

**FINAL REPORT**

**submitted to**

**IDAHO TRANSPORTATION DEPARTMENT**

# **Highway Cost Allocation Study**

**Prepared by**

**SYDEC, Inc.**

**in association with**

**R. D. Mingo and Associates**

**Harry Cohen, Consultant**

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## SUMMARY

### Scope of the Study

This report presents the final results of the 2002 Idaho Highway Cost Allocation Study (HCAS). A cost allocation study provides information on the fairness of highway user taxes and fees with respect to different vehicle classes such as automobiles, buses, and various types of trucks. The degree of fairness, or equity, is determined by comparing the highway-related taxes and fees paid by each vehicle class to its fair share of highway-related expenditures (referred to as the “cost responsibility” of that class). Based upon these findings, changes in the highway financing structure can be proposed to increase equity by bringing highway user payments more closely in line with cost responsibilities for each vehicle class.

The scope of the Idaho HCAS is a comprehensive one, including both state-administered highways, state assistance to local governments and districts for local streets and highways, and user payments and shares of cost responsibilities due to federal programs in Idaho as well. A cost allocation study is limited, however, only to considerations of the equity of highway-related taxes and fees. Non-user taxes that may be spent on streets and highways (like property taxes used by local governments for road improvements and maintenance) cannot logically be attributed to vehicle classes. Furthermore, the allocations of cost responsibilities for highway expenditures are based upon current or projected highway programs. A cost allocation study does not include any estimate or evaluation of highway needs, nor does it consider whether new sources of revenue are warranted to support an expanded program.

The study covers revenues projected to be received during FY 2001 through FY 2005 levied uniquely on motor vehicles and their use of the highways, regardless of the disposition of those receipts. Thus, Idaho highway user revenues are defined to include all of the fuel taxes, registration fees, and other user revenues distributed to local governments, and to the Department of Law Enforcement for state police and other highway-related programs. Likewise, the study covers all highway-related expenditures programmed for FY 2001 through FY 2005 regardless of the source of funding, and includes motor vehicle administration and state police as well as highway construction, maintenance, and operation.

The primary focus of this study is on the combined state and federal highway program in Idaho because of the increasing interdependency of these funds and the increasing flexibility that Idaho now has in programming federal funds for the various components of its highway programs.

Despite the comprehensive scope of this study, the conclusions reported here are based on a limited-scale HCAS. The estimates of revenues collected from the various classes of vehicles and their cost responsibility for portions of the Idaho highway program are less precise than in the 1994 Idaho HCAS report because this current study is essentially an update of the 1994 study. The scale of effort involved has been about one-quarter of the earlier effort. Many of the old relationships developed in the 1994 study were re-used in this study. Generally, however, the old relationships that were used in this study are those that are judged to have changed relatively little, so that the level of error introduced is likely to be small.

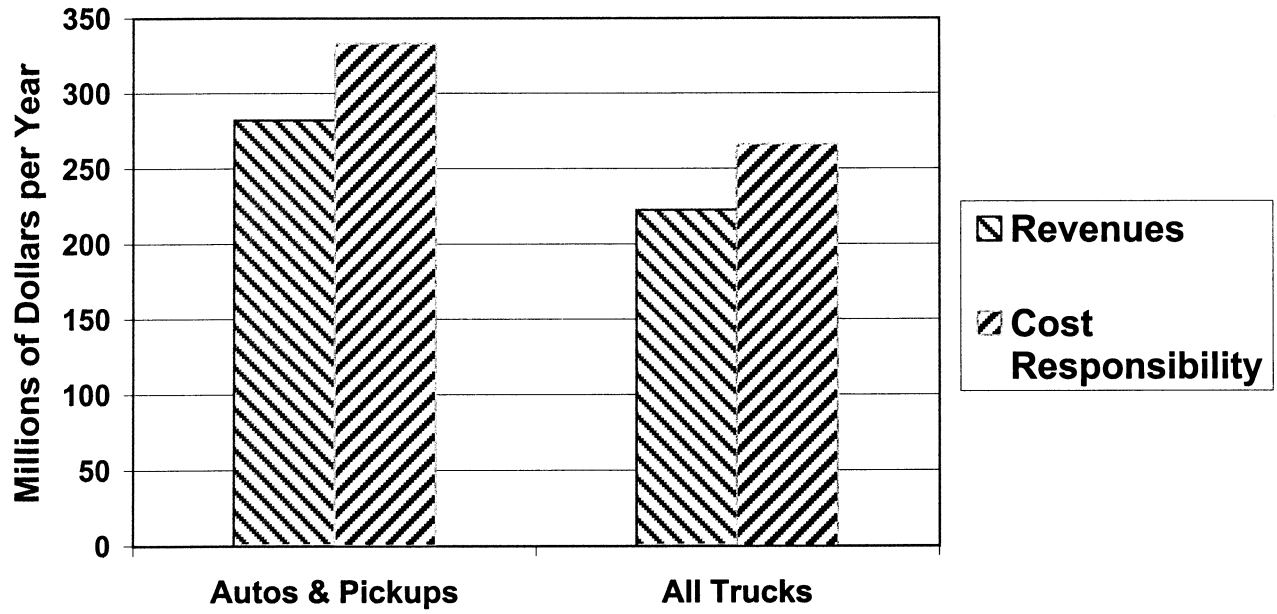
### **Summary of Findings**

Exhibit 1 shows the basic results of the study for the two principal classes of vehicles: (1) all light vehicles, consisting of autos, pickups, and small trucks (registrations up to 8,000 pounds), and (2) all heavier trucks. The only motor vehicles omitted from this bar graph are buses, which comprise less than one percent of the vehicle miles of travel (VMT) in Idaho.

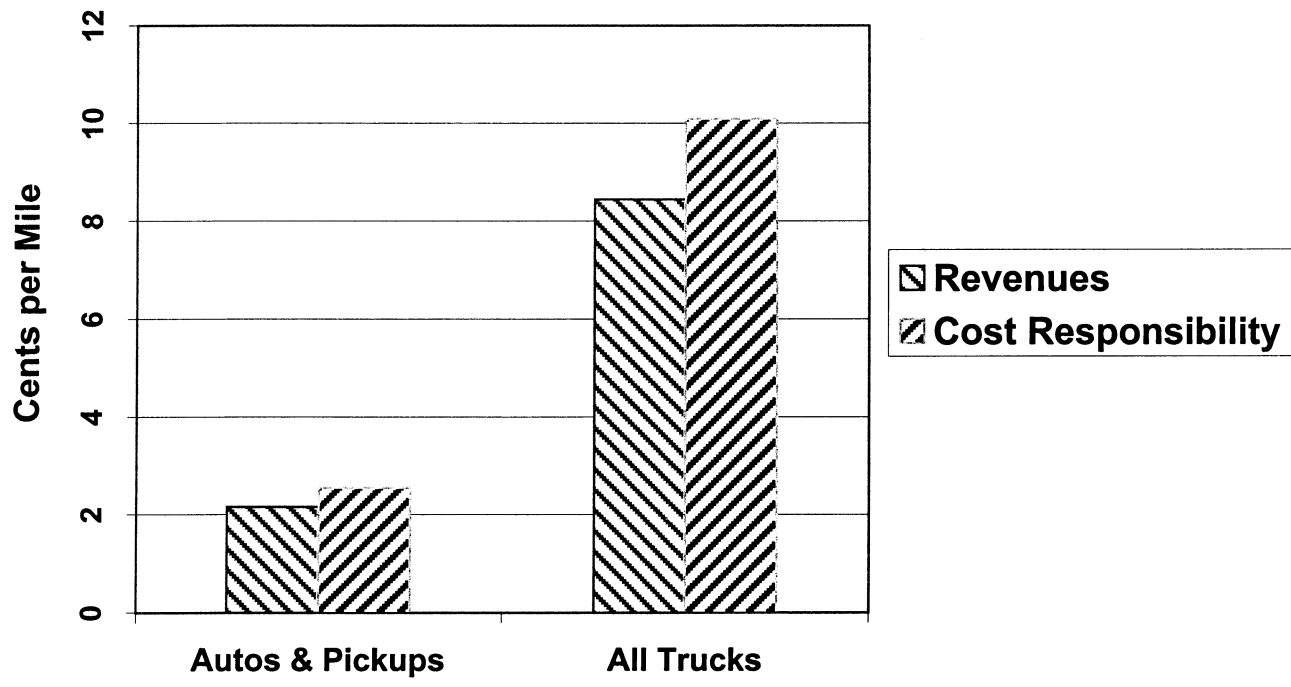
Exhibit 1 shows that light vehicles (autos and pickups) pay more than half the total revenue and have more than half the total cost responsibility. It also shows both light vehicles and trucks pay less in highway user revenue than their highway cost responsibility by a significant amount. This is primarily due to the fact that the federal government spends substantially more in Idaho than it collects from all vehicles operated in Idaho. Federal expenditures in Idaho include assistance to the Idaho Transportation Department for construction and maintenance, assistance to other state and local agencies, and direct federal expenditures for highways in federal forests and other federal lands.

Exhibit 2 shows the same results as Exhibit 1 expressed on a per vehicle mile of travel basis, since a high proportion of both revenues and cost responsibility are related to the vehicle

**Exhibit 1**  
**Combined State and Federal Revenues and Cost Responsibility for Two Vehicle Classes**



**Exhibit 2**  
**Combined State and Federal Revenues and Cost Responsibility per Mile for Two Vehicle Classes**



miles of travel. Note that both the revenues per mile and the cost responsibility per mile are about four times as great for trucks as for autos and pickups.

Exhibit 3 shows the data on which Exhibits 1 and 2 are based and provides some additional detail to permit more precise comparisons. The top part of the table breaks out the state part of the total -- i.e., excluding both the federal highway user taxes and fees collected from Idaho vehicles operating in Idaho and the federal assistance and direct expenditures in Idaho. This shows that the ratio of state revenues to state cost responsibility is lower (0.90) for autos and pickups than the same ratio for all trucks (1.09). More detail on the state-only comparisons of revenues and expenditures is provided in Appendix A.

Exhibits 1 and 2 are based on the data in the bottom part of Exhibit 3. This second part of Exhibit 3 adds in the federal highway user revenues from vehicles operating in Idaho and the cost responsibility for all federal highway assistance to Idaho and the direct federal expenditures in Idaho on federal lands.

In the third line, note that the ratios of revenues to cost responsibility for state plus federal programs are very similar for the two broad classes of vehicles, 0.85 and 0.84. Also note that the ratio of revenues to cost responsibility for all vehicles (in the last column) is 0.84, which means that total state and federal highway user revenues equal only 84% of total state and federal expenditures in Idaho. This is primarily because the federal highway program has long recognized the national interest in facilitating long-distance interstate travel in the sparsely populated Rocky Mountain states. Because of this national policy, it is not reasonable to expect each vehicle class to pay full cost responsibility in Idaho, but instead to pay its share of revenue based on its share of cost responsibility.

In order to provide the appropriate measure relating to this criterion, an "Adjusted Ratio" is shown on the next line of Exhibit 3. When the revenue-to-cost-responsibility ratios are adjusted by expressing them as shares of revenue divided by shares of cost responsibility, which is the most common way of defining equity ratios, autos and pickups are shown to be "overpaying" by the very slight amount of one percent and trucks "underpaying" by an equally

**Exhibit 3**  
**Revenue-to-Cost-Responsibility Ratios for Two Major**  
**Vehicle Classes for FY 2001 - 2005 for All State Programs**  
**And for State and Federal Programs Combined**

	<u>Autos &amp; Pickups</u>	<u>All Trucks</u>	<u>All Vehicles</u>
<b><u>All State Programs</u></b>			
Revenue (millions per year)	174	126	302
Cost Responsibility (million per year)	193	116	311
Revenue / Cost Responsibility	0.90	1.09	0.97
<b><u>State Plus Federal Programs</u></b>			
Revenue (millions per year)	282	223	508
Cost Responsibility (million per year)	333	266	604
Revenue / Cost Responsibility	0.85	0.84	0.84
Adjusted Ratio (% of revenue / % of cost responsibility)	1.01	0.99	1.00
Revenue per mile (cents)	2.16	8.44	3.21
Cost Responsibility per mile (cents)	2.55	10.09	3.81

**Exhibit 4**  
**Revenue-to-Cost-Responsibility Ratios**  
**All State and Federal Programs for FY 2001 - 2005**

Vehicle Class	Revenue-to-Cost Responsibility Ratio		1994 Study Adjusted Ratio
	Unadjusted	Adjusted	
<b>Autos</b>	0.79	0.94	0.84
<b>Pickups</b>	0.93	1.11	1.19
<b>Buses</b>	0.65	0.77	1.08
<b>Single Unit Trucks</b>	0.98	1.17	1.20
<b>Combinations</b>	0.79	0.95	0.99
<b>All Vehicles</b>	0.84	1.00	1.00

Registered Weight (000)	Revenue-to-Cost Responsibility Ratio		1994 Study Adjusted Ratio
	Unadjusted	Adjusted	
<b>0-8</b>	0.84	1.00	0.98
<b>8-20</b>	1.10	1.31	1.24
<b>20-30</b>	1.04	1.24	1.23
<b>30-40</b>	1.14	1.35	1.14
<b>40-50</b>	1.33	1.58	1.55
<b>50-60</b>	1.51	1.80	1.17
<b>60-70</b>	1.40	1.67	1.02
<b>70-80</b>	0.74	0.89	0.96
<b>&gt;80</b>	0.90	1.07	1.03
<b>All Weights</b>	0.84	1.00	1.00

slight one percent. These percentages can be converted into dollar amounts of under- or overpayment, as will be done in the body of this report.

The use of these adjusted ratios as the basic measure of the fairness of the tax structure has no implication that the highway user revenues as a whole should be adjusted upward to match total cost responsibility. Quite the opposite, the use of these adjusted ratios implicitly recognizes and accepts the given policy of an imbalance between revenues and expenditures -- in this case, primarily the national policy of facilitating national travel through Idaho.

Exhibit 4 provides the final summary results, showing similar ratios for each of the main five classes of vehicles and breakdowns of vehicles by several registered weight ranges.

Note that the last two columns of Exhibit 4 show a comparison of the adjusted equity ratios between this study and the 1994 HCAS. Autos and pickups have each moved somewhat closer to the ideal ratio of 1.00, but are still significantly underpaying and overpaying respectively. Buses are now heavily subsidized, but comprise well under one percent of total cost responsibility. Single unit trucks are overpaying more than any other vehicle class, although the amount of overpayment has decreased slightly. Combination trucks have slipped from very slight underpayment to a significant amount of underpayment.

The results by registered weight range shown in the bottom part of Exhibit 4 elaborate on the above difference in results for trucks. Note that trucks are overpaying in every registered weight range from 8,000 pounds through 70,000 pounds. Also note that only the 70,000 to 80,000 pound registered weight range is underpaying and that it is underpaying by more than twice as much as combination trucks as a whole (by 11 percent compared to 5 percent).

Some of the reasons for the variations in equity ratios among the various vehicle classes will be discussed in the main section of the report.

## **DETAILED RESULTS AND FINDINGS**

### **Outline of How the Results Were Developed**

The detailed results presented in this report were developed in essentially the same manner as was done in the 1994 Idaho Highway Cost Allocation Study (HCAS). The theory and general procedures used were described in Chapters 2 and 3 of the February 1994 Final Report of that study, and the detailed data, procedures, and computer programs were described in a separate Documentation Report of the same date. Some modifications that were made to the original procedures are described in Appendix B of this report.

All forecasts used for this study were developed by staff of the Idaho Transportation Department. Revenues for each highway user tax and fee were forecast for FY 2003, the mid-year of the five-year construction program period of FY 2001 through FY 2005. The major portion of the expenditures used for the allocation of cost responsibility to vehicle classes is the adopted construction program for this five-year period. ITD staff also provided forecasts of other expenditures and vehicle miles of travel (VMT) for light and heavy vehicles for FY 2003, and these were then distributed among highway functional classes and vehicle classes using the same procedures as used in the 1994 study.

Exhibit 5 provides more detailed information for the summary results presented in Exhibit 4 at the end of the Summary section.

The user revenues in the first column of Exhibit 5 are the sum of fuel taxes, registration fees, and various other highway user fees collected at the state level, plus somewhat similar taxes and fees collected at the federal level. The FY 2003 forecasts were attributed to detailed vehicle categories broken down by registered gross weight, revenue class, and the five vehicle classes shown in this exhibit, based on the characteristics of the various vehicle classes (fuel economy, registered weight, proportion of vehicles exempt from fees, etc.).

**Exhibit 5**  
**Revenue-to-Cost-Responsibility Ratios with Detailed Data**  
**Covering All State and Federal Highway Programs for FY 2001 - 2005**

Vehicle Class	User Revenue		Cost Responsibility		Vehicle Miles (Millions)	Revenue Per Mile (Cents)	Cost Per Mile (Cents)	Revenue-to-Cost Responsibility Ratio		1994 Study Adjusted Ratio *
	(Millions per year)	160	(Millions per year)	202				Unadjusted	Adjusted *	
Autos	123	131	4	122	8,007	1.99	2.52	0.79	0.94	0.84
Pickups	3	58	59	897	5,059	2.42	3.51	0.93	1.11	1.19
Buses	165	508	208	1,742	122	2.28	6.53	0.65	0.77	1.08
Single Unit Trucks	282	333	604	15,826	897	6.43	11.92	0.98	0.95	1.20
Combinations	223	266	266	2,639	1,742	9.47	10.09	0.79	0.95	0.99
All Vehicles					15,826	3.21	3.81	0.84	1.00	1.00
Autos + Pickups					13,066	2.16	2.55	0.85	1.01	0.97
All Trucks					2,639	8.44	10.09	0.84	0.99	1.04

Registered Weight (000)	User Revenue		Cost Responsibility		Vehicle Miles (Millions)	Revenue Per Mile (Cents)	Cost Per Mile (Cents)	Revenue-to-Cost Responsibility Ratio		1994 Study Adjusted Ratio *
	(Millions per year)	282	(Millions per year)	334				Unadjusted	Adjusted *	
0-8	20	8	7	150	13,100	2.15	2.55	0.84	1.00	0.98
8-20	8	5	4	71	483	4.22	3.84	1.10	1.31	1.24
20-30	7	7	5	66	150	5.17	4.95	1.04	1.24	1.23
30-40	7	4	4	61	71	7.06	6.21	1.14	1.35	1.14
40-50	4	137	184	1,551	66	10.03	7.54	1.33	1.58	1.55
50-60	38	3	43	317	61	10.98	7.27	1.51	1.80	1.17
60-70	508	3	604	15,826	27	12.99	9.25	1.40	1.67	1.02
70-80	3	134	182	1,528	1,551	8.85	11.89	0.74	0.89	0.96
>80					317	12.10	13.49	0.90	1.07	1.03
All Weights					15,826	3.21	3.81	0.84	1.00	1.00
70-78					23	12.25	9.58	1.28	1.52	
78-80					1,528	8.80	11.92	0.74	0.88	

\* Share of user revenue divided by share of cost responsibility for all vehicles. The "Adjusted ratio" for all vehicles thus equals 1.00 by definition and provides an overall measure of equity for each vehicle class.

Similarly, the construction, maintenance, and other expenditures projected for the FY 2001 through FY 2005 period were allocated among detailed vehicle categories based on various vehicle characteristics (e.g., vehicle miles of travel, axle weights, and travel patterns) broken down by detailed vehicle configurations and operating weight classes, and then converted back into registered weight classes using conversion procedures developed in the 1994 study.

The vehicle miles shown in the third column of Exhibit 5 are projected annual vehicle miles of travel in Idaho for FY 2003, the mid-year of the five-year program period of FY 2001 through FY 2005. These VMT forecasts are then divided into the first two columns of Exhibit 5 to yield the estimates in the next two columns -- revenue per mile and cost responsibility per mile. This is done in order to show these results in a manner so that it is easier to compare revenues and costs among vehicle classes on a more common basis related to average vehicles in each class.

The “Unadjusted Revenue-to-Cost-Responsibility Ratios” in the next (sixth) column are simple divisions of either the first two columns or the preceding two columns. Finally, the “Adjusted Revenue-to-Cost-Responsibility Ratios” in the next column are the unadjusted ratios divided by the unadjusted ratio for all vehicles. This definition of adjusted ratios is identical to the percent of revenues in each vehicle class divided by the percent of cost responsibility for each vehicle class.

“Adjusted Revenue-to-Cost-Responsibility Ratios,” or “Adjusted Equity Ratios,” are the basic measure of equity or fairness used in this report, as in the 1994 report and in most state highway cost allocation studies. This basic measure of equity recognizes that there are often very legitimate policy reasons why total highway user revenues do not exactly equal total highway-related expenditures (or total highway costs, which may differ somewhat from expenditures over any given period). For example, subsidies for highways may be obtained from non-highway-user revenues, as is done at the federal level for most highways in national parks, forests, and other federal facilities. Alternatively, highway user revenues are frequently used to subsidize public transit or other transportation modes, and have been used at the federal level to support deficit reduction.

The last column compares the adjusted ratios developed in this study with those developed in the 1994 study.

Exhibit 5A shows a different way of measuring the fairness of the highway user tax structure by showing the dollar amount of underpayment or overpayment of revenues for each vehicle class, in comparison to the cost responsibility of each class.

In order to show the step-by-step calculation process, Exhibit 5A starts by repeating the first two columns of Exhibit 5, showing the user revenues and cost responsibility for the same vehicle classes. In addition, both the unadjusted and adjusted equity ratios are repeated from Exhibit 5 in the third and fourth columns of Exhibit 5A.

Next, Exhibit 5A shows the “Fair Share of Revenue Based on Cost Responsibility” in the fifth column. Each fair share is the percent of cost responsibility for that vehicle class multiplied by the total user revenue for all vehicle classes.

The final column of Exhibit 5A shows the average annual dollar amount of underpayment or overpayment for each vehicle class. Each value in this column is the user revenue for that class minus the fair share of revenue for that vehicle class.

In the top half of Exhibit 5A, note that both autos and combination trucks are underpaying by an average annual amount of about \$10 million per year; while pickups and single unit trucks are overpaying by about \$12 million and \$8 million per year respectively.

Perhaps most importantly, the bottom half of Exhibit 5A shows that, when vehicles are compared on the basis of registered weight, the only large vehicle class that is underpaying is the 70,000 to 80,000 pound class -- by about \$18 million per year. Note that the amount of underpayment for the more detailed class of 78,000 to 80,000 pounds is slightly greater -- almost \$19 million per year.

**Exhibit 5A**  
**Revenue Underpayment or Overpayment for Each Vehicle Class**  
**Covering All State and Federal Highway Programs for FY 2001 - 2005**

Vehicle Class	User Revenue		Cost Responsibility		Revenue-to-Cost Responsibility Ratio		Fair Share of Revenue Based on Cost Responsibility	Annual Underpayment or Overpayment (Millions)
	(Millions per year)	(Millions per year)	(Millions per year)	(Millions per year)	Unadjusted	Adjusted *		
Autos	160	202	0.79	0.94	170	-10.1		
Pickups	123	131	0.93	1.11	110	12.2		
Buses	3	4	0.65	0.77	4	-0.8		
Single Unit Trucks	58	59	0.98	1.17	49	8.3		
Combinations	165	208	0.79	0.95	175	-9.6		
<b>All Vehicles</b>	<b>508</b>	<b>604</b>	<b>0.84</b>	<b>1.00</b>	<b>508</b>	<b>0.0</b>		
Autos + Pickups	282	333	0.85	1.01	280	2.0		
All Trucks	223	266	0.84	0.99	224	-1.2		

Registered Weight (000)	User Revenue		Cost Responsibility		Revenue-to-Cost Responsibility Ratio		Fair Share of Revenue Based on Cost Responsibility	Annual Underpayment or Overpayment (Millions)
	(Millions per year)	(Millions per year)	(Millions per year)	(Millions per year)	Unadjusted	Adjusted *		
0-8	282	334	0.84	1.00	281	1.0		
8-20	20	19	1.10	1.31	16	4.8		
20-30	8	7	1.04	1.24	6	1.5		
30-40	5	4	1.14	1.35	4	1.3		
40-50	7	5	1.33	1.58	4	2.4		
50-60	7	4	1.51	1.80	4	3.0		
60-70	4	3	1.40	1.67	2	1.4		
70-80	137	184	0.74	0.89	155	-17.8		
>80	38	43	0.90	1.07	36	2.4		
<b>All Weights</b>	<b>508</b>	<b>604</b>	<b>0.84</b>	<b>1.00</b>	<b>508</b>	<b>0.0</b>		
70-78	3	2	1.28	1.52	2	1.0		
78-80	134	182	0.74	0.88	153	-18.7		

\* Share of user revenue divided by share of cost responsibility for all vehicles. The "Adjusted ratio" for all vehicles thus equals 1.00 by definition and provides an overall measure of equity for each vehicle class.

## **Discussion of Results and Findings**

The adjusted equity ratios for both classes of light vehicles moved closer to the ideal of 1.00 since 1994, although the ratios are both still significantly different from 1.00. However, very little attention should be given to the difference in the results for autos and pickups because of the poor quality of the data available for distinguishing between these two vehicle classes as observed on the highway and the fact that no new analysis of trends in fuel economy or other factors was conducted as part of this study. Because of this, the most important observation that can be made is that between 1994 and 2002 the composite adjusted equity ratio for light vehicles changed from 0.97 to 1.01. That is, as a whole light vehicles are no longer slightly underpaying, but are now very slightly overpaying.

The adjusted equity ratio for buses moved from above 1.00 to the lowest of all vehicle classes (0.77), possibly reflecting a decline in private for-hire intercity bus operations and an increase in subsidized urban public transit and school bus operations.

Equity ratios for both classes of trucks decreased from 1994 to 2002 by comparable amounts, from 1.20 to 1.17 for single unit trucks and from 0.99 to 0.95 for combination trucks, probably due primarily to the elimination of the ton-mile tax and the replacement of it with a set of registrations fees that are relatively insensitive to miles of travel in Idaho. The composite adjusted equity ratio for all trucks moved from slight overpayment in the 1994 study (1.04) to a very slight underpayment (0.99) in this study.

However, the equity situation among trucks is now quite different from the equity situation among light vehicles, in that the current study results do provide evidence of very clear differences in the results among different classes of trucks. Single unit trucks are still substantially overpaying -- by 17%, and combinations are now underpaying significantly -- by 5%. More notably, the level of overpayment has increased since the 1994 study for every registered weight range from 8,000 pounds through 70,000 pounds, by at least a very small amount, and by a large amount in the 50,000 to 70,000 pound ranges. Meanwhile, the level of underpayment has increased almost threefold -- from 4% to 11% -- for 70,000 to 80,000 pound

trucks. For the dominant registered weight group, 78,000 to 80,000 pounds, the underpayment is now 12%.

Much of this can be explained by the fact that combination trucks in the important 78,000 to 80,000 pound range are primarily involved in long-haul interstate operations. These vehicles generally have a small proportion of their annual mileage in Idaho and therefore pay a small proportion of their annual registration fees to Idaho. As can be seen in Exhibit 5, as a whole 78,000 to 80,000 pound vehicles are paying Idaho less per mile of operation in Idaho (8.80 cents) than vehicles of both lighter registered weight (each weight range from 40,000 through 78,000 pounds) and heavier registered weight (over 80,000 pounds). Only vehicles registered under 40,000 pounds pay less per mile of operation in Idaho, and they have less than half the cost responsibility per mile in Idaho compared with the 78,000 to 80,000 pound vehicles.

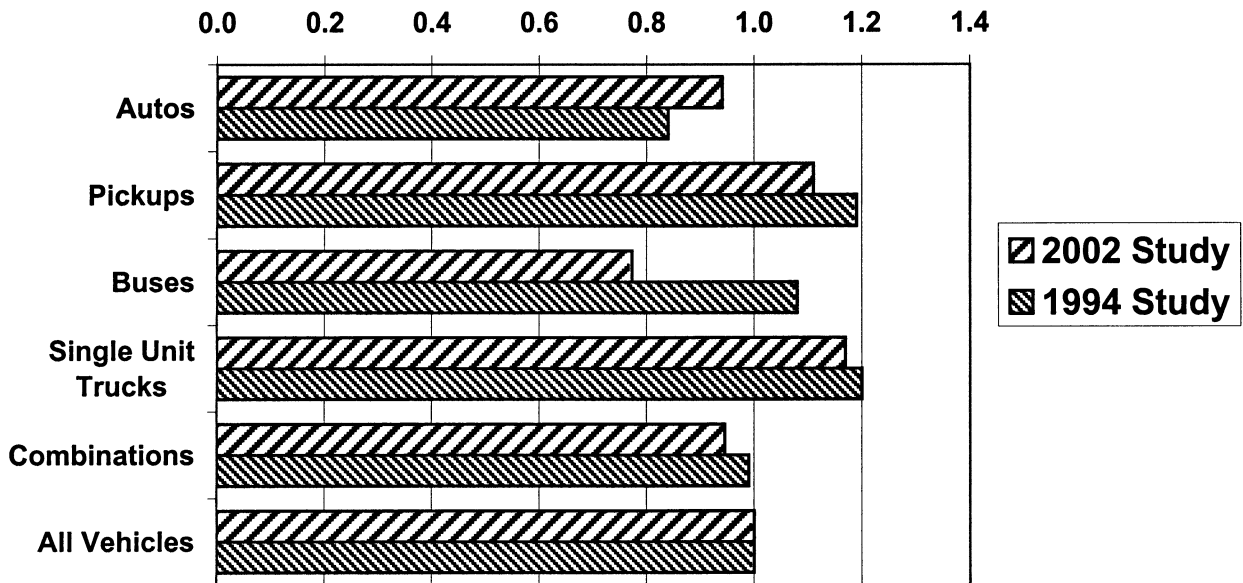
Exhibits 6 and 7 provide a graphic comparison of the adjusted equity ratios for the 1994 and 2002 studies, broken down by vehicle class and by registered weight range. Note that the biggest changes occurred in the middle weight ranges of 30,000 to 40,000 pounds, 50,000 to 60,000 pounds, and 60,000 to 70,000 pounds, and that all of these were increases in the level of overpayment. Much of this change is due to the fact that cost responsibility per mile went down substantially for each of these weight ranges due to decreases in the shares of expenditures on highway systems that are heavily used by these vehicles (non-Interstate routes generally).

These observations regarding changes in equity ratios for middle level registered weight ranges are not considered very accurate since these vehicle classes each make up well under 1% of the state's VMT.

Exhibit 8 provides a very approximate comparison of results for "Idaho Vehicles" (based in Idaho) and "Other Vehicles" (out-of-state-based). These results are very approximate because data on actual revenue receipts from these two classes of vehicles were not available for this study and had to be estimated from travel patterns developed during the 1994 study. Note that the adjusted equity ratio is slightly above 1.00 for Idaho vehicles as a whole (1.02) and somewhat more below 1.00 for Other Vehicles as a whole (0.96). However, no great importance

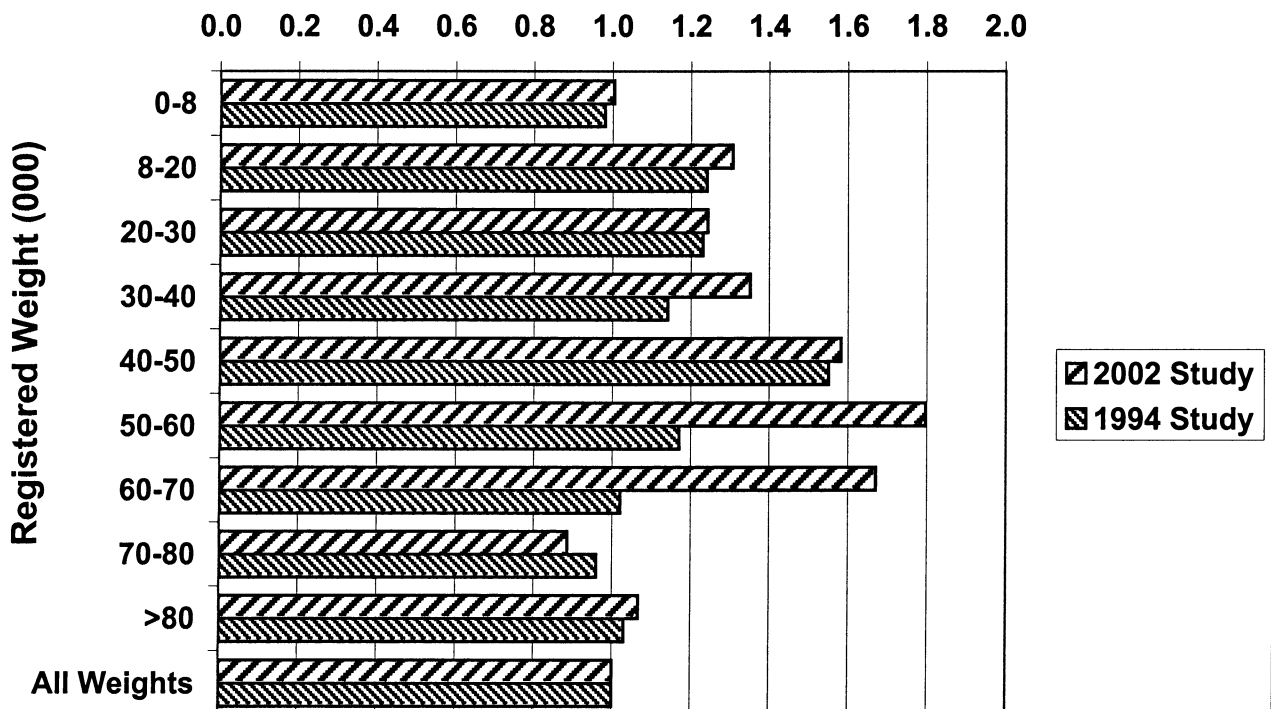
**Exhibit 6**  
**Adjusted Equity Ratios for All Vehicle Classes**  
**State + Federal Programs for FY 2001 - 2005**

Share of revenue / share of cost responsibility



**Exhibit 7**  
**Adjusted Equity Ratios by Weight Ranges**  
**State + Federal Programs for FY 2001 - 2005**

Share of revenue / share of cost responsibility



**Exhibit 8**  
**Revenue-to-Cost-Responsibility Ratios for Idaho and Other Vehicles**  
**Covering All State and Federal Highway Programs for FY 2001 - 2005**

**All Vehicles**

Registered Weight (000)	User Revenue (Millions)	Cost Responsibility (Millions)	Vehicle Miles (Millions)	Revenue Per Mile (Cents)	Cost Per Mile (Cents)	Revenue-to-Cost Responsibility Ratio	
						Unadjusted	Adjusted *
0-8	282.1	334.3	13,100	2.2	2.6	0.84	1.00
8-20	20.4	18.5	483	4.2	3.8	1.10	1.31
20-30	7.8	7.4	150	5.2	5.0	1.04	1.24
30-40	5.0	4.4	71	7.1	6.2	1.14	1.35
40-50	6.6	5.0	66	10.0	7.5	1.33	1.58
50-60	6.7	4.5	61	11.0	7.3	1.51	1.80
60-70	3.5	2.5	27	13.0	9.3	1.40	1.67
70-78	2.8	2.2	23	12.2	9.6	1.28	1.52
78-80	134.4	182.1	1,528	8.8	11.9	0.74	0.88
>80	38.3	42.7	317	12.1	13.5	0.90	1.07
<b>All Weights</b>	<b>507.6</b>	<b>603.7</b>	<b>15,826</b>	<b>3.2</b>	<b>3.8</b>	<b>0.84</b>	<b>1.00</b>

**Idaho Vehicles**

Registered Weight (000)	User Revenue (Millions)	Cost Responsibility (Millions)	Vehicle Miles (Millions)	Revenue Per Mile (Cents)	Cost Per Mile (Cents)	Revenue-to-Cost Responsibility Ratio	
						Unadjusted	Adjusted *
0-8	282.0	334.2	13,098	0.0	2.6	0.84	1.00
8-20	19.8	18.1	470	4.2	3.8	1.10	1.30
20-30	6.7	6.7	135	5.0	4.9	1.01	1.20
30-40	2.0	2.1	35	5.8	6.2	0.93	1.11
40-50	5.4	4.1	54	9.9	7.5	1.31	1.56
50-60	2.5	1.8	24	10.4	7.2	1.43	1.70
60-70	1.7	1.3	14	12.3	9.3	1.32	1.58
70-78	0.8	0.7	8	10.6	9.8	1.07	1.28
78-80	30.4	44.3	372	8.2	11.9	0.69	0.82
>80	30.0	33.4	248	12.1	13.5	0.90	1.07
<b>All Weights</b>	<b>381.3</b>	<b>446.7</b>	<b>14,457</b>	<b>2.6</b>	<b>3.1</b>	<b>0.85</b>	<b>1.02</b>

**Other Vehicles**

Registered Weight (000)	User Revenue (Millions)	Cost Responsibility (Millions)	Vehicle Miles (Millions)	Revenue Per Mile (Cents)	Cost Per Mile (Cents)	Revenue-to-Cost Responsibility Ratio	
						Unadjusted	Adjusted *
0-8	0.1	0.1	2	3.0	2.6	1.16	1.38
8-20	0.6	0.5	13	4.5	3.8	1.17	1.40
20-30	1.0	0.8	15	6.9	5.1	1.36	1.62
30-40	3.0	2.3	36	8.3	6.2	1.33	1.58
40-50	1.3	0.9	12	10.6	7.5	1.41	1.68
50-60	4.2	2.7	37	11.4	7.2	1.57	1.87
60-70	1.9	1.3	14	13.6	9.3	1.47	1.75
70-78	2.0	1.4	15	13.1	9.4	1.38	1.65
78-80	104.0	137.8	1,156	9.0	11.9	0.75	0.90
>80	8.3	9.3	69	12.0	13.4	0.89	1.06
<b>All Weights</b>	<b>126.3</b>	<b>156.9</b>	<b>1,369</b>	<b>9.2</b>	<b>11.5</b>	<b>0.80</b>	<b>0.96</b>

\* Share of user revenue divided by share of cost responsibility for all vehicles. The "Adjusted ratio" for all vehicles thus equals 1.00 by definition and provides an overall measure of equity for each vehicle class.

should be placed on this observation since "Other Vehicles" are predominantly 78,000 to 80,000 pound vehicles, and they are shown to be underpaying substantially regardless of whether or not they are based in Idaho or other states.

## **APPENDIX A**

### **RESULTS FOR STATE-ONLY FUNDS AND PROGRAMS**

The 1994 Highway Cost Allocation Study (HCAS) focused primary attention on results based on state-level tax structure and expenditures of state-only funds. This has been the focus of many state HCAS up to that time, in large part because the federal highway program had been primarily a well-defined Interstate Highway construction program from the mid-1950s through much of the 1980s.

However, during the 1980s the Interstate Highway construction program was essentially completed. With the advent of the Intermodal Surface Transportation Efficiency Act (ISTEA) in 1991 the federal highway program shifted to a much more flexible state and local intermodal assistance program, and federal funds became much more co-mingled with state and local funding for a wide range of surface transportation improvements and operations. Finally, with enactment of the Transportation Equity Act for the 21st Century in 1998, the federal surface transportation program became more nearly a program of block grant assistance to state and local governments.

Thus, the rationale for a completely separate analysis of state-only funds in a state HCAS essentially disappeared. This study has therefore focused on the combined state and federal revenues and expenditures in Idaho. However, for the sake of comparison with the primary results of the 1994 HCAS, this Appendix presents a summary of the state-only results, performed essentially as done in the 1994 study.

Exhibit A-1 presents a summary of the state-only analysis in the same format as the combined results were presented in Exhibit 5. As expected from the results of the 1994 HCAS, the results present a more favorable picture for trucks and less favorable picture for light vehicles compared with the results for combined state and federal funds and programs. However, as noted in the body of this report, there has been a definite shift since 1994 in the direction of more

**Exhibit A1**  
**Revenue-to-Cost-Responsibility Ratios**  
**Covering State-Only Funds and Highway Programs for FY 2001 - 2005**

Vehicle Class	User Revenue (Millions)	Cost Responsibility (Millions)	Vehicle Miles (Millions)	Revenue Per Mile (Cents)	Cost Per Mile (Cents)	Revenue-to-Cost Responsibility Ratio		1994 Study Adjusted Ratio *
						Unadjusted	Adjusted *	
Autos	99	116	8,007	1.24	1.45	0.85	0.88	0.76
Pickups	75	77	5,059	1.48	1.52	0.98	1.01	1.03
Buses	2	2	122	1.55	1.84	0.84	0.86	0.79
Single Units	35	31	897	3.92	3.41	1.15	1.18	1.27
Combinations	91	86	1,742	5.23	4.92	1.06	1.10	1.41
<b>All Vehicles</b>	<b>302</b>	<b>311</b>	<b>15,826</b>	<b>1.91</b>	<b>1.97</b>	<b>0.97</b>	<b>1.00</b>	<b>1.00</b>
Autos + Pickups	174	193	13,066	1.33	1.48	0.90	0.93	0.86
All Trucks	126	116	2,639	4.78	4.41	1.09	1.12	1.37

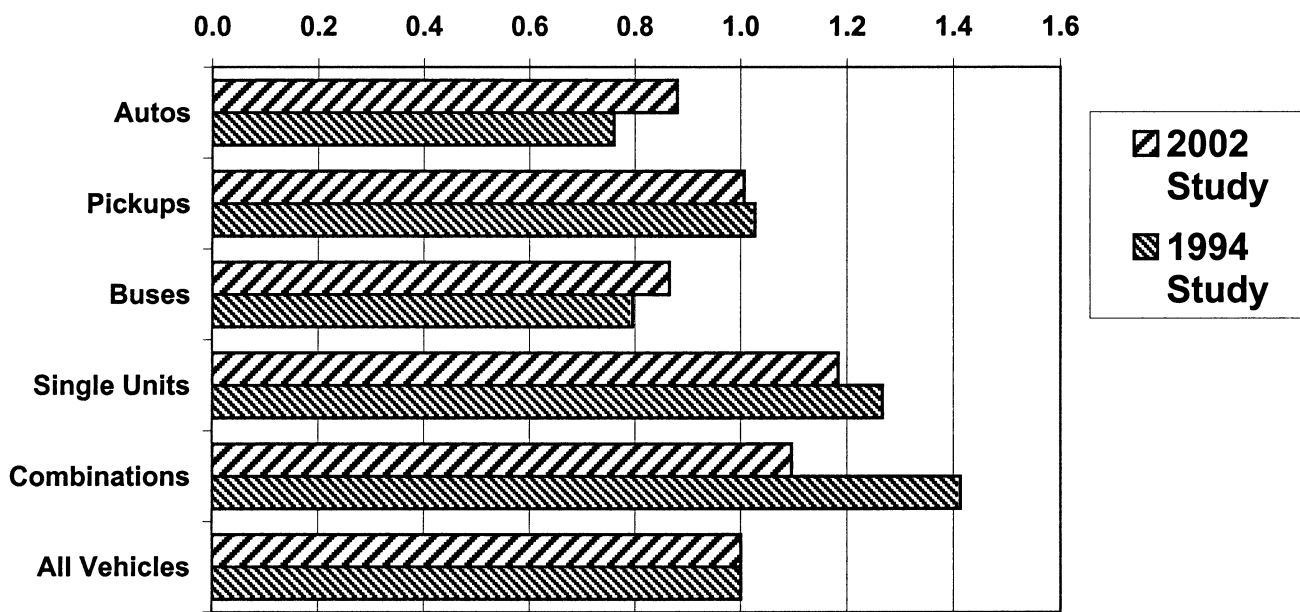
Registered Weight (000)	User Revenue (Millions)	Cost Responsibility (Millions)	Vehicle Miles (Millions)	Revenue Per Mile (Cents)	Cost Per Mile (Cents)	Revenue-to-Cost Responsibility Ratio		1994 Study Adjusted Ratio *
						Unadjusted	Adjusted *	
0-10	170	195	13,192	1.29	1.48	0.87	0.90	0.86
10-20	10	8	391	2.58	2.13	1.21	1.25	1.28
20-30	6	4	150	4.05	2.59	1.56	1.61	1.26
30-40	3	2	71	4.91	3.17	1.55	1.60	1.18
40-50	5	3	66	6.90	3.84	1.80	1.85	1.60
50-60	5	2	62	7.44	3.50	2.12	2.19	1.62
60-70	2	1	27	6.97	4.47	1.56	1.60	1.42
70-80	79	77	1,550	5.10	4.99	1.02	1.05	1.34
>80	22	18	317	7.09	5.76	1.23	1.27	1.44
<b>All Vehicles</b>	<b>302</b>	<b>311</b>	<b>15,826</b>	<b>1.91</b>	<b>1.97</b>	<b>0.97</b>	<b>1.00</b>	<b>1.00</b>
70-78	2	1	23	6.77	4.47	1.51	1.56	
78-80	78	76	1,528	5.08	5.00	1.02	1.05	

\* Share of user revenue divided by share of cost responsibility for all vehicles. The "Adjusted ratio" for all vehicles thus equals 1.00 by definition and provides an overall measure of equity for each vehicle class.

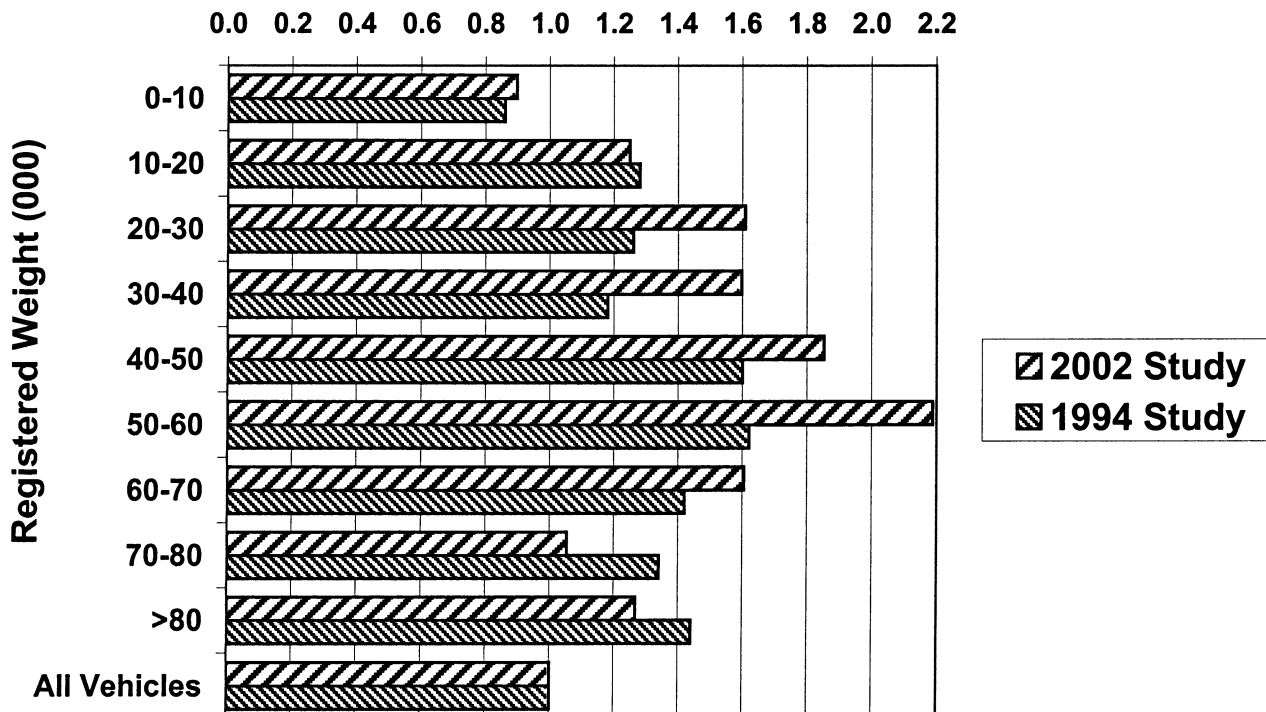
favorable results for light vehicles and less favorable results for trucks, for reasons discussed in the body of this report.

Exhibits A-2 and A-3 provide graphic comparisons of the shifts that have occurred since 1994 in the state-only analysis, in the same format as was done in Exhibits 6 and 7 for the combined state and federal analysis.

**Exhibit A2**  
**Adjusted Equity Ratios for All Vehicle Classes**  
**State-Only Funds and Programs for FY 2001 - 2005**  
 Share of revenue / share of cost responsibility



**Exhibit A3**  
**Adjusted Equity Ratios by Registered Weight Ranges**  
**State-Only Funds and Programs for FY 2001 - 2005**  
 Share of revenue / share of cost responsibility



## **APPENDIX B**

### **DOCUMENTATION OF PROCEDURES**

#### **Revisions to Revenue Attribution Procedures**

Federal and state highway user revenues for fiscal year 2003 were used to represent the fiscal years 2001 through 2005 analysis period.

FY 2003 state highway user revenues for gasoline, special fuels, registration fees, permit fees, and operators' licenses were obtained from forecasts prepared by Idaho Transportation Department staff in August 2001. A minor adjustment was made to eliminate revenue from fines, which generally are not included in revenues attributed to highway users.

FY 2003 federal highway user revenues for gasoline, special fuels, use tax, trucks and trailer sales, and tires were estimated based on (1) actual collections of federal highway user revenues attributed to Idaho for FY 2000 (as reported in *Highway Statistics 2000* Table FE-9) and (2) growth rates for state highway user revenues from FY 2000 to FY 2003.

One major change from the 1994 Highway Cost Allocation Study was that registration fees for vehicles over 60,000 pounds are now based not only on registered weight but also on annual mileage ranges. In order to accommodate this change within the existing computer program structure it was necessary to develop estimates of a single weighted average registration fee for each specific registered weight. This was done with the aid of estimates of annual mileage distributions by registered weight and revenue class developed by Idaho Transportation Department staff.

#### **Revisions to Cost Allocation Procedures**

We used the same cost allocation programs, procedures, and options used in the primary allocation process in the 1994 study. All of our revisions derived from the data sources and assumptions used in developing the array of highway expenditures used in the analysis.

As in the previous study, we calibrated all our expenditure distributions to control totals supplied by the Idaho Transportation Department, showing expenditures and anticipated expenditures by program. In the 1994 study, we had access to information that allowed us to distribute individual project expenditures to highway classes and construction cost categories. In this study, we had to use the distributions developed in the 1994 study, since the cost categories and highway classes were no longer included in the project database.

Similarly, we used maintenance cost distributions from the 1994 study, in the absence of new information on their distributions. We calibrated these distributions to the total maintenance estimates supplied by Idaho Transportation Department.