



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 33,890 miles of highway and 10,371 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

MAP-21

Percent of major highways in good condition-2a

MEASUREMENT DRIVER:
Brian Reagan,
Transportation System
Analysis Engineer

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

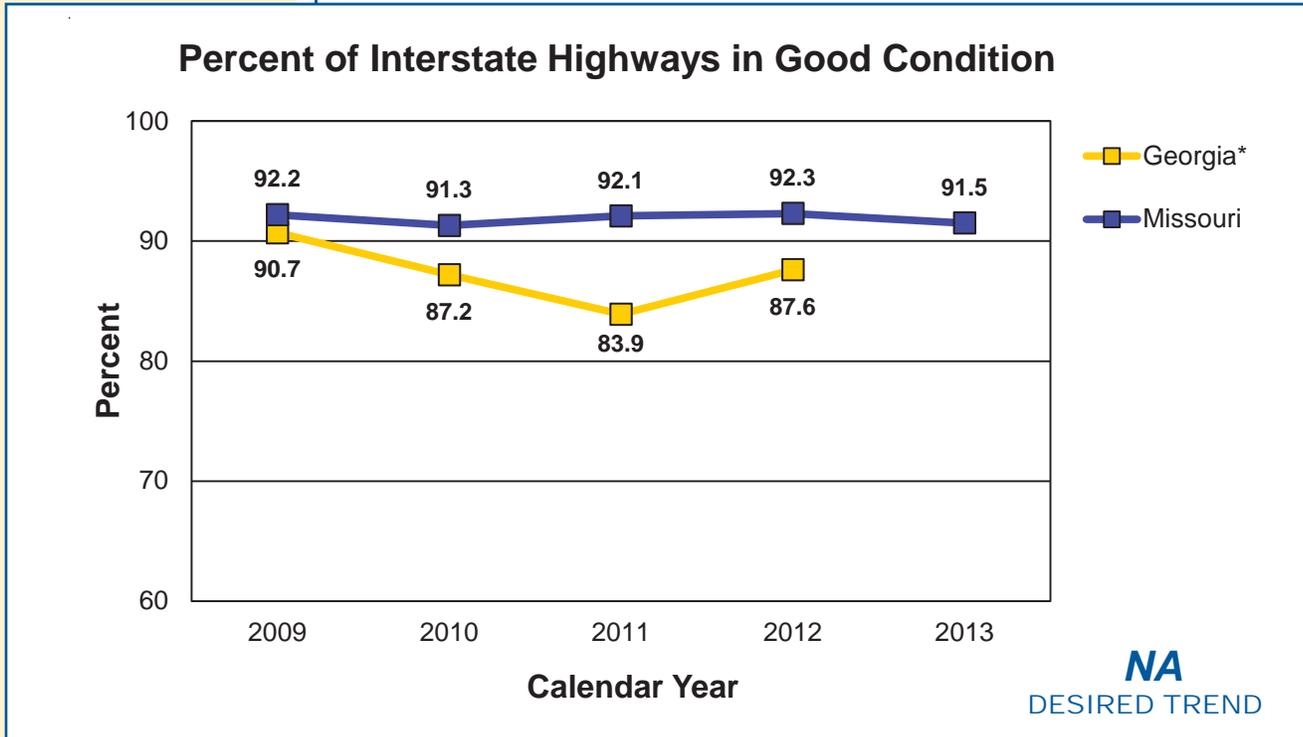
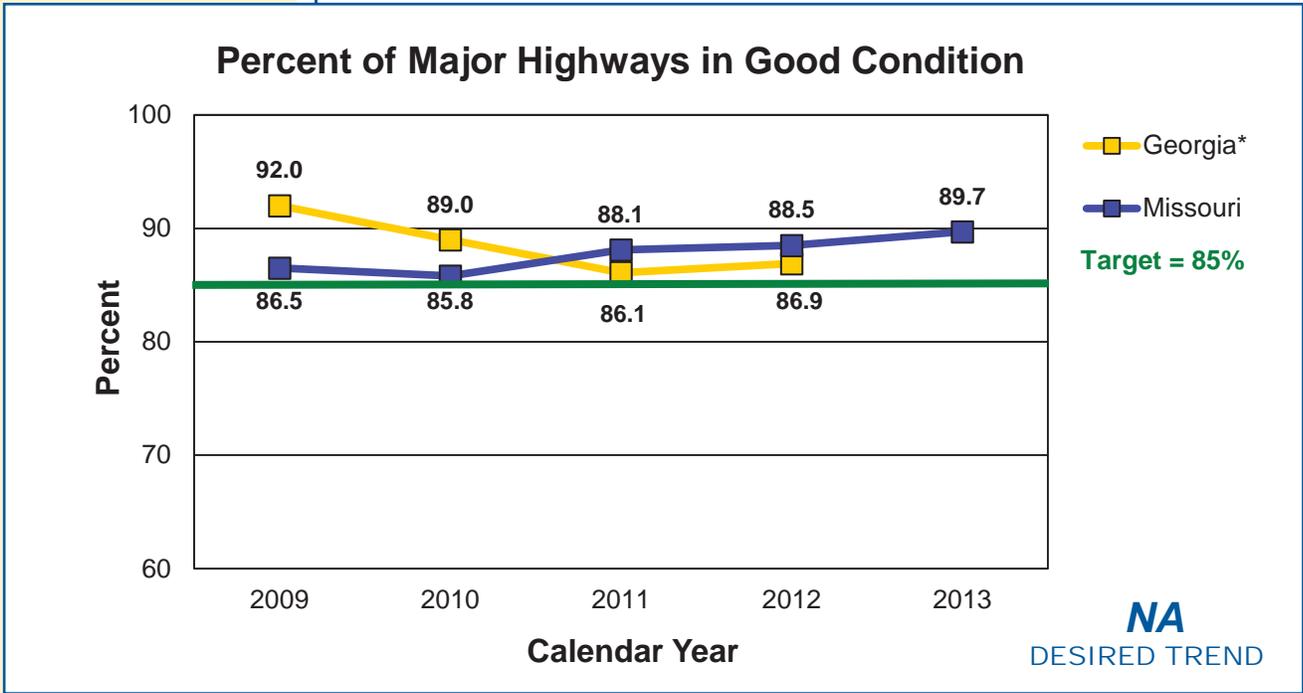
MEASUREMENT AND DATA COLLECTION:
Missouri's major highway system contains the state's busiest highways, including interstates and most U.S. routes. It also includes busy routes in urban areas, particularly where vehicles travel between business districts and residential areas. There are 5,533 miles total 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.

MoDOT started a major road improvement program in 2004 called the Smooth Roads Initiative. Over the next two years, the program improved 2,200 miles of Missouri's major routes, bringing them from 47 percent in good condition up to 74 percent. The Better Roads, Brighter Future program in 2007 further improved the system, increasing Missouri's major routes in good condition to 85 percent.

Currently more than 89 percent of major highways are rated in good condition. However, with contractor awards dropping from over \$700 million per year to \$325 million per year beginning in 2017, it will be increasingly difficult to maintain this condition level.



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*Source data for Georgia comes from FHWA highway statistics. Data for 2013 is not available at the time of publication. Georgia data is based only on pavement smoothness (IRI) submitted as part of the Highway Performance Monitoring System.

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

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

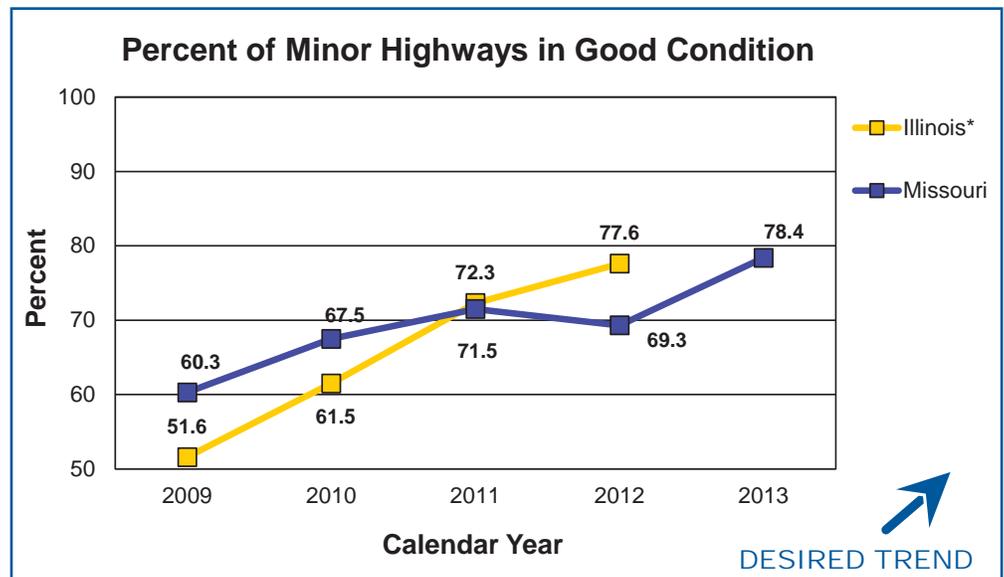
**MEASUREMENT
AND DATA
COLLECTION:**
Missouri's minor highway
system consists of its less-
traveled state highways,
including those routes that
mainly serve local trans-
portation needs. The minor
highway system includes
most lettered routes. There
are 28,357 miles of minor
highways in Missouri. The
condition of these routes is
determined using a variety
of measures.

While it can be difficult to
compare one state's road-
ways to another's, MoDOT
uses Illinois as a compa-
rable system because it has
a similar number of minor
highways and has the high-
est percentage of routes
in good condition. Missouri
measures the condition of
its roadways using smooth-
ness as one factor, but also
considers physical distress-
es such as cracking.

Percent of minor highways in good condition-2b

MoDOT began an initiative in 2004 that focused on improving major high-ways. As a result, less time and funding were spent on minor roads and the percentage of minor roads in good condition fell from 71 percent in 2005 to 60 percent in 2009. After MoDOT made headway improving major highways, it targeted its focus on minor routes and brought 71 percent back to good condition.

Currently, 78 percent of Missouri's minor roads are in good condition, which is an increase from 2012. With contractor awards dropping from over \$700 million per year to \$325 million per year beginning in 2017, the expectation is that the condition of the minor roads will decline.



*Source data for Illinois comes from FHWA highway statistics. Data for 2013 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.

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MAP-21

Condition of state bridges-2c

MEASUREMENT DRIVER:

David Koenig, Structural
Services 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 pre-
sented 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 10,371
bridges on state highways,
208 are major.

Bridges are categorized as
being in good, fair or poor
condition. Good means no
significant condition-related
problems exist. Fair indi-
cates moderate problems
that may require minor re-
habilitation or maintenance
to return the structure to
good condition.

The public has indicated the condition of Missouri's existing roadway system should be one of the state's highest priorities. Currently, 1,966 (47 major) structures are in poor condition, 4,686 (97 major) structures are in fair condition and 3,719 (64 major) structures are in good condition.

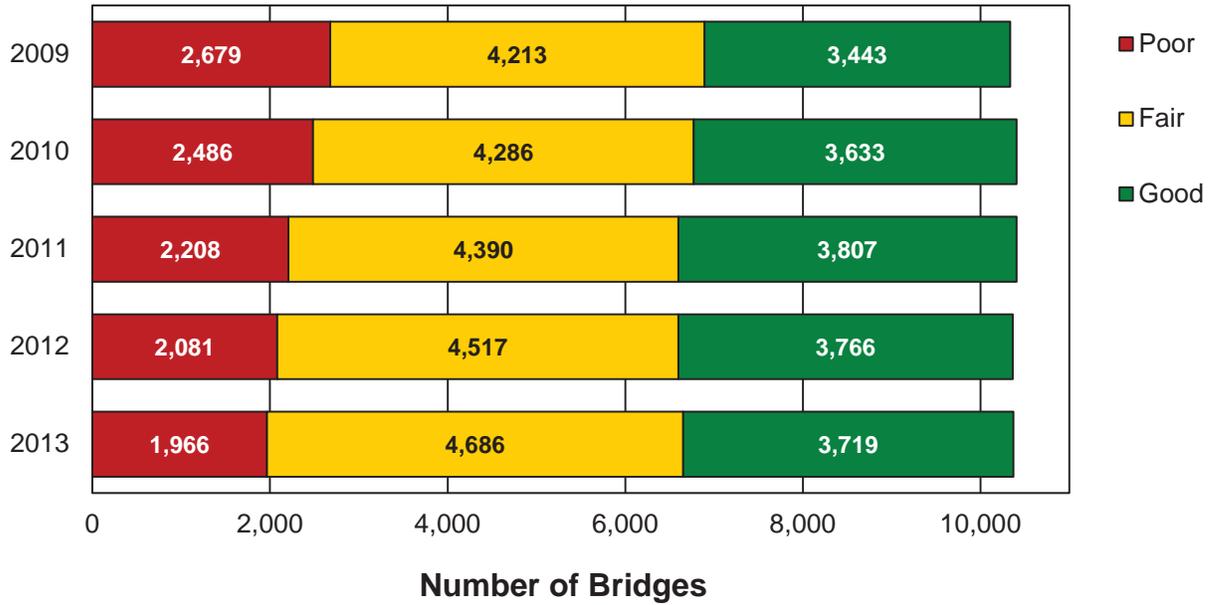
Statewide, the number of structures in poor condition dramatically decreased over the last five years and the number of structures in good condition moderately improved up until 2011. These improvements were heavily impacted by the Safe & Sound Bridge Improvement Program that was completed in 2012, and by the increased construction program that resulted from the passage of Amendment 3 in 2004. It should be noted that while the number of poor-condition bridges dropped by 713 over this five-year period, the number in good condition only increased by 276. The number in fair condition increased by 473 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. With the decrease in funds available for the construction program, continued improvements in the number of structures in poor condition is unlikely.

For major bridges, the number of structures in the poor category has 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 very expensive with simple rehabilitations costing \$10 to \$20 million and replacements ranging from \$20 million to \$200 million. With a greatly reduced construction program and potential problems with matching federal funds in 2020, significant future improvements in the condition of major bridges are unlikely.

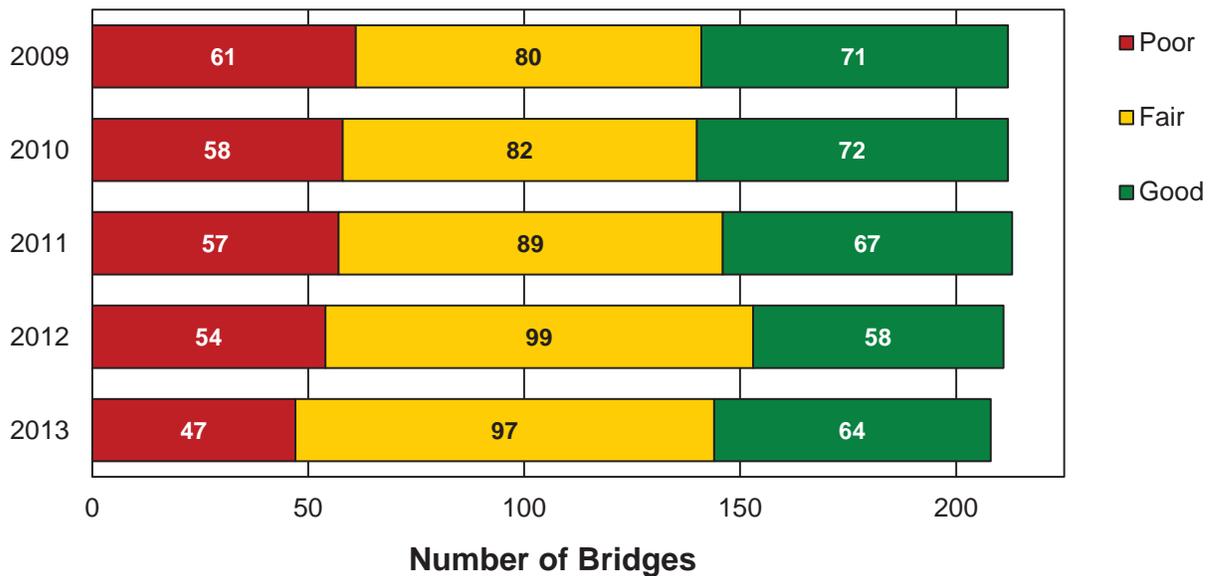


KEEP ROADS AND BRIDGES IN GOOD CONDITION

Statewide Condition of All Bridges (10,371 Total Bridges)



Statewide Condition of Major Bridges (208 Total Bridges)



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MAP-21

MEASUREMENT DRIVER:
David Koenig, Structural Services Engineer

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

PURPOSE OF THE MEASURE:
This measure tracks the percent of structurally deficient deck area for bridges that are part of the National Highway System (NHS). Moving Ahead for Progress in the 21st Century, the federal surface transportation act requires states to track the Structurally Deficient (SD) deck area with a national performance goal of this being less than 10 percent.

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 SD deck area of NHS bridges be less than 10 percent. The local system has 144 NHS structures (five SD) and the MoDOT system has 3,591 NHS structures (153 SD). MoDOT currently meets the national performance goal with the total at 6.7 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. The ability to continue to meet this goal will become more difficult with a reduced construction program. Additionally, the potential inability for MoDOT to fully match available federal funds in 2020 could have a severe impact on this measure. This measure is also heavily influenced by major bridges because one structure has the ability to impact this measure +/-0.5 percent. Since many major bridges are part of the NHS, any reduction in funding available for the construction program will limit MoDOT's ability to keep up with the replacement/rehabilitation needs on major bridges.

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, SD 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 SD is determined and this measure has been created based on these proposed adjustments.

