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Highway Bridge Conditions: Issues for Congress

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Summary

Of the 617,000 public road bridges in the United States, about 46,000 (7.5%) were classified as in poor condition in 2019. These data, along with some highly publicized incidents involving highway bridges, have led to claims that the United States is experiencing a crisis with respect to bridge condition. Federal data do not substantiate this assertion. The number of bridges classified as poor has consistently fallen over the past decade, totaling about 15,000 fewer bridges in poor condition in 2019 than in 2009. Although improvements have been made in most states, there remain major differences in the share of bridges in poor condition. About 22% of bridges in Rhode Island are classified as poor, whereas in Nevada the share is 1%.

The vast majority of bridges in poor condition, over four out of five, are in rural areas. These bridges tend to be small and relatively lightly traveled. In urban areas, bridges in poor condition, while far fewer, are generally much larger and, therefore, more expensive to fix: 59% of the deck area classified as in poor condition is on urban bridges. Bridges on roads carrying heavy traffic loads, particularly Interstate Highway bridges, are generally in better condition than those on more lightly traveled routes.

Federal funding for bridge building, reconstruction, and repair is authorized in surface transportation acts. The most recent authorization is the Fixing America's Surface Transportation Act (FAST Act; P.L. 114-94), which was enacted on December 4, 2015. The FAST Act did not authorize a program dedicated to highway bridges, but it made bridge projects broadly eligible for federal funding under the largest of the highway formula programs and eligible on a case-by-case basis under other programs. Bridges that are damaged by natural disasters or catastrophic events may also be eligible for Emergency Relief Program funds.

The condition of roads, in particular urban roads, has not experienced the same degree of improvement as the condition of bridges. This disparity raises the policy question of what priority should go to bridge repairs as opposed to roadway repairs. Congress has implicitly addressed this issue by giving states greater flexibility to use federal funding for roads or for bridges, at their discretion. Laws enacted in 2012 and again in 2015 have given states near-total authority to determine which projects to fund with federal highway funds, within broad guidelines established by Congress. As it considers reauthorization of the FAST Act, Congress may want to evaluate whether states are making sufficient progress in reducing the number of structurally deficient bridges and whether future laws should reestablish specific requirements for bridge spending.

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Background

The United States has approximately 617,000 bridges on public roads subject to the National Bridge Inspection Standards (NBIS) mandated by Congress. About 48% of these bridges are owned by state governments, and 50% are owned by local governments. State governments generally own the larger and more heavily traveled bridges, such as those on the Interstate Highway system. Less than 2% of highway bridges are owned by the federal government, primarily those on federally owned land.[1]

About 9% of all bridges carry Interstate Highways, and another 14% serve principal arterial highways other than Interstates.[2] Interstate and other principal arterial bridges carry about 80% of average daily bridge traffic. The highest traffic loads are on Interstate Highway bridges in urban areas; these account for only 5% of all bridges but carried 37% of average daily bridge traffic in 2019.[3]

Bridge Conditions

Federal law requires states to inspect public road bridges periodically and to report their findings to the Federal Highway Administration (FHWA). This information permits FHWA to characterize the existing condition of bridges as good, fair, or poor, and to identify those bridges that are structurally deficient. To implement the performance management system for bridges enacted in the Moving Ahead for Progress in the 21st Century Act (MAP-21;), FHWA changed the way it categorizes bridges, including how it defines structural deficiency. Prior to the change, structurally deficient bridges included those in poor condition and some others, such as those with an inadequate waterway opening. Beginning in 2018, "structurally deficient" was also termed "poor."[4] A bridge classified as poor/structurally deficient is not necessarily unsafe, but may require the posting of a vehicle weight restriction. When officials determine that a bridge is unsafe, it is closed to traffic.

A bridge is considered in good condition if the deck, superstructure, substructure, and culvert are rated at least 7 on a 0-to-9 scale. If any of these bridge elements is rated 5 or 6, a bridge is considered in fair condition. A bridge is considered in poor condition if any element is rated 4 or less. In 2019, 45.3% of bridges were considered good, 47.2% fair, and 7.5% poor. Measured by the percentage of bridges rated poor, bridge condition has improved since 2009. This is a drop of about 15,000 in the number of bridges considered poor. However, the percentage of bridges in good condition has also dropped over this period (**Table 1**).

[1] The standards, authorized at 23 U.S.C. §144, cover bridges located on public roads that are 20 feet (6.1 meters) in length or longer. Federal Highway Administration (FHWA), "Bridge Condition by Owner, 2019," National Bridge Inventory, at http://www.fhwa.dot.gov/bridge/britab.cfm.

[2] Arterials, including Interstates, are roads designed to provide for relatively long trips at high speed and usually have multiple lanes and limited access. Principal arterials exclude rural and urban minor arterials. FHWA, "Bridge Condition by Functional Classification, 2019," National Bridge Inventory, at http://www.fhwa.dot.gov/bridge/britab.cfm.

[3] FHWA, "Bridge Condition by Functional Classification, Average Daily Travel (ADT), 2019," National Bridge Inventory, at http://www.fhwa.dot.gov/bridge/britab.cfm.

[4] FHWA, "National Performance Management Measures; Assessing Pavement Condition for the National Highway Performance Program and Bridge Condition for the National Highway Performance Program," 82 *Federal Register* 5886, January 18, 2017.

Table 1. Bridge Condition Ratings, 2009-2019

Percent

Year	Good	Fair	Poor
2009	47.5	42.3	10.1
2010	47.4	42.7	9.8
2011	47.2	43.1	9.6
2012	47.3	43.3	9.4
2013	47.3	43.7	9.0
2014	47.1	44.2	8.7
2015	47.3	44.4	8.3
2016	47.4	44.6	7.9
2017	46,8	45.4	7.7
2018	46.0	46.4	7.6
2019	45.3	47.2	7.5

Source: Federal Highway Administration, *National Bridge Inventory, Highway Bridge Condition by Highway System*, at https://www.fhwa.dot.gov/bridge/britab.cfm.

In terms of the number of bridges, poor condition is principally a problem affecting rural areas, particularly bridges on local rural roads. In 2019, 80% of bridges rated poor were in rural areas and 50% of bridges in poor condition were on local rural roads. However, urban bridges in poor condition are generally much larger and, therefore, more expensive to fix. In 2019, 59% of the deck area of bridges in poor condition was in urban areas, with 40% on urban Interstates and other principal arterials.[5]

Nevertheless, bridges on Interstate Highways are generally in better condition than those on more lightly traveled routes: 3.3% of urban Interstate Highway bridges were considered poor in 2019, less than half of the 7.3% of urban bridges on local roads classified as poor.[6] Likewise, 2.6% of rural Interstate Highway bridges were poor in 2019, about a fourth of the 11.4% of rural bridges on local roads rated poor.

Locally owned bridges, typically carrying local roads, are more likely to be in poor condition. In 2019, 9.8% of bridges owned by local government were classified as poor, compared with 5.0% of state-owned bridges. For bridge condition ratings by state and territory, see **Appendix A**.

Future Bridge Funding Needs

Every two years or so, FHWA assesses the condition and performance of the nation's highways and bridges, documents current spending by all levels of government, and estimates future spending needs to maintain or improve current conditions and performance.[7] As with any attempt

[5] FHWA, "Bridge Condition by Functional Classification," National Bridge Inventory, at https://www.fhwa.dot.gov/bridge/fc.cfm.

[6] Interstates are the highest class of roadways in FHWA's functional classification system, and local roads are the lowest.

[7] The "maintain" scenario assumes that capital investment changes so that selected measures of bridge performance in 2034 are maintained at their 2014 levels. The "improve" scenario is the level of spending in which the investment is made in all projects by 2034 for which the economic benefits are equal to or greater than the economic costs.

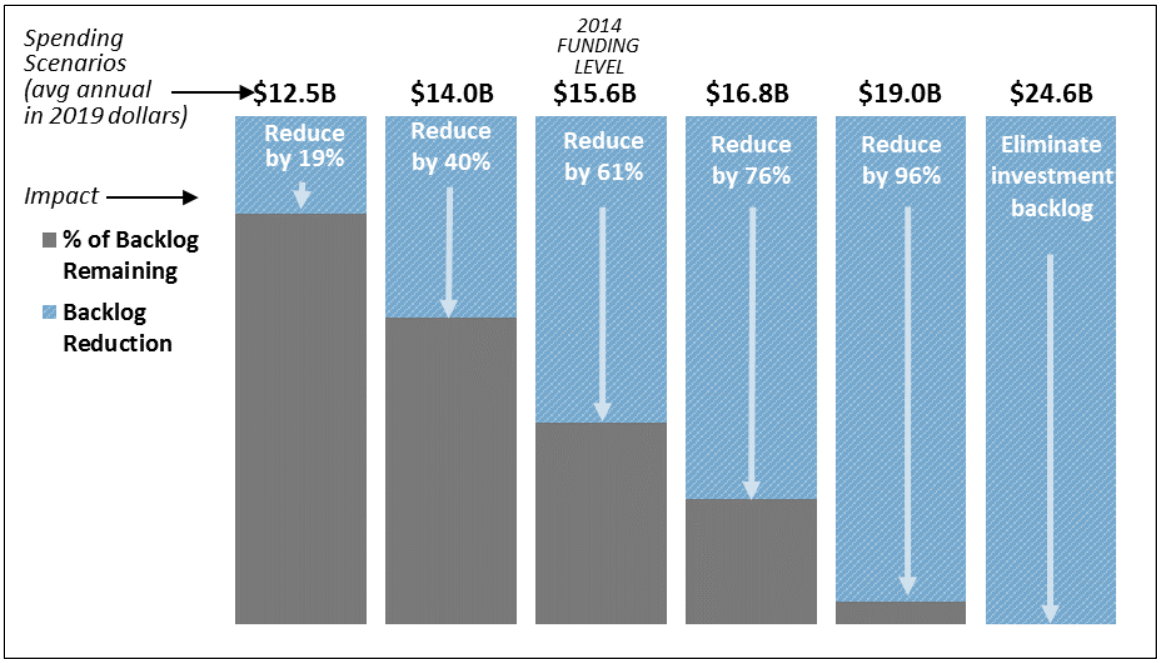
to forecast future conditions, a host of simplifying assumptions, omissions, and data problems influence these estimates. Among other things, the estimates rely on forecasts of travel demand. Despite such uncertainties and assumptions, these estimates provide a way to assess the level of current spending compared with what would be needed in the future under different scenarios.

The most recent assessment was published in 2019 based on 2014 data. Represented in 2019 dollars, this assessment showed that $15.6 billion was spent on bridge rehabilitation or replacement by governments at all levels in 2014. An additional $1.7 billion was spent on the construction of new bridges.[8] Because of the modeling involved, FHWA's future needs estimates for bridges are limited to fixing deficiencies in existing bridges only when the benefits outweigh the costs. It estimated that fixing all bridge deficiencies existing in 2014 would cost $135 billion (in 2019 dollars), which was eight times the level of spending on bridge rehabilitation and replacement in 2014.[9]

Of course, fixing all deficient bridges overnight is not feasible. FHWA, therefore, estimated how this investment backlog may change at various levels of spending over the 2015-2034 period, taking into account the deterioration of existing bridges over that period. The results of this analysis are seen in **Figure 1**. To eliminate the backlog by 2034 would require an investment of $24.6 billion annually (in 2019 dollars). If the $15.6 billion spending level of 2014 were to continue, the total bridge reconstruction backlog would decline by roughly 61% by 2034.

Figure 1. Estimated Effect of Various Spending Levels on Bridge Investment Backlog

Average Annual Spending for 20 Years



Source: Federal Highway Administration and Federal Transit Administration, *Status of the Nation's Highways, Bridges, and Transit: Conditions and Performance, 23rd Edition*, January 2019, exhibit 10-15.

Notes: The current funding level is for 2014 and the 20-year spending scenarios are for 2015 through 2034. CRS adjusted the data expressed in 2014 dollars to 2019 dollars using the implicit GDP deflator.

[8] Federal Highway Administration and Federal Transit Administration, *Status of the Nation's Highways, Bridges, and Transit: Conditions and Performance, 23rd Edition*, January 2019, pp. 2-15.

[9] Ibid., exhibit 7-9.

Federal and State Roles

Federal assistance for the maintenance, rehabilitation, and construction of highway bridges comes principally through the Federal-Aid Highway Program administered by FHWA. FHWA, however, does not determine which bridges should benefit from federal funding. Almost all funding under the Federal-Aid Highway Program is distributed to state departments of transportation, which determine, for the most part, where and on what the money is spent. States must comply with detailed federal planning guidelines and performance management measures as part of the decisionmaking process, but otherwise they are free to spend their federal highway funds in any way consistent with federal laws and regulations.[10] Bridge projects are developed at the state level, and state departments of transportation let the contracts, oversee the construction process, and provide for the inspection of bridges.[11]

The Highway Bridge Program, a stand-alone program for highway bridges that was formerly part of the Federal-Aid Highway Program, was terminated at the end of FY2012.The current law authorizing highway spending, the 2015 Fixing America's Surface Transportation Act (FAST Act; P.L. 114-94), does not include a program specifically targeting bridges.[12] Instead, the law makes bridge projects eligible for funding from three programs that distribute funds to the states under formulas specified in law: the National Highway Performance Program (NHPP), the Surface Transportation Block Grant Program (STBG), and the National Highway Freight Program (NHFP). Under all three programs, the states determine how much of their federal funding is spent on bridges as opposed to other uses, primarily highway construction and improvement. These funds may also be used for the seismic retrofitting of bridges to reduce earthquake failure risk.[13]

Depending on the specific use, funding from other formula programs may also be used on bridge projects on a case-by-case basis. In addition, states are allowed to transfer ("flex") up to 50% of each formula program's apportioned funds to other formula programs.[14] A related discretionary grant program, the Nationally Significant Freight and Highway Projects Program (renamed INFRA), also may provide funding for large bridge projects on a competitive grant basis.[15]

Beginning in FY2018, some bridge funding has also been provided by appropriations outside the authorization process. The Consolidated Appropriations Act, 2018 (P.L. 115-141), included $225 million for a competitive bridge program for states with a population density of 100 per square mile or less. The Consolidated Appropriations Act, 2019 (P.L. 116-6), provided $475 million for a Bridge Replacement and Rehabilitation Program, to be distributed by formula to states for which

[10] FHWA's Final Rule for National Performance Management Measures: Assessing Pavement Condition for the National Highway Performance Program and Bridge Condition for the National Highway Performance Program, became effective on February 17, 2017. See https://www.federalregister.gov/documents/2017/01/18/2017-00550/national-performance-management-measures-assessing-pavement-condition-for-the-national-highway.

[11] CRS Report R44332, *Federal-Aid Highway Program (FAHP): In Brief*, by Robert S. Kirk.

[12] CRS Report R44388, *Surface Transportation Funding and Programs Under the Fixing America's Surface Transportation Act (FAST Act; P.L. 114-94)*, coordinated by Robert S. Kirk.

[13] See CRS Report R41746, *Earthquake Risk and U.S. Highway Infrastructure: Frequently Asked Questions*, by William J. Mallett, Nicole T. Carter, and Peter Folger.

[14] Metropolitan Planning Program funds and sub-allocated funds under the Surface Transportation Block Grant Program (STBG) are among those shielded from transfer. See FHWA, *Transferability of Apportioned Program Funding under 23 U.S.C. 126*, at https://www.fhwa.dot.gov/cfo/23usc126_transferability.cfm.

[15] Unlike the other highway programs discussed in this report, INFRA is administered by the Office of the Secretary of Transportation, not by FHWA.

the percent of total bridge deck area classified as poor is at least 7.5%. The Further Consolidated Appropriations Act, 2020 (P.L. 116-94), provided $1.15 billion for the Bridge Replacement and Rehabilitation Program but broadened the eligibility to states for which the percentage of total bridge deck area classified as poor is at least 5%. For these three years Congress has in effect pursued a two-pronged approach toward bridge funding, making bridges eligible for funding at state discretion under the large highway programs established in authorization acts supplemented by targeted bridge funds provided in annual appropriations acts.

FHWA imposes certain performance measures that states must meet to avoid tighter federal restrictions on highway spending. For example, if more than 10% of the deck area of a state's bridges on the National Highway System (which consists of the Interstate Highway System and most other principal arterial roads) is structurally deficient, the state is required to dedicate an amount of its NHPP funds equal to 50% of its FY2009 spending under the former Highway Bridge Program to bridge projects.[16]

Section 1111 of MAP-21 had also required FHWA, in consultation with states and other federal agencies, to classify public road bridges according to "serviceability, safety, and essentiality for public use ... [and,] based on that classification, assign each a risk-based priority for systematic preventive maintenance, replacement or rehabilitation." FHWA has not completed a rulemaking implementing this requirement.[17]

Table 2 shows the total obligation of federal funding for bridges, including both funds from the former Highway Bridge Program and those from all other programmatic sources, from FY2012 through FY2019. The table also compares obligations from all programs in current dollars and adjusts these totals to show the impact of project cost inflation during this period.

[16] For a definition of the National Highway System, see FHWA, National Highway System, "What Is the National Highway System?" at http://www.fhwa.dot.gov/planning/national_highway_system/.

[17] Because of possible conflicts with a MAP-21 requirement that states develop risk-based asset management plans under the NHPP, FHWA has chosen not to pursue the rulemaking, in Letter from Federal Highway Administration, Congressional Affairs Team, to Robert S. Kirk, Specialist in Transportation Policy, June 3, 2020.

Table 2. Trends in Federal Bridge Obligations, FY2012-FY2019

(current and inflation-adjusted dollars in millions)

	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019
Total (Current $)	$6,014	$6,484	$6,803	$6,804	$7,095	$6,666	$7,092	$7,365
% Change from Previous Year	-15%	+8%	+5%	0.0%	+4%	-6%	+6%	+4%
Highway Bridge Program (pre MAP-21 funds)	$3,575	$961	$221	$243	$80	$72	$44	$2
Surface Transportation Program	$477	$548	$708	$604	$587	$558	$1,662	$2,212
National Highway Performance Program	—	$3,018	$3,673	$3,638	$3,910	$3,937	$3,790	$4,033
All Other Programs	$1,962	$1,957	$2,201	$2,319	$2,518	$2,099	$1,596	$1,118
Total (Inflation Adjusted, 2012$)	$6,014	$6,319	$6,550	$6,550	$6,808	$6,202	$6,292	6,398
% Change from Previous Year	-19%	+5%	+4%	0.0%	+4%	-9%	+1%	+2%

Sources: FHWA; Cost adjustments calculated by CRS using Bureau of Economic Analysis, *Price Indexes for Gross Government Fixed Investment by Type*, National Income and Product Accounts Table 5.9.4, Line 40: State and local highways and streets. Weighted average used to approximate fiscal years.

Notes: For a detailed table of bridge obligations for these years, see **Appendix B**. Totals reflect ongoing obligations of funds under prior authorizations. Totals may not add due to rounding. Highway Bridge Program funding for FY2013-FY2019 reflects funds unobligated when the program was discontinued at the end of FY2012. Surface Transportation Program includes both Surface Transportation Program and Surface Transportation Block Grant Program funds.

In FY2012, after most American Recovery and Reconstruction Act (ARRA; P.L. 111-5) stimulus funds had been obligated, the obligation of federal funds for bridges fell roughly 15% below FY2011 obligations. From FY2012 through FY2019 the obligation of funds for bridges grew nearly 22.5% in current dollar terms. Even so, adjusted for inflation, in FY2019 obligations for bridge work were only 6% higher than bridge obligations in FY2012.

Bridge Inspection

Under the National Bridge Inspection Program, all bridges longer than 20 feet on public roads must be inspected by qualified inspectors, based on federally defined requirements. Federal agencies are subject to the same requirements for federally owned bridges, such as those on federal lands. Data from these inspections are reported to FHWA, which uses them to compile a list of bridges in poor condition. States may use this information to identify which bridges need replacement or repair.[18]

[18] The National Bridge Inspection Program was initiated in 1968 following the 1967 collapse of the so-called Silver Bridge over the Ohio River. The National Bridge Inspection Standards were first issued in 1971. See FHWA, "Tables of Frequently Requested NBI Information," at http://www.fhwa.dot.gov/bridge/britab.cfm.

FHWA sets the standards for bridge inspection through the National Bridge Inspection Standards (NBIS).[19] The NBIS set forth how, with what frequency, and by whom bridge inspection is to be completed. The standards provide the following

- Each state is responsible for the inspection of all public highway bridges within the state except for those owned by the federal government or Indian tribes. Although the state may delegate some bridge inspection responsibilities to smaller units of government, the responsibility for having the inspections done in conformance with federal requirements remains with the state.
- Inspections can be done by anyone qualified under the NBIS, which set forth standards for qualification and training. The inspectors may be state employees, consultants to the states, or others.
- Inspection of a federally owned bridge is the responsibility of the federal agency that owns the bridge.
- In general, the required interval of inspection is every 24 months. States are to identify bridges that require less than a 24-month interval. States can also, however, request FHWA approval to inspect certain bridges at intervals as long as 48 months. The interval for an underwater inspection is generally 60 months but may be increased to 72 months with FHWA permission. Fracture-critical members must undergo a hands-on inspection at intervals not to exceed 24 months.[20]
- The most common on-site inspection is a visual inspection by trained inspectors, one of whom must meet the additional training requirements of a team leader. Damage and special inspections do not require the presence of a team leader.
- Load rating of a bridge must be under the responsibility of a registered professional engineer. Structures that cannot carry maximum legal loads for the roadway must be posted.

The vast majority of inspections are done by state employees or consultants working for the states. FHWA bridge engineers do, at times, perform field reviews to assure that states are complying with the bridge inspection requirements. FHWA also provides on-site engineering expertise in the examination of the reasons for a catastrophic bridge failure. However, FHWA bridge engineers have only limited time available for audits and other bridge oversight.

FHWA's Emergency Relief Program

The Emergency Relief Program[21] provides funding for bridges damaged in natural disasters or that are subject to catastrophic failures from an outside source. The program provides funds for emergency repairs immediately after the failure to restore essential traffic, as well as for longer-term permanent repairs.

Emergency Relief is authorized at $100 million per year, nationwide. Funding beyond this amount is commonly provided for in supplemental appropriations acts. In the case of most large

[19] 23 C.F.R. §650, subpart C.

[20] A fracture-critical member is a steel member in tension, or with a tension element, whose failure would probably cause a portion of or the entire bridge to collapse.

[21] CRS Report R45298, *Emergency Relief for Disaster-Damaged Roads and Public Transportation Systems*, by Robert S. Kirk and William J. Mallett.

disasters, additional emergency relief funds are provided in an appropriations bill, usually a supplemental appropriations bill.

The federal share of emergency repairs to restore essential travel during the first 180 days following a disaster is 100%. Later repairs, as well as permanent repairs such as reconstruction or replacement of a collapsed bridge, are reimbursed at the same federal share that would normally apply to the federal-aid highway facility. Congress has sometimes legislatively raised the federal share under the Emergency Relief Program to 100%. As is true with other FHWA programs, the Emergency Relief Program is administered through state departments of transportation in close coordination with FHWA's field office in each state.

Issues for Congress

The large number of bridges classified as poor, together with some highly publicized incidents involving highway bridges, such as the washout of a bridge on Interstate 10 in California in 2015 and the use restriction imposed on the Arlington Memorial Bridge in Washington, DC, has led to warnings of an incipient crisis.[22] FHWA data do not substantiate this assertion. For example, the number of bridges classified as poor has consistently fallen over the past decade, totaling about 15,000 fewer bridges in poor condition in 2019 than in 2009.

The condition of roads, in particular urban roads, has not experienced the same degree of improvement as the condition of bridges.[23] This disparity raises the policy question of what priority should go to bridge repairs as opposed to roadway repairs. In MAP-21, enacted in 2012, Congress implicitly addressed this issue by giving states greater flexibility to use federal funding for roads or for bridges, at their discretion. In doing so, Congress chose not to mandate any specific level of spending on bridges. Instead, responsibility for determining the amount that should be spent on bridges each year was assigned to the states.

A related issue is one of efficiency. Bridges classified as in *poor condition* are not in most cases *unsafe* bridges, and an intensive effort to repair all bridges that are in poor condition could quickly lead to spending on relatively low-priority projects that do not present major safety problems. MAP-21 also required FHWA to develop performance measures in regard to bridges. The effectiveness of implementation, and whether the measures fulfill the intent of Congress, may be ongoing oversight issues.

Tolling of Non-tolled Bridges

Wider use of tolling could allow for more rapid improvement of major bridges. Heavily traveled bridges can be attractive targets for conversion to toll facilities; many bridges have no convenient alternatives, so drivers may find it difficult to avoid paying whatever toll is imposed. The revenue

[22] See, for example, "Collapsed California Bridge Earned 'A' Rating Just Last Year," *USA Today*, July 21, 2015, http://www.usatoday.com/story/news/nation/2015/07/20/collapsed—10-bridge-given-rating-just-last-year/30428515/.; "Memorial Bridge, symbol of U.S. strength, is corroded, partly shut down," *Washington Post*, May 30, 2015, at https://www.washingtonpost.com/local/trafficandcommuting/memorial-bridge-symbol-of-us-strength-is-corroded-partly-shut-down/2015/05/28/bbe0e9b0-0582-11e5-a428-c984eb077d4e_story.html; American Road and Transportation Builders Association, "2020 Bridge Report," at https://artbabridgereport.org/.

[23] See also U.S. Congressional Budget Office, *Approaches to Make Federal Highway Spending More Productive*, February 2016, pp. 1-50, at https://www.cbo.gov/sites/default/files/114th-congress-2015-2016/reports/50150-Federal_Highway_Spending-OneCol.pdf.

stream provided by tolls can make bridge building and reconstruction an attractive investment for private entities that are interested in participating in a public-private partnership. Tolling can also help projects become eligible for a federal Transportation Infrastructure Finance and Innovation Act (TIFIA) loan. Bridge tolls, however, are often very unpopular, and their acceptance varies greatly from region to region. Some states have sought to make bridge tolls more acceptable within a state by charging out-of-state users at a much higher rate than in-state residents, a practice that may face legal challenges.[24]

Currently, any bridge on the federal-aid highway system, including Interstate Highway bridges, may be converted to a toll facility if the conversion is related to the reconstruction or replacement of the previously non-tolled bridge.[25] New bridges, including bridges on new segments of Interstate Highways, may be tolled as well. Added lane capacity on a bridge may be tolled as long as the number of free lanes remains the same. Any bridge owner (a state, public authority, or other eligible entity) has the right to implement tolling, provided the facility is eligible to be tolled under 23 U.S.C. Sections 129 or 166, or under federally authorized pilot toll programs. FHWA does not regulate the toll rates users pay. Setting toll rates is the responsibility of the bridge owner or operator. However, for toll roads operating under Sections 129 or 166, federal law does impose restrictions on the use of toll revenues.

Tolling Bridges Between States

Establishing tolls on bridges that connect two states is generally done with the agreement of the states on both ends of the bridge. This does not always have to be the case, as such bridges are not always jointly owned. In the case of a bridge between two states that is owned by one of the states, the bridge owner might be able to impose tolls unilaterally; if such a bridge is on the Interstate Highway system, the state could impose tolls only through participation in the Value Pricing Pilot Program.[26] Congress might consider providing guidance on the process of imposing tolls on bridges between two states.

Spending on Off-System Bridges

Historically, nearly all federal highway funding was restricted to roads and bridges on the federal-aid highway system. The Surface Transportation Assistance Act of 1978 (P.L. 95-599) stipulated that not less than 15% of a state's bridge apportionments nor more than 35% be spent "off-system," that is, on relatively small bridges on roads that are not part of the 1.03 million-mile federal-aid system.[27] A minimum level of spending on off-system bridges has been required in every highway authorization bill since 1978. Under current law, STBG funds equal to at least 15% of the amounts apportioned to a state for the Highway Bridge Program in FY2009 are to be obligated for off-system bridge projects.

[24] CRS Report R44910, *Tolling U.S. Highways and Bridges*, by Robert S. Kirk.

[25] The exception to the reconstruction or replacement requirement would be to convert all or some of the bridge lanes to a congestion pricing facility under the Value Pricing Pilot Program.

[26] For example, Oregon is the owner of the I-5 Columbia River Bridge, which links Portland, OR, and Vancouver, WA. It already has one of the 15 slots allowed under the Value Pricing Program, and has included the bridge in a broader study of implementing value pricing in Portland. Ultimately, if the state of Oregon chooses to toll the bridge and demonstrates that the I-5 tolling project fulfills value pricing objectives, FHWA would be asked to approve tolling as part of the program. Oregon could then collect tolls on the bridge or near the water's edge without the agreement of Washington.

[27] FHWA, "Public Road Length-2014(1): Miles by Ownership and Federal-aid Highways," National Summary Table HM-16, *Highway Statistics 2018*, August 30, 2019, at https://www.fhwa.dot.gov/policyinformation/statistics/2018/hm16.cfm. The total public road length in the United States for 2018 was 4.2 million miles.

Off-system bridges, by definition, are inherently local in nature. By eliminating the set-aside for off-system bridges, Congress could enable states to spend more of their federal funds on bridges that are more heavily used, but states would not be required to spend funds for that purpose without additional legislation. However, 58.5% of bridges classified as in poor condition are on local rural roads or minor rural collectors, which are off-system. The set-aside for off-system projects has been strongly supported by predominantly rural states and by many county and municipal governments.

Bridge Improvement Type

Of the funds both authorized and obligated for bridges in FY2018 from all FHWA sources, 3% were obligated for new bridges, 57% were obligated for bridge replacement, 9% were for major rehabilitation, and 31% were for minor bridge work. The 60% combined share obligated for both new and replacement bridges was less than in the late 1990s, when it approached 70%. The share of spending for major bridge rehabilitation has also fallen since the late 1990s. Meanwhile, four times the proportion of federal funding went to minor bridge work in FY2018 as in the 1990s.[28]

The shift in spending of federal funds from large bridge construction projects to minor rehabilitation projects could be due to the falling number of deficient bridges, but it also could indicate that states are favoring less expensive projects and delaying some new bridges or bridge replacements because of the higher cost of these projects. Examining the trends in spending by improvement type could reveal state bridge priorities.

Federal Lands and Tribal Bridges

Funding for bridges owned by the federal government or by Indian tribes does not come from the regularly apportioned programs discussed above. Funding is authorized separately, primarily from two stand-alone programs: the Tribal Transportation Program[29] and the Federal Lands Transportation Program. The Tribal Transportation Program funds are under the control of the tribes, in cooperation with the Department of the Interior and the Department of Transportation. The Federal Lands Transportation Program funds are under the control of the federal land management agencies, with assistance and oversight from the Department of Transportation. A third program, the Federal Lands Access Program, funds facilities that provide access to federal lands. The use of these funds in each state is determined by a state committee that includes representatives of FHWA, the state department of transportation, and a political subdivision of the state.

Compared to the core highway formula programs, these programs are small. Under the FAST Act, an average of $485 million annually is available to the Tribal Transportation Program. The $355 million annual average Federal Lands Transportation program authorization is divided among the National Park Service ($284 million), the Fish and Wildlife Service ($30 million), the U.S. Forest Service ($17 million), and other federal land management agencies ($24 million). These funds must cover both road and bridge needs as well as any public transportation funding. These programs are paid for from the Highway Trust Fund.

[28] FHWA, "Obligation of Federal Funds for Bridge Projects Underway by Improvement Type," *Highway Statistics,* various years, and *Highway Statistics 2018, Table FA-10*. Based on data from Table FA-10 for FY1996-FY1999, obligation for minor bridge rehabilitation relative to total bridge obligations for the years was 6% for FY1996, 8% for FY1997, 7% for FY1998, and just below 10% for FY1999.

[29] CRS Report R44359, *Highways and Highway Safety on Indian Lands*, by William J. Mallett.

The structure for funding bridges on federal and tribal land has given rise to some complications, such as those relating to the ongoing rehabilitation of Arlington Memorial Bridge. The bridge is owned by the National Park Service. Therefore, the work would logically be paid out of the Park Service's funding under the Federal Lands Transportation Program, but the cost is expected to be $227 million, nearly as much as the Park Service receives each year for all highway needs. To complete the project the Park Service is combining $107 million of its transportation and general construction funds with a discretionary grant of $90 million from the Department of Transportation's Infrastructure for Rebuilding America (INFRA) program and a transfer of $30 million in federal highway formula funds from Virginia and the District of Columbia.[30] The FAST Act established the Nationally Significant Federal Lands and Tribal Projects Program (NSFLTP), authorized at $100 million annually, to provide an extra source of funds for large projects on federal or tribal lands, but this money is subject to appropriation each year. The NSFLTP has received appropriations of $300 million for FY2018, $25 million for FY2019, and $70 million for FY2020. Congress may wish to consider the adequacy of funding for large federal lands bridge projects such as Arlington Memorial Bridge.

Oversight and Inspection Issues[31]

Risk-Based Approach to Federal Bridge Oversight

MAP-21 required that the National Bridge Inventory classify bridges according to serviceability, safety, and essentiality for public use, and based on this classification assign each bridge a risk-based priority for systematic preventive maintenance, replacement, or rehabilitation.[32] FHWA has chosen not to pursue a rule to implement these provisions (23 U.S.C. §144(b) (3) and (4)). According to FHWA, after considering a variety of approaches to the required classification system the agency determined that all the approaches "would conflict or compete with the current Transportation Performance Management and Asset Management requirements."[33]

However, the provisions remain a required part of current law regarding the National Bridge Inventory, and the failure to pursue the provisions means there is effectively no national bridge rating system. Congress may wish to revisit the MAP-21 bridge classification and risk-based priority setting requirements.

[30] Department of the Interior, "Under Budget & Ahead of Schedule: Secretary Zinke Announces Full Funding to Repair Arlington Memorial Bridge," press release, December 1, 2017, at https://www.doi.gov/pressreleases/under-budget-ahead-schedule-secretary-zinke-announces-full-funding-repair-arlington.

[31] See also FHWA, "Tables of Frequently Requested NBI Information," at http://www.fhwa.dot.gov/bridge/britab.cfm.

[32] Previously, a 0%-100% "sufficiency" (to be in service) rating was determined for each bridge. This rating alone, however, did not determine which bridges were replaced or reconstructed. These ratings were used for many years without being seen as in conflict with 23 U.S.C. §145. The sufficiency ratings are not used for the use of funds provided in MAP-21 or the FAST Act.

[33] Letter from Federal Highway Administration, Congressional Affairs Team, to Robert S. Kirk, Specialist in Transportation Policy, June 3, 2020. In particular, FHWA found that the requirement that each highway bridge to be assigned a priority for preventive maintenance, replacement, or rehabilitation, could be contradictory to the requirements of 23 U.S.C.§119(e) which require states to develop risk-based asset management plans and use the results of those plans to prioritize their projects under NHPP. FHWA also expressed concerns that implementation was contradictory to "the State-administered nature of the Federal-aid Highway Program as provided by 23 U.S.C.§145. FHWA does not have the authority to dictate what projects States pursue and fund, so a priority system set by FHWA would not be meaningful."

Inspection Auditing

FHWA could be directed to take a more active role in ensuring that inspections performed by the states or their contractors are done in conformance with the NBIS. This step might involve a requirement for more on-site field reviews of state inspections or increased review or inspection paperwork. At some division offices FHWA might have to hire more engineers and support personnel to carry out the increased workload; at others FHWA might be able to dedicate more of its existing resources to oversight of the inspection program.

Bridge Postings and Closures

A bridge classified as in poor condition is not necessarily unsafe, but may require the posting of a vehicle weight restriction. When officials determine that a bridge is unsafe, they are to close it to traffic immediately. The actual closing of a bridge is usually done by the state, but in some states closures are under the authority of county commissioners. The recent failure of local officials in Mississippi to close unsafe bridges until the state was threatened with the withholding of federal funds suggests that unsafe bridge closures do not always happen immediately.[34]

Each year Congress is asked to approve exceptions from federal weight and length rules for trucks. Increased truck weights can put stress on bridge structures. Congress might consider a process mandating studies of the proposed weight limit exemptions on bridges to lessen the potential for future problems that could result in weight restrictions or closures.

Inspector Training and Personnel Qualifications

Current law includes requirements for the establishment of minimum inspection standards and an annual review of state compliance with the standards established in MAP-21. Under the act, the Secretary of Transportation is to update the NBIS, including those governing the methodology, training, and qualifications of inspectors. The Notice of Proposed Rulemaking was issued on November 12, 2019, and the extended closing date for comments was March 13, 2020.[35] Once the final rule is published, Congress may wish to oversee implementation of these provisions and to monitor their effectiveness.

[34] Cameron McWhirter, "Mississippi Gov. Bryant Orders More Than 100 Bridges Closed," *Wall Street Journal*, April 12, 2018, at https://www.wsj.com/articles/mississippi-gov-bryant-orders-more-than-100-bridges-closed-1523541600.

[35] FHWA, *National Bridge Inspection Standards (MAP-21)*, Notice of Proposed Rulemaking, *Federal Register*, November 12, 2019, at https://www.federalregister.gov/documents/2019/11/12/2019-23929/national-bridge-inspection-standards, and the extension of the comment period at https://www.federalregister.gov/documents/2020/01/13/2020-00315/national-bridge-inspection-standards.

Appendix A. Bridge Condition by State and Territory

(Data as of December 31, 2019)

State	All Bridges (number)	Condition Rating (number)			Condition Rating (percent)		
		Good	Fair	Poor	Good	Fair	Poor
Alabama	16,162	6,740	8,768	654	41.7	54.3	4.0
Alaska	1,595	706	744	145	44.3	46.6	9.1
Arizona	8,320	5,098	3,085	137	61.3	37.1	1.6
Arkansas	12,902	6,598	5,678	626	51.1	44.0	4.9
California	25,771	13,707	10,267	1,797	53.2	39.8	7.0
Colorado	8,785	3,550	4,769	466	40.4	54.3	5.3
Connecticut	4,336	1,256	2,805	275	29.0	64.7	6.3
Delaware	879	248	603	28	28.2	68.6	3.2
District of Columbia	244	60	174	10	24.6	71.3	4.1
Florida	12,518	8,279	3,878	361	66.1	31.0	2.9
Georgia	14,940	6,796	7,703	441	45.5	51.6	3.0
Hawaii	1,138	297	761	80	26.1	66.9	7.0
Idaho	4,493	1,282	2,916	295	28.5	64.9	6.6
Illinois	26,825	13,084	11,334	2,407	48.8	42.3	9.0
Indiana	19,284	7,892	10,226	1,166	40.9	53.0	6.0
Iowa	24,043	9,319	10,149	4,575	38.8	42.2	19.0
Kansas	24,934	13,468	10,186	1,280	54.0	40.9	5.1
Kentucky	14,394	4,908	8,444	1,042	34.1	58.7	7.2
Louisiana	12,884	6,244	4,939	1,701	48.5	38.3	13.2
Maine	2,461	748	1,399	314	30.4	56.8	12.8
Maryland	5,402	1,783	3,346	273	33.0	61.9	5.1
Massachusetts	5,233	1,371	3,393	469	26.2	64.8	9.0
Michigan	11,244	4,304	5,723	1,217	38.3	50.9	10.8
Minnesota	13,346	8,085	4,630	631	60.6	34.7	4.7
Mississippi	17,019	10,682	4,853	1,484	62.8	28.5	8.7
Missouri	24,494	10,228	12,119	2,147	41.8	49.5	8.8
Montana	5,278	1,602	3,296	380	30.4	62.4	7.2
Nebraska	15,332	7,996	5,980	1,356	52.2	39.0	8.8
Nevada	2,029	1,009	994	26	49.7	49.0	1.3
New Hampshire	2,502	1,323	966	213	52.9	38.6	8.5

State	All Bridges (number)	Condition Rating (number)			Condition Rating (percent)		
		Good	Fair	Poor	Good	Fair	Poor
New Jersey	6,786	1,825	4,432	529	26.9	65.3	7.8
New Mexico	4,013	1,516	2,277	220	37.8	56.7	5.5
New York	17,540	6,348	9,447	1,745	36.2	53.9	9.9
North Carolina	18,407	7,087	9,606	1,714	38.5	52.2	9.3
North Dakota	4,329	2,352	1,515	462	54.3	35.0	10.7
Ohio	27,167	16,101	9,609	1,457	59.3	35.4	5.4
Oklahoma	23,138	10,174	10,612	2,352	44.0	45.9	10.2
Oregon	8,211	2,850	4,935	426	34.7	60.1	5.2
Pennsylvania	22,911	7,330	12,080	3,501	32.0	52.7	15.3
Rhode Island	779	138	467	174	17.7	59.9	22.3
South Carolina	9,419	4,130	4,494	795	43.8	47.7	8.4
South Dakota	5,821	1,940	2,890	991	33.3	49.6	17.0
Tennessee	20,226	8,777	10,562	887	43.4	52.2	4.4
Texas	54,432	27,958	25,749	725	51.4	47.3	1.3
Utah	3,063	1,419	1,578	66	46.3	51.5	2.2
Vermont	2,818	1,494	1,256	68	53.0	44.6	2.4
Virginia	13,933	4,670	8,656	607	33.5	62.1	4.4
Washington	8,300	4,307	3,609	384	51.9	43.5	4.6
West Virginia	7,291	1,861	3,899	1,531	25.5	53.5	21.0
Wisconsin	14,249	7,271	5,952	1,026	51.0	41.8	7.2
Wyoming	3,114	943	1,956	215	30.3	62.8	6.9
Guam	10	2	6	2	20.0	60.0	20.0
Puerto Rico	2,315	422	1,609	284	18.2	69.5	12.3
U.S. Virgin Islands	24	3	15	6	12.5	62.5	25.0
Total	617,083	279,581	291,339	46,163	45.3	47.2	7.5

Source: Federal Highway Administration, National Bridge Inventory, "Bridge Condition by Functional Classification, 2019," https://www.fhwa.dot.gov/bridge/fc.cfm.

Appendix B. Bridge Obligations by Program: FY2012-FY2019 (current dollars)

Program	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019
Interstate Maintenance	755,656,556	129,051,722	40,227,615	11,385,907	2,406,944	2,305,999	8,908,364	2,240,105
National Highway System	680,253,396	88,777,186	55,653,947	55,928,169	37,274,844	29,941,503	26,125,570	20,040,402
Surface Transportation Program	558,073,243	1,662,455,267	2,211,511,901	2,254,453,670	2,409,636,146	2,107,910,876	2,566,044,582	2,515,966,628
National Highway Performance Program	—	3,018,008,912	3,673,113,345	3,638,484,037	3,910,107,620	3,936,751,913	3,789,511,563	4,032,500,809
National Highway Freight Program	—	—	—	—	237,121,333	106,864,872	260,926,616	155,729,020
Transportation Alternatives	—	138,881	4,620,618	2,368,351	6,332,735	3,967,287	3,562,061	7,840,507
Bridge Programs	3,575,482,507	960,648,620	220,620,109	243.314,396	79,924,642	71,802,855	43,968,419	2,091,860
Congestion Mitigation and Air Quality	(10,213,853)	72,343,225	41,677,322	62,542,855	38,121,580	44,430,292	31,197,678	30,500,730
Appalachian Development Highway System	5,436,959	24,767,784	16,374,183	51,015,156	158,589,439	63,980,429	(586,007)	10,843,215
High Priority Projects	61,045,589	—	31,470,461	10,125,976	17,908,671	15,770,437	13,463,004	6,370,325
Minimum Guarantee—TEA-21	12,053,469	9,919,033	2,720,538	10,404,647	10,711287	1,828,744	(266,006)	(2,089,107)
Equity Bonus Exempt Lim	59,268,059	451,407,959	220,471,325	211,958,856	8,778,554	16,978,609	4,605,487	7,038,169
Coordinated Border Infrastructure Program	10,461,126	3,049,907	84,377,062	2,569,474	(3,142,320)	6,169,284	(232,028)	(1,000,000)
Safe Routes to School	—	—	—	694,649	—	—	(24,133)	—
Planning and Research	(200,000)	—	—	—	—	—	130,043	151,500
All Others	306,635,541	63,018,956	200,128,997	248,261,223	181,235,160	257,267,156	344,279,171	576,427,938
Total	6,013,952,592	6,483,587,452	6,802,967,421	6,803,507,367	7,095,006,638	6,665,970,255	7,091,614,385	7,364,652,101

Source: Federal Highway Administration (FHWA).

Note: Displays funds from the Fixing America's Surface Transportation Act (FAST Act; P.L. 114-94), as well as ongoing obligation of funds from earlier authorization acts.

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