



# KEEP ROADS AND BRIDGES IN GOOD CONDITION

*Dennis Heckman, State Bridge Engineer*

# Tracker

MEASURES OF DEPARTMENTAL PERFORMANCE



Missourians have said they want MoDOT to keep roads and bridges in good condition. Customers are looking for smooth pavements and bridges that can safely handle growing traffic demands. With 33,891 miles of highway and 10,376 bridges on the state system, the challenges are great; however, we are focused on using our limited resources to keep Missouri's roads and bridges in good condition.

**RESULT DRIVER:**  
Dennis Heckman,  
State Bridge Engineer

## KEEP ROADS AND BRIDGES IN GOOD CONDITION

**MEASUREMENT  
DRIVER:**  
Brian Reagan  
Transportation System  
Analysis Engineer

**PURPOSE OF  
THE MEASURE:**  
This measure tracks the  
condition of Missouri's major  
highways.

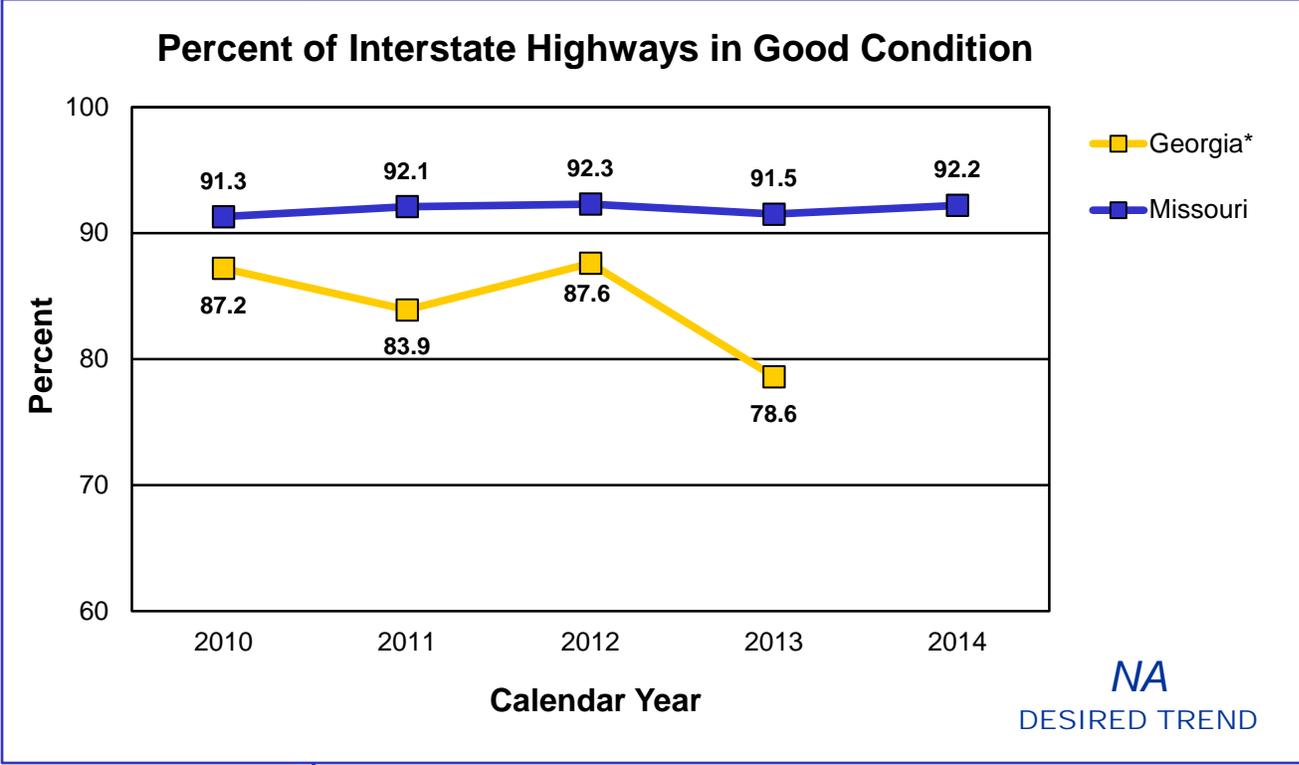
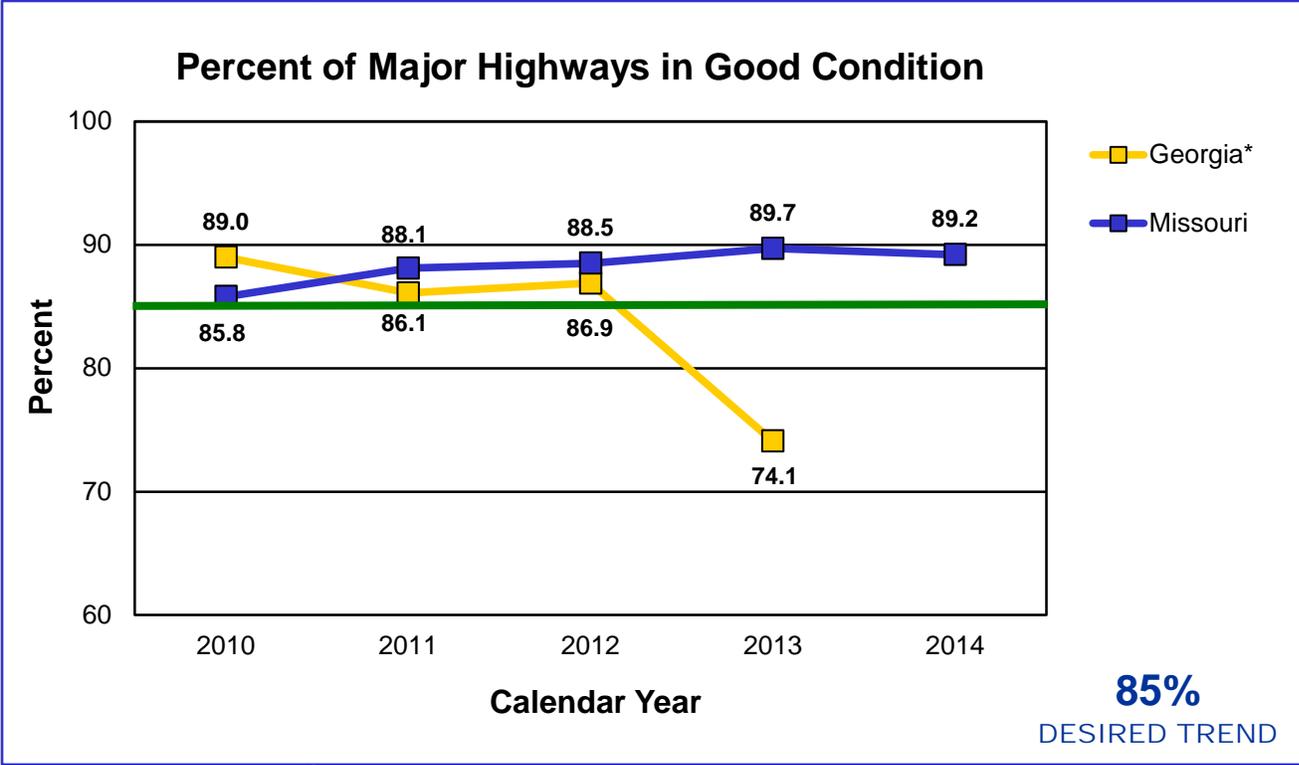
**MEASUREMENT  
AND DATA  
COLLECTION:**  
Missouri's major highway  
system contains the state's  
busiest highways, including  
interstates and most U.S.  
routes. It also includes busy  
routes in urban areas,  
particularly where vehicles  
travel between business  
districts and residential areas.  
There are 5,530 total miles on  
the major highway system, and  
the condition of these  
roadways is determined using  
a variety of measures. While it  
can be difficult to compare one  
state's roadways to another's,  
MoDOT uses Georgia as a  
comparable system because it  
has a similar amount of major  
highways and also bases its  
evaluation on the smoothness  
of the roadways. Missouri  
measures the condition of its  
roadways using smoothness  
as one factor, but also  
considers physical distresses  
such as cracking.

### *Percent of major highways in good condition – 2a*

Missourians have repeatedly told MoDOT keeping roads smooth is a top priority. Over the years, MoDOT has been able to fund pavement improvement programs greatly improving pavement conditions on the thousands of miles of state highways. Currently, more than 89 percent of major highways are rated in good condition.



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\*Source data for Georgia comes from FHWA highway statistics. Full data sets are collected every two years. The data set for 2013 is not a full data set. Georgia data is based only on pavement smoothness (IRI) submitted as part of the Highway Performance Monitoring System.

## RESULT DRIVER:

Dennis Heckman  
State Bridge Engineer

## MEASUREMENT DRIVER:

Brian Reagan  
Transportation System  
Analysis Engineer

## PURPOSE OF THE MEASURE:

This measure tracks the condition of Missouri's minor highways.

## MEASUREMENT AND DATA COLLECTION:

Missouri's minor highway system consists of its less-traveled state highways, including those routes that mainly serve local transportation needs. The minor highway system includes most lettered routes. There are 28,361 miles of minor highways in Missouri. The condition of these routes is determined using a variety of measures.

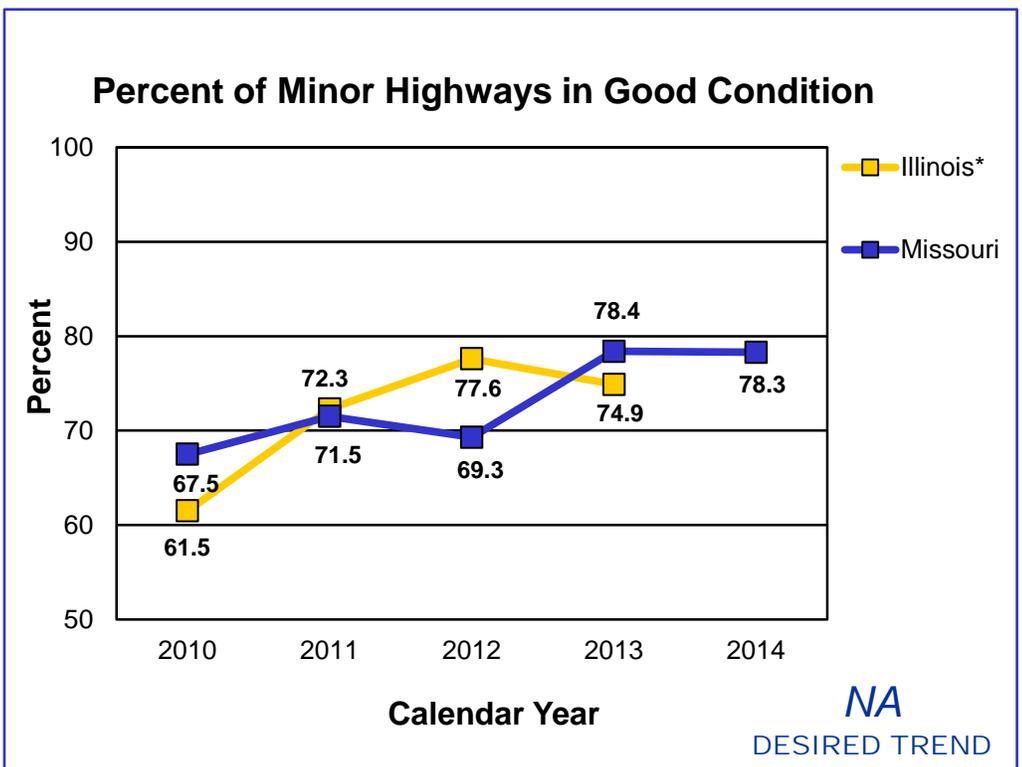
While it can be difficult to compare one state's roadways to another's, MoDOT uses Illinois as a comparable system because it has a similar number of minor highways and has the highest percentage of routes in good condition. Missouri measures the condition of its roadways using smoothness as one factor, but also considers physical distresses such as cracking.

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## Percent of minor highways in good condition – 2b

Although minor roads are less traveled, Missourians still say keeping them in good condition is a priority. During the early 2000s, MoDOT's focus was on improving major highways. This resulted in less work being done on minor roads and lower condition ratings. Over the past few years, success on major highways has allowed the department to focus more time and funding on improving minor highways.

Currently, 78 percent of Missouri's minor roads are in good condition, which is level from 2013.



\*Source data for Illinois comes from FHWA highway statistics. Data for 2014 is not available at the time of publication. Data is based on a combination of pavement condition and smoothness as submitted as part of the Highway Performance Monitoring System.

## RESULT DRIVER:

Dennis Heckman  
State Bridge Engineer

# KEEP ROADS AND BRIDGES IN GOOD CONDITION

## *Condition of state bridges – 2c*

## MEASUREMENT

### DRIVER:

David Koenig  
Bridge Management Engineer

## PURPOSE OF THE MEASURE:

This measure tracks progress toward improving the condition of Missouri's bridges.

## MEASUREMENT AND DATA COLLECTION:

This measure is updated in April based on MoDOT inspections conducted the prior year. Data is presented for all state bridges and major bridges. Major bridges are typically those that cross large rivers and lakes and are longer than 1,000 feet. Of the 10,376 bridges on state highways, 209 are major. Bridges are categorized as being in good, fair or poor condition. Good means no significant condition-related problems exist. Fair indicates moderate problems that may require minor rehabilitation or maintenance to return the structure to good condition. Poor indicates a structure that is deficient, requiring either replacement or a major rehabilitation.

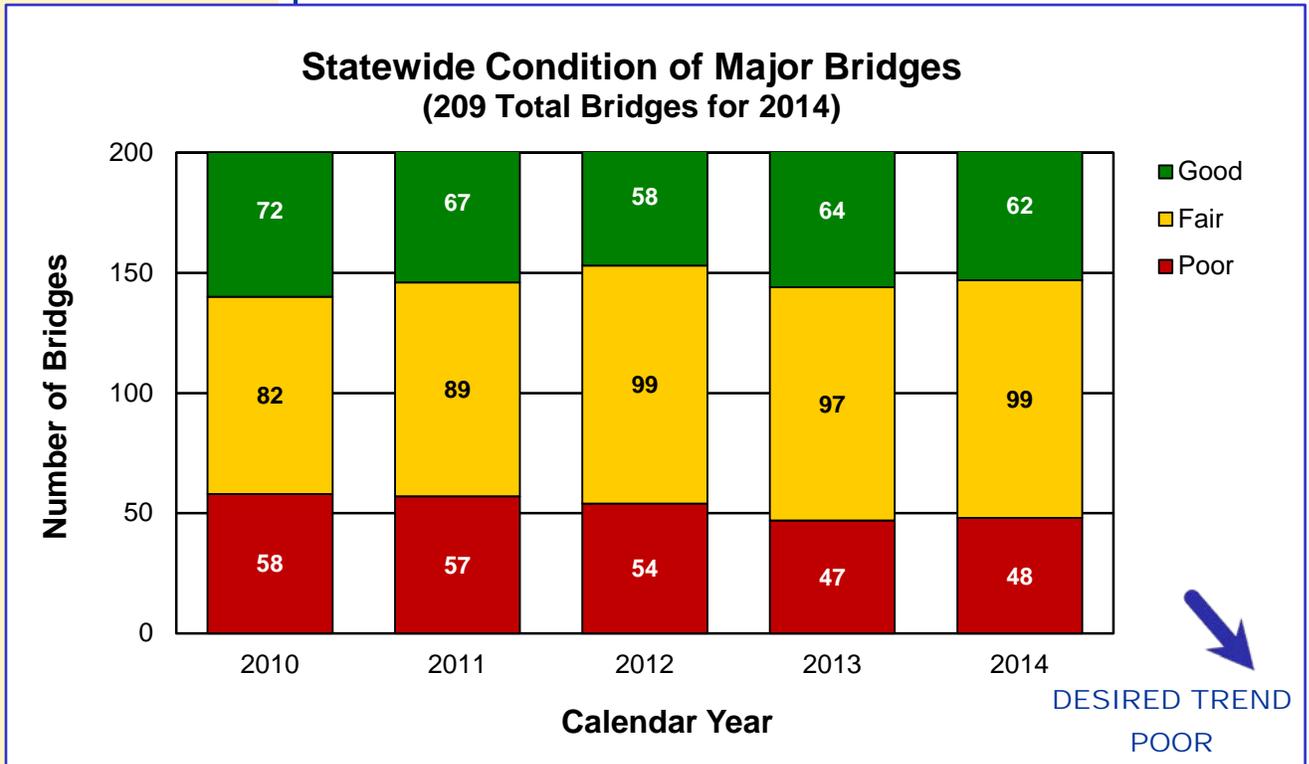
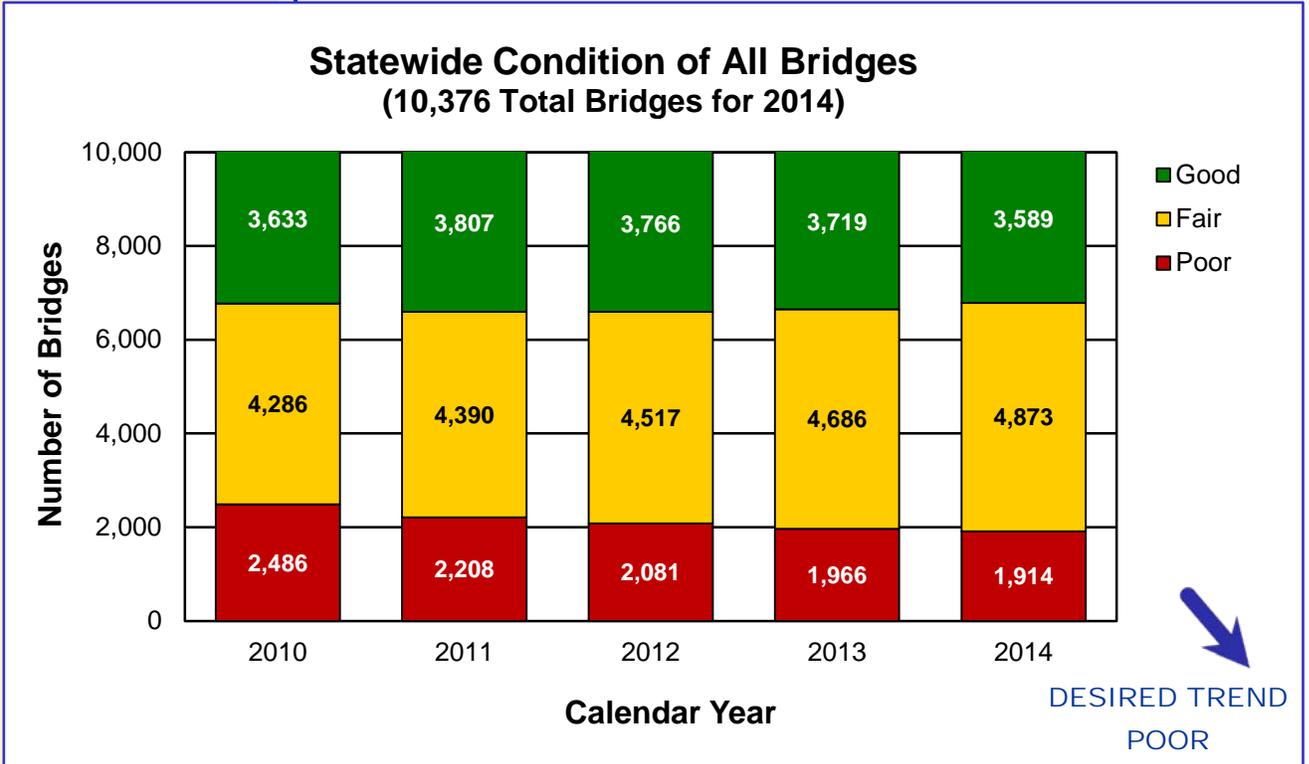
The public has indicated the condition of Missouri's existing roadway system should be one of the state's highest priorities. Currently, 1,914 (48 major) structures are in poor condition, 4,873 (99 major) structures are in fair condition and 3,589 (62 major) structures are in good condition.

Statewide, the number of structures in poor condition has dramatically decreased over the last five years, but the rate of decline is slowing down. The number of structures in good condition moderately improved through 2011 but has started to decline over the last two years. Improvements in these numbers were heavily impacted by the Safe & Sound Bridge Improvement Program that was completed in 2012 and by the increased construction program that resulted from the passage of Amendment 3 in 2004. The recent decline in good bridges can be attributed to MoDOT's reduced construction program as the result of funding constraints. It should be noted that while the number of poor-condition bridges dropped by 572 over this five-year period, the number in good condition has also decreased by 44. The number in fair condition has significantly increased by 587 over this period which is reflective of MoDOT's aging bridge population with many structures at the point where they need minor maintenance or rehabilitation.

For major bridges, the number of structures in the poor category has generally been dropping over the last five years because of an aggressive focus on these structures in the STIP, but despite a significant investment in major bridges, the number of structures in good condition generally dropped over the five-year period while the number in fair condition significantly increased. Work on major bridges is expensive with rehabilitations costing \$10 to \$20 million and replacements ranging from \$20 million to \$200 million.



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## RESULT DRIVER:

Dennis Heckman,  
State Bridge Engineer

## MEASUREMENT

### DRIVER:

David Koenig  
Bridge Management Engineer

## PURPOSE OF THE MEASURE:

This measure tracks the percent of structurally deficient deck area for bridges on the National Highway System.

## MEASUREMENT AND DATA COLLECTION:

The NHS is defined by federal law and consists of all roadways functionally classified as principal arterials as well as some routes that serve as major connections to multimodal freight-type facilities and some locally owned roadways. Historically, structurally deficient consists of bridges that are in bad condition or have insufficient load capacity when compared to modern design standards. With MAP-21, there are some proposed adjustments in how structurally deficiency is determined and this measure has been created based on these proposed adjustments. Moving Ahead for Progress in the 21st Century, the federal Surface Transportation Act, requires states to track the structurally deficient deck area with a national performance goal of less than 10 percent.

# KEEP ROADS AND BRIDGES IN GOOD CONDITION

## Percent of structurally deficient deck area on National Highway System – 2d

The public has indicated keeping Missouri's existing roads and bridges in good condition should be one of the state's highest priorities. MAP-21 set a national performance goal to have the structurally deficient deck areas of National Highway System bridges be less than 10 percent. The local system has 84 NHS structures (two SD) and the MoDOT system has 3,600 NHS structures (145 SD). Missouri currently meets the national performance goal with the total at 7.2 percent, which is attributable to aggressive efforts undertaken with construction on major bridges over the last 10 years, as well as other accelerated construction from MoDOT's bonding program.

This measure is also heavily influenced by major bridges because one structure has the ability to impact this measure +/-0.5 percent. The majority of the change from 2013 to 2014 is attributable to the addition of two major bridges and the removal of one major bridge from the SD category. Additionally, on the local system there was a significant reduction in the number of NHS structures as the result of functional class changes on roadways across the state. The majority of these changes happened in the Kansas City area. Both of the local system structures that are currently SD are in St. Louis, with a replacement project for one of them scheduled to start in 2015.

