State Highway Aid
to Local Governments
in Tennessee

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State Highway Aid to Local Governments in Tennessee

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PURPOSE OF THE REPORT

The purpose of this report is to provide a closer examination of the distribution of gasoline and diesel fuel tax revenues. Gasoline and diesel fuel taxes accounted for over 41 percent of total state-shared taxes in fiscal year 2003.[1] The distribution from these taxes is required to be used for roads and mass transit. The special petroleum tax, which generates much less revenue, is also earmarked for spending on roads.

The Tennessee Advisory Commission on Intergovernmental Relations (TACIR) prepared this report as part of its study of state tax sharing in Tennessee. TACIR initiated the state-shared tax study in response to a request from the Speaker of the House of Representatives to examine fairness in state-shared taxes. The first phase of the study culminated in TACIR's January 2004 report, *State Tax Sharing, Fairness, and Local Government Finance in Tennessee*. At its January 2004 meeting, TACIR reviewed and discussed that report and decided on a course of action for the additional study. One such action was to further explore areas identified in the report as apparent inequities, including highway finance.

Readers seeking general information on Tennessee's highway system should refer to the July 2003 report by the Tennessee Comptroller of the Treasury, *Where are We Going? A Look at Transportation Planning in Tennessee*, available online at www.comptroller.state.tn.us.

EXECUTIVE SUMMARY

There exist several concerns regarding the equity of the current highway aid distribution formula in Tennessee. During fiscal year 2003, $268.8 million of state gasoline and diesel fuel tax collections were distributed to local governments in Tennessee as state highway aid, with municipalities receiving $89.7 million and counties receiving $179.1 million. This represents the largest component of state-shared taxes in Tennessee The gasoline tax rate is currently $0.20 per gallon and the diesel fuel tax rate is $0.17 per gallon.

DISTRIBUTION

The current distribution of state highway aid to counties in Tennessee is outdated, largely unchanged since 1931. The county portion is distributed according to a three-part formula:

- **One-half of the total amount shared with county governments is distributed equally to each county.** This component is clearly the most inequitable of the three components that jointly determine how much each county receives. The obvious criticisms of this component of the distribution are that it

  - accounts for the single largest dollar amount distributed to counties, and

  - is based on nothing that directly relates to streets, roads, and bridges.

- **Twenty-five percent of the total amount shared with county governments is distributed on the basis of county area.** This component is also poorly related to actual road mileage, usage, and maintenance expense, and therefore not an efficient method for distributing scarce resources for highway use.

- **Twenty-five percent of the total amount shared with county governments is distributed on the basis of population.** This is the only component of the distribution method that bears some relationship to road usage.

An ongoing controversy over the distribution of the gasoline and diesel fuel taxes centers on the somewhat arbitrary split between county and city governments of 2/3 and 1/3. Cities clearly have higher road usage, while counties own a larger share of road miles.

The city portion is distributed based upon population. While population has a clearer relationship to actual highway and road expenditure requirements than those used to distribute shared taxes to counties, it is also less than perfect. It does not capture the intensity of use of city roads and streets, and therefore remains an unproven variable for measuring actual highway, street, and bridge traffic volume and the resulting expenses associated with maintaining the public's investment in streets, roads, and bridges.

EFFORT

An important factor not now considered in distributing state aid to county governments is local fiscal effort.

While county fiscal capacity clearly varies across the state, there is no clear evidence that that factor alone accounts for the large variation in the local fiscal effort observed. One measure of county highway fiscal effort can be calculated as the ratio of county own-source revenue used for highway purposes to total county highway expenditures. A fiscal effort of 50 percent implies that half of the county highway program was financed by local revenue, and half by state aid.

This report shows an extensive variation in the highway program fiscal effort of county governments in Tennessee:

Category	Number of Counties
Counties locally funding over 60 percent of highway program	6
Counties locally funding 50 to 60 percent of highway program	15
Counties locally funding 20 to 50 percent of highway program	57
Counties locally funding 10 to 20 percent of highway program	13
Counties locally funding less than 10 percent of highway program	4

The median county effort was 32 percent. This implies that approximately half the counties (48) in the state shoulder 32 percent or less of their highway program costs while the other half contribute a larger share.

Many cities in Tennessee provide very few services to their residents, forcing county governments to provide most of the basic public services to the residents of such cities. In such cases, county governments likely spend more than they would if their respective city governments provided these services. Other cities, with similar populations, provide many of the basic services expected by city residents, removing the need for their respective county governments to provide city residents with these basic services.

FACTORS AFFECTING LOCAL EXPENDITURES

Population, while certainly a good proxy for establishing local service needs, is insufficient by itself to explain the wide variation in city and county spending patterns. The most obvious items affecting local highway budgets relate to measures of existing local roads and bridges and their use. Available or potentially available measures include:

- miles of road (centerline mileage),

- lane-miles of road,

- various measures of vehicle miles of travel,

- types of vehicles traveling on roads, and

- types of roads (gravel, asphalt, concrete) and bridges.

Weather, intensity of vehicle use, and the extent to which vehicle use consists of heavy vehicles all contribute to road life and maintenance requirements. None of these variables are directly considered in the current method used to distribute state aid for local highways and roads. Unfortunately, any modifications to the current model are limited by data availability. The Tennessee Department of Transportation (TDOT) has reported that due to the unique performance and design standards of the local

agencies, collecting, applying, and comparing the data statewide are difficult. Further, TDOT has no data on the unique topographic differences of local roads.

CORRELATIONS

Only city populations and city road miles are strongly correlated variables. The remaining correlations imply no significant relationship between any other combination of variables. Simple correlation analysis was used to evaluate how well the variables now utilized to distribute state road aid track or reflect differences in actual road-related statistics:

- **There is a clear and surprisingly high correlation between city population and city road miles (.96 correlation coefficient);**

- The correlation coefficient between county area and county road miles, equal to .70, reflects a mildly positive degree of association;

- County population has little correlation to county road miles (.27 correlation coefficient);

- County population residing outside cities correlates better with road miles (.52 correlation coefficient), but the relationship is still very weak;

- County area and total county population have a low correlation (.32 correlation coefficient).

OTHER STATES AND THE FEDERAL GOVERNMENT

Tennessee allocates a much greater share of road taxes (gasoline and diesel) to local governments than do neighboring states. Many states distribute state road funds using methods similar to those in Tennessee, often also based on dated criteria. Some have begun to modernize their distribution systems to reflect changing population distributions. The federal government has faced its own challenges over the distribution of road funds to the states. An attempt at major reform and equalization in 1991 largely failed and left much of the old 1916 formula in place, averaging

each state's traditional take with what they would receive under a new formula.

ALTERNATIVE DISTRIBUTION METHODS

Ideally, highway distributions to both city and county governments would reflect factors actually affecting highway budgets. Severe data limitations hinder the state's ability to reflect these factors. **Although the distribution to city governments, a per capita distribution, is not perfect, it is probably the best available with current data limitations.** Since city population correlates well with city road miles, distributing road aid to cites based on population does at least indirectly consider road mileage. This is not true for the distribution of road aid to county governments. There is room for improvement in the distribution to county governments. **Tennessee could modify the current method to reflect county highway maintenance and replacement cost factors in one of several ways.** A few examples are listed below.

- Replace the entire county formula with one that distributes funds based 1/3 on county lane miles, 1/3 on population, and 1/3 on land area.

- Replace the entire county formula with one that distributes funds based on weighted measures of road miles and vehicle usage.

- Replace the equal distribution share with a distribution based on a proxy measure for maintenance costs.

- Replace the equal distribution share with a distribution based on a component cost model using several measures. The model would attempt to estimate the cost to adequately fund transportation maintenance and replacement costs, similar to the component cost methodology used in the Basic Education Program (BEP).

- Replace the equal distribution share with a distribution based on a statistical model to calculate local transportation maintenance and life cycle costs. A regression model like that used in TACIR's fiscal capacity model could be used.

- Eliminate residents in group quarters, in particular inmates, from population figures that determine highway funding.

TACIR simulated the impact of two of these scenarios, the 1/3 population, 1/3 land area, 1/3 miles scenario, and the weighted population, road miles, and vehicle usage scenario. **Both resulted in dramatic shifts in the distribution of state-shared highway revenue to county governments**:

- 1/3,1/3,1/3 scenario: fifty-two counties would receive less highway funds while forty-three would receive more. Trousdale County is the biggest losing county, both in terms of percentage lost and dollars lost, minus 62.5 percent and minus $702,520, respectively. The biggest percentage gainer would be Knox County, gaining 40.8 percent ($1.8 million). The biggest dollar gainer would be Shelby County, gaining $2.4 million (26.7 percent).

- Weighted measures scenario: fifty-one counties would receive more highway funds while forty-four would receive less. The biggest gainer would be Sevier County, gaining 132.7 percent, or $2.8 million. The biggest losing county would be Davidson County, losing 91.7 percent, or $5.5 million.

Due to the limitations of the data used in these two scenarios in terms of reflecting actual costs and needs, and the resulting shifts in funding, staff would not recommend their adoption.

INTRODUCTION

State-shared highway fuel taxes (gasoline and diesel fuel taxes) represent the largest component of state-shared taxes in Tennessee, with 36 percent of the total amount distributed during FY 2003. The gasoline tax rate is currently $0.20 per gallon[2] and the diesel fuel tax rate is $0.17 per gallon.[3] During fiscal year 2003, $268.8 million of state gasoline and diesel fuel tax collections were distributed to local governments. Cities received approximately 1/3 of this amount ($89.7 million) and counties 2/3 ($179.1 million). An additional tax of $.01 per gallon[4] is levied

on all petroleum products, with a portion[5] of collections distributed to local governments ($12 million). An ongoing controversy over the distribution of the gasoline and diesel fuel taxes centers on the somewhat arbitrary split between county and city governments of 2/3 and 1/3. The fairness or rationality issue surfaces for the following reasons:

- Cities account for 56 percent of the state's population and counties (areas outside of cities) 44 percent, based on 2000 Census data.

- Urban areas account for 55 percent of total non-interstate annual vehicle miles of travel,[6]

- Counties account for the balance of 45 percent of total non-interstate annual vehicle miles of travel.[7]

It should be pointed out that while usage measures tend to favor cities, actual public road length statistics favor counties. For 2001, counties in Tennessee had ownership responsibility for 77 percent of the total amount of public road miles owned by counties and cities combined.[8]

DISTRIBUTION

The current distribution of state highway aid to cities and counties in Tennessee partly reflects legislative decisions dating back to 1929. The method used today for distribution of road aid to counties was established in 1931. The sharing of state highway taxes with cities began in 1953, using the same population basis as in use today. The most recent comprehensive public debate and reassessment of existing state highway tax sharing arrangements occurred over 30 years ago, by the Tennessee Tax Modernization and Reform Commission (TTMRC).[9] Despite recommendations by the TTMRC that the statutory method for distributing state highway aid to local governments be changed (specifically the method for distributing aid to counties), no changes to the law were made.

Figure 1. Distribution of Selected Statewide Road-Related Data Between City and County Governments, % of Statewide Total
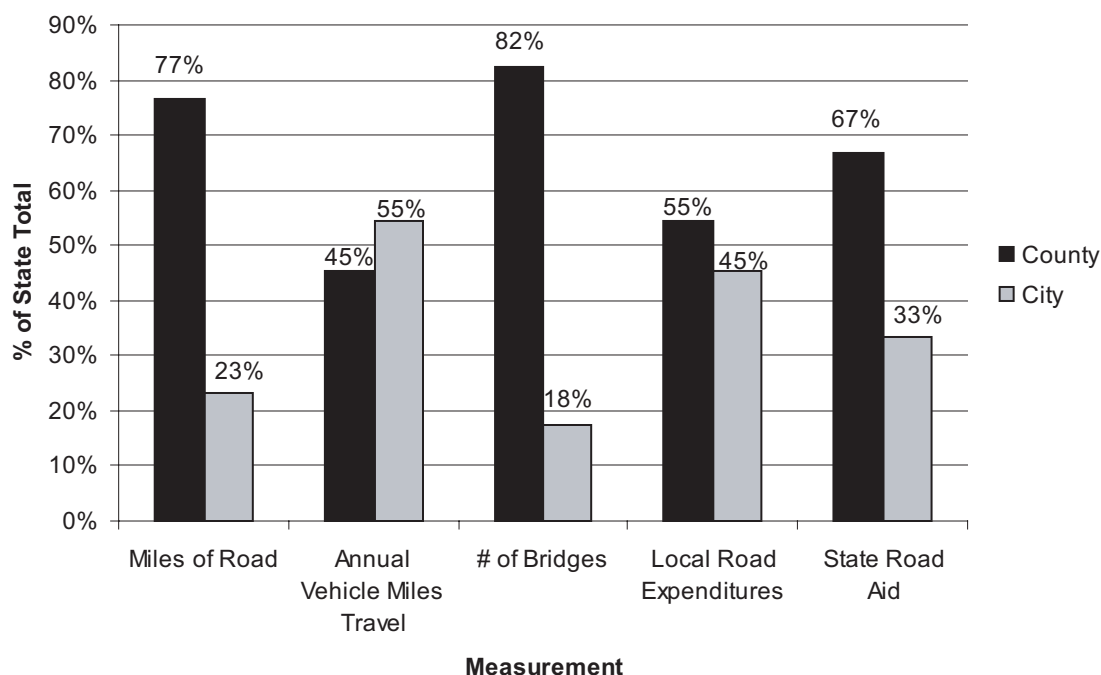
Source: Tennessee Department of Transportation

Figure 1 shows the distribution of key highway-related measures for county and city governments.[10] The data does not support or justify any particular distribution of state aid among local governments. It does provide some road-related data with which to evaluate the existing distribution of aid between county and city governments. It raises the sensitive issue of whether the current distribution of state road aid between counties and cities should be more closely related to measures of road mileage and usage, regardless of who (city or county) owns and maintains the road.

The revenue from the special petroleum tax is distributed in set amounts to counties (about $4.6 million) and cities (about $7.4 million) for roads, with a small amount from the city distribution earmarked for the UT Center for Government Training. Both the city and county portions are allocated based on population. During the fiscal year ending in 2003, nearly $270 million in state-shared gasoline and diesel fuel taxes were distributed to Tennessee's cities

and counties. These funds are distributed to cities based on population,[11] but to counties based ¼ on population, ¼ on land area, and ½ divided equally among all 95 counties. The distribution formula for cities has one exception, Premiere Type Tourist Resort Cities (which have a specific definition in T.C.A. § 67-6-103, and which include only Gatlinburg and Pigeon Forge in Sevier County) have their populations artificially increased to 10,945 for distribution purposes. The actual population of both cities is below that level (Gatlinburg's is 3,382 and Pigeon Forge's is 5,172).[12]

The county portion of the distribution formula has been in place since 1931 for the gasoline tax and since the inception of the diesel tax (called the motor fuels tax when established in 1941). Situs distributions are the only type used in the state that would not be not be possible with the petroleum taxes, because they are not collected based on the sale at retail. The state has no means of tracking the city and/or county in which the petroleum products are eventually sold to final consumers.

One of the inequities of the distribution of state-shared taxes that was listed as "most apparent" in *State Tax Sharing, Fairness, and Local Government Finance in Tennessee* concerned gasoline and diesel (referred to in that report as motor fuels) taxes:

> The fact that one half of county shared gasoline and motor fuel taxes are based on equal shares… means that the smallest county (whether based on area or population) receives exactly the same amount as the largest county.[13]

The first question that needs to be addressed is whether the current division of shared highway fund revenues between counties and cities is reasonable and rational. These taxes are required to be used for roads and mass transit, although the portion used on mass transit is minor, so it is appropriate to ask if their distribution formulae make sense if the goal is adequate, well-maintained city roads, county roads and mass transit systems. State and interstate highways are maintained with other funds.

As explained above, counties receive road funds based on a formula that includes population, equal shares and land area.

Counties receive road funds based on a formula that includes population, equal shares and land area. Cities receive these funds based on population.

Cities receive these funds based on population. A separate question is how to fairly and rationally distribute the shared highway taxes within each group, once the overall total to be allocated to counties and cities has been established. The method now being used has several shortcomings that need to be addressed.

Before any meaningful discussion on the subject of shared motor fuel tax-sharing (and changes to such tax sharing) can proceed, one very essential item, identified over thirty years ago by the Tax Modernization and Reform Commission, must be mentioned. Discussions on the topic of highway tax-sharing arrangements are secondary and premature to the development of a detailed and meaningful statewide coordinated highway program. The lack of a coordinated plan by state and local officials can only lead, in the words of the TTMRC, to "inefficiencies in the use of highway funds."[14]

DISTRIBUTION CONSIDERATIONS

Many federal[15] as well as state formulary aid programs contain adjustments that limit strict formula distributions in one way or another. A common adjustment is to set a minimum or maximum level of program aid regardless of the calculations from a standard distribution formula. In many other situations, formula distribution programs contain hold-harmless provisions designed to shield some jurisdictions from the full impact of the mathematical calculations of a standard allocation formula. Such adjustments frequently reflect the realities of the political process. Most, but not all, federal aid programs are based on some combination of need, capacity, and effort. This is not true for most state-tax sharing arrangements in Tennessee.

The distribution of highway funds and other state-shared taxes in Tennessee represents one of two distinctively different bases for formula allocations. One "school" requires "a clear set of principles that defines how funds should be allocated."[16] Examples of this view would include any formulary allocations that are based partly or wholly on need (more need, more aid), effort (more effort, more aid), and capacity (more own-source capacity, less aid).

Most, but not all, federal aid programs are based on some combination of need, capacity, and effort. This is not true for most state-tax sharing arrangements in Tennessee.

The other "school" or view, reflective of most of the state-tax sharing distributions in Tennessee, reflects the political or practical origins of the distributions formulae.

While both views are legitimate, improvements in distributions that are politically-based are difficult to evaluate, as their goals are rarely made clear. Changes to distributions that are grounded in a clear set of principles can at least be evaluated based on those same principles.

COUNTY DISTRIBUTION

- One-half of the total amount shared with county governments is distributed equally to each county regardless of its population, road mileage, or road usage. This component is clearly the most inequitable of the three components that jointly determine how much each county receives. The obvious criticism of this component of the distribution is that it (a) accounts for the single largest dollar amount distributed to counties and (b) is based on nothing that directly relates to streets, roads, and bridges. The distribution of a major share of highway taxes to counties on an equal basis was deemed illogical over 30 years ago by the TTMRC.[17]

- Twenty-five percent of the total amount shared with county governments is distributed on the basis of county area, again without regard to population, road mileage, or road usage. This component is also poorly related to actual road mileage, usage, and maintenance expense, and therefore not an efficient method for distributing scarce resources for highway use.

- Twenty-five percent of the total amount shared with county governments is distributed on the basis of population. This is the only component of the distribution method that is somewhat related to possible road usage.[18]

The distribution of a major share of highway taxes to counties on an equal basis was deemed illogical over 30 years ago.

EXISTING COUNTY HIGHWAY PROGRAM EFFORT

An additional factor not now considered in distributing state aid to county governments is local fiscal effort. While county fiscal capacity clearly varies across the state, there is no clear evidence that that factor alone accounts for the large variation in the local fiscal effort observed. One measure of county highway fiscal effort can be calculated as the ratio of county own-source revenue used for highway purposes[19] to total county highway expenditures. A fiscal effort of 50 percent implies that half of the county highway program was financed by local revenue, and half by state aid. This data is presented in Table 1 using a total of revenues and expenditures, combining data for three fiscal years, 2000, 2001 and 2002. Three years are used in order to smooth out any unusually large expenses incurred in one year.

The data in Table 1 show extensive variation in the highway program fiscal effort of county governments. The median county effort was 32 percent. This implies that approximately half the counties (48) in the state shoulder 32 percent or less of their highway program costs while the other half contribute a larger share. The data show five counties that shoulder less than 10 percent of their highway program cost and a total of 16 that shoulder less than 20 percent of the cost. At the other extreme, 21 counties use their own money to pay over 50 percent of the cost of their road programs, while six pay over 60 percent.

CITY DISTRIBUTION

The city portion of state-shared gasoline and diesel taxes is distributed on the basis of population.[20] While this variable has a clearer relationship to actual highway and road expenditure requirements than those used to distribute shared taxes to counties, it is also less than perfect. It does not capture the intensity of use of city roads and streets, and therefore remains an unproven variable for measuring actual highway, street, and bridge traffic volume and the resulting expenses associated with maintaining the public's investment in streets, roads, and bridges.

**Table 1. State-Shared Highway Revenue Compared to Total Highway Spending
Fiscal Years 2000 through 2002**

County	Highway Expenditures ($) FY 2000-02	State-Shared Hwy Revenue($) FY 2000-02	Estimated Local Share of Expenditures
Davidson	112,438,120	19,167,235	83.00%
Williamson	28,641,075	7,590,138	73.50%
Sevier	23,230,103	6,242,871	73.10%
Sullivan	26,263,376	8,186,621	68.80%
McNairy	14,724,243	5,196,994	64.70%
Dickson	14,774,347	5,374,733	63.60%
Tipton	13,176,717	5,586,308	57.60%
Wilson	16,125,737	6,869,902	57.40%
Blount	16,086,545	7,115,950	55.80%
Greene	14,253,146	6,371,285	55.30%
Henry	12,002,105	5,367,673	55.30%
Washington	14,387,118	6,512,522	54.70%
Montgomery	17,204,471	7,856,642	54.30%
Weakley	12,004,083	5,534,235	53.90%
Bradley	12,917,466	5,994,944	53.60%
Hamilton	26,985,786	12,686,562	53.00%
Madison	14,313,759	6,838,281	52.20%
Gibson	12,357,302	6,007,547	51.40%
Knox	28,974,867	14,175,520	51.10%
Dyer	10,792,848	5,388,145	50.10%
Fayette	11,527,762	5,761,489	50.00%
Giles	10,899,030	5,464,268	49.90%
McMinn	10,732,375	5,379,468	49.90%
Bedford	9,972,157	5,185,993	48.00%
Sumner	14,483,340	7,563,719	47.80%
Lauderdale	9,452,867	4,954,197	47.60%
Maury	11,904,578	6,372,876	46.50%
Putnam	10,139,466	5,571,337	45.10%
Obion	9,667,692	5,398,649	44.20%
Rutherford	16,355,488	9,130,778	44.20%
Lawrence	10,278,007	5,758,999	44.00%
Carter	8,886,572	5,339,044	39.90%
Hawkins	9,324,008	5,639,042	39.50%
Roane	8,720,871	5,278,347	39.50%
Robertson	8,979,558	5,551,868	38.20%
Haywood	7,937,037	5,012,470	36.80%
Jackson	6,370,411	4,024,399	36.80%
Hardin	8,249,226	5,265,885	36.20%
Cumberland	9,200,939	6,008,659	34.70%
Benton	6,772,206	4,446,223	34.30%
Unicoi	5,721,265	3,790,370	33.70%
Lincoln	8,135,510	5,405,751	33.60%

Table 1. State-Shared Highway Revenue Compared to Total Highway Spending Fiscal Years 2000 through 2002 (continued)

County	Highway Expenditures ($) FY 2000-02	State-Shared Hwy Revenue($) FY 2000-02	Estimated Local Share of Expenditures
Crockett	5,970,952	3,996,349	33.10%
Jefferson	6,952,514	4,653,958	33.10%
Warren	7,640,965	5,112,934	33.10%
Marshall	6,793,991	4,606,169	32.20%
Monroe	8,411,848	5,716,583	32.00%
Rhea	6,600,906	4,494,515	31.90%
Claiborne	7,166,780	4,911,461	31.50%
Cocke	7,219,995	5,001,271	30.70%
Campbell	7,554,297	5,317,306	29.60%
Humphreys	6,995,227	4,922,251	29.60%
Cheatham	6,640,118	4,687,912	29.40%
Chester	5,760,151	4,067,643	29.40%
Johnson	5,837,099	4,134,040	29.20%
Trousdale	4,659,117	3,305,437	29.10%
White	6,394,657	4,545,411	28.90%
Hardeman	7,845,791	5,591,850	28.70%
Henderson	7,105,710	5,068,426	28.70%
Carroll	7,626,155	5,462,095	28.40%
Macon	5,906,857	4,228,745	28.40%
DeKalb	5,717,254	4,162,641	27.20%
Coffee	7,213,378	5,325,193	26.20%
Cannon	5,271,739	3,925,483	25.50%
Franklin	7,422,446	5,538,202	25.40%
Wayne	7,356,966	5,518,578	25.00%
Stewart	6,006,231	4,513,800	24.80%
Decatur	5,482,546	4,130,507	24.70%
Marion	6,646,772	5,079,596	23.60%
Lake	4,497,940	3,492,143	22.40%
Grainger	5,322,122	4,165,609	21.70%
Fentress	6,103,096	4,782,807	21.60%
Meigs	4,600,341	3,622,042	21.30%
Houston	4,571,726	3,608,216	21.10%
Moore	4,177,961	3,317,071	20.60%
Lewis	4,980,583	3,967,162	20.30%
Smith	5,260,532	4,191,137	20.30%
Scott	6,261,999	4,997,907	20.20%
Clay	4,658,170	3,726,511	20.00%
Sequatchie	4,835,020	3,881,618	19.70%
Overton	5,739,160	4,659,888	18.80%
Bledsoe	5,267,480	4,351,904	17.40%
Polk	5,507,090	4,553,589	17.30%
Loudon	5,287,841	4,434,056	16.10%
Anderson	6,863,251	5,782,589	15.70%

**Table 1. State-Shared Highway Revenue Compared to Total Highway Spending
Fiscal Years 2000 through 2002 (continued)**

County	Highway Expenditures ($) FY 2000-02	State-Shared Hwy Revenue($) FY 2000-02	Estimated Local Share of Expenditures
Hancock	4,313,254	3,662,465	15.10%
Hickman	6,118,788	5,232,779	14.50%
Grundy	4,903,457	4,267,504	13.00%
Van Buren	4,304,746	3,779,871	12.20%
Hamblen	5,409,625	4,755,568	12.10%
Union	4,325,630	3,893,912	10.00%
Perry	4,559,828	4,284,241	6.00%
Pickett	3,605,117	3,415,686	5.30%
Morgan	5,130,754	4,933,890	3.80%
Shelby	25,349,227	28,925,460	-14.10%
Total	**987,518,779**	**539,071,915**	**45.40%**

Source: Highway Expenditure data from County Technical Advisory Service; State-Shared Highway Revenue from Tennessee Department of Revenue.

Note: Davidson, Moore and Trousdale Counties are consolidated governments and as such may not be comparable with other counties. Shelby County data reflects less spending during the three year fiscal period 2000-2002 than state highway funds received during that period. It must be noted that state highway aid received in any given year may be used in later periods.

FACTORS AFFECTING EXPENDITURES

Ideally, highway distributions to both city and county governments would reflect factors actually affecting highway budgets. The most obvious items affecting local highway budgets relate to measures of existing local roads and bridges and their use. According to the Institute of Transportation Engineers (ITE), transportation costs can be categorized into three main components:

- Capital costs;

- Operating and maintenance; and

- Life-cycle costs.

Capital costs are those associated with the actual procurement, development and construction of transportation projects. Operating and maintenance costs are associated with upkeep of the projects. Life-cycle costs are a combination of initial

Ideally, highway distributions to both city and county governments would reflect factors actually affecting highway budgets.

construction cost, ongoing operating and maintenance costs, and future replacement and rehabilitation costs.[21]

Available or potentially available measures include:

- miles of road (centerline mileage),

- lane-miles of road,

- various measures of vehicle miles of travel,

- types of vehicles traveling on roads, and

- types of roads (gravel, asphalt, concrete) and bridges.

Weather, intensity of vehicle use, and the extent to which vehicle use consists of heavy vehicles all contribute to road life and maintenance requirements. None of these variables are directly considered in the current method used to distribute state aid for local highways and roads.

Unfortunately, any modifications to the current model will be limited by data availability. The Tennessee Department of Transportation has reported that due to the unique performance and design standards of the local highway agencies, collecting, applying, and comparing the data statewide would be difficult, if even possible. Further, TDOT has no data on the unique topographic differences of local roads.[22]

One source for descriptive information of highway needs by local government in Tennessee is TACIR's Public Infrastructure Needs Inventory. The inventory is based on information provided by state and local officials. The latest survey report shows that Tennessee needs at least $21.6 billion of public infrastructure improvements to be in some stage of development during the five-year period of 2002-2007. Statewide transportation needs alone represent around thirty-eight percent of the total at $8.1 billion. This amount includes both state and local project needs. The survey provides transportation project information down to the local government level.

State and local transportation needs for 2002-2007 equal $8.1 billion.

The figures for transportation needs in the survey are even more impressive considering that they do not include the cost of those

types of projects if they are needed to support other projects. For example, if a road extension is needed to create a new industrial site, then the extension is recorded in the inventory as an industrial site project with transportation as its secondary project type. This two-dimensional classification facilitates more complete analysis of the costs of different types of infrastructure improvements.

DISTRIBUTIONS BASED ON POPULATION: IMPACT OF PERSONS IN GROUP QUARTERS

There is a problem using population to distribute road funds if persons in group quarters, particularly prisoners, are included. During a recent analysis of the existing method used to distribute BEP grants to local school systems, a problem was recognized that has implications for the BEP program as well as for distributions of state-shared taxes that are based on population. Twenty-five percent of state-shared gasoline and diesel fuel tax revenue distributed to counties is based on population; 100 percent of amounts distributed to cities is based on population.

Population numbers currently used to distribute state-shared revenue to local governments utilize population counts produced by the Local Planning Division of the State Department of Economic and Community Development. Their population counts are based on estimates produced by the U. S. Census Bureau during decennial Censuses and adjusted as the result of any special censuses that are conducted by individual cities (or counties).

Census estimates of the population include persons in group quarters. Group quarter persons include the following: (1) institutionalized population in correctional institutions, nursing homes, hospitals, and juvenile institutions, and (2) noninstitutionalized population in college dormitories, military quarters, group homes, religious group quarters, and workers' dormitories. Approximately 2.6 percent of Tennessee's population in 2000 was in group quarters.

While many persons in group quarters are evenly distributed across the state, there are many circumstances where group quarter persons represent a disproportionate percent of the local population. This can cause unintended consequences for state

While many persons in group quarters are evenly distributed across the state, there are many circumstances where group quarter persons represent a disproportionate percent of the local population.

programs that are based on official population counts. This is especially true for distributions of state–shared taxes to counties and cities. A few examples should be sufficient to clarify the problem. Group quarter persons account for 12.9 percent of the population of Wayne County, 14.1 percent of the population of Hardeman County, and 28.6 percent of the population of Lake County.[23]

Even more dramatic is the impact of group quarter persons on population counts in select cities. Group quarter persons account for 48.4 percent of the population in Mason, 54.9 percent in Sewanee, 63.2 percent in Whiteville, and 70.2 percent in Clifton. The question posed is whether it is fair or reasonable to distribute state-shared taxes to cities and counties on the basis of official population counts when population counts in some individual cities and counties are heavily impacted by the number of persons in group quarters?

Any recommendations for changes to the existing methods for distributing state-shared taxes should consider an adjustment for group quarter persons. In most cases, persons in group quarters have little or no permanent ties or relationships with the local governments in which they reside or are located. Although it can be argued that some persons in group quarters, college students for example, still utilize highways, others, such as prisoners, clearly do not do so on a regular basis. It should be noted that detailed (by type of institution) annual counts of persons in group-quarters are not available for cities, and only partially available for counties.[24]

DISTRIBUTIONS BASED ON NEED

Distribution based on need is difficult to determine. The TTMRC was very concerned with promoting a general revenue sharing program that was based on a distribution that "reflected ability, effort, and need."[25] The staff of the TTMRC spent extensive time developing a method for calculating revenue effort and ability, but little time dealing with the problem of calculating local need. To a large extent, the TTMRC felt that need could best be measured by population; a measure they believed was a reasonable proxy for a minimum measure of local service needs.

To a large extent, the TTMRC felt that need could best be measured by population.

Each city and each county has unique service obligations that are not easily explained by reference to a single factor.

In studying the details of city and county expenditures, a recent TACIR study[26] noted that population, while certainly an important measure for establishing local service needs, is insufficient by itself to explain the wide variation in city and county spending patterns.

Many cities in Tennessee provide very few services to their residents, forcing county governments to provide most of the basic public services to the residents of such cities. In such cases, county governments likely spend more than they would if their respective city governments themselves provided these services. Other cities with similar populations provide many of the basic services expected by city residents, removing the need for their respective county governments to provide city residents with these basic services.

In these cases, county government could be expected to spend less than under the first scenario described. As a result, each city and each county has unique service obligations that are not easily explained by reference to a single factor; namely the population of either the county or the city. This reality complicates any easy solution to a "needs" measure in any distribution formula.

CORRELATIONS

How well do the variables now utilized to distribute state road aid track or reflect differences in actual road-related statistics? If the number of road miles (or lane-miles) in a city or county is a reasonable basis for distributing road aid, does the current method for distributing road aid reasonably reflect variations in road or lane miles among recipient governments?

Simple correlation analysis was used to evaluate this question. Such analysis calculates the strength of association between two variables. The analysis produces a coefficient or single number that varies from -1 to +1. A value of +1 or -1 would imply a perfect linear association between the two variables, while a value of 0 would imply no relationship.

The results of simple correlation analysis on several highway-related variables are shown in Table 2. **Except for a clear and surprisingly high correlation between city population and city**

road miles, .96, the remaining correlations imply no significant relationship between any other combination of variables.

- The correlation coefficient between county area and county road miles, equal to .7, reflects a moderately positive degree of association.

- County population has little correlation to county road miles (.27 correlation coefficient), and, while the county population residing outside cities correlates a bit better with road miles (.52 correlation coefficient), the relationship is still very weak.

Table 2. Correlation Results for Select Highway-Related Variables

Variable 1	Variable 2	Correlation Coefficient
City Population	City Road Miles	0.96
County Population	County Road Miles	0.27
County Population Outside Cities	County Road Miles	0.52
County Population	County Area	0.32
County Area	County Road Miles	0.70
Actual County Aid	County Road Miles	0.38

Source: TACIR analysis of Tennessee Department of Transportation data.

- County area has a very slight correlation with county lane-miles (.52 correlation coefficient).

- County area and total county population have a low correlation (.32 correlation coefficient).

TACIR, in a prior report, found there is little correlation between county population and county area, and no correlation between equal shares and county population.

OTHER STATES

Tennessee state government supports local highway spending with a higher proportion of state-shared funding than most other states. During fiscal year 2001, state governments provided $13.1 billion in intergovernmental aid to local governments for local highway programs.[27] This represented 26 percent of total local government highway funding. The respective figures for Tennessee were $269.9 million, and 56.8 percent. State aid as a percent of total local highway receipts was higher in only two other states, Maryland (63.1 percent) and Michigan (57.0 percent). In a handful of states,[28] state assistance for local highway programs occurs

through direct state expenditures for local road capital outlays, maintenance, administration and law enforcement, and bond interest and retirement payments.

Table 3. Distribution of Local Government Highway Spending (FY 2001)

Category	Tennessee	US Total
Capital Outlay	22.4%	31.8%
Maintenance	57.0%	31.4%
Snow Removal	0.3%	3.3%
Law Enforcement	4.1%	10.9%
Administration	5.8%	7.2%
Debt Interest & Retirement	6.2%	8.2%
Other	4.2%	7.2%
Total	100.0%	100.0%

Source: "Highway Statistics 2002," Federal Highway Administration, Table LGF-2.

Local government expenditures by purpose vary extensively from state to state. Table 3 contrasts the importance of various categories of highway spending by Tennessee local governments with those by all U.S. local governments. There is no comparable data available from the Federal Highway Administration (FHA) that breaks down expenditures by type of local government. Data from the 2002 Census of Governments[29] shows that Tennessee cities accounted for 45.4 percent of total local highway expenditures and counties 54.6 percent.

TACIR's *State Tax Sharing, Fairness, and Local Government Finance in Tennessee* notes that the county distribution formula hasn't changed since 1931. Earlier studies have recommended that the formula be gradually changed to one that is wholly based on population.[30] The March 2000 TACIR report, *State-Shared Taxes in Tennessee*, summarized a 1972 study of the distribution formulae for the gasoline tax in Tennessee that found that, other things equal, the most densely populated counties, the fastest growing counties, and the counties with the highest road usage received smaller relative shares of the revenue.[31]

State-Shared Taxes in Tennessee included a comparison of Tennessee with some of our neighboring states, and documented that Tennessee allocates a much greater share of the gasoline tax to local governments than those states do.[32] Many states have systems much like Tennessee's, based on outdated formulae that were put into place when municipal population density was much less than it is now. Some have begun to modernize their distribution systems to reflect changing population distributions. Michigan was highlighted in *State Tax Sharing, Fairness, and Local Government Finance in Tennessee*; it has changed its entire tax-sharing system to one based on population and fiscal capacity,

The distribution formula for county highway funds has not changed since it was enacted in 1931.

with some equalization measures to offset variances in wealth and to promote stability in payments.[33]

NORTH CAROLINA

North Carolina's method for funding highways provides a comparison and contrast to Tennessee's method. North Carolina's highway system operates on a "pay-as-you-go" basis, like Tennessee, and the state relies "primarily on user revenues through motor fuels taxes and vehicle registration and user fees, rather than on tolls or bonds."[34]

The total state and county highway budget is over $3 billion and funding comes from three main sources: federal funds, the Highway Fund, and the Highway Trust Fund. The North Carolina Department of Transportation (NCDOT) is the authority for all highway maintenance and construction, excluding roads that are part of municipal systems. Highway Fund monies derive from eligible motor fuel taxes, motor vehicle registration fees, title fees, and federal-aid. Highway Fund monies can be used to match federal funds, to construct state-funded highways, to maintain highways, or to support other NCDOT functions.[35]

NCDOT is responsible for devising a schedule outlining all major projects to be completed in the next seven years and estimating costs and funding sources for these projects. The schedule is called the Transportation Improvement Program (TIP) and is formulated after NCDOT confers with the Board of Transportation, legislators, and city officials to identify and plan program projects according to local, regional, and statewide needs. All major proposed projects are included on this list regardless of the funding source but projects must be on the TIP to receive federal funds.[36] The TIP considers both urban and rural areas and most of the projects in the TIP are maintenance based, such as surface and bridge repairs and road overlays.[37]

North Carolina's highway system is broken up into 14 divisions, seven regions and 100 counties. Divisions, regions, and counties all operate under NCDOT and receive highway funds based on NCDOT's distribution formulae. Municipalities do not operate under NCDOT, but do receive highway funds based on NCDOT

The North Carolina Department of Transportation is the authority for all highway maintenance and construction, excluding roads that are part of municipal systems.

distribution formulae. Though some highway funds are distributed on a county level, all roads and highways in North Carolina are the shared responsibility of NCDOT and municipalities. In North Carolina "county government has no authority or financial responsibility for the planning, design, construction, maintenance, or operation of any streets, roads, or highways within the boundaries of the county."[38] Roads outside of municipal boundaries are the responsibility of the NCDOT and roads within the municipal boundaries are the responsibility of NCDOT and the municipality.

HOW THE FEDERAL GOVERNMENT DISTRIBUTES ROAD FUNDS

The federal government has faced its own challenges over the distribution of road funds to the states. An attempt at major reform and equalization in 1991 largely failed and left much of the old 1916 formula in place, averaging each state's traditional take with what each would receive under a new formula. The new formula was a complex series of calculations that covered eight programs and five separate funding mechanisms. The new formula attempted to compensate states that had built their own highway systems and did not traditionally receive as much as they contributed, but the bulk of the financing was left under the 1916 formula that was need-based and sent more funds to the northeast and the Midwest than to other regions.[39]

But states that pay more in than they receive back (mostly from the south and the west) continued to advocate for what is essentially a situs distribution. In 1997, the formulae moved further in that direction and, in an update passed in the past few months, guaranteed that states receive nearly all of the transportation revenues collected inside their borders. Political pressures are moving the federal system toward a situs system, distributing funding based on where revenue is generated, that virtually eliminates the federal tax in favor of a state one.[40]

Some federal highway funding, however, is still decided on need-based formulae. The National Highway Safety Act of 2003

Political pressures are moving the federal system toward a situs system that virtually nulls the federal tax in favor of a state one.

distributes funds for highway safety programs based on the following formula:

> 1) 25 percent based on the state's percentage of total lane miles of federal-aid highways;
>
> 2) 40 percent based on the state's percentage of total vehicle miles traveled on lanes on federal-aid highways;
>
> 3) 35 percent based on the state's percentage of all monies paid into the federal Highway Trust Fund (situs). There is an additional requirement that each state receive at least one half of one percent of the overall funds.[41]

A 1991 National Conference of State Legislatures report determined that federal formulae provide the least needed support to large, sparsely-populated states. Such states require above average numbers of miles of roads to cover their areas, but have only small tax bases from which to raise money.[42] This suggests that land area may be an appropriate component of Tennessee's highway fund distribution formula, though the number of federal, state and city roads in a county will influence the extent to which land area can adequately represent its needs.

ALTERNATIVE DISTRIBUTION METHODS FOR TENNESSEE

Although the distribution to city governments, a per capita distribution, is not perfect, it is probably the best available given current data limitations. Since city population correlates well with city road miles, distributing road aid to cities based on population does at least indirectly consider road mileage. There is room for improvement in the distribution to county governments. Tennessee could modify the current method to reflect county highway maintenance and replacement cost factors in one of several ways. A few examples include

- Replace the entire county formula with one that distributes funds based 1/3 on county lane miles, 1/3 on population, and 1/3 on land area.

A 1991 Conference of State Legislatures report determined that federal formulae provide the least needed support to large, sparsely-populated states.

There is room for improvement in the distribution to county governments.

- Replace the entire county formula with one that distributes funds based on weighted measures of road miles, and vehicle usage.

- Replace the equal distribution share with a distribution based on a proxy measure for maintenance costs.

- Replace the equal distribution share with a distribution based on a component cost model using several measures. The model would attempt to estimate the cost to adequately fund transportation maintenance and replacement costs, similar to the component cost methodology used in the BEP.

- Replace the equal distribution share with a distribution based on a statistical model to calculate the local transportation maintenance and life cycle costs. A regression model like that used in TACIR's fiscal capacity model could be used.

- Eliminate residents in group quarters, in particular inmates, from population figures that determine highway funding.

TACIR simulated the impact of two of these scenarios, the 1/3 miles, 1/3 population, 1/3 land area scenario, and the weighted road miles and vehicle usage scenario. Both resulted in dramatic shifts in the distribution of state-shared highway revenue to county governments.

The 1/3, 1/3, 1/3 scenario was simulated using the following methodology:

Two scenarios for modifying distribution of highway funding to counties both resulted in dramatic shifts in funding.

- The total current distribution amount to counties of $179,064,463 was divided by three, producing $59,688,154.

- Each county's lane miles percent of the state total was multiplied by $59,688,154, the sum representing 1/3 of their total share.

- Each county's population percent of the state total was multiplied by $59,688,154, the sum representing 1/3 of their total share.

- Each county's land area was multiplied by $59,688,154, the sum representing 1/3 of their total share.

- Each county's three partial shares were summed to calculate their new total share.

Using this scenario, fifty-two counties would receive less highway funds while forty-three would receive more. Trousdale County is the biggest losing county, both in terms of percentage lost and dollars lost, minus 62.5 percent and minus $702,520, respectively. The biggest percentage gainer would be Knox County, gaining 40.8 percent ($1.8 million). The biggest dollar gainer would be Shelby County, gaining $2.4 million (26.7 percent). The results by county are included in Appendix 2.

The impact of a distribution schedule based on actual road mileage and vehicle usage was simulated for counties and is included in Appendix 3. The simulation estimated county highway maintenance expenses as a function of the miles of road for which a county is responsible and the vehicle miles of travel on such roads. Road usage (vehicle miles of travel) was assumed to be responsible for 82.5 percent of road deterioration and road miles alone 17.5 percent (assumes deterioration on roads even if not used).[43] State-shared highway revenue was then distributed based on the weighted sum of these two measures of highway use. The resulting distribution reflects some dramatic shifts in the distribution of state-shared highway revenue to county governments. Fifty-one counties would receive more highway funds while forty-four would receive less. The biggest gainer would be Sevier County, gaining 132.7 percent, or $2.8 million. The biggest losing county would be Davidson County, losing 91.7 percent, or $5.5 million. **Due to the limitations of the data used in these two scenarios, in terms of reflecting actual costs and needs, and the resulting shifts in funding, staff would not recommend their adoption.**

Any modification of the existing distribution method could also potentially address this city/county split. Modification would not necessarily be limited to adjusting the 50 percent of the county share that is divided equally amongst counties. It could adjust or replace any of the factors. It is valuable to remember the 1972 recommendation of the TTMRC for the gasoline tax distribution,

which was to modify the existing distribution arrangement over time to one that eventually would be based primarily on population. They recommended a slow phase-in to avoid "a drastic shift to rectify the (existing) inequity completely in one step." Their recommendation was to immediately reduce the importance of the equal share factor from 50 percent to 33 1/3 percent, raise the importance of the remaining two factors to 33 1/3 percent and apply these new factors to a base year (originally 1973). Growth in the county road fund (above the level of 1973) in future years was to be distributed wholly on the basis of population. At the time, the TTMRC estimated that within 12 years, two-thirds of the amount distributed to counties would be based on population.

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APPENDICES

APPENDIX 1

County Government Local Highway Program Effort

County	Highway Expenditures($) FY 2000-02	State-Shared Hwy Revenue($) FY 2000-02	Estimated Local Share of Highway Expenditures	Rank
Anderson	6,863,251	5,782,589	15.7%	85
Bedford	9,972,157	5,185,993	48.0%	24
Benton	6,772,206	4,446,223	34.3%	40
Bledsoe	5,267,480	4,351,904	17.4%	82
Blount	16,086,545	7,115,950	55.8%	9
Bradley	12,917,466	5,994,944	53.6%	15
Campbell	7,554,297	5,317,306	29.6%	52
Cannon	5,271,739	3,925,483	25.5%	64
Carroll	7,626,155	5,462,095	28.4%	61
Carter	8,886,572	5,339,044	39.9%	32
Cheatham	6,640,118	4,687,912	29.4%	53
Chester	5,760,151	4,067,643	29.4%	54
Claiborne	7,166,780	4,911,461	31.5%	49
Clay	4,658,170	3,726,511	20.0%	79
Cocke	7,219,995	5,001,271	30.7%	50
Coffee	7,213,378	5,325,193	26.2%	63
Crockett	5,970,952	3,996,349	33.1%	44
Cumberland	9,200,939	6,008,659	34.7%	39
Davidson	112,438,120	19,167,235	83.0%	1
Decatur	5,482,546	4,130,507	24.7%	68
DeKalb	5,717,254	4,162,641	27.2%	62
Dickson	14,774,347	5,374,733	63.6%	6
Dyer	10,792,848	5,388,145	50.1%	20
Fayette	11,527,762	5,761,489	50.0%	21
Fentress	6,103,096	4,782,807	21.6%	72
Franklin	7,422,446	5,538,202	25.4%	65
Gibson	12,357,302	6,007,547	51.4%	18
Giles	10,899,030	5,464,268	49.9%	23
Grainger	5,322,122	4,165,609	21.7%	71

County Government Local Highway Program Effort (cont.)

County	Highway Expenditures($) FY 2000-02	State-Shared Hwy Revenue($) FY 2000-02	Estimated Local Share of Highway Expenditures	Rank
Greene	14,253,146	6,371,285	55.3%	10
Grundy	4,903,457	4,267,504	13.0%	88
Hamblen	5,409,625	4,755,568	12.1%	90
Hamilton	26,985,786	12,686,562	53.0%	16
Hancock	4,313,254	3,662,465	15.1%	86
Hardeman	7,845,791	5,591,850	28.7%	58
Hardin	8,249,226	5,265,885	36.2%	38
Hawkins	9,324,008	5,639,042	39.5%	33
Haywood	7,937,037	5,012,470	36.8%	36
Henderson	7,105,710	5,068,426	28.7%	59
Henry	12,002,105	5,367,673	55.3%	11
Hickman	6,118,788	5,232,779	14.5%	87
Houston	4,571,726	3,608,216	21.1%	74
Humphreys	6,995,227	4,922,251	29.6%	51
Jackson	6,370,411	4,024,399	36.8%	37
Jefferson	6,952,514	4,653,958	33.1%	45
Johnson	5,837,099	4,134,040	29.2%	55
Knox	28,974,867	14,175,520	51.1%	19
Lake	4,497,940	3,492,143	22.4%	70
Lauderdale	9,452,867	4,954,197	47.6%	26
Lawrence	10,278,007	5,758,999	44.0%	31
Lewis	4,980,583	3,967,162	20.3%	76
Lincoln	8,135,510	5,405,751	33.6%	42
Loudon	5,287,841	4,434,056	16.1%	84
McMinn	10,732,375	5,379,468	49.9%	22
McNairy	14,724,243	5,196,994	64.7%	5
Macon	5,906,857	4,228,745	28.4%	60
Madison	14,313,759	6,838,281	52.2%	17
Marion	6,646,772	5,079,596	23.6%	69
Marshall	6,793,991	4,606,169	32.2%	46

County Government Local Highway Program Effort (cont.)

County	Highway Expenditures($) FY 2000-02	State-Shared Hwy Revenue($) FY 2000-02	Estimated Local Share of Highway Expenditures	Rank
Maury	11,904,578	6,372,876	46.5%	27
Meigs	4,600,341	3,622,042	21.3%	73
Monroe	8,411,848	5,716,583	32.0%	47
Montgomery	17,204,471	7,856,642	54.3%	13
Moore	4,177,961	3,317,071	20.6%	75
Morgan	5,130,754	4,933,890	3.8%	94
Obion	9,667,692	5,398,649	44.2%	30
Overton	5,739,160	4,659,888	18.8%	81
Perry	4,559,828	4,284,241	6.0%	92
Pickett	3,605,117	3,415,686	5.3%	93
Polk	5,507,090	4,553,589	17.3%	83
Putnam	10,139,466	5,571,337	45.1%	28
Rhea	6,600,906	4,494,515	31.9%	48
Roane	8,720,871	5,278,347	39.5%	34
Robertson	8,979,558	5,551,868	38.2%	35
Rutherford	16,355,488	9,130,778	44.2%	29
Scott	6,261,999	4,997,907	20.2%	78
Sequatchie	4,835,020	3,881,618	19.7%	80
Sevier	23,230,103	6,242,871	73.1%	3
Shelby	25,349,227	28,925,460	-14.1%	95
Smith	5,260,532	4,191,137	20.3%	77
Stewart	6,006,231	4,513,800	24.8%	67
Sullivan	26,263,376	8,186,621	68.8%	4
Sumner	14,483,340	7,563,719	47.8%	25
Tipton	13,176,717	5,586,308	57.6%	7
Trousdale	4,659,117	3,305,437	29.1%	56
Unicoi	5,721,265	3,790,370	33.7%	41
Union	4,325,630	3,893,912	10.0%	91
Van Buren	4,304,746	3,779,871	12.2%	89
Warren	7,640,965	5,112,934	33.1%	43

County Government Local Highway Program Effort (cont.)

County	Highway Expenditures($) FY 2000-02	State-Shared Hwy Revenue($) FY 2000-02	Estimated Local Share of Highway Expenditures	Rank
Washington	14,387,118	6,512,522	54.7%	12
Wayne	7,356,966	5,518,578	25.0%	66
Weakley	12,004,083	5,534,235	53.9%	14
White	6,394,657	4,545,411	28.9%	57
Williamson	28,641,075	7,590,138	73.5%	2
Wilson	16,125,737	6,869,902	57.4%	8
Total	987,518,779	539,071,915	45.4%	

Source: Highway Expenditure data from County Technical Advisory Service; state-shared highway revenue from Tennessee Department of Revenue.

Notes: Davidson and Moore Counties are consolidated governments and as such may not be comparable with other counties. Shelby County data reflects less spending during the three year fiscal period 2000-2002 than state highway funds received during that period. It must be noted that state highway aid received in any given year may be used in later periods.

APPENDIX 2

**Results of Sample Gasoline and Diesel Tax Redistribution Methodology for County Share
Redistributed 1/3 by % of State Road Miles, 1/3 by % of State Population, and 1/3 by % of State Land Area
Ranked by % Difference, FY 2004**

County	Current Distribtuion	Lane Miles	Percent of State Total	2003 Population	Percent of State Total	Land Area	Percent of State Total	Revised Distribution	Difference	Percent Difference	Rank
KNOX	$4,501,757	1,503	2.7%	392,995	6.7%	508	1.2%	$6,337,965	$1,836,208	40.8%	1
GREENE	$2,113,202	1,148	2.0%	63,991	1.1%	622	1.5%	$2,766,297	$653,095	30.9%	2
RUTHERFORD	$3,047,293	897	1.6%	202,310	3.5%	619	1.5%	$3,910,276	$862,982	28.3%	3
SHELBY	$8,825,139	786	1.4%	906,178	15.5%	755	1.8%	$11,182,099	$2,356,960	26.7%	4
LAWRENCE	$1,926,909	1,011	1.8%	40,704	0.7%	617	1.5%	$2,376,804	$449,895	23.3%	5
SULLIVAN	$2,595,527	978	1.7%	153,050	2.6%	413	1.0%	$3,194,265	$598,737	23.1%	6
HAMILTON	$3,955,284	782	1.4%	309,510	5.3%	542	1.3%	$4,773,057	$817,773	20.7%	7
WILLIAMSON	$2,571,260	759	1.3%	141,301	2.4%	583	1.4%	$3,089,185	$517,925	20.1%	8
SUMNER	$2,543,684	802	1.4%	138,752	2.4%	529	1.3%	$3,031,244	$487,560	19.2%	9
BLOUNT	$2,382,478	822	1.5%	111,510	1.9%	559	1.4%	$2,815,540	$433,061	18.2%	10
WILSON	$2,261,623	821	1.5%	95,366	1.6%	571	1.4%	$2,667,245	$405,622	17.9%	11
MONTGOMERY	$2,588,533	753	1.3%	141,064	2.4%	539	1.3%	$3,016,847	$428,314	16.5%	12
SEVIER	$2,145,625	825	1.5%	75,503	1.3%	592	1.4%	$2,499,720	$354,095	16.5%	13
MAURY	$2,155,277	810	1.4%	73,198	1.3%	613	1.5%	$2,490,796	$335,519	15.6%	14
GILES	$1,837,929	885	1.6%	29,390	0.5%	611	1.5%	$2,118,995	$281,067	15.3%	15
GIBSON	$1,976,436	854	1.5%	47,922	0.8%	603	1.5%	$2,263,842	$287,406	14.5%	16
WEAKLEY	$1,847,130	856	1.5%	34,314	0.6%	580	1.4%	$2,094,758	$247,628	13.4%	17
DAVIDSON	$5,972,483	180	0.3%	569,842	9.8%	502	1.2%	$6,739,995	$767,512	12.9%	18
WASHINGTON	$2,140,219	771	1.4%	110,078	1.9%	326	0.8%	$2,411,110	$270,891	12.7%	19
MADISON	$2,270,245	744	1.3%	93,873	1.6%	557	1.4%	$2,550,941	$280,696	12.4%	20
LINCOLN	$1,800,743	822	1.5%	31,773	0.5%	570	1.4%	$2,018,556	$217,813	12.1%	21
HICKMAN	$1,783,819	813	1.4%	23,352	0.4%	613	1.5%	$1,984,277	$200,457	11.2%	22
HENRY	$1,797,832	814	1.4%	31,185	0.5%	562	1.4%	$1,990,865	$193,033	10.7%	23
MONROE	$1,938,866	765	1.4%	41,051	0.7%	635	1.5%	$2,146,852	$207,985	10.7%	24
MCMINN	$1,795,319	798	1.4%	50,632	0.9%	430	1.0%	$1,982,839	$187,520	10.4%	25
HAWKINS	$1,893,021	761	1.3%	55,037	0.9%	487	1.2%	$2,070,553	$177,533	9.4%	26
HARDIN	$1,771,639	773	1.4%	25,927	0.4%	578	1.4%	$1,917,184	$145,545	8.2%	27
WAYNE	$1,872,335	742	1.3%	16,947	0.3%	734	1.8%	$2,018,708	$146,374	7.8%	28
BRADLEY	$1,992,127	699	1.2%	90,264	1.5%	329	0.8%	$2,136,015	$143,888	7.2%	29
FAYETTE	$1,934,985	679	1.2%	32,289	0.6%	705	1.7%	$2,066,994	$132,009	6.8%	30
DICKSON	$1,814,383	728	1.3%	44,935	0.8%	490	1.2%	$1,937,269	$122,886	6.8%	31
ROBERTSON	$1,889,005	687	1.2%	58,181	1.0%	477	1.2%	$2,009,376	$120,371	6.4%	32

**Results of Sample Gasoline and Diesel Tax Redistribution Methodology for County Share
Redistributed 1/3 by % of State Road Miles, 1/3 by % of State Population, and 1/3 by % of State Land Area
Ranked by % Difference, FY 2004 (cont.)**

County	Current Distribtuion	Lane Miles	Percent of State Total	2003 Population	Percent of State Total	Land Area	Percent of State Total	Revised Distribution	Difference	Percent Difference	Rank
CUMBERLAND	$2,051,620	652	1.2%	49,391	0.8%	682	1.7%	$2,179,600	$127,980	6.2%	33
OBION	$1,789,873	716	1.3%	32,386	0.6%	545	1.3%	$1,875,544	$85,671	4.8%	34
MCNAIRY	$1,744,809	714	1.3%	24,938	0.4%	560	1.4%	$1,819,857	$75,048	4.3%	35
FRANKLIN	$1,852,231	679	1.2%	40,512	0.7%	553	1.3%	$1,931,336	$79,105	4.3%	36
CARROLL	$1,825,115	690	1.2%	29,342	0.5%	599	1.5%	$1,895,463	$70,348	3.9%	37
HENDERSON	$1,708,200	714	1.3%	25,900	0.4%	520	1.3%	$1,771,724	$63,525	3.7%	38
BEDFORD	$1,753,172	671	1.2%	40,253	0.7%	474	1.1%	$1,805,566	$52,394	3.0%	39
HARDEMAN	$1,889,280	652	1.2%	28,174	0.5%	668	1.6%	$1,943,269	$53,988	2.9%	40
TIPTON	$1,844,571	639	1.1%	54,184	0.9%	459	1.1%	$1,893,576	$49,004	2.7%	41
PUTNAM	$1,868,482	617	1.1%	64,973	1.1%	401	1.0%	$1,895,967	$27,485	1.5%	42
COCKE	$1,678,082	673	1.2%	34,329	0.6%	434	1.1%	$1,690,213	$12,131	0.7%	43
CLAIBORNE	$1,648,942	666	1.2%	30,415	0.5%	434	1.1%	$1,642,535	-$6,407	-0.4%	44
WARREN	$1,714,068	645	1.1%	39,129	0.7%	433	1.0%	$1,706,970	-$7,098	-0.4%	45
COFFEE	$1,786,356	613	1.1%	49,643	0.8%	429	1.0%	$1,775,805	-$10,551	-0.6%	46
ROANE	$1,743,155	631	1.1%	52,424	0.9%	361	0.9%	$1,724,114	-$19,041	-1.1%	47
JEFFERSON	$1,588,725	655	1.2%	46,919	0.8%	274	0.7%	$1,567,576	-$21,149	-1.3%	48
DYER	$1,789,858	599	1.1%	37,308	0.6%	511	1.2%	$1,752,423	-$37,435	-2.1%	49
CAMPBELL	$1,777,537	581	1.0%	40,125	0.7%	480	1.2%	$1,718,163	-$59,374	-3.3%	50
HUMPHREYS	$1,661,482	607	1.1%	18,123	0.3%	532	1.3%	$1,597,041	-$64,441	-3.9%	51
CARTER	$1,759,456	560	1.0%	58,394	1.0%	341	0.8%	$1,681,398	-$78,058	-4.4%	52
OVERTON	$1,571,176	613	1.1%	20,151	0.3%	433	1.1%	$1,480,319	-$90,858	-5.8%	53
WHITE	$1,533,833	610	1.1%	23,584	0.4%	377	0.9%	$1,430,206	-$103,627	-6.8%	54
HAYWOOD	$1,677,268	542	1.0%	19,626	0.3%	533	1.3%	$1,545,210	-$132,059	-7.9%	55
BENTON	$1,500,636	598	1.1%	16,500	0.3%	395	1.0%	$1,370,998	-$129,638	-8.6%	56
POLK	$1,541,336	574	1.0%	16,171	0.3%	435	1.1%	$1,400,854	-$140,482	-9.1%	57
ANDERSON	$1,870,996	430	0.8%	71,904	1.2%	338	0.8%	$1,676,827	-$194,168	-10.4%	58
MACON	$1,436,428	576	1.0%	21,023	0.4%	307	0.7%	$1,268,050	-$168,378	-11.7%	59
MARSHALL	$1,560,502	523	0.9%	27,537	0.5%	375	0.9%	$1,376,725	-$183,777	-11.8%	60
LAUDERDALE	$1,667,403	484	0.9%	27,077	0.5%	470	1.1%	$1,468,506	-$198,897	-11.9%	61
SCOTT	$1,686,648	453	0.8%	21,675	0.4%	532	1.3%	$1,470,324	-$216,324	-12.8%	62
FENTRESS	$1,615,377	482	0.9%	16,935	0.3%	499	1.2%	$1,404,048	-$211,329	-13.1%	63
GRAINGER	$1,409,249	539	1.0%	21,445	0.4%	280	0.7%	$1,193,701	-$215,549	-15.3%	64
MORGAN	$1,665,005	422	0.7%	20,080	0.3%	522	1.3%	$1,406,330	-$258,675	-15.5%	65
CHEATHAM	$1,554,263	453	0.8%	37,364	0.6%	303	0.7%	$1,298,100	-$256,163	-16.5%	66

**Results of Sample Gasoline and Diesel Tax Redistribution Methodology for County Share
Redistributed 1/3 by % of State Road Miles, 1/3 by % of State Population, and 1/3 by % of State Land Area
Ranked by % Difference, FY 2004**

COUNTY	Current Distribtuion	Lane Miles	Percent of State Total	2003 Population	Percent of State Total	Land Area	Percent of State Total	Revised Distribution	Difference	Percent Difference	Rank
LOUDON	$1,498,863	457	0.8%	41,624	0.7%	229	0.6%	$1,238,757	-$260,107	-17.4%	67
DEKALB	$1,409,852	500	0.9%	18,037	0.3%	305	0.7%	$1,153,460	-$256,392	-18.2%	68
MARION	$1,704,214	364	0.6%	27,880	0.5%	500	1.2%	$1,392,773	-$311,440	-18.3%	69
HAMBLEN	$1,574,852	423	0.7%	58,851	1.0%	161	0.4%	$1,280,676	-$294,175	-18.7%	70
DECATUR	$1,396,559	500	0.9%	11,610	0.2%	334	0.8%	$1,129,449	-$267,110	-19.1%	71
RHEA	$1,509,268	432	0.8%	29,286	0.5%	316	0.8%	$1,212,643	-$296,626	-19.7%	72
JACKSON	$1,364,612	499	0.9%	11,208	0.2%	309	0.7%	$1,088,343	-$276,269	-20.2%	73
STEWART	$1,537,359	399	0.7%	12,847	0.2%	458	1.1%	$1,214,780	-$322,579	-21.0%	74
SMITH	$1,422,988	449	0.8%	18,225	0.3%	314	0.8%	$1,115,751	-$307,237	-21.6%	75
BLEDSOE	$1,480,855	409	0.7%	12,556	0.2%	406	1.0%	$1,148,340	-$332,515	-22.5%	76
PERRY	$1,453,361	379	0.7%	7,627	0.1%	415	1.0%	$1,078,510	-$374,850	-25.8%	77
CHESTER	$1,378,742	414	0.7%	15,842	0.3%	289	0.7%	$1,016,797	-$361,945	-26.3%	78
CROCKETT	$1,344,741	401	0.7%	14,491	0.2%	265	0.6%	$955,942	-$388,799	-28.9%	79
CANNON	$1,332,402	405	0.7%	13,204	0.2%	266	0.6%	$946,793	-$385,609	-28.9%	80
JOHNSON	$1,405,020	351	0.6%	17,948	0.3%	298	0.7%	$986,068	-$418,952	-29.8%	81
UNION	$1,325,988	353	0.6%	18,830	0.3%	224	0.5%	$888,204	-$437,785	-33.0%	82
GRUNDY	$1,444,331	244	0.4%	14,389	0.2%	361	0.9%	$926,921	-$517,410	-35.8%	83
LEWIS	$1,338,300	302	0.5%	11,438	0.2%	282	0.7%	$844,432	-$493,868	-36.9%	84
CLAY	$1,261,650	348	0.6%	7,947	0.1%	236	0.6%	$790,368	-$471,282	-37.4%	85
MEIGS	$1,241,591	335	0.6%	11,430	0.2%	195	0.5%	$752,889	-$488,703	-39.4%	86
SEQUATCHIE	$1,320,944	278	0.5%	11,958	0.2%	266	0.6%	$800,352	-$520,592	-39.4%	87
HANCOCK	$1,237,080	336	0.6%	6,702	0.1%	222	0.5%	$745,507	-$491,573	-39.7%	88
HOUSTON	$1,223,430	307	0.5%	8,085	0.1%	200	0.5%	$697,046	-$526,384	-43.0%	89
VAN BUREN	$1,283,504	221	0.4%	5,478	0.1%	273	0.7%	$684,820	-$598,684	-46.6%	90
UNICOI	$1,274,689	216	0.4%	17,709	0.3%	186	0.5%	$678,294	-$596,395	-46.8%	91
PICKETT	$1,158,508	268	0.5%	5,006	0.1%	163	0.4%	$569,636	-$588,872	-50.8%	92
MOORE	$1,127,834	250	0.4%	5,911	0.1%	129	0.3%	$511,221	-$616,613	-54.7%	93
LAKE	$1,182,187	198	0.4%	7,824	0.1%	163	0.4%	$525,912	-$656,275	-55.5%	94
TROUSDALE	$1,123,495	170	0.3%	7,447	0.1%	114	0.3%	$420,975	-$702,520	-62.5%	95
TOTAL	$179,064,463	56,550		5,841,748		41,220		179,064,463	0		

Sources: Current distribution from TN Dept of Revenue; road miles from TN Dept of Transportation; population and land area from US Census Bureau.

Note: Most of the actual lane miles in Metropolitan Nashville/Davidson County are accounted for by the city, not the rural portion of the county.

APPENDIX 3

ALTERNATE DISTRIBUTION OF HIGHWAY FUND REVENUE TO COUNTIES: WEIGHTED MEASURES SCENARIO

In a 1990 publication titled "State Fiscal Capacity and Effort", Information Report; M-170, the U.S. Advisory Commission on Intergovernmental Relations (ACIR) noted that road costs are a function of two primary factors: deterioration from traffic and deterioration that is independent of traffic.[44] Deterioration costs from traffic can be measured by vehicle-miles traveled while deterioration costs that are independent of traffic can be measured by lane-miles of road (the existing road stock). The ACIR report then went on to measure road costs as a weighted function of vehicle miles of travel (VMT) (given a weight of .825) and lane-miles (given a weight of .175).

The following table compares the current distribution of highway funds to counties with one based on VMT (weighted .825) and lane miles (weighted .175). It assumes no changes to the amount of total state aid to county governments. County vehicle miles of travel were calculated as VMT on the following types of county roads:[45]

- Principal rural roads;

- Minor arterial rural roads;

- Major collector rural roads;

- Minor collector rural roads;

- Local rural roads.

The table on the following page shows a dramatic redistribution of state road aid to county governments.

Results of Sample Gasoline and Diesel Tax Redistribution Methodology for County Share
Redistributed by Weighted Measures of County Lane Miles and Rural Vehicle Miles
Ranked by % Difference, FY 2004

COUNTY	LANE MILES	% of STATE TOTAL	RURAL VMT	% of STATE TOTAL	CURRENT DISTRIBUTION	NEW DISTRIBUTION (.825 VMT, .175 LM)	% DIFFERENCE	RANK
SEVIER	825	1.5%	1,887,782	3.1%	$2,145,625	$4,992,788	132.7%	1
WILLIAMSON	759	1.3%	1,711,533	2.8%	$2,571,260	$4,533,131	76.3%	2
GREENE	1148	2.0%	1,138,346	1.9%	$2,113,202	$3,371,393	59.5%	3
RUTHERFORD	897	1.6%	1,813,307	2.9%	$3,047,293	$4,853,918	59.3%	4
JEFFERSON	655	1.2%	857,277	1.4%	$1,588,725	$2,422,894	52.5%	5
MAURY	810	1.4%	1,168,119	1.9%	$2,155,277	$3,255,687	51.1%	6
GIBSON	854	1.5%	1,002,316	1.6%	$1,976,436	$2,881,502	45.8%	7
WILSON	821	1.5%	1,182,189	1.9%	$2,261,623	$3,295,362	45.7%	8
MCMINN	798	1.4%	880,522	1.4%	$1,795,319	$2,557,887	42.5%	9
FAYETTE	679	1.2%	976,625	1.6%	$1,934,985	$2,722,878	40.7%	10
BRADLEY	699	1.2%	1,003,320	1.6%	$1,992,127	$2,797,951	40.5%	11
MCNAIRY	714	1.3%	852,064	1.4%	$1,744,809	$2,443,109	40.0%	12
CLAIBORNE	666	1.2%	805,244	1.3%	$1,648,942	$2,303,766	39.7%	13
MONROE	765	1.4%	948,321	1.5%	$1,938,866	$2,702,478	39.4%	14
LOUDON	457	0.8%	746,579	1.2%	$1,498,863	$2,047,065	36.6%	15
TIPTON	639	1.1%	868,712	1.4%	$1,844,571	$2,441,475	32.4%	16
GRAINGER	539	1.0%	649,500	1.1%	$1,409,249	$1,859,070	31.9%	17
OBION	716	1.3%	815,488	1.3%	$1,789,873	$2,356,015	31.6%	18
HAWKINS	761	1.3%	860,854	1.4%	$1,893,021	$2,490,183	31.5%	19
LAWRENCE	1011	1.8%	805,228	1.3%	$1,926,909	$2,494,966	29.5%	20
BLOUNT	822	1.5%	1,085,033	1.8%	$2,382,478	$3,062,352	28.5%	21
ROBERTSON	687	1.2%	822,057	1.3%	$1,889,005	$2,355,716	24.7%	22
CHEATHAM	453	0.8%	693,859	1.1%	$1,554,263	$1,918,089	23.4%	23
WHITE	610	1.1%	645,626	1.1%	$1,533,833	$1,889,178	23.2%	24
MADISON	744	1.3%	987,457	1.6%	$2,270,245	$2,784,706	22.7%	25
KNOX	1503	2.7%	1,950,716	3.2%	$4,501,757	$5,519,725	22.6%	26
LINCOLN	822	1.5%	712,759	1.2%	$1,800,743	$2,168,293	20.4%	27
CARROLL	690	1.2%	746,331	1.2%	$1,825,115	$2,175,506	19.2%	28
FRANKLIN	679	1.2%	761,982	1.2%	$1,852,231	$2,206,936	19.2%	29
DICKSON	728	1.3%	725,599	1.2%	$1,814,383	$2,146,966	18.3%	30
GILES	885	1.6%	697,537	1.1%	$1,837,929	$2,166,307	17.9%	31
HENRY	814	1.4%	688,369	1.1%	$1,797,832	$2,104,798	17.1%	32
WARREN	645	1.1%	679,369	1.1%	$1,714,068	$1,989,624	16.1%	33
WEAKLEY	856	1.5%	692,650	1.1%	$1,847,130	$2,138,758	15.8%	34
DYER	599	1.1%	721,427	1.2%	$1,789,858	$2,065,099	15.4%	35
OVERTON	613	1.1%	594,587	1.0%	$1,571,176	$1,768,226	12.5%	36

**Results of Sample Gasoline and Diesel Tax Redistribution Methodology for County Share
Redistributed by Weighted Measures of County Lane Miles and Rural Vehicle Miles
Ranked by % Difference, FY 2004 (cont.)**

COUNTY	LANE MILES	% of STATE TOTAL	RURAL VMT	% of STATE TOTAL	CURRENT DISTRIBUTION	NEW DISTRIBUTION (.825 VMT, .175 LM)	% DIFFERENCE	RANK
BEDFORD	671	1.2%	665,190	1.1%	$1,753,172	$1,970,109	12.4%	37
RHEA	432	0.8%	598,020	1.0%	$1,509,268	$1,676,204	11.1%	38
MARION	364	0.6%	695,334	1.1%	$1,704,214	$1,872,332	9.9%	39
ROANE	631	1.1%	644,692	1.0%	$1,743,155	$1,898,504	8.9%	40
SUMNER	802	1.4%	941,557	1.5%	$2,543,684	$2,706,951	6.4%	41
HARDIN	773	1.4%	602,301	1.0%	$1,771,639	$1,875,244	5.8%	42
ANDERSON	430	0.8%	712,960	1.2%	$1,870,996	$1,951,055	4.3%	43
POLK	574	1.0%	533,728	0.9%	$1,541,336	$1,600,306	3.8%	44
COCKE	673	1.2%	569,334	0.9%	$1,678,082	$1,740,888	3.7%	45
COFFEE	613	1.1%	628,789	1.0%	$1,786,356	$1,850,718	3.6%	46
CROCKETT	401	0.7%	484,090	0.8%	$1,344,741	$1,385,575	3.0%	47
CUMBERLAND	652	1.2%	719,778	1.2%	$2,051,620	$2,090,554	1.9%	48
PUTNAM	617	1.1%	647,350	1.1%	$1,868,482	$1,897,409	1.5%	49
DECATUR	500	0.9%	473,165	0.8%	$1,396,559	$1,413,699	1.2%	50
HENDERSON	714	1.3%	547,054	0.9%	$1,708,200	$1,710,259	0.1%	51
HARDEMAN	652	1.2%	623,751	1.0%	$1,889,280	$1,860,248	-1.5%	52
CAMPBELL	581	1.0%	592,523	1.0%	$1,777,537	$1,745,475	-1.8%	53
UNICOI	216	0.4%	461,350	0.8%	$1,274,689	$1,228,080	-3.7%	54
HICKMAN	813	1.4%	527,366	0.9%	$1,783,819	$1,717,786	-3.7%	55
SULLIVAN	978	1.7%	810,343	1.3%	$2,595,527	$2,488,990	-4.1%	56
HAMBLEN	423	0.7%	521,090	0.8%	$1,574,852	$1,486,255	-5.6%	57
MACON	576	1.0%	429,575	0.7%	$1,436,428	$1,351,588	-5.9%	58
BENTON	598	1.1%	436,042	0.7%	$1,500,636	$1,378,792	-8.1%	59
CHESTER	414	0.7%	428,606	0.7%	$1,378,742	$1,259,291	-8.7%	60
MARSHALL	523	0.9%	458,551	0.7%	$1,560,502	$1,391,440	-10.8%	61
FENTRESS	482	0.9%	487,824	0.8%	$1,615,377	$1,439,277	-10.9%	62
HUMPHREYS	607	1.1%	475,496	0.8%	$1,661,482	$1,479,073	-11.0%	63
SMITH	449	0.8%	419,116	0.7%	$1,422,988	$1,255,968	-11.7%	64
SCOTT	453	0.8%	510,767	0.8%	$1,686,648	$1,478,331	-12.4%	65
LAUDERDALE	484	0.9%	492,153	0.8%	$1,667,403	$1,450,537	-13.0%	66
WASHINGTON	771	1.4%	573,629	0.9%	$2,140,219	$1,805,601	-15.6%	67
CARTER	560	1.0%	481,831	0.8%	$1,759,456	$1,467,901	-16.6%	68
JOHNSON	351	0.6%	406,636	0.7%	$1,405,020	$1,171,505	-16.6%	69
UNION	353	0.6%	378,181	0.6%	$1,325,988	$1,103,985	-16.7%	70
MONTGOMERY	753	1.3%	711,173	1.2%	$2,588,533	$2,125,991	-17.9%	71
DEKALB	500	0.9%	346,657	0.6%	$1,409,852	$1,110,165	-21.3%	72

Results of Sample Gasoline and Diesel Tax Redistribution Methodology for County Share Redistributed by Weighted Measures of County Lane Miles and Rural Vehicle Miles Ranked by % Difference, FY 2004 (cont.)

COUNTY	LANE MILES	% of STATE TOTAL	RURAL VMT	% of STATE TOTAL	CURRENT DISTRIBUTION	NEW DISTRIBUTION (.825 VMT, .175 LM)	% DIFFERENCE	RANK
SEQUATCHIE	278	0.5%	364,464	0.6%	$1,320,944	$1,029,615	-22.1%	73
WAYNE	742	1.3%	431,674	0.7%	$1,872,335	$1,448,069	-22.7%	74
MORGAN	422	0.7%	434,190	0.7%	$1,665,005	$1,276,942	-23.3%	75
CANNON	405	0.7%	323,464	0.5%	$1,332,402	$1,001,454	-24.8%	76
STEWART	399	0.7%	373,655	0.6%	$1,537,359	$1,118,665	-27.2%	77
MEIGS	335	0.6%	287,226	0.5%	$1,241,591	$875,922	-29.5%	78
JACKSON	499	0.9%	275,382	0.4%	$1,364,612	$938,081	-31.3%	79
HAYWOOD	542	1.0%	344,016	0.6%	$1,677,268	$1,127,133	-32.8%	80
BLEDSOE	409	0.7%	288,954	0.5%	$1,480,855	$920,885	-37.8%	81
PERRY	379	0.7%	242,606	0.4%	$1,453,361	$792,774	-45.5%	82
TROUSDALE	170	0.3%	212,410	0.3%	$1,123,495	$604,564	-46.2%	83
GRUNDY	244	0.4%	263,325	0.4%	$1,444,331	$768,008	-46.8%	84
LEWIS	302	0.5%	216,142	0.4%	$1,338,300	$686,820	-48.7%	85
MOORE	250	0.4%	182,558	0.3%	$1,127,834	$577,114	-48.8%	86
CLAY	348	0.6%	182,522	0.3%	$1,261,650	$631,355	-50.0%	87
HAMILTON	782	1.4%	599,683	1.0%	$3,955,284	$1,874,013	-52.6%	88
VAN BUREN	221	0.4%	189,821	0.3%	$1,283,504	$578,324	-54.9%	89
HOUSTON	307	0.5%	157,688	0.3%	$1,223,430	$549,238	-55.1%	90
SHELBY	786	1.4%	1,373,641	2.2%	$8,825,139	$3,736,244	-57.7%	91
PICKETT	268	0.5%	132,238	0.2%	$1,158,508	$466,074	-59.8%	92
HANCOCK	336	0.6%	118,901	0.2%	$1,237,080	$472,121	-61.8%	93
LAKE	198	0.4%	109,777	0.2%	$1,182,187	$373,651	-68.4%	94
DAVIDSON	180	0.3%	165,479	0.3%	$5,972,483	$497,517	-91.7%	95
TOTAL	56,550		61,484,501		$179,064,463	$179,064,463		

Source: Tennessee Department of Revenue and Tennessee Department of Transportation.

Note: Most of the actual lane miles in Metropolitan Nashville/Davidson County are accounted for by the city, not the rural portion of the county.

ENDNOTES

[1] Green, Harry. A., Stan Chervin, and Ed Young. *State Tax Sharing, Fairness, and Local Government Finance in Tennessee*, January 2004, page VI. See Table A. Total excludes beer wholesale tax.

[2] TCA 67-3-201.

[3] TCA 67-3-202.

[4] TCA 67-3-203.

[5] TCA 67-3-906 establishes a fixed annual amount of money from collections from this special privilege tax for local government use.

[6] Based on the daily number of vehicles traveling on each segment of road times the length of each segment. The daily figure is then multiplied by 365 to obtain an estimate of the annual vehicle miles of travel for each segment of road.

[7] Federal Highway Administration (FHA), U.S. Department of Transportation. *Highway Statistics 2002*. http://www.fhwa.dot.gov/policy/ohim/hs02. Table VM-2. These figures are for state roads, excluding federal interstates.

[8] Ibid, Table HM-10.

[9] The TTMRC was created by the State Legislature in 1972 to study various aspects of state and local taxation.

[10] The Federal Highway Administration and the Tennessee Department of Transportation do not produce data on annual vehicle miles of travel (AVMT) by road ownership (county or city owned and maintained). The FHA data for rural AVMT was used as a proxy for AVMT on county highways and urban AVMT as a proxy for travel on city roads and streets. Source: FHA Highway Statistics 2002, Tables PS-1 and VM-2.

[11] Under Tenn. Code Ann. § 54-4-203, a "premiere tourist resort city" shall be considered a city with a population of ten thousand nine hundred forty-five (10,945) for purposes of distribution of funds under this section. Only Gatlinburg and Pigeon Forge qualify, and this represents a major increase in population consideration for both, especially for Gatlinburg. The statute lists the provision under "Special Census". Generally, a special census is allowed to determine distribution share if there is reason to believe the population has changed substantially.

[12] 2003 population figures, used for distribution purposes, provided by the Tennessee Department of Economic and Community Development.

[13] Green (2004), p. *xviii*.

[14] Tennessee Tax Modernization and Reform Commission (TTMRC). *State Financial Assistance to Local Government: Education, Highway, and General Government Assistance Programs, TTMRC Staff Report.* Nashville, Tennessee, June 30, 1973. Recommendation 27, p. 10.

[15] The Catalog of Federal Domestic Assistance (December 2001 update) listed 180 federal allocation by formula programs totaling $262.3 billion as obligations for FY 2000.

[16] National Research Council (2003), p. 10.

[17] Quindry, Kenneth E., and Richard E. Engles. *Distribution of State-Local Shared Taxes.* Center for Business and Economic Research, University of Tennessee. Knoxville, February 1972, p. and TTMRC (1973).

[18] Based on the assumption that more people imply more vehicles that in turn results in higher road usage.

[19] Estimated as the difference between total county highway expenditures and state highway aid. Data for three years (FY 2000-2002) was used to develop the contribution rates shown in the Appendix.

[20] A city's population relative to the population of all cities in the State.

[21] Institute of Transportation Engineers, *Transportation Planning Handbook*, Washington, D.C., 1999, pp. 289-298.

[22] October 4, 2004 response to TACIR request for data by Commissioner Nicely, Tennessee Department of Transportation.

[23] U. S. Bureau of Census, Census 2000 Summary File 3 (SF3).

[24] Data for cities is only available during the decentennial census. Data for counties is updated annually for only a few categories of group quarters.

[25] TTMRC, Recommendation 8.

[26] Green (2004).

[27] State highway program data from "Highway Statistics 2002," U.S. Department of Transportation, Federal Highway Administration, October 2003, Table LGF-1.

[28] Notably Arkansas, Georgia, Kentucky, New York, Rhode Island, and Vermont. In four states, Delaware, North Carolina, West Virginia, and Virginia, most local roads are under state control. See "Highway Statistics 2002," Table SF-6.

[29] Preliminary data downloaded from US Census Bureau website http://www.census.gov/govs/estimate/0243tnsl_2.html on August 20, 2004; Table 2 Local Government Finances by Type of Government.

[30] Green (2004), p. 110-111.

[31] Ibid, p. 200–206.

[32] Green, Harry A., Stan Chervin, and Cliff Lippard. *State-Shared Taxes in Tennessee.* The Tennessee Advisory Commission on Intergovernmental Relations (TACIR), Nashville, Tennessee, March 2000, p. 200.

[33] Green (2004), p. 42–45.

[34] Hartgen, David. On the Road Again: Performance, Needs, and Funding Options for North Carolina's Highways. John Locke Foundation, Raleigh, NC, October, 2000.

[35] Goode, Larry. "The Equity Formula for Allocating Highway Construction Funds in North Carolina." Policy Report No. 1. Transportation Planning, Policy, and Finance Group, North Carolina State University, 1998.

[36] Hartgen.

[37] Ibid.

[38] North Carolina Department of Transportation, State Road Maintenance Unit, and the Institute for Transportation Research and Education, North Carolina State University. *Maintenance Operations Manual.* Raleigh, North Carolina, August, 2002.

[39] *CQ Weekly.* February 3, 1997.

[40] Birnbaum, Jeff. *Marketplace.* Minnesota Public Radio. February 16, 2004.

[41] Text of the National Highway Safety Act of 2003, amending Title 23 of the United States Code.

[42] National Conference of State Legislatures. *State and Local Highway Finance: Where Does the Money Come From and Why Isn't There Enough?* Legislative Finance Paper #78, September 1991, p. 10-11.

[43] See Appendix 3 for basis of weights chosen.

[44] Advisory Commission on Intergovernmental Relations. *State Fiscal Capacity and Effort, Information Report M-170.* Washington D.C., August 1990, p. 14.

[45] Data from the Tennessee Department of Transportation for 2002. Data used excludes federal interstate miles and traffic.

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