Is the Juice Worth the Squeeze?

A big picture view of the public and private costs of South Carolina's automotive transportation system.

S.C. Transportation Infrastructure Bank
Strategic Planning Committee

Draft Report: March 2, 2017

Calculating automotive transportation costs in S.C.

Three Components considered:

1. **Direct cost of vehicle ownership and operation.**
2. **Indirect cost of vehicle ownership and operation (fines, parking)**
3. **Costs resulting from vehicle crashes (deaths, injuries, property damage, wage and productivity losses, medical expenses, administrative expenses, employers' uninsured costs).**

Calculating automotive transportation costs in SC.

Components *NOT* considered:

1. **Health costs (obesity resulting from a more sedentary lifestyle, stress-related diseases, hypertension, grief and anguish resulting from death and injury)**
2. **Land costs to store vehicles (land for public and private garages and parking lots, on-street parking, etc)**
3. **Land costs to move vehicles. Right-of-way that might otherwise be on tax roles.**
4. **Opportunity costs – time spent in traffic away from family, friends.**
5. **Opportunity costs – urban blight. Degraded value of land adjacent to highways.**
6. **Opportunity costs - Money drain that leaves state economy. Localities get a small scrape of the total, but most automotive-related expenditures literally vanish (in the form of exhaust) or go to other states and countries (Texas & Saudi Arabia for oil products used to power vehicles, New York for financing, etc).**
7. **Unfunded liabilities of ongoing road maintenance**
8. **Legal (court costs & attorney fees) – theoretically paid from state/local taxes**
9. **Police costs - theoretically paid from local/state taxes**
10. **Military costs (securing oil flows from the Middle East (theoretically paid from income taxes)**

Components *NOT* considered:

It's difficult, if not impossible, to quantify the negative externalities arising from an auto-centric transportation system. For example, the damaging aesthetic and environmental impacts on air, water, climate, one's soul, etc. Loss of farmland and nature bears a cultural cost.

These costs are not included.

Components *NOT* considered:

Policy priority: Car > Pedestrian

Transportation policy prioritizes automobile movement and storage over all other means of transportation. Motorists compete with one another for asphalt, particularly in populated urban areas. The system supports isolating people in cars, and driving long distances. Conflicts often arise. Social costs are difficult, if not impossible, to quantify.

These costs are not included.

Basis for Calculating Costs (2015 estimates)

South Carolina population	4,900,000
Total Households	1,960,000
Average Household Size	2.5 persons
Workers per Household	1.3 persons
Registered Vehicles (including commercial)	4,300,000
SC Drivers Licenses	3,700,000
Vehicles per Household (census)	1.9 cars
Median Household Income	$46,360
Average Federal Income Tax Paid/HH	$4,600
Average State & Local Tax Paid/HH	$4,010

Median Household After-tax Income **$37,750**

Assume each worker in household works 40 hours/week and 48 weeks/year. Total annual hours worked per worker = 1,920 hours. Total hours worked per household = 1,920 x 1.3 workers = 2,496 hours. $37,750/2,496 = $15.12/hour.

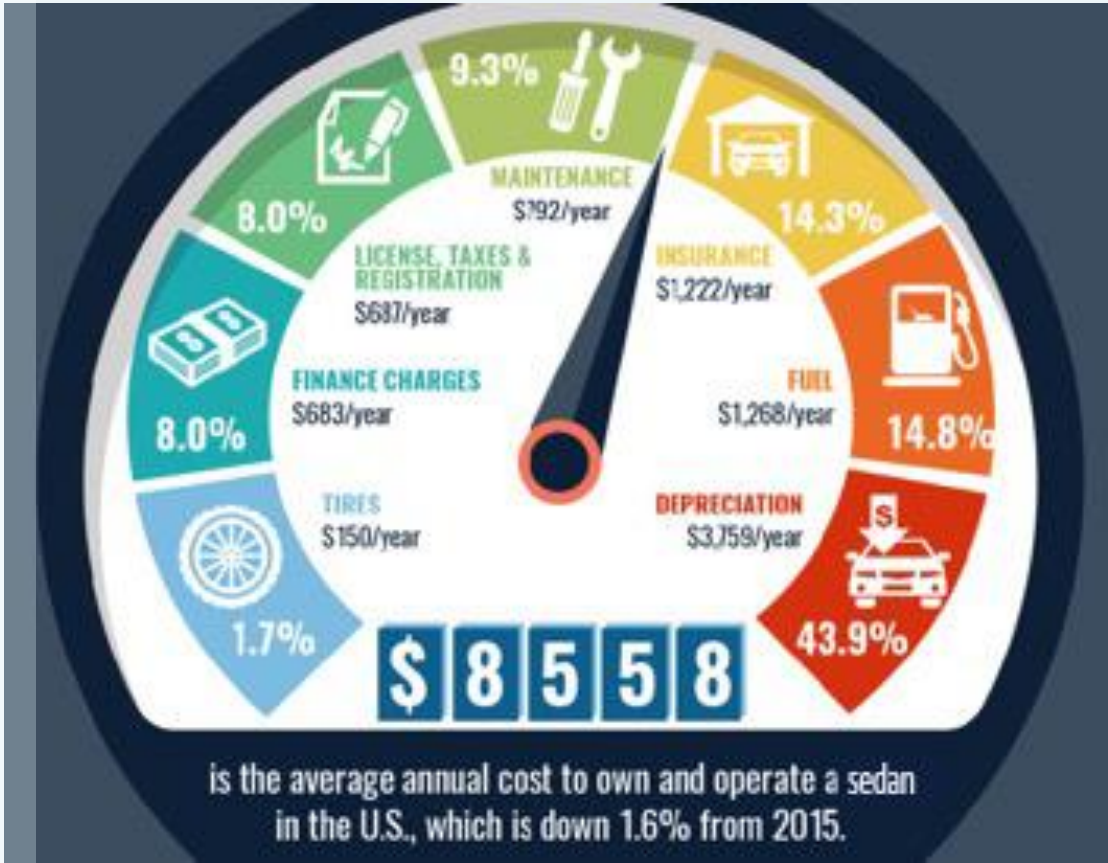
Average State and Local Tax Paid per Household
https://wallethub.com/edu/best-worst-states-to-be-a-taxpayer/2416/

Component 1

Direct Cost of Vehicle Ownership and Operation

Each year, the American Automobile Association calculates the average annual cost to own and operate a car driving 15,000 miles.

In 2016, the cost was $8,558.



Component 1 (continued)

A household pays for the costs of ownership and operation with after-tax income. Based on AAA figures, the costs per SC household to own and operate 1.9 vehicles is $16,260 calculated as follows:

Fuel	1,267	15%
Insurance	1,222	14%
Depreciation	3,759	44%
Maintenance	792	9%
Lic/Reg/Tax	687	8%
Fin. Charges	683	8%
Tires	150	2%
Total	$8,558	100%
	x 1.9 cars	
Cost per HH	$16,260	

Component 1 Summary

Direct Costs of Vehicle Ownership and Operation

The average SC Household spends 43% of its $37,750 after-tax income on car ownership & operation.

The average Household puts in 1,075.4 hours of work to pay for car ownership and operation (based on average take home pay of $15.12/hour).

Component 1 Summary
Context related to Direct Costs of Vehicle Ownership and Operation

The latest SCDOT fiscal year annual budget is approximately $2.1 billion. In her presentation before the Senate Budget Committee on February 27, 2017, Secretary of Transportation Christy Hall stated that approximately ½ of 1% [$10 million] goes toward the construction of new roads. Most goes toward widening existing roads, repaving, and other maintenance.

The transportation "system" includes not only the public expenditure on hardware (roads, bridges, etc), but also the private expenditure on software (vehicles) that utilize this hardware.

Multiplying the number of SC 2015 vehicle registrations (4.3 million) by AAA's estimate of annual cost to own and operate a vehicle ($8,558) yields a total annual cost of $36.8 billion.

$36.8 Billion is more than 17.5 times SCDOT's Annual Budget! Looked at another way, the annual expense to maintain SC's transportation system hardware (roads, bridges, etc.) is 5% of the annual amount spent to maintain system software (vehicles).

Component 2

Indirect Cost of Vehicle Ownership and Operation

Average annual fines for traffic violations	`$31/vehicle
Average annual parking fees and fines	$250/vehicle
Total Indirect Costs	$281/vehicle
	x 1.9 vehicles
Total Indirect Cost/Household	$534

The average SC Household spends 1.4% of its $37,750 after-tax income on the indirect costs of car ownership & operation. This equates to 35.3 hours of work.

THE INDIRECT COST IN 2015 OF VEHICLE OWNERSHIP AND OPERATION FOR ALL HOUSEHOLDS IN SC WAS $1.05 BILLION.

Fines $31/car (based on 20.6% of $152 http://www.statisticbrain.com/driving-citation-statistics/
Parking $250 (this is probably low. See http://www.vtpi.org/tca/tca0504.pdf)

Component 3 Costs resulting from vehicle crashes

The National Safety Council is a 501c nonprofit, nongovernmental organization promoting health and safety in the United States. Founded in 1913 NSC members include more than 55,000 businesses, labor organizations, schools, public agencies, private groups and individuals. NSC is nonpolitical and does not contribute to or support any political party or candidate.

Each year the NSA estimates the calculable costs of motor vehicle crashes, taking into account wage and productivity losses, medical expenses, administrative expenses, motor vehicle damage, and employers' uninsured costs. In 2014, estimated costs of these items for each death (*not* each fatal crash), injury (*not* each injury crash), and per damaged-vehicle were:

Average Economic Cost by Injury Severity, or Crash, 2014

Death (K)	$1,512,000
Disabling (A)	$88,500
Evident (B)	$25,600
Possible (C)	$21,000
No injury observed (O)	$11,300
Property damage only (cost per vehicle)	$4,200

http://www.nsc.org/NSCDocuments_Corporate/estimating-costs-unintentional-injuries-2016.pdf

Component 3 (continued)

Each year, the South Carolina Department of Public Safety (SCDPS) uses the NSA estimates for the calculable costs of motor vehicle crashes to estimate the economic costs associated with vehicle crashes. In 2014, SCDPS estimated the total cost in South Carolina to be $3.05 billion.

Source: *South Carolina Traffic Collision Fact Book 2014*
http://www.scdps.gov/ohsjp/fact%20book/2014%20Fact%20Book.pdf

NOTE: $3.05 BILLION IS 45% HIGHER THAN SCDOT'S ANNUAL BUDGET.

Component 3 (continued)

However, the $3.05 billion calculated by the SCDPS does *not* take into account the total costs of *ALL* motor vehicle crashes - i.e. fatal, nonfatal injury, and property damage.

Per the NSA: "Expressed on a *per death* basis, the cost of *all* motor-vehicle crashes [in 2014] — was $10,760,000. This includes the cost of one death, 54 nonfatal disabling injuries, and 268 property damage crashes (including minor injuries)."

The NSA maintains "this average may be used to estimate the motor-vehicle crash cost for a state."

http://www.nsc.org/NSCDocuments_Corporate/estimating-costs-unintentional-injuries-2016.pdf

Component 3 (continued)

Total Costs Resulting from Vehicle Crashes

Multiplying the NSC 2014 figure of $10,760,000 per death by the 977 auto-related deaths in 2015 yields a total cost in SC resulting from motor vehicle crashes in 2015:

977 deaths x $10,760,000 = $10,512,520,000

$10.512 Billion is more than Five Times the SCDOT Annual Budget!

Component 3 (continued)

Calculating Household Costs Resulting from Vehicle Crashes

The $10.512 billion cost resulting from motor vehicle crashes in 2015 divided by the 2015 estimated South Carolina population of 4,900,000, yields a cost per capita is $2,145.

Per capita cost resulting from vehicle crashes	**$2,145**
Number of persons per household	**2.50 persons**
Total Cost/Household	**$5,362.50**

$5,362.50 represents 14.2% of the $37,750 of average after-tax income for a SC household. At the average hourly wage of $15.12 (see calculation from page 3), this equates to 355 hours per worker per year.

355/1,920 average total hours worked/year = 18.5% of an average workers time is spent to pay for this externality.

The Total Squeeze

Calculating total annual costs of automotive transportation system in South Carolina (All three Components)

1. Direct cost of vehicle ownership and operation	$36.8 Billion
2. Indirect cost of vehicle ownership and operation	$1.05 Billion
3. Costs resulting from vehicle crashes	$10.51 Billion
Total Annual Costs in South Carolina	$48.36 Billion

The Squeeze per Household

Calculating total annual automotive transportation costs per household in South Carolina.

	Total	Hours Worked
1. Direct cost of vehicle ownership and operation	$16,260	1,075.4
2. Indirect cost of vehicle ownership and operation	534	35.3
3. Costs resulting from vehicle crashes	5,362	354.7
Total Costs	$22,156	1,465.4

$22,156 represents 58.7% of the average $37,750 in after-tax household income. The average household must work the equivalent of 1,465.4 hours to pay this cost.

The Squeeze per Person

Calculating total annual automotive transportation costs <u>per person</u> in South Carolina.

$48.36 Billion

÷ 4.96 Million People

$9,750 per Person

The Squeeze per Vehicle

Calculating total annual automotive transportation costs per registered vehicle in South Carolina.

$48.36 Billion

÷ 4.30 Million Vehicles

$11,246 per Vehicle

The Squeeze per Vehicle Mile Traveled

Calculating total annual automotive transportation costs per vehicle mile traveled.

$48.36 Billion

54 Billion VMT

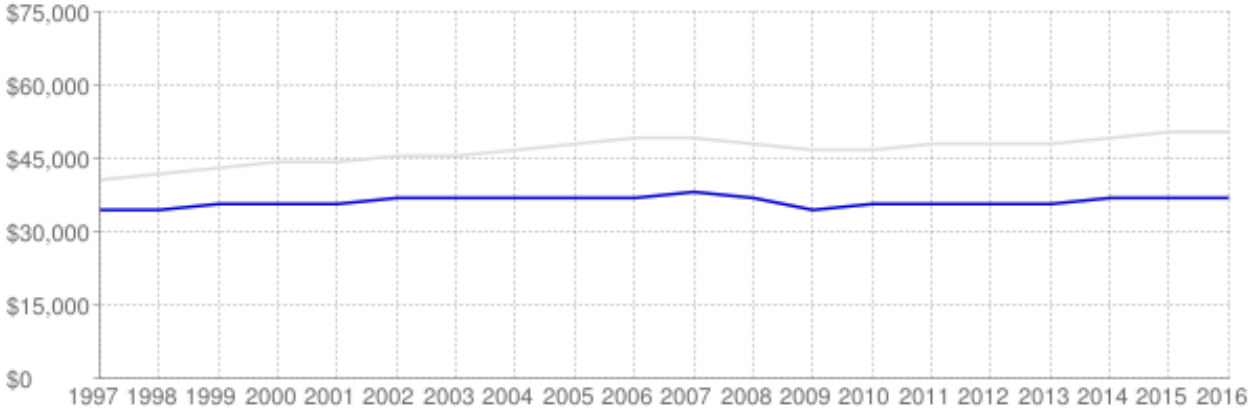
90¢ per Mile Driven

According to TRIP, a national transportation research group, there were 54 billion vehicle miles traveled on SC roads in 2016.

Trends Real in South Carolina Real Per-Capita GDP & Population

Real South Carolina per-capita GDP is 4.08% higher today than 5 years prior in 2011. In that time the population in South Carolina grew by 288,482 (6.17%) people. The per-capita GDP growth plus the population growth are approximatly equal to the GDP growth South Carolina shown above.

Real Per-Capita GDP (2009 Chained Dollars): South Carolina, National



Historical Real Per-Capita GDP (2009 Chained Dollars) and Population data for South Carolina

Date	US Per-Capita GDP	South Carolina Per-Capita GDP	South Carolina Population
2016	$50,577	$37,063	4,961,119
2015	$50,155	$36,796	4,894,834
2014	$49,253	$36,295	4,828,430
2013	$48,538	$35,701	4,767,894
2012	$48,173	$35,346	4,720,760
2011	$47,595	$35,609	4,672,637
2010	$47,287	$35,126	4,635,943
2009	$46,680	$34,955	4,589,872
2008	$48,401	$36,834	4,528,996
2007	$49,126	$37,724	4,444,110

The Juice

Assume average speed = 30 mph (city and highway driving conditions, sitting still at traffic lights, stop signs, slow moving congestion, etc).

15,000 annual miles driven per car/30 mph = 500 hours in vehicle x 1.9 vehicles/household = 950 hours/household.

950 hours spent in car + 1,465.4 hours worked to afford car = 2,415.4 hours

28,500 miles driven divided by 2,415.4 hours = 11.8 mph

Other hours.
182 hours per household per year watching car commercials (based on average 4 hours/day television watching/American x 30% commercials x 1/6 (car commercials).

76 hours per household per year walking to and from cars (12.5 minutes/household/day)
30 hours per household per year searching for car keys
7.5 hours pumping gas
113.5 hours

113.5 + 2,415.4 = 2,529 hours per household to get 28,500 miles. 28,500/2,529 = 11.3 mph.

Is the juice worth the squeeze? Do benefits derived from an auto-centric transportation system exceed costs?

$48.36 Billion is spent annually to achieve an average speed of 11.3 mph - the same speed as that of a bike rider in an urban environment. Average walking speed is 3.1 mph.

Supplemental Slides to Incorporate

“It is now widely recognized that federal and state governments, spurred by the lobbying of automobile companies, oil companies, tire companies, and construction contractors and unions, have indulged in a vast over-expansion of highways. The highways grant gross subsidies to the users and have played the major role in killing railroads as a viable enterprise. Thus, trucks can operate on a right-of-way constructed and maintained by the taxpayer, while railroads had to build and maintain their own trackage. Furthermore, the subsidized highway and road programs led to an overexpansion of automobile-using suburbs, the coerced bulldozing of countless homes and businesses, and an artificial burdening of the central cities. The cost to the taxpayer and to the economy has been enormous.

Particularly subsidized has been the urban auto-using commuter, and it is precisely in the cities where traffic congestion has burgeoned along with this subsidy to overaccumulation of their traffic. ”

~Murray Rothbard (1973)

South Carolina Department of Public Safety (2014 Statistics)*

Road Category	# Centerline (CL) Miles	%	Vehicle Miles Traveled (VMT) 2014 Daily VMT (millions)	2014 Annual VMT (millions)	%	2014 Deaths	Deaths per 100 CL Miles	Deaths per 100 MM VMT
Interstate	851	1.1%	38.97	14,224	28.5%	117	13.7	0.82
US Primary	2,752	3.6%	33.65	12,281	24.6%	199	7.2	1.62
SC Primary	6,765	8.9%	28.31	10,333	20.7%	174	2.6	1.68
Secondary	10,370	13.6%	22.26	8,125	16.3%	292	2.8	3.59
Local**	55,563	72.8%	13.61	4,968	9.9%	41	0.1	0.83
Total	76,301	100%	136.80	49,931	100%	823	1.1	1.65

*2014 Statistics were latest available from SCDPS as of 1/4/17

**"Local" assumed to consist of 20,657 of "Non-Federal Aid Secondary" centerline miles in SCDOT system, and approximately 34,900 miles of roads in municipal and county systems. In each year between 2000-13, SCDOT recorded approximately 66,250 centerline miles in the state. Secretary of Transportation Christy Hall reported that SCDOT staff "found" an additional 10,000 miles of local roads in SC.

The two categories of SCDOT "Secondary" Roads: Federal Aid Secondary and Non-Federal Aid Secondary.

TABLE 1 – The Five Categories of Roads in the SCDOT System

SCDOT System Category	Centerline Miles (CLM)	%	Lane Miles	%	Daily Vehicle Miles Traveled (DVMT)	%
Interstate	851	2%	3,795	4%	41,186,787	31%
NHS Primary	2,752	7%	9,281	10%	35,306,967	26%
Non-NHS Primary	6,765	16%	14,843	16%	27,215,218	20%
Federal Aid Secondary	10,370	25%	21,286	23%	22,004,945	16%
Non-Fed Aid Secondary	20,657	50%	41,393	46%	9,003,242	7%
Total SCDOT Roads	41,395	100%	90,598	100%	134,717,159	100%

Data provided by SCDOT. Current as of December 31, 2015.

As shown in Table 1, 31% of the average daily vehicle miles traveled (DVMT) on the SCDOT system took place on Interstates in 2015, which make up only 2% of total centerline miles in the system.

Comparing South Carolina's Road Inventory with that of other States.

In 2016, the Legislative Audit Council (LAC) of the General Assembly completed its first ever audit report of the South Carolina Transportation Infrastructure Bank (SCTIB). In the final draft of its report, the LAC identified 38 states with infrastructure banks. The report states the LAC "conducted a detailed analysis of 7 of the 12 states with ***the most state-administered lane miles***." The LAC report excluded two of the 12 states which did not have infrastructure banks, and "3 states from which we [the LAC] could not obtain reliable data."

This left six states that, along with South Carolina, composed the seven "states with the most state-administered lane miles." In addition to South Carolina, the six states analyzed were California, Florida, Georgia, Missouri, Ohio, and Texas.

As previously mentioned, of all public roads in South Carolina, those in the SCDOT system comprise 54% of State's total *centerline* miles. The roads in the SCDOT system comprise 58% of the total *lane* miles in the State. The LAC report compared lane miles in the seven states. SCDOT's 58% of lane miles is ***more than two and a half times*** the 21% average of the six other states analyzed. Conversely, the other six states analyzed have better developed county and municipal road systems, with an average of 79% of total lane miles under the authority of local government. This is almost twice the 42% of total lane miles in South Carolina that are under the authority of local government.

Public Roads in the context of Population

TABLE 2 – Comparing State and Total Lane Miles Per Capita

State	State Hwy Agency Lane Miles	County & Muni Govt Lane Miles	Total	State Hwy Lane Miles as % of Total	State Population (2015 est)	Persons per State Lane Mile	Persons per Total Lane Mile
CA	51,897	367,737	419,634	12.4%	39,144,818	754	93
FL	43,602	224,164	267,766	16.3%	20,271,272	465	76
GA	49,131	216,024	265,155	18.5%	10,214,860	208	39
MO	76,313	194,520	270,833	28.2%	6,083,672	80	22
OH	49,438	209,116	258,554	19.1%	11,613,423	235	45
TX	195,755	474,898	670,653	29.2%	27,469,114	140	41
AVG	77,689	281,077	358,766	20.6%	19,132,860	314	53
SC	90,365	66,485	156,850	57.6%	4,896,146	54	31

Source for the number of state highway agency and local lane miles: LAC's *A Review of the South Carolina Transportation Infrastructure Bank*. Source for state populations: www.wikipedia.com.

As shown in Table 2, the only state in the LAC study with more state lane miles than South Carolina was Texas – which has more than five times the population and nine times the land area of South Carolina. But even Texas has only 29% of its total lane miles in its DOT system – half SCDOT's 58%.

The two states analyzed by the LAC that were geographically closest to South Carolina were Florida and Georgia. Georgia, has more than twice the population of South Carolina, and Florida has more than four times South Carolina's population. Despite much larger populations, ***both the Georgia DOT and the Florida DOT have about half the lane miles in their systems than does the SCDOT***. The public road systems of both Georgia and Florida are much less centralized than that of South Carolina. Compared to SCDOT's 58% of the total public lane miles in South Carolina, GDOT has 18.5% of the total state's public lane miles, and FDOT only 16% of its state's public lane miles.

The state gas tax in Florida is 17.425 cents per gallon, including a .125 cent per gallon inspection fee. Florida's 17.425 cents per gallon state fuel tax is only 4% higher than South Carolina's 16.75 cents per gallon. However, Florida also enables each of its 67 counties to charge their own tax to help maintain the 224,164 lane miles ***not*** in the FDOT system. The county fuel taxes range from 13.4 to 19.4 cents per gallon.

California is even more decentralized than Florida - only 12% of total lane miles in that state are in the California DOT's system. Even though California has five times the land area and eight times the population, its DOT system is 3/5ths the size of South Carolina's. As in Florida, California's legislature enables counties and municipalities to place a tax on fuel to maintain roads.

South Carolina DOT administers one lane mile for every 54 people in the State.
Missouri DOT administers one lane mile for every 80 people.
Texas DOT administers one lane mile for every 140 people.
Georgia DOT administers one lane mile for every 208 people.
Ohio DOT administers one lane mile for every 235 people.
Florida DOT administers one lane mile for every 465 people.
California DOT administers one lane mile for every 754 people.

Public Roads and Land Area in Context

In terms of area, Table 3 shows that South Carolina is much smaller than the other states. Its relatively large highway system in a relatively small state means the SCDOT is responsible for a much higher number of highway lane miles per square mile than any other state agency. SCDOT must administer more than two and a half times as many lane miles per square mile than its counterpart agencies in Missouri and Ohio; more than triple that of Georgia and Texas; four times that of Florida; and eight times more than California.

TABLE 3 – Comparing State and Total Lane Miles Per Unit of Land Area

State	State Hwy Agency Lane Miles	County & Muni Govt Lane Miles	Total	State Hwy Lane Miles as % of Total	Area (Sq. Miles)	Acres per State Lane Mile	Acres per Total Lane Mile
CA	51,897	367,737	419,634	12.4%	163,696	2,019	250
FL	43,602	224,164	267,766	16.3%	65,755	965	157
GA	49,131	216,024	265,155	18.5%	59,425	774	143
MO	76,313	194,520	270,833	28.2%	68,709	576	162
OH	49,438	209,116	258,554	19.1%	44,825	580	111
TX	195,755	474,898	670,653	29.2%	268,581	878	256
AVG	77,689	281,077	358,766	20.6%	111,832	965	180
SC	90,365	66,485	156,850	57.6%	32,020	227	131

Source for the number of state highway agency and local lane miles: LAC's *A Review of the South Carolina Transportation Infrastructure Bank*. Source for state areas: www.wikipedia.com.

SCDOT administers one lane mile for every 227 acres in the State.

Missouri DOT administers one lane mile for every 576 acres.
Ohio DOT administers one lane mile for every 580 acres.
Georgia DOT administers one lane mile for every 774 acres.
Texas DOT administers one lane mile for every 878 acres.
Florida DOT administers one lane mile for every 965 acres.
California administers one lane mile for every 2,019 acres.

As indicated in Tables 2 and 3 above, SCDOT has the administrative authority and responsibility for substantially more lane miles per capita and per square mile than any other state analyzed by the LAC.

Context: Road Safety.[3]

South Carolina's road system consistently ranks among the most dangerous in the country.

An oft used measure of traffic safety is "Fatalities per 100 million vehicle miles traveled." Safety comparison of states in the LAC Study.

Approximately 95% of the deaths and injuries recorded each year occur on roads within the SCDOT system.

South Carolina Department of Public Safety (2014 Statistics)*

Road Category	# Centerline (CL) Miles	%	Vehicle Miles Traveled (VMT) 2014 Daily VMT (millions)	2014 Annual VMT (millions)	%	2014 Deaths	Deaths per 100 CL Miles	Deaths per 100 MM VMT
Interstate	851	1.1%	38.97	14,224	28.5%	117	13.7	0.82
US Primary	2,752	3.6%	33.65	12,281	24.6%	199	7.2	1.62
SC Primary	6,765	8.9%	28.31	10,333	20.7%	174	2.6	1.68
Secondary	10,370	13.6%	22.26	8,125	16.3%	292	2.8	3.59
Local**	55,563	72.8%	13.61	4,968	9.9%	41	0.1	0.83
Total	76,301	100%	136.80	49,931	100%	823	1.1	1.65

*2014 Statistics were latest available from SCDPS as of 1/4/17

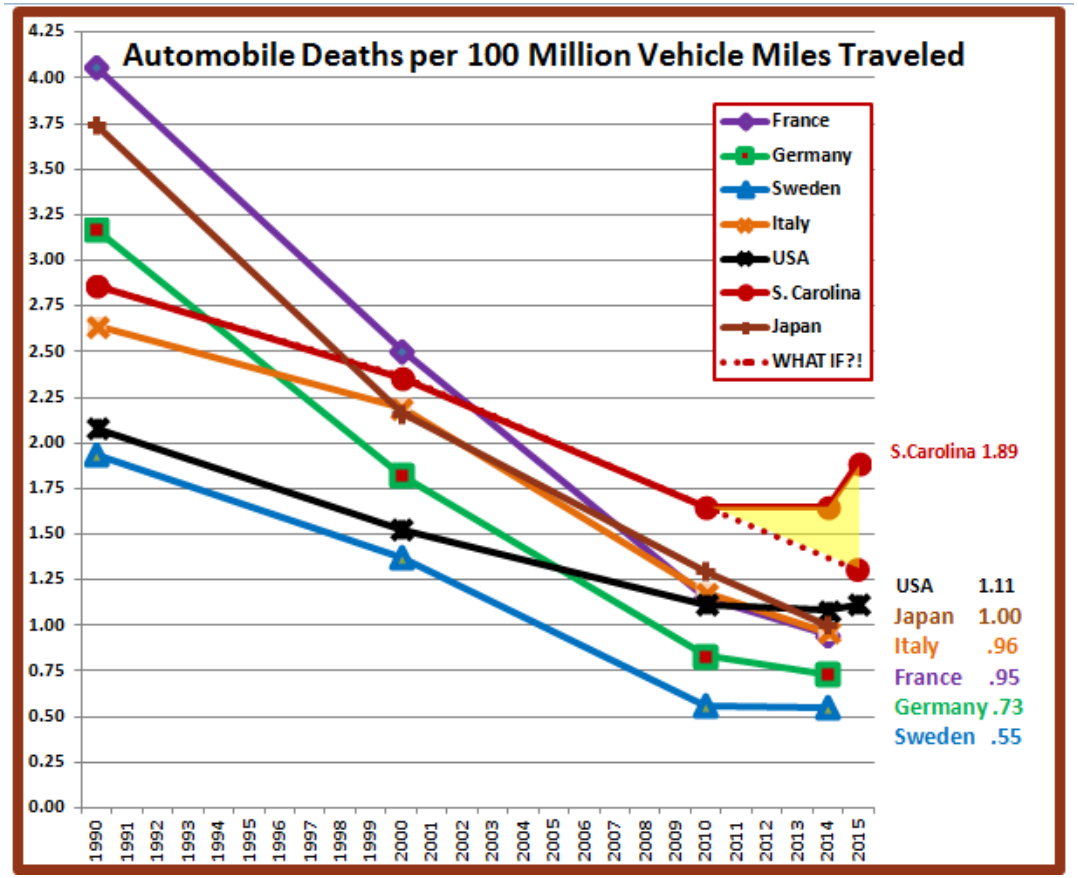
**"Local" assumed to consist of 20,657 of "Non-Federal Aid Secondary" centerline miles in SCDOT system, and approximately 34,900 miles of roads in municipal and county systems. In each year between 2000-13, SCDOT recorded approximately 66,250 centerline miles in the state. Secretary of Transportation Christy Hall reported that SCDOT staff "found" an additional 10,000 miles of local roads in SC.

Question for consideration:

1. Given that roads in the SCDOT system are more dangerous than those under the purview of South Carolina's counties and municipalities, could devolving authority and responsibility from SCDOT to localities improve safety?

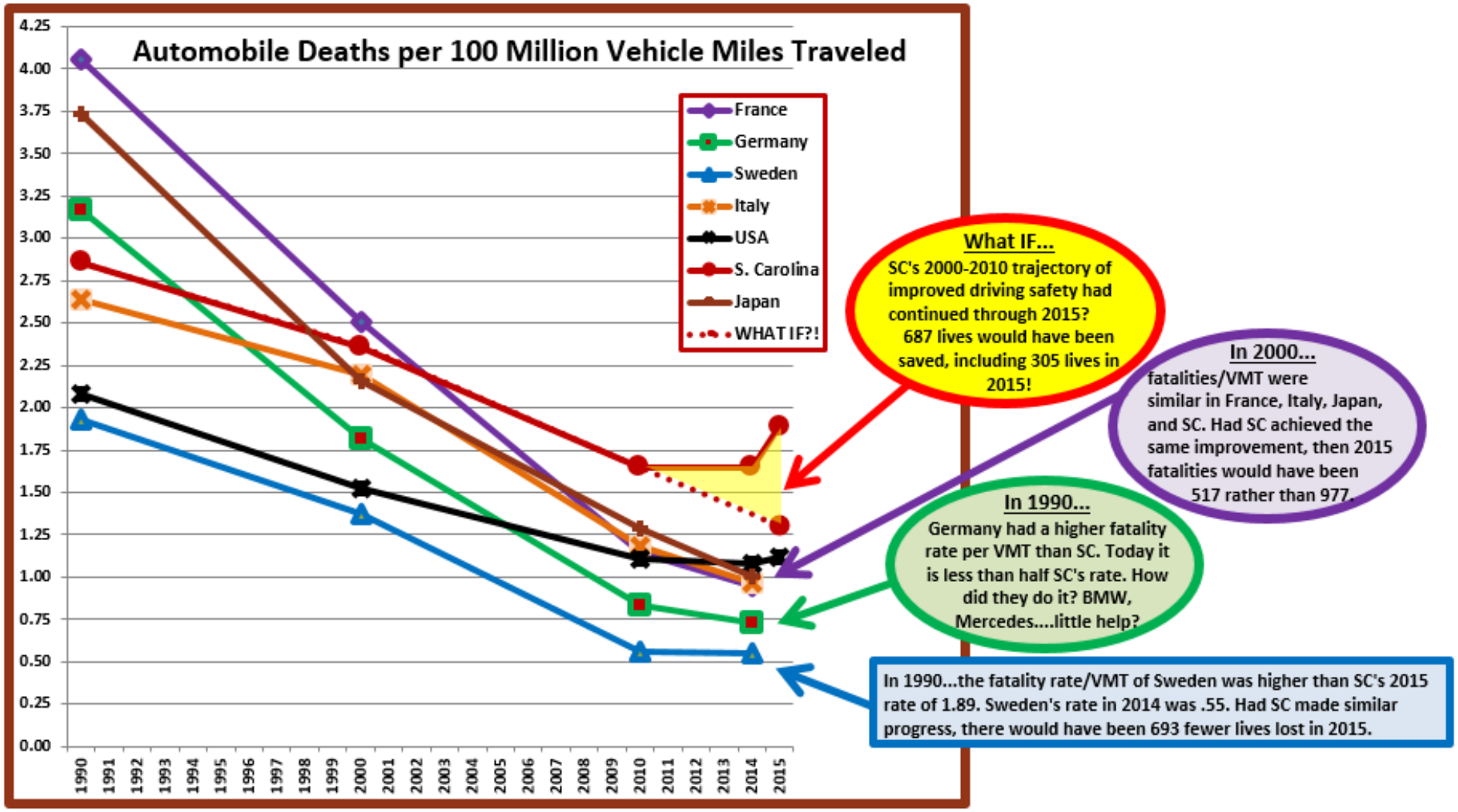
3. Except for "Interstates", SCDOT and the SC Department of Public Safety (SCDPS) use different nomenclature to categorize roads. For example, what SCDOT refers to as "NHS Primary", SCDPS calls "US Primary." A "Non-NHS Primary" road in the SCDOT system is categorized as a "SC Primary" in the SCDPS. A "Federal Aid Secondary" road in the SCDOT system is simply classified as a "Secondary" road by SCDPS. Data for SCDOT's "Non-Federal Aid Secondary" classification is included in the "Local" classification of SCDPS records. SCDPS' "Local" classification also includes roads in South Carolina's county and municipal systems. In its safety records for "Local" roads, SCDPT does not distinguish between which accidents take place in the SCDOT system, and which are in a County or Municipal system.

Between 1990 and 2010, significant progress was made in reducing traffic fatalities and injuries in South Carolina. Tragically, South Carolina has regressed since that time with roads becoming more deadly. Whereas in 2013 there were 767 traffic fatalities on South Carolina's roads, last year (2016) there were 976 – an increase of 27% in three years!



The foreign countries shown in this graph were selected because they are the home bases for automotive-related companies with significant investments in South Carolina. For example, the global headquarters for Bridgestone Tires is in Japan. The home country of Trelleborg Wheel Systems in Spartanburg is in Italy. Michelin, which has facilities in several South Carolina counties, has a home base is in France. Germany is the international headquarters of BMW, Continental Tire, and Mercedes Benz. And Sweden, the champion of safe roads, is home to Volvo.

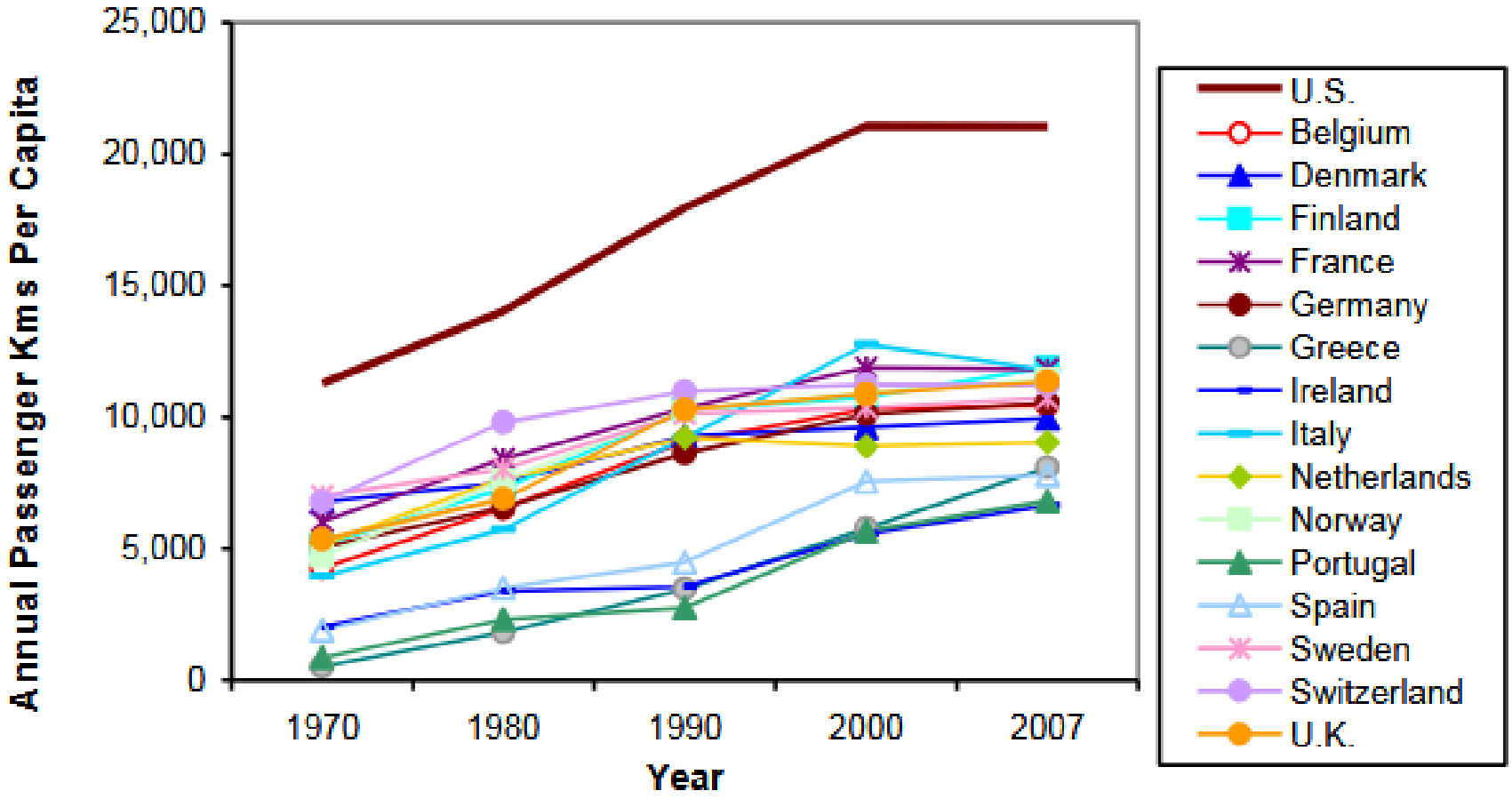
What if?


Automobile Deaths per 100 Million Vehicle Miles Traveled
France
Germany
Sweden
Italy
USA
S. Carolina
Japan
WHAT IF?!
4.25
4.00
3.75
3.50
3.25
3.00
2.75
2.50
2.25
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015
What IF...
SC's 2000-2010 trajectory of improved driving safety had continued through 2015?
687 lives would have been saved, including 305 lives in 2015!
In 2000...
fatalities/VMT were similar in France, Italy, Japan, and SC. Had SC achieved the same improvement, then 2015 fatalities would have been 517 rather than 977.
In 1990...
Germany had a higher fatality rate per VMT than SC. Today it is less than half SC's rate. How did they do it? BMW, Mercedes....little help?
In 1990...the fatality rate/VMT of Sweden was higher than SC's 2015 rate of 1.89. Sweden's rate in 2014 was .55. Had SC made similar progress, there would have been 693 fewer lives lost in 2015.

The red line in the preceding graph shows the fatality rate per 100 million vehicle miles traveled for South Carolina over the last 25 years, and compares it to that of six countries, including the United States. Notice:

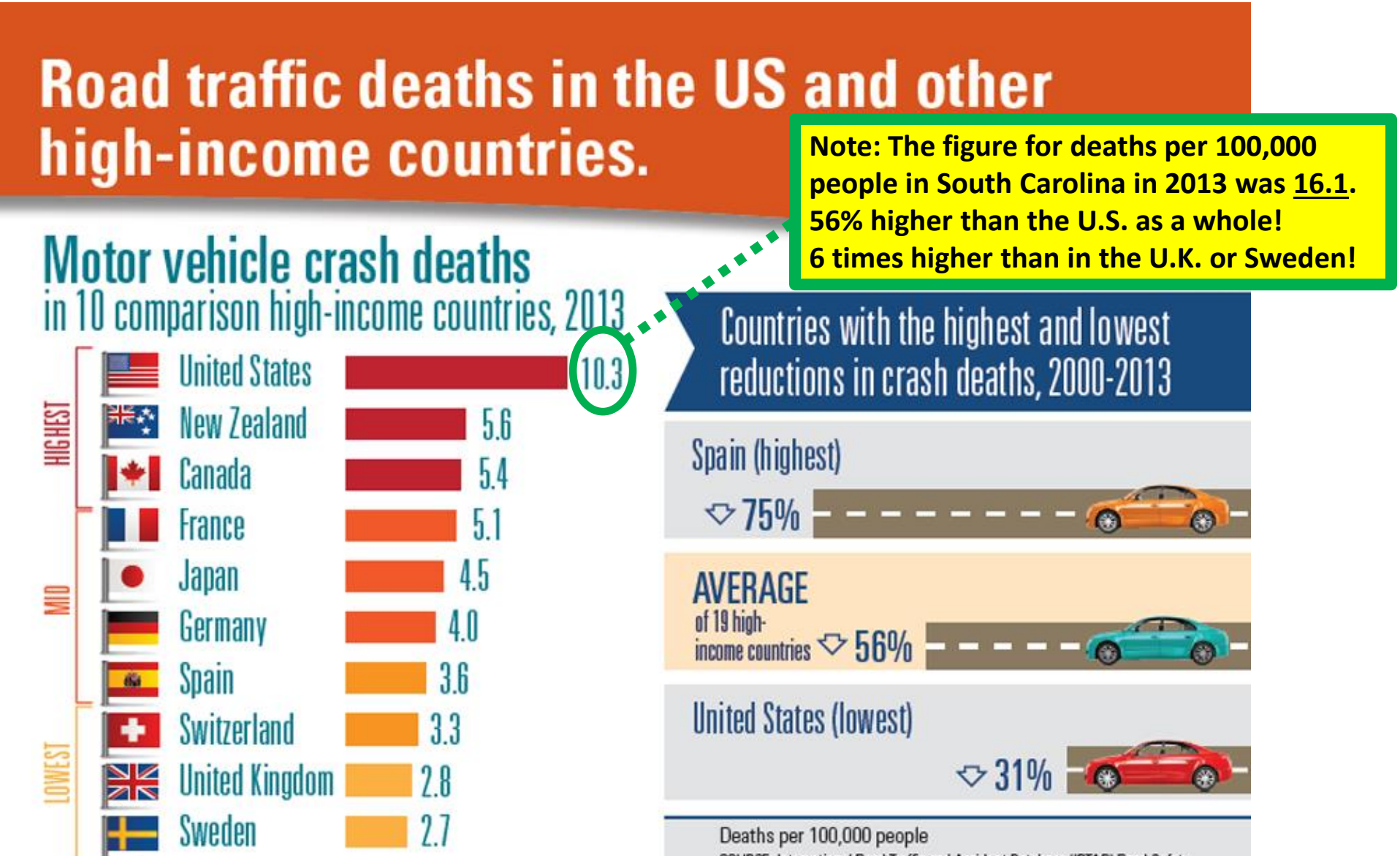
1. **Between 1990 and 2010 remarkable progress was made in reducing South Carolina's fatality rate. Over this 20-year period the rate dropped 42% from 2.86 to 1.65 deaths per 100 million miles traveled. It then flatlined for a few years before increasing to 1.89 in 2015. Had we continued the trajectory of improvement between 2000 and 2010, South Carolina's rate would have followed the dotted red line and we would now be at 1.3 deaths per 100 million miles traveled - 30% lower than the current rate of 1.89!**
2. **The triangular yellow-shaded area of the graph translates into 687 lives that might have been saved had South Carolina been able to sustain the safety trajectory of 2000-2010. Thousands of injuries and billions of dollars in economic cost avoided.**
3. **Note that in 1990, France, Japan, and Germany had higher death rates than South Carolina, and that of Italy's was comparable to our State. As late as 2000, the death rate in Japan and Italy were still comparable to that of South Carolina, and France's was still higher. But since that time, those countries have been able to knock their rate down to 1.0 or below. If they can do it, why can't we?**

Per Capita Annual Vehicle Travel (1970-2007)

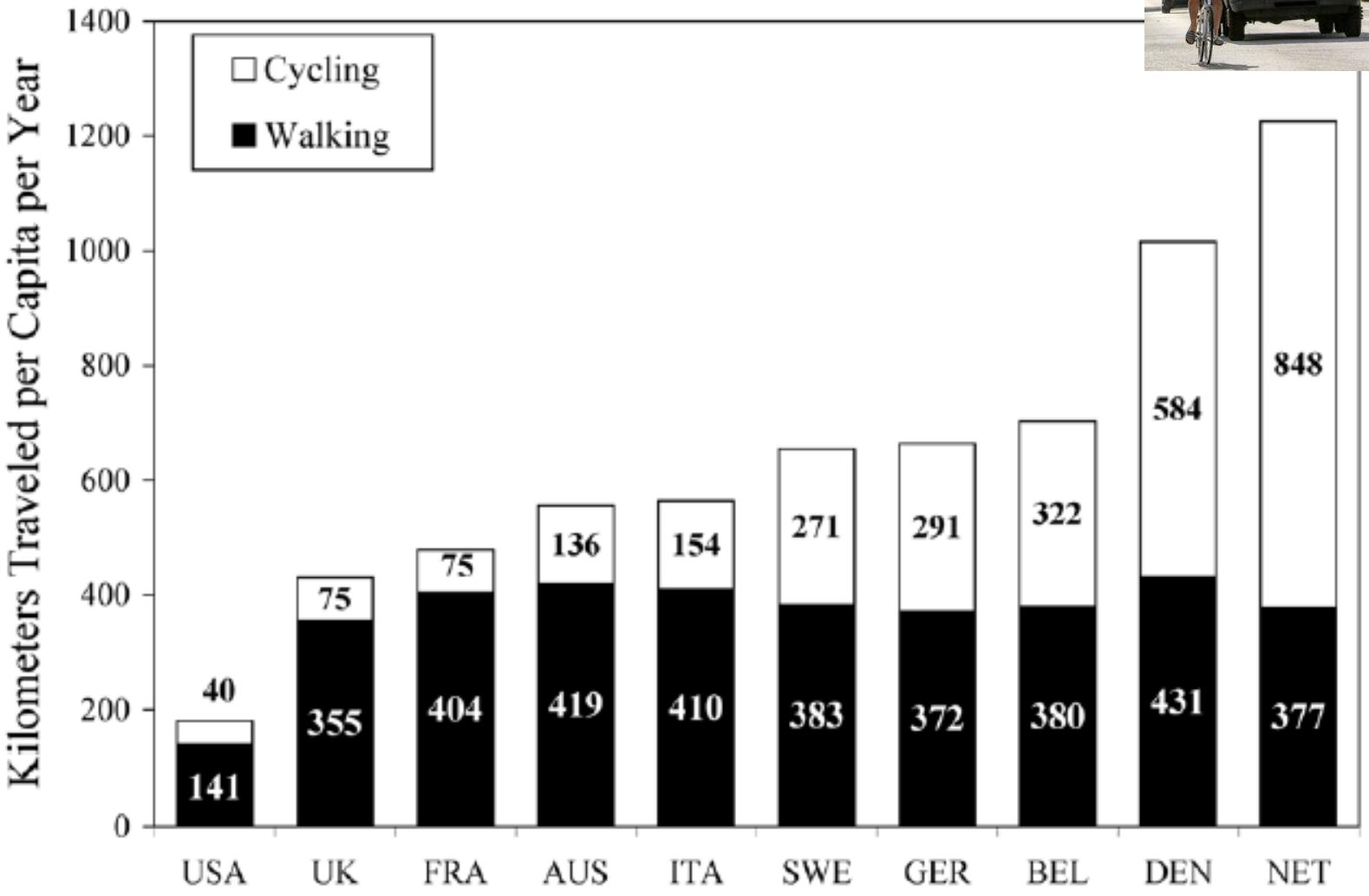


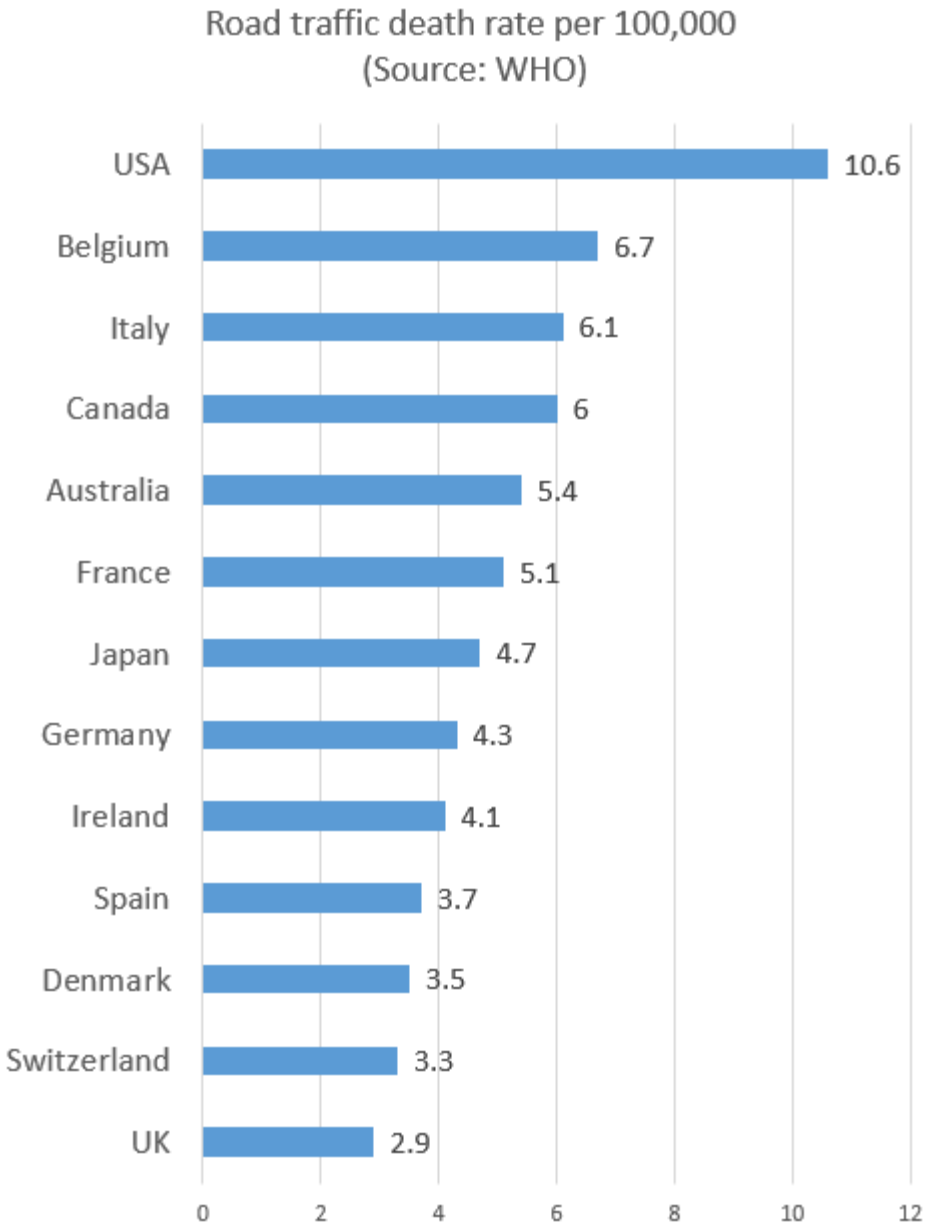
Taking the EU as a whole, as of 2008, passenger kilometers per capita in the US totaled more than 23,000 while the total was under 10,000 in the EU.

Unsafe road conditions as measured by deaths per mile traveled, combined with the fact that vehicle miles per capita in the U.S. is more than twice that in European countries, results in a substantially higher incidence of road traffic deaths per capita. In 2013, a South Carolinian was six times more likely to die in a vehicle crash than a Brit or a Swede.



Moreover, Europeans tend to walk and bicycle more. This is largely a function of a built environment that enables and encourages alternative forms of transportation. As opposed to the United States in general, and South Carolina in particular, where auto-centric policies crowd out alternative forms of transportation.





As with obesity, road fatalities are found to be a contributing factor to declining life expectancy in the United States. A 2013 study by the British Medical Journal found that "transport injuries" contributed 18 percent toward a "life expectancy shortfall" found in men under 50.

Combining the realities of automobile accidents with the widespread usage of automobiles, leads to a fatter, more accident-prone population likely to die sooner. That's not a recipe for a longer life expectancy.

Costs of transportation. Are South Carolinians solidly behind the vision or would we be better off considering alternatives? When citizens are fully informed about the costs of the current system, will they choose to continue to pay for it, or would they be open to something else? How can we develop procedures that will insure the public is better informed about the costs of this system. Is the transportation system worth the cost in terms of lost lives, opportunity, lost money and time.

Council of Transportation Policy Advisors will evaluate the costs of transportation in life, money, time, opportunity. Establish procedures that allow the evaluation of current and anticipated costs. Probably better if this is a private sector group that evaluates.

Elevating discourse on these costs could conceivably lead elected officials and department heads to either defend the status quo and make a case for business as usual or compel a discussion for alternatives.

Aesthetics, environmental and social costs can be evaluated in addition to economic costs.

> **"The principle of spending money to be paid by posterity…is swindling futurity on a large scale."**
>
> **~Thomas Jefferson (May 28, 1816)**

Ethical and moral considerations come into play. Our society continues to go ever deeper into debt to build liabilities, effectively putting the costs of this system on a credit card that future generations will be compelled to pay. Is this what future generations desire or are they looking for something better?

Questions:

1. Do policies of the South Carolina Department of Transportation create misaligned incentives? For example, do they facilitate sprawling development patterns along interstates and arterials? If so, can measures be taken to preclude the type of parasitical development patterns that cost more to serve than they produce in taxes?
2. Are land use policies of SC counties, municipalities and school districts counterproductive? Do zoning laws, decision related to school and other governmental building locations, transportation funding priorities contribute to or reduce automotive dependence?
3. Is the current structure with funding provided by state and federal governments distorting local decision making? Does this funding lead to a misallocation of public resources?

Aldous Huxley's 1932 novel *Brave New World* tells the story of a dystopian future in which an all-powerful central government maintains economic stability by keeping its citizenry distracted through an obsession with consumption of entertainment, news, sports, drugs, and automotive transportation. Individuality was shunned and self sufficiency deliberately undermined. Children are brainwashed in "Conditioning Centers" to accept their station in life, unquestioningly obeying authority and doing their part to consume and keep the wheels of the economy turning.

Is South Carolina and Charleston County, either deliberately or unwittingly, perpetuating a "Brave New World" scenario through outdated policies? For example, locating schools in a manner that maximizes driving and commute times.

4. Can the SCTIB play a leading role in redirecting taxpayer monies to create a safer, more beautiful, and less costly transportation system for its stockholders – the citizens of SC?