



# 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 33,856 miles of highway and 10,385 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

## MEASUREMENT DRIVER:

Steve Engelbrecht  
District Planning Manager

## 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 5,546 total miles on the major highway system and the condition of these roadways is determined using a variety of measures.

Missouri measures the condition of its roadways using smoothness as one factor but also considers physical distresses such as cracking. The structural condition of the pavements includes the underlying layers of the pavement and other pavement criteria, which may not impact the current smoothness of the pavement but may cause future pavement issues.

The target for this measure is set by internal policy and will not change unless policy changes, regardless of performance.

# KEEP ROADS AND BRIDGES IN GOOD CONDITION

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

Missourians have repeatedly told MoDOT that keeping roads smooth is a top priority. Over the years, MoDOT has been able to fund pavement improvement programs on thousands of miles of state highways. Currently, more than 90 percent of Missouri major highways are rated in good condition. A statewide target for both major highways and interstate highways has been set. The target for Missouri major highways is 90 percent and the target for interstates is 92 percent. These targets are based on the statewide asset management plan and represent MoDOT's goal of maintaining current conditions.

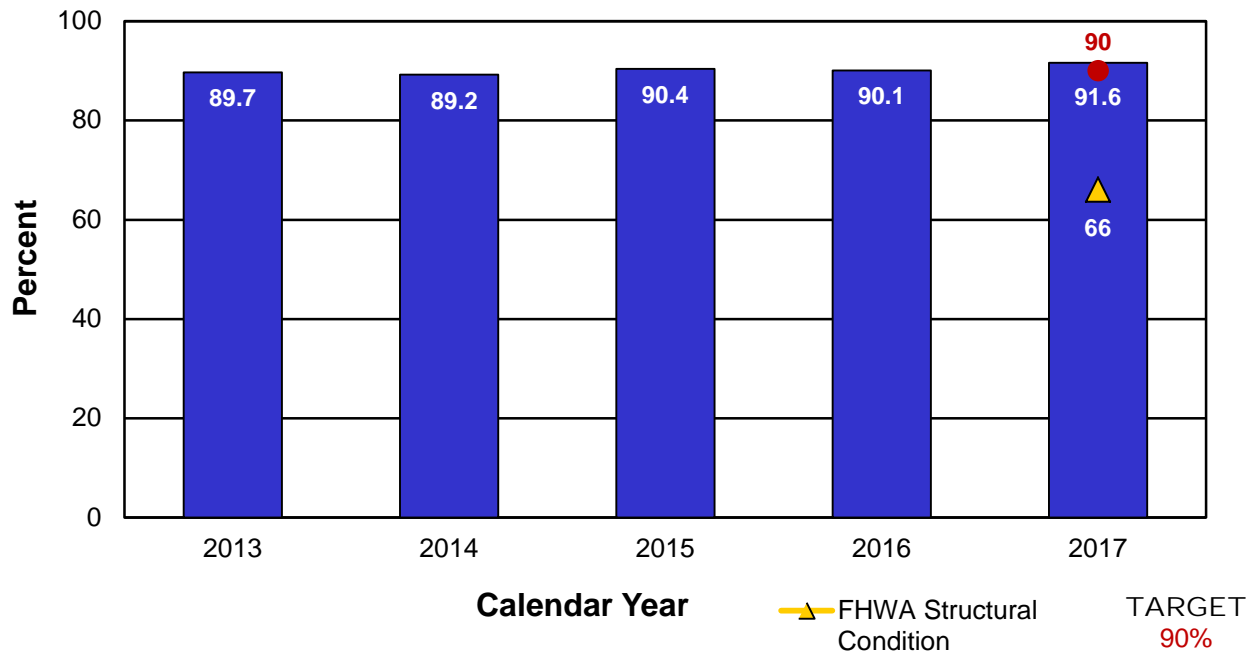
Beginning in 2018, the Federal Highway Administration required all DOTs to report pavement data related to the structural integrity of the pavement, which may not impact current pavement smoothness but may cause future pavement issues. The current percent of major highway pavements in good structural condition is 66 percent.

MoDOT has implemented asset management practices statewide to invest in transportation projects that will keep good roads in good condition

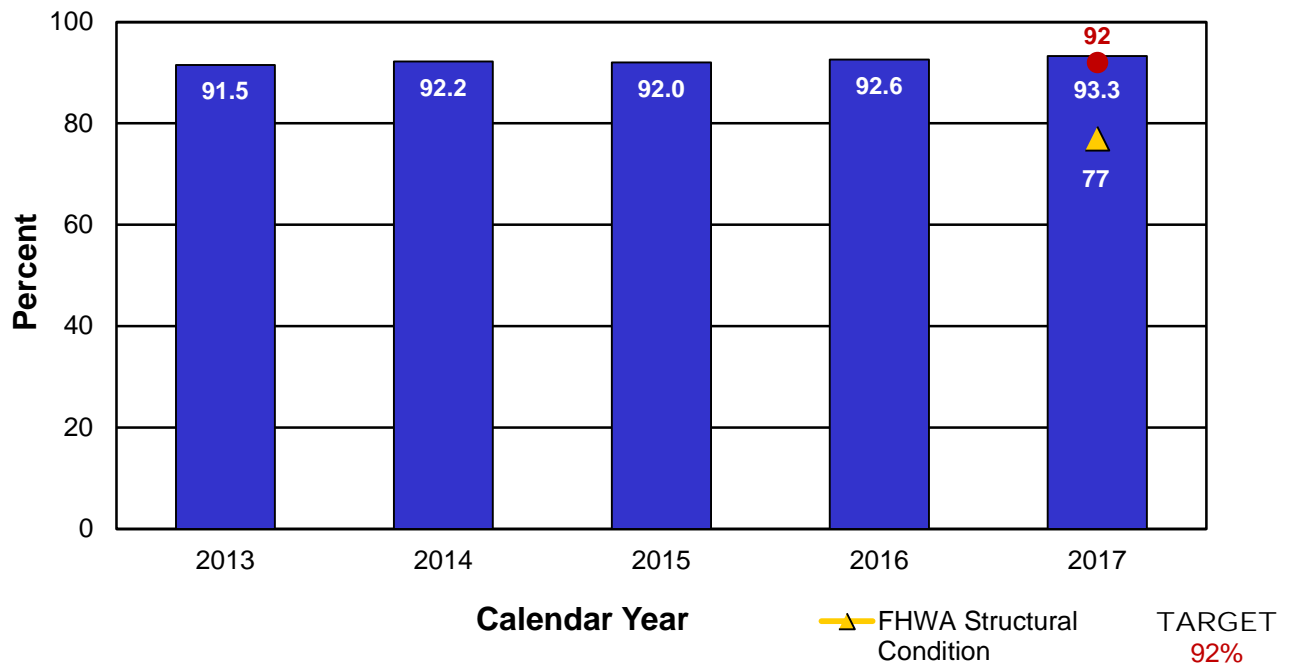


# KEEP ROADS AND BRIDGES IN GOOD CONDITION

## Percent of Major Highways in Good Condition



## Percent of Interstate Highways in Good Condition



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

**MEASUREMENT DRIVER:**  
Wesley Stephen  
District Planning Manager

**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 28,314 miles of minor highways in Missouri. The condition of these routes is determined using a variety of measures.

Missouri measures the condition of its roadways using smoothness as one factor but also considers physical distresses such as cracking.

Data are collected in the previous calendar year and updated in April of the current calendar year. It is subsequently reported on, annually, in July of the current calendar year.

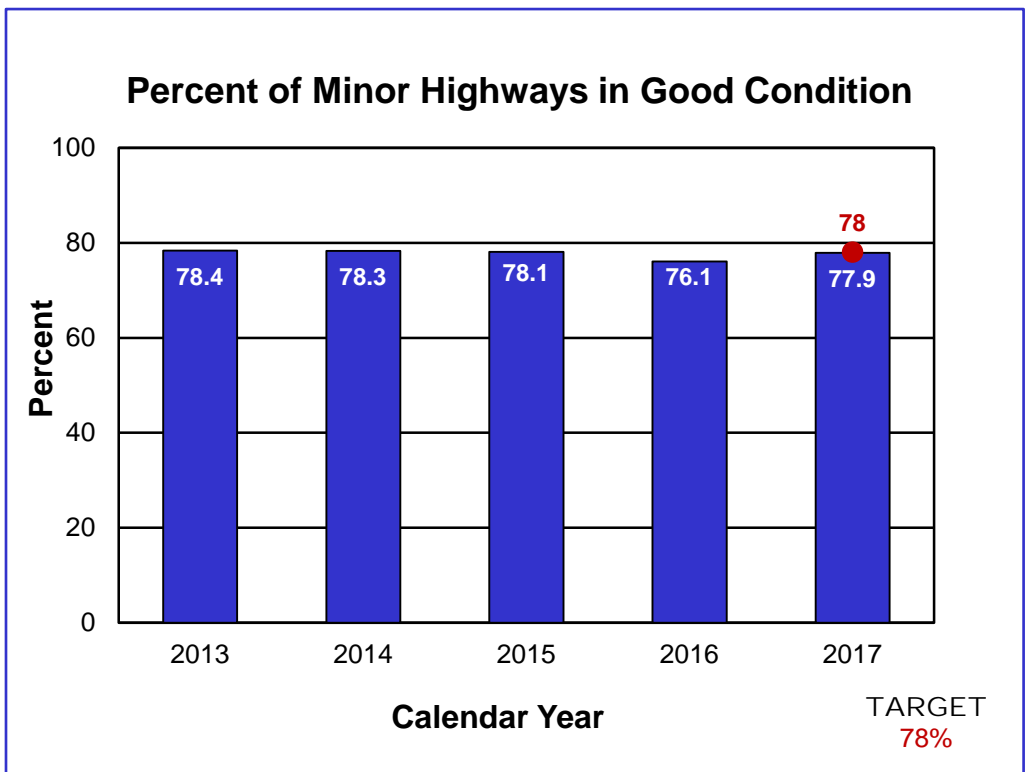
The target for this measure is set by internal policy and will not change unless policy changes.

## KEEP ROADS AND BRIDGES IN GOOD CONDITION

### *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 leading to declining condition ratings. However, over the past few years, success on major highways has allowed the department to focus more time and funding on improving minor highways.

Currently, almost 78 percent of Missouri's minor highways are in good condition, which is slightly above the percentage for 2016 and slightly less than each of the three years prior to 2016. A target of 78 percent of minor highways has been established. The target is based on the statewide asset management plan and represents MoDOT's goal of maintaining current condition.





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

**MEASUREMENT DRIVER:**  
Jerad Noland  
District Design 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 July based on MoDOT inspections conducted the prior year. Data are presented for all state bridges and major bridges. Major bridges are those that are longer than 1,000 feet and typically cross the larger rivers and major lakes within the state. Of the 10,385 bridges on state highways, 208 are considered major bridges. Bridges are categorized as being in good, fair or poor condition in accordance with criteria established by FHWA. Good means no significant condition-related problems exist. Fair indicates that moderate problems exist that may require minor rehabilitation or maintenance to return the structure to good condition. Poor indicates that more significant problems exist which will require either a major rehabilitation or replacement of the structure.

The target for this measure is set internally and reflects the department's goal of "holding its own" in terms of bridge condition.

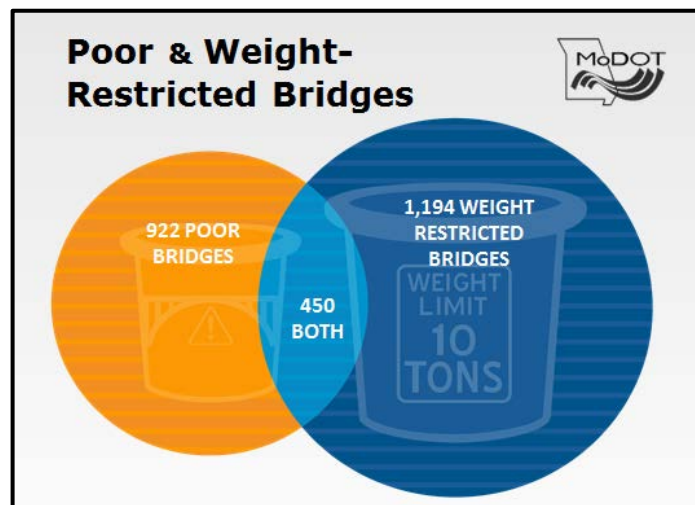
## KEEP ROADS AND BRIDGES IN GOOD CONDITION

### *Condition of state bridges – 2c*

The public has indicated the condition of Missouri's existing roadway system should be one of the state's highest priorities. Currently, 922 (22 major) structures are in poor condition, 6,084 (133 major) structures are in fair condition and 3,379 (53 major) structures are in good condition.

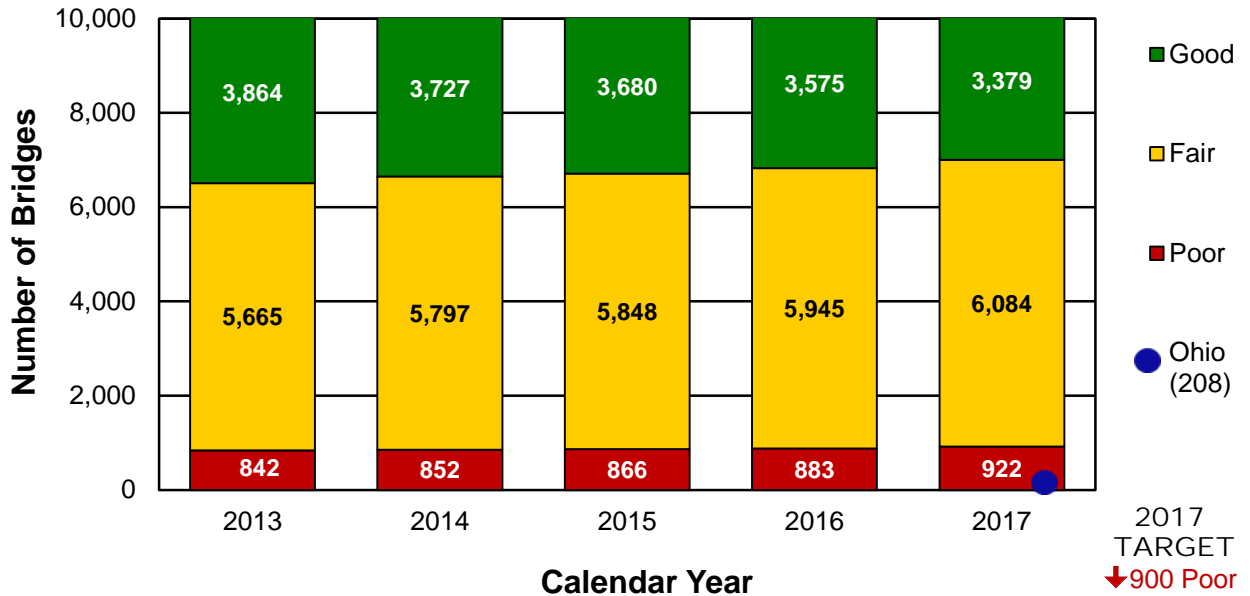
Statewide, the number of structures in poor condition has been slowly increasing over the last five years. The number of structures in good condition peaked in 2012 and has been steadily declining since then, while the number of structures in fair condition has significantly increased. The data on poor condition structures reflects that even with the significant STIP investments on bridges in recent years, the number is slowly increasing. The decline in good structures, as well as the increase in fair condition structures, is reflective of MoDOT's aging bridge inventory 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 steady over the last five years. This is reflective of the significant focus on these structures in the STIP. Even with the significant investment in the STIP, the number of structures in good condition has been generally dropping over the five-year period while the number in fair condition has generally been increasing. Work on major bridges is expensive with rehabilitations costing \$10 to \$20 million and replacements ranging from \$20 million to \$200 million. Ohio has been selected for comparison as its total of 10,402 (129 major) state highway bridges is only 17 more than Missouri, as well as having similar demographics, geography and weather conditions.

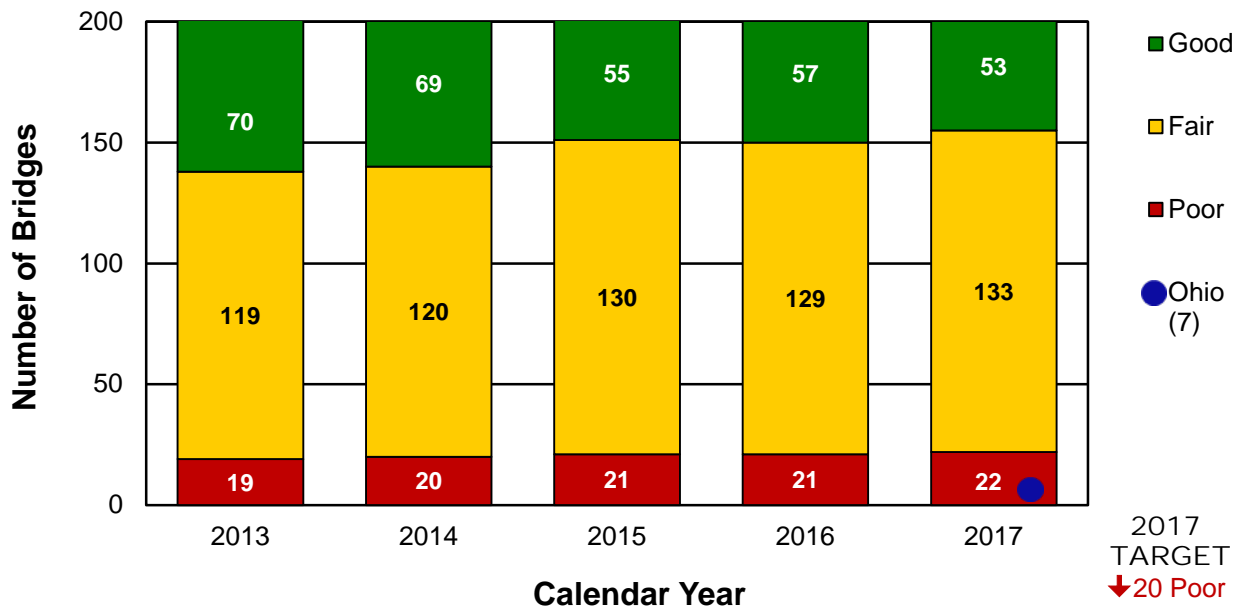


# KEEP ROADS AND BRIDGES IN GOOD CONDITION

## Statewide Condition of All Bridges (10,385 Total Bridges for 2017)



## Statewide Condition of Major Bridges (208 Total Bridges for 2017)



## RESULT DRIVER:

Dennis Heckman  
State Bridge Engineer

## MEASUREMENT

### DRIVER:

David Wyman  
Area 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. Fixing Americas Surface Transportation Act requires states to track the structurally deficient deck area on the NHS. Historically, structurally deficient consisted of bridges that were in bad condition or had insufficient load capacity when compared to modern design standards. With the implementation of the FAST Act, this definition has changed and this measure reflects those changes. The FAST Act has a penalty threshold that requires a state to take certain actions whenever the percentage of structurally deficient deck area within a state exceeds 10 percent. The chart reflects keeping the percentage below 10 percent as the target.

# KEEP ROADS AND BRIDGES IN GOOD CONDITION

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

The public has indicated that keeping Missouri's existing roads and bridges in good condition should be one of the state's highest priorities. The FAST Act established a 10 percent penalty threshold for states that, when exceeded, requires a state to focus money on bridges until they are back under 10 percent. The local system has 86 NHS structures (3 SD) and the MoDOT system has 3,552 NHS structures (155 SD). Missouri currently falls below the penalty threshold with the statewide SD deck area at 7.1 percent. This is attributable to the continued effort to focus on major bridges when funding is available as well as the increased focus on dealing with the poor condition bridges in the STIP.

Statewide, this measure is also heavily influenced by major bridges with one structure having the ability to impact this measure +/-0.5 percent. From 2016 to 2017, there was a slight drop in the statewide percentage of structurally deficient deck area on the NHS. The number of bridges on the NHS has stabilized with very small changes from year to year. Ohio has been selected for comparison because it has similar demographics, geography and weather conditions. There are 10,402 total state highway bridges in Ohio with 5,067 structures on the National Highway System.

