Road Work Ahead

Holding Government Accountable for Fixing America's Crumbling Roads and Bridges

WISPIRG Foundation

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Travis Madsen and Benjamin Davis,
Frontier Group

Phineas Baxandall, Ph.D.,
U.S. PIRG Education Fund

April 2010

Acknowledgments

Thank you to Lilly Shoup at Transportation for America for special contributions to the content of this report. Additional thanks go to Andrew Amey, Linda Bailey and David Goldberg at Transportation for America and Michelle Ernst at Tri-State Transportation Campaign for providing analysis, editorial assistance and review. The authors thank Scott Bernstein at the Center for Neighborhood Technology and Rob Puentes at the Brookings Institution for their insightful feedback on drafts of this report. Finally, the authors are grateful to Tony Dutzik, Elizabeth Ridlington and Kari Wohlschlegel at Frontier Group for editorial assistance.

This report is made possible through the generous support of the Rockefeller Foundation.

The authors bear any responsibility for factual errors. The recommendations are those of WISPIRG Foundation. The views expressed in this report are those of the authors and do not necessarily reflect the views of our funders or those who provided review.

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Table of Contents

The Manhattan Bridge in New York City. Photo by Tim Schnurpfeil

Executive Summary

Over the last 50 years, America has built roads and bridges at a pace and scale that dwarfs most of the rest of the world. We've built a national highway network like no other, with more than 45,000 miles of interstate highway and 575,000 highway bridges.

Now, much of that system is showing its age—and as maintenance needs continue to grow, we are falling farther behind. Across the nation, drivers face more than 150,000 miles of roads in less than good condition and more than 70,000 decaying bridges. Neglected maintenance of roads and bridges acts as a constant drain on our economy and a scourge on our quality of life. Rough and rutted roads cause accidents, damage vehicles, trigger traffic jams that lead to countless hours of delay, and waste money Americans need for other expenses. On some occasions—such as the 2007 collapse of the I-35 bridge in Minneapolis, Minnesota—it can lead to profound tragedy.

Why are America's roads and bridges in such terrible shape? And who or what is to blame?

One thing is for sure: the deterioration of our roads and bridges is no accident. Rather, it is the direct result of countless policy decisions that put other considerations ahead of the pressing need to preserve our investment in the highway system. Political forces often undermine a strong commitment to maintenance. Members of Congress, state legislators and local politicians thrive on ribbon-cuttings. Powerful special interests push for new and bigger highways. Meanwhile, federal and state policies—which should provide strong guidance in the wise use of taxpayer dollars—often fail to achieve the proper balance between building new infrastructure and taking care of what we already have built.

To fix our roads and bridges, America first must fix our transportation policies. To counteract the tendencies to neglect repair and maintenance, we must adopt strong "fix it first" rules that give priority to maintenance of our existing roads and bridges, set national goals for the condition of our transportation system, and hold state governments accountable for achieving results.

America's roads and bridges are in disrepair.

- According to the Federal Highway Administration, 45 percent (or more than 150,000 miles) of federal highways and major roads were in poor, mediocre or fair condition as of 2008. Metropolitan areas tend to have the roughest roads. In 2008, nearly two-thirds of urban roadways offered a poor, mediocre or fair ride. Major cities—including Los Angeles, San Francisco, Washington, D.C., New York City and New Orleans—had the worst road conditions. Typical drivers in these cities pay as much as $750 per year in extra vehicle maintenance costs due to rough road conditions.

- The American Association of State Highway and Transportation Officials estimates that poor road conditions cost U.S. motorists $67 billion a year in repairs and operating costs—an average of $335 per motorist.

- The United States Department of Transportation rates 12 percent (or 71,000) of the nations' bridges as "structurally deficient," which means that a bridge has a major defect in its support structure or its deck is cracking and deteriorating. In some states, more than 20 percent of bridges are structurally deficient.

- Generally, engineers build bridges in the United States for a useful life of 50 years. The average age of America's bridges is now 43 years, with 185,000 over 50 years old. By 2030, that number could double.

- The American Society of Civil Engineers awarded the condition of the nation's bridges a "C" grade and roadways a near-failing "D-" grade in 2009. The U.S. Department of Transportation estimates that merely sustaining the condition and performance of the federal highway system would require investing more than $100 billion per year—almost $30 billion more than current spending levels.

Special interest pressure tilts the playing field toward the construction of new and ever-wider highways at the expense of repair and maintenance.

- By and large, states award new contracts for major construction projects, but perform ongoing maintenance in-house. As a result, there is a strong outside political pressure for new bridge or highway construction, but little outside pressure for preventative maintenance and regular repairs.

- The highway lobby is a powerful political force that stands to profit from government spending on new highways. In 2008, highway interests gave more than $130 million to candidates for state and federal office. According to an investigation by the Center for Public Integrity, more than 1,800 different special interest groups are vying to influence the contents of the next transportation authorization bill. Many of the real-estate or construction interests involved have specific new construction projects they are attempting to move forward.

- Since 1985, the nation has built enough roadways to circle the globe more than five times. On average from 2006 to 2008, states spent more than $8 billion in federal capital annually to build new roads or add highway capacity. In contrast, states

spent $4.8 billion in federal dollars per year on repairing deficient bridges.

- Despite deep maintenance backlogs, states in 2009 committed almost a third of federal stimulus funds—$6.6 billion—to new capacity road and bridge projects rather than to repair and other preservation projects. Kentucky directed 88 percent of its stimulus funds to new roads, rather than fixing the 39 percent of its roads that are in poor condition, or its 573 structurally deficient bridges. Building new roads will only increase the state's maintenance burden in the future.

U.S. transportation policy fails to properly emphasize highway and bridge maintenance. Responsibility for the road and bridge crisis begins at the top, with federal transportation policies that allocate vast amounts of money to the states with little direction and no accountability.

- **Spending is not targeted toward specific goals.** Federal highway programs largely dole out money to states based on standardized funding formulas and with no prioritization of projects based on their importance. States are guaranteed to receive funds totaling a minimum of 92 percent of the federal gas taxes collected in their state, regardless of whether the state spends the money wisely or in a way that furthers the interest of the nation as a whole. Moreover, federal funds designated specifically for maintenance are given out with no accountability for actually achieving specific maintenance standards.

- **There is little accountability for proper maintenance**. In theory, federal law authorizes the U.S. Transportation Secretary to withhold funds from states that fail to properly maintain roads and bridges; but the law does not define "proper maintenance" and the power is virtually never used.

- **States can divert maintenance money to other uses.** States can, and often do, shift federal money intended for maintenance to other projects—including the construction of new roads and bridges. Between 2005 and 2007, states redirected one out of every 10 federal dollars intended for bridge repair to other purposes. In the three years prior to the I-35 bridge collapse, Minnesota diverted more than 50 percent of its federal bridge funding away from bridge repair and maintenance.

- **Perverse incentives undermine progress**. States receive more federal bridge maintenance and repair money when they face higher bills for bridge repair. The system inadvertently encourages states to neglect bridge maintenance and shift the money to other uses: Not only do federal funding formulas fail to require states to achieve specific targets for bridge maintenance, but fixing bridges actually could reduce the amount of federal money received in future years.

Congressional earmarks—in which members of Congress designate funding for specific projects—further tilt spending away from maintenance.

- The most notorious transportation earmark in recent history—for construction of the $223 million "Bridge to Nowhere" in Alaska—was to have been partially paid for with funds

from the federal Highway Bridge Program, which cannot normally be spent to build new bridges.

- The 2005 transportation law created a program intended to identify and fund transportation projects of "national and regional significance" on a competitive basis, based on a set of objective criteria. However, members of Congress used earmarks to predetermine the winners of the grants, bypassing any national system of prioritization.

- In 2008, Congress directed just 10 percent of earmarked funds in the annual transportation appropriations bill to repair or maintain a bridge, tunnel, or overpass. For example, the delegation from Mississippi secured funding for 19 earmarked projects at a cost of $29 million, and despite having a backlog of over 3,000 structurally deficient bridges in the state, none of their earmarks went to bridge repair.

State transportation funding policies are often similarly short-sighted, focusing on the creation of politically popular new highways rather than maintaining existing roads and bridges.

- According to the U.S. Government Accountability Office, state transportation agencies tend to weigh political support and public opinion more heavily than cost-benefit calculations when deciding how to spend federal transportation dollars. As a result, state transportation agencies can neglect projects—like ongoing maintenance—that can extend the life and minimize the life-cycle costs of roads and bridges.

- Some states underfund road and bridge repair in metropolitan areas, even though they are home to more than 80 percent of the U.S. population and economic output and tend to have the greatest needs. These states, like the federal government, dole out transportation money partially based on geographic shares rather than focusing funds on the most important needs and opportunities. Georgia, for example, divides the bulk of its transportation dollars by congressional district, leading the state to spend 50 percent more per capita on areas outside metropolitan Atlanta than inside, according to analysis by the Atlanta Journal Constitution.

- States bend the definition of "maintenance" projects to include road or bridge expansion, further reducing the amount of money available for true maintenance. In Wisconsin, for example, a project to devote $1.9 billion to repair a 38-mile section of Interstate 94 actually expanded the number of lanes on the road from four to eight. The state is demolishing every overpass bridge along the segment and building new ones to accommodate the new lanes, despite the fact that only one was structurally deficient. As a result, millions of dollars will actually go toward the construction of new infrastructure rather than repair.

Spending more money on transportation won't fix America's roads and bridges without a top-to-bottom shift in funding priorities and policies. Specific recommendations include:

- **Prioritize highway and bridge maintenance and repair.** States should be held accountable for properly maintaining roads and bridges, and should be required to

demonstrate progress to the public according to specific, measurable benchmarks.

- **Reorganize federal highway programs to focus exclusively on either maintenance or new construction.** One program should cover all new infrastructure construction, ensuring that new highway or bridge projects undergo rigorous evaluation and prioritization at the federal level—much like the New Starts program for public transportation projects. Another program should consolidate infrastructure preservation efforts to better dedicate resources to repair and maintenance.

- **Require states receiving federal aid to plan for future maintenance before building new roads.** States receiving federal transportation funds should calculate and publicly report the 10-, 20- and 50-year maintenance costs of all new or improved infrastructure projects and demonstrate that such funds will be available over the lifespan of the infrastructure. Such requirements are commonplace in state applications for federal transit investments.

- **Measure performance the right way.** The federal government should establish performance measures connected to national goals that drive investment decisions, such as increasing the fraction of roads in good condition or reducing the number of vehicles traveling over structurally deficient bridges. States should report progress to the public annually.

- **Reward states for good performance on national objectives.** States already receive bond ratings for how well they act to meet future obligations to investors who buy their assets. By that same principle, the U.S. Department of Transportation could develop a system to rate states based on their progress, or lack thereof, on preventative maintenance, deferred maintenance, and resources dedicated to repair. States with unsatisfactory ratings would be prohibited from transferring funds out of federal repair programs for other purposes, and would risk losing their full federal funding over time.

- **States, too, should create fix it first policies –** Every state should adopt Fix it First policies analogous to those in Maryland, New Jersey and Illinois, requiring state DOTs to focus on the rehabilitation of existing facilities before building new highways.

Introduction

It's a situation every parent faces. A mom or dad walks into a room to see their child playing carelessly with a new toy. Invariably, the following words will be spoken: "If you break that, I'm not buying you a new one."

For decades, federal and state transportation decision-making has been geared toward buying shiny new toys … and not so much toward taking good care of the ones we already have. Too often, no one has taken responsibility for insisting that our nation's roads and bridges be scrupulously maintained, so that drivers remain safe and that we get the maximum possible life out of our investments.

Now, America's transportation system is in crisis. The vast amount of highway and bridge infrastructure we have built over the last half-century is rapidly aging, with much of it beginning to reach the end of its useful life. The pools of money that once funded lavish spending on new highways and bridges are drying up. And the need for investment in clean, efficient transportation options—including rail, public transportation and safe streets for walking and bicycling—continues to grow.

The Highway Trust Fund—the primary pot of money funding transportation improvements in the United States—ran out of money in September 2008. Overall spending from the trust fund has exceeded revenues since 2002. Meanwhile, Congress has been plugging the gap with revenues out of the General Fund. The Congressional Budget Office has estimated that if current spending patterns continue, the nation would have to come up with another $100 billion between 2010 and 2018 to fund federal transportation activities. Where that money could come from is anyone's guess.

Historically, most of the money used to fund highway construction has come from motorists. The Highway Trust Fund is largely filled with revenues from the federal gas tax, which has not been adjusted for inflation since 1993—meaning that the Fund buys a third less than it did 20 years ago. Existing gas taxes and other fees no longer cover the cost of building and maintaining infrastructure, much less the indirect costs caused by traffic, pollution, accidents or energy security needs. The taxpayer is forced to shoulder more

and more of these burdens each year.

At the same time, the nation increasingly faces the need to invest in other transportation options—particularly, clean, efficient forms of transportation, such as high-speed rail and public transit. These modes are vital to reducing the nation's dependence on oil and securing the long-term health of the economy. Americans recognize, and tell pollsters, that an increasing portion of transportation funds should be dedicated toward public transportation systems.

Despite the urgent need to maintain our existing system—and growing demands for investment in other modes of transportation—public officials have often reacted to the budget squeeze by putting off needed repairs or delaying preventative maintenance, instead directing funds toward building new and wider highways. In 2008, states spent more than $15 billion in capital to build new roads, reconstruct roads with added capacity, or perform major widening projects. To make matters worse, many of these projects are of questionable value in addressing our mobility needs over the long haul. In many cases the new lanes will provide little more than a temporary traffic fix, becoming clogged again themselves in a matter of years, while increasing our dependence on oil and raising pollution levels.

Years of deferred maintenance have left us with hundreds of billions of dollars worth of fixes to be made to our roads and bridges.

As this report makes clear, fixing our roads and bridges means fixing the way we allocate money and prioritize transportation projects. The answer is not necessarily to spend more. In fact, the Government Accountability Office has found that increased federal spending on highway programs over the years has tended to displace state and local funds that otherwise would have been spent on highways and bridges.

Rather, as a succession of blue-ribbon commissions and numerous outside analysts have concluded, we need to reform our national system for funding transportation and establish clear goals and priorities, performance standards, and strong accountability measures. A key first priority must be to invest in preventative maintenance of the most critical links in our transportation system, ensuring the greatest return from the trillions citizens have already invested in the system.

Those fixes won't be easy. But the time has come for America to face its bridge and highway maintenance problems squarely, and make a strong national commitment to ensuring that the legacy of one or our greatest national investments endures for generations to come.

America's Roads and Bridges Are in Disrepair

Over the last 50 years, America has built roads and bridges at a pace and scale that dwarfs most of the rest of the world. We've built a national highway network like no other, with more than 45,000 miles of interstate highway and 575,000 highway bridges.

America's roads and bridges are severely threatened. More than 70,000 bridges are "structurally deficient," which means that engineers have identified a major defect in a bridge support structure or the bridge's deck is cracking and deteriorating. More than 150,000 thousand miles of highways and major roads are similarly in less than good repair. That total is more than three times the entire distance envisioned for the nation's Interstate Highway System when it was first approved by Congress.

Inadequately maintained roads and bridges are more than just a hassle. They cause accidents, damage vehicles, and lead to expensive traffic delays. Moreover, allowing roads and bridges to slip into disrepair ends up costing governments billions of additional dollars, since the cost of reconstructing a piece of infrastructure can exceed the cost of maintenance by as much as seven times. Without adequate inspection and maintenance, critical transportation infrastructure can even fail—as demonstrated by the 2007 collapse of the I-35 bridge in Minnesota or the 2009 closing of the Crown Point Bridge linking Vermont and upstate New York.

The Federal Highway Administration estimates that the nation would have to spend more than $100 billion annually just to maintain roads and bridges at current conditions and levels of performance—and billions more to improve the system. Without changes in the way highway funds get spent, the repair bill will only increase over time, especially since so many roadways and bridges were built between the Depression-era public works projects of the 1930s and the completion of the Interstate highway network in the 1980s—and have hence begun to reach the end of their useful lives.

Thousands of Miles of America's Roads Are Riddled with Potholes and Crumbling Asphalt

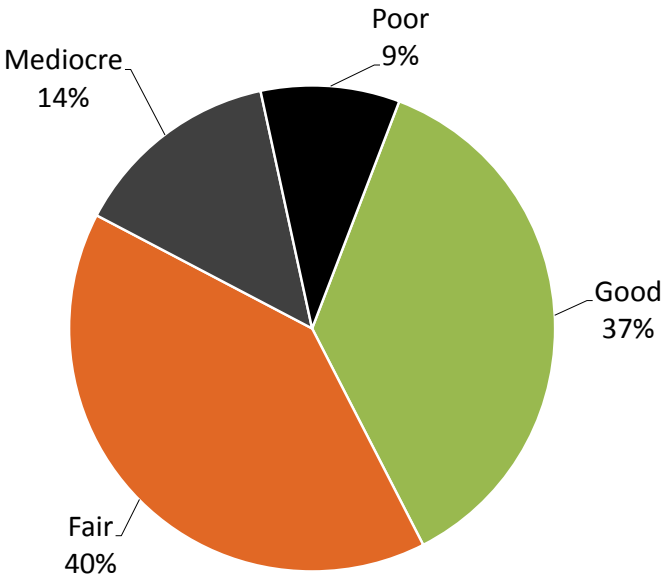
According to the Federal Highway Administration, 45 percent of our nation's major roadways were in less than good condition as of 2008. In several states, well over half of all highways and major roads are rough, crumbling, or riddled with potholes. (See Table 1.) For example, according to the Federal Highway Administration, only 18 percent of highways in the state of New Jersey are in good condition. This is to say nothing of the condition of our local roadway system—which no federal agency tracks. Because of the overall dire state of our roadways, the American Society of Civil Engineers gave our nation's roads a "D-minus" grade in 2009.

Metropolitan areas—where more than 80 percent of Americans live and where most economic output is generated—tend to have the roughest roads. In 2008, 63 percent of major roadways in urban areas were in less than good repair. (See Figure 1.) Major cities—including Los Angeles, San Francisco, Washington, D.C., New York City and New Orleans—had the worst road conditions. Since 1995, roadway conditions on rural highways have tended to improve, while the trend has been toward worse conditions on major metropolitan roads, where maintenance needs are greater. Even after Los Angeles filled 800,000 potholes in 2008, the city still had the "bumpiest roads in California."

Fewer than 80 percent of the Interstate highways in America's cities are in good condition, with the Interstates in America's largest cities in greatest disrepair. For example, according to the Federal Highway Administration, the District of Columbia lacks a single mile of Interstate in "good" condition.

Figure 1: Major Roadways in Metropolitan Areas are In Worse Shape[17]

1A . Metropolitan Areas



1B. Rural Areas

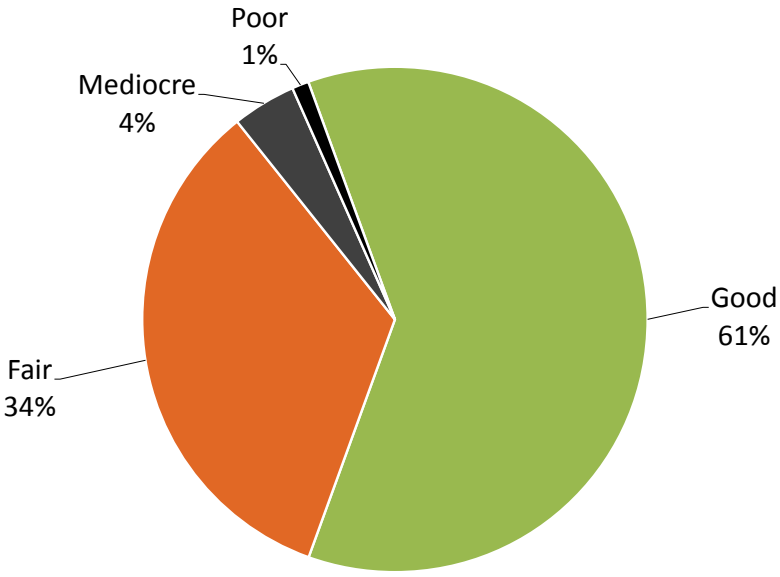


Table 1: Ten States with the Roughest Roads, 2008[20]

State	Percent of Roads in Poor or Mediocre Condition	Percent of Roads in Less than Good Condition	Rank, Highest Fraction of Roads in Poor or Mediocre Condition
Alaska	35%	75%	1
Rhode Island	34%	84%	2
New Jersey	33%	82%	3
Vermont	28%	63%	4
California	28%	76%	5
Massachusetts	26%	71%	6
Hawaii	26%	90%	7
Louisiana	23%	56%	8
Mississippi	17%	57%	9
Illinois	17%	57%	10

Rankings and data for all states can be found in the Appendix on page 38.

Too Many of America's Bridges Are Structurally Deficient

Many of America's bridges are in disrepair. The United States Department of Transportation rates 12 percent—or 71,000—of the nations' bridges as "structurally deficient," which means that a bridge has a major defect in its support structure or its deck is cracking and deteriorating. In 2009, the American Society of Civil Engineers rated the condition of America's bridges with a mediocre "C" grade.

Pennsylvania and Oklahoma had more than 5,000 bridges rated structurally deficient in 2009—accounting for 27 and 22 percent of all bridges in these states, respectively. In comparison, less than 4 percent of the bridges in Nevada, Arizona, and Delaware are structurally deficient. See Table 2 and the appendix on page 40 for a listing of states based on the fraction of total bridges, or total bridge area, that are structurally deficient.

Allowing a bridge to become structurally deficient can lead to lead to weight restrictions, bridge closures, and in rare cases, collapse. The San Francisco Bay Bridge in California, connecting San Francisco and Oakland, is a good example. When an eastern section of the bridge was being replaced just before Labor Day weekend in 2009, inspection crews discovered a crack in an eyebar, which is a support connector similar to a link in a bicycle chain. Workers repaired the section to prevent the bridge deck adjacent to the crack from collapsing. William Ibbs, a professor of civil engineering at the University of California at Berkeley, explained in the *Contra Costa Times* that the bridge's structural problems were a result of heavy use and age. "It's a 73-year-old bridge," he said, "and it's gotten a lot of wear and tear with 260,000 vehicles a day going across it." Abolhassan

Astaneh, another U.C. Berkeley professor, believes that the fracture was specifically caused by metal fatigue, and that "it is a problem likely to afflict the remaining [264] eyebars on the bridge."

Unfortunately, the repair wasn't perfect. In late October 2009, a newly installed steel rod snapped, sending several tons of steel chunks down onto the bridge surface during the evening rush hour. Luckily, the accident damaged just three vehicles and caused only minor injuries. Commuters were forced to use other routes or means of transportation for six days while workers repaired the new damage. The *Sacramento Bee* reported that some commuters were so frightened by the incident that they continue to avoid using the bridge.

California Department of Transportation officials testified before the state legislature in December 2009, saying that they still did not know why the bridge had cracked or why the steel rod had failed. The agency is now sending bridge inspectors to check on key parts of the bridge every three months—much more frequently than the federally mandated minimum of one inspection every two years. Altogether, the repairs for the fall 2009 incident will cost $21.5 million.

The deterioration of our nation's bridges goes well beyond metal fatigue. For example:

- The Brooklyn Bridge's anchorages, ramps, and approaches are corroding and crumbling. Some of the ramps have cracks as wide as 8 inches, and several of the beams that support the bridge's approaches and spans are severely corroding.

- In 2007, Idaho's Dover Bridge—used by 5,000 motorists everyday—nearly lost a 30-inch-by-30 inch section of deck, because wear, tear, and poor maintenance had reduced the section's support to rebar alone.

- Until it was demolished at age 80 in December 2009, the 2,184-foot-long Crown Point Bridge connecting New York and Vermont was at risk of collapse because the river current and weather elements had severely eroded the concrete piers and steel support structure at the base of the bridge.

The Difference Between Structurally Deficient and Functionally Obsolete Bridges

A structurally deficient bridge suffers from a design flaw or wear and tear, which has led to a major defect in a support structure or a cracking and deteriorating deck.[21] These flaws reduce the margin of safety offered by the bridge, and could require restrictions on the weight or type of vehicles that can use the bridge, or even closure. In contrast, a functionally obsolete bridge has a flaw in configuration that does not line up with modern standards, such as narrow shoulders or a sharp-angled approach roadway. A functionally obsolete bridge can still carry traffic safely without major repairs—albeit not as quickly as a new bridge. This report focuses on the "structurally deficient" category as the best indicator of the need for bridge maintenance and repair.

America's Bridges Are Aging and Repair Needs Will Grow

The number of structurally deficient bridges will only increase over time, as old bridges reach the end of their designed lives. Given that new bridge construction first peaked during the public works projects of the Great Depression and peaked again during the first 15 years of establishing the Interstate highway system (1956 to 1971), many of our nation's bridges are now several decades old. Since the average age of a bridge in the United States is 43 years and the typical design lifespan of a bridge is 50 years, the rate at which bridges become structurally deficient is likely to increase over the next decade. In 2008, the Government Accountability Office found that, as bridges continue to age, "states and local agencies may see a spike in their need for bridge rehabilitation and replacement funding over the next 15 years."

More than 185,000 highway bridges (out of 575,000 total) are now 50 years old or older. By 2030, that number could double. (See Figure 2.)

The Northeast and the Missouri and Mississippi river valleys currently have the highest concentration of aging bridges. (See Figure 3.) More than 50 percent of the bridges in Massachusetts and Maine are already more than 50 years old, while between 35 percent and 50 percent of bridges in states such as Oklahoma and Pennsylvania have reached this age.

Over time, the distribution of aging bridges is likely to expand across the country. (See Figure 3.) By 2018, 21 states will have at least 35 percent of their bridges exceed 50 years of age. By 2028, older bridges will become the majority in 48 states and the District of Columbia. As these bridges age, repair needs will grow. As shown in Figure 4, older bridges are more likely to suffer from structural deficiencies.

Figure 2. Past and Projected Number of U.S. Highway Bridges More Than 50 Years Old

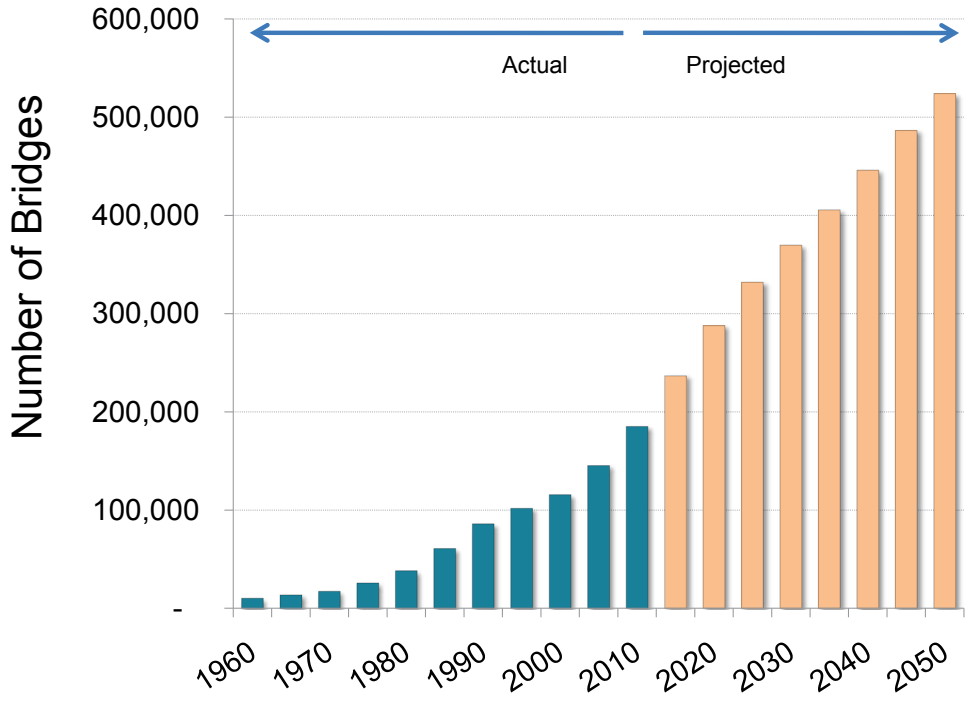


Figure 3: The Percentage of Bridges 50 Years Old or Older by State: 2008, 2018 and 2028[36]

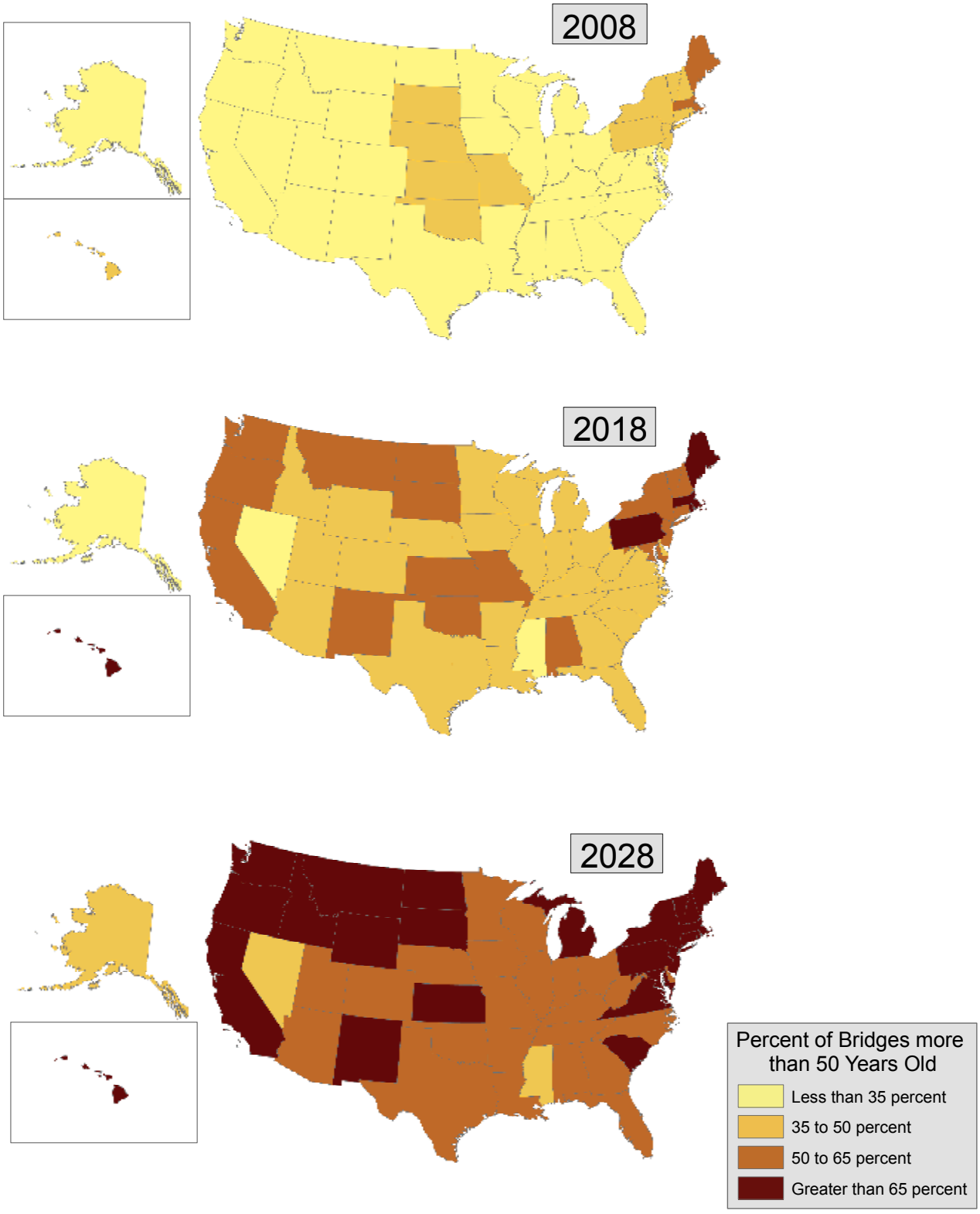


Figure 4: Percent of U.S. Bridges by Age that Are Structurally Deficient (as of December 2009)[37]

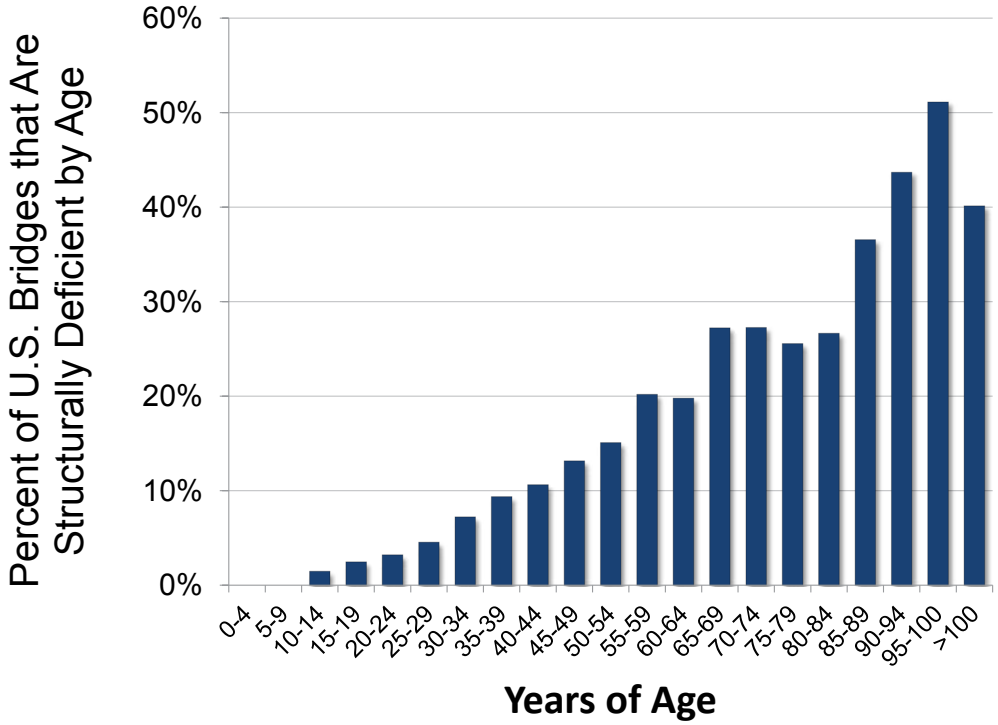


Table 2: Top Ten States for Percent of Bridge Deck Area on Structurally Deficient Spans, as of December 2009[38]

Rank	State	Number of Structurally Deficient Bridges	Structurally Deficient Bridge Deck Area, as a Percent of Total Bridge Deck Area
1	Rhode Island	163	27%
2	Pennsylvania	6,060	20%
3	California	3,228	19%
4	Massachusetts	593	16%
5	Oklahoma	5,286	16%
6	Vermont	437	16%
7	Iowa	5,358	14%
8	Wyoming	401	13%
9	Maine	364	13%
10	North Carolina	2,442	13%

Poorly Maintained Roadways Cause Harm

As road conditions deteriorate, drivers incur greater and greater costs every time they get behind the wheel. As the amount of road decay, potholes, bumps, clogged drainage systems, and damaged bridges increases, so too do the number of accidents, the amount of money spent on car maintenance, and the number of hours consumed by driving.

Poor Roadway Maintenance Causes Accidents

Roads in disrepair create unsafe driving conditions that can lead to accidents. Without regular maintenance, roads turn into crumbled asphalt, erosion narrows shoulders and lanes, damaged drainage systems create hazardous floods, and broken retaining walls can allow boulders and other obstacles to obstruct a safe path.

These accidents can cause injury and death. The American Society of Civil Engineers notes that "roadway conditions are a significant factor in about one-third of traffic fatalities." Poor road conditions contributed to more than 11,000 of the 34,000 highway fatalities in 2009.

People are also killed and injured when bridges collapse. The most dramatic bridge collapse in recent memory occurred on Wednesday, August 1, 2007, when the 1,907-foot-long Interstate 35 Bridge, connecting Minneapolis, collapsed 108 feet into the Mississippi River, killing 13 people and injuring 145 others. The bridge was 40 years old and had been labeled "structurally deficient" by the Federal Highway Administration. The National Transportation Safety Board concluded that in this case, the probable cause of the collapse was an error in the design of the gusset plates, aggravated by added weight on the bridge on the day the structure failed.

Table 3: Top Ten States by Average Additional Operating Costs Due to Rough Roads[45]

Rank	State	Additional Operating Cost
1	New Jersey	$596
2	California	$590
3	Hawaii	$503
4	Rhode Island	$473
5	Oklahoma	$457
6	Maryland	$425
7	Missouri	$410
8	New York	$405
9	Mississippi	$394
10	Louisiana	$388

Poorly Maintained Roadways Cost Motorists

Roads in poor condition damage vehicles—damage that costs motorists heavily. Accidents caused by poor road conditions can cost individual drivers and their insurance companies thousands of dollars. Even without a collision, drivers pay the repair costs of tires and shock absorbers that are worn out and destroyed by rough and uneven roads. The American Association of State Highway and Transportation Officials (AASHTO) estimates that poor road conditions cost U.S. motorists $67 billion a year in repairs and operating costs—or an average of $335 per motorist. (See Table 3.)

Drivers in urban areas spend even more money on vehicle repairs. Because of the especially poor road conditions of cities, these motorists pay the additional maintenance costs of fixing their tires, shock absorbers, and other car parts that deteriorate due to rough roads. AASHTO estimates that drivers living in metropolitan areas

Table 4: Top Ten Metropolitan Areas with the Highest Additional Operating Costs Due to Rough Roads (Populations of 500,000 or more)[46]

Rank	Metropolitan Area	Additional Operating Costs
1	Los Angeles, CA	$746
2	San Jose, CA	$732
3	San Francisco–Oakland, CA	$705
4	Tulsa, OK	$703
5	Honolulu, HI	$688
6	San Diego, CA	$664
7	Concord, CA	$656
8	New York, NY–Newark, NJ	$638
9	Riverside–San Bernardino, CA	$632
10	Oklahoma City, OK	$631

with the worst road conditions are paying as much as $750 additionally per year in extra costs. (See Table 4.)

Poor Road Maintenance Increases Delays

Roadways in disrepair cause traffic and delays. Drivers attempting to navigate a section of damaged road sometimes swerve to avoid potholes, or lose control of the vehicle while traveling over excessively rough and uneven patches of pavement. Resulting accidents can drastically slow or stop traffic. Even without an accident, drivers must slow down to maneuver safely and comfortably through or around a section of rough road. Not only do these obstructions slow the driver, but they also cause bottlenecks that can slow the traffic behind them, and create traffic jams.

Bridge collapses or closures can be devastating to the nearby communities by forcing delivery trucks to travel longer distances, delaying emergency vehicles from reaching destinations, and costing local businesses time and money. Bridges are built to provide a shortcut across natural obstacles. So, when bridges collapse or are closed due to risk of collapse, drivers must take circuitous alternate routes. These detours create delays—and increase the cost of freight delivery—because of increased activity and traffic on substitute bridges or the long distance between the nearest substitute bridge and the inoperable one.

For example, when highway officials closed the Crown Point Bridge due to excessive wear on the support structure, the regional economy—and the lives of Vermonters and New Yorkers living on either side of the bridge—suffered. Many people who live and work on separate sides of the bridge are now forced to drive an additional two hours when traveling to and from work because Crown Point was the only easily accessible bridge. In addition, the bridge's closing is hurting businesses because fewer visitors are passing though the towns adjacent to the bridge, and because freight trucks now have to travel a longer distance to deliver goods.

Deferred Maintenance Costs Taxpayers More in the Long Term

Allowing roads and bridges to deteriorate to the point that replacement is necessary costs the government more than keeping up with ongoing maintenance. According to AASHTO:

- Reconstructing a road after 25 years can cost more than triple the amount necessary to preserve the road in good condition over that same period.

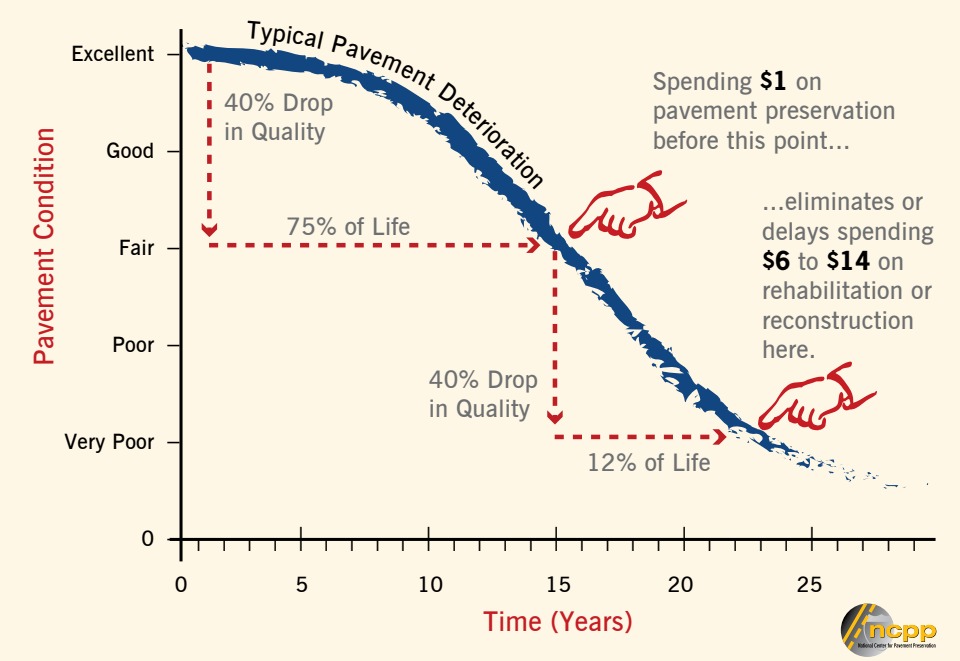
- The Director of the Michigan Department of Transportation, Kirk T. Steudle, said at a news conference to release AASHTO's *Rough Roads Ahead* report, "it costs $1 to keep a

The Crown Point Bridge

In October 2009, the Crown Point or Champlain Bridge, linking New York and Vermont, was closed after an inspection revealed critical structural problems. The estimated 3,500 vehicles that had been using the Crown Point Bridge each day were left with an $8 ferry ride or a 100-mile detour. The bridge was demolished two months later, on December 28, 2009, and the two states are now planning a replacement structure.[48]

When the Crown Point Bridge closed, travelers had to choose between an $8 ferry ride or a 100-mile detour to cross between New York and Vermont. Photo by Jay Parker.

Figure 5: Allowing Pavement to Deteriorate Increases Costs[52]



road in good shape for every $7 you would have to spend on reconstruction."

- The National Pavement Preservation Association has found that $1 spent on preservation can eliminate or delay the need for $6 to $14 for road reconstruction. (See Figure 5.)
- Building a new road or bridge requires significantly more material, labor, and equipment than repairing an existing bridge.

States Spend Billions on Expanded Roadway Capacity

Catching up with the backlog of necessary road and bridge maintenance would cost America hundreds of billions of dollars. The U.S. Department of Transportation estimates that merely maintaining the condition and performance of the federal highway system would require investing more than $100 billion per year—almost

The Birmingham Bridge

In February 2008, the Birmingham Bridge which crosses the Monongahela River in Pittsburgh had to be closed for just over three weeks after two spans moved because of problems with the bridge's rocker bearings. During the closure, 23,000 vehicles a day had to find alternate routes.[49]

Ramps on the Birmingham Bridge fell about 8 inches after a problem with a key support mechanism, forcing an extended closure. Photo by Dave Gingrich.

$30 billion more than current spending levels.. The bill for maintaining existing bridges in current condition alone would reach nearly $18 billion annually.

The emphasis on repair has increased since 1990, when the Intermodal Surface Transportation Efficiency Act of 1991 opened up federal transportation spending to uses beyond road building. Nevertheless, spending on maintenance and repair continues to lag behind actual need.

States continue to direct large amounts of capital into building new roadways and expanding existing ones. Since 1985, the nation has built more than 130,000 miles of roadway—enough to circle the globe more than five times. In 2008, states spent more than $15 billion in capital to build new roads, reconstruct roads with added capacity, or perform major widening projects. Of federal capital funds committed to specific roadway projects by the states in 2008, the Federal Highway Administration classified 41 percent, or almost $7 billion, as going toward expanded capacity.

In 2009, states committed almost a third of their infrastructure funds from the American Recovery and Reinvestment Act—$6.6 billion—to new capacity road and bridge projects rather than to repair and other preservation projects. Kentucky directed 88 percent of its stimulus funds to new roads, rather than fixing the 39 percent of its roads that are in poor condition, or its 573 structurally deficient bridges.

The emphasis on building new roads not only diverts resources that could be used for road maintenance and repair—it also increases the size of the system, and expands the need for road maintenance in the future.

Why Are America's Roads and Bridges in Such Poor Shape?

Why are America's roads and bridges in such poor shape? And who is to blame?

In truth, the deterioration of our roads and bridges is no accident. Rather, it is the direct result of countless policy decisions that put other considerations ahead of the pressing need to preserve our investment in the highway system. Political forces often undermine a strong commitment to maintenance. Members of Congress, state legislators and local politicians thrive on ribbon-cuttings. Powerful special interests push for new and bigger highways. And as costs rise, voters are rebelling against paying higher gas taxes, and demanding that transportation agencies make do with the resources they have. Meanwhile, federal and state policies—which should provide strong guidance in the wise use of taxpayer dollars—often fail to achieve the proper balance between building new infrastructure and taking care of what we already have built.

In this section of the report, we explore the political tendencies that skew spending toward construction of new and ever-wider highways at the expense of repair and maintenance activity. We also examine the state and federal policies that magnify this bias and fail to create accountability for spending wisely.

Political Pressure Tilts the Playing Field Toward Construction of New Highways

Federal and state transportation officials are subject to pressure from elected officials and special interests, which tends to tilt the playing field toward the construction of new and wider highways and bridges.

New and wider highways feature high-profile launches, ribbon cuttings, and sometimes are even named after the politicians who secured their funding. They also satisfy the powerful interests that make up the highway lobby, who often advocate for transportation dollars to go to projects from which they will benefit.

Maintenance and repair projects meanwhile address problems that haven't happened yet and of which the public generally

isn't yet aware. Maintenance problems can typically be deferred into the future, when they become somebody else's problem. Even worse, the chief public reaction to maintenance projects is likely to be displeasure over temporary closure of bridges or lanes.

Transportation Funding Decisions: Subject to Special Interest Pressure

The highway lobby—interests that stand to profit from federal, state and local expenditures on highway projects—is a powerful political force in many states, as well as at the federal level. The highway lobby includes a diverse array of interests, such as automobile companies, oil and gas companies, cement and asphalt companies, construction firms, and real estate developers.

According to an investigation by the Center for Public Integrity, more than 1,800 different special interest groups are vying to influence the contents of the next highway authorization bill to follow the expiration of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). All together, these interests are spending tens of millions of dollars on 2,100 federal lobbyists, and many more at the state level.

According to a U.S. PIRG Education Fund analysis, in 2008, highway interests gave more than $80 million to candidates for federal office and more than $50 million to candidates for state office. In state elections, highway and construction interests outspent the defense industry and the energy and natural resources industries.

According to the Center for Public Integrity, many real estate or construction interests that donate to candidates for office often have specific projects in mind that they are hoping to advance. For example, a New York developer, Concord Associates, gave $100,000 to the Democratic Senatorial Campaign Committee. That same developer benefited from an earmark placed in the 2005 transportation authorization bill by Senator Charles Schumer of New York to study widening Route 17 to the Catskills, where Concord Associates is planning a huge mountain resort and casino. Concord Associates also hired a former state legislator as a lobbyist, paying $350,000 in the first year. Similarly, Florida developer Daniel Aronoff held a $40,000 fundraiser for House Transportation Committee Chairman Don Young of Alaska. Afterward, Representative Young inserted a $10 million earmark for a road project in Florida into the language of SAFTEA-LU, against the wishes of local transportation officials.

Highway interests often push for new capacity projects, which can benefit new residential or commercial developments, as in the case of Concord Associates. Additionally, new capacity projects or major reconstruction projects often involve states issuing lucrative contracts to construction firms. In contrast, ongoing maintenance measures have little political constituency. Many state DOTs use state employees to perform their ongoing maintenance.

New capacity projects have a well-financed and powerful lobby with a large profit motive pushing for them, while repair projects do not. If politics is allowed large influence over spending decisions, it is no surprise that repair and maintenance projects will lose out.

State Departments of Transportation Respond to Political Influences

Under federal law, states have wide leeway in how they may spend federal transportation dollars when they are directed toward highways. Unlike new transit lines proposed under the New Starts program, for example, new highway or bridge projects do not undergo any rigorous evaluation or

prioritization at the federal level.

State decisions about how to spend transportation funding are subject to the influence of politicians and public pressure. According to the U.S. Government Accountability Office (GAO), state transportation agencies tend to weigh political support and public opinion more heavily than cost-benefit calculations when deciding how to spend federal transportation dollars. As a result, state transportation agencies can neglect projects—like ongoing maintenance—that can extend the lifetime and minimize the life-cycle costs of roads and bridges. A GAO official testified before Congress that "rigorous economic analysis does not generally drive the investment decisions of state and local governments—in a 2004 survey of state departments of transportation, 34 of 43 state departments of transportation cited political support and public opinion as very important factors, whereas 8 said the same of the ratio of benefits to costs."

Federal Highway Programs Funding Repair and Maintenance

There are six main federal programs providing funding to the states for highway transportation activities. Two of those funds are specifically oriented towards preservation and rehabilitation: the Interstate Maintenance Program and the Highway Bridge Program. Additionally, funds within the National Highway System apportionment or the Surface Transportation Program can be used for maintenance—along with a wide variety of other activities, including new road construction.[72]

The **Interstate Maintenance Program** is primarily directed toward preserving the national network of Interstate Highways in good condition. Eligible uses of funds include: "resurfacing, restoring, rehabilitating, and reconstructing" Interstate routes. Any portion of a project's cost attributable to new capacity additions other than HOV lanes is not eligible for Interstate Maintenance Program funding.[73]

Funding for the Interstate Maintenance Program is based on equal parts:

- Interstate lane miles open to traffic within a state;
- Vehicle miles traveled on Interstate routes open to traffic; and
- Annual contributions to the Highway Account of the Highway Trust Fund attributable to commercial vehicles.

The **Highway Bridge Program** provides funding to states to assist with bridge maintenance, including "bridge painting, seismic retrofitting, anti-scour measures, deicing applications," and preemptive maintenance to ensure bridges remain structurally sound and safe.[74] These activities are allowed on any bridge regardless of its condition. Program funds are also intended to help states renovate or replace structurally deficient bridges. In addition, states can use program funds to renovate

(Continued on page 23)

Federal Policies Fail to Counter Inherent Biases Against Maintenance

The road and bridge maintenance crisis begins at the top. Federal transportation policies fail to counter the inherent biases against maintenance introduced by the nature of our political system—and in some cases, actually magnify it.

Lack of Prioritization

As currently formulated, federal policy does not lay out a broad vision or overall goal for the preservation of the system. Rather, each individual state decides how to spend transportation dollars, including decisions on what bridges or highways to repair and when. The federal government gives billions in funds eligible for maintenance to states every year, but allows states

(Continued from page 22)

or replace functionally obsolete bridges—which could include rebuilding a bridge to include more lanes. [75]

Funding for the Highway Bridge Program is based on:

- Relative state share of the total cost to repair or replace deficient highway bridges nationwide.

National Highway System funds go toward a wide variety of maintenance, rehabilitation, replacement, expansion, construction or related projects on the National Highway System, which includes the Interstate System and other major metropolitan and rural highways.[76]

Funding for the National Highway System is based on:

- Lane miles on non-Interstate arterial roads (25 percent);
- Lane miles on those roads, divided by total state population (10 percent);
- Vehicle miles traveled on those roads (35 percent);
- Diesel fuel used on highways (30 percent).

The **Surface Transportation Program** provides funding for a wide variety of maintenance, rehabilitation, replacement, expansion, construction or related projects on any road eligible for federal funding, or for transit capital projects.[77]

Funding for the Surface Transportation Program is based on:

- Lane miles on non-Interstate arterial roads (25 percent);
- Lane miles on those roads, divided by total state population (10 percent);
- Vehicle miles traveled on those roads (35 percent);
- Diesel fuel used on highways (30 percent).

to divert much of that funding to other purposes while failing to tie funding to any concrete outcome.

Federal transportation policy has been oriented toward providing maximum flexibility to the states, and toward ensuring that federal transportation funding is spread broadly across geographic areas. This policy has had the effect of empowering local and state officials to make decisions about their transportation future. While it would be inappropriate for the federal government to micromanage state decisions, federal taxpayers deserve to have safeguards in place to prevent politics from systematically distorting spending decisions in a way that undermines the long-term health of the system they pay for.

Funding Decisions Not Based on Need

Federal highway programs largely dole out money to states based on standardized funding formulas. Formulas for highway funding distribution tend to be based on criteria including the number of lane-miles of roadway within a state, vehicle miles traveled, and contributions of commercial vehicle users to the Highway Trust Fund. (See "Federal Highway Programs Funding Repair and Maintenance" on page 22.)

As a result, funding distribution sometimes has little relationship to needs or to the achievement of key goals, including system maintenance. The Interstate Maintenance Program is a case in point. Were federal monies for Interstate maintenance distributed based on need, one would assume that states with older roadways, or those with worse weather conditions, would receive proportionally more funding than states with newer roadways or milder climates. Current federal funding formulas, however, do not take these factors into consideration.

For example, in 2007, 567 miles of New York's Interstate Highways were in poor, mediocre, or fair condition. New York has a large amount of vehicle traffic, older roadways, and relatively harsh winters—all of which contribute to roadway disrepair. In contrast, Florida had only 13 miles of Interstate highways in poor, mediocre, or fair condition. As a rapidly growing state, many of Florida's roadways are relatively new. Moreover Florida's weather is relatively mild, without the winter freeze-thaw cycles that can create and expand potholes. Yet, because of New York and Florida's similar number of Interstate lane miles, both states received about the same amount of Interstate Maintenance Program funding over the last five years—$182 million for New York and $193 million for Florida, annually.

In addition, federal law requires that states receive roughly similar distribution of federal gas tax revenue—regardless of the status of states' transportation infrastructure or investment needs. Under current law, states get a minimum of 92 percent of the funds they contribute through federal gas taxes back in transportation funding, regardless of whether those states have projects worth funding. This guarantee is achieved through the Equity Bonus Program. Money apportioned to states through the Equity Bonus Program can be essentially used for any purpose, with no prioritization. More than 20 percent of the funding authorized under SAFETEA-LU—$40 billion over five years—was allocated through the Equity Bonus Program.

Thankfully, in some cases, as with the Highway Bridge Program, transportation funding is based on a measure of need. The Highway Bridge Program allocates available resources to states for bridge maintenance based on the cost to repair all deficient bridges in a state relative to the total such cost nationwide. In fiscal year 2009, the highway bridge program apportioned $5.3 billion to the states. Delaware, Nevada, North Dakota, South Dakota, Utah, and Wyoming, the states with the lowest share of the nationwide cost to repair

structurally deficient bridges, each were apportioned between $12 million and $14 million. Pennsylvania, New York, and California, the states with the most structurally deficient and functionally obsolete bridges, each were apportioned between $490 million and $510 million.

However, in the case of the Highway Bridge Program, the ability to "flex" funds from bridge maintenance to other needs actually creates a disincentive to keep bridges in good repair, because reducing the bridge repair backlog could result in reduced Bridge Program funding in future years. (See the following section on page 25 for a detailed discussion of flexible funding.)

Consider a state which uses its Bridge Program funding to repair structurally deficient bridges. In the following year, that state will likely have a smaller backlog of bridge work to be done—and thus will receive a smaller fraction of the pool of money distributed through the program. In contrast, if the state chose to shift a portion of Bridge Program funding to other needs, it could result in the state getting a greater baseline share of Highway Bridge Program money in the following year, because it would face greater costs to fix its deficient bridges. This perverse incentive also discourages states from directing other sources of federal or state funding toward bridge repair.

Flexible Funding Without Accountability for Results Undercuts Maintenance

If the federal government were to choose to prioritize maintenance of the existing system, the most obvious way to do so would be to boost funding for programs specifically aimed at maintaining the current system, such as the Interstate Maintenance Program and the Highway Bridge Program. However, the flexibility given to states with regard to the allocation of maintenance funds already undercuts federal efforts to encourage proper maintenance.

The availability of two methods to transfer funds between programs—one official and one unofficial—reduces the amount of funds specifically dedicated to maintenance. Between 2005 and 2007, states overall spent only 9 of every 10 dollars apportioned for the Highway Bridge Program, transferring the other 10 percent to other purposes. Minnesota, Arkansas, and Arizona spent the least amount of their available Bridge Program funds, spending 54 percent, 46 percent, and 45 percent less than their full apportionments, respectively, over this three-year period. In comparison, in fiscal year 2006, states overall spent 113 percent of the apportionment for the National Highway System and 132 percent of the apportionment for the Surface Transportation Program—the two most flexible highway programs and the ones most often used for highway construction.

In 2008, the federal government directed 28 percent of all highway transportation funds apportioned to the states to the Highway Bridge Program and the Interstate Maintenance Program, the two programs most directly oriented towards system preservation rather than system expansion. However, because of the large degree of flexibility afforded under these programs, the amount of funding actually used for repair or maintenance could end up being much less.

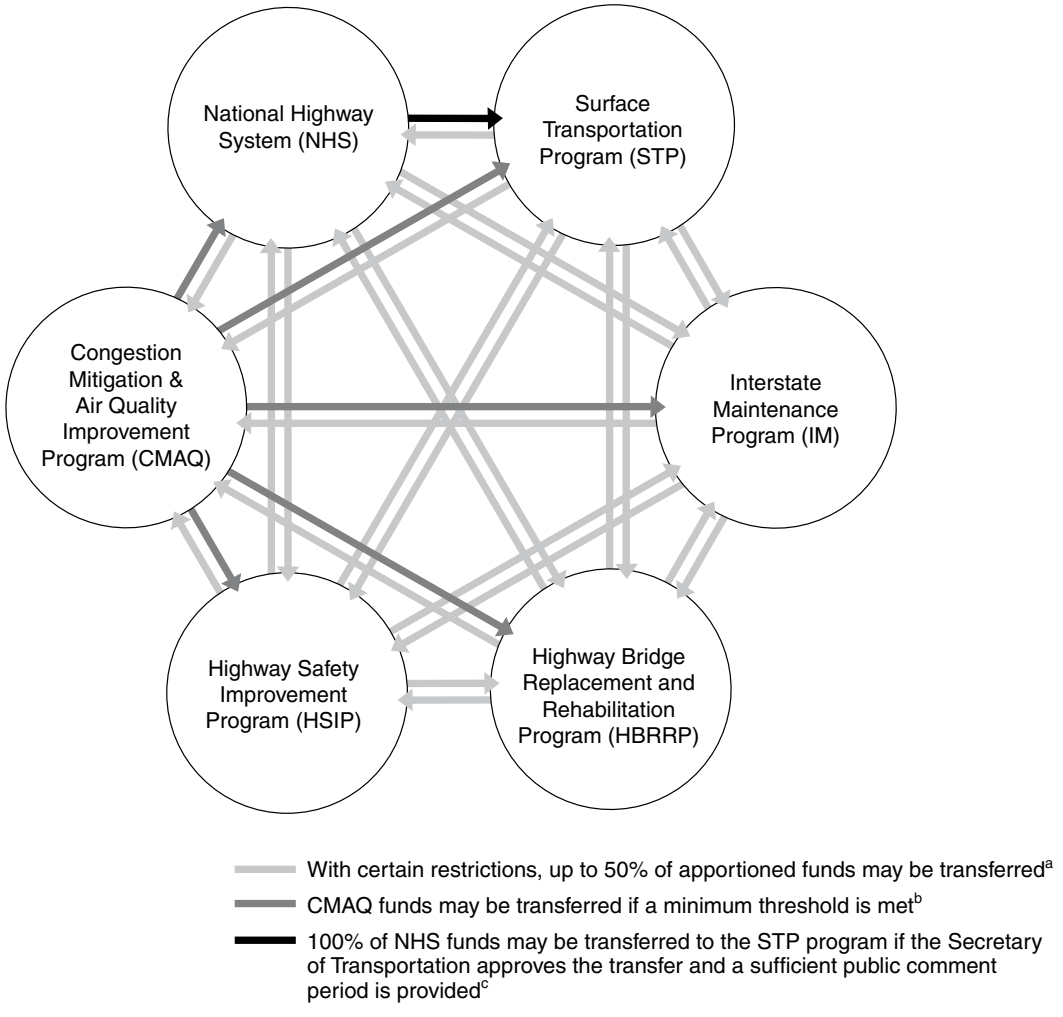
Under the Highway Bridge Program, states can decide how to prioritize the use of the funds. The program is intended to address both structurally deficient and functionally obsolete bridges, with no guidance on which to prioritize. Theoretically, a state could use the money to focus exclusively on expanding functionally obsolete bridges to increase traffic speeds rather than performing preventative maintenance or repair of existing structural problems.

Moreover, the Highway Bridge Program allows states to shift federal money

intended for maintenance to other projects—including the construction of new roads and bridges—regardless of the condition of a state's existing roads and bridges. Federal policy allows states to transfer up to 50 percent of Interstate Maintenance Program funds or Highway Bridge Program funds to broader programs that allow for spending on new construction, such as the Surface Transportation Program. (See Figure 6.) While the law includes a penalty intended to deter states from diverting Highway Bridge Program funds to other uses, the penalty for doing so could be entirely offset by funds from the Equity Bonus Program. No comparable penalty exists in the Interstate Maintenance Program.

According to the Federal Highway Administration and the Government Accountability Office, 27 states transferred $2.8 billion (or 7 percent) of Highway Bridge Program funds to other projects from 1998 through 2006. From fiscal year 2003 to 2007, several states transferred more than $50 million in Highway Bridge Program funding to other programs: Rhode Island ($50 million), Minnesota

Figure 6 : Transferability of Transportation Program Funds[95]



($51 million), Ohio ($87 million), California ($306 million), and Pennsylvania ($972 million).

Finally, because of the complicated accounting around the distribution of funding to highway programs, states have flexibility to spend much less than their full apportionment on a given highway program, effectively shifting funds to another highway program without making an official transfer. Historically, states have tended to use this fact to spend less than allowed on maintenance-oriented programs and more on the most flexible programs that allow activities including system expansion.

In principle, flexible funding can also work the other way, enabling states to shift money that could be used for the construction of new infrastructure toward maintenance instead. As noted earlier (see page 20, however, states face strong incentives to invest in new roads and bridges at the expense of routine maintenance.

No Prioritization Exists Within Programs

Even within programs, there is no way for the federal government to prioritize particular projects with greater national significance. The lack of prioritization has two impacts. First, it makes it more difficult to direct funds to important projects that are expensive and difficult—for example, the maintenance or reconstruction of a critical bridge with high traffic loads in a congested metropolitan area—projects that states will have incentives to put off as long as possible. Second, to the extent that the lack of objective criteria for evaluating transportation investments makes it easier for states to build new highways of dubious merit, it further adds to states' incentives to pursue system expansion, even at the expense of maintenance.

Not every federal transportation program works this way. The Federal Transit Administration's New Starts program is a competitive grant program that requires that proposed new transit projects be justified according to a host of clearly defined criteria. No such criteria, however, exist for states' use of broader transportation funds, making it easier for states to invest in new capacity, regardless of whether those investments are the wisest use of federal dollars.

Without similarly clear funding criteria, spending for the most needed road and bridge projects are often skewed toward projects that will spread the money around more or to indirectly expand the number of lanes and highway miles.

In its 2008 report on the Highway Bridge Program (HBP), the Government Accountability Office noted that the largest, most heavily traveled deficient bridges can be particularly expensive to fix—with costs far exceeding the amount of funds available through the Highway Bridge Program. According to GAO, "transportation officials in Washington state and other states we visited acknowledged that bridge mega projects such as these could easily exhaust a state's entire HBP apportionment for many years, potentially to the detriment of all other bridge needs in that state." When states do decide to repair large, heavily traveled, costly spans, they must often look to other sources of funding outside of the Highway Bridge Program to make these projects happen—either earmarks or special state programs.

In addition, the inability to prioritize projects—particularly those related to highway or bridge expansion—can also make it easier for states to invest in new capacity projects of limited merit. The Highway Bridge Program also provides a good example in this regard. By dedicating funds toward both structurally deficient and functionally obsolete bridges at the same time, the program fails to provide direction to the states in achieving national goals for system preservation. While one state might prioritize maintenance of the most critical links in its transportation

system, another might prioritize reconstructing bridges to enable them to handle more traffic.

The attempts that have been made to identify and fund priority projects have largely fizzled. For example, in SAFETEA-LU, Congress made an attempt to provide funding for specific national priorities, chosen by the Department of Transportation based on a competitive application process and a defined set of evaluation criteria. However, members of Congress directed all of the $1.8 billion in available funds to specific projects identified in the legislation, bypassing any competitive application process. (See this page for further discussion of such "earmarking" of funds.)

No Accountability for Performance

Even if America's highway policy focused resources toward national priorities and goals for preserving roads and bridges in a state of good repair, federal funds are now given out with no accountability for actually achieving specific outcomes. None of the major highway programs include requirements that money spent deliver any particular measurable result or performance benchmark.

The only accountability measure aimed at infrastructure preservation in SAFETEA-LU allows the U.S. Transportation Secretary to withhold funding for states that fail to properly maintain roads and bridges that were built using federal funds. However, the law remains toothless because it does not define what proper maintenance is—and the authors of this report were unable to find an instance of its use. Currently, the law requires the Federal Highway Administration to notify a state if it believes the roads and bridges are not properly maintained and give the state 90 days to correct the condition. A similar accountability mechanism in previous federal transportation laws—which authorized sanctions against states that could not certify that federal-aid highways and bridges were properly maintained—was rarely used.

Congressional Earmarks Further Tilt Spending Away from Maintenance

Congressional earmarks—in which members of Congress bypass the administrative process of allocating merit-based funding and instead designate funding for specific projects—further tilt spending away from system preservation and maintenance.

In the last transportation authorization bill (SAFETEA-LU), there were almost 6,000 earmarks totaling more than $13 billion. The most notorious of these earmarks designated $223 million for the "Bridge to Nowhere" between Ketchikan and Gravina Island in Alaska—which was raised as a major issue in congressional campaigns in 2006 and 2008, and in the 2008 presidential race. The primary beneficiaries of the project would have been the 7,000 residents of the Island, and the contractors put to work on the project.

The Bridge to Nowhere was never built. However, this earmark and others carved out $100 million annually from the Highway Bridge Program for new bridge construction—a use of funds that normally would not be allowed.

The funding for some programs authorized by SAFETEA-LU was 100 percent earmarked. For example, the 2005 transportation bill created a five-year, $1.8 billion program intended to identify and fund transportation projects of "national and regional significance." The program included a wide variety of criteria intended to prioritize projects based on their importance for the functioning of the transportation system nationwide. However, according to a report by the Bipartisan Policy Center, the winners of the grants were already predetermined in the

Poor Inspection and Data Reporting – A Symptom of the Lack of National Priorities and Goals

In its 2008 bridge report, the Government Accountability Office noted that evaluating the impact of the Highway Bridge Program was difficult to impossible.[103] The lack of clear focus on measurable indicators and performance indicators means a lack of workable data. For example:[104]

- The Federal Highway Administration keeps track of federal capital spending on bridges—which may be for repairs or for expanding traffic volume—but the numbers do not include money spent on preventative maintenance, because it does not count as a capital expenditure.

- No agency keeps track of comprehensive spending on bridges at the state and local level, making it difficult to evaluate the impact of federal spending, or the extent to which states respond to increased federal funding availability by reducing state and local spending.

- Neither the Federal Highway Administration nor state departments of transportation keep track of comprehensive, quantifiable measures of the performance and outcomes of spending through the Highway Bridge Program.

- The National Bridge Inventory makes it difficult to track changes in the condition of a bridge over time. The identifying numbers of the bridges are assigned by state DOTs and do not remain constant. "As a result," the GAO noted, "it is difficult to track changes in the condition of any specific bridge or group of bridges to determine if, for example, the same bridges that were deficient in 1998 are still deficient today, to see how many bridges have been replaced, or to determine the impact of new bridges added to the inventory (which may not be funded by the HBP) on the overall condition of the nation's bridges." [105]

The failure to orient the program toward accountability and performance extends even into the process for bridge inspection and condition reporting:

- States are often not fully aware of the extent and degree of bridge disrepair. Many bridges are inspected only visually and only every two years. Speaking about a bill to reform the Highway Bridge Program, Congressman James Oberstar reported that "these visual inspections are subjective and can vary" because there are no uniform standards nor training requirements for bridge inspectors.[106]

- Furthermore, since 10 percent of structurally deficient bridges in the National Highway System are incorrectly load-rated, and increased load weights exacerbate the structural deficiencies of bridges, states are often unaware the rate of which their bridges are actually losing structural integrity.[107]

The nation's highway programs need a clearer focus and an orientation toward achieving particular national priorities and goals, with measureable outcomes, in order to ensure that transportation dollars are being spent in the most effective ways possible.

text of the legislation. Members of Congress earmarked every dollar available to projects they deemed of importance to their districts, bypassing any national prioritization.

Members of Congress also earmark funds in the annual bill that appropriates funding for transportation programs. In 2008, just a few months after the tragic Minneapolis bridge collapse which killed 13 and sparked alarm and outrage across the country, Congress directed only 74 of the 704 highway projects earmarked in the annual transportation appropriations bill to repair or maintain a bridge, tunnel or overpass. In other words, only about one in 10 of the projects, and about 10 percent of the funding, focused on fixing the nation's crumbling bridge infrastructure. The delegation from Mississippi, for instance, secured funding for 19 earmarked projects at a cost of $29 million, and despite having a backlog of over 3,000 structurally-deficient bridges in the state, none of their earmarks went to bridge repair. The majority of the $570 million went for new highways and construction of other new highway capacity.

State Policies Can Further Steer Spending Away from Adequate Maintenance

State policies can aggravate the imbalance in highway spending, failing to counter the inherent bias toward building new capacity and other politically high-profile projects. In particular, some states distribute highway dollars based on geography or political equity, rather than by prioritization based on objective criteria designed to achieve state and national goals. States also have a tendency to classify some road expansion projects as repair work, making accountability more difficult.

Distributing Funding Based on Geography Undercuts Statewide Priorities

In many states, state departments of transportation tend to under-invest in metropolitan areas, where road and bridge maintenance and repair needs are often the greatest. Transportation spending decisions are often skewed by formulas or decisions that spread funding around based on geography rather than need—a pattern aggravated in cases where metropolitan areas are politically underrepresented.

For example, Georgia divides up to 85 percent of its transportation dollars by congressional district, but exempts money for certain programs, such as a program to build four-lane highways in rural parts of the state. The *Atlanta Journal Constitution* calculated in 2003 that this formula leads the state to spend 50 percent more per capita on areas outside metropolitan Atlanta than inside. The Atlanta Regional Commission estimated in the late 1990s that metropolitan Atlanta generated 40 percent of the state's gas tax revenues, but received just 17 percent of total state transportation dollars. Georgia's highway system in metropolitan areas has 117 miles of rough roads, while the highway system in rural areas has 14 miles of rough roads.

Regardless of distributional issues between Atlanta and the rest of the state, dividing funding by congressional district clearly has little to do with actual spending needs. This practice prevents the state from prioritizing the most important transportation projects for the state as a whole.

North Carolina has a similar "equity" formula that weakens efforts to prioritize transportation spending. Under a 1989 law, the state distributes Highway Trust Fund dollars to seven different regions of the state, with 25 percent allocated as an equal share between areas, 25 percent **to** build a system of 4-lane "intrastate" highways,

and 50 percent based on regional share of the state's total population. The law was intended to stimulate economic growth in rural areas of the state.

In metropolitan areas, politicians and residents have complained that the formula reflects the power of rural politicians and under-serves the needs of the most highly populated and economically productive centers in the state. Compounding the problem, residents are counted by where they live, and not where they drive.

Blurring the Definition Between "Maintenance" and Highway Expansion

State policies often expand the definition of "maintenance" projects to include road or bridge expansion, further reducing the amount of money available for "true" maintenance. Part of the problem is that state DOT officials frequently lump structural and maintenance problems in together with road or bridge features that

Some States Focus Federal Highway Funding on Bridge Repair while Others Emphasize New Capacity

The amount of federal funding going to repair structurally deficient bridges varies wildly from metro area to metro area and state to state. (See the appendix on page 44 for detailed tables.) For example, Texas spends more than 30 times the amount of funding per square foot of structurally deficient bridge in the Houston metropolitan area as California spends in the Sacramento metropolitan area.[123]

Similarly, the degree to which states prioritize using federal resources for bridge repair relative to building new highway capacity varies dramatically from state to state. Nevada and Delaware, two of the states with the smallest amount of structurally deficient bridges, spent more than 10 times the amount of federal funding per square foot of structurally deficient bridge area from 2006 to 2008 than states like Rhode Island, Iowa, Arkansas, Kentucky and California. (See the appendix on page 44 for a detailed table.) On average, states spent $17.42 in federal funding per square foot of structurally deficient bridge annually over this period, for a total of $4.8 billion per year. This compares with $8.2 billion per year to expand or build new highways.[124]

Over this period, 13 states—including Massachusetts, New Jersey and Mississippi—spent less on new capacity than bridge repair. In contrast, 25 states spent more than double the amount of federal dollars on new highway capacity than on bridge repair. Kentucky, Nevada and Arkansas spent more than five times more on new capacity than bridge repair, and Florida, Hawaii and Arizona spent more than 10 times more on new capacity than bridge repair.

merely do not allow traffic to flow as fast as would newly designed construction. As a result, some "repair" projects construct additional lanes or other new infrastructure.

Interstate 94 in Wisconsin provides a good example. Wisconsin is devoting $1.9 billion, including $200 million in federal stimulus funds, to replace deteriorating pavement on the 38-mile section of Interstate 94 between Milwaukee and the Illinois border. However, the state decided to expand the scope of the project to include widening the Interstate from four to eight lanes. All bridges on the 38 mile stretch are scheduled to be replaced to accommodate the four additional lanes, despite the fact that only one of them is structurally deficient. According to the Wisconsin Department of Transportation, the reconstruction would cost $1.4 billion with no added lanes; $1.7 billion with two added lanes (which the state calls "Safety and Design Improvements,"); and $1.9 billion for four added lanes. However, given the fact that most of the bridges would not need reconstruction without the added lanes on I-94, the state appears to be underestimating the cost of the added capacity and labeling much of the expenditure as repair.

How Traffic Engineering Exacerbates the Problem

Transportation planners have long engineered traffic systems to funnel traffic onto large roads and expressways rather than fully utilizing networks of local roads.[133] The idea is to get "through traffic" off of local streets, which is intended to benefit the quality of life of local residents. But channeling ever more traffic onto fewer—and larger—roadways, has significant costs and federal and state policies often exacerbate those costs.

States tend to evaluate roadway projects in isolation from one another, with each improvement standing on its own merit, regardless of how combinations of improvements might perform together. This type of evaluation tends to emphasize adding new lanes or widening an intersection—and leaving local road networks under-utilized. Aggravating the issue, federal policy instructs states to use federal highway aid largely on major roadways, restricting the use of the dollars on local road networks.[134]

As a result, many states invest most of their federal dollars in highway capacity designed to handle peak commuter traffic and long distance travel. However, most trips in metropolitan America are short trips, and mostly non-work trips. And, most of the roadway capacity in America is in local road networks.[135] To the extent state departments of transportation fail to recognize the capacity of local road networks to move traffic and mischaracterize the nature of citizen and freight transportation use of roadways, officials can over-emphasize investment in major roadways.

This can tend to increase vehicle miles traveled and aggravate the impacts of traffic and heavy use on roadways—particularly in areas that collect large numbers of vehicles—increasing the need for regular roadway maintenance.

The Wisconsin DOT claims that expanding the freeway will relieve congestion for commuters in Wisconsin's southeastern counties. In actuality, congestion outside Milwaukee is minimal. Even assuming DOT's projection that congestion will worsen by 2035, there is only one stretch of road (I-94 northbound, south of Route 50) that will have "extreme congestion" if lanes are not added. However, this projected congestion is much contested because of alternate plans to construct a commuter train link.

Unlike structurally deficient bridges and rough and corroded roads, "functionally obsolete" roadways often do not pose a safety problem. Fixing these design problems may just displace traffic bottlenecks to further down the road. Furthermore, some kinds of road improvements that increase the speed of traffic also make driving more lethal. Technically, obsolete road design may play a useful function by calming traffic and keeping drivers' attention, even if they encourage lower operating speeds.

Fix It First: A 21st Century Vision for America's Transportation Infrastructure

America's failure to maintain its roads and bridges has many causes. From political pressures that disfavor repair or maintenance, to state and federal policies that fail to prioritize maintenance and fail to hold states accountable, there is plenty of blame to go around.

Fixing America's roads and bridges, therefore, will require more than just spending more money on transportation. It requires a top-to-bottom shift in the nation's transportation funding priorities and policies.

Many transportation experts argue that America should adopt a "Fix it First" approach to investment in our road and bridge infrastructure. The most fiscally prudent way to manage our transportation system is to make sure that structural and safety problems get addressed in a timely way—before roads or bridges must be closed or catastrophe strikes. We must recognize that the post-World War II highway-building boom is over, and we have entered a new era. Investments in new and ever larger highways are inconsistent with a transportation future in which more resources will be needed for maintenance and for rounding out the network with public transportation, intercity rail and other transportation options.

What steps are necessary to hold government accountable for ensuring our roads and bridges are maintained in good repair, and that any such policy has real teeth?

First, it means that system maintenance must become a top priority for highway programs in the years to come.

Second, national transportation programs for improving the state of good repair must link spending to measureable outcomes. Federal policy should ensure that every transportation dollar delivers the greatest impact. If states seeking additional highway funds must demonstrate progress in actually achieving a good state of repair, then it will become less of a problem to ensure that states prioritize repair and maintenance.

Third, it means that proposals for new or expanded highways or bridges must be evaluated on criteria based on need. A repair- and maintenance-oriented policy does not mean that no new highways will ever be built or bridges expanded—indeed, in some parts of the country, expansion projects may well be warranted. Rather,

Prioritizing Repair Can Create Jobs

Investing in repair can create jobs and economic activity. Repair and maintenance projects on roads and bridges produce on average of 16 percent more jobs than new highway construction per dollar spent, in part because a greater share of project costs go directly into workers' pockets, and less to right-of-way purchase, engineering, and impact studies.[139] Every $1 billion invested in bridge repair creates more than 20,000 jobs.[140]

it means that if the federal government is to prioritize repair and maintenance of roads, then states will need to pare their "wish lists" for expansion until they demonstrate that a good state of repair. Doing so will also save tremendously on future transportation costs.

Fourth, it means that provisions must be made—at both the federal and state levels—to fund the most urgent and important projects first, guided by national goals and objective criteria. While states can take pride in reducing the sheer number of structurally deficient bridges, it is more important to reduce the number of people who travel over structurally deficient bridges and roads each day, and to address the most pressing problems before they force the prolonged closure of highways or bridges, especially in highly populated areas.

Policy Recommendations

To implement a "Fix it First" vision, the federal government should:

- **Prioritize highway and bridge maintenance and repair.** Transportation infrastructure is crucial to the function of local, state and national economies. Accordingly, it is in the interest of the country as a whole that states take excellent care of these assets and maximize their value. States should be held accountable for properly maintaining roads and bridges, and should be required to demonstrate progress to the public according to specific, measurable benchmarks.

- **Reorganize federal highway programs.** Federal highway programs should have a sharper focus, oriented toward the achievement of specific national priorities and goals with measureable outcomes.

  - **Create a highway program specifically focused on all projects that would increase road capacity.** This program should ensure that new highway or bridge projects undergo rigorous evaluation and prioritization at the federal level—much like the New Starts program for public transportation projects.

  - **Consolidate programs aimed at repair and maintenance into one focused program.** The

States Adopting "Fix it First" Policies

"Fix it First" policies work to get the most out of established infrastructure in existing communities—including roads, schools, utilities, and housing—by maintaining it in good condition before investing in new projects.

At least 17 states have adopted "Fix it First" policies, while other states have designated priority funding areas or set targets for infrastructure investments to meet state-specific goals.[137] For example, New Jersey's "Fix it First" policy, created in 2000, required transportation agencies to halve the amount of decaying infrastructure in five years. In 2003, then-Governor McGreevey strengthened this commitment by issuing an Executive Order to expedite "Fix it First" projects.[138]

federal government should establish a highway program aimed at existing asset management to better dedicate resources to repair and maintenance. An example of how *not* to do this is the Highway Bridge Program, which muddles its focus by simultaneously directing funding towards the divergent priorities of preventative maintenance, repair of structurally deficient spans, and replacement of functionally obsolete spans—with no goals or accountability for performance. Instead, states should prepare annual asset management plans to target the most important projects.

- **Require states receiving federal aid to plan for future maintenance of the new roads they build.** States receiving federal transportation funds should calculate and publicly report the 10-, 20- and 50-year maintenance costs of all new or improved infrastructure projects and develop a plan demonstrating that such funds will be available over the lifespan of the infrastructure. Such requirements are commonplace in state applications for federal transit investments such as for the New Starts program, which must demonstrate where future operating funds will come from as a condition for eligibility.

- **Measure performance the right way.** The federal government should establish performance measures connected to national goals that drive investment decisions. These standards could include, for example, annual reduction in number of fatalities or accidents, the fraction of roadways in good condition, the deck area of structurally deficient bridges or the number of vehicles traveling over structurally deficient bridges. If goals and performance criteria are to be taken seriously for determining allocation of resources, then standards must be well established and reported publicly on an annual basis. Federal funding should ensure uniform standards for assessing infrastructure and training inspectors. The independent source of these funds will ensure that states do not underfund inspection and that inspectors need not be concerned about retaining their jobs after identifying bad news for their employers.

- **Reward states for good performance on national objectives.** States already receive bond ratings for how well they act to meet future obligations to investors who buy their assets. By that same principle, the U.S. DOT could develop a system to rate states based on their progress, or lack thereof, on preventative maintenance, deferred maintenance, and resources dedicated to repair. States with unsatisfactory ratings would be prohibited from transferring funds out of federal repair programs for other purposes, and would risk losing their full federal funding over time.

To implement a Fix it First vision, state and local governments should:

- **Adopt Fix it First policies.** All states should adopt Fix it First policies analogous to those in Maryland, New Jersey and Illinois. For example, in 1999, Illinois passed Illinois FIRST (a Fund for Infrastructure, Roads, Schools and Transit)—a five-year, $12 billion program to restore aging roads and bridges, revitalize mass transit, repair suburban schools, clean up urban brownfields, upgrade water and sewer systems and improve quality of life throughout the state. Specifically, these policies should require state departments of transportation to focus on the rehabilitation of existing transportation facilities before turning attention to the construction of new highways.

Table A-1: Road Roughness by State, 2008 (Includes Arterial Routes, such as Interstates, Freeways, and Other Major Roads)[142]

State	Percent of Roads in Poor Condition	Percent of Roads in Mediocre Condition	**Percent of Roads in Poor or Mediocre Condition**	Percent of Roads in Fair Condition	Percent of Roads in Good Condition	**Percent of Roads in Less than Good Condition**	Rank, Fraction of Roads in Poor or Mediocre Condition (50 = Worst)
Alabama	0%	1%	**1%**	13%	86%	**14%**	2
Alaska	9%	27%	**35%**	40%	25%	**75%**	50
Arizona	1%	4%	**5%**	25%	69%	**31%**	15
Arkansas	1%	5%	**6%**	50%	43%	**57%**	21
California	11%	17%	**28%**	49%	24%	**76%**	46
Colorado	2%	8%	**10%**	49%	41%	**59%**	29
Connecticut	5%	11%	**16%**	58%	26%	**74%**	39
Delaware	4%	3%	**7%**	41%	52%	**48%**	23
Dist. of Columbia	65%	24%	**89%**	11%	0%	**100%**	n/a
Florida	0%	1%	**1%**	15%	84%	**16%**	3
Georgia	0%	0%	**0%**	5%	95%	**5%**	1
Hawaii	10%	16%	**26%**	64%	10%	**90%**	44
Idaho	1%	4%	**4%**	30%	66%	**34%**	13
Illinois	4%	13%	**17%**	40%	43%	**57%**	41
Indiana	2%	6%	**8%**	34%	58%	**42%**	26
Iowa	4%	8%	**12%**	41%	47%	**53%**	34
Kansas	1%	3%	**3%**	26%	71%	**29%**	8
Kentucky	1%	3%	**3%**	35%	62%	**38%**	7
Louisiana	7%	16%	**23%**	33%	44%	**56%**	43
Maine	3%	7%	**10%**	33%	58%	**42%**	30
Maryland	8%	6%	**14%**	27%	59%	**41%**	37
Massachusetts	10%	16%	**26%**	45%	29%	**71%**	45
Michigan	6%	8%	**14%**	25%	62%	**38%**	36
Minnesota	2%	7%	**8%**	36%	56%	**44%**	27
Mississippi	4%	14%	**17%**	40%	43%	**57%**	42
Missouri	1%	3%	**4%**	49%	47%	**53%**	10
Montana	0%	1%	**2%**	20%	78%	**22%**	4
Nebraska	1%	5%	**6%**	33%	61%	**39%**	20
Nevada	1%	1%	**2%**	9%	89%	**11%**	5
New Hampshire	4%	5%	**9%**	24%	66%	**34%**	28

Table A-1: (continued)

State	Percent of Roads in Poor Condition	Percent of Roads in Mediocre Condition	**Percent of Roads in Poor or Mediocre Condition**	Percent of Roads in Fair Condition	Percent of Roads in Good Condition	**Percent of Roads in Less than Good Condition**	Rank, Fraction of Roads in Poor or Mediocre Condition (50 = Worst)
New Jersey	16%	17%	**33%**	49%	18%	**82%**	48
New Mexico	1%	4%	**6%**	26%	69%	**31%**	18
New York	10%	6%	**16%**	39%	45%	**55%**	40
North Carolina	1%	4%	**5%**	37%	58%	**42%**	16
North Dakota	1%	3%	**4%**	33%	63%	**37%**	12
Ohio	3%	8%	**10%**	30%	60%	**40%**	31
Oklahoma	4%	9%	**12%**	40%	47%	**53%**	35
Oregon	1%	3%	**4%**	39%	56%	**44%**	11
Pennsylvania	2%	8%	**10%**	47%	43%	**57%**	32
Rhode Island	13%	22%	**34%**	50%	16%	**84%**	49
South Carolina	1%	3%	**4%**	38%	58%	**42%**	9
South Dakota	3%	12%	**14%**	31%	55%	**45%**	38
Tennessee	1%	2%	**3%**	18%	79%	**21%**	6
Texas	2%	5%	**7%**	45%	48%	**52%**	24
Utah	1%	6%	**6%**	44%	49%	**51%**	22
Vermont	13%	16%	**28%**	34%	37%	**63%**	47
Virginia	1%	4%	**6%**	45%	49%	**51%**	17
Washington	5%	7%	**12%**	37%	51%	**49%**	33
West Virginia	2%	4%	**6%**	45%	49%	**51%**	19
Wisconsin	2%	6%	**8%**	35%	57%	**43%**	25
Wyoming	1%	4%	**5%**	38%	57%	**43%**	14
U.S. Total	3%	7%	**10%**	35%	55%	**45%**	n/a

Table A-2: Structurally Deficient Bridge Spans by State, as of December 2009[143]

State	Number of Structurally Deficient Bridges	Percent of Bridges that are Structurally Deficient	Structurally Deficient Bridge Deck Area, as a Percent of Total Bridge Deck Area
Alabama	1,686	11%	4%
Alaska	129	11%	8%
Arizona	210	3%	4%
Arkansas	933	7%	7%
California	3,228	13%	19%
Colorado	598	7%	7%
Connecticut	378	9%	12%
Delaware	37	4%	8%
D.C.	20	8%	8%
Florida	303	3%	3%
Georgia	949	6%	4%
Hawaii	144	13%	3%
Idaho	367	9%	9%
Illinois	2,373	9%	9%
Indiana	1,927	10%	10%
Iowa	5,358	22%	14%
Kansas	2,901	11%	6%
Kentucky	1,362	10%	9%
Louisiana	1,723	13%	9%
Maine	364	15%	13%
Maryland	372	7%	4%
Massachusetts	593	12%	16%
Michigan	1,467	13%	12%
Minnesota	1,209	9%	6%
Mississippi	2,820	17%	7%
Missouri	4,289	18%	12%
Montana	402	8%	4%
Nebraska	2,878	19%	10%
Nevada	44	3%	2%
New Hampshire	373	16%	11%
New Jersey	692	11%	10%
New Mexico	381	10%	10%
New York	2,140	12%	12%
North Carolina	2,442	14%	13%

Table A-2: (Continued)

State	Number of Structurally Deficient Bridges	Percent of Bridges that are Structurally Deficient	Structurally Deficient Bridge Deck Area, as a Percent of Total Bridge Deck Area
North Dakota	696	16%	7%
Ohio	2,795	10%	8%
Oklahoma	5,286	22%	16%
Oregon	477	7%	8%
Pennsylvania	6,060	27%	20%
Rhode Island	163	22%	27%
South Carolina	1,238	13%	9%
South Dakota	1,231	21%	12%
Tennessee	1,246	6%	6%
Texas	1,752	3%	2%
Utah	169	6%	4%
Vermont	437	16%	16%
Virginia	1,241	9%	6%
Washington	405	5%	9%
West Virginia	1,056	15%	10%
Wisconsin	1,207	9%	6%
Wyoming	401	13%	13%
U.S Total	**71,179**	**12%**	**9%**

Table A-3: Metropolitan Areas with the Highest Additional Operating Costs Due to Rough Roads (Populations of 500,000 or More)[144]

Metropolitan Area	Additional Annual Operating Costs
Los Angeles, CA	$746
San Jose, CA	$732
San Francisco – Oakland, CA	$705
Tulsa, OK	$703
Honolulu, HI	$688
San Diego, CA	$664
Concord, CA	$656
New York – Newark, NY-NJ	$638
Riverside – San Bernardino, CA	$632

Metropolitan Area	Additional Annual Operating Costs
Oklahoma City, OK	$631
Sacramento, CA	$622
New Orleans, LA	$622
Palm Springs – Indio, CA	$608
Omaha, NE	$592
Baltimore, MD	$589
Albuquerque, NM	$576
Mission Viejo, CA	$571
San Antonio, TX	$529

Table A-4: Average Additional Operating Costs Due to Rough Roads by State[145]

Metropolitan Area	Additional Annual Operating Costs
Alabama	$162
Alaska	$324
Arizona	$207
Arkansas	$302
California	$590
Colorado	$292
Connecticut	$313
Delaware	$282
Florida	$126
Georgia	$44
Hawaii	$503
Idaho	$318
Illinois	$297
Indiana	$242
Iowa	$383
Kansas	$318
Kentucky	$187
Louisiana	$388
Maine	$250
Maryland	$425
Massachusetts	$301
Michigan	$370
Minnesota	$347
Mississippi	$394
Missouri	$410
Montana	$195

Metropolitan Area	Additional Annual Operating Costs
Nebraska	$278
Nevada	$227
New Hampshire	$250
New Jersey	$596
New Mexico	$279
New York	$405
North Carolina	$251
North Dakota	$238
Ohio	$209
Oklahoma	$457
Oregon	$166
Pennsylvania	$346
Rhode Island	$473
South Carolina	$262
South Dakota	$319
Tennessee	$180
Texas	$336
Utah	$176
Vermont	$308
Virginia	$249
Washington	$266
West Virginia	$280
Wisconsin	$281
Wyoming	$230
United States	$335

Table A-5. Federal Funds Directed Toward Bridge Repair vs. New Capacity

State	Average Annual Spending on New Road Capacity, 2006 - 2008	Average Annual Spending on Bridge Repair, Federal Sources, 2006 - 2008	Ratio of Spending on New Capacity to Bridge Repair	Area of Structurally Deficient Bridges (Average, 06-08, Sq. Ft.)	Spending per Sq. Ft.	Ranking (From Most to Least Spending per Sq. Ft.)
Alabama	$214,530,463	$42,523,369	5	4,328,734	$9.82	38
Alaska	$71,356,339	$31,240,501	2.3	585,263	$53.38	3
Arizona	$271,405,389	$10,098,621	26.9	1,081,039	$9.34	41
Arkansas	$214,139,597	$22,392,699	9.6	3,533,423	$6.34	48
California	$581,269,027	$249,158,096	2.3	32,058,444	$7.77	46
Colorado	$88,126,247	$34,787,014	2.5	3,139,635	$11.08	33
Connecticut	$107,082,097	$128,339,741	0.8	3,874,772	$33.12	11
Delaware	$29,602,671	$9,853,703	3	134,680	$73.16	1
Dist. of Columbia	-$5,226,807	$64,313,381	-0.1	490,976	$130.99	N/A
Florida	$621,362,751	$61,347,961	10.1	4,311,103	$14.23	27
Georgia	$422,814,972	$103,533,407	4.1	3,087,941	$33.53	10
Hawaii	$115,737,026	$10,524,212	11	420,736	$25.01	18
Idaho	$64,682,068	$11,885,610	5.4	1,196,725	$9.93	37
Illinois	$241,910,860	$218,738,018	1.1	9,986,725	$21.90	20
Indiana	$221,522,187	$59,082,892	3.7	6,403,917	$9.23	42
Iowa	$111,419,887	$65,510,034	1.7	10,747,847	$6.10	49
Kansas	$88,901,722	$49,849,148	1.8	4,977,776	$10.01	36
Kentucky	$186,107,004	$28,618,911	6.5	4,395,699	$6.51	47
Louisiana	$91,579,570	$123,017,381	0.7	15,030,877	$8.18	44
Maine	$14,413,382	$37,546,585	0.4	1,342,562	$27.97	14
Maryland	$95,717,858	$62,528,537	1.5	2,258,909	$27.68	15
Massachusetts	$38,672,734	$185,099,693	0.2	4,946,416	$37.42	8
Michigan	$90,110,375	$154,273,578	0.6	7,788,345	$19.81	21
Minnesota	$82,024,993	$101,762,454	0.8	3,128,146	$32.53	12
Mississippi	$166,812,274	$293,565,071	0.6	6,511,845	$45.08	4
Missouri	$167,117,559	$103,117,424	1.6	11,392,781	$9.05	43
Montana	$52,069,130	$29,564,608	1.8	732,714	$40.35	6
Nebraska	$78,837,493	$32,204,103	2.4	3,403,833	$9.46	40
Nevada	$105,111,970	$12,380,582	8.5	180,483	$68.60	2
New Hampshire	$40,043,979	$20,749,207	1.9	1,092,522	$18.99	22
New Jersey	$131,822,984	$231,787,585	0.6	6,800,239	$34.09	9
New Mexico	$43,721,930	$16,227,548	2.7	1,705,189	$9.52	39
New York	$156,194,165	$585,421,542	0.3	13,138,081	$44.56	5

Table A-5. (Continued)

State	Average Annual Spending on New Road Capacity, 2006 - 2008	Average Annual Spending on Bridge Repair, Federal Sources, 2006 - 2008	Ratio of Spending on New Capacity to Bridge Repair	Area of Structurally Deficient Bridges (Average, 06-08, Sq. Ft.)	Spending per Sq. Ft.	Ranking (From Most to Least Spending per Sq. Ft.)
New Mexico	$43,721,930	$16,227,548	2.7	1,705,189	$9.52	39
New York	$156,194,165	$585,421,542	0.3	13,138,081	$44.56	5
North Carolina	$497,088,450	$132,632,328	3.7	10,004,934	$13.26	29
North Dakota	$37,625,585	$13,089,629	2.9	866,516	$15.11	25
Ohio	$239,158,048	$216,966,932	1.1	8,346,452	$26.00	17
Oklahoma	$187,223,221	$109,045,858	1.7	13,807,837	$7.90	45
Oregon	$41,702,433	$94,489,211	0.4	4,038,865	$23.39	19
Pennsylvania	$309,310,906	$248,764,860	1.2	22,928,229	$10.85	34
Rhode Island	$11,890,465	$2,580,520	4.6	2,423,582	$1.06	50
South Carolina	$68,581,586	$72,652,937	0.9	5,783,351	$12.56	31
South Dakota	$39,464,253	$20,983,081	1.9	2,066,067	$10.16	35
Tennessee	$351,987,781	$65,070,782	5.4	4,940,642	$13.17	30
Texas	$719,362,318	$259,473,177	2.8	8,860,012	$29.29	13
Utah	$45,251,729	$10,198,342	4.4	838,370	$12.16	32
Vermont	$17,404,548	$20,737,871	0.8	1,545,434	$13.42	28
Virginia	$173,877,383	$71,598,504	2.4	4,762,554	$15.03	26
Washington	$114,688,226	$165,366,630	0.7	4,392,654	$37.65	7
West Virginia	$215,474,233	$53,298,968	4	3,208,609	$16.61	24
Wisconsin	$90,356,271	$55,074,829	1.6	3,158,083	$17.44	23
Wyoming	$42,208,839	$20,363,104	2.1	773,875	$26.31	16

Sources: Federal Highway's Fiscal Management Information System; National Bridge Inventory.[147]

Table A-6: Federal Dollars Going Toward Bridge Repair in the Largest 25 Metropolitan Areas

Metropolitan Area	Average Annual Obligation for Bridge Repair 2004 - 2008	Area of Structurally Deficient Bridge (Sq. Ft., 2008)	Dollars per Square Foot	Ranking
Washington-Arlington-Alexandria, DC-VA-MD-WV	$80,854,339	1,352,723	$59.77	1
Houston-Sugar Land-Baytown, TX	$37,086,542	694,945	$53.37	2
Atlanta-Sandy Springs-Marietta, GA	$29,576,591	616,553	$47.97	3
Minneapolis-St. Paul-Bloomington, MN-WI	$56,936,225	1,371,534	$41.51	4
New York-Northern New Jersey-Long Island, NY-NJ-PA	$435,754,735	11,420,572	$38.16	5
Boston-Cambridge-Quincy, MA-NH	$114,861,200	3,274,892	$35.07	6
Baltimore-Towson, MD	$40,046,689	1,342,647	$29.83	7
Detroit-Warren-Livonia, MI	$91,509,395	3,598,591	$25.43	8
Tampa-St. Petersburg-Clearwater, FL	$4,723,969	234,003	$20.19	9
Chicago-Naperville-Joliet, IL-IN-WI	$109,847,608	5,669,534	$19.38	10
Seattle-Tacoma-Bellevue, WA	$49,722,354	2,775,757	$17.91	11
Portland-Vancouver-Beaverton, OR-WA	$18,041,057	1,037,665	$17.39	12
Cincinnati-Middletown, OH-KY-IN	$17,119,033	1,027,115	$16.67	13
St. Louis, MO-IL	$50,934,668	3,058,066	$16.66	14
San Francisco-Oakland-Fremont, CA	$119,622,676	7,306,888	$16.37	15
Miami-Fort Lauderdale-Pompano Beach, FL	$14,400,786	1,320,831	$10.90	16
Denver-Aurora-Broomfield, CO	$15,504,771	1,607,588	$9.64	17
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	$51,513,884	6,054,086	$8.51	18
Pittsburgh, PA	$44,668,391	5,626,675	$7.94	19
Dallas-Fort Worth-Arlington, TX	$25,107,282	3,682,415	$6.82	20
San Diego-Carlsbad-San Marcos, CA	$9,830,246	1,546,629	$6.36	21
Riverside-San Bernardino-Ontario, CA	$8,035,832	1,897,681	$4.23	22
Los Angeles-Long Beach-Santa Ana, CA	$29,968,483	7,940,361	$3.77	23
Phoenix-Mesa-Scottsdale, AZ	$1,084,789	328,334	$3.30	24
Sacramento--Arden-Arcade--Roseville, CA	$6,810,845	3,729,334	$1.83	25

Source: National Bridge Inventory 2008[146]

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