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The Highway Funding Formula: History and Current Status

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The Highway Funding Formula: History and Current Status

More than 90% of federal highway assistance is distributed to the states by formula. Between 1916, when Congress created the first ongoing program to fund road construction, and 2012, various formula factors specified in law were used to apportion highway funds among the states. After 1982, these factors were partially overridden by provisions to guarantee that each state received federal funding at least equal to a specific percentage of the federal highway taxes its residents paid.

Since enactment of the Moving Ahead for Progress in the 21st Century Act (MAP-21; P.L. 112-141) in 2012, formula factors such as population and highway lane mileage have ceased to have a significant role in determining the distribution of funds. The apportionment among the states under the current surface transportation law, the Fixing America's Surface Transportation Act (FAST Act; P.L. 114-94), passed in 2015, is not based on any particular policy objectives other than ensuring the stability of states' shares of total funding based on their shares in the last year of MAP-21, In addition, each state is guaranteed an amount at least equal to 95 cents on the dollar of the taxes paid by its residents into the highway account of the Highway Trust Fund.

Some policy-related factors used to distribute highway funds in the past are no longer in use, while other possible factors sometimes mentioned in policy discussions, such as states' rates of population growth and projected increases in truck traffic, have never been used as formula factors. This report describes mechanism by which Federal-Aid Highway Program funds are distributed today, and includes tables comparing individual states' shares of the FY2018 apportionment with their shares of some factors relevant to highway needs. **Table 5** ranks states' apportionments based on the apportionment amount per resident, per square mile of land area, per federal-aid highway lane mile, and per million vehicle miles traveled on federal-aid highways.

SUMMARY

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Introduction

In FY2019 and FY2020, more than 90% of federal highway assistance is being distributed to the states by formula. Highway funding formulas have been in use to apportion federal highway authorizations among the states since the passage of the first federal-aid highway act more than a century ago.[1] The resulting apportionments are widely used to evaluate how individual states benefit from federal highway assistance relative to other states.

Although the procedure currently used to distribute federal highway funds is written into law and programs receiving funds in this manner are frequently referred to as "formula programs," the statutory language does not describe any formula in a straightforward way. In consequence, it can be difficult to understand how the apportionment of funds is determined, and whether that apportionment adequately reflects considerations that may be of concern to Members of Congress.

This report describes the origins and development of highway formula funding, and then discusses how the use of various formula factors gave way to the current apportionment mechanism. A series of tables compares individual states' shares of the FY2018 apportionment with their shares of some factors relevant to highway needs.

The Early Years of Formula Funding

The Federal Aid Road Act of 1916 (39 Stat. 355), which created the first ongoing federal program to fund road construction, used three factors to apportion federal highway funds among the states.[2] After setting some funds aside to cover administrative costs, the law apportioned the remaining authorization to the states according to three factors. These factors were selected, in part, because they were not difficult to compile and seemed relevant to individual states' costs to build and maintain a highway system. The three factors, which were weighted equally, were

1. land area: the ratio which the area of each state bore to the total area of all states;
2. population: the ratio which the population of each state bore to the total population of all the states, as shown by the latest available census; and
3. postal road mileage: the ratio which the mileage of rural free delivery routes and star routes in each state bore to the total mileage of such in all the states at the close of the preceding year.[3]

The selection of these factors had much to do with disagreement between urban and rural interests about the goals of the road program and with constitutional concerns regarding the appropriateness of federal spending on road construction. The population and land area factors were proxies for the rural and urban state interests. The population factor was seen as protecting

[1] Apportionment is the distribution of a portion of authorized funds to each of the states by a statutory formula. Formula or apportionment factors are the data used in the formula, such as population, fuel use, or lane miles.

[2] "An Act to provide that the United States shall aid the States in the construction of rural post roads, and for other purposes" (39 Stat. 355). The enacted program was a rural road program, as urban roads were generally believed to be in relatively good condition while rural roads were not. This report focuses on the main core formula programs that apportion federal highway assistance to the states. Federal road legislation also soon provided for assistance to roads in national forests, Indian reservations, national parks, other federally owned areas. Eventually, Congress also created narrower formula-based programs such as beautification, but these activities are beyond the scope of this report.

[3] Rural free delivery routes provided rural home delivery. Star routes provided intercity bulk mail delivery, usually between post offices. Together this road mileage was commonly referred to as *rural post road mileage*.

the interests of the more densely populated eastern states and the land area factor as protecting the interests of large but less populated western states. The use of a postal road mileage factor helped allay any constitutional qualms, as Article I, Section 7 of the Constitution specifically grants Congress the power "To establish…post roads," but the factor also garnered favor from less populous states.[4] The 1916 act also set the maximum federal share of the cost of any highway project at 50%. The 1916 act supported the construction of rural roads and excluded streets and roads in places having a population of 2,500 or more.

The formula factors enacted in 1916 remained in place, with only temporary changes made in Depression-era emergency legislation and war legislation, until passage of the Federal-Aid Highway Act of 1944 (58 Stat. 838).[5] The 1944 act began to shift the federal highway program away from construction of rural roads. It created three separate highway systems: a Primary System, a Secondary System, and an Urban System. Each system was authorized a percentage of the total funds provided, which were then apportioned among the states by formula.[6]

The Federal Highway Act of 1921 (42 Stat 22) retained the three formula factors adopted in 1916, but increased federal control over the use of funds by requiring the designation of a system of highways, limited to 7% of each state's total highway mileage, on which the federal funds could be spent.[7] The 1921 act also guaranteed that each state would receive at least one-half percent of the total appropriation in any year. With this law, the three main characteristics of today's federal highway program were in place: funds were apportioned to the states by formula and implementation was left primarily to state governments; the states were required to provide matching funds; and the funds could be spent only on designated federal-aid highways.

The Post-War Highway Program

The Primary System funds were apportioned using the three formula factors established in 1916: each state's share of the national land area, population, and rural post road mileage, with each factor weighted equally. Funds for the Secondary System were apportioned based on each state's share of the national land area, rural population, and rural postal route mileage. The Urban System formula apportioned funds to the states based on one formula factor: each state's share of the national population living in urban areas of 5,000 or more residents. Although the act still favored rural areas, it was the first significant programmatic shift away from what had been essentially a rural road program.

[4] Alan R. Kooney, *Review and Analysis of Federal-Aid Apportionment Factors*, Federal Highway Administration, June 2, 1969, pp. 1-14.

[5] One change of lasting impact was the withdrawal of the limitation of the use of federal funds on highway construction, reconstruction, and bridges within municipalities, which was first enacted in Section 13 of the Hayden-Cartwright Act of 1934 (48 Stat. 993).

[6] The primary system was made up of roads on the Federal-aid highway system. The "secondary and feeder roads," were roads in rural areas, including farm-to-market roads, rural mail routes, and school-bus routes, not on the federal-aid system. Urban system roads were federal-aid highways in urban areas with a population of 5,000 or more.

[7] These designated roads were divided into two classes of roads: primary or interstate roads (not to exceed three-sevenths of the total mileage) and secondary or intercountry highways (consisting of the remaining mileage). This distinction became ignored in practice and the roads became known collectively as the federal-aid highway system and later as the primary system. Kooney, *Review and Analysis*, p. 15.

Interstate Highway System: Toward Apportionments Based on Need

After the passage of the Federal-Aid Highway and Highway Revenue Acts of 1956 (70 Stat. 374,378), funds to construct the Interstate Highway System were apportioned two ways. The apportionments for FY1957 through FY1959 were governed one-half by the Primary, Secondary, and Urban System formulas adopted in 1944 and one-half by population. Thereafter, Interstate Highway funds were to be apportioned based on needs, with each state's need considered to be identical to the estimated cost of the federal share of completing the Interstate System in the state. The estimates required to begin use of this formula were completed in time for the FY1960 Interstate System apportionment. New estimates were released roughly every two years. The final cost-to-complete estimate was issued in 1991.

During the 1970s and 1980s, as Congress created many narrowly targeted programs within the Federal-Aid Highway Program, it frequently adopted formula factors specific to those programs. By FY1977, there were 35 separate authorized programs. Of those, 13, including all the larger programs, apportioned funds by a variety of statutory formulas.[8] Examples of programs receiving more narrowly targeted funding were the new highway safety and hazard elimination programs, for which funds were apportioned based on both total state population and public road mileage. With the aging of the Interstate Highway System, a new Interstate Resurfacing, Restoration, Rehabilitation, and Reconstruction Program (Interstate 4R) was created, with funding apportioned based on each state's Interstate Highway lane miles and vehicle miles traveled on the Interstate System, as shares of the respective national totals.

A 1986 report from the General Accounting Office (GAO) criticized the use of land area, decennial population, and postal road mileage in the distribution of highway funding. It recommended instead the use of vehicle miles traveled (on and off the Interstate System), lane miles, motor fuel consumption, annualized population statistics, and road deterioration.[9]

Although the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA; P.L. 102-240) substantially reorganized the highway programs, it apportioned the funds of the four largest apportioned programs (accounting for roughly 70% of all apportioned funds) according to each state's share of apportionments during the FY1987-FY1991 period rather than according to specific factors. According to a 1995 GAO report, this procedure, to a significant extent, made "the underlying data and factors… not meaningful because the funding outcome is largely predetermined."[10] Under ISTEA, the apportionments from FY1992 through FY1998 were fixed for six years by the factors used in the FY1987-1991 apportionments. Significantly, they did not reflect the new 1990 census data. An exception was a new program, the Congestion Mitigation and Air Quality Improvement Program (CMAQ), which was apportioned according to population in each state's air quality non-attainment areas relative to the national population living in non-attainment areas.

In 1998, the Transportation Equity Act for the 21st Century (TEA-21; P.L. 105-178) reestablished apportionment formula factors for individual programs within the Federal-Aid Highway Program, often using new factors designed to act as proxies for the needs a program was intended to address. For example, the formula for the National Highway System program, one of several large programs, used four factors to apportion the annual authorization:[11]

[8] Federal Highway Administration, *Financing Federal-Aid Highways Revisited*, July 1976, pp. 60-61, 69-70.

[9] U.S. General Accounting Office, *Highway Funding: Federal Distribution Formulas Should be Changed*, GAO/RCED-86-114, March 1986, pp. 32-43, https://www.gao.gov/assets/150/144245.pdf.

[10] U.S. General Accounting Office, *Highway Funding: Alternatives for Distributing Federal Funds*, GAORCED096-6, pp.1-70, November 1995, pp. 3-5, https://www.gao.gov/products/GAO/RCED-96-6.

[11] Federal Highway Administration, *Financing Federal-Aid Highways*, FHWA-PL-99-015, August 1999, p. 49.

1. 25% based on the ratio of each state's lane miles on principal arterial routes (excluding the Interstate System) to the national total;
2. 35% based on the ratio of each state's vehicle miles traveled on principal arterial routes (excluding the Interstate System) to the national total;
3. 30% based on the ratio of each state's diesel fuel use on highways within each state to the national total;
4. 10% based on the ratio of each state's per capita lane miles of principal arterial highways to the national total.

The Surface Transportation Program, the federal-aid program that the states had the greatest discretion in spending, was apportioned by a formula that used three weighted factors:

1. 25% based on the ratio of each state's total lane miles of federal-aid highways to the national total;
2. 40% based on the ratio of each state's vehicle miles on federal-aid highways to the national total;
3. 35% based on the ratio of each state's estimated tax payments attributable to highway users paid into the highway account of the Highway Trust Fund—the source of federal funding for highways—to the national total.

The last surface transportation reauthorization that used formula factors to apportion individual program authorizations was the Safe, Accountable, Flexible, Efficient Transportation Equity Act: a Legacy for Users (SAFETEA-LU; P.L. 109-59), enacted in 2005. That law apportioned 13 programs using funding formulas. For example, funds under the Highway Safety Improvement Program were apportioned according to three equally weighted factors: (1) each state's share of lane miles of federal-aid-highways; (2) vehicle miles traveled on federal-aid highways; and (3) number of fatalities on the federal-aid system. In contrast, the Railway-Highway Crossings Program used the share of public railway-highway crossings in each state.

The factors of land area and postal route mileage were no longer used for distributing any highway funds. Population figures were used for only two of the 13 formula programs authorized in SAFETEA-LU.

Equity Programs

Between 1982 and 2005, the formulas embedded in surface transportation authorization acts were not always decisive in determining how funds were apportioned. After some states objected that their residents paid more of the motor fuel and truck taxes that flowed into the highway account of the Highway Trust Fund than they received in federal highway funding, Congress enacted "equity" programs that generally did three things. First, each act included a guarantee that each state would receive federal funding at least equal to a specific percentage of the federal highway taxes its residents paid. Second, all or nearly all states were given an increase in funding from the equity program.[12] Third, the program size was calculated in a way to assure that the states receiving less than their residents paid in highway taxes could be made whole up to their guaranteed percentage and most other states could get more funding as well.

In the 1982 act, 5% of highway funding was distributed through the equity program, but in SAFETEA in 2005 the equity program received over 20% of the funds. The equity program

[12] For example, under TEA-21 the Minimum Guarantee Program guaranteed each state a distribution of at least $1 million from the program. Under SAFETEA-LU most but not all states received distributions under the Equity Bonus Program. In 2009, for example, Rhode Island and Maine did not receive Equity Bonus funds.

distribution determined the total apportionment amount for each state and reduced the impact of the formula factors when it came to calculating each state's apportionments under the individual formula programs.

Formulas in Recent Highway Legislation

The Moving Ahead for Progress in the 21st Century Act (MAP-21; P.L. 112-141), enacted in 2012, eliminated or consolidated two-thirds of the federal highway programs. It also made major changes in the way funds were apportioned among the states.

Prior to MAP-21, Congress wrote authorizations for each individual apportioned program into law, and specified the formula factors that were used to determine each state's share of the authorization for that program. Beginning with MAP-21, all the large formula programs shared a single authorization amount, and the states' apportioned shares of the total authorization were determined before their amounts were divided among the specific programs.

MAP-21 did not specify any formula factors that were to be used to apportion funds among the states. Instead, the apportionment was based primarily on each state's share of total apportionments in FY2012, the last year of SAFETEA, as extended. In practice, this meant that the main determinants of the totals apportioned among the states under MAP-21 were the relative distributions under the equity bonus program established in SAFETEA.

In the MAP-21 formula, Congress addressed concerns about fairness from two different perspectives. On the one hand, it guaranteed that each state received an apportionment equal to at least 95 cents of every dollar the state's highway users paid in highway taxes. This represented an increase from the 92% return guaranteed in 2012, the final year of SAFETEA. On the other hand, by effectively fixing the apportionment shares at the FY2012 level Congress ensured that most states receiving more from the Federal-Aid Highway Program than their residents paid in federal highway taxes would still get increases in funding. As was true under the SAFETEA and earlier equity programs, some states could receive larger amounts without substantially reducing the amounts provided to other states only because of the large amounts of funding provided. This was possible because the bill transferred $18 billion from other Treasury accounts to the highway account of the Highway Trust Fund.[13]

Apportionment of Highway Funds Under Current Law

The Fixing America's Surface Transportation Act (FAST Act; P.L. 114-94), enacted in 2015, is the current authorization of federal highway programs. It made only modest changes to the MAP-21 apportionment mechanism. As was true with MAP-21, the FAST Act authorizes a single amount for each year for all the apportioned highway programs combined. It retained the basic MAP-21 formula and the basic MAP-21 programmatic structure. This means that while apportionments are still based primarily on each state's share of total apportionments in FY2012,

[13] CRS In Focus IF11125, *Reauthorizing Highway and Transit Funding Programs*, by Robert S. Kirk and William J. Mallett. Nearly all federal highway assistance is funded out of the highway account of the Highway Trust Fund. (The Highway Trust Fund also has a separate mass transit account.) Because tax revenues dedicated to the highway account have been insufficient to fund the amounts Congress authorized to be spent from the account since FY2008, Congress has transferred $144 billion of other monies, mostly from the Treasury general fund, to keep the highway account of the Highway Trust Fund solvent.

the final year of SAFETEA, each state is guaranteed an apportionment equal to at least 95% of the amount its residents pay into the highway account of the Highway Trust Fund.

Calculating Each State's Apportionment

Under the FAST Act, the authorization that funds six programs within the Federal-Aid Highway Program is apportioned among the states by formula. The programs are the National Highway Performance Program (NHPP), the Surface Transportation Block Grant program (STBG), the Highway Safety Improvement Program (HSIP), the Congestion Mitigation and Air Quality Improvement Program (CMAQ), Metropolitan Planning (MP), and the National Highway Freight Program (NHFP). As summary of the process follows.

Prior to calculating states' apportionments for FY2020, the Federal Highway Administration is to reserve two amounts, $67 million for NHPP and $1.020 billion for STBG. These reserve funds will later supplement these programs.

The remaining amount, net of these two amounts, is the "base apportionment amount."

Each state's initial apportionment amounts are calculated for the three components (the base apportionment, supplemental NHPP, and supplemental STBG) by multiplying the base apportionment and two supplemental amounts by the ratio that each state's FY2015 apportionments bear to the nationwide total for FY2015.

Next, the three initial amounts are adjusted, if necessary, to assure that each state's total base apportionment plus reserve funds is no less than 95 cents for every dollar the state contributed to the highway account of the Highway Trust Fund in the most recent fiscal year for which data are available. Any necessary upward adjustments for some states are offset by proportional decreases to the amounts of other states. However, basing initial apportionment amounts on FY2015 apportionment shares and guaranteeing a 95-cents-on-the-dollar return to all states without major reductions in some states' funding requires a larger program than the existing Highway Trust Fund taxes can fund. As was true under MAP-21, large transfers from the Treasury general fund to the highway account of the Highway Trust Fund authorized in the FAST Act made it possible to fund the Federal-Aid Highway Program in a way that would fulfill the 95% guarantee without having to reduce other states' apportionments significantly.[14]

Division of Each State's Apportionment Among the Programs

Each state's base apportionment amount is used as the starting point in determining the division of the state's apportionment among the six apportioned programs. First, the amount determined for the NHFP is set aside from each state's base apportionment. Second, from the remaining amounts an amount is distributed for CMAQ (according to the state's FY2009 CMAQ apportionment share). Third, the state's MP program gets a distribution (based on the state's FY2009 apportionment share). Fourth, the remainder of the state's apportionment is divided among the three remaining core programs as follows: 63.7% is apportioned to the NHPP, 29.3% to the STBG, and 7% to the HSIP. Fifth, the STBG (each year FY2016-FY2020) and NHPP (for FY2019-FY2020 only) reserve funds are added to supplement each state's STBG and NHPP amounts calculated from the state's base apportionments.

[14] In FY2019, Texas was the only state to receive an additional apportionment due to the 95% guarantee. The additional $56.9 million Texas received was deducted from the $38.5 billion of apportionments to the other 49 states and the District of Columbia.

Evaluating States' Highway Apportionments

As described above, the procedure currently used to apportion federal highway funds among the states is not based on any particular policy objectives other than ensuring the stability of state shares based on the apportionment shares in the last year of MAP-21, FY2015. In addition, each state is guaranteed an amount at least equal to 95 cents on the dollar of the taxes paid by its residents into the highway account of the Highway Trust Fund. Some policy-related factors used to distribute highway funds in the past are no longer in use, while other possible factors sometimes mentioned in policy discussions, such as states' rates of population growth and projected increases in truck traffic, have never been used as formula factors.

The following tables compare each state's share of highway apportionments under current law to that state's proportion of various factors that have been used in the past in the distribution of federal highway funds. **Table 5** provides a ranking of individual states' apportionment amounts as judged by these factors.

Table 1. 2018 State Apportionment Share/Population Share

State	Apportionment	%	Population	%
Alabama	$798,592,462	1.93%	4,887,871	1.49%
Alaska	$527,794,368	1.27%	737,438	0.23%
Arizona	$770,153,352	1.86%	7,171,646	2.19%
Arkansas	$544,979,392	1.32%	3,013,825	0.92%
California	$3,863,394,035	9.33%	39,557,045	12.09%
Colorado	$562,866,921	1.36%	5,695,564	1.74%
Connecticut	$528,685,798	1.28%	3,572,665	1.09%
Delaware	$178,058,011	0.43%	967,171	0.30%
Dist. of Columbia	$167,953,361	0.41%	702,455	0.21%
Florida	$1,994,334,006	4.81%	21,299,325	6.51%
Georgia	$1,359,129,884	3.28%	10,519,475	3.22%
Hawaii	$178,031,957	0.43%	1,420,491	0.43%
Idaho	$301,068,202	0.73%	1,754,208	0.54%
Illinois	$1,496,539,901	3.61%	12,741,080	3.89%
Indiana	$1,002,977,210	2.42%	6,691,878	2.05%
Iowa	$517,312,715	1.25%	3,156,145	0.96%
Kansas	$397,776,344	0.96%	2,911,505	0.89%
Kentucky	$699,381,985	1.69%	4,468,402	1.37%
Louisiana	$738,774,269	1.78%	4,659,978	1.42%
Maine	$194,304,897	0.47%	1,338,404	0.41%
Maryland	$632,550,030	1.53%	6,042,718	1.85%
Massachusetts	$639,295,840	1.54%	6,902,149	2.11%
Michigan	$1,108,263,489	2.68%	9,995,915	3.06%
Minnesota	$686,384,758	1.66%	5,611,179	1.72%
Mississippi	$509,087,926	1.23%	2,986,530	0.91%
Missouri	$996,486,818	2.41%	6,126,452	1.87%
Montana	$431,879,254	1.04%	1,062,305	0.32%
Nebraska	$304,247,397	0.73%	1,929,268	0.59%
Nevada	$382,221,701	0.92%	3,034,392	0.93%
New Hampshire	$173,915,712	0.42%	1,356,458	0.41%
New Jersey	$1,050,984,021	2.54%	8,908,520	2.72%
New Mexico	$386,545,823	0.93%	2,095,428	0.64%
New York	$1,766,855,733	4.27%	19,542,209	5.97%
North Carolina	$1,097,816,127	2.65%	10,383,620	3.17%
North Dakota	$261,327,819	0.63%	760,077	0.23%
Ohio	$1,410,935,784	3.41%	11,689,442	3.57%
Oklahoma	$667,575,430	1.61%	3,943,079	1.21%
Oregon	$526,123,426	1.27%	4,190,713	1.28%
Pennsylvania	$1,727,056,799	4.17%	12,807,060	3.91%
Rhode Island	$230,202,826	0.56%	1,057,315	0.32%
South Carolina	$704,850,578	1.70%	5,084,127	1.55%
South Dakota	$296,847,082	0.72%	882,235	0.27%
Tennessee	$889,486,516	2.15%	6,770,010	2.07%
Texas	$3,831,926,012	9.25%	28,701,845	8.77%
Utah	$365,507,771	0.88%	3,161,105	0.97%
Vermont	$213,631,530	0.52%	626,299	0.19%
Virginia	$1,071,151,543	2.59%	8,517,685	2.60%
Washington	$713,575,916	1.72%	7,535,591	2.30%
West Virginia	$460,005,319	1.11%	1,805,832	0.55%
Wisconsin	$792,011,303	1.91%	5,813,568	1.78%
Wyoming	$269,660,722	0.65%	577,737	0.18%
Total	$41,420,520,075	100.00%	327,167,434	100.00%

One advantage of using annual state full population estimates, as opposed to rural or urban area data, is that the Census Bureau provides full population estimates by state within a year of its annual survey and annual estimates each year thereafter until the next decennial census. Providing a breakdown of rural and urban populations takes longer, and in the past was delayed until the details of the next decennial census were complete. This was a disadvantage to fast-growing states and an advantage to states that were losing residents.

Population is a reasonable proxy for transportation needs, although less so for road conditions or extent of the highway capital stock, since states with similar populations may have significantly better or worse road conditions or smaller or larger road networks.

Most states with large populations, including California, New York, and Florida, have apportionment shares that are lower than their population shares. Texas and Pennsylvania are exceptions in this respect.

Source: FHWA, FY2018 apportionment table; U.S. Census Bureau, Estimates of Resident Population, 2018.

Table 2. State Apportionment Share/Land Area (sq. mi.) Share

State	Apportionment	%	Land Area	%
Alabama	$798,592,462	1.93%	50,645	1.43%
Alaska	$527,794,368	1.27%	570,641	16.16%
Arizona	$770,153,352	1.86%	113,594	3.22%
Arkansas	$544,979,392	1.32%	52,035	1.47%
California	$3,863,394,035	9.33%	155,779	4.41%
Colorado	$562,866,921	1.36%	103,642	2.93%
Connecticut	$528,685,798	1.28%	4,842	0.14%
Delaware	$178,058,011	0.43%	1,949	0.06%
Dist. of Columbia	$167,953,361	0.41%	61	0.00%
Florida	$1,994,334,006	4.81%	53,625	1.52%
Georgia	$1,359,129,884	3.28%	57,513	1.63%
Hawaii	$178,031,957	0.43%	6,423	0.18%
Idaho	$301,068,202	0.73%	82,643	2.34%
Illinois	$1,496,539,901	3.61%	55,519	1.57%
Indiana	$1,002,977,210	2.42%	35,826	1.01%
Iowa	$517,312,715	1.25%	55,857	1.58%
Kansas	$397,776,344	0.96%	81,759	2.31%
Kentucky	$699,381,985	1.69%	39,486	1.12%
Louisiana	$738,774,269	1.78%	43,204	1.22%
Maine	$194,304,897	0.47%	30,843	0.87%
Maryland	$632,550,030	1.53%	9,707	0.27%
Massachusetts	$639,295,840	1.54%	7,800	0.22%
Michigan	$1,108,263,489	2.68%	56,539	1.60%
Minnesota	$686,384,758	1.66%	79,627	2.25%
Mississippi	$509,087,926	1.23%	46,923	1.33%
Missouri	$996,486,818	2.41%	68,742	1.95%
Montana	$431,879,254	1.04%	145,546	4.12%
Nebraska	$304,247,397	0.73%	76,824	2.18%
Nevada	$382,221,701	0.92%	109,781	3.11%
New Hampshire	$173,915,712	0.42%	8,953	0.25%
New Jersey	$1,050,984,021	2.54%	7,354	0.21%
New Mexico	$386,545,823	0.93%	121,298	3.43%
New York	$1,766,855,733	4.27%	47,126	1.33%
North Carolina	$1,097,816,127	2.65%	48,618	1.38%
North Dakota	$261,327,819	0.63%	69,001	1.95%
Ohio	$1,410,935,784	3.41%	40,861	1.16%
Oklahoma	$667,575,430	1.61%	68,595	1.94%
Oregon	$526,123,426	1.27%	95,988	2.72%
Pennsylvania	$1,727,056,799	4.17%	44,743	1.27%
Rhode Island	$230,202,826	0.56%	1,034	0.03%
South Carolina	$704,850,578	1.70%	30,061	0.85%
South Dakota	$296,847,082	0.72%	75,811	2.15%
Tennessee	$889,486,516	2.15%	41,235	1.17%
Texas	$3,831,926,012	9.25%	261,232	7.40%
Utah	$365,507,771	0.88%	82,170	2.33%
Vermont	$213,631,530	0.52%	9,217	0.26%
Virginia	$1,071,151,543	2.59%	39,490	1.12%
Washington	$713,575,916	1.72%	66,456	1.88%
West Virginia	$460,005,319	1.11%	24,038	0.68%
Wisconsin	$792,011,303	1.91%	54,158	1.53%
Wyoming	$269,660,722	0.65%	97,093	2.75%
Total	$41,420,520,075	100.00%	3,531,907	100.00%

Land area was one of the original 1916 formula factors because it could be measured reliably and because the federal aid was intended to help build all-weather roads across large expanses of thinly populated land. This factor was also thought to help balance out the influence of the population factor, which was seen as favoring the northeastern states.

Land area has not been used as a factor in distributing federal highway funding since the passage of TEA-21 in 1998.

Land area may be less useful today as a measure of need for highway funding because few new roads are being built. Most federally funded construction work involves the reconstruction or expansion of existing highways, and lane mileage of federal-aid or Interstate Highways may be a more suitable measure for this purpose.

Source: FHWA FY2018 apportionment table; U.S. Census Bureau, State Area Measurements.

Table 3. 2018 State Apportionment Share/Lane Miles Share

State	Apportionment	%	FAHP Lane Miles	%
Alabama	$798,592,462	1.93%	62,708	2.52%
Alaska	$527,794,368	1.27%	9,547	0.38%
Arizona	$770,153,352	1.86%	39,316	1.58%
Arkansas	$544,979,392	1.32%	50,653	2.04%
California	$3,863,394,035	9.33%	154,806	6.23%
Colorado	$562,866,921	1.36%	42,437	1.71%
Connecticut	$528,685,798	1.28%	15,438	0.62%
Delaware	$178,058,011	0.43%	4,246	0.17%
Dist. of Columbia	$167,953,361	0.41%	1,333	0.05%
Florida	$1,994,334,006	4.81%	83,633	3.37%
Georgia	$1,359,129,884	3.28%	78,974	3.18%
Hawaii	$178,031,957	0.43%	3,960	0.16%
Idaho	$301,068,202	0.73%	25,883	1.04%
Illinois	$1,496,539,901	3.61%	83,845	3.38%
Indiana	$1,002,977,210	2.42%	57,384	2.31%
Iowa	$517,312,715	1.25%	58,347	2.35%
Kansas	$397,776,344	0.96%	75,125	3.02%
Kentucky	$699,381,985	1.69%	36,189	1.46%
Louisiana	$738,774,269	1.78%	35,369	1.42%
Maine	$194,304,897	0.47%	13,837	0.56%
Maryland	$632,550,030	1.53%	22,715	0.91%
Massachusetts	$639,295,840	1.54%	26,684	1.07%
Michigan	$1,108,263,489	2.68%	85,458	3.44%
Minnesota	$686,384,758	1.66%	74,040	2.98%
Mississippi	$509,087,926	1.23%	51,013	2.05%
Missouri	$996,486,818	2.41%	74,512	3.00%
Montana	$431,879,254	1.04%	32,508	1.31%
Nebraska	$304,247,397	0.73%	44,873	1.81%
Nevada	$382,221,701	0.92%	20,534	0.83%
New Hampshire	$173,915,712	0.42%	8,111	0.33%
New Jersey	$1,050,984,021	2.54%	29,046	1.17%
New Mexico	$386,545,823	0.93%	31,246	1.26%
New York	$1,766,855,733	4.27%	68,084	2.74%
North Carolina	$1,097,816,127	2.65%	60,794	2.45%
North Dakota	$261,327,819	0.63%	40,239	1.62%
Ohio	$1,410,935,784	3.41%	76,618	3.08%
Oklahoma	$667,575,430	1.61%	73,455	2.96%
Oregon	$526,123,426	1.27%	41,262	1.66%
Pennsylvania	$1,727,056,799	4.17%	67,700	2.73%
Rhode Island	$230,202,826	0.56%	4,209	0.17%
South Carolina	$704,850,578	1.70%	50,487	2.03%
South Dakota	$296,847,082	0.72%	42,406	1.71%
Tennessee	$889,486,516	2.15%	50,767	2.04%
Texas	$3,831,926,012	9.25%	231,509	9.32%
Utah	$365,507,771	0.88%	24,035	0.97%
Vermont	$213,631,530	0.52%	8,622	0.35%
Virginia	$1,071,151,543	2.59%	55,581	2.24%
Washington	$713,575,916	1.72%	46,955	1.89%
West Virginia	$460,005,319	1.11%	23,484	0.95%
Wisconsin	$792,011,303	1.91%	65,475	2.64%
Wyoming	$269,660,722	0.65%	18,332	0.74%
Total	$41,420,520,075	100.00%	2,483,783	100.00%

Lane miles are calculated by multiplying the length of road by the number of lanes.

Lane miles provide a measure of the size of the capital stock of highways in a state relative to other states and the nation as a whole. Lane miles are a direct measure of the extent of public roads in both rural and urban areas.

Lane-mile data can be obtained from the Federal Highway Administration's Highway Performance Monitoring System.

Although lane miles was rated as the best proxy for needs in a GAO study from the mid-1990s, the character of individual states' lane miles can vary substantially. For example, states with dense urban populations may face higher costs for repairing existing lane miles or building new ones than sparsely populated states. Mountainous lane miles are often more expensive to rebuild or repair than flat lane miles, and roads subject to extreme cold may require more costly construction methods than those in more temperate areas.

Source: FHWA, FY2018 apportionment table; FHWA, *Highway Statistics, 2017*, Table HM-48.

Note: Lane miles are federal-aid highway lane miles only.

Table 4. 2018 State Apportionment Share/Vehicle Miles Traveled Share

State	Apportionment	%	VMT (Mil.)	%
Alabama	$798,592,462	1.93%	52,177	1.92%
Alaska	$527,794,368	1.27%	4,156	0.15%
Arizona	$770,153,352	1.86%	56,676	2.08%
Arkansas	$544,979,392	1.32%	31,520	1.16%
California	$3,863,394,035	9.33%	312,787	11.50%
Colorado	$562,866,921	1.36%	47,258	1.74%
Connecticut	$528,685,798	1.28%	28,233	1.04%
Delaware	$178,058,011	0.43%	8,857	0.33%
Dist. of Columbia	$167,953,361	0.41%	2,942	0.11%
Florida	$1,994,334,006	4.81%	172,194	6.33%
Georgia	$1,359,129,884	3.28%	95,584	3.51%
Hawaii	$178,031,957	0.43%	7,803	0.29%
Idaho	$301,068,202	0.73%	13,861	0.51%
Illinois	$1,496,539,901	3.61%	92,747	3.41%
Indiana	$1,002,977,210	2.42%	60,178	2.21%
Iowa	$517,312,715	1.25%	29,289	1.08%
Kansas	$397,776,344	0.96%	27,748	1.02%
Kentucky	$699,381,985	1.69%	41,531	1.53%
Louisiana	$738,774,269	1.78%	44,307	1.63%
Maine	$194,304,897	0.47%	12,037	0.44%
Maryland	$632,550,030	1.53%	54,196	1.99%
Massachusetts	$639,295,840	1.54%	53,769	1.98%
Michigan	$1,108,263,489	2.68%	91,357	3.36%
Minnesota	$686,384,758	1.66%	51,289	1.89%
Mississippi	$509,087,926	1.23%	31,417	1.15%
Missouri	$996,486,818	2.41%	60,101	2.21%
Montana	$431,879,254	1.04%	10,095	0.37%
Nebraska	$304,247,397	0.73%	18,085	0.66%
Nevada	$382,221,701	0.92%	21,420	0.79%
New Hampshire	$173,915,712	0.42%	11,984	0.44%
New Jersey	$1,050,984,021	2.54%	65,088	2.39%
New Mexico	$386,545,823	0.93%	21,683	0.80%
New York	$1,766,855,733	4.27%	101,252	3.72%
North Carolina	$1,097,816,127	2.65%	92,246	3.39%
North Dakota	$261,327,819	0.63%	8,065	0.30%
Ohio	$1,410,935,784	3.41%	97,631	3.59%
Oklahoma	$667,575,430	1.61%	40,815	1.50%
Oregon	$526,123,426	1.27%	31,852	1.17%
Pennsylvania	$1,727,056,799	4.17%	86,679	3.19%
Rhode Island	$230,202,826	0.56%	7,571	0.28%
South Carolina	$704,850,578	1.70%	49,873	1.83%
South Dakota	$296,847,082	0.72%	8,749	0.32%
Tennessee	$889,486,516	2.15%	65,289	2.40%
Texas	$3,831,926,012	9.25%	254,286	9.35%
Utah	$365,507,771	0.88%	26,217	0.96%
Vermont	$213,631,530	0.52%	5,958	0.22%
Virginia	$1,071,151,543	2.59%	76,401	2.81%
Washington	$713,575,916	1.72%	54,266	1.99%
West Virginia	$460,005,319	1.11%	16,731	0.62%
Wisconsin	$792,011,303	1.91%	56,516	2.08%
Wyoming	$269,660,722	0.65%	7,591	0.28%
Total	$41,420,520,075	100.00%	2,720,359	100.00%

Estimates of vehicle miles traveled in a state are developed by the states via projection from traffic counts, offering an indication of the level of use of the road system.

Vehicle miles traveled does not indicate the time spent traveling the miles, so drivers in traffic in urban areas would be traveling fewer miles relative to time on the road than most rural drivers. An alternative measure looking more specifically at congestion would calculate vehicle miles traveled per highway lane mile.

Generally, geographically large states that also have large cities tend to have an equal or higher share of total vehicle miles traveled than their apportionment percentage. Rural states without large urban areas also generally have larger apportionment percentages than their percentage of national vehicle miles traveled.

Source: FHWA, FY2018 apportionment table. FHWA, *Highway Statistics, 2017*, Table VM-3.

Note: Vehicle miles traveled (VMT) are annual vehicle miles traveled on federal-aid highways only.

Table 5. 2018 State Ranking of Apportionment Amounts Divided by Factor

State	Per Capita	Per Sq. Mile	Per Lane Mile	Per VMT
Alabama	17	27	39	31
Alaska	1	51	2	1
Arizona	43	37	17	42
Arkansas	12	33	43	19
California	47	16	11	45
Colorado	46	40	36	47
Connecticut	23	4	7	14
Delaware	11	5	5	12
Dist. of Columbia	8	1	1	2
Florida	49	10	14	51
Georgia	31	17	27	36
Hawaii	36	13	4	10
Idaho	13	46	42	11
Illinois	40	15	24	30
Indiana	22	12	26	23
Iowa	16	35	47	17
Kansas	26	41	51	35
Kentucky	21	25	19	20
Louisiana	19	26	16	22
Maine	24	38	32	29
Maryland	45	7	8	50
Massachusetts	50	6	13	49
Michigan	42	22	37	46
Minnesota	37	36	45	43
Mississippi	14	31	44	27
Missouri	18	30	34	24
Montana	3	49	35	3
Nebraska	20	43	49	21
Nevada	33	47	21	15
New Hampshire	32	23	15	33
New Jersey	39	3	6	28
New Mexico	10	48	40	16
New York	51	9	9	18
North Carolina	44	20	23	48
North Dakota	4	45	50	7
Ohio	38	11	22	34
Oklahoma	15	34	46	26
Oregon	35	39	38	25
Pennsylvania	28	8	10	13
Rhode Island	9	2	3	8
South Carolina	25	18	33	37
South Dakota	6	44	48	6
Tennessee	30	21	25	41
Texas	29	28	28	32
Utah	41	42	29	40
Vermont	5	19	12	4
Virginia	34	14	20	38
Washington	48	32	30	44
West Virginia	7	24	18	9
Wisconsin	27	29	41	39
Wyoming	2	50	31	5

Source: FHWA, FY2018 apportionment table. FHWA, Highway Statistics, 2017, Table VM-3.

Note: Each column's calculations are based on data from previous tables. For example, the per capita column is based on each state's apportionment divided by each state's population from **Table 1**, which were then ranked for **Table 5**. Lane miles count only lanes on federal-aid highways. Vehicle miles traveled (VMT) are annual vehicle miles traveled on federal-aid highways only.

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