

Transportation Infrastructure: An Overview of Highway Systems and South Carolina's Position and Status

--A Working Paper--

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Introduction

Governors on Monday [February 25, 2008] left the National Governors Association winter meeting divided over whether to push Congress to include transportation money in a second economic stimulus package. But the NGA gathering elevated bipartisan concerns about the nation's deteriorating infrastructure, landing the issue directly in front of President Bush amid vows to get the presidential candidates to also address the problem.¹

Transportation highway systems are increasingly becoming a key issue among numerous national, state, and local policymakers. The main reason for this attention and concern is that the conditions of many roads and bridges are deemed to be poor. Lack of sufficient appropriations and viable funding mechanisms are blamed mainly for the failing conditions of highway systems. Other competing public spending needs, falling revenues due to tax cuts, lackluster economic conditions in early 2008, and disagreement on the precise nature of transportation issues and problems, have complicated the overall situation and debate. Nevertheless, the literature appears to be clear that our highway systems are of great significance to all and that their worsening status must be addressed by public officials at the earliest opportunity.

In this working paper, the benefits of a good transportation system will first be discussed with focus on the economic advantages. Next, the highway system in the United States will be reviewed with particular emphasis on the interstate system and its corridors, federal highway legislation and funding, and the growth in highway construction and maintenance costs. After this, an overview of the system of highways and roads in South Carolina will be presented.

This overview will give a description of the state's highway infrastructure, state transportation legislation and funding as well as expenditures, and the conditions of South Carolina's roads. Also, the South Carolina Department of Transportation's (SCDOT) key planning document—the Statewide Multimodal Transportation Plan—will be examined giving a glimpse of the state's future proposed actions. Finally, a review of a recent report² (Hartgen and Karanman, 2007) will give a comparative look at the performance of state highway systems.

The Benefits of Highway Systems

The benefits and advantages of highways are immensely important to the social and economic structures and processes of the United States, including national security. These views are made clear in the literature and, in the main, among American opinion polls.³

Surface transportation⁴ has been described as “the thread that knits the country together, providing the mobility that is such a significant part of America’s quality of life and is deeply embedded in our culture, psyche, and history of events... Highways (also transit and rail) provide unprecedented access to work, education, health care, recreation, and the many other activities that constitute the American way of life.”⁵

Of particular importance, America’s surface transportation system serves as the backbone of our country’s economy. Highways contribute to the economy in basically three ways. First, they contribute to employment supported by highway construction and maintenance. Second, they permit ordinary commuters and travelers to spend and consume products and services. And third, they allow for the movement of commodities or freight and, therefore, increase productivity. All of these together constitute a very significant part of the total U.S. economy.

According to research conducted by the United States Department of Transportation (USDOT), in 2002, transportation-related goods and services, or freight,⁶ accounted for more than 10%—over \$1 trillion—of the U.S. Gross Domestic Product⁷ (GDP). Only housing, health care, and food are the industry sectors that contributed a larger share of the nation’s GDP. The for-hire transportation⁸ service industries alone, not including the value of transportation equipment, fuels, and other material inputs, and the value of the in-house transportation services provided by non-transportation industries for their own use, contributed \$306 billion to the country’s GDP in 2001. Sixty-eight percent of this for-hire contribution came from the freight transportation sector.⁹ (See Figure A.)

Further, in 2001, the Federal Highway Administration (FHWA) states that Americans bought more than \$313 billion of products and services that were transported on our nation’s highways. The FHWA indicates that transportation or freight costs amounted, on average, 1% to 14% of the costs of these commodities.¹⁰ These costs have increased substantially with escalating gasoline and other related energy prices according to the literature, though no precise, documented cost estimate could be found by this author for the period 2006 through 2008.

Figure A.
Transportation and the U.S. Economy

In relation to GDP	2001
Overall GDP (trillions of dollars)	10.05
Transportation related goods and services purchases (trillions of dollars) *	1.05
Transportation's share of GDP (percent)	10.4%

(Figure A. Continued)

In relation to employment (millions)	2002
Total U.S. occupational employment	127.5
Total transportation	19.9
Transportation and related-industries	10.7
For-hire transportation industry, total	4.4
Equipment manufacturing (transportation only)	1.7
Other related industries (e.g., automotive repair, service stations, car dealers, auto supplies, and highway construction)	4.5
Transportation occupations in non-transportation industries (e.g., truck drivers employed by retail and grocery chain and wholesale shipping clerk)	9.2
Transportation and related jobs' share of total labor force (percent)	15.6%

* Includes all consumer and government purchases of goods (e.g., vehicles and fuel) and services (e.g., auto insurance) and exports related to transportation.

Note: "For-hire transportation industry," "Equipment manufacturing," and "Related industries" data are based on the Standard Industrial Classification.

Source: U.S. Department of Transportation. (2002). *Economic impact on transportation*. Washington, DC: USDOT Research and Innovative Technology Administration, Bureau of Transportation Statistics.

The USDOT also speaks to the economic benefits created by highway systems in terms of employment. (Figure A.) Their data show that in 2002 jobs in the transportation industry and related industries totaled 20 million. More specifically, the for-hire transportation sector totaled 4.4 million employees in 2002. USDOT additionally states:

More than 60% of these for-hire workers are either in freight-related occupations or in jobs that directly support freight transportation. An additional 1.7 million workers are employed in transportation equipment manufacturing and another 4.5 million in transportation-related industries such as automotive service and repair, highway construction, and motor vehicle and parts dealers (USDOT-BTS 2004). Transportation-related occupations also make up a significant portion of the employment of non-transportation industries such as truck drivers, freight arrangement agents, and freight-moving workers in the wholesale and retail industries. In 2002, there were about 9.2 million people employed in transportation-related occupations in non-transportation industries.¹¹

Of interest, the Road Information Program (TRIP), a respected non-profit transportation research group, also provides data from a recent study that point to the cost-benefit of U.S. highways and bridges. First, one analysis found that for every \$1 billion of federal expenditure spent on the U.S. highway system, some 47,500 jobs were created as a result. In another analysis, it was concluded that for each dollar spent on the highway system in America, the return on investment (ROI) was \$5.40. This ROI resulted from "reduced delays, improved safety, and decreased motor vehicle costs."¹² Finally, according to

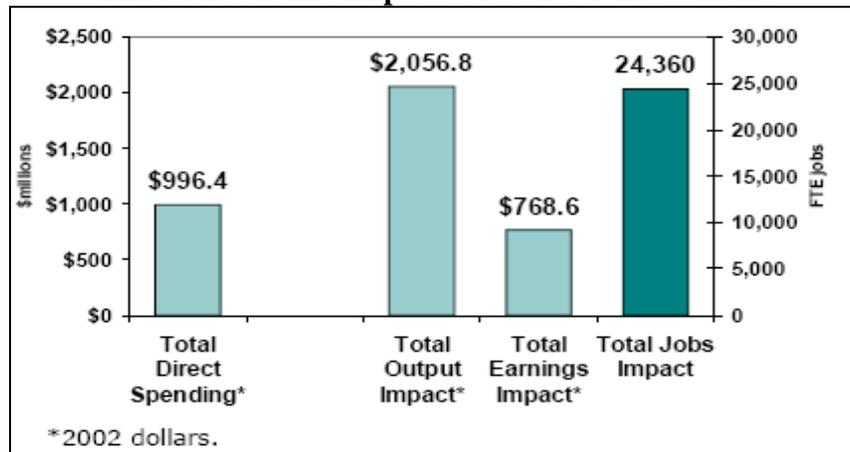
TRIP’s analysis of data,¹³ it was found that 74% of all \$8.4 trillion commodities (or \$6.3 trillion) transported in the U.S. was by truck on states’ highways.

With regard to the economic benefits attributable to the overall transportation system in South Carolina, the Moore School of Business of the University of South Carolina prepared an extensive report in 2003 as to the economic impact that the activities and operations of the South Carolina Department of Transportation (SCDOT) has on the state. According to the report, the short-term economic benefits are as follows:

- SCDOT supports a total of \$2.1 billion of economic output annually. Of this total, \$1.6 billion is attributable to highway construction and maintenance projects.
- \$768.6 million in labor income for South Carolinians each year can be linked to the activities of SCDOT. This amounts to roughly 1.1 percent of total labor earnings statewide.
- SCDOT’s annual operations support a total of 24,360 full-time equivalent jobs distributed across all regions and sectors of the South Carolina economy.
- A total of \$91.6 million in annual, recurring tax revenue for South Carolina is supported by SCDOT’s activities. Of this total, \$79.3 million flows to the state’s general revenue fund, while \$12.3 million is directly allocated to education via the Education Improvement Act.¹⁴ (See Table 2.)

As to long-term economic benefits, the Moore School report states that South Carolina is also affected from SCDOT’s improvements to the state’s transportation system. Though difficult to measure precisely, and in some cases not at all, these beneficial areas include: business costs and productivity; labor market access; economic competitiveness; and, revenues.¹⁵ Specifically, the report does give quantifiable analysis to three direct long-term benefit areas—safety, reduced congestion and traffic time, and increased transportation choice and accessibility.¹⁶

Table 2.
Annual Economic Impacts of SCDOT Investments



Source: Moore School of Business. (2003, January). *The South Carolina department of transportation and its economic impact on the State of South Carolina*. Executive Summary. Columbia, SC: Moore School of Business, Division of Research, University of South Carolina, p. ii.

Thus, the highway system in the United States—and South Carolina—has provided significant benefits for Americans, especially economic ones. These benefits include increased productivity (i.e., the GDP), the monetary gains from commodity transport, new investment, and job creation.

The United States Highway System

As the preceding discussion indicates, highway systems are vital to the United States in many respects. One expert (Slater, 1996) states, “Success can be measured by virtue of the concrete, asphalt, and steel that comprise the elements that make up the network of highways and bridges that stretches the length of our nation.”¹⁷ A review of the literature indicates that most experts in the transportation field agree with this statement.

With the advent of the automobile and its increasing use as America’s principal mode of transportation, the need for good, reliable roads and bridges became much evident in the first part of the 20th century. Specifically, in the early to mid 1920s, the U.S. Highway System was established to standardize routes and create a single and unified system of highways. The first national legislation to develop a national roadway system was the Federal-Aid Highway Act of 1938. However, no funding was established to build a recommended 26,700-mile interstate. Later, in 1944, the Act expanded the proposed highway mileage to 40,391; yet, again, no specific funding was appropriated.

Recognizing the strategic importance of a national highway system, President Dwight Eisenhower pushed for legislation and funding to construct an interstate system. In 1954, a revised Federal-Aid Act was approved and \$175 million was initially appropriated. Then two years later, the Act was expanded to provide for 41,012 miles of interstate with an authorized budget of \$25 billion.

Today, the U.S. interstate system covers 46,837 miles of which 31,477 miles are categorized as rural and 15,300 as urban. Additionally, the National Highway System provides an additional 115,319 miles. Other federally-aided highways encompass 809,044 miles. Highways not receiving federal aid—state and local—make up the vast majority of highway mileage or 3,026,261.¹⁸ (See Table 3).

Table 3.
United States – Highway Miles

Category		Miles	Percent
Interstate		46,837	1.2
	Rural	31,477	
	Urban	15,300	
Other NHS		115,319	2.9
	Total NHS	162,156	
Other Federal Aid		809,044	20.2

Non-Federal Aid		3,026,261	75.7
Total		3,997,461	100.0

Source: Kane, A. (2006, March). *U.S. highway system overview*. American Association of State Highway Officials. Retrieved March 11, 2008 from <http://downloads.transportation.org/Kane-2006-03-10.pdf>.

The U.S. Interstate System

The concept of the interstate system was first introduced in 1939 in a report to Congress. Yet, the interstate system did not get its start until June 19, 1956 when President Eisenhower signed the Highway Federal-Aid Act.

The current 46,837 miles of interstate was and continues to be funded mainly by the Federal Highway Trust Fund (90%), a fuel tax which the federal government levies on gasoline (18.4 cents per gallon¹⁹). States pay 10% of the costs. Each state owns and operates its respective part of the interstate system. The estimated cost of building the interstate was approximately \$329 billion (in 1995 dollars). Interstate funding nowadays pays for construction improvements and maintenance costs. However, it should be noted that if a state or the federal government deems it necessary to expand today's interstate system, it may do so through legislation.

The standard design of the interstate was specified in 1956. The four main requirements are as follows: 1) a minimum of two lanes in each direction, 2) lanes must be 12 feet in width, 3) a 10 foot right paved shoulder must exist, and 4) that the lane design must accommodate speeds of 50-70 mph. These standards serve several purposes but, according to the literature the most important one is safety.²⁰

Safety is essentially measured by the fatality rate. This rate equates to the fatalities per 100 million miles traveled. The interstate system, presently has a fatality rate of .08 compared to 1.46 for other roadways (2004), and, therefore, is statistically the safest in the U.S. Other factors attribute to interstate safety are slid-resistant pavements, better signage, and improved guardrails along with median dividers.

Finally, in 2006, while representing only 3% of all the nation's highways or roadway lane miles, the U.S. interstate system carries 24% of all traffic. "Since funding of the interstate was approved in 1956, vehicle miles of travel in the U.S. have risen by 373%, the number of vehicles in the nation has grown by 236%, and the nation's population has increased by 75%."²¹

The U.S. Department of Transportation (USDOT)

The USDOT was created October 15, 1966, when legislation was signed by President Lyndon Johnson. In 2008, it is the primary federal cabinet-level executive agency responsible for "shaping and administering policies and programs to protect and enhance the safety, adequacy, and efficiency of the transportation system and services." Its priorities, as outlined by the Office of the Secretary, are "to keep the traveling public safe and secure, increase their mobility, and contribute to the nation's economic growth."²²

The USDOT has some 60,000 employees and consists of the Office of the Secretary and 11 operating units with their own management and organizational structures. Of these units, those dealing with highways are the Federal Highway Administration, the Federal Motor Carrier Safety Administration, the Federal Transit Administration, the National Highway Traffic Safety Administration, and the Research and Innovative Technology Administration.

The Office of the Secretary is appointed by the president and confirmed by the senate. The secretary is the main advisor to the president on transportation matters and assists in the development of policy, the formulation of legislative proposals, and the enforcement of transportation laws and regulations.

The Federal Highway Administration (FHWA) is pivotal in the coordination of highway transportation programs with state DOTs. Its strategic goals are “to improve highway safety; to preserve, improve, and expand the nation’s highway transportation system; to promote and facilitate a more efficient domestic and global transportation system that enables economic growth; to protect and enhance the natural environment and communities affected by highway transportation; and, to improve highway security and support national defense mobility.”²³ The primary program FHWA administers is the Federal-Aid Highway Program which provides federal monies for the construction and improvement of the National Highway System, including other designated state roadways and bridges. FHWA also provides programs for highway research and development. Its annual budget of more than \$30 billion is funded by federal fuel and motor vehicle excise taxes.

Federal Highway Legislation and Funding/Expenditures

While there are several key federal laws and regulations, *The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users of 2005* (SAFETEA-LU) is the most comprehensive legislation to date. It was enacted August 10, 2005 and provides funding (\$244.1 billion) for surfacing highways, highway safety, and public transportation. The Act is in effect for a five-year period (2005-2009) and represents the largest surface investment in U.S. history. SAFETEA-LU was preceded by two other laws—the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) and the Transportation Equity Act for the 21st Century (TEA-21).²⁴

Basically, SAFETEA-LU addresses the current problems of our transportation system by improving safety, reducing traffic congestion, improving efficiency in freight movement, increasing intermodal²⁵ connectivity, and protecting the environment. SAFETEA-LU, according to the FHWA, promotes more efficient and effective federal surface transportation programs by focusing on transportation issues of national significance, while giving state and local transportation decision makers more flexibility for solving transportation problems in their communities.²⁶

The Highway Trust Fund (HTF), established originally in 1956, is the principal financial mechanism for SAFETEA-LU. HTF monies are collected through receipts of the excise

taxes charged to highway users, mainly motor fuels. (See Table 4.) By law, HTF expenditures—road and bridge and mass transit improvements—cannot exceed highway user funds or revenue collected.

Table 4.
Highway User Funds

Tax Type	Tax Rate
Gasoline	18.4 cents per gallon
Diesel	24.4 cents per gallon
Gasohol (10% ethanol) *	13 cents per gallon
Special Fuels:	
General rate	18.4 cents per gallon
Liquefied petroleum gas	13.6 cents per gallon
Liquefied natural gas	11.9 cents per gallon
M85 (from natural gas)	9.25 cents per gallon
Compressed natural gas	48.54 cents per thousand cubic feet
Tires:	
0-40 pounds	No Tax
Over 40 to 70	15¢ per pound in excess of 40
Over 70 pounds to 90	\$4.50 plus 30¢ per pound in excess of 70
Over 90 pounds	\$10.50 plus 50¢ per pound in excess of 90
Truck and Trailer Sales	12 percent of retailer's sales price for tractors and trucks over 33,000 pounds gross vehicle weight (GVW) and trailers over 26,000 pounds GVW
Heavy Vehicle Use	Annual tax: Trucks 55,000 pounds and over GVW, \$100 plus \$22 for each 1,000 pounds (or fraction thereof) in excess of 55,000 pounds (maximum tax of \$550)

Source: Retrieved March 13, 2008 from <http://www.fhwa.dot.gov/reports/fifahiwy/fifahi05.htm>.

In 2006, estimated receipts for the HTF were \$34.1 billion, most of which came from the taxes on gasoline and diesel. In 2007, HTF forecasted receipts totaled \$39.7 billion. Of this amount, \$26 billion in revenues came from gas taxes and \$9.8 billion from diesel taxes (90% of total). (See Table 5.) According to a recent GAO report, current outlays for expenditure of HTF indicate a negative balance in 2009 (-\$4.6 billion).²⁷

With regard to South Carolina's allocation of the federal Highway Trust Fund, the FHWA reports that the state received a total \$680.3 million for FFY 2006 expenditures. Specifically, HTF funded these main categories: interstate (\$329,000); National Highway System (\$107.4 million); surface transportation program (\$227.6 million); interstate maintenance (\$99.5 million); bridge replacement (\$77.2 million); and, congestion and air quality improvement (\$23.3 million).²⁸

Table 5.
Forecast of Excise Tax Receipts to Highway Trust Fund – 2007

Gross Transfers	
Gasoline	\$25,955 million
Diesel and Other Fuels	\$9,784 million
Retail Tax on Trucks	\$3,464 million
Highway-Type Tires	\$579 million
Heavy Vehicle Use Tax	\$1,508 million
Gross HA and TA Transfers	\$41,290 million
Less Aquatic Account	\$422 million
Net HA and TA Transfers	\$40,848 million
Less HA and TA Refunds	\$1,141 million
Highway Trust Fund Total	\$39,707 million

Source: U.S. Department of Treasury. Retrieved March 14, 2008 from <http://www.transportation1.org/tif4report/background.html>.

Growth in Highway Construction and Maintenance Costs

On the whole, many of the highway and bridge conditions in the United States are becoming increasingly dilapidated. Meanwhile, costs in surface transportation are growing at an unprecedented rate. This mix of failing roads and bridges and inflationary costs for construction and maintenance is causing significant problems with regard to the U.S. transportation system, particularly among some states.

Currently, 33% of all major roads in the nation are in poor or mediocre condition. As to bridges, 26% are structurally deficient or functionally obsolete.²⁹ (See Table 6.)

In particular, based on 2005 data from the USDOT, an estimated 1,565 roads in South Carolina are in mediocre condition and the same number (1,565) are in poor condition. Bridges in the state that are structurally deficient total 1,274, while those that are functionally obsolete are 827.

Table 6.
Road and Bridge Conditions

Road Conditions: 2005

State	Very Good	Good	Fair	Mediocre	Poor	Not Reported
South Carolina	554	7,153	10,082	1,565	1,565	0
United States, total	120,102	259,314	386,931	96,890	64,860	4,416

Bridge Conditions: 2005

State	All bridges (number)	Structurally deficient (number)	Functionally obsolete (number)	Total, structurally deficient and functionally obsolete	
				(number)	(percent)
South Carolina	9,202	1,274	827	2,101	22.8
United States, total	592,473	75,621	79,523	155,144	26.2

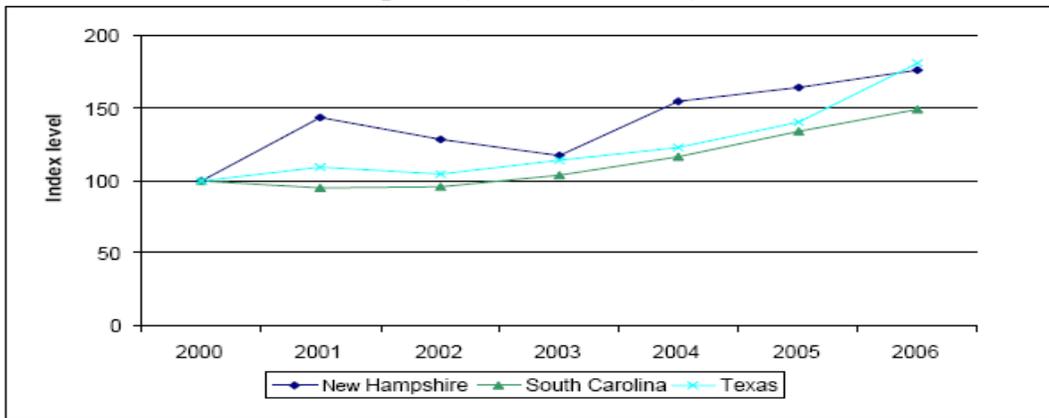
Sources: Source: U.S. Department of Transportation, Federal Highway Administration. (2006). *Highway statistics 2005*. Washington, DC: Author, Tables HM-63 and HM-64.
 U.S. Department of Transportation, Federal Highway Administration. (2006). *National bridge inventory: deficient bridges by state and highway system*. Washington, DC: Author, available at <http://www.fhwa.dot.gov/bridge/britab.htm> as of October 3, 2006.

Again, costs to address these conditions and new construction are growing, reducing the purchasing capacity of federal and state highway funds. In a recent report by the FHWA, it was found that construction and maintenance costs increased three times faster (35.3%) over the period 2003 through 2006 than any three-year period from 1990 to 2003.³⁰ The reason for this substantial growth was due mainly to the inflationary costs of materials or “commodities” used for highway and bridge construction and maintenance; namely, steel, concrete, and asphalt. In addition, costs associated with delivering these commodities have increased. The report states:

Highway project cost growth has substantially reduced the purchasing power of highway funds provided in SAFETEA-LU. A dollar will have lost between 37 and 60 percent of its value between 2005 and 2009, if highway project inflation continues at its 2006 pace. Under these circumstances, the \$42 billion provided in SAFETEA-LU for 2009 Federal-aid to highways will only be equivalent to between \$16.8 billion and \$26.6 billion in 2005 dollars.³¹

However, it should be noted that the report found that cost increases varied among states. In South Carolina, it was found that state construction cost indices (CCI) were significantly higher from 2003 to 2006 when compared to the prior three-year period (2000-2003). The CCI increase from 2003-2006 was 44%, which was 13 times higher than the earlier period. (See Figure B.)

Figure B.
State Construction Cost Indices
New Hampshire, South Carolina, and Texas



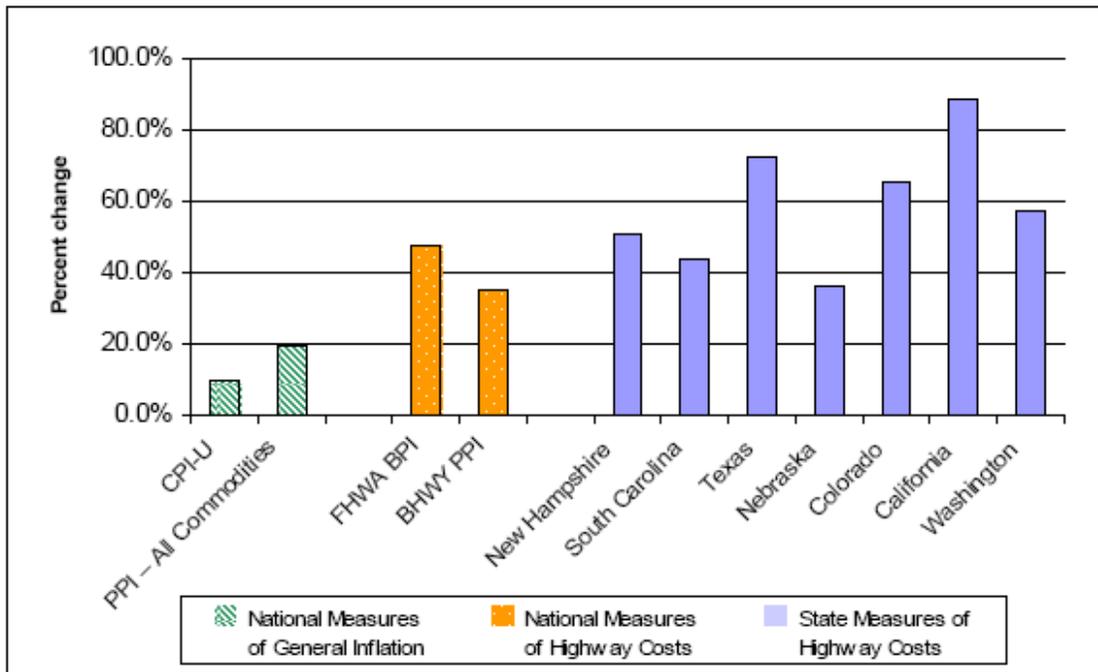
*All indices were scaled to equal 100 in 2000.

Source: Federal Highway Administration. (2007, September 26). *Growth in highway construction and maintenance costs*. Washington, DC: USDOT, Office of the Inspector General, p. 2.

The FHWA report also pointed out that highway building and improvement costs have substantially exceeded inflation in other sectors of the U.S. economy over the past three years. The report compared the consumer price index³² for urban consumers (CPI-U) and the producer price index³³ (PPI) against the national indices for highway construction and maintenance costs (incl., for the nation and select states), which are the FHWA BPI and the BHWY PPI for 2003 through 2006. The findings were that 1) highway indices were double that of the PPI, and 2) quadruple that of the CPI-U. (See Figure C.)

Of significance, the report additionally provided an explanation of the “cost drivers” behind growing commodity expenditures used for highway construction and maintenance. For example, steel costs have grown because of the scarcity of scrap, increased international demand, and consolidation in the steel industry (less competition). Steel prices have doubled over the past year. Additionally, asphalt is more expensive because of higher gasoline prices, including greater international demand for petroleum distillates used for asphalt production, and generally, greater customer demand. Lastly, cement costs have increased because its production process is also a fuel intensive.³⁴

Figure C.
Percent Changes in Measures of General Inflation and FHWA Highway Indices
2003 – 2006



Source: Federal Highway Administration. (2007, September 26). *Growth in highway construction and maintenance costs*. Washington, DC: USDOT, Office of the Inspector General, p. 3.

The South Carolina Highway System

Like that of the United States, South Carolina’s highway system is critical to the state’s overall social and economic well-being. As mentioned earlier in this paper, USC’s Moore School of Business estimated in a 2003 report that the SCDOT supports a \$2.1 billion economic output annually, of which \$1.6 billion is directly related to highway construction and maintenance.³⁵ According to Ike McLeese, president of the Greater Columbia Chamber of Commerce, “it is important to economic development that transportation infrastructure issues get straightened out... it is an issue for people considering moving a business to the state, visiting, or living here.”³⁶ These sentiments are shared among many South Carolinians.^{37 38}

Historically, like other Southern states, South Carolina’s highway system was relatively slow to modernize. In 1917, the State Highway Commission was created. Five years later, in 1922, a two-cent gasoline tax was imposed and earmarked for roads. Automobile registration in 1917 stood at a little more than 40,000 vehicles. By 1940 the number increased to 269,000 registrations. It wasn’t until the late 1950s and 1960s that individual or personal automobiles became the vanguard for transportation in South Carolina and highways were improved exponentially to handle bigger and faster vehicles.

In terms of road construction, by 1917, there were only 3,037 miles of roadways completed and only 28 miles were paved. However, in 1929, a serious road program was started in South Carolina to pave roads when a \$65 million bond was issued for highway construction and the gasoline tax was increased to six-cents a gallon. Despite the Great Depression, highways continued to improve due in great part to federal aid and the New Deal programs enacted during the 1930s.³⁹

Today, the SCDOT is responsible for 41,500 miles of roads and 8,329 bridges. Based on FHWA data, this makes South Carolina the fourth largest state-owned highway system in the U.S. Additionally, it should be noted that approximately 65% of South Carolina’s public roads are maintained by the state as compared to the national average of 21%.⁴⁰ Table 7 presents some key facts on the extent of South Carolina’s transportation highway system as based on the 2000 Census figures.

The primary source of state funding is the 16-cent per gallon motor fuel user fee which accounts for about 95% of the state total. In FY 2007, the state appropriation for transportation was \$569.3 million. Further, this amount was supplemented for the same fiscal year by federal funds adding \$614 million. Altogether, the FY 2007 total transportation budget was \$1,083.3 million.⁴¹

Table 7.
South Carolina Highway System Facts
2000

Transportation System Extent	Vehicles and Conveyances	Commuting (percent of workers)
All public roads: 64,921 miles	Automobiles registered: 1.9 M	Vehicle—drove alone: 81.8
Interstate: 829 miles	Light trucks registered: 1.1 M	Vehicle—carpooled: 11.6

Road bridges: 9,064	Heavy trucks: 18,000	Public transportation: 1.0
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Source: U.S. Department of Transportation, Bureau of Transportation Statistics. *South Carolina—transportation profile*. Washington, DC: Author. Retrieved March 19, 2008 from http://www.bts.gov/publications/state_transportation_statistics/south_carolina/index.html.

According to the SCDOT, highway safety is their number one priority.⁴² Nevertheless, South Carolina has the third highest fatality rate for highways in the nation. An average three people die each day on South Carolina roadways.⁴³ With regard to rural roads, South Carolina had the highest fatality rate in the country at 4.61 deaths per 100 million vehicle miles of travel. According to SCDOT data, primary, secondary, and county roads carry 74% of state traffic. It is these roads, not the interstates, where 90% of crashes occur. Furthermore, roughly one third of all fatalities involve vehicles running off the road and hitting fixed objects. Currently, SCDOT is spending \$16 million per year on its programs to reduce crashes (viz., the Improving Safety on Secondaries Program⁴⁴).

Finally, South Carolina’s highway system is heavily traveled. In 2006, South Carolina’s population was 4.3 million, a 24% increase over 1990 figures. Yet, for the same 15-year period, vehicle miles of travel in South Carolina grew by 44%, that is, from 34 billion vehicle miles of travel to 49 billion. As such, currently, South Carolina’s highway system is one of the most traveled per capita in the nation.⁴⁵

S.C. Department of Transportation (SCDOT)

The SCDOT is mandated by law to carry out the following responsibilities: “the systematic planning, design, construction, maintenance, and operation of the state highway system.”^{46 47} To do this, the SCDOT coordinates and oversees state and federal programs and expends funds relating to all aspects of the state’s highway system. The primary goal of SCDOT, as stated in its accountability report to the state legislature, “is to provide adequate, safe, and efficient transportation services for the movement of people and goods.”⁴⁸

The SCDOT is one of state government’s largest agencies in terms of budget and staffing. Its budget for this operating year (FY 2008) is \$1,083.5 million and the department maintains a staff of approximately 5,000. Its central location is in Columbia but its offices and workers are spread across the entire state or 46 counties.

Recently, the SCDOT was made a cabinet agency whereby the governor appoints a Secretary of Transportation who acts as the department’s chief operating officer. The principal organizational units that assist the SCDOT secretary are engineering, finance and administration, and mass transit. Additionally, there is a governance commission consisting of seven members.

State Legislation and Funding/Expenditures

The bulk of state legislation pertaining to the SCDOT and the state’s highway system can be found variously within the South Carolina Code of Laws, Title 57, Chapters 1 through 27. However, key legislation was passed last year that reformed the SCDOT. [Act 114 of](#)

2007 changed the SCDOT in several respects to improve overall agency accountability. Basically, the legislation provided for reform in six areas.

First, it establishes the position of Secretary of Transportation to be appointed by the governor with senate approval. Formerly, this chief administrative position was named by the SCDOT Commission. The duties of the secretary are, generally speaking, to administer the overall operations of the department reporting directly to the governor with some responsibilities to the newly formed SCDOT commission, such as budget approval. Second, the Act reconstitutes the transportation commission. There are seven commissioners: six are elected by their respective congressional district legislative delegations, and one is named at-large by the governor. The chairman of the commission is elected from its membership. Additionally, commissioners may be removed by the governor for cause. All commissioners must also meet specified qualifications and are subject to review and approval by a ten-member transportation committee.

Third, the Act mandates that the commission formulate a plan, the Statewide Transportation Improvement Program, which provides for a multimodal transportation system. This plan must establish a priority list of transportation projects using a nine-point criterion. Fourth, SCDOT is required by the Act to conduct a public hearing in each county where a department project is to take place in order to get local community input. This hearing must be in compliance with federal regulations. Fifth, the Act provides for multiple audits. An annual audit is to be conducted by an internal auditor which reports directly to the commission. The Materials Management Office of the Budget and Control Board is required also to conduct an annual audit of procurement practices and their conformity to state law, rules, and regulations. And, finally, the Legislative Audit Council is mandated to initiate a compliance and performance audit of SCDOT's divisions of finance and administration division, mass transit, and construction and engineering by January 15, 2010. Sixth, and last among the major provisions of Act 114, SCDOT and the commission are subject to the State Ethics Act and the State Tort Claims Act; district engineers are required to file economic interest statements; and, all department employees must attend an ethics workshop every two years.

The current operating year budget of SCDOT (FY 2008) totals an estimated \$1,083.5 million. (See Table 8.) The vast majority of state funding is provided by the state's motor fuel tax or \$445.4 million. Other state monies include mainly maintenance trust funds and loans (bonds) from the South Carolina Transportation Infrastructure Bank. Federal funds make up the rest of SCDOT's transportation revenues or roughly \$500 million. It should be noted that federal monies are primarily used for construction and are eligible only for maintenance purposes in certain cases. Also, to acquire federal funds, each state is required to provide a match of 20%; thus, the ratio 80/federal and 20/state. In addition, using state dollars to meet the federal match obviously impacts negatively the availability of funds for highway maintenance.

Table 8.
Fiscal Year 2008 Budget - Estimated Revenues
Projections in Millions

Motor Fuel User Fees	445.4
Interest Income	6.0
Tolls	5.8
Miscellaneous (Permits, Sales, other)	17.6
Sub Total	474.9
Federal Aid - Construction	487.2
Federal Aid - Mass Transit	15.5
CTC Debt Service Reimbursement	0.3
Participation Receipts	9.7
General Fund - Mass Transit	0.1
Maintenance Trust Fund	40.0
Transfer from SIB	2.7
SIB Loan Proceeds for Highway 17	53.0
Sub Total	608.6
TOTAL	1,083.5

Source: Retrieved March 27, 2008 from
<http://www.scdot.org/inside/revenues.shtml>.

In terms of estimated expenditures for FY 2008, the total amount is \$1,085.9. As shown in Table 9, most SCDOT expenditures will go to highway construction (\$587.5 million) and maintenance (\$315.0 million).

Table 9.
Fiscal Year 2008 Budget - Estimated Expenditures
Projections in Millions

SCDOT Programs	
Highway Construction	587.5
Mass Transit Federal & State	20.2
Highway Maintenance	315.0
Operation of Toll Facilities	3.5
Total DOT Programs	926.2
Administration and Support	
General & Executive Administration	51.8
Land & Buildings	5.3
Engineering Services & Administration	71.1
Total Admin. and Engineering Admin.	128.2
Total Expenditures	1,054.4
Other Uses of Funds	
Debt Service	11.8

CTC Donor Bonus	9.5
Transfer to SIB	2.7
IFTA Transfer	7.5
Total Other Uses of Funds	31.5
Total Exp. and Other Uses	1,085.9

Source: Retrieved March 27, 2008 from
<http://www.scdot.org/inside/revenues.shtml>.

The South Carolina Transportation Infrastructure Bank (SCTIB)

Act 148 of 1997 created the SCTIB to determine and finance major transportation projects by providing loans, in the form of bonds, to both public and private entities. Mainly, the loans are to assist in constructing and improving highways and bridges as well as transportation facilities. The SCTIB also provides grants for some projects.

The SCTIB is composed of seven members. These include, according to statute the following: the Chairman of the Department of Transportation Commission, ex officio; one member appointed by the governor who shall serve as chairman; one member appointed by the governor; one member appointed by the Speaker of the House of Representatives; one member of the House of Representatives appointed by the Speaker, ex officio; one member appointed by the President Pro Tempore of the Senate; and one member of the senate appointed by the President Pro Tempore of the Senate, ex officio.⁴⁹

More specifically, the SCTIB provides funding for major transportation projects that exceed \$100 million in value. Since its inception, the SCTIB has approved approximately \$4.5 billion in financial assistance. Examples of projects funded by the SCTIB include the Arthur Ravenel Jr. Bridge, the Conway By-Pass, the Palmetto Parkway in Aiken, and the widening of SC 170 in Beaufort. The SCTIB has also contributed some \$30 million thus far in establishing cable barriers on South Carolina interstates. The SCTIB is also the main funding source for the \$4 billion program of highway construction referred to as the “27 in 7” Peak Performance Program. This program’s aim is to accelerate 27 years of road and bridge projects within a seven-year timeframe.

The major funding sources for the SCTIB are basically three. With the creation of the board, there was a one-time earmark of \$66 million from the State General Fund. Recurring monies come from a portion of the motor fuel tax (one cent) and truck registration fees; approximately \$22 million, and \$53 million per annum, respectively.⁵⁰

The South Carolina Multimodal Transportation Plan (SCMTP)

The SCDOT is developing a comprehensive, long-term transportation plan⁵¹—the South Carolina Multimodal Transportation Plan—to address the state’s continuing rapid population growth and the consequential demands for passenger travel and the transfer of freight, which have together exceeded population growth. The SCMTP is intended to harness all transportation assets and to maximize their efficiency and effectiveness. The

SCMTP is envisioned as the cornerstone for meeting the state’s projected transportation needs for the foreseeable future.⁵²

As Table 10 shows, while the state’s population has increased 20.8% for the period 1990-2005, vehicle miles traveled have increased 38.4%. Vehicle miles of travel per capita have risen by nearly 15%. According to the SCDOT, “increasing travel demand, increasing congestion, and increasing fuel prices all point to the need for viable transportation choices. Opportunities to use alternative modes besides the automobile, better modal coordination, and better system connectivity are all critical elements of a plan that provides an effective and seamless statewide transportation system.”⁵³

Table 10.
Trends in Population Growth and Vehicle Miles of Travel

Year	Population	Vehicle Miles of Travel (millions)	System Miles (Lane Miles)	Vehicle Miles of Travel per Capita
1990	3,499,064	34,377,000	89,067	9,825
2000	4,012,012	45,083,000	89,359	11,237
2005	4,229,990	47,598,000	89,834	11,253
Increase	20.8%	38.4%	0.3%	14.5%

Source: Retrieved March 28, 2008 from <http://www.dot.state.sc.us/inside/multimodal/pdfs/PlanningProcess.pdf>.

The SCMTP covers seven primary areas. These areas include the following: 1) Bridge Needs and Maintenance; 2) Interstate Plan; 3) Public Transit Plan and Human Services Coordination Plans; 4) Metropolitan Planning Organization and Councils of Government Plans; 5) Railroad Right-of-Way Preservation Inventory; 6) Safety Plan; and 7) the Statewide Strategic Corridor Plan. The SCMTP focuses on these key areas and “the array of policies, considerations and strategies needed to provide an optimal multimodal transportation system for South Carolina.”⁵⁴

The process for developing the SCMTP is a participatory one. Through public meetings and focus groups, SCDOT planners are gathering data and information critical to the final formulation of the SCMTP.

To date, the SCMTP has developed three reports dealing with transportation funding issues. In its third report, the SCMTP estimates that state roads, bridges, transit, and passenger rail costs will be \$56.9 billion by the year 2022. Given current funding rates, there is forecasted to be a \$30.6 billion shortage or gap to meet anticipated required costs. The report, prepared by the Strom Thurmond Institute, provides six scenarios to enhance transportation funding.⁵⁵

The “preliminary” contents and scope of the SCMTP are contained in an [executive summary](#) published by the SCDOT in early 2008. The summary covers a dozen issue areas, including sections on highways and maintenance. Broad recommendations are also contained in the executive summary with regard to 11 topical areas, ranging from safety upgrades to system preservation and maintenance to “funding.”⁵⁶ Of importance,

according to this SCTMP summary, total statewide transportation needs through 2030 will cost \$48.3 billion. This includes bridge replacement (\$3.0 billion), highway maintenance (\$17.0 billion), highway upgrades (\$11.0 billion), and interstate upgrades (\$11.0 billion). (See Table 11.)

**Table 11.
Statewide Transportation Needs Through 2030**

Categories	COST (\$billions)
Bridge Replacement	3.0
Highway System Maintenance	17.0
Highway System Upgrades	11.0
Interstate Upgrades	11.0
Mass Transit	3.8
Premium Transit and Passenger Rail	1.4
Safety	1.0
Total Needs	48.3
Current Anticipated Funding	18.0
Shortfall	28.3

Source: Retrieved March 28, 2008 from <http://www.scdot.org/inside/multimodal/pdfs/MultimodalPlanExecutiveSummary.pdf>.

South Carolina Highway Maintenance

The maintenance of highways and bridges in South Carolina, as elsewhere, is critical to passenger safety, freight delivery, fuel savings, and pollution reduction. Over time pavement conditions deteriorate due to wear and damage caused by traffic. Maintenance is important to keeping highways and bridges in a state of repair and working efficiency. The term “maintenance refers broadly to any action intended to keeping a highway or bridge functioning as originally designed and constructed.”⁵⁷

Though no measure of the condition of roads and bridges is universal, the International Roughness Index⁵⁸ (IRI) is the most used in the United States. For highways, the measures include five determinations or gradations: “very good,” “good,” “fair,” “mediocre” and “poor.” Bridge conditions that do not meet standards generally are classified as 1) “structurally deficient,” or 2) “functionally obsolete.”

Statistically, almost one third of South Carolina’s primary and interstate roads are currently in mediocre or poor condition. Also, half of all secondary roads are in either mediocre or poor condition. And in terms of bridges, one in five is deficient or obsolete. (See Table 6, page 10.)

Again, the SCDOT is responsible for one of the largest road systems in the United States. It is responsible for 41,500 miles of roads and 8,329 bridges. Though extensive, the state has one of the lowest transportation revenue-generating funding mechanisms⁵⁹ in the country. According to the most recent data available, the SCDOT spends \$7,297 per mile on maintenance, while the national average is \$19,615 per mile.⁶⁰

For FY 2008, the total maintenance budget is nearly \$315 million. The funding source for maintenance comes from the State Highway Fund and Act 176⁶¹ funds. The 2008 maintenance activities and funding levels break down as follows: 1) routine maintenance activities (\$209,847,990); 2) extraordinary maintenance (\$4,223,469); 3) pavement improvement and preservation (\$79,091,421); 4) maintenance support activities (\$1,710,000); 5) bridge maintenance and replacement (\$10,975,000); and, 6) maintenance equipment replacement (\$8,650,000).⁶² (See Table 12.)

Table 12.
Definitions of Maintenance SCDOT Activities

<p>1) Routine maintenance activities – consists of the everyday activities to maintain the state’s roads and bridges at a given level of service. These activities are usually proactive planned activities but also include reactive activities that are in response to accidents, natural disasters and normal infrastructure deterioration. These activities are performed with Department and contract forces. Examples of some of the most common routine maintenance activities are pothole patching, mowing, re-grading shoulders, cleaning drainage structures and litter pickup.</p> <p>2) Extraordinary maintenance – unforeseen major repairs to roads and bridges that are beyond the capabilities of the Department’s maintenance forces to accomplish within their existing operating budget. This may also include participation in County or Municipal drainage projects or other infrastructure improvement projects that are within the Department’s right-of-way.</p> <p>3) Pavement improvement and preservation – the reconstruction, rehabilitation, and preservation of roads on the state highway system. Roads are prioritized for inclusion in one of the three programs using data from the Department’s Pavement Management System and other objective and quantifiable factors.</p> <p>4) Maintenance support activities – includes environmental, hydraulic, and training contracts for things such as underground storage tank replacement, third party environmental audits, drainage studies, and heavy equipment operator training.</p> <p>5) Bridge maintenance and replacement – includes the asset management contract for the Arthur Ravenel and other significant bridges in the Charleston area as well as small bridges replaced with by the Department’s bridge maintenance crews.</p> <p>6) Maintenance equipment replacement – includes the replacement of existing maintenance equipment such as dump trucks, motor graders, backhoes etc.</p>

Source: SCDOT. (2008). State Program. Retrieved March 31, 2008 from http://www.scdot.org/inside/pdfs/state_program_2008.pdf.

In a 2008 report by the SCDOT, it was found that “funding for maintenance has been limited for many years and that maintaining the system at an acceptable level of service has become impossible.”^{63 64}

The study conducted by SCDOT maintenance engineers—the Maintenance Assessment Program (MAP)—examined key maintenance factors or features. These included pavement, shoulders-ditches, drainage structures, roadside, signs, pavement markings, and guardrail. Defined or specified mile road segments (two tenths per mile) were chosen at random and reviewed to establish what is commonly referred to as the “level of service” (LOS) being provided. LOS is based on a scale of A to F, with “LOS-A” representing excellent road conditions and “LOS-F” representing failure.⁶⁵

The result of the MAP evaluation indicated that the state highway system is being maintained currently at a LOS-D. Due to deferred maintenance, it is estimated by SCDOT that approximately \$2.3 billion will be required to bring the system up to a LOS-C status (includes bridge replacement⁶⁶), and then \$803 million a year thereafter to maintain that level of service. To bring the system up to a level of service LOS-A or LOS-B would require a substantially greater amount of funding.⁶⁷

Performance of South Carolina Highway Systems

The performance of state highway systems has been measured systematically for several years. Recognized experts in the field of transportation, such as Professor David Hartgen of UNC Charlotte, and others, conduct these studies and their analyses are widely accepted as accurate portrayals of state road systems. The latest report was published in June 2007 by the Reason Foundation and is entitled the *16th Annual Report on the Performance of State Highway Systems*. The 16th annual study examines the performance of state highways and bridges for 2005 using 12 indicators ranking each state.

In terms of cost-effectiveness, for example, South Carolina ranked second, indicating that comparatively speaking, the Palmetto state uses its available, limited revenues to produce maximum effects or outcomes.⁶⁸ (North Dakota ranked first and Kansas third.) This cost-effectiveness is significant given the fact that South Carolina ranked 5th in state controlled mileage of 41,391, and further, ranked the lowest receipts per state-controlled mile (\$36,890). The U.S. average of receipts per state-controlled mile was \$126,354.⁶⁹

South Carolina’s maintenance disbursements per state-controlled mile, as mentioned earlier, ranked 5th (\$7,297) in the nation. The lowest was North Dakota (\$5,077) and the U.S. average was \$19,615. (See Table 13.) Further, with regard to total disbursements per state-controlled mile South Carolina ranked lowest (\$31,262) in the U.S.⁷⁰

Table 13.
Ten Lowest Maintenance Disbursements per State-controlled Mile

Rank	State	Disbursements/mile
1	North Dakota	\$5,077
2	Montana	\$5,973
3	West Virginia	\$6,673
4	South Dakota	\$6,983
5	South Carolina	\$7,297
6	Mississippi	\$8,454
7	Kentucky	\$8,864
8	Oregon	\$9,048
9	Nebraska	\$9,891
10	North Carolina	\$9,933
Mean		\$19,615

Source: Hartgen, D., Karanam, R. (2007, June). *16th annual report on the performance of state highway systems (1984-2005)*. Washington, DC: The Reason Foundation, Table 6.

Other South Carolina performance figures and rankings in the report include the following:

- 1) Rural interstate condition: 0.00%⁷¹ poor; rank (mean=1.73%)⁷²
- 2) Urban interstate condition: 0.38% poor; rank 12 (mean=5.97%)⁷³
- 3) Urban interstate congestion: 49.37% congested; rank 33 (mean=51.87%)⁷⁴
- 4) Deficient bridges: 23.63%; rank 24 (mean=24.52%)
- 5) Fatality rates per 100 million vehicle miles: 2.211; rank 48 (mean=1.453)

Conclusion

Highway systems are immensely important to the country and the State of South Carolina for various apparent reasons, including, but not limited to, economic prosperity. Adequate funding is crucial to building and maintaining a highway system to standards that allow for effective movement of goods or commodities. It is also vital to the safe, convenient, and comfortable travel of vehicle passengers.

South Carolina is at the crossroads of making or breaking the state's extensive highway system. Lawmakers have done much to provide for good roads and bridges,⁷⁵ but more is required based on the abundance of needs.⁷⁶ While the SCDOT is maximizing the use of each transportation funding dollar, the department must be ever diligent to get "the biggest bang for the buck."

With a combination of aging roadways and bridges, competing state needs and priorities, and rising highway construction and maintenance costs, the actions required to stabilize the state's highway system are daunting. Informed and tough decisions will be required to be made by lawmakers, transportation officials, and the public at-large. The urgency for responsible and deliberate action cannot be overlooked or ignored.

ENDNOTES

¹ Prah, P. (2008, 26 February). Govs target transportation funding. *Stateline.org*. Retrieved February 26, 2008 from <http://www.stateline.org/live/details/story?contentId=285162>.

² The report is Hartgen, D. and Karanman, R. (2007, June). *16th annual report on the performance of state highway systems (1984-2005)*. Washington, DC: The Reason Foundation.

³ One such survey report of interest was conducted by the Moore School of Business, Division of Research, at the University of South Carolina in 2001 is entitled, *Report on the survey of public opinion about the South Carolina Department of Transportation*. Another reference is a February 2004 public opinion survey on highway maintenance in South Carolina at <http://research.moore.sc.edu/Research/studies/SCDOT/MtnceAct/scdotrank04.pdf>.

⁴ In the context of this working paper, surface transportation refers to highways, roads, and bridges.

⁵ Op. Cit. National Surface Transportation Policy and Revenue Study Commission. (2007, December), p. 2.

⁶ The wide range of transportation services used in the economy includes for-hire freight carriers, private transportation providers, freight forwarders, logistics providers, and firms that service and maintain

vehicles. Retrieved February 27, 2008 from <http://www.bts.gov/cgi-bin/breadcrumbs/PrintVersion.cgi?date=27123242>.

⁷ “Gross domestic product (GDP). The market value of goods and services produced by labor and property in the United States, regardless of nationality; GDP replaced gross national product (GNP) as the primary measure of U.S. production in 1991. Gross domestic product (GDP) price index. Measures the prices paid for goods and services produced by the U.S. economy and is derived from the prices of personal consumption expenditures (PCE), gross private domestic investment, net exports of goods and services, and government consumption expenditures and gross investment. It differs from the gross domestic purchases price index in that it ignores price changes in imports of goods and services and includes price changes in exports of goods and services.” Retrieved February 28, 2008 from <http://www.bea.gov/glossary/glossary.cfm>.

⁸ "For-hire transportation" means the transportation for compensation of passengers, freight or merchandise not owned by the carrier. Retrieved May 20, 2008 from janus.state.me.us/LEGIS/STATUTES/29-A/title29-Asec101.html.

⁹ U.S. Department of Transportation. (2002). *Economic impact on transportation*. Washington, DC: USDOT Research and Innovative Technology Administration, Bureau of Transportation Statistics. Retrieved February 27, 2008 from http://www.bts.gov/programs/freight_transportation/html/transportation.html.

¹⁰ Federal Highway Administration (2002, October). *Benefit-cost analysis of freight investments*. Retrieved February 28, 2008 from http://ops.fhwa.dot.gov/freight/freight_news/cost_analysis/benefit_cost.htm.

¹¹ Op. Cit. U.S. Department of Transportation. (2002).

¹² TRIP. (2007, November). *Key facts about America's road and bridge conditions and federal funding*. Washington, DC: Author.

¹³ Data from the U.S. Census Bureau, the U.S. Department of Transportation, the Federal Highway Administration, the Bureau of Transportation Statistics, the National Highway Traffic Safety Administration, and the Texas Transportation Institute were compiled and analyzed by TRIP, a nonprofit transportation research group based in Washington, D.C. Information is the latest available.

¹⁴ Moore School of Business. (2003, January). *The South Carolina Department of Transportation and its economic impact on the State of South Carolina*. Executive Summary. Columbia, SC: Moore School of Business, Division of Research, University of South Carolina, pp. i-ii.

¹⁵ Ibid.

¹⁶ For this analysis, see report Moore School of Business. (2003, January), pp. 18-21.

¹⁷ Slater, R. (1996, Spring). The national highway system: a commitment to America's future. *Public Roads Magazine*. Vol. 59. No. 4

¹⁸ In terms of percentages, states own 19% of all highways, counties own 45%, the federal government owns 3%, and “other” 33%.

¹⁹ The Highway Account receives 15.44 cents per gallon. The remainder goes to mass transit and a fraction to leaking underground storage.

²⁰ Cox, W. and Love, J. (1996, June). 40 years of the U.S. interstate highway system: an analysis of the best investment a nation ever made. Retrieved March 12, 2008 from <http://www.publicpurpose.com/freeway1.htm>.

²¹ Retrieved May 26, 2008 from <http://www.tripnet.org/national/InterstateHighwaySystemPR062906.pdf>.

²² Retrieved April 3, 2008 from http://www.dot.gov/about_dot.html.

²³ Retrieved March 12, 2008 from <http://www.fhwa.dot.gov/whoweare/whoweare.htm>

²⁴ “PL 105-178, the Transportation Equity Act for the 21st Century (TEA-21) authorized highway, highway safety, transit and other surface transportation programs for the next 6 years, beginning in June of 1998. TEA-21 builds on the initiatives established in the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), which was the last major authorizing legislation for surface transportation. TEA-21 combines the continuation and improvement of ISTEA programs with new initiatives to meet challenges of improving safety as traffic continues to increase at record levels, protecting and enhancing communities and the natural environment as we provide transportation, and advancing America's economic growth and competitiveness domestically and internationally through efficient and flexible transportation.” Retrieved March 12, 2008 from <http://www.fhwa.dot.gov/tea21/sumover.htm>.

²⁵ Intermodal is the connectivity of the various modal systems (e.g., rail, highways, barges, etc.).

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- ²⁶ Retrieved March 12, 2008 from <http://www.fhwa.dot.gov/legregs/legislat.html>.
- ²⁷ U.S. Government Accountability Office. (2006, April 4). *Highway Trust Fund: overview of estimates*. Washington, DC: Author, p.10. Retrieved March 13, 2008 from <http://www.gao.gov/new.items/d06572t.pdf>.
- ²⁸ Retrieved March 13, 2008 from <http://204.68.195.102/policy/ohim/hs06/htm/fa3.htm>.
- ²⁹ Op. Cit. TRIP. (2007, November).
- ³⁰ Federal Highway Administration. (2007, September 26). *Growth in highway construction and maintenance costs*. Washington, DC: USDOT, Office of the Inspector General, p. ii.
- ³¹ Ibid.
- ³² The Consumer Price Index (CPI) is a measure of the average change over time in the prices paid by urban consumers for a market basket of consumer goods and services.
- ³³ The Producer Price Index (PPI) is an inflationary indicator used by the U.S. Bureau of Labor Statistics to evaluate wholesale prices levels in the economy.
- ³⁴ Also, the U.S. produces only 75% of its needed cement annually. Retrieved March 18, 2008 from <http://www.detnews.com/2005/business/0507/06/D01-238278.htm>.
- ³⁵ Op. Cit. Moore School of Business. (2003, January).
- ³⁶ Higgins, L. (2008, February 13). S.C. study: our risky roads. *The State*. Retrieved March 18, 2008 from <http://www.thestate.com/154/story/315439.html>.
- ³⁷ See public opinion survey on highway maintenance (2004, February) in South Carolina at <http://research.moore.sc.edu/Research/studies/SCDOT/MtnceAct/scdotrank04.pdf>.
- ³⁸ S.C. Department of Transportation. (2007). *Annual accountability report – FY 2007*. Columbia, SC: Author, p. 51.
- ³⁹ Jones, L. (1971). *South Carolina: a synoptic history for laymen*. Orangeburg, SC: Sandlapper Publishers Inc., pp. 248-249.
- ⁴⁰ Op. Cit. S.C. Department of Transportation. (2007), pp. 2-4.
- ⁴¹ Ibid.
- ⁴² Ibid.
- ⁴³ There were 2.21 traffic fatalities per 100 million miles of travel in South Carolina in 2005. The national average was 1.45.
- ⁴⁴ See <http://www.roadwaysafetyawards.org/2007BestPractices/CRISOS15.htm>.
- ⁴⁵ “Since funding of the Interstate system was approved in 1956, vehicle miles travel in South Carolina has increased by 538%, the number of vehicles in South Carolina has increased by 304% and the state’s population has jumped by 84%.” Report available at <http://www.tripnet.org>.
- ⁴⁶ S.C. Code of Laws, 1976, as amended, Section 57-3-10.
- ⁴⁷ S.C. Code of Laws, 1976, as amended, Section 57-3-110.
- Powers and duties of Department of Transportation.
- “The Department of Transportation shall have the following duties and powers:
- (1) lay out, build, and maintain public highways and bridges, including the exclusive authority to establish design criteria, construction specifications, and standards required to construct and maintain highways and bridges;
 - (2) acquire such lands, road building materials, and rights-of-way as may be needed for roads and bridges by purchase, gift, or condemnation;
 - (3) cause the state highways to be marked with appropriate directions for travel and regulate the travel and traffic along such highways, subject to the laws of the State;
 - (4) number or renumber state highways;
 - (5) initiate and conduct such programs and pilot projects to further research and development efforts, and to promote training of personnel in the fields of planning, construction, maintenance, and operation of the state highway system;
 - (6) cooperate with the federal government in the construction of federal-aid highways in the development of improved mass transit service, facilities, equipment, techniques, and methods and in planning and research in connection therewith; and seek and receive such federal aid and assistance as may from time to time become available except for funds designated by statute to be administered by the Chief Executive Officer of the State;
 - (7) instruct, assist, and cooperate with the agencies, departments, and bodies politic and legally constituted agencies of the State in street, highway, traffic, and mass transit matters when requested to do so, and, if

requested by such government authorities, supervise or furnish engineering supervision for the construction and improvement of roads and bridges, provided such duties do not impair the attention to be given the highways in the state highway system;

(8) promulgate such rules and regulations in accordance with the Administrative Procedures Act for the administration and enforcement of the powers delegated to the department by law, which shall have the full force and effect of law;

(9) grant churches the right to cross over, under, along, and upon any public roads or highways and rights-of-way related thereto;

(10) enter into such contracts as may be necessary for the proper discharge of its functions and duties and may sue and be sued thereon;

(11) erect such signs as requested by a local governing body, if the department deems the signs necessary for public safety and welfare, including "Deaf Child" signs and "Crime Watch Area" signs; and

(12) do all other things required or provided by law.” Retrieved March 20, 2008 from

<http://www.scstatehouse.net/code/t57c003.htm>.

⁴⁸ Op. Cit. S.C. Department of Transportation. (2007), p. 2.

⁴⁹ Section 11-43-140 of the S.C. Code of Laws, 1976, as amended.

⁵⁰ Retrieved March 28, 2008 from <http://www.fhwa.dot.gov/innovativefinance/ifp/cssc.htm>.

⁵¹ The plan is currently in draft form. The SCDOT is accepted input from stakeholders through April 11, 2008.

⁵² Retrieved March 28, 2008 from http://www.scdot.org/inside/multimodal/multimodal_transplan.shtml.

⁵³ Retrieved March 28, 2008 from

http://www.dot.state.sc.us/inside/multimodal/multimodal_transplan.shtml.

⁵⁴ Retrieved March 28, 2008 from <http://www.dot.state.sc.us/inside/multimodal/pdfs/PlanningProcess.pdf>

⁵⁵ See London, J. et al. (2003, October). *Transportation funding options for the State of South Carolina 2003-2022*. Report Number 3. Executive Summary. Clemson, SC: Strom Thurmond Institute of Government and Public Affairs. Retrieved March 28, 2008 from

<http://www.strom.clemson.edu/publications/london/SCDOTExec-sum3.pdf>.

⁵⁶ The funding recommendation simply states: “Seek necessary funding on the state and local levels to close the gap in highway and local mass transit needs over the next 20 years.”

⁵⁷ Lemer, A. (2004). *Public benefits of highway system preservation and maintenance*. Washington, DC: Transportation Research Board, p. 8.

⁵⁸ See http://training.ce.washington.edu/wsdot/Modules/09_pavement_evaluation/09-2_body.htm#iri.

⁵⁹ The state motor user fee generates most of the state’s transportation funding or 95%. The remaining percentage comes from vehicle registration fees, carrier fees, and tolls. It should be noted as well that “C-Fund” dollars are created by collecting and depositing 2.66 cents from the 16-cent-per-gallon motor fuel user fee into County Transportation Funds, which are allocated to South Carolina counties, based on formulas.

⁶⁰ Op. Cit. S.C. Department of Transportation. (2007), p. 33.

⁶¹ Act 176 of 2005 is “a two-part, three-year phase-in program which redirected approximately \$68 million from the General Fund to highway funding, with half going to the SIB and the other half going to SCDOT for the resurfacing of secondary roads.” In 2005, SIB and SCDOT each received approximately \$7 million; they received \$20 million in 2006 and \$35 million in 2007. Retrieved March 31, 2008 from

http://findarticles.com/p/articles/mi_qa5306/is_200703/ai_n21287059.

⁶² SCDOT. (2008). State Program. Retrieved March 31, 2008 from

http://www.scdot.org/inside/pdfs/state_program_2008.pdf.

⁶³ SCDOT. (2008). *South Carolina comprehensive multimodal long-range transportation plan*. Executive Summary. Columbia, SC: Author, p.7. Retrieved March 28, 2008 from

<http://www.scdot.org/inside/multimodal/pdfs/MultimodalPlanExecutiveSummary.pdf>.

⁶⁴ Also see http://www.pewcenteronthestates.org/states_card.aspx?abrv=SC and

<http://www.pewcenteronthestates.org/uploadedFiles/gpp2005%2052.pdf>.

⁶⁵ Op. Cit. SCDOT. (2008).

⁶⁶ The funding needs mentioned above to achieve a level of service “C” include \$1.4 billion for bridge replacement and then \$60 million a year to maintain that level of service.

⁶⁷ Op. Cit. SCDOT. (2008).

⁶⁸ Hartgen, D., Karanam, R. (2007, June). *16th annual report on the performance of state highway systems (1984-2005)*. Washington, DC: The Reason Foundation, Table 1B.

⁶⁹ Ibid., Table 4.

⁷⁰ Ibid., Table 8.

⁷¹ As reported by SCDOT.

⁷² Twenty-two states reported no “poor” mileage.

⁷³ Ten states reported no “poor” urban interstate mileage.

⁷⁴ Four rural states reported no interstate congestion.

⁷⁵ From *The State*. (2008, April 10). \$100 million for roads , bridges passes house. Author. “Proceeds from sales taxes on cars would go to repair the state’s roads and bridges, under a bill that passed the House Wednesday. Members of the House Republican Caucus hailed the legislation as a victory for economic development and for consumers. A bid to increase the state’s fuel tax has been proposed in the General Assembly to generate more money for road maintenance. Diverting sales taxes on cars to road maintenance is viewed by many lawmakers as a less painful alternative for consumers given the cost of gasoline. ‘When the U.S. Energy Department is predicting gas prices to hit \$4 a gallon, the last thing we need to do is overburden our citizens further by raising the (state’s) gas taxes,’ said House Speaker Bobby Harrell, R-Charleston. The revenue would be split between the State Highway Fund and the State Infrastructure Bank over the next four years. After the first year of implementation, 10 percent of the fund would go to the Rural Infrastructure Bank, which focuses on improving roadways in S.C.’s rural areas.” Retrieved April 10, 2008 from <http://www.thestate.com/politics/story/371020.html>.

⁷⁶ See SCDOT. (2008). *South Carolina comprehensive multimodal long-range transportation plan*. Executive Summary. Columbia, SC: Author, p. 7. Retrieved April 3, 2008 from <http://www.scdot.org/inside/multimodal/pdfs/MultimodalPlanExecutiveSummary.pdf>.