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Alternatives for Distributing Federal Funds

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The Honorable Max S. Baucus
Ranking Minority Member
Committee on Environment
and Public Works
United States Senate

The Honorable Bud Shuster
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The Honorable James L. Oberstar
Ranking Democratic Member
Committee on Transportation
and Infrastructure
House of Representatives

In response to section 1098 of the Intermodal Surface Transportation Efficiency Act of 1991 and following discussions with your offices, this report discusses the way the formula for distributing federal highway funds works and the relevancy of the data used for the formula. It also discusses the major funding objectives implicit in the formula and the implications of alternative formula factors for achieving these objectives.

We are sending copies of this report to the Secretary of Transportation; the Administrator, Federal Highway Administration; the heads of the state departments of transportation; and other interested parties. We will also make copies available to others on request.

If you or your staff have any questions about this report, please call me at (202) 512-2834. Major contributors to this report are listed in appendix XII.

John H. Anderson, Jr.
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Executive Summary

Purpose

Under the federal-aid highway program, billions of dollars are distributed to the states annually for the construction and repair of highways and related activities. The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) authorized approximately $120 billion for this program for fiscal years 1992 through 1997.[1] ISTEA charged GAO with reviewing the formula by which these highway funds are distributed to the states. As agreed with the Senate Committee on Environment and Public Works and the House Committee on Transportation and Infrastructure, this report discusses (1) the way the formula works and the relevancy of the data used for the formula and (2) the major funding objectives implicit in the formula and the implications of alternative formula factors for achieving these objectives.

Background

The federal-aid highway formula is a series of mathematical calculations that determines how federal highway funds are distributed among the states each year. The formula is established by law and has been periodically revised on the basis of additions and modifications to the program. As such, the formula has evolved over many decades as new programs and apportionment factors have been layered on top of existing rules. The result is a multistep process that encompasses several objectives, including preserving the highway infrastructure and attaining certain social goals, such as improved air quality.

The current formula, established by ISTEA, determines the distribution of funds for 13 funding categories. These categories include eight individual programs, the two largest of which are the National Highway System and the Surface Transportation Program, and five separate mechanisms for increasing individual states' funding in order to achieve certain goals for equity among the states. The calculations that determine the level of funding that each state receives for the various categories occur in a strict sequence. Each calculation can incorporate one or more factors. For example, during one step in the calculation, states gain funding to preserve their Interstate highways in accordance with their number of lane miles and vehicle miles traveled; in later steps, additional funding is provided to certain states under categories referred to as equity adjustments. The Congress created such adjustments primarily to (1) address the concerns of the states that contribute a greater share of highway user taxes than they receive in federal-aid highway funds and (2) provide each state with

[1]The full ISTEA authorization for all surface transportation programs, including mass transit, totals $155 billion for fiscal years 1992-97. In addition, ISTEA offers states and localities unprecedented opportunities to use federal highway and mass transit capital funds across different modes of transportation.

the same relative share of overall funding that it received in the past, recognizing the legislative funding compromises embedded in ISTEA. Taken together, all 13 steps of the formula process, corresponding to the 13 funding categories, result in an apportionment for each state.

Federal highway funding is supported through federal highway user taxes on, among other things, motor fuels, tires, and trucks. Revenues from these taxes are credited to the Highway Trust Fund's highway account. The Department of Transportation has estimated that in fiscal year 1996, these taxes will generate about $20.5 billion.

Results in Brief

The federal highway funding formula is a complex, iterative process that is based on an array of data and factors. To a significant extent, however, the underlying data and factors are not meaningful because the funding outcome is largely predetermined. This outcome occurs because the annual combined funding for the four largest highway programs (accounting for 70 percent of all the funding apportioned in fiscal year 1995) is fixed throughout the 6-year life of ISTEA, even though the funding for each individual program ostensibly derives from a separate calculation. Furthermore, some of the factors used in the formula's calculations for major programs are based, in part, on outdated information, are unresponsive to changing conditions, and often do not reflect the current extent or use of the nation's highway system. For example, the mileage of postal roads has been included as either a direct or underlying factor in the calculation since 1917, although this factor is not relevant to today's federal-aid highway network. Finally, equity adjustments ultimately increase many states' final level of funding.

GAO's review of the existing formula and its legislative underpinnings, as well as discussions with federal and state transportation officials, indicated that four overarching objectives are entwined in the current process for distributing highway funds:[2] (1) maintaining and improving the highway infrastructure; (2) returning the majority of the funds contributed to the Highway Trust Fund to the state where the revenue was generated; (3) advancing selected goals, such as improving air quality and conserving energy; and (4) safeguarding the states' historical funding shares. Since needs vary among the states, the extent to which these objectives are met also varies. Furthermore, while these four overarching objectives can to some extent be mutually supporting, they also conflict in some cases. For

[2]While the majority of funds are distributed to the states by formula, a few exceptions arise because of minor deductions, such as those for federal administrative expenses, and because of congressionally designated projects.

example, returning funds to the states where the revenue was generated may not be in harmony with an approach that seeks to safeguard the states' historical funding shares.

One or more of the overarching objectives could be the foundation for a new formula. For instance, the Congress could choose to emphasize just one objective, such as preserving the highway infrastructure—an objective aligned with those formula factors that reflect the use and extent of each state's highway network. Alternatively, two or more objectives and their associated factors could be blended so as to balance multiple goals. Regardless of which objective or combination of objectives is chosen, some states may receive more funds than they do under the existing formula, others less. The Congress could temper these effects by also incorporating the objective of safeguarding historical funding shares into the formula. This result could be accomplished through a component designed to place a cap on the maximum percentage of loss that any individual state would be expected to bear as a result of the changes.

Principal Findings

Formula Process Is Cumbersome, Yields a Largely Predetermined Outcome, and Partially Relies on Outdated and Irrelevant Factors

The formula for apportioning federal highway funds among the states derives from a complicated set of calculations involving consideration of 13 specific funding categories. In some cases, these complex calculations can prove to be an essentially meaningless exercise. One prime example is the treatment of the four major highway programs (the Interstate Maintenance, Bridge Replacement and Rehabilitation, National Highway System, and Surface Transportation Program), which together accounted for 70 percent of all the funds apportioned in fiscal year 1995. Separate calculations are used to determine each state's share of funding for each of these four programs. However, the outcome of each separate calculation is obscured because an adjustment is made for the Surface Transportation Program in each state's apportionment. The result of this adjustment is that each state's total share of funding for these four programs must equal the adjusted share of funding that the state received for the programs' predecessors in fiscal years 1987 through 1991.

A further concern with the existing formula is that irrelevant or outdated factors underlie the funding calculations for certain programs. GAO reported in 1986 that two of the factors that underlie certain key decisions

about apportionment—postal road mileage and land area—were irrelevant to either the extent or use of the modern highway system.[3] ISTEA restructured the major highway programs, but the states' funding for the two largest programs—the National Highway System and Surface Transportation Program, together accounting for 40 percent of all the apportioned funding—remains linked to these irrelevant factors.

Near the end of the apportionment process, most states' total funding is increased through various funding categories known as equity adjustments. In fiscal year 1995, 41 states and the District of Columbia received a total of $2.8 billion in funding for equity adjustments. This funding represented 16 percent of the approximately $18 billion apportioned to the states that year.

Alternatives for Distributing Federal Highway Funds

Reauthorization of the federal-aid highway program provides an opportunity to reassess the overarching objectives for the federal highway program's funds and the formula governing the distribution of the funds. Depending on which objectives and formula factors are selected and how they are weighted, significant amounts of funding could shift among the states. GAO analyzed the funding distributions that would result from certain alternative configurations of the formula. This analysis consisted of a hypothetical redistribution of the actual apportionments in fiscal year 1995 according to a series of formula options.[4] Such examples represent but a small sample of the myriad alternative formulas available to the Congress, but these hypothetical redistributions illustrate both the pervasiveness of funding shifts under a variety of formula options and the magnitude of gains and losses that each state would experience, depending on the selection of formula factors and weighting schemes. Under these redistribution alternatives,[5] in some cases, a state would lose 50 percent or more of its funds. While the losses would not always be so sizable and a number of states would gain funds under the redistributions, this result would be of little comfort to the states whose relative position would worsen.

[3]Highway Funding: Federal Distribution Formulas Should Be Changed (GAO/RCED-86-114, Mar. 31, 1986).

[4]Distributions in fiscal year 1995—the most recent year for which data were available at the time of our analysis—were used. However, different funding patterns may emerge on the basis of (1) the total distributions over the life of ISTEA or (2) the choice of a different year.

[5]The formula alternatives are keyed to the existing funding objectives, but new components—such as disbursements for highways as a percentage of the states' and localities' total disbursements—could be added to recognize differences in the states' fiscal capacity and costs.

Maintaining and Improving the Highway Infrastructure

Highway funds could be returned to the states on the basis of indicators of highway needs using actual needs or proxies for such needs. Direct measures of a system's needs, such as the miles of poor pavement or number of deficient bridges in a state, reflect the physical condition of the highway and bridge network and its performance. However, basing a formula on actual needs could foster a perverse incentive, since the more needs a state has, the more money it would receive. This situation could be remedied by using proxies for needs, such as ones reflecting how extensive a state's highway system is and how heavily it is used. Transportation officials, however, do not agree on the appropriate proxies for distributing highway funds. A previous GAO report and a study sponsored by the Federal Highway Administration both indicated that proxies, such as lane miles and vehicle miles traveled, are closely aligned with highway needs. Some transportation officials argue, however, that such proxies promote the use of highways and are at odds with energy conservation and clean-air goals. Alternative proxies less directly tied to highway use include population and population density. Population data, however, also have limitations. For example, while funds would be focused on congested urban areas, the use of population data to apportion highway funds would do little to accommodate the needs of rural areas.

Returning Funds to the Source

States' contributions to the Highway Trust Fund are not currently returned to the states in proportion to the amount collected, although this approach to distributing funds would be a relatively simple and direct method of fund distribution. Some state transportation officials support this approach because it would guarantee that all or a substantial amount of the revenues collected in their state would be returned to them. However, the return-to-origin approach would not be universally attractive, as a number of states would lose funds. In 1993, distributions of federal highway funds as a percentage of states' contributions to the Highway Trust Fund's highway account ranged from 83 percent for South Carolina to 707 percent for Hawaii. Some transportation officials observe that this redistribution of funds is to be expected, since federal highway taxes are collected to address national objectives, such as preserving the National Highway System, not merely to return the funds to their source. Furthermore, these officials question the need for a federal program if the states' Highway Trust Fund contributions are simply returned to them.

Using Set-Asides to Advance Selected Goals

A portion of highway funds could be set aside to advance specific goals before the remaining funds were distributed to the states. For example, incentive payments drawn from this set-aside could be used to provide bonuses to advance quality-of-life objectives, reward improvements in the

condition of the highway infrastructure above a certain defined floor, and advance highway safety. The payments could be simply added on to the states' apportionments or could be channeled to the states through a separate program category, such as the current authorization of approximately $1 billion annually for the Congestion Mitigation and Air Quality Improvement program.

Creating a Safeguard to Mitigate Against the Sudden Loss of Historical Funding Shares

Altering the existing formula could eliminate its current emphasis on historical funding shares and thus cause shifts in the amount of funds distributed to the states. In some cases, the funding shifts could be dramatic, warranting consideration of ways to reduce the magnitude of the losses. For instance, any new formula might include a component designed to place a cap on the maximum percentage of loss that any individual state would be expected to bear as a result of changes in the formula. This cap could be either permanent or established for a set period during the transition to a new funding amount.

The funds needed to make such an adjustment could derive from a variety of sources. As an example, the funds devoted to existing equity adjustments in fiscal year 1995—$2.8 billion—would more than offset the states' cumulative losses under all of the sample formula scenarios that GAO analyzed. As another possibility, the funding authorized by the Congress for specific demonstration projects, which is not distributed by formula, could in the future be used to offset the states' losses resulting from a formula change instead of being used for additional authorizations for specific projects. In fiscal year 1995, funds for demonstration projects distributed to the states under ISTEA totaled approximately $1 billion.

Recommendations

Because the selection of a highway apportionment formula is a judgment for the Congress, GAO is making no specific recommendations.

Agency Comments

GAO provided copies of a draft of this report to the Department of Transportation for its review and comment. GAO met with Department officials—including the chiefs of the Program Analysis Division, the Policy Evaluation Branch, and the Highway Funding and Motor Fuels Division of the Federal Highway Administration—who provided comments. The Department agreed with the information presented and observations made throughout the report and considered it a well-prepared, balanced report. Technical comments provided by the Department have been incorporated where appropriate.

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Abbreviations

AASHTO	American Association of State Highway and Transportation Officials
CMAQ	Congestion Mitigation and Air Quality program
DOT	Department of Transportation
FHWA	Federal Highway Administration
ISTEA	Intermodal Surface Transportation Efficiency Act of 1991
LOE	level of effort
NHS	National Highway System
STP	Surface Transportation Program

Introduction

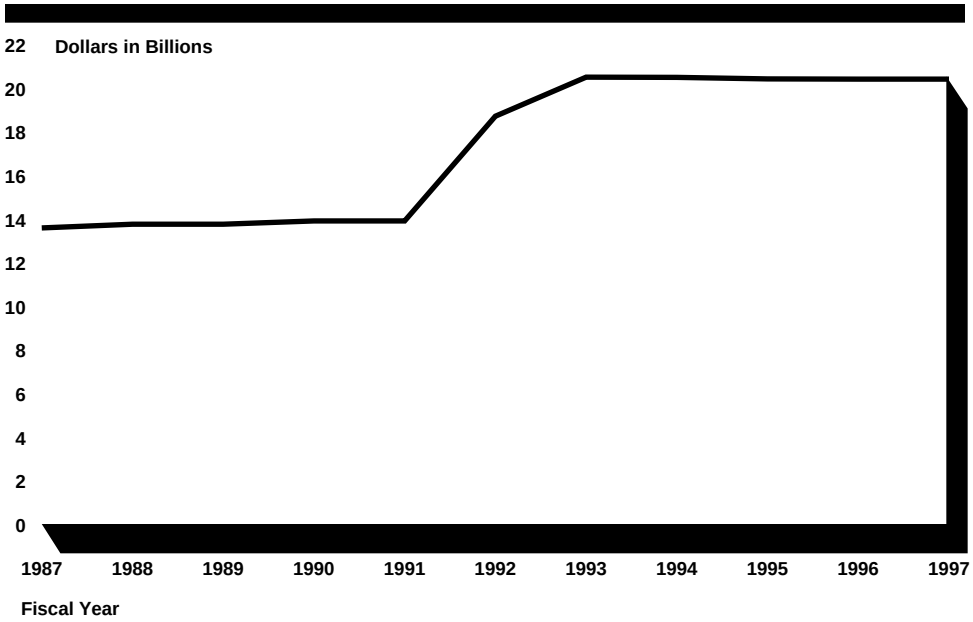
The existing federal-aid highway formula is the vehicle for distributing billions of dollars annually for highway construction and repair and related activities to the 50 states, the District of Columbia, and Puerto Rico (hereafter called the states, unless otherwise noted). Since the mid-1980s, a number of organizations (including GAO) have suggested fundamental changes in the formula for apportioning these federal-aid funds because of perceived problems with the formula, such as its reliance, at least in part, on outdated data. Section 1098 of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) tasked GAO with reviewing the process for distributing highway funds to the states. Chapter 2 of this report evaluates the current apportionment formula. Chapter 3 discusses a process by which the Congress may reconsider the formula during the next reauthorization of the federal-aid highway program and comments on the advantages and disadvantages of several alternative formula options.

ISTEA Authorized Unprecedented Funding

ISTEA authorized funding to sustain and enhance the nation's surface transportation infrastructure. The act provided an unprecedented authorization of $122 billion for highways, bridges, and related activities for fiscal years 1992-97.[1] Figure 1.1 shows the annual authorization for federal highway funding since 1987 and demonstrates the dramatic increases effected under ISTEA.

[1]The full ISTEA authorization for all surface transportation programs, including mass transit, totals $155 billion for fiscal years 1992-97. In addition,ISTEA offers states and localities unprecedented opportunities to use federal highway and mass transit capital funds across different modes of transportation.

Figure 1.1: Highway Authorization Levels, Fiscal Years 1987-97



Note: Authorization levels refer to authorizations originally provided under title I of the Surface Transportation and Uniform Relocation Authorization Act of 1987 and the Intermodal Surface Transportation Efficiency Act of 1991. Section 1003(c) of ISTEA, however, placed a $98.6 billion cap on highway authorizations from fiscal years 1992 through 1996, to comply with the 1990 budget resolution. This cap, according to officials of the Federal Highway Administration, will result in a 13-percent reduction in the original authorization level for fiscal year 1996.

Source: Federal Highway Administration.

Except for a few minor deductions, such as those for federal administrative expenses, federal highway funds are provided to the states through the Federal Highway Administration (FHWA), which is part of the U.S. Department of Transportation (DOT). The money is distributed to the states through various formula calculations and, to a lesser extent, through congressionally designated projects.

ISTEA's authorization is funded primarily through federal highway user taxes such as those on motor fuels (gasoline, gasohol, and diesel), tires, and trucks. Funds from these sources are collected from users and credited to the Highway Trust Fund for highway and mass transit projects or related activities. The fund is divided into a highway account and a

mass transit account.[2] DOT forecasts that the income to the highway account will total $20.5 billion in fiscal year 1996.

ISTEA Revamped the Federal-Aid Highway Systems

Before ISTEA, the federal-aid systems—designated routes on which federal funds may be used—were at the core of the federal-aid highway program. Designation of a road as part of a federal-aid system does not mean the road is owned, operated, or maintained by the federal government. The designation is simply the first step in establishing the eligibility of selected state and local roads for federal assistance. Previously, federal aid was apportioned to Interstate, primary, secondary, and urban highways.

ISTEA, however, discarded this approach by creating only two systems: the National Highway System (NHS) and the Interstate System, which is a component of the NHS. The NHS is the centerpiece of ISTEA, and the system is expected to be the major focus for the federal-aid highway program into the 21st century. In a speech on December 9, 1993, the Administrator of FHWA noted that since the Interstate was begun in 1956, the nation's population has grown and shifted, the economy has changed, and needs are different. To serve these needs—to extend the benefits of the Interstate system to areas not served directly by it—the NHS was conceived as a way of focusing federal resources on the nation's most important highways. DOT, working cooperatively with state and local officials as well as the private sector, proposed to the Congress in December 1993 an NHS network of about 159,000 miles. This network is about 17 percent of the approximately 950,000-mile federal-aid network and includes only 4 percent of the approximately 4 million miles of public roads. However, this system would handle about 40 percent of all vehicle miles traveled[3] and accommodate over 70 percent of all commercial truck traffic.

For other roads eligible for federal assistance, a program with the characteristics of a block grant, the Surface Transportation Program (STP), provides financial assistance. In addition, ISTEA continued authorizations for a separate Bridge Replacement and Rehabilitation Program and Interstate Maintenance Program and an array of other separate highway program initiatives as well as funding categories addressing various equity

[2]Throughout this report, references to the Highway Trust Fund refer only to the highway account, unless otherwise noted.

[3]Vehicle miles traveled measures traffic by the number of miles traveled by automobiles or other classes of vehicles during a specific period of time.

issues, such as each state's share of funding as compared with what it received in past years.[4]

ISTEA Expanded the Goals of Surface Transportation

ISTEA broadened the overall goals of surface transportation. Previously, the federal-aid highway program had focused on completing and preserving the Interstate Highway system and on maintaining other federal-aid highways as well as bridges eligible for federal funds. While these goals remain a part of the overall surface transportation program, ISTEA broadened the goals and included new programs, planning processes, and management systems that are intended to help ensure that the states' transportation plans are intermodal (that is, coordinate various modes of transportation), environmentally sound, and energy efficient. For example, the Congestion Mitigation and Air Quality Improvement Program (CMAQ) directs funds to transportation projects in clean air nonattainment areas—areas that have not achieved federal standards for air quality. ISTEA also provides for increased emphasis on mobility for the elderly, disabled, and economically disadvantaged.

ISTEA expanded the use of equity adjustments for the apportionment of federal-aid funds among the states. For example, it modified minimum allocation funding.[5] It also created "hold harmless" funding, which establishes the state's share of overall federal highway apportionments. These adjustments, which are more fully explained in chapter 2, are generally used to increase the states' return on their contributions to the Highway Trust Fund.

ISTEA also embodied quality-of-life objectives, stating that the nation's transportation system should be economically efficient and environmentally sound, provide the foundation for the nation to compete in the global economy, and move people and goods in an energy-efficient manner. Additionally, ISTEA's emphasis is intermodal—providing links in a seamless intermodal network that will enhance economic growth, international competitiveness, and national security. The NHS is expected to reflect this emphasis.

[4]The use of the label "equity" is based on its traditional usage in the debate on the highway formula. It does not reflect any judgment on our part that these provisions increase the equity or fairness of the formula's allocations. Since this report does not employ any specific criteria, we make no attempt here to gauge the performance of the current formula and the alternatives on equity.

[5]Minimum allocation funding guarantees each state an amount so that its apportionments and allocations for selected programs in the prior year equal 90-percent of the percentage of the state's estimated contributions to the Highway Account of the Highway Trust Fund.

Objectives, Scope, and Methodology

Section 1098 of ISTEA tasked us with reviewing the process for distributing highway funds to the states. In discussion with the congressional committees identified in section 1098, we agreed to address (1) the way the formula works and the relevancy of the data used for the formula and (2) the major funding objectives implicit in the formula and the implications of alternative formula factors for achieving these objectives.

To understand the evolution of the current formula and assist in clarifying the process by which alternative formula options might be crafted, we reviewed the history of the federal-aid highway programs. Key documents included Development and Evaluation of Alternative Factors and Formulas, published by Jack Faucett Associates in December 1986; Review and Analysis of Federal-Aid Apportionment Factors, a 1969 paper prepared in FHWA's Policy Planning Division; Alternative Financial Formulas for Allocating Federal Highway Funds, a 1990 report by the American Association of State Highway and Transportation Officials (AASHTO); Moving Ahead—1991 Surface Transportation Legislation, a 1991 report by the congressional Office of Technology Assessment; and a report we published in March 1986.[6]

To understand how the current formula works and the ramifications of possible changes, we reviewed an FHWA publication, Financing Federal-Aid Highways, published in 1992, and discussed the formula with FHWA's Office of Fiscal Services, which is responsible for making formula apportionments to the states. We interviewed officials from FHWA's Legislation and Strategic Planning Division, Office of Highway Information Management, and Bridge Division. We also solicited the states' views on the current formula and on future apportionment issues in meetings with state transportation officials from 34 states and the District of Columbia at regional or national transportation meetings in Atlanta, Chicago, and Detroit. We also held meetings with state transportation officials in our Washington, D.C., offices. In addition, we met with representatives from various transportation organizations, including the American Association of State Highway and Transportation Officials and the Surface Transportation Policy Project.

While we focused our review on existing, overarching highway objectives, new components could be added to recognize the states' capacity to fund highway needs from state resources, the states' level of effort in meeting their own needs, and geographic differences in the cost of maintaining

[6]Highway Funding: Federal Distribution Formulas Should Be Changed (GAO/RCED-86-114, Mar. 31, 1986).

existing highway networks. Although similar factors have been applied in other programs, they have not been applied to highway programs in the past. But FHWA did provide a report to the Congress in 1994 that addresses measures for assessing how much of their available resources the states or local areas devote to surface transportation.[7]

Finally, working with FHWA's Office of Policy Development, we analyzed the effect of a series of hypothetical changes to the current formula. This analysis was based on comparing the actual fiscal year 1995 funding that the states received with what they would have received under the various alternatives. In this analysis, the states' contributions to the Highway Trust Fund were based on estimates for fiscal year 1993—the most recent year for which data were available at the time of our analysis.

We performed this review in accordance with generally accepted government auditing standards. We conducted our review from January 1994 through October 1995.

[7]Report on State Level of Effort, required by section 6013 of the Intermodal Surface Transportation Efficiency Act of 1991 (P.L.102-240), Mar. 1994.

The Current Apportionment Formula Is a Complex Process With a Largely Predetermined Outcome

Although federal-aid highway funds are apportioned among the states in 13 funding categories, four programs—Interstate Maintenance, Bridge Replacement and Rehabilitation, the NHS, and the STP—accounted for 70 percent of the funds apportioned in fiscal year 1995. While each state's share of funds is calculated annually for each of these separate programs, these separate calculations are essentially meaningless since the total funding for the four programs is fixed over the 6-year authorization period for ISTEA. Consequently, the total funding for the four programs does not respond to changing conditions in a state, such as increased highway use. Furthermore, the factors underlying the distribution of highway funds to the states, such as land area and postal mileage, are generally outdated and often do not reflect the extent or use of the nation's highway system. Our March 1986 report[1] and a study commissioned by FHWA from a contractor[2] noted that alternative factors, such as lane miles, are more closely aligned with highway needs.

The Congress has used funding adjustments to improve equity among the states. These equity adjustments, which occur towards the end of the 13-step apportionment process, increase the total amount of funds for eligible states. In fiscal year 1995, the equity funding categories increased the amount of federal highway funds apportioned to 41 states and the District of Columbia. The amount of funding that the majority of states received through the highway formula process was therefore ultimately increased by these equity adjustments.

The Congress can further adjust the federal highway funds a state receives by authorizing specific projects, commonly referred to as demonstration projects. Funding for these demonstration projects is not distributed by formula. Rather, the Congress requires that particular projects receive a specified amount of funding. In ISTEA, for instance, the Congress provided $6.2 billion in funds for over 500 demonstration projects over the 6-year authorization period.

[1]GAO/RCED-86-114.

[2]Development and Evaluation of Alternative Factors and Formulas, Jack Faucett Associates, Dec. 1986.

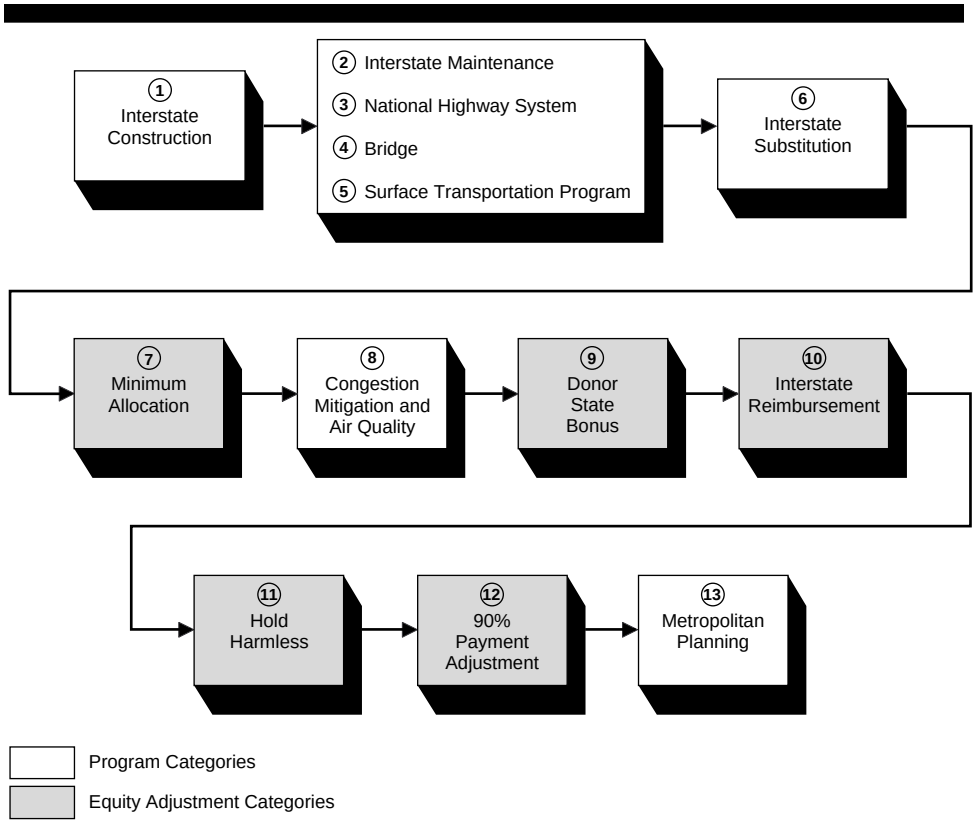
The Distribution of Federal-Aid Funds Among the States Is a Complex Process

The formula for apportioning federal-aid highway funds established in ISTEA is a complex arithmetic tool used by FHWA to determine each state's share of the funds. On the basis of the formula, funding is provided for eight programs, including the NHS and STP, and for five separate mechanisms to raise individual states' funding levels to achieve certain goals for equity among the states. The calculations that determine the level of funding that each state receives for these various categories occur in a strict sequence, as illustrated in figure 2.1. During the first step of the calculation, for example, funding is provided to complete the construction of the Interstate Highway System. Funding for the other program categories is also based on separate calculations. However, as depicted in figure 2.1 and discussed later in this report, the funding for four programs—Interstate Maintenance, Bridge Replacement and Rehabilitation, the NHS, and the STP—is interdependent since a state's total share of funding for all four programs is fixed.

Later steps in the formula's calculation provide additional funding to certain states; these funding categories are legislatively designated as equity adjustments. Equity adjustments generally address the concerns of states that contribute a greater share of highway user taxes than they receive in federal-aid highway funds. Equity adjustments also provide each state with the same relative share of overall funding that it received in the past.[3] In fiscal year 1995, these equity adjustments represented 16 percent of the total funds apportioned. Figure 2.1 outlines the sequence of the equity adjustments and program funding categories (app. I provides additional details). However, DOT has proposed changes to the existing equity adjustments and program categories. The changes, proposed in DOT's fiscal year 1996 budget justification, were preceded by the statement that if less federal money will be invested in transportation, state and local governments need to have greater authority and flexibility to decide which projects are most important. DOT has stated that it will provide an authorization proposal for such changes at an appropriate time.

[3]One funding category designated as an equity adjustment—Reimbursement for Interstate Segments—reimburses the states for the cost of constructing segments of the Interstate System completed in the early days of the Interstate Construction Program. Funding in this category is scheduled to begin in fiscal year 1996.

Figure 2.1: Sequence of Calculations to Determine States' Highway Apportionments



While apportionments for highway programs are based on individual calculations, for some programs the dollar amount apportioned by formula has little practical meaning because the states have substantial flexibility to transfer funds from one program category to another. For example, with the Secretary of Transportation's approval, up to 100 percent of a state's apportionment for the Interstate Maintenance and NHS programs can be transferred to the state's surface transportation program. In addition, ISTEA's flexible funding provisions have allowed decisionmakers at the state and regional level to decide for themselves whether to allocate transportation funds to highway or transit projects. ISTEA provided for a potential $70 billion in such flexible funding for transit or highway projects over 6 years. According to DOT's preliminary data through the end of fiscal year 1995, $2,160.6 million in highway funds had been transferred to transit projects and $2.2 million in transit funds had gone to highway projects.

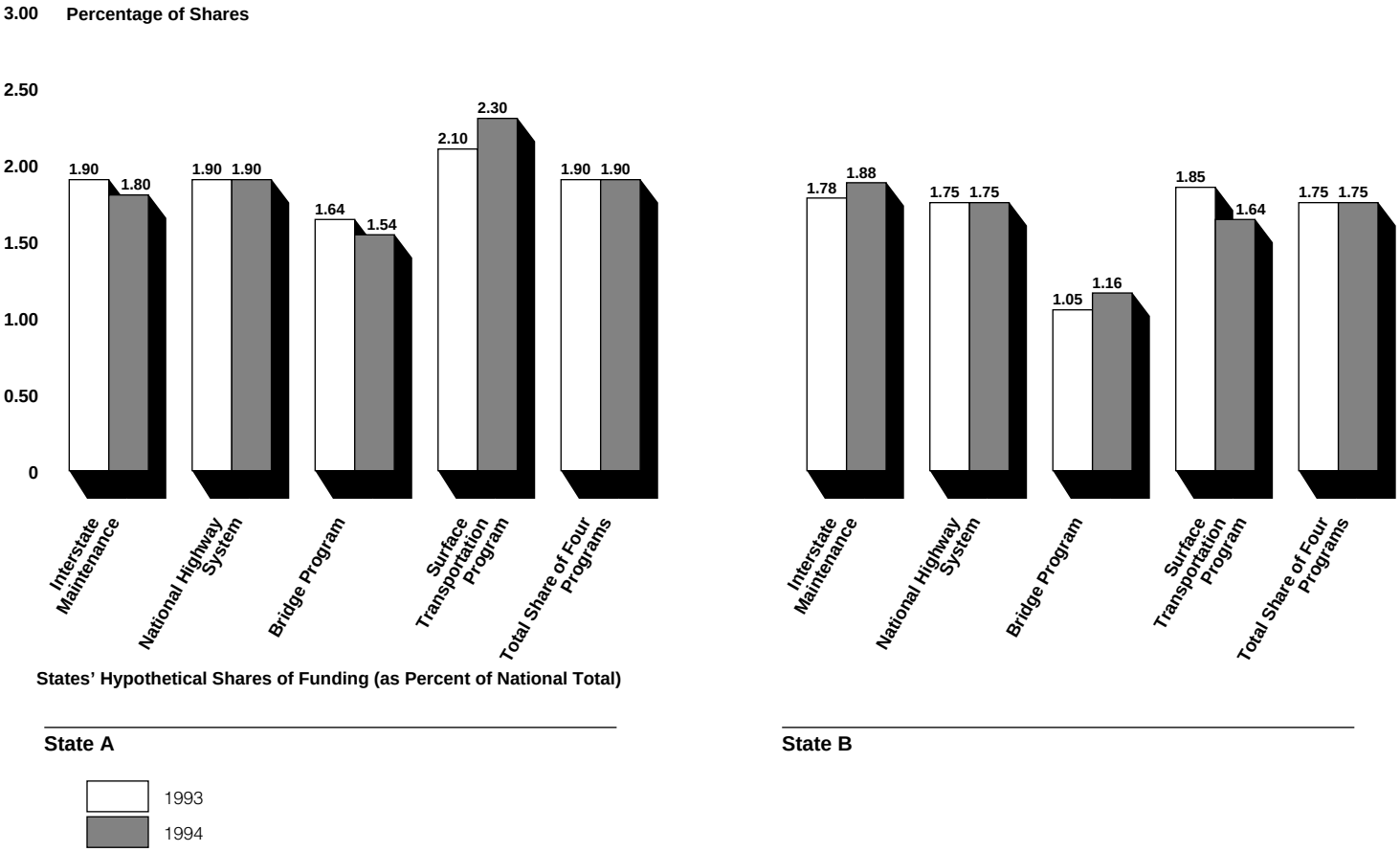
The Total Funding Share for Major Programs Is Fixed

In fiscal year 1995, 70 percent of the funding under the formula went to the four largest programs—the Interstate Maintenance Program, Bridge Program, NHS, and STP. Separate calculations determine each state's share of funds for the Interstate Maintenance Program, Bridge Program, and NHS. Nonetheless, these program-specific calculations are essentially meaningless because each state's ultimate share of funding for all four programs is fixed. With a few minor adjustments, these fixed shares derive from the shares of funds that the states received, on average, during fiscal years 1987-91 for the predecessor programs that ISTEA consolidated into these four new programs. As a result, the states' funding shares for the four major programs are divorced from current conditions, as the states' current and future shares of total funding for these programs must equal the adjusted historical shares.

In practice, the states' funding shares for these programs remain fixed over time because the final program included in the four-part calculation—the STP—behaves as an adjuster. The states' funding levels for the other three programs—the Interstate Maintenance Program, Bridge Program, and NHS—are independently calculated on the basis of factors specific to each program. After those calculations are completed, however, each state's STP funding is determined by simply taking the difference between (1) the state's predetermined share of the total funding available for the four programs and (2) the amount the state is actually scheduled to receive for the three independently calculated programs. This means that any annual increase or decrease in a state's funding for the Interstate Maintenance Program, Bridge Program, or NHS must be offset by a corresponding, reciprocal change in the STP funds the state receives for that same year.

Figure 2.2 illustrates this zero-sum game through a hypothetical example involving 2 years and two states. In the example, both State A and State B experience shifts in their apportioned funding between fiscal years 1993 and 1994. State A loses funds for the Interstate Maintenance and Bridge programs, while State B gains funds in both of these categories. However, for both states these shifts are rendered irrelevant because they are offset by a corresponding change in the states' STP funding levels. As a result, State A has 1.9 percent of the total funding available for the four programs in both fiscal years, despite its losses in funding for the Interstate Maintenance and Bridge programs. State B is locked into a 1.75-percent share in both years, despite its gains in funding for the Interstate Maintenance and Bridge programs.

Figure 2.2: Hypothetical Example Illustrating That the States' Total Shares of Funding for the Four Largest Programs Is Fixed



Funding Is Determined in Part by Irrelevant or Outdated Factors

Not only is the total funding for the four major programs fixed over the life of ISTEA, but the funding for the two largest programs—the NHS and STP, together accounting for 40 percent of all the funding apportioned in fiscal year 1995—is based, in part, on underlying factors that are largely irrelevant to the highway system's needs. As we reported in March 1986,[4] the factors that influenced the historical targets for funding in the federal-aid highway program—land area, postal mileage, and population—are not closely related to the highway system's needs. Furthermore, our March 1986 report and an FHWA-sponsored study

[4]GAO/RCED-86-114.

indicated that alternative factors, such as lane miles and annual contributions to the Highway Trust Fund, are more closely aligned with highway needs.

Certain Factors Used to Apportion Highway Funds Are Irrelevant or Outdated

In our March 1986 report, we found that the factors used to apportion certain highway funds—land area, postal mileage, and population—were not closely related to the highway system. At the time of our report, the data on which these factors were based were already between 40 and 70 years old. Specifically, the report detailed the following problems with the factors:

- A state's land area was originally included as a factor in the distribution formula in 1916. Land area was thought to provide a balance for the factor based on population and to reflect a state's future highway needs. However, this approach resulted in large but sparsely populated states receiving larger apportionments than they otherwise would have. In addition, land area no longer bears a close relationship to future highway needs, namely the need for new construction, since the highway system is no longer growing rapidly throughout the country.
- Postal mileage was included as a formula factor in 1916 to provide a constitutional justification for federal involvement in highways (the power to establish post offices and post roads). By 1919, changes to the highway legislation had ended the need for this justification. In addition, since postal mileage is computed on the basis of the distance traveled both on and off the federal-aid highway system, it is unrelated to either the extent of the federal-aid highway network or its use.
- Population figures for formula use were derived every 10 years from the census. As a result, changes in the states' populations were accounted for only at 10-year intervals. This problem has been exacerbated under ISTEA, since the population data underlying the states' historical shares for ISTEA's major funding calculations are, in part, based on 1980 population data, not the more current 1990 data.

In our March 1986 report, we also identified those factors previously suggested to the Congress as consistent with basic federal highway programs and for which data were available. Our results supported lane miles as a direct measure of the size of the road network and thus as a reflection of the extent of the system to be preserved. In addition, we found that vehicle miles traveled and motor fuel consumption reflected the extent of highway use. We recognized that each of these factors has its own advantages and disadvantages in establishing a formula. (The

advantages and disadvantages of certain formula factors are addressed in ch. 3.)

Finally, we recognized that changing the factors used in certain highway apportionment formulas would result in some states' receiving more or less funds than they did under the then-current formulas. We suggested that to lessen these impacts, a transition period could be provided during which the full effect of the formulas would be gradually introduced. However, the Congress elected not to change the basic formula structure.

Linkages Exist Between Apportionment Factors and Highway Needs

In December 1986, Jack Faucett Associates, a consultant for FHWA, issued a report evaluating alternative apportionment formulas for highway funds that included correlation analysis.[5] Using this tool, the report showed, for example, that a state with a large number of vehicle miles traveled on the Interstate would also have a high requirement for repairs to the Interstate. Similarly, the states that contributed large amounts of revenue to the Highway Trust Fund, reflecting substantial use of motor fuels, were also shown to require more repairs of the Interstate.

The correlation analysis was reported in terms of values between zero and one.[6] The closer the value is to 1, the closer the correlation between the factor and the need for repairs to the Interstate. Table 2.1 shows the correlation between selected apportionment factors and the states' need for Interstate repairs, as reported.

[5]Correlation analysis produces a statistic, called the correlation coefficient, that measures the extent to which the values of two variables are associated with each other.

[6]None of the factors showed a negative correlation with the need for repairs to the Interstate.

Table 2.1: Correlation Between Selected Apportionment Factors and Repair Needs on Interstate Highways

Factor	Correlation
Interstate vehicle miles traveled	0.913
Highway Trust Fund contributions (annual)	0.900
Interstate lane mileage	0.883
Highway Trust Fund contributions (historical)	0.870
Total motor vehicle registrations	0.861
Population's weighted income	0.780
Total population	0.778
Interstate mileage	0.776
Urban population	0.766
Rural population	0.427
Daily mean temperature	0.116
Annual snowfall	0.102
Per capita personal income	0.038
Annual precipitation	0.015

Source: Jack Faucett Associates.

As table 2.1 indicates, the highest correlations—at least 0.900—existed for vehicle miles traveled and annual contributions to the Highway Trust Fund. Interstate lane mileage, contributions to the Highway Trust Fund over time, and total motor vehicle registrations also showed fairly strong correlations with the need to repair the Interstate. This was not the case, however, for weather-related variables or per capita income. Furthermore, the strong correlations between certain of these factors and major needs for repair diminished for federal-aid highways other than the Interstate.[7]

Equity Adjustments Benefit Most States

Equity adjustments were designed to address the concerns of the states that contribute a greater share of highway user taxes than they receive in federal-aid highway funds. In addition, another adjustment provides each state with the same relative share of overall funding that it received in the past.

The three equity adjustment categories described below—Minimum Allocation, 90 Percent of Payments Adjustment, and Donor State Bonus—address the concerns of those states that contribute more in highway user taxes than they receive in federal-aid highway funds:

[7]Highway repair needs for other major highways showed correlations of 0.741 for contributions to the Highway Trust Fund in 1984, compared with 0.9 for the Interstate. The correlations became weaker for highways that were not considered major and were located in rural areas.

- The Minimum Allocation guarantees a state an amount such that its percentage of the total apportionments and prior-year allocations from certain highway funding categories is not less than 90 percent of the state's estimated percentage of contributions to the Highway Trust Fund's Highway Account.[8]
- The 90 Percent of Payments Adjustment ensures a state that selected apportionments for the fiscal year and allocations in the previous fiscal year will equal at least 90 percent of its contributions to the Highway Trust Fund's Highway Account.
- The Donor State Bonus, as implemented by FHWA, compares each state's projected contributions to the Highway Trust Fund in the fiscal year with the apportionments that the state will receive in that fiscal year. Starting with the state having the lowest return (apportionments compared with contributions), each state is brought up to the level of return for those states with the next highest level of return. This process is repeated successively for each state until the funds authorized for this funding category in that fiscal year are exhausted.

Finally, a fourth adjustment category, referred to as Hold Harmless, addresses a different objective—preserving the states' historical funding share, recognizing the legislative compromises embedded in ISTEA. ISTEA established a percentage for selected apportionments and prior-year allocations that each state must receive annually. For example, this legislatively prescribed funding percentage is 1.74 for Alabama, 0.41 for Delaware, 0.69 for Idaho, 3.72 for Illinois, and 4.36 for Massachusetts. These funding percentage shares can result in a state's receiving an addition to the regular apportionments, so that the state's total apportionment will equal the established percentage.

As figure 2.1 showed, the calculations that determine the level of funding that each state receives for the various funding categories occur in a strict sequence. All of the equity adjustments come into play late in the sequential calculation.[9] Therefore, these adjustments essentially increase the funding calculated for a state up to that point. For example, if a state is hypothetically entitled to a total apportionment of $500 million on the basis of the Hold Harmless provision, it will receive that amount

[8]In determining whether a state qualifies for a Minimum Allocation adjustment, the funds considered in the calculation are those for grants for the Interstate Construction Program, Interstate Maintenance Program, Interstate Substitution Program, NHS, STP, Bridge Program, Scenic Byways Program, and Safety Belt and Motorcycle Helmet Program and the allocations from any of these programs.

[9]A fifth equity funding category—Reimbursement for Interstate Segments—is not described here, since reimbursement for the costs that the states incurred in constructing the Interstate System without federal assistance will not begin until fiscal year 1996.

regardless of whether all the calculations up to that point yielded a total of $200 million, $300 million, or $400 million.

In fiscal year 1995, equity adjustments accounted for $2.8 billion (16 percent) of the approximately $18 billion distributed to the states. Only nine states—Colorado, Connecticut, Hawaii, Maryland, Pennsylvania, Rhode Island, South Carolina, Virginia, and Washington—and Puerto Rico did not receive funding through equity adjustments in fiscal year 1995, as highway apportionments for each of these jurisdictions met all of ISTEA's stated equity criteria on the basis of the funding for the programs alone. For the other 41 states and the District of Columbia, the total amount of federal highway funding apportioned in fiscal year 1995 was ultimately increased by equity adjustments.

Funding for Demonstration Projects Is Not Governed by a Formula

Funding for demonstration projects is distinct from apportionments to the states in that the authorized funding for such projects is not distributed by formula. Rather, the Congress directs how certain funds are to be distributed by requiring that particular projects receive a specified amount of funding. Funding for such projects is authorized by the congressional committees with jurisdiction over highway appropriations and authorizations.

The amount of federal funds authorized for demonstration projects has grown since 1982. ISTEA alone authorized over $6.2 billion over 6 years for 539 demonstration projects. While some demonstration projects address critical transportation problems and can be considered nationally significant, authorizing a large number of such projects could prove troublesome. As we noted in a 1991 report[10] and testimony in 1993 and 1995[11] before the Subcommittee on Transportation, House Committee on Appropriations, demonstration projects often cost more than expected. In our 1991 report, we found that for 66 projects reviewed, the federal funding and state matching funds together accounted for only 37 percent of the projects' total anticipated costs. Future finances could be drained if extra federal funds are needed to cover the cost of completing the projects. Demonstration projects can also yield a low payoff for a variety of reasons, including the fact that they frequently are not aligned with the

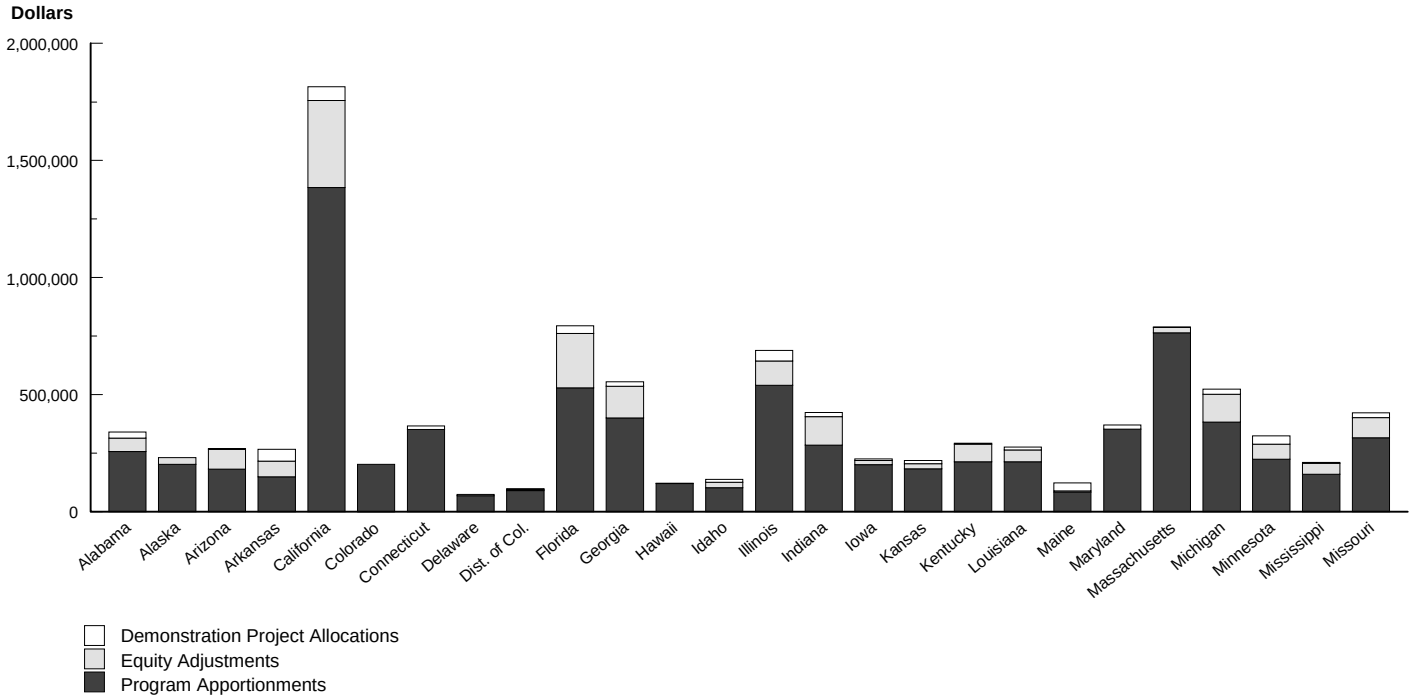
[10]Highway Demonstration Projects: Improved Selection and Funding Controls Are Needed (GAO/RCED-91-146, May 28, 1991).

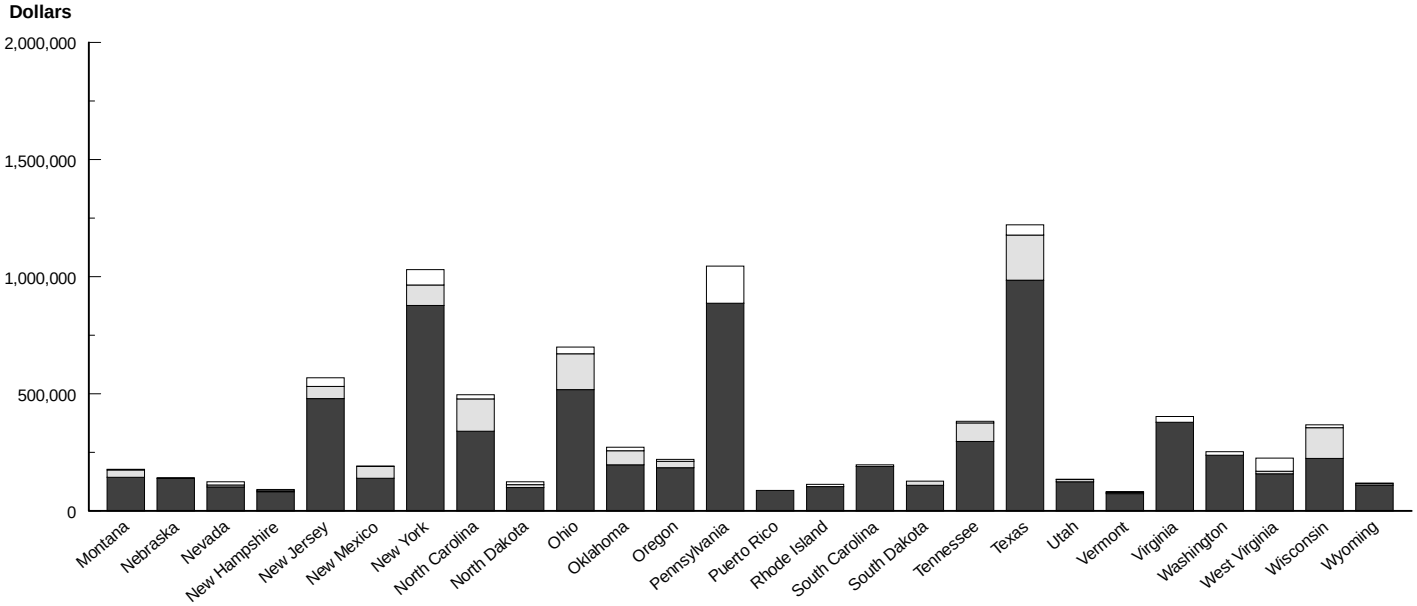
[11]Surface Transportation: Funding Limitations and Barriers to Cross-Modal Decision Making (GAO/T-RCED-93-25, Mar. 31, 1993) and Surface Transportation: Reorganization, Program Restructuring, and Budget Issues (GAO/T-RCED-95-103, Feb. 13, 1995).

states' transportation priorities, can languish in the early stages of project development, or may never get started at all. For instance, in our 1991 report, we found that for 22 of the 66 projects reviewed, none of the authorized funds ($92 million) had been obligated, even though the projects had been authorized 4 years earlier.

Figure 2.3 depicts the funding to each state for highway programs, and, if applicable, any modifications to that funding realized through either equity adjustments or funding for demonstration projects provided under ISTEA in fiscal year 1995.

Figure 2.3: Highway Funds Provided to States for Programs, Equity Adjustments, and Demonstration Projects in Fiscal Year 1995

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South Dakota
Tennessee
Texas
Utah
Vermont
Virginia
Washington
West Virginia
Wisconsin
Wyoming

Conclusions

ISTEA authorized approximately $120 billion for highway construction and repair and related activities over 6 years, emphasized quality-of-life and intermodal objectives, revamped major highway programs, and offered states and localities unprecedented opportunities to use federal highway and mass transit capital funds across modal lines. But the factors underlying the distribution of funds for two of the largest highway programs—the NHS and STP—essentially remained the same, since each state's funding was to be based on the historical share of funds the state received from major programs before ISTEA was enacted. Locking in the status quo on the basis of historical funding averages has also been supported through two other funding avenues. First, a state's total funding share for the four largest programs is fixed over the life of ISTEA. Second, the Hold Harmless equity adjustment category serves to raise the states' ultimate level of annual funding to a predetermined percentage share of the total funding available. These percentage figures, which are spelled out in ISTEA and remain fixed for the act's duration, were derived primarily from historical averages rather than current circumstances.

For major highway programs, the data underlying the distribution of highway funds to the states are generally outdated, unresponsive to changing conditions, and often not reflective of the nation's highway system or its usage. Furthermore, as mentioned above, because the percentage share is fixed for the four largest programs, any updated data that are factored into the calculation for two of these programs are negated.

Alternatives for Distributing Federal Highway Funds

On the basis of our analysis and discussions with federal and state transportation officials, ISTEA's myriad objectives for highways can be placed into four overarching categories: (1) maintaining and improving the highway infrastructure, (2) returning the majority of funds to the state where the revenue was generated, (3) fostering social benefits, and (4) safeguarding the states' historical funding shares. The first two objectives translate into formula components that are at the core of the distribution process. Addressing the states' highway needs, such as the miles of highway in need of repair and the deterioration of the highway associated with traffic loads, is a primary objective in the distribution of highway funds. The second component, calling for a return of funds to the state in which they were generated, supports a congressional objective of having the states receive a substantial return on the federal fuel and other tax receipts that they generate and contribute to the Highway Trust Fund.[1]

The third and fourth objectives discussed in this chapter could be met through formula components that would distribute funds set aside from the regular apportionment process. A portion of formula funding could be devoted to social goals by, for example, directing a portion of funding to selected purposes such as improving air quality and conserving energy. Finally, a share of funding could be set aside and used to protect the states' historical funding shares. The formula objectives may be used singly or in combination and may further be targeted to specific program categories—such as the NHS—that are deemed to merit special attention.

While we focus in this report on the existing, overarching highway objectives, new components could be added to recognize the states' capacity to fund highway needs from state resources, the states' level of effort (LOE) in meeting their own needs, and geographic differences in the cost of maintaining existing highway networks. Although similar factors have been applied in other programs, they have not been applied to highway programs in the past. But FHWA did provide a report to the Congress in 1994 that addresses measures for assessing how much of their available resources the states or local areas devote to surface transportation.[2] (App. III provides additional details on FHWA's study.)

The task of revising the formula for distributing highway funds will be difficult because needs vary across the country and objectives conflict

[1]As discussed later in this chapter, there is some overlap between these first two objectives, as states' fuel tax receipts also tend to be a strong measure of highway needs.

[2]Report on State Level of Effort, required by section 6013 of the Intermodal Surface Transportation Efficiency Act of 1991 (P.L.102-240) Mar. 1994.

among themselves. For example, relief of congestion is more pressing in urban areas of the country, whereas connecting rural areas is more pressing in sparsely populated areas. The analysis presented in this report is intended to provide the Congress with formula alternatives that reflect the key objectives governing the current federal-aid highway formula.

Component 1: Distribution of Funds Based on Indicators of Need

Many individual factors making up a formula are capable of supporting the principle of distributing funds on the basis of the states' relative needs. One possibility would be to use factors that relate to the states' actual needs, such as the states' miles of poor pavement or number of deficient bridges. In this approach, the states with the poorest highway conditions would be granted a larger share of the funds than the states with better highway and bridge conditions.

However, a formula based on direct measures of need could prove problematic. The use of actual needs can foster a perverse incentive by potentially encouraging the states to permit their highway infrastructure to worsen in order to capture a greater share of federal highway funds.[3] Moreover, this approach would reward the states with the poorest highway and bridge conditions while penalizing the states that have maintained these structures. In addition, the condition of highways and bridges varies considerably among the states. For instance, as of December 1993 the percentage of deficient bridges on the NHS ranged from a low of 8 percent in North Dakota to a high of 64 percent in Massachusetts.

The disadvantages of basing a formula on actual needs can be remedied through the use of proxies of need, such as those reflecting the extent or usage of a highway system, or more highway-neutral measures such as population. Such proxies have the advantage of being relatively objective and neutral. However, there is debate among the states and other transportation experts on what factors can appropriately serve as proxies for distributing highway funds. Some insight can be gained from the Faucett study performed for FHWA in 1986 and discussed in chapter 2. This study indicated a strong correlation, particularly for repairs of the Interstate, between highway needs and lane miles and vehicle miles

[3]To some extent, the problem of the perverse incentive can be dealt with by limiting the time during which a state can get more money because a particular highway or bridge is in poor condition. For instance, if after 5 years a particular highway or bridge would not count towards a state's needs regardless of its condition, then a state would have no incentive to keep that highway or bridge unrepaired beyond that time to get more federal money.

traveled. The following sections discuss the advantages and disadvantages of certain proxies in more detail.

Extent of a System Is Reflected in the Number of Miles Covered

The primary measures of the extent of the federal-aid highway network are center-line miles and lane miles. Center-line miles reflect the length of the system, whereas lane miles represent the number of lanes per section multiplied by the actual length of the section. For example, a four-lane section that is 2 miles long would equal 2 center-line miles or 8 lane miles.

Some states believe that center-line miles, not lane miles, are a more appropriate factor for distributing highway funds. For instance, transportation officials from Idaho, Montana, North Dakota, South Dakota, and Wyoming told us that to the extent that road mileage is considered in a formula, center-line miles more accurately reflect interconnectivity on a national and regional basis. However, while center-line miles accurately depict overall connections though a linear measurement of highways, this measure does not capture any information on the various widths of highways, because a two-lane highway and an eight-lane highway are considered equal under this measure.

The width and length of highways is reflected in lane miles, and as we noted in our 1986 report, lane miles are a good measure of the extent of the highway system (capital stock) to be preserved. In addition, using lane miles as a factor for apportioning highway funds was endorsed by a Policy Review Committee of the American Association of State Highway and Transportation Officials (AASHTO) in fiscal year 1991. As the committee noted, lane miles are a direct measure of the extent of public roads in both rural and urban areas. The committee further noted that a measure of lane miles is probably the simplest and most efficient potential apportionment factor on which to obtain accurate information and that annual data are generally available within 6 to 9 months of the close of the calendar year.

Regardless of whether center-line miles or lane miles are used to indicate the extent of a system, some observers criticize the use of mileage for apportioning future highway funds because such usage could reward expansion of the system. Thus, this type of apportionment factor would tend to encourage more highway construction, to the possible detriment of adequately preserving the existing network and of considering air quality. Several actions could be taken to counterbalance such tendencies. First, as part of the third component of the formula framework discussed later in this chapter, set-asides could be established to reward those states that

meet certain preservation or maintenance goals. Second, greater use of performance measures geared to preserving the existing infrastructure would help FHWA ensure that the states do not neglect needed preservation and maintenance. As we noted in our July 1994 testimony before the Senate Committee on Environment and Public Works,[4] performance expectations need to be established for preservation and maintenance and other important goals for the NHS. A well-maintained system is the necessary foundation for pursuing the myriad goals for the system, which include economic development, enhanced mobility, and improved air quality. Without such a foundation, system enhancements such as alleviating congestion and improving the efficient movement of goods may not be fully realized.

Use of the System Is Also an Indicator of Highway Needs

While measures of a system's extent provide part of the story on highway needs, the condition of the road is also an important element. Condition can be captured by measures of the use of a system, as distinct from the extent of the system. A system's usage is typically gauged using factors such as vehicle miles traveled or consumption of motor fuel.

One advantage of using data on the vehicle miles traveled as a formula factor is that they tend to be quite reliable. The AASHTO Policy Review Committee observed that data on vehicle miles traveled have been statistically designed for a high level of measurable accuracy and are relevant as an indicator of both capital and system preservation needs. Also, in the Faucett study, vehicle miles traveled garnered one of the highest correlation values, 0.913, of all the factors related to Interstate repair needs. That is, a state with a high number of vehicle miles traveled would also likely have high needs for repair of the Interstate.

Another proxy of system use is motor fuel consumption. Motor fuel consumption reflects travel on all roads, not just on the federal-aid system or on roads under a state's jurisdiction. Therefore, it would not be a precise measure for apportioning funds to specific groups of roads. These data are reported by states monthly and adjusted at year's end. Annual data are generally available within 6 to 9 months of the close of the calendar year. Fuel consumption patterns may differ across states because of the urban-rural population mix, the amount of travel done under congested conditions, differences in physical terrain, and fuel purchases by transients in those states with lower fuel taxes, among other things.

[4]National Highway System: Refinements Would Strengthen the System (GAO/T-RCED-94-266, July 15, 1994).

While vehicle miles traveled and motor fuel consumption correlate well with system usage, they do have some drawbacks. For example, vehicle miles traveled measure the vehicles moved rather than the people and do not account for different vehicle classifications. Moreover, both factors are largely at odds with air quality objectives, and the principle of rewarding motor fuel consumption with more highway funding also conflicts with the goal of encouraging energy conservation. New Jersey transportation officials, for instance, noted that such factors reward energy consumption and air pollution and penalize those who successfully enact measures to reduce the use of single-occupant vehicles. Similarly, transportation officials from several other states noted that the Congress has previously rejected the notion of giving vehicle miles traveled greater weight in apportioning funds, in part because of the strong environmental objections raised. As in the case of the factors related to the system's extent, the disadvantages associated with measures of the system's usage could be at least partially counteracted by building incentives into the formula or by creating appropriate performance standards.

Other Proxies Are Linked Less Directly to Extent and Usage of Highway System

A host of other factors—such as population, climatic conditions (daily mean temperature, annual snowfall, and annual precipitation), and per capita income—could also be used to determine how highway funds are distributed. Yet, as the Faucett study demonstrated, a low correlation exists between highway needs as reported by FHWA and climatic variables and per capita income.[5]

The Executive Director of the Surface Transportation Policy Project supports the use of population levels for distributing highway funds.[6] The Executive Director stated that to the extent that the formula uses factors such as vehicle miles traveled, lane miles, and fuel consumption, it encourages behavior that runs counter to the objectives of reducing congestion and improving air quality. In his view, population and population density would be preferable alternatives as proxies. These proxies were recommended because they were perceived as avoiding the perverse effects tied to a system's extent and usage, and because the data are sound.

[5]Although income was not shown to be highly correlated with highway needs, an income factor could also be included in an apportionment formula to reflect the ability of a state to fund its highway needs from state resources.

[6]The Surface Transportation Policy Project is a coalition of over 100 groups seeking to ensure that transportation policy and investments help meet a variety of social goals, such as energy conservation.

Population data, however, also have limitations. As noted by the Executive Director of AASHTO, the link between population and the states' highway needs is questionable. First, while funds would be targeted to congested urban areas, the approach would do little to accommodate the needs of rural areas. Second, the approach does not recognize that goods produced in sparsely populated areas ultimately must be transported to dense areas. And some state transportation officials from sparsely populated states believe that much of the traffic that occurs in densely populated areas is local. Officials from these states maintain that the promotion of interstate commerce should be a principal objective of the federal-aid highway program and that federal funds should target the highways that tend to carry national, not local, traffic.

A Combination of Proxies for Need Could Be Employed

As we reported in March 1986,[7] factors reflecting a system's extent and use in isolation do not provide a complete picture on the states' needs. Combining such factors helps to round out the formula's capacity to reflect the states' total needs. Introducing neutral factors, such as population, into the formula further diversifies the mix of factors and alters the amounts the states receive. The analysis that follows focuses on two possible blends of proxies for need. Table 3.1 provides an outline of the factors to be considered in the two alternatives.

Table 3.1: Factors Considered in Two Hypothetical Formula Alternatives Based on Proxies for Need

Alternative 1	Distribution based equally on •total lane miles •total vehicle miles traveled
Alternative 2	Distribution based equally on •total lane miles •Interstate vehicle miles traveled •state population

The first alternative assumes that 100 percent of total highway funds are distributed to the states based equally on total lane miles and total vehicle miles traveled. Under this alternative, 13 percent of the overall highway funds would be redistributed. Twenty-three states and Puerto Rico would receive more funds than they were apportioned in fiscal year 1995. The average dollar gain would be $102 million; $643 million would be the high end of the range (California), and $7 million would be the low end (North Carolina). Twenty-seven states and the District of Columbia would receive less funding. For these recipients, the average loss would be $87 million;

[7]GAO/RCED-86-114.

the greatest loss would be $417 million (Pennsylvania), and the smallest loss would be $5 million (Oklahoma). (State-by-state details are provided in app. IV.)

The second alternative assumes that 100 percent of the total highway funds are returned to the states based equally on total lane miles, vehicle miles traveled on the Interstate, and state population. Under this approach, 10 percent of overall highway funds would be redistributed. Twenty-six states and Puerto Rico would receive more funds than they were apportioned in fiscal year 1995. The average dollar gain would be $73 million; the high end of the range would be $366 million (California), and the low end would be $2 million (Nevada). Twenty-four states and the District of Columbia would receive less funding. For these states, the average loss would be $79 million; the greatest loss would be $359 million (Pennsylvania), and the smallest loss would be $1.6 million (Alabama). (State-by-state details are provided in app. V.)

Component 2: Return of Funds to the Source

One indicator of need that we intentionally omitted from the above discussion is that of the states' contributions to the federal Highway Trust Fund. As a formula factor, these contributions have a special status because they align with two key objectives of the highway program. Not only do contributions to the Trust Fund correlate strongly with highway needs, particularly for major highways, but the states' returns on these contributions have also been considered a key measure of equity. For years, the highway apportionment formula has endorsed, through one or more equity adjustments, the principle that the states ought to receive back a substantial portion of what they deposit into the Trust Fund.[8] If the formula were restructured to encompass a pure return-to-origin approach, each state's contribution to the Trust Fund would simply be returned to that state. This does not currently occur. FHWA's data indicate that in 1993, federal highway apportionments as a percentage of the states' contributions to the Highway Trust Fund's highway account ranged from 83 percent for South Carolina to 707 percent for Hawaii.

FHWA estimates the states' contributions to the Trust Fund, which derive from various federal excise taxes such as the gasoline and diesel tax. Because the majority of revenues credited to the Trust Fund derive from the federal fuel tax, the states' contributions to the Trust Fund tend to be quite closely linked with fuel consumption. As a potential formula factor,

[8]The principal funding categories in ISTEA that support a return-to-origin definition of equity are Minimum Allocation, 90 Percent of Payments Adjustment, and Donor State Bonus, as implemented by FHWA.

these contributions therefore offer the same kinds of advantages and disadvantages as fuel consumption does.

Return-to-Origin Approach Offers Advantages and Disadvantages

Returning the states' contributions to the Highway Trust Fund to their source is a relatively simple and direct way of distributing these funds. Some state transportation officials could be expected to support this approach because it would guarantee that all or a substantial amount of the revenues collected in their states would be returned to them. An advantage of returning funds to their source is that, as the 1986 Faucett study shows, contributions to the Highway Trust Fund tend to correlate highly with highway needs, particularly for major highways.

However, the return-to-origin approach would not be universally attractive, as a number of states would lose funds. For instance, those states whose fuel usage is low relative to their land area and extent of highway network would be financially hurt. A prime argument made by officials from these states is that the national interest requires highways to span the wide expanses of large, sparsely populated states that are the source of goods for citizens in the population centers, but the financial resources of those states are often insufficient to construct, maintain, and operate such networks.

Two additional arguments are made against the return-to-origin approach. First, as New York transportation officials noted, formulas based on returning contributions to the Trust Fund to the state where they are raised meet neither federal or state transportation goals nor national policy as set forth in ISTEA. If the primary goal of federal apportionment formulas is to return revenues from motor fuel taxes to the place they were earned, these officials questioned whether there was a need for a federal program. Second, state officials have questioned the wisdom of selecting a formula factor that is geared predominantly to fuel use. They argue that such an approach rewards greater use of motor fuel and as such contradicts federal goals of improving air quality and conserving energy.

Finally, this approach would not necessarily preclude congressional direction of the use of those funds. Legislation could still specify that the returned funds be used in certain proportions for certain programs, such as the NHS. Moreover, the return could function as (1) a simple return of funds, in which states would be exempt from any or most federal oversight, or (2) a distribution of funds, in which FHWA would oversee the programs for which the funds were returned.

Return-to-Origin Approach Also Yields Winners and Losers

Under a return-to-origin approach, we considered three different alternatives, which are summarized in table 3.2.[9]

Table 3.2: Outline of Three Return-To-Origin Alternatives

Alternative 1	Excluding Interstate Construction funds, all funds are returned to the source.
Alternative 2	Excluding demonstration project funds, all funds are returned to the source.
Alternative 3	With no exclusions, all funds are returned to the source.

Under the first alternative, $17.8 billion of the total $19.1 billion would be returned to the source. This amount would represent all the funds (including ISTEA's funds for demonstration projects) distributed to the states in fiscal year 1995, except funds for Interstate Construction. These funds were excluded since the Interstate Construction program's final apportionment was made at the beginning of fiscal year 1995, and only 14 states and the District of Columbia received funds in the program's last year. Under this alternative, 24 states would receive more funds than they were apportioned in fiscal year 1995, while the remaining states, along with the District of Columbia and Puerto Rico, would lose funds. The average dollar gain would be $67 million; the average loss would be $58 million. (State-by-state details are presented in app. VI.)

Under the second alternative, the total amount of funds ($18.1 billion) apportioned to the states in fiscal year 1995 would be returned, including funds for Interstate Construction funds but excluding those for demonstration projects. Funds for demonstration projects are excluded from this analysis because these funds are not distributed by formula. Rather, the Congress directs how certain funds are to be distributed by requiring that particular projects receive a specified amount of funding. Under this alternative, 27 states would receive more funds than they were apportioned in fiscal year 1995. The average dollar gain would be about $68 million; 23 states, along with the District of Columbia and Puerto Rico, would receive less funding. For these recipients, the average loss would be $73 million. (State-by-state details are provided in app. VII.)

[9]The level of funding used for this analysis is based on contributions to the Highway Trust Fund's highway account in fiscal year 1993—the latest year for which data were available.

Under the third alternative, all funds would be returned to the states, including funds for Interstate Construction and demonstration projects along with other program funding. Thus, this alternative recognizes the full $19.1 billion distributed to the states in fiscal year 1995. Under this alternative, 24 states would gain an average of $86 million, while 26 states along with the District of Columbia and Puerto Rico would lose an average of $74 million. (State-by-state details are provided in app. VIII.)

Needs-Based and Return-Based Components Can Be Combined

As mentioned previously, the first two formula components discussed above—based on needs and based on returning funds to the source—can be combined. A significant advantage of blending these components is that programs of particular concern (notably, the NHS) could receive special attention through the use of carefully targeted formula factors. In contrast, a return-to-origin approach might be more appropriate for the STP, which already has characteristics that resemble those of a block grant program and which would thus lend itself well to an approach under which funds are returned to the states.

For purposes of illustration, the following two hypothetical distributions blend needs-based and return-to-origin approaches along the existing split between the STP and two other primary highway programs—Interstate Maintenance and the NHS. The current funding level for the STP represents about 40 percent of the total funds authorized for these programs. The two alternatives outlined in table 3.3 and described below maintain this distribution of funding.

Table 3.3: Combination of Principles in Two Redistribution Alternatives

Alternative 1	Distribution based on •40% returned to source •remaining 60% based equally on NHS lane miles and Interstate vehicle miles traveled
Alternative 2	Distribution based on •40% returned to source •remaining 60% based equally on NHS lane miles, Interstate vehicle miles traveled, and population

Under the first alternative, 33 states would receive an average of $64 million more than they were apportioned in fiscal year 1995, while 17 states, along with the District of Columbia and Puerto Rico, would lose

$111 million on average. Overall, 11 percent of highway funds would be redistributed. (State-by-state details are presented in app. IX.)

Under the second alternative, a slightly different redistribution pattern would emerge. The average dollar gain for 30 states would be $60 million; 20 states, along with the District of Columbia and Puerto Rico, would receive less funding than they did in fiscal year 1995. For these recipients, the average loss would be $82 million. In total, about 9 percent of the highway funds would be redistributed. (State-by-state details are presented in app. X.)

Component 3: Set-Asides to Foster Improvements

While many social objectives are probably best addressed through means other than the highway apportionment formula, a portion of highway funds might nonetheless be retained to advance specific objectives and/or to counterbalance some of the potential disadvantages of the principal formula factors. For instance, a certain percentage of funds—10 percent, for example—could be set aside before the remaining funds were distributed to the states. Payments drawn from this set-aside could be used to provide bonuses to advance quality-of-life objectives, to reward improvements in the condition of highway infrastructure above a certain defined floor, and to advance highway safety. These and similar objectives are all laudable; however, constraint in selecting the objectives may be warranted to prevent the dilution of funds that could result from attempting to meet numerous objectives.

One approach to distributing the set-aside moneys would be to direct set-aside funds to those states suffering from unique or concentrated needs in certain areas. A prime example of this approach is the existing Congestion Mitigation and Air Quality Improvement (CMAQ) program, which directs funds to states with particularly severe problems in air quality. ISTEA provided CMAQ with a $6 billion authorization—approximately $1 billion annually for 6 years. CMAQ is focused on investment in air quality improvements and provides funds for projects that expand or initiate transportation services that benefit air quality. It is directed to those states that are classified as nonattainment areas for ozone and carbon monoxide (although every state, regardless of its air quality status, is guaranteed an annual minimum apportionment of 0.5 percent of the program's total funding.) The advantage of such a program is that it focuses funding on precisely those areas with the greatest needs. The disadvantage is that, as occurs with the needs-based formula factors discussed earlier in this chapter, directing funding to

states with specific needs can foster a perverse incentive. In the case of the CMAQ program, questions have been raised about the wisdom of essentially rewarding states for their nonattainment status, particularly given that a state loses CMAQ funding if it makes "too much progress" in improving air quality.

A second approach to directing set-aside funding towards specific goals is to treat the funds as incentive payments. Incentive payments, as the name implies, do not redress shortcomings, but instead reward desired behaviors or accomplishments. For example, shared set-aside funding could be used to reward states that make notable and measurable improvements in the percentage of the state's pavement condition rated as "good" under FHWA's classification system.[10] To emphasize the condition of the nation's most heavily traveled highways, such rewards could be further refined to focus on improvements in the condition of the NHS.

One concern with providing incentives for improvements in highway conditions, however, is that the data from the states on the condition and performance of their roadways are not always reliable, making it more difficult to equitably distribute such incentive payments. In subcommittee hearings for the House Committee on Appropriations in fiscal year 1994, FHWA was questioned on significant swings in the percentage of Interstate pavement rated in poor condition, as illustrated by table 3.4.

[10]FHWA uses data from the states that classify their pavement into broad categories—poor, mediocre, fair, good and very good—on the basis of the roughness of the ride and surface defects. According to FHWA's statistics, about 65 percent of the NHS' urban mileage and 61 percent of the system's rural mileage is classified in less than good condition.

Table 3.4: Examples of Significant Changes in the Percentage of Interstate Pavements Rated in Poor Condition in Some States

State	Percentage of Interstate pavement in poor condition, 1989	Percentage of Interstate pavement in poor condition, 1991
Alaska	26.4	5.1
Arizona	27.4	1.2
Colorado	7.6	30.3
Georgia	11.7	0
Michigan	10.7	19.0
Nevada	33.9	11.6
New Mexico	1.3	38.1
North Dakota	0.2	32.2
Rhode Island	31.4	1.4
Vermont	18.7	5.9
Wisconsin	18.6	0

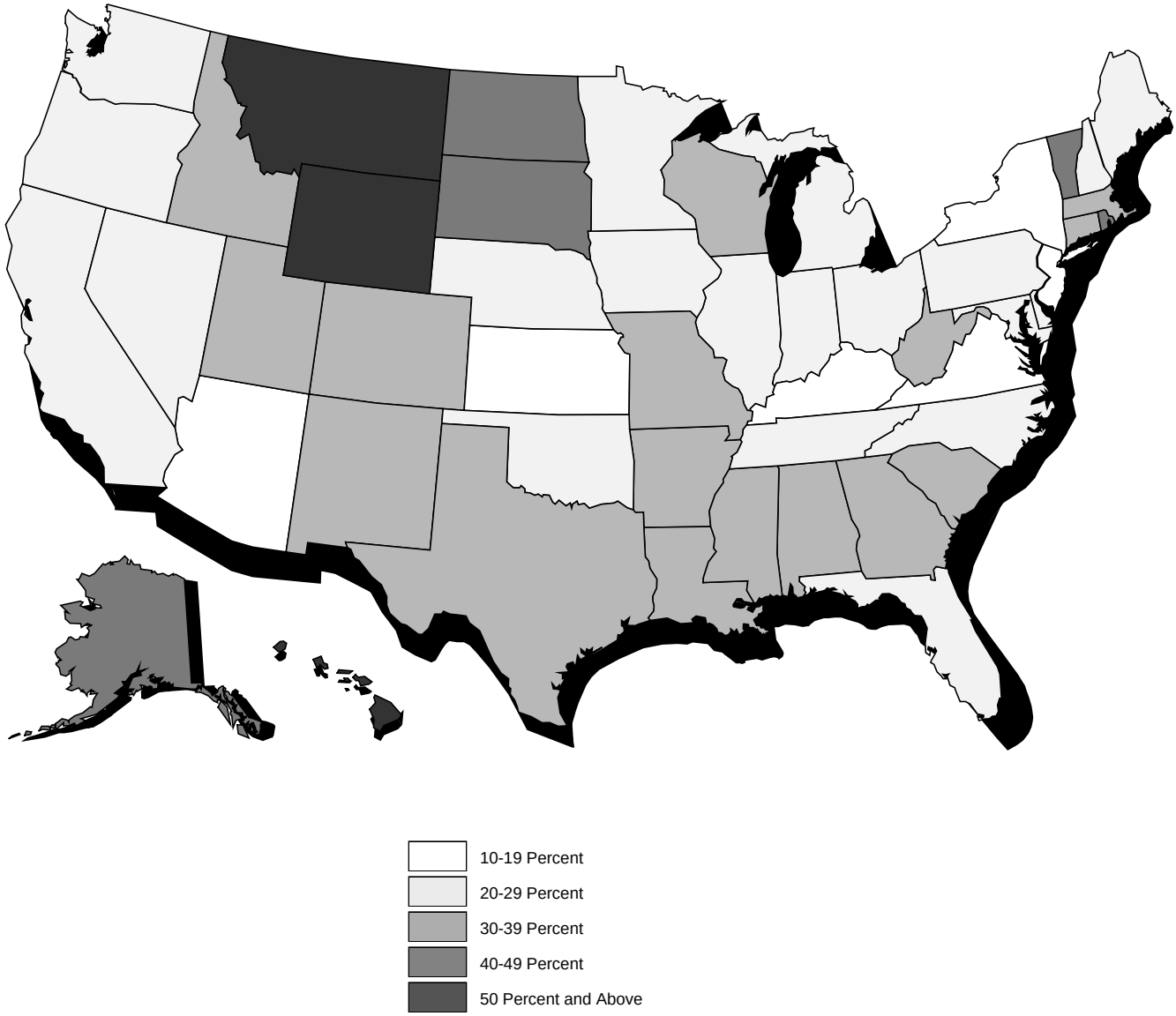
FHWA explained that the data on the condition of the pavement were based on the use of an index, referred to as the Present Serviceability Index. This index, however, represents a subjective measure of the pavement's ride quality and can be arrived at by a variety of procedures. Furthermore, FHWA noted that from time to time the states have attempted to improve their estimation of this measure, thus invalidating comparisons with data from previous years. As a result, until the reliability of these data is improved, their use as an indicator for distributing federal highway funds would be suspect and arbitrary. An alternative measure, the International Roughness Index, is a more objective measure of pavement condition (roughness), and FHWA expects this data source to play a more prominent role in the future. In 1993, the most recent year for which data are available on pavement condition, 37 states used the International Roughness Index to measure pavement condition on Interstate highways, while the remaining 13 states continued to rely on the Present Serviceability Index. For other major highways, the proportion of states using the International Roughness Index dropped to about half the states. An FHWA official noted that some states do not use the International Roughness Index because they do not have the money to purchase the necessary equipment. Another impediment to using the International Roughness Index is that the equipment must be operated at a speed of 35-55 miles per hour, thus making in infeasible for use on certain major highways in urban areas because of the presence of other traffic, traffic signals, and other disruptions.

Component 4: Safeguards to Mitigate Against Sudden Losses

Altering the existing formula would undoubtedly cause shifts in the states' relative shares of annual highway funding. Under a number of the scenarios presented in this chapter, more states would gain funds than would lose funds, but this overall result would be of little comfort to the states whose relative position worsened. Some individual states such as Alaska and Hawaii could lose 50 percent or more of their highway funds under any of the scenarios derived from the approaches based on needs and return to origin. Sudden and significant losses would likely play havoc with the states' planning processes and programs, and it is doubtful that the affected states would be prepared to cope with losses of this magnitude.

In addition, the effect that a change in the formula would have on any state would depend on the percentage of the state's highway revenue provided by federal funds. Figure 3.1 depicts federal funds as a percentage of the states' total highway revenue.

Figure 3.1: Federal Contributions as a Percentage of Total Highway Funding, by State, Fiscal Year 1994



To help temper the effects of changes in the formula, any new formula might include a component designed to place a cap on the maximum percentage of loss that any individual state would be expected to bear as a result of the changes. For example, a maximum-loss cap of 20 percent might be established. Thus, if a new formula calculation caused a given state's funding to fall by 50 percent from the level it would otherwise be, the cap would come into effect and funding for the state in question would be reinstated to 80 percent of what the state would otherwise have received. The cap could be either permanent or established for a set period of time during the transition to a new funding amount.

Finding the funds to shield the states from severe losses might not be as difficult as it would first appear. If the existing, intricate equity adjustments were replaced with a single, simple cap, the funds devoted to these equity adjustments in fiscal year 1995—$2.8 billion—would more than offset the states' combined losses in that year under all of the scenarios discussed in this report. The scenario resulting in the greatest adverse impact on the states—alternative 1 of the needs proxy approach—produced a combined loss of $2.4 billion. Alternatively, other categories of funding, such as those supporting highway demonstration projects (currently commanding about $1 billion per year), could be redirected to provide safeguards against sudden losses.

Conclusions

Reauthorization of the federal-aid highway program presents the Congress with the opportunity to review the objectives associated with providing federal highway funds and the accompanying formula for distributing the funds. A review of the program's objectives could be structured to recognize differences among highways and the federal role associated with important highways, such as those included in the NHS.

There are no perfect factors that embrace the breadth of ISTEA's diverse objectives as well as the states' different needs. Regardless of the factors chosen, some states will experience disadvantages that the construction of a formula may not be able to compensate for. Which states are negatively affected changes with the factors chosen and the percentage weights assigned to various factors. Moreover, as noted in chapter 2, DOT has proposed changes in the system for delivering grants.

Whether DOT's proposed changes are adopted or other scenarios for delivering grants are developed, the Congress will have to reach a consensus on the national objective(s) that are critical for the highway

program to address; decide whether a formula is the appropriate vehicle for addressing these objective(s); and for those objectives that the formula can best address, determine the most representative factors and corresponding weight to be assigned to those factors. If an alternative formula is adopted for distributing highway funds in the future and this formula would result in dramatic funding losses for certain states, ways could be considered to reduce the magnitude of the losses—by, for example, providing for a cap on the maximum percentage of loss that any one state would be expected to bear.

Funding Categories for Federal-Aid Apportionments

Funding category	Authorized funding level (billions of dollars)[a]	Funding factor(s)
Interstate Construction	7.2	Relative federal share of cost to complete the Interstate
Interstate Maintenance	17.0	Interstate lane miles, 55 percent; vehicle miles traveled on the Interstate, 45 percent
National Highway System (NHS)	21.0	Essentially based on each state's share of funds for Interstate Maintenance, Primary, Secondary, Urban, and Bridge programs and adjusted minimum allocations for 1987-91
Bridge	16.1	Each state's relative share of the total cost of deficient bridges
Surface Transportation Program (STP)	23.9	Basically the same as for the NHS, reduced by apportionments for Interstate Maintenance, NHS, and Bridge programs
Interstate Substitution	1.0	Relative federal share of costs to complete Interstate Substitution projects
Minimum Allocation	5.2[b]	Each state's share of funds is not less than 90 percent of the state's share of contributions to the Highway Trust Fund for a specified set of programs
Congestion Mitigation and Air Quality	6.0	Each state's share of population in air quality nonattainment areas, but each state is guaranteed at least 0.5 percent of the total funding
Donor State Bonus	3.0	Rate of return on contributions to Highway Trust Fund increased for states that have the lowest return
Interstate Reimbursement	4.0	Fixed percentages based on the states' investments in Interstate highways made before federal funding of the Interstate
Hold Harmless	3.6[b]	Legislated minimum percentage for each state as provided in section 1015 of ISTEA
90 Percent of Payments Adjustment	0.4[b]	Ensures that each state receives at least a 90-percent rate of return on its contributions to the Highway Trust Fund
Metropolitan planning organizations	No separate authorization[c]	Share of national urban population

[a]Funding categories are presented in the order in which they occur in the sequential funding calculation process; funding levels are the 6-year (1992-97) totals for each category under ISTEA.

[b]Estimated amount. Actual annual amount depends on the formula calculations for each year.

[c]Metropolitan planning organizations are funded through 1 percent set-asides from authorizations for the Interstate Maintenance, National Highway System, Bridge, and Congestion Mitigation and Air Quality programs and the Surface Transportation Program.

Fiscal Year 1995 Funding to States for Programs, Equity Adjustments, and Demonstration Projects

Dollars in thousands

State	Program apportionments	Equity adjustments	Allocations for demonstration projects	Total funding for programs, equity adjustments, and demonstration projects
Alabama	257,242	57,583	26,901	341,726
Alaska	202,719	28,589	0	231,308
Arizona	182,802	84,491	2,245	269,538
Arkansas	149,132	67,297	51,152	267,581
California	1,385,030	372,253	58,963	1,816,246
Colorado	202,575	0	534	203,109
Connecticut	351,562	0	14,610	366,172
Delaware	69,248	5,155	0	74,403
Dist. of Columbia	91,496	4,125	4,066	99,687
Florida	529,411	232,980	33,039	795,430
Georgia	401,480	135,155	19,394	556,029
Hawaii	120,851	0	1,104	121,955
Idaho	102,881	24,206	12,954	140,041
Illinois	539,955	104,904	45,711	690,570
Indiana	285,518	122,087	17,278	424,883
Iowa	201,247	17,738	7,286	226,271
Kansas	183,832	21,957	13,432	219,221
Kentucky	214,308	75,278	3,974	293,560
Louisiana	213,335	50,823	12,909	277,067
Maine	84,053	6,027	34,426	124,506
Maryland	352,645	0	17,682	370,327
Massachusetts	763,756	23,962	1,086	788,804
Michigan	382,487	118,959	22,827	524,273
Minnesota	223,780	64,805	36,237	324,822
Mississippi	161,242	46,198	5,106	212,546
Missouri	316,707	85,985	20,608	423,300
Montana	142,777	32,302	3,312	178,391
Nebraska	138,884	1,027	957	140,868
Nevada	101,695	9,115	13,542	124,352
New Hampshire	81,730	4,011	5,906	91,647
New Jersey	479,176	52,991	37,334	569,501
New Mexico	139,067	51,789	1,987	192,843
New York	877,479	87,146	65,657	1,030,282
North Carolina	340,200	137,790	18,106	496,096

(continued)

Dollars in thousands

State	Program apportionments	Equity adjustments	Allocations for demonstration projects	Total funding for programs, equity adjustments, and demonstration projects
North Dakota	99,141	13,016	13,064	125,221
Ohio	518,138	153,384	29,043	700,565
Oklahoma	196,586	59,820	16,291	272,697
Oregon	185,186	27,605	8,464	221,255
Pennsylvania	886,137	0	159,585	1,045,722
Puerto Rico	87,783	0	0	87,783
Rhode Island	103,615	0	10,563	114,178
South Carolina	190,515	0	7,121	197,636
South Dakota	109,094	17,821	0	126,915
Tennessee	296,715	79,067	7,084	382,866
Texas	984,510	193,612	43,498	1,221,620
Utah	124,454	9,665	2,006	136,125
Vermont	74,241	5,420	3,680	83,341
Virginia	378,204	0	25,668	403,872
Washington	237,523	0	16,486	254,009
West Virginia	159,118	10,107	57,371	226,596
Wisconsin	223,886	131,230	13,156	368,272
Wyoming	109,126	6,820	3,680	119,626
Total	**15,234,274**	**2,834,295**	**1,027,085**	**19,095,654**

DOT'S Assessment of Possible Measures Related to States' Transportation Financing

Each state has a unique fiscal and economic framework, and various factors determine its capability to plan and pay for public services, such as highway construction and mass transit services. For example, the strength of the economic base of a state is tied to its ability to raise both public and private funds. Some states tax their residents almost as heavily as the economic base will allow, while others are wealthier than the tax burden suggests. A bonus could be structured to essentially reward a state whose financial contributions to transportation services are high relative to the state's wealth. This approach was proposed in the highway bill passed in the Senate in June 1991 (S. 1204), which would have authorized $4.1 billion over a 4-year period for bonuses for states with higher-than-average state gasoline taxes and lower-than-average per capita disposable income. Although ISTEA did not incorporate the bonuses proposed in the Senate bill, the Congress did direct the Secretary of Transportation and the Director of the Bureau of Transportation Statistics to study and recommend the most appropriate and accurate methods of calculating the states' level of effort (LOE) in funding surface transportation programs.

A Department of Transportation (DOT) report of March 1994 responded to the legislative mandate to review the states' LOE.[1] DOT evaluated a range of measurements against a series of questions to determine the "best" LOE measures. The questions included the following:

- Does the measure consider actual spending for highways and mass transit as well as the ability to pay?
- Is the measure accurate, objective, and equitable?
- Can the measure be updated as necessary?
- Is the measure uniform across the nation?

DOT found that four types of state and local measurements of revenue and spending met their criteria: (1) equivalent motor-fuel tax rates—the total receipts for a state's highway and transit use; (2) highway and mass transit disbursements as a percentage of state and local disbursements, which considers the relative importance of spending on surface transportation to other spending; (3) disbursements for highways and mass transit financed only by state and local funds compared with the state's and localities' total disbursements (since this measure eliminates the direct impact of federal spending, it considers the relative effort that states and local governments make with their own financial resources); and (4) per capita state and

[1]Report on State Level of Effort, required by section 6013 of Intermodal Surface Transportation Efficiency Act of 1991 (P.L. 102-240), Mar. 1994.

local spending on highways and mass transit as a percentage of per capita personal income.

DOT observed that combining the four recommended measurements into one provided a simple, comprehensive measurement. For illustrative purposes in DOT's report, each of the recommended measures was weighted equally at one-fourth. DOT noted that use of any one measure alone would not be the most appropriate or accurate measurement of the states' LOE. For instance, the equivalent motor-fuel tax does not address the considerable assistance that the state and local transportation sector receives from nonuser fees such as general fund appropriations and other taxes. Also, equivalent motor-fuel tax rates do not recognize differences in fiscal capacity among the states, since a poorer state must impose a relatively greater economic burden on its highway and mass transit users to achieve the same motor-fuel equivalent tax rate as a wealthier state.

DOT concluded that there is no "perfect" single factor to measure LOE, as the individual factors have strengths and weaknesses. Therefore, DOT noted that considering more than one measurement gives a more accurate picture of state and local LOE and reduces the impact of year-to-year fluctuations in any single measurement. As previously mentioned, DOT found that combining four measures met certain criteria it had established. In its report, DOT did not recommend either for or against measuring LOE as a factor in a formula for providing assistance to highways or mass transit. Rather, DOT stated that if LOE is considered as a formula factor, it should be considered within the total context of highway and mass transit financing, investment requirements, goals of the transportation program, environmental considerations, and other public policy considerations not explicitly considered in the study.

While we did not evaluate the reasonableness of DOT's assumptions and selection of these measurements, we note that better LOE indicators are possible. For example, per capita personal income is the measure of fiscal capacity most commonly used in federal grant formulas and is a measure DOT recommended. However, we have found[2] that total taxable resources, developed by the U.S. Department of the Treasury, is a better measure of fiscal capacity than per capita personal income because it measures all the income produced within a state—whether received by residents or nonresidents or retained by business corporations—rather than personal

[2]Older Americans Act: Funding Formula Could Better Reflect State Needs (GAO/HEHS-94-41, May 12, 1994) and Maternal and Child Health: Block Grant Funds Should Be Distributed More Equitably (GAO/HRD-92-5, Apr. 2, 1992).

income alone. The federal block grant formula for Alcohol and Drug Abuse and Mental Health Services currently uses total taxable resources.

Alternative Formula Distributions Under a Needs Proxy Approach: Alternative One

The following table compares the states' actual fiscal year 1995 federal-aid highway distributions with alternative distributions resulting from a combination of two proxies for needs. The alternative distributions assume that each state receives one-half of its funding on the basis of its total lane miles and one-half of its funding on the basis of its total vehicle miles traveled.

Dollars in thousands

State	Actual FY 1995 distributions under ISTEA	FY 1995 distributions under alternative formula	States gaining funds under alternative formula		States losing funds under alternative formula	
			Dollars	Percent	Dollars	Percent
Alabama	341,725	364,353	22,628	6.6		
Alaska	231,308	39,640			191,668	82.9
Arizona	269,539	312,821	43,282	16.1		
Arkansas	267,581	193,010			74,571	27.9
California	1,816,247	2,459,171	642,924	35.4		
Colorado	203,109	270,227	67,118	33.0		
Connecticut	366,172	273,562			92,610	25.3
Delaware	74,403	39,406			34,997	47.0
Dist. of Columbia	99,688	24,124			75,564	75.8
Florida	795,430	893,380	97,950	12.3		
Georgia	556,030	717,424	161,394	29.0		
Hawaii	121,955	61,392			60,563	49.7
Idaho	140,041	89,298			50,743	36.2
Illinois	690,571	700,941	10,370	1.5		
Indiana	424,882	467,150	42,268	9.9		
Iowa	226,272	198,250			28,022	12.4
Kansas	219,222	195,114			24,108	11.0
Kentucky	293,560	331,145	37,585	12.8		
Louisiana	277,068	307,273	30,205	10.9		
Maine	124,506	79,485			45,021	36.2
Maryland	370,327	399,328	29,001	7.8		
Massachusetts	788,804	413,447			375,357	47.6
Michigan	524,273	703,095	178,822	34.1		
Minnesota	324,822	340,764	15,942	4.9		
Mississippi	212,546	195,229			17,317	8.1

Dollars in thousands

State	Actual FY 1995 distributions under ISTEA	FY 1995 distributions under alternative formula	States gaining funds under alternative formula		States losing funds under alternative formula	
			Dollars	Percent	Dollars	Percent
Missouri	423,299	487,139	63,840	15.1		
Montana	178,392	76,649			101,743	57.0
Nebraska	140,867	115,361			25,506	18.1
Nevada	124,353	98,779			25,574	20.6
New Hampshire	91,647	77,087			14,560	15.9
New Jersey	569,501	389,135			180,366	31.7
New Mexico	192,843	172,009			20,834	10.8
New York	1,030,282	845,178			185,104	18.0
North Carolina	496,096	503,368	7,272	1.5		
North Dakota	125,221	49,075			76,146	60.8
Ohio	700,564	844,703	144,139	20.6		
Oklahoma	272,696	267,405			5,291	1.9
Oregon	221,254	254,055	32,801	14.8		
Pennsylvania	1,045,722	628,984			416,738	39.9
Puerto Rico	87,783	106,449	18,666	21.3		
Rhode Island	114,178	66,412			47,766	41.8
South Carolina	197,636	312,401	114,765	58.1		
South Dakota	126,915	62,902			64,013	50.4
Tennessee	382,866	466,725	83,859	21.9		
Texas	1,221,619	1,422,214	200,595	16.4		
Utah	136,125	178,638	42,513	31.2		
Vermont	83,341	51,204			32,137	38.6
Virginia	403,872	575,345	171,473	42.5		
Washington	254,010	441,622	187,612	73.9		
West Virginia	226,596	134,696			91,900	40.6
Wisconsin	368,272	333,187			35,085	9.5
Wyoming	119,626	65,907			53,719	44.9
Total	**19,095,656**	**19,095,656**	**2,447,024**		**2,447,022**	

Notes: Shading indicates those states that would gain funds under the alternative distribution.

Totals may not add because of rounding.

Alternative Formula Distributions Under a Needs Proxy Approach: Alternative Two

The following table compares the states' actual fiscal year 1995 federal-aid highway distributions with alternative distributions resulting from a combination of three proxies for needs. The alternative distributions assume that each state receives one-third of its funding on the basis of its total lane miles, one-third on the basis of the vehicle miles traveled on its Interstate highways, and one-third on the basis of its population.

Dollars in thousands

State	Actual FY 1995 distributions under ISTEA	FY 1995 distributions under alternative formula	States gaining funds under alternative formula		States losing funds under alternative formula	
			Dollars	Percent	Dollars	Percent
Alabama	341,725	340,141			1,584	0.5
Alaska	231,308	60,696			170,611	73.8
Arizona	269,539	315,101	45,562	16.9		
Arkansas	267,581	212,986			54,595	20.4
California	1,816,247	2,182,454	366,207	20.2		
Colorado	203,109	306,015	102,906	50.7		
Connecticut	366,172	238,167			128,005	35.0
Delaware	74,403	38,427			35,976	48.4
Dist. of Columbia	99,688	26,607			73,081	73.3
Florida	795,430	863,212	67,782	8.5		
Georgia	556,030	630,127	74,097	13.3		
Hawaii	121,955	54,706			67,249	55.1
Idaho	140,041	120,021			20,019	14.3
Illinois	690,571	751,239	60,669	8.8		
Indiana	424,882	415,188			9,694	2.3
Iowa	226,272	265,174	38,903	17.2		
Kansas	219,222	249,878	30,656	14.0		
Kentucky	293,560	306,548	12,989	4.4		
Louisiana	277,068	313,415	36,346	13.1		
Maine	124,506	86,272			38,234	30.7
Maryland	370,327	354,063			16,264	4.4
Massachusetts	788,804	385,010			403,795	51.2
Michigan	524,273	672,078	147,805	28.2		
Minnesota	324,822	369,863	45,040	13.9		
Mississippi	212,546	216,693	4,147	2.0		

Dollars in thousands

State	Actual FY 1995 distributions under ISTEA	FY 1995 distributions under alternative formula	States gaining funds under alternative formula		States losing funds under alternative formula	
			Dollars	Percent	Dollars	Percent
Missouri	423,299	472,469	49,170	11.6		
Montana	178,392	141,711			36,681	20.6
Nebraska	140,867	162,272	21,404	15.2		
Nevada	124,353	126,304	1,951	1.6		
New Hampshire	91,647	73,241			18,406	20.1
New Jersey	569,501	378,868			190,633	33.5
New Mexico	192,843	195,088	2,245	1.2		
New York	1,030,282	932,914			97,368	9.5
North Carolina	496,096	462,871			33,224	6.7
North Dakota	125,221	123,455			1,765	1.4
Ohio	700,564	766,892	66,328	9.5		
Oklahoma	272,696	280,933	8,237	3.0		
Oregon	221,254	274,988	53,734	24.3		
Pennsylvania	1,045,722	686,980			358,742	34.3
Puerto Rico	87,783	127,257	39,475	45.0		
Rhode Island	114,178	66,160			48,018	42.1
South Carolina	197,636	296,447	98,811	50.0		
South Dakota	126,915	119,646			7,269	5.7
Tennessee	382,866	431,910	49,044	12.8		
Texas	1,221,619	1,466,481	244,862	20.0		
Utah	136,125	185,438	49,313	36.2		
Vermont	83,341	53,032			30,310	36.4
Virginia	403,872	503,249	99,377	24.6		
Washington	254,010	405,951	151,941	59.8		
West Virginia	226,596	131,689			94,907	41.9
Wisconsin	368,272	355,353			12,920	3.5
Wyoming	119,626	99,978			19,648	16.4
Total	**19,095,656**	**19,095,656**	**1,968,999**		**1,968,999**	

Notes: Shading indicates those states that would gain funds under the alternative distribution.

Totals may not add because of rounding.

Alternative Formula Distributions Under a Return-To-Origin Approach: Alternative One

The following table compares the states' actual fiscal year 1995 federal-aid highway distributions with alternative distributions resulting from returning the states' tax contributions to the Highway Trust Fund back to the state of origin. Interstate Construction is excluded from this analysis to adjust for the augmented funding some states receive through this program. Fiscal year 1995 is the final year of funding for the Interstate Construction program.

Dollars in thousands

State	Actual FY 1995 distributions under ISTEA	FY 1995 distributions under alternative formula	States gaining funds under alternative formula		States losing funds under alternative formula	
			Dollars	Percent	Dollars	Percent
Alabama	330,141	368,686	38,545	11.7		
Alaska	231,308	39,706			191,601	82.8
Arizona	269,539	289,745	20,205	7.5		
Arkansas	267,581	244,281			23,300	8.7
California	1,694,491	2,021,086	326,595	19.3		
Colorado	203,109	220,524	17,415	8.6		
Connecticut	355,956	194,748			161,208	45.3
Delaware	74,403	52,016			22,387	30.1
Dist. of Columbia	80,479	24,527			55,952	69.5
Florida	795,430	900,712	105,282	13.2		
Georgia	537,772	629,103	91,331	17.0		
Hawaii	121,955	48,604			73,351	60.1
Idaho	140,041	85,753			54,288	38.8
Illinois	690,571	653,538			37,033	5.4
Indiana	424,882	456,268	31,386	7.4		
Iowa	226,272	201,282			24,990	11.0
Kansas	219,222	196,728			22,494	10.3
Kentucky	293,560	331,291	37,732	12.9		
Louisiana	277,068	296,497	19,429	7.0		
Maine	124,506	96,153			28,352	22.8
Maryland	261,478	321,952	60,474	23.1		
Massachusetts	307,554	330,552	22,997	7.5		
Michigan	524,273	596,584	72,311	13.8		
Minnesota	324,822	281,006			43,817	13.5
Mississippi	212,546	233,467	20,921	9.8		

Dollars in thousands

State	Actual FY 1995 distributions under ISTEA	FY 1995 distributions under alternative formula	States gaining funds under alternative formula		States losing funds under alternative formula	
			Dollars	Percent	Dollars	Percent
Missouri	423,299	467,261	43,962	10.4		
Montana	178,392	81,844			96,547	54.1
Nebraska	140,867	126,075			14,793	10.5
Nevada	124,353	112,716			11,638	9.4
New Hampshire	91,647	71,084			20,563	22.4
New Jersey	490,121	462,142			27,979	5.7
New Mexico	192,843	145,996			46,847	24.3
New York	1,030,282	833,300			196,983	19.1
North Carolina	477,973	532,808	54,835	11.5		
North Dakota	125,221	59,712			65,509	52.3
Ohio	680,360	689,172	8,813	1.3		
Oklahoma	272,696	291,908	19,212	7.0		
Oregon	196,220	227,605	31,385	16.0		
Pennsylvania	738,576	772,460	33,884	4.6		
Puerto Rico	87,783	0			87,783	100.0
Rhode Island	114,178	51,591			62,587	54.8
South Carolina	197,636	303,706	106,070	53.7		
South Dakota	126,915	61,383			65,532	51.6
Tennessee	381,022	423,902	42,880	11.3		
Texas	1,195,397	1,354,823	159,426	13.3		
Utah	136,125	132,852			3,273	2.4
Vermont	83,341	48,258			35,083	42.1
Virginia	323,327	489,447	166,120	51.4		
Washington	254,010	336,820	82,811	32.6		
West Virginia	226,596	143,729			82,867	36.6
Wisconsin	368,272	354,701			13,571	3.7
Wyoming	119,626	75,934			43,691	36.5
Total	**17,766,036**	**17,766,036**	**1,614,019**		**1,614,019**	

Notes: Shading indicates those states that would gain funds under the alternative distribution.

Totals may not add because of rounding.

Alternative Formula Distributions Under a Return-To-Origin Approach: Alternative Two

The following table compares the states' actual fiscal year 1995 federal-aid highway distributions with alternative distributions resulting from returning the states' tax contributions to the Highway Trust Fund to the state of origin. Funding for demonstration projects is excluded from this analysis to adjust for the augmented funding that the states receive outside of the apportionment process.

Dollars in thousands

State	Actual FY 1995 distributions under ISTEA	FY 1995 distributions under alternative formula	States gaining funds under alternative formula		States losing funds under alternative formula	
			Dollars	Percent	Dollars	Percent
Alabama	314,825	374,964	60,140	19.1		
Alaska	231,308	40,383			190,925	82.5
Arizona	267,294	294,679	27,384	10.2		
Arkansas	216,429	248,441	32,011	14.8		
California	1,757,284	2,055,502	298,218	17.0		
Colorado	202,575	224,280	21,704	10.7		
Connecticut	351,562	198,065			153,497	43.7
Delaware	74,403	52,902			21,501	28.9
Dist. of Columbia	95,622	24,945			70,677	73.9
Florida	762,391	916,050	153,659	20.2		
Georgia	536,636	639,816	103,179	19.2		
Hawaii	120,851	49,431			71,419	59.1
Idaho	127,087	87,213			39,874	31.4
Illinois	644,860	664,667	19,807	3.1		
Indiana	407,604	464,037	56,433	13.8		
Iowa	218,985	204,709			14,276	6.5
Kansas	205,790	200,078			5,712	2.8
Kentucky	289,585	336,933	47,348	16.4		
Louisiana	264,159	301,546	37,387	14.2		
Maine	90,079	97,791	7,711	8.6		
Maryland	352,645	327,435			25,210	7.1
Massachusetts	787,719	336,181			451,538	57.3
Michigan	501,446	606,743	105,297	21.0		
Minnesota	288,585	285,791			2,794	1.0
Mississippi	207,440	237,443	30,002	14.5		

Dollars in thousands

State	Actual FY 1995 distributions under ISTEA	FY 1995 distributions under alternative formula	States gaining funds under alternative formula		States losing funds under alternative formula	
			Dollars	Percent	Dollars	Percent
Missouri	402,691	475,218	72,527	18.0		
Montana	175,080	83,238			91,842	52.5
Nebraska	139,911	128,222			11,689	8.4
Nevada	110,811	114,635	3,824	3.5		
New Hampshire	85,741	72,294			13,446	15.7
New Jersey	532,167	470,012			62,155	11.7
New Mexico	190,856	148,482			42,373	22.2
New York	964,626	847,490			117,136	12.1
North Carolina	477,990	541,881	63,891	13.4		
North Dakota	112,157	60,729			51,428	45.9
Ohio	671,521	700,908	29,387	4.4		
Oklahoma	256,405	296,879	40,474	15.8		
Oregon	212,790	231,480	18,690	8.8		
Pennsylvania	886,137	785,615			100,522	11.3
Puerto Rico	87,783	0			87,783	100.0
Rhode Island	103,615	52,469			51,145	49.4
South Carolina	190,515	308,878	118,363	62.1		
South Dakota	126,915	62,428			64,487	50.8
Tennessee	375,782	431,120	55,339	14.7		
Texas	1,178,122	1,377,894	199,772	17.0		
Utah	134,119	135,114	995	0.7		
Vermont	79,661	49,080			30,581	38.4
Virginia	378,204	497,782	119,578	31.6		
Washington	237,523	342,556	105,033	44.2		
West Virginia	169,225	146,176			23,049	13.6
Wisconsin	355,116	360,741	5,625	1.6		
Wyoming	115,946	77,227			38,718	33.4
Total	**18,068,572**	**18,068,572**	**1,833,779**		**1,833,779**	

Notes: Shading indicates those states that would gain funds under the alternative distribution.

Totals may not add because of rounding.

Alternative Formula Distributions Under a Return to Origin Approach: Alternative Three

The following table compares the states' actual fiscal year 1995 federal-aid highway distributions with alternative distributions resulting from returning the states' tax contributions to the Highway Trust Fund to the state of origin. The comparison includes all funding categories.

Dollars in thousands

State	Actual FY 1995 distributions under ISTEA	FY 1995 distributions under alternative formula	States gaining funds under alternative formula		States losing funds under alternative formula	
			Dollars	Percent	Dollars	Percent
Alabama	341,725	396,279	54,553	16.0		
Alaska	231,308	42,678			188,629	81.5
Arizona	269,539	311,429	41,890	15.5		
Arkansas	267,581	262,563			5,018	1.9
California	1,816,247	2,172,345	356,097	19.6		
Colorado	203,109	237,028	33,919	16.7		
Connecticut	366,172	209,323			156,848	42.8
Delaware	74,403	55,909			18,494	24.9
Dist. of Columbia	99,688	26,363			73,325	73.6
Florida	795,430	968,122	172,691	21.7		
Georgia	556,030	676,185	120,155	21.6		
Hawaii	121,955	52,241			69,713	57.2
Idaho	140,041	92,170			47,870	34.2
Illinois	690,571	702,449	11,878	1.7		
Indiana	424,882	490,415	65,533	15.4		
Iowa	226,272	216,346			9,926	4.4
Kansas	219,222	211,451			7,771	3.5
Kentucky	293,560	356,085	62,526	21.3		
Louisiana	277,068	318,687	41,619	15.0		
Maine	124,506	103,350			21,156	17.0
Maryland	370,327	346,047			24,280	6.6
Massachusetts	788,804	355,290			433,514	55.0
Michigan	524,273	641,233	116,960	22.3		
Minnesota	324,822	302,036			22,786	7.0
Mississippi	212,546	250,940	38,394	18.1		

Dollars in thousands

State	Actual FY 1995 distributions under ISTEA	FY 1995 distributions under alternative formula	States gaining funds under alternative formula		States losing funds under alternative formula	
			Dollars	Percent	Dollars	Percent
Missouri	423,299	502,231	78,932	18.6		
Montana	178,392	87,970			90,422	50.7
Nebraska	140,867	135,510			5,357	3.8
Nevada	124,353	121,151			3,202	2.6
New Hampshire	91,647	76,404			15,243	16.6
New Jersey	569,501	496,729			72,772	12.8
New Mexico	192,843	156,923			35,920	18.6
New York	1,030,282	895,664			134,618	13.1
North Carolina	496,096	572,683	76,588	15.4		
North Dakota	125,221	64,181			61,040	48.7
Ohio	700,564	740,750	40,187	5.7		
Oklahoma	272,696	313,755	41,058	15.1		
Oregon	221,254	244,639	23,384	10.6		
Pennsylvania	1,045,722	830,272			215,450	20.6
Puerto Rico	87,783	0			87,783	100.0
Rhode Island	114,178	55,452			58,726	51.4
South Carolina	197,636	326,436	128,800	65.2		
South Dakota	126,915	65,977			60,938	48.0
Tennessee	382,866	455,627	72,761	19.0		
Texas	1,221,619	1,456,218	234,599	19.2		
Utah	136,125	142,794	6,670	4.9		
Vermont	83,341	51,870			31,471	37.8
Virginia	403,872	526,078	122,206	30.3		
Washington	254,010	362,028	108,018	42.5		
West Virginia	226,596	154,485			72,111	31.8
Wisconsin	368,272	381,247	12,975	3.5		
Wyoming	119,626	81,617			38,009	31.8
Total	**19,095,656**	**19,095,656**	**2,062,394**		**2,062,394**	

Notes: Shading indicates those states that would gain funds under the alternative distribution.

Totals may not add because of rounding.

Alternative Formula Distributions Under a Combined Approach: Alternative One

The following table compares the states' actual fiscal year 1995 federal-aid highway distributions with alternative distributions. The alternative formula under consideration blends a needs-proxy approach and a return-to-origin approach. The alternative distributions assume that each state receives 40 percent of its funding on the basis of its contributions to the Highway Trust Fund, 30 percent on the basis of the lane miles on its National Highway System highways, and 30 percent on the basis of the vehicle miles traveled on its Interstate highways.

Dollars in thousands

State	Actual FY 1995 distributions under ISTEA	FY 1995 distributions under alternative formula	States gaining funds under alternative formula		States losing funds under alternative formula	
			Dollars	Percent	Dollars	Percent
Alabama	341,725	393,289	51,564	15.1		
Alaska	231,308	89,182			142,126	61.4
Arizona	269,539	324,187	54,648	20.3		
Arkansas	267,581	257,578			10,004	3.7
California	1,816,247	1,945,252	129,004	7,1		
Colorado	203,109	305,188	102,079	50.3		
Connecticut	366,172	215,841			150,331	41.1
Delaware	74,403	39,498			34,905	46.9
Dist. of Columbia	99,688	18,600			81,088	81.3
Florida	795,430	780,632			14,798	1.9
Georgia	556,030	671,199	115,169	20.7		
Hawaii	121,955	48,563			73,391	60.2
Idaho	140,041	147,710	7,669	5.5		
Illinois	690,571	671,718			18,853	2.7
Indiana	424,882	429,572	4,690	1.1		
Iowa	226,272	260,340	34,069	15.1		
Kansas	219,222	276,947	57,725	26.3		
Kentucky	293,560	340,722	47,163	16.1		
Louisiana	277,068	322,140	45,071	16.3		
Maine	124,506	99,263			25,243	20.3
Maryland	370,327	320,647			49,680	13.4
Massachusetts	788,804	336,935			451,869	57.3
Michigan	524,273	634,589	110,316	21.0		
Minnesota	324,822	363,133	38,311	11.8		
Mississippi	212,546	248,650	36,104	17.0		

Dollars in thousands

State	Actual FY 1995 distributions under ISTEA	FY 1995 distributions under alternative formula	States gaining funds under alternative formula		States losing funds under alternative formula	
			Dollars	Percent	Dollars	Percent
Missouri	423,299	520,118	96,819	22.9		
Montana	178,392	197,024	18,632	10.4		
Nebraska	140,867	197,270	56,403	40.0		
Nevada	124,353	157,468	33,115	26.6		
New Hampshire	91,647	79,816			11,831	12.9
New Jersey	569,501	351,437			218,064	38.3
New Mexico	192,843	226,547	33,704	17.5		
New York	1,030,282	762,187			268,095	26.0
North Carolina	496,096	501,397	5,301	1.1		
North Dakota	125,221	132,070	6,850	5.5		
Ohio	700,564	722,691	22,127	3.2		
Oklahoma	272,696	310,032	37,336	13.7		
Oregon	221,254	311,797	90,542	40.9		
Pennsylvania	1,045,722	677,265			368,457	35.2
Puerto Rico	87,783	44,840			42,942	48.9
Rhode Island	114,178	52,154			62,024	54.3
South Carolina	197,636	324,409	126,773	64.1		
South Dakota	126,915	152,433	25,518	20.1		
Tennessee	382,866	454,840	71,975	18.8		
Texas	1,221,619	1,501,183	279,563	22.9		
Utah	136,125	201,010	64,885	47.7		
Vermont	83,341	60,889			22,452	26.9
Virginia	403,872	518,759	114,887	28.4		
Washington	254,010	404,896	150,886	59.4		
West Virginia	226,596	160,835			65,761	29.0
Wisconsin	368,272	378,564	10,292	2.8		
Wyoming	119,626	152,350	32,724	27.4		
Total	**19,095,656**	**19,095,656**	**2,111,914**		**2,111,914**	

Notes: Shading indicates those states that would gain funds under the alternative distribution.

Totals may not add because of rounding.

Alternative Formula Distributions Under a Combined Approach: Alternative Two

The following table compares the states' actual fiscal year 1995 federal-aid highway distributions with alternative distributions. The alternative formula under consideration blends a needs-proxy approach and a return-to-origin approach. The alternative distributions assume that each state receives 40 percent of its funding on the basis of its contributions to the Highway Trust Fund, 20 percent on the basis of the lane miles on its National Highway System highways, 20 percent on the basis of the vehicle miles traveled on its Interstate highways, and 20 percent on the basis of its population.

Dollars in thousands

State	Actual FY 1995 distributions under ISTEA	FY 1995 distributions under alternative formula	States gaining funds under alternative formula		States losing funds under alternative formula	
			Dollars	Percent	Dollars	Percent
Alabama	341,725	376,210	34,485	10.1		
Alaska	231,308	73,473			157,834	68.2
Arizona	269,539	313,145	43,606	16.2		
Arkansas	267,581	242,320			25,261	9.4
California	1,816,247	2,037,087	220,840	12.2		
Colorado	203,109	284,944	81,835	40.3		
Connecticut	366,172	221,575			144,596	39.5
Delaware	74,403	43,873			30,529	41.0
Dist. of Columbia	99,688	25,104			74,584	74.8
Florida	795,430	845,402	49,972	6.3		
Georgia	556,030	635,713	79,683	14.3		
Hawaii	121,955	56,121			65,833	54.0
Idaho	140,041	126,006			14,035	10.0
Illinois	690,571	714,547	23,976	3.5		
Indiana	424,882	435,716	10,834	2.5		
Iowa	226,272	244,450	18,178	8.0		
Kansas	219,222	250,339	31,117	14.2		
Kentucky	293,560	330,426	36,867	12.6		
Louisiana	277,068	321,147	44,079	15.9		
Maine	124,506	98,548			25,958	20.8
Maryland	370,327	332,302			38,025	10.3
Massachusetts	788,804	363,092			425,712	54.0
Michigan	524,273	649,300	125,027	23.8		
Minnesota	324,822	348,605	23,783	7.3		
Mississippi	212,546	238,188	25,641	12.1		

Dollars in thousands

State	Actual FY 1995 distributions under ISTEA	FY 1995 distributions under alternative formula	States gaining funds under alternative formula		States losing funds under alternative formula	
			Dollars	Percent	Dollars	Percent
Missouri	423,299	491,189	67,890	16.0		
Montana	178,392	155,178			23,214	13.0
Nebraska	140,867	173,481	32,613	23.2		
Nevada	124,353	139,330	14,976	12.0		
New Hampshire	91,647	80,193			11,454	12.5
New Jersey	569,501	417,567			151,934	26.7
New Mexico	192,843	194,894	2,052	1.1		
New York	1,030,282	899,946			130,336	12.7
North Carolina	496,096	510,989	14,893	3.0		
North Dakota	125,221	106,277			18,944	15.1
Ohio	700,564	744,800	44,237	6.3		
Oklahoma	272,696	296,151	23,454	8.6		
Oregon	221,254	283,519	62,265	28.1		
Pennsylvania	1,045,722	742,117			303,605	29.0
Puerto Rico	87,783	83,222			4,561	5.2
Rhode Island	114,178	57,357			56,821	49.8
South Carolina	197,636	312,591	114,955	58.2		
South Dakota	126,915	120,957			5,958	4.7
Tennessee	382,866	437,824	54,959	14.4		
Texas	1,221,619	1,452,150	230,530	18.9		
Utah	136,125	179,132	43,007	31.6		
Vermont	83,341	56,030			27,312	32.8
Virginia	403,872	509,668	105,796	26.2		
Washington	254,010	391,889	137,879	54.3		
West Virginia	226,596	154,977			71,619	31.6
Wisconsin	368,272	377,277	9,005	2.4		
Wyoming	119,626	119,317			309	0.3
Total	**19,095,656**	**19,095,656**	**1,808,435**		**1,808,435**	

Notes: Shading indicates those states that would gain funds under the alternative distribution.

Totals may not add because of rounding.

Federal Funding as a Percentage of Total Highway Receipts, by State, Fiscal Year 1994

Dollars in thousands

State	Contribution from federal government	Total receipts	Federal contribution as percentage of total receipts
Alabama	332,310	1,007,101	33
Alaska	214,957	436,056	49
Arizona	181,052	1,083,145	17
Arkansas	225,215	668,242	34
California	1,340,780	5,111,941	26
Colorado	274,892	890,138	31
Connecticut	336,934	1,053,229	32
Delaware	78,620	309,563	25
Dist. of Columbia	48,727	289,250	17
Florida	649,151	2,923,270	22
Georgia	398,908	1,298,222	31
Hawaii	226,930	365,242	62
Idaho	104,962	323,923	32
Illinois	556,491	2,727,428	20
Indiana	386,082	1,359,131	28
Iowa	272,938	1,005,267	27
Kansas	167,030	1,062,946	16
Kentucky	228,715	1,399,035	16
Louisiana	228,248	745,851	31
Maine	86,650	333,338	26
Maryland	250,764	1,194,821	21
Massachusetts	731,936	2,313,017	32
Michigan	389,334	1,661,472	23
Minnesota	334,497	1,303,184	26
Mississippi	225,839	698,567	32
Missouri	346,634	1,112,755	31
Montana	160,988	313,632	51
Nebraska	149,493	558,549	27
Nevada	97,429	370,178	26
New Hampshire	94,834	334,175	28
New Jersey	460,033	2,490,037	18
New Mexico	181,164	518,644	35
New York	848,026	4,483,431	19
North Carolina	383,600	1,690,327	23
North Dakota	107,996	234,866	46

(continued)

Dollars in thousands

State	Contribution from federal government	Total receipts	Federal contribution as percentage of total receipts
Ohio	568,413	2,490,193	23
Oklahoma	177,402	710,506	25
Oregon	226,527	851,961	27
Pennsylvania	746,074	3,085,837	24
Rhode Island	134,177	313,557	43
South Carolina	223,026	631,700	35
South Dakota	124,300	275,850	45
Tennessee	265,171	1,210,728	22
Texas	1,011,466	3,383,666	30
Utah	150,855	404,685	37
Vermont	97,717	227,338	43
Virginia	219,948	1,927,064	11
Washington	377,940	1,454,616	26
West Virginia	292,444	774,711	38
Wisconsin	354,736	1,167,722	30
Wyoming	170,236	269,185	63
Total	16,242,591	62,849,292	26

Source: 1993 Highway Statistics, Federal Highway Administration.

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