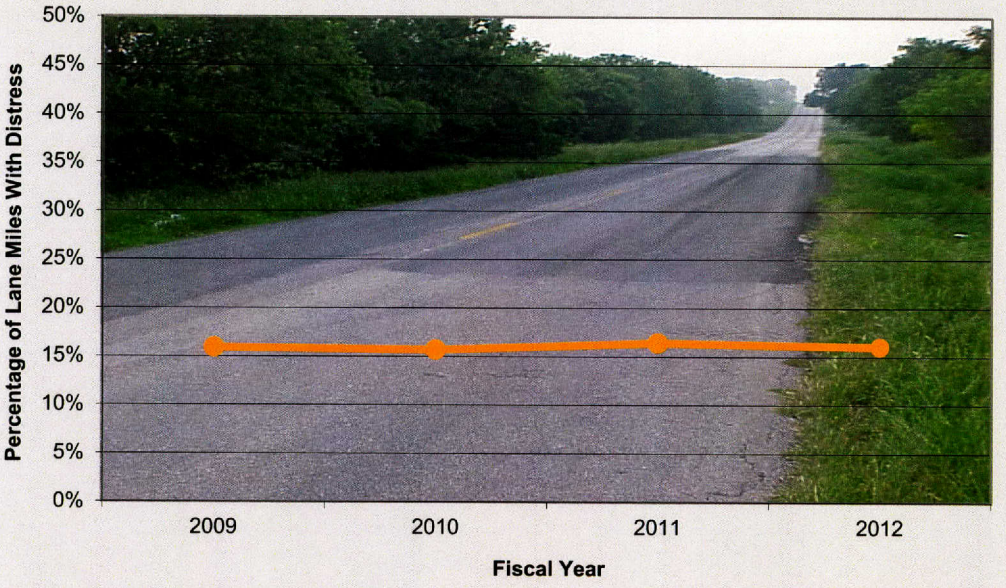
ACP Block Cracking (rated), FY 2009-2012



FY 2012 Trend: Less

0.62 percent of the lane miles contained Block Cracking

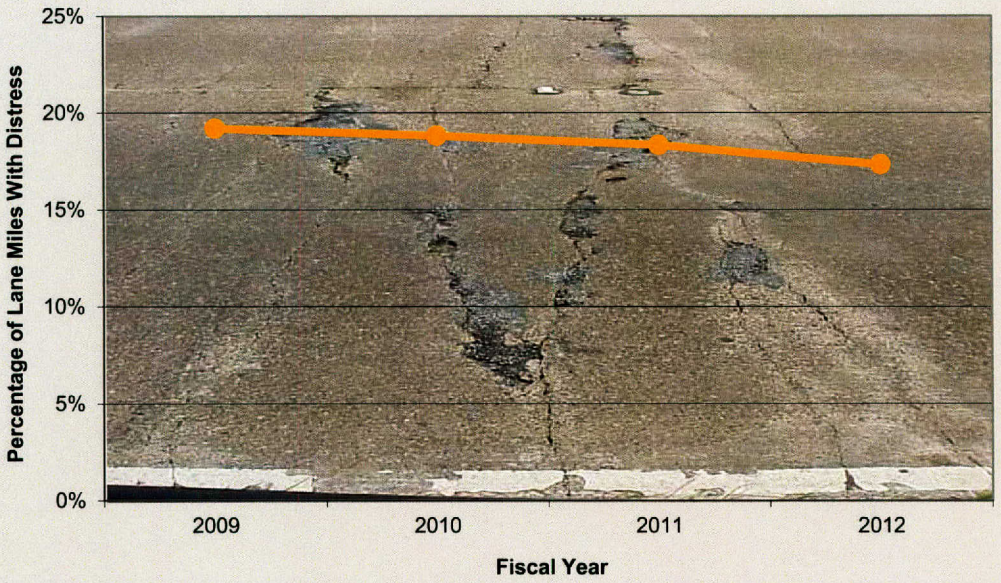
ACP Patching (rated), FY 2009-2012



FY 2012 Trend: Less

16.03 percent of the lane miles contained Patching

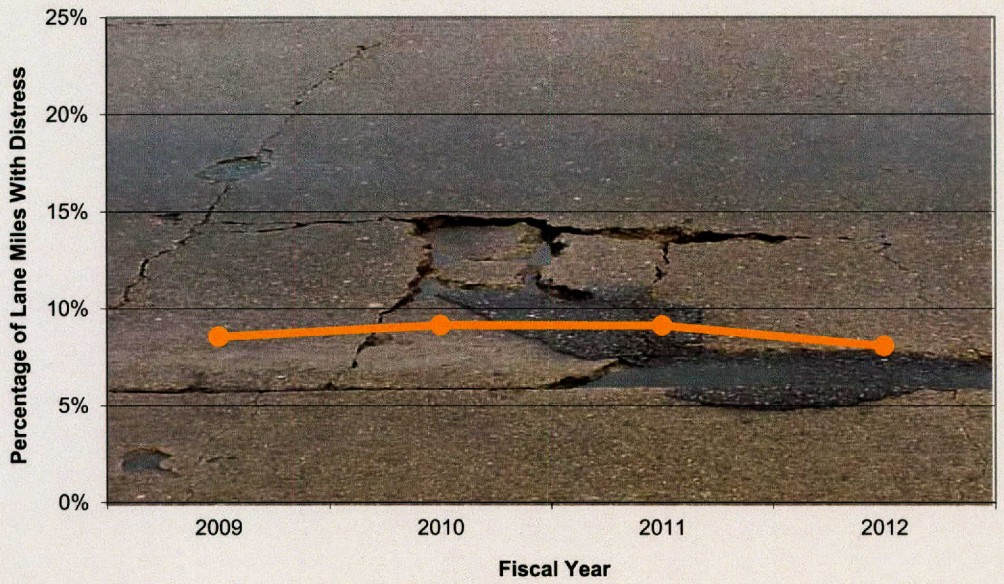
CRCP Spalled Cracks (rated), FY 2009-2012



FY 2012 Trend: Less

17.33 percent of the lane miles contained Spalled Cracks

CRCP Punchouts (rated), FY 2009-2012

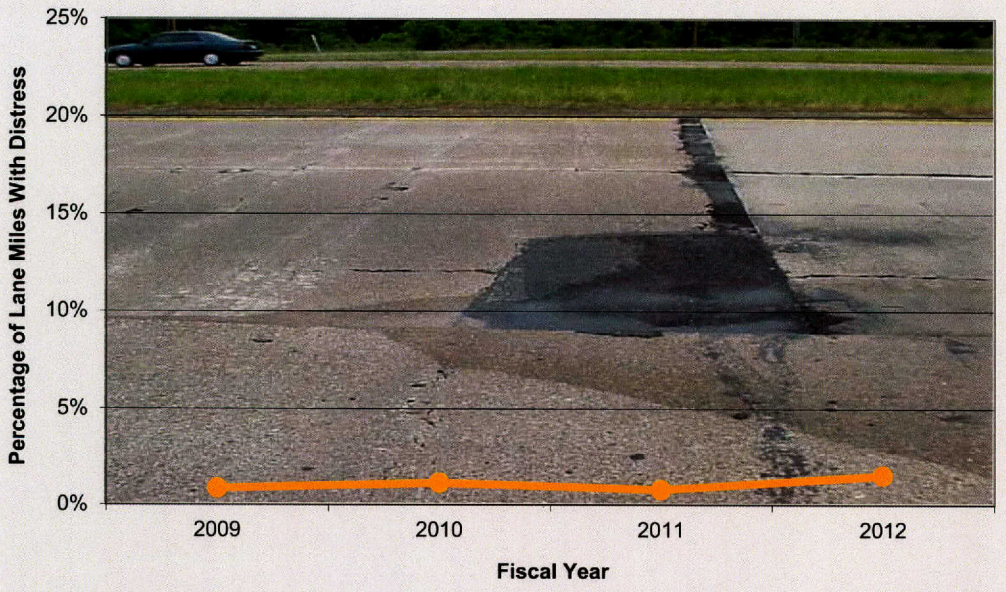


FY 2012 Trend: Less

8.08 percent of the lane miles contained Punchouts

Chapter 4 — Pavement Distress Trends

CRCP Asphalt Patches (rated), FY 2009-2012



FY 2012 Trend: More

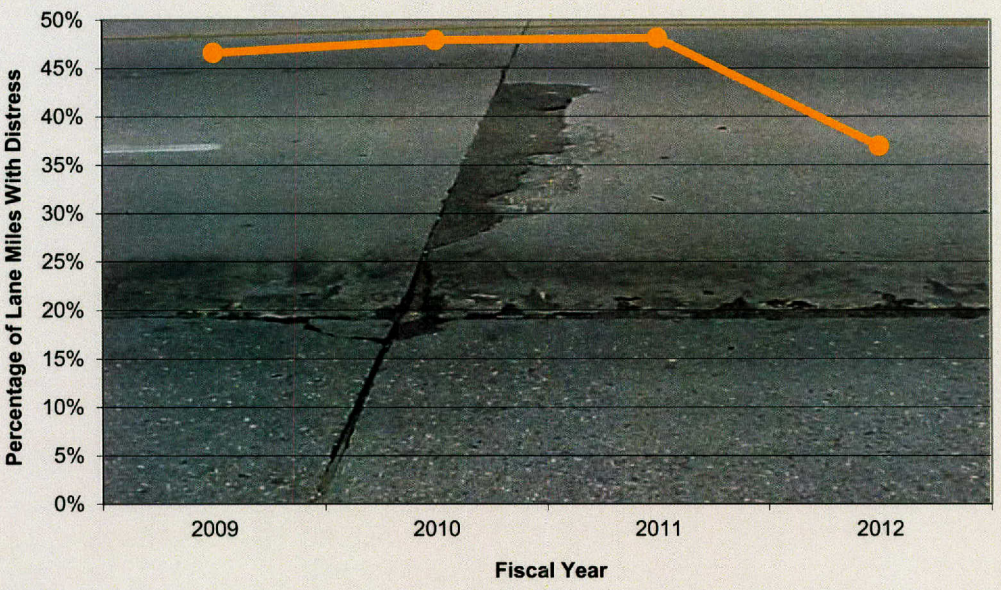
1.52 percent of the lane miles contained Asphalt Patches

CRCP Concrete Patches (rated), FY 2009-2012

FY 2012 Trend: More

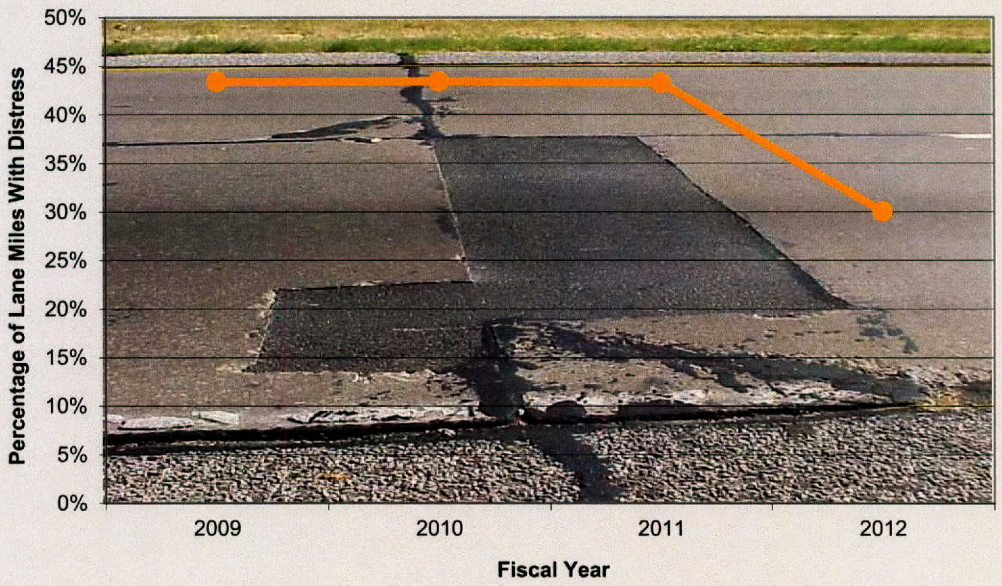
15.10 percent of the lane miles contained Concrete Patches

JCP Failed Joints and Cracks (rated), FY 2009-2012



FY 2012 Trend: Less **36.94 percent** of the lane miles contained Failed Joints and Cracks

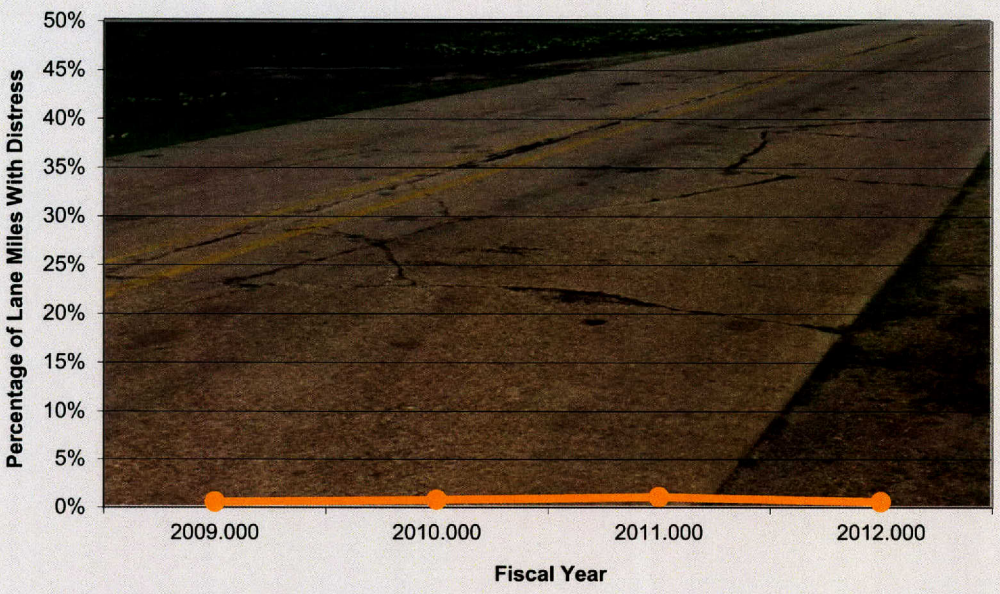
JCP Failures (rated), FY 2009-2012



FY 2012 Trend: Less **30.03 percent** of the lane miles contained Failures

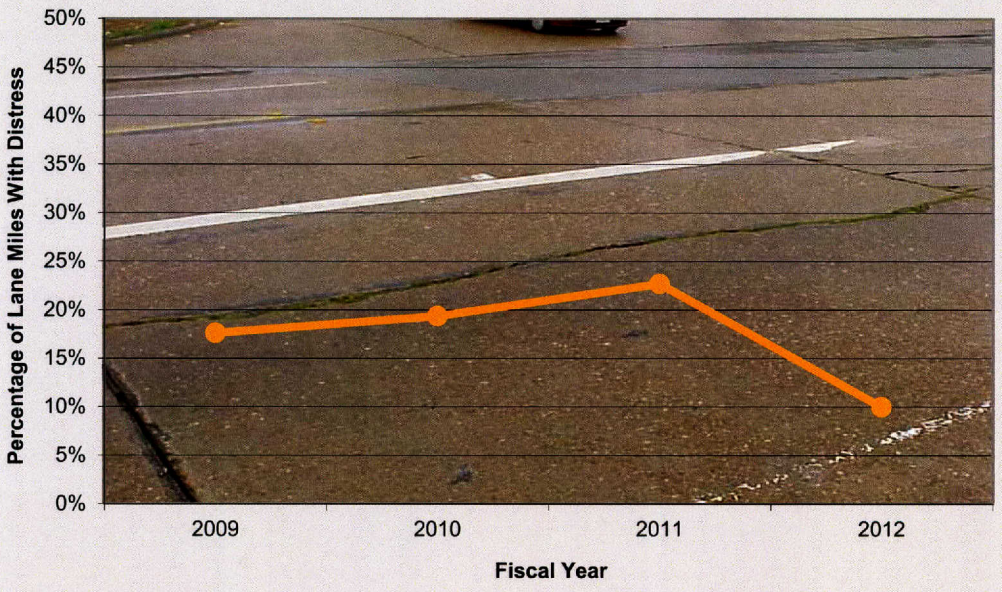
Chapter 4 — Pavement Distress Trends

JCP Shattered Slabs (rated), FY 2009-2012



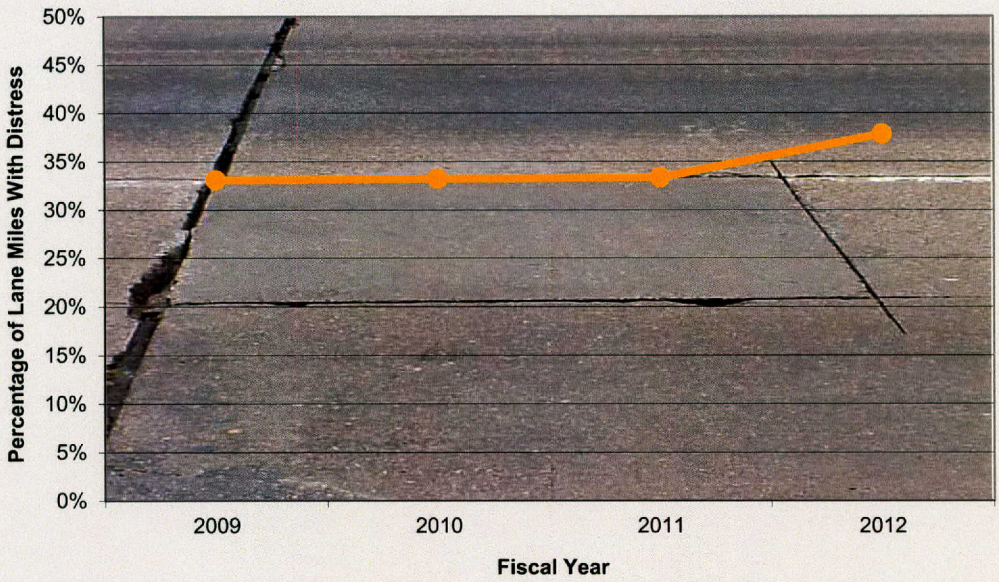
FY 2012 Trend: Less **0.59 percent** of the lane miles contained Shattered Slabs

JCP Slabs with Longitudinal Cracks (rated), FY 2009-2012

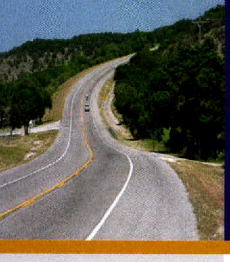


FY 2012 Trend: Less **10.00 percent** of the lane miles contained Longitudinal Cracks

JCP Concrete Patches (rated), FY 2009-2012

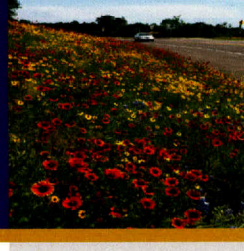


FY 2012 Trend: **More** **37.82 percent** of the lane miles contained Concrete Patches



The Texas Highway Department assumed responsibility for maintenance on January 1, 1924. Before that, maintenance was a concern of each county. During the first year, costs reached $4.5 million. By 1930, the department's maintenance costs began to run about $1 million a month.

Chapter 5 — Maintenance Level of Service Trends



This chapter shows FY 2009-2012 statewide maintenance level of service trends, according to the definitions shown below.

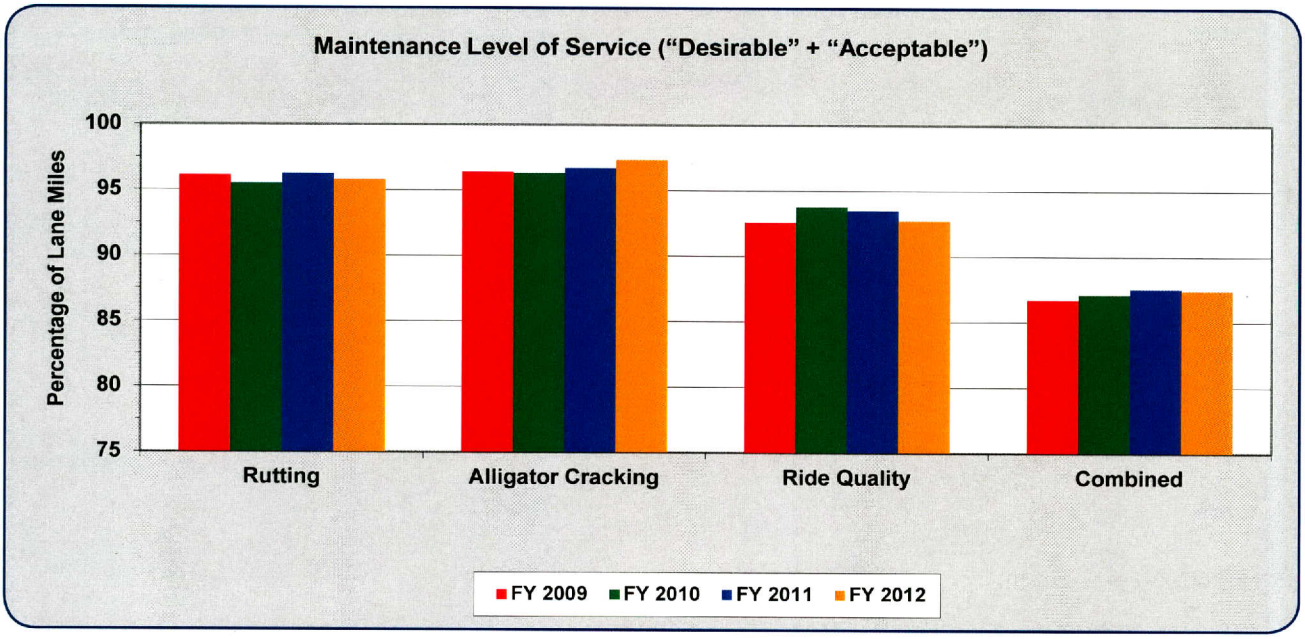
Please note that maintenance levels of service are only defined for flexible ("asphalt") pavements. Rigid ("concrete") pavements are not included in this Chapter.

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

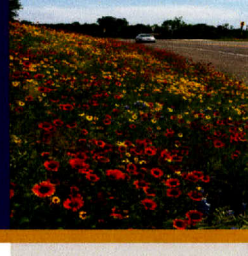
Reference: *TxDOT Administrative Circular 5-92* **(February 13, 1992).**

Maintenance Level of Service Trends, FY 2009-2012

Fiscal Year	Desirable + Acceptable Level of Service			
	Rutting	Alligator Cracking	Ride Quality	Combined
2009	96.11	96.38	92.57	86.71
2010	95.50	96.32	93.78	87.10
2011	96.25	96.71	93.48	87.54
2012	95.81	97.33	92.72	87.41
2011 - 2012 Change	**-0.44**	**+0.62**	**-0.76**	**-0.13**



Chapter 6 — PMIS Mileage



Total Lane Miles in PMIS, by Highway System, FY 2009-2012

Highway System	Fiscal Year			
	2009	2010	2011	2012
Interstate Highways, mainlanes only	15,184.6	15,294.8	15,295.5	15,323.6
Interstate Highways, frontage roads	9,377.6	9,429.5	9,441.4	9,457.8
United States Highways	39,213.6	39,437.9	39,754.5	39,827.7
State Highways	41,904.3	42,189.7	42,883.7	43,139.4
Farm-to-Market Roads	84,921.6	85,052.9	85,025.5	85,124.8
Business Routes	3,104.0	3,131.5	3,157.6	3,184.3
Park Roads	691.1	687.5	687.2	684.0
Principal Arterial Streets	63.6	63.6	77.0	79.8
STATEWIDE	194,460.4	195,287.4	196,322.4	196,821.4

Total Lane Miles in PMIS, by Pavement Type, FY 2009-2012

Pavement Type	Fiscal Year			
	2009	2010	2011	2012
Flexible or Asphalt Concrete Pavement (ACP)	178,591.5	178,953.8	179,318.3	179,485.9
Continuously Reinforced Concrete Pavement (CRCP)	11,770.5	12,345.1	13,109.1	13,387.9
Jointed Concrete Pavement (JCP)	4,098.4	3,988.5	3,895.0	3,947.6
STATEWIDE	194,460.4	195,287.4	196,322.4	196,821.4

Rated/Measured Mileage in PMIS, by Data/Score Type, FY 2009-2012

Data/Score Type	Fiscal Year			
	2009	2010	2011	2012
	Lane Miles	Lane Miles	Lane Miles	Lane Miles
Condition Score	187,178.6	190,395.5	190,759.4	190,918.2
Distress	190,647.5	193,094.3	193,143.3	194,656.1
Distress Score	188,059.2	191,024.3	191,344.9	191,803.6
Ride	190,291.5	192,215.9	193,538.4	192,795.2
Ride Score	190,291.5	192,215.9	193,538.4	192,795.2
Rut (ACP Only)	175,246.6	176,405.2	177,084.8	176,296.2

Rated/Measured Percentage in PMIS, by Data/Score Type, FY 2009-2012

Data/Score Type	Fiscal Year			
	2009	2010	2011	2012
	Lane Miles	Lane Miles	Lane Miles	Lane Miles
Condition Score	96.26%	97.50%	97.17%	97.00%
Distress	98.04%	98.88%	98.38%	98.90%
Distress Score	96.71%	97.82%	97.46%	97.45%
Ride	97.86%	98.43%	98.58%	97.95%
Ride Score	97.86%	98.43%	98.58%	97.95%
Rut (ACP Only)	90.12%	90.33%	90.20%	89.57%

The phrase "good roads" in Texas had a different meaning back before World War 1. "Come to Texas if you want to see a good road," a turn-of-the-century Bell County farmer growled, "good and rough, good and muddy."

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