Policy Study No. 243

RETHINKING TRANSIT "DOLLARS AND SENSE": UNEARTHING THE TRUE COST OF PUBLIC TRANSIT

BY JOHN SEMMENS

EXECUTIVE SUMMARY

The Campaign for Efficient Passenger Transportation's 1997 report entitled *Dollars and Sense: The Economic Case for Public Transportation in America* purports to go "beyond the rhetoric to look at the facts." A careful examination of their report, though, reveals that the facts do not support the rhetoric of the document.

According to *Dollars and Sense*, transit ridership is growing. The reality is that transit ridership has been declining for five decades. It peaked in 1945 at 23 billion passenger trips and a 30 percent share of urban travel. Transit's share fell to 19 percent in 1955, 11 percent in 1965, six percent in 1975, and five percent in 1985. More recently, trips have been in the 7 billion range for an urban travel share of around 3 percent.

According to *Dollars and Sense*, riders, motorists, businesses, and taxpayers are receiving a "handsome" return-on-investment from public transit. The data say otherwise:

- Riders must pay higher fares because transit operating costs have risen almost four times faster than inflation over the past 30 years.

- In every case, the motorist's benefits from public transit cited in the *Dollars and Sense* report are smaller than the taxes they must pay to obtain these benefits.

- Taxpayers' "investment" in public transit has been rewarded with steadily deteriorating performance: the deficits have gotten larger, there are fewer passengers per dollar spent and fewer per vehicle mile.

- The funds spent on public transit could have generated an additional capital stock of $400 billion and supported an additional seven million jobs if business tax cuts had been implemented instead of transit subsidies over the last 30 years.

According to *Dollars and Sense*, increasing spending on transit would improve traffic safety, enhance mobility for the poor, and provide a more equitable allocation of government spending on transportation. The data say otherwise:

- Transit vehicles have higher fatality rates per vehicle mile of travel than automobiles.
- The overwhelming majority of the poor use modes other than transit to get to work.
- On a per passenger mile basis, transit already receives 20 times as much government spending as highways.

According to *Dollars and Sense*, the people are choosing transit. Local government officials may be eager to spend more money on transit. Voters, though, when given a choice, are turning down transit initiatives 80-90 percent of the time.

Part 1

Introduction

Public transit has been in decline for two generations. Government attempts to reverse this decline have not been successful. Dispassionate analysis of the data clearly confirms this conclusion. Nevertheless, proponents of enlarged taxpayer-financed subsidies of public transit continue their quest to deny the verdict of history. The latest major effort in this quest was undertaken by the Campaign for Efficient Passenger Transportation. In 1997 this coalition of interest groups published a report entitled *Dollars and Sense: The Economic Case for Public Transportation in America*. This report purports to go "beyond the rhetoric to look at the facts."[1] A careful examination of their report, though, reveals that the facts do not support the rhetoric of the document.

It will be our task in this Policy Study to analyze the data presented in the *Dollars and Sense* report and add some critical, but conveniently omitted data in order to get a more complete and coherent picture of the role public transit plays in our society. We will do this by concentrating on the major benefits claimed by *Dollars and Sense* on behalf of increasing the tax resources devoted to sustaining and enlarging public transit systems across the nation.

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[1] Donald H. Camph, *Dollars and Sense: The Economic Case for Public Transportation in America*, Campaign for Efficient Passenger Transportation, 1900 L St.., NW, #602, Washington, D.C. 20036; ph. 202-775-1580 (June 11,1997), p. 28.

Part 2

Ridership

According to *Dollars and Sense*, transit ridership is growing. The specific statistic in support of this assertion is that from 1970 to 1994, transit ridership increased by 15 percent,[2] an increase supported by figures reported in the American Public Transit Association's *1996 Transit Fact Book*, which claims that passenger boardings rose from 7.33 billion in 1970 to 8.44 billion in 1994. There are two problems with relying upon these numbers. The most obvious problem is the selection of the time period. Even if we were to take this billion-passenger boarding increase at face value it would be dwarfed by the 15 billion passenger boardings per year decline since the end of World War II.

Public transit ridership peaked during the World War II period at over 23 billion passenger boardings in 1945.[3] World War II provided optimal conditions for transit ridership. Over 10 million Americans were enlisted or conscripted into the U.S. armed forces. Auto ownership and use by military personnel were severely restricted. Automobile manufacturing was discontinued. Gasoline was rationed. Under these conditions, public transit was able to capture over 50 percent of urban passenger travel.[4] When World War II ended, public transit began to lose its share of urban person-miles of travel. Public transit's share fell to around 3 percent by 1995[5] Inasmuch as cars often carry persons in addition to the driver, this 3 percent transit share overstates the actual market share for transit. To focus on the 1970 to 1994 period, as *Dollars and Sense* does, misses the big story.

A second problem with the claim that transit ridership increased between 1970 and 1994 is that it didn't happen. In between 1970 and 1994, the American Public Transit Association changed the way it calculated passenger boardings. Prior to 1980, a transit trip was the total travel from origin to the ultimate destination. After 1980, a transit "trip" was recorded every time a person boarded a transit vehicle. Thus, a person transferring from a bus to a train, or from one bus to another bus, or one train to another train ywould account for two "trips" in the post 1980 period. If we correct for these changes, as Wendell Cox has done, we find that transit passenger boardings went from 7.33 billion in 1970 to 7.09 billion in 1994.[6]

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2 Camph, *Dollars and Sense*, p. 32.

3 *1996 Transit Fact Book* (American Public Transit Association), p. 77.

4 Alan Altshuler, "Changing Patterns of Policy: The Decision Making Environment of Urban Transportation," *Public Policy* (Spring 1977), pp. 171–203.

5 Altshuler, "Changing Patterns of Policy," pp. 171–203; and updated figures by the author based on data from the *Transit Fact Book* (American Public Transit Association, various years) and *Highway Statistics* (Federal Highway Administration, various years); Alan Pisarski, *Commuting in America II* (Eno Transportation Foundation, 1996), p. 49; and Wendell Cox, "U.S. Urban Public Transport Ridership: 1970–1995" in *Urban Transport Fact Book* (http://www.publicpurpose.com/utus7095.htm).

6 Wendell Cox, "U.S. Urban Public Transport Ridership: 1970–1995."

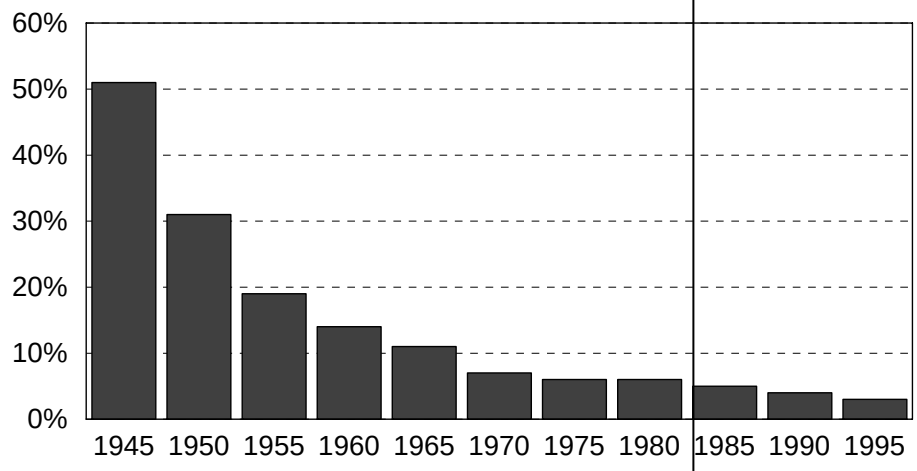
Table 1: Transit's Share of Urban Travel (in billions of trips and passenger miles)

Year	Transit		Auto	Transit share
	Boardings	Passenger miles	Vehicle miles	
1945	23.3	112	109	51%
1950	17.2	84	183	31%
1955	11.5	56	234	19%
1960	9.4	46	285	14%
1965	8.3	42	357	11%
1970	7.3	37	496	7%
1975	7.0	35	596	6%
1980	8.2	41	671	6%
1985	8.0	40	796	5%
1990	7.4	37	959	4%
1995	7.0	35	1007	3%

Sources: Transit Fact Book (American Public Transit Association, various years); Highway Statistics (Federal Highway Administration, various years); Wendell Cox, "U.S. Urban Public Transport Ridership: 1970-1995" in Urban Transport Fact Book (http://www.publicpurpose.com/utus7095.htm); and Alan Altshuler, Changing Patterns of Policy: The Decision Making Environment of Urban Transportation," Public Policy (Spring 1977), pp. 171-

Thus, the big story is that transit ridership has been declining for five decades. This relentless desertion of transit by urban travelers has occurred despite the attempt to prevent it by massive subsides. Since the initiation of federal aid to urban transit began in 1965, federal, state, and local governments have poured over $300 billion in tax dollars into subsidizing public transit, adjusted for inflation.[7] Riders who used to pay their own way in the pre-1965 era now pay less than 30 percent of the cost of the full cost (operating and capital expense) of their own transportation on public transit.[8]

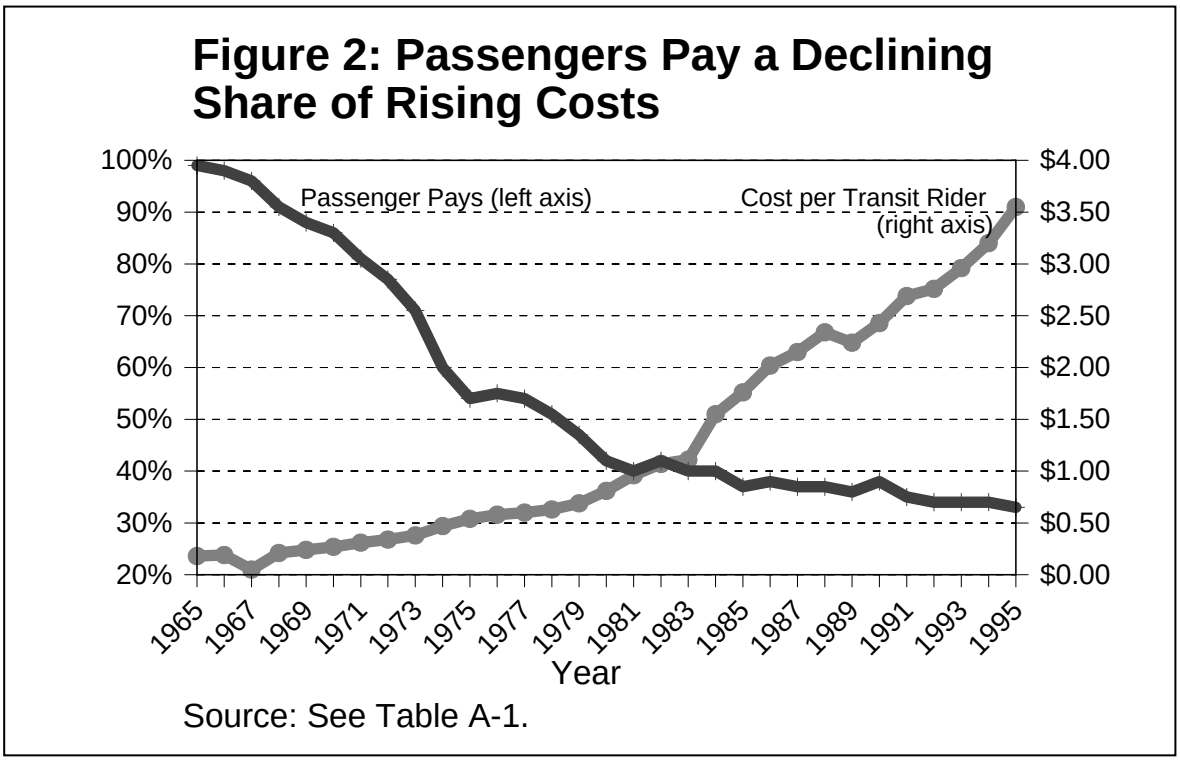
Figure 1: Transit Mode Share



Source: See Table 1.

[7] Wendell Cox, "U.S. Urban Public Transport Subsidies from 1960," in *Urban Transport Fact Book* (http://www.publicpurpose.com/ut-ussby.htm).

[8] *1996 Transit Fact Book*, pp. 58 & 64.



A key reason for the persistent decline in transit ridership has been rising personal income that has increased the ability of families to own autos and houses. The movement toward owning autos and houses was aided by government policies that gave special tax advantages for mortgage interest and programs that funded expansion of the highway system. Persons without vehicles living in densely populated urban centers may be prime customers for public transit. Auto-owning suburbanites are not. Per capita personal income in the United States rose from $1,223 in 1945 to $22,788 by 1995. Adjusting for inflation of 750 percent between 1945 and 1995, real per capita purchasing power increased by about 120 percent.[9] As family incomes rose, consumers shifted their demand from transit to automobiles as the preferred mode of travel. Consequently, transit trips per capita fell from 166 in 1945 to 26 in 1995, a decline of over 80 percent.[10] Even in the central city, over 90 percent of the travel is made in cars.[11] Regardless of whether one believes that the government actions aiding this shift toward automobile transportation were well-conceived, it is fruitless to think it can be undone. The fact is that Americans have become accustomed to driving their own cars to and from their own homes in a highly suburbanized landscape. No politically feasible government transportation policy or program is likely to change this fundamental reality.

Public transit is a time-intensive mode of travel. An American's average commute to work by car is about 21 minutes. The average commute to work by public transit bus is about 38 minutes. The average commute to work by rail transit is about 45 minutes.[12] It has been suggested that transit travel times in the largest, most congested urban areas would compare more favorably than the nation wide average travel

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9 *Historical Statistics of the United States* (U.S. Department of Commerce, Bureau of the Census, 1975), p. 297 and *Statistical Abstract of the United States* (U.S. Department of Commerce, Bureau of the Census, various years).

10 *Ibid.* and *Transit Fact Book* (American Public Transit Association, various years).

11 Erik Ferguson, "Demographics of Carpooling," *Transportation Research Record 1496* (Transportation Research Board, 1995).

12 Pisarski, *Commuting in America II,* p. 85.

times. Unfortunately, for transit backers, though, the margin of difference between traveling by car and by bus in the largest urban areas maintains almost the same 17 minute spread as the nation wide averages (by car = 26 minutes, by bus = 41 minutes).[13] The high time-cost to the passenger of public transit makes it a relatively unattractive mode of travel. Using the fully allocated costs of owning and operating a new car, we can see that as income level (and an individual's implicit value of time) rises, public transit becomes a more expensive mode of travel.

Contrary to the contention of the *Dollars and Sense* report, transit ridership is not rising. It has been falling and is likely to continue to do so in the future. Inasmuch as personal income seems likely to continue its upward trend and that no reasonable amount of money spent on transit systems in the future is likely to have a significant impact on transit travel times, transit is unlikely to serve more than a very small portion of the urban travel market.

Table 2: Time and Fare(Transit) or Operating(Auto) Cost of a Trip by Mode

Income level	car*	carpool*	bus**	rail**
$10,000	$6.68	$4.16	$4.17	$4.74
$20,000	$8.44	$6.55	$7.33	$8.49
$30,000	$10.20	$8.93	$10.50	$12.23
$40,000	$11.95	$11.32	$13.66	$15.97
$50,000	$13.71	$13.70	$16.83	$19.72
$75,000	$18.11	$19.66	$24.74	$29.08
$100,000	$22.50	$25.63	$32.65	$38.43

Sources: *Commuting in America II* (ENO Transportation Foundation, 1996), p. 85; *Your Driving Costs* (American Automobile Association, 1995), p. 5; *1996 Transit Fact Book* (American Public Transit Association), p. 60.

*Auto cost/vehicle mile = 41 cents; travel time in minutes: drive alone 21.1; 3 person carpool 28.62.

**transit fare per passenger = $1.00; travel time in minutes: bus 37.98; rail 44.92.

Note: The time cost is calculated by multiplying an implied hourly earning rate for each level of income (assuming a 40 hour work week) by the travel time of each mode. This is then added to either the fare or vehicle operating cost (for an average 12 mile trip by car) to obtain the total cost per trip by each mode.

[13] Pisarski, *Commuting in America II*, p. 86.

Part 3

Economics And Finance

The *Dollars and Sense* report says that public transit "pays a handsome return on investment to the taxpayer, to the business community, to the transit user, and even to the motorist who never uses transit."[14] If these types of returns were actually realized, the case for spending more money on transit would, indeed, be strong. A close examination of the evidence, however, reveals that none of the alleged beneficiaries cited by the *Dollars and Sense* report has been well-served by the heavily subsidized public transit system that has evolved over the past three decades. None of the alleged beneficiaries—taxpayers, businesses, transit users, or motorists—is better off as a result of the decisions and actions undertaken by the public transit agencies during this timespan.

A. Return-on-Investment for the Taxpayer

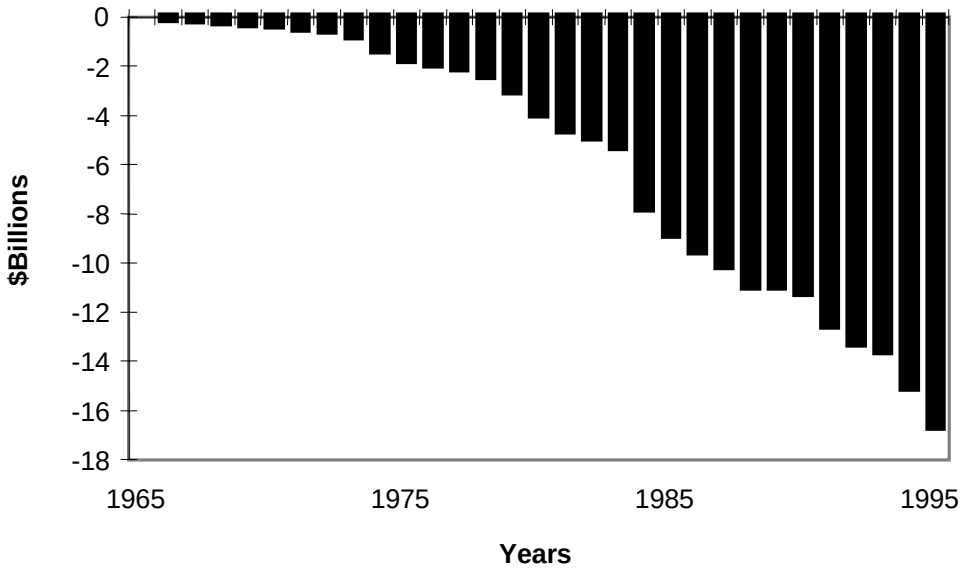
It is difficult to understand what *Dollars and Sense* could mean by the claim that taxpayers have enjoyed a "handsome" return on the money they have "invested" in public transit. In the private sector, a return-on-investment would be represented by the payment of dividends and/or the appreciation of the value of the business assets. Taxpayers have garnered neither of these types of returns from the "investment" in public transit. On the contrary, the last 30 years has been marked by steadily worsening public transit financial deficits and depreciation of the value of the assets. The $300 billion of taxpayer capital put into public transit has shrunken to a current value of around $13 billion. Taxpayers have provided a continuing infusion of additional capital to keep public transit from collapsing into bankruptcy. While many transit systems were financially struggling by the mid 1960s, in the aggregate, these systems represented a borderline break-even type of proposition. By 1965, the annual aggregated deficits were in the $16 billion range.[15] The graph below shows the growing gap between passenger revenue and total transit expenses from 1965 through 1995.[16] This is not a picture of financial health or "handsome" returns.

[14] Camph, *Dollars and Sense*, p. 12.

[15] *1996 Transit Fact Book*, pp. 53, 76 and *Transit Fact Book* (American Public Transit Association, 1979), pp. 21–22.

[16] Ibid.

Figure 3: Public Transit's Annual Loses



B. Return-on-Investment for the Business Community

The notion that the "business community" has received a "handsome" return from the expenditures on public transit is founded on the assumption that some of their employees use transit to get to work[17] and the observation that the construction of transit facilities (like train stations) can have an impact on land uses in the nearby vicinity.[18] The implication is that without the massive subsidies that have been poured into public transit: (a)these commuters wouldn't be able to get to work and (b)urbanized areas wouldn't be as prosperous and fully developed as they are with these transit subsidies. The crucial missing ingredient in this *Dollars and Sense* formula for meeting travel needs and promoting urban development is what economists call "opportunity cost." That is, could the money spent on public transit subsidies be used in another way that would more efficiently get employees to work and promote urban prosperity?

First, let's examine what it costs to provide a person-mile of transportation via public transit. Travel by transit cost about 71 cents per passenger mile in 1995, including both capital and operating costs.[19] This compares unfavorably with the 41 cents per vehicle mile full cost of owning and operating a car for that same year.[20] This is the fully allocated cost, including depreciation, financing, insurance, maintenance, fuel, and taxes on a new car. Fully allocated costs on an older car would be lower. If the car carried more than one person, the per passenger mile costs would be cut by half or more. When one also considers that commuting by car is generally faster than commuting by bus or train, getting workers to their jobs via cars or carpools would be a much less costly option for meeting this business need.

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17 Camph, *Dollars and Sense,* p. 35.

18 Ibid, p. 44.

19 *1996 Transit Fact Book*, pp. 53, 76; and Wendell Cox, "U.S. Urban Public Transport Ridership: 1970–1995."

20 *Your Driving Costs*, American Automobile Association, 1995.

Privately owned and operated buses have also demonstrated lower operating costs than public transit buses. Recent performance statistics indicate that public transit buses cost more than $5 per bus mile, while privately operated buses cost less than $2 per bus mile.[21] So, it would appear that the business need for employee transportation could be more cost-effectively met by means other than continued and increased subsidies to current public transit systems.

Second, the *Dollars and Sense* report's focus on the economic activity that springs up around a transit station overlooks opportunity costs. There is no question that specific persons and specific properties may gain substantial benefits from their proximity to a transit station. However, this does not necessarily mean that, on balance, there is a net gain in total wealth. The *Dollars and Sense* report tries to bolster a claim for a net gain by citing work done by David Aschauer for the American Public Transit Association. In a report written in 1991, Aschauer claimed that spending on transit had a long-term benefit/cost ratio of 3.29.[22] That is, every dollar spent on transit would generate $3.29 in long-term benefits.

Impressive as Aschauer's claims sound, his analysis suffers from two key shortcomings. First, his analysis is based on the correlation of transit expenditures and historical growth of the economy. However, as those familar with statistical analyses know, correlations do not prove cause-and-effect. They merely demonstrate an association between variables. Aschauer's implication that the growth in the U.S. economy is caused by the expenditure of funds on transit is a less persuasive explanation of the relationship between these two events than a reversed causal link. That is, it is the growth in the economy that more likely explains the growth in transit outlays. The hypothesis that spending on trains and buses that have carried a dwindling share of urban travelers has played a significant role in the post-World War II growth of the U.S. economy is unconvincing. More convincing is the hypothesis that the economic growth over the last 50 years has provided the means for federal, state, and local governments to spend taxpayers'money on transit.

The second key shortcoming of Aschauer's analysis is the issue of opportunity cost. There is a question as to whether the gains enjoyed by the beneficiaries of specific transit outlays might be outweighed by gains foregone in other areas due to the taxes imposed to fund the transit facilities. In an effort to answer this question, let's examine hypothetical alternative ways in which the federal aid committed to public transit over the 1965-1995 period might have been invested. We find that public transit spending can be credited with assets and returns that currently support about 900,000 jobs.[23] This sounds pretty good until it is compared with the outcomes that might have been achieved if the funds had been used in some other ways.

If the $70 billion in federal taxes that has been spent on public transit had been invested in the form of a cut in corporate income tax rates, these corporations would have been able to expand operations or pay larger dividends to their shareholders. The profits earned would cause the economy to grow at a faster rate than it has. Assuming that the companies made an average rate of return on corporate investments, this

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[21] Wendell Cox, "U.S. Urban Transport & Private Bus Costs Per Mile 1970–1994" in *Urban Transport Fact Book* (http://www.publicpurpose.com/ut-pubpr.htm).

[22] David Aschauer, *Transportation Spending and Economic Growth: The Effects of Transit and Highway Expenditures* (American Public Transit Association, 1991), p. 10. Highway expenditures were depicted as generating only half as many benefits per dollar spent on them (benefit/cost = 1.50).

[23] *1996 Transit Fact Book*, p. 100.

would expand GDP by $460 billion, generating 8 million jobs, about 7 million more than were produced by the actual investment in transit.[24]

If the $70 billion in federal taxes that has been spent on public transit had been invested in the form of a cut in capital gains tax rates, the incentive to invest in new businesses or to expand existing businesses would have been stimulated. Capital assets necessary to support employment would have grown at an even faster rate. Assuming they would have grown in pace with Dow Jones stocks, the economy would have expanded by $920 billion, creating 16 million new jobs. Consequently, the economy could, theoretically, have supported 15 million more jobs than it currently does, thanks to the investment in transit.[25]

Table 3: Impacts on the U.S. Economy of Alternative Investments ($ in billions)

	Public Transit	Corporate Tax Cut	Capital Gains Tax Cut
Amount Invested	$70	$70	$70
Current Value of Residual Assets	$13	$115	$230
Impact on Gross Domestic Product	$52	$460	$920
Number of Jobs	900,000	8 million	16 million
Federal Taxes Generated	$10	$85	$175

Sources: Economic Report of the President (February 1996); Statistical Abstract of the U.S. (1995); 1996 Transit Fact Book (American Public Transit Association).

Analyses like these are hypothetical. Everything except the way $70 billion could have been invested was held constant. In the real world everything cannot be held constant. The important point, though, is the relative magnitudes of the impacts of each alternative. In terms of economic growth, we would have been considerably better off if a couple of plausible alternative ways of spending $70 billion had been implemented. The difference in outcomes for these alternatives is the result of differences in the profit/loss results. Public transit is a consistent money loser. As a result, it cannot compound growth over time. Instead, it consumes capital. Profit-making businesses, on the other hand, create outputs that have a higher value than the inputs. Wealth is created and can be compounded over time. The whole history of human progress rests upon this type of wealth-creating process.[26]

Consequently, when opportunity cost is taken into account, there can be no question that putting money into public transit lowers the economic growth rate and consumes capital. Contrary to the wishful thinking of transit proponents, this cannot be accurately described as a "handsome" return on investment for the business community.

C. Return-on-Investment for the Transit User

[24] John Semmens, "Government Investment Yields Poor Returns," Chicago: Heartland Institute, October 18, 1993.

[25] Semmens, "Government Investment."

[26] This concept is supported by numerous books, articles, and studies, a few of which include: Adam Smith, *The Wealth of Nations* (Liberty Press, Indianapolis, IN, 1976), Julian Simon, *The State of Humanity* (Blackwell, Cambridge, MA, 1995), Steven Moore, "The Coming Age of Abundance," in *The True State of the Planet* (Free Press, NY, 1995), Nathan Rosenberg and L.E. Birdzell, *How the West Grew Rich* (Basic Books, NY, 1986).

It might seem that at least the transit user who is relieved of the burden of paying the full cost of public transit service must garner a "handsome" return on his investment. For its part, the *Dollars and Sense* report claims that transit users enjoy mobility benefits of over $33 billion per year,[27] which sounds impressive. However, this benefit was not calculated by examining the price paid by transit users, but by projecting a "consumer surplus" value over and above the price paid. While it is true that the value of any product or service is reasonably presumed to exceed its price (otherwise the consumer would not buy it), there is no foundation for the report's assertion that this value is more than four times the $8 billion in passenger fares collected in a year. Trying to fit the *Dollars and Sense* report's $33 billion figure under a simple demand curve using the current average transit fare of $1 projects an extraordinarily large component of "consumer surplus" and implies an extremely steep and, therefore, extremely inelastic demand for transit. This degree of inelasticity of demand would mean that a quintupling of the fare (a 400 percent increase) would result in only a 50 percent decrease in ridership. This implies an elasticity coefficient of -0.125. While it is possible that this might be true, it seems unlikely. In 1983, Los Angeles reduced transit fares from 85 cents to 50 cents (a 41 percent decrease. Ridership rose from 354 million boardings in 1982 to 497 boardings by 1985 (a 40 percent increase). This implies an elasticity coefficient of -0.98.[28] Clearly, the claimed $33 billion mobility benefit is a gross over-estimate.

A second problem with this imputed mobility benefit is, again, the complete absence of consideration of opportunity cost. Consumer surplus is not a phenomenon restricted to public transit. It is pervasive. Every expenditure of money entails a consumer surplus component. Before we could conclude that there would be net benefits by extracting funds from taxpayers and diverting them to subsidizing transit, we would need to know the full cost of the foregone uses of this money, we would need to estimate the consumer surpluses that would be sacrificed in the myriad purchases made infeasible by the taxes taken for transit subsidies.

Even if we can't substantiate these dubious mobility benefits, surely a transit passenger who has to pay only one-third the cost of his ride, must be a "winner." If transit users, though, were really getting such a great return on their investment, why has transit's share of urban travel dwindled to such a small percentage (about 3 percent)? We have already discussed the effects of rising personal income to explain some of the reasons for the demand to decline. It is also possible that escalating inefficiencies in the way public transit has operated have contributed to the unattractiveness of this mode of transportation.

The cost per passenger trip on transit rose from less than 20 cents in 1965 to over $3.50 by 1995. The consumer price index has risen by about 400 percent since 1965.[29] However, transit's per rider costs have risen by more than 1800 percent during this period, causing a significant rise in the real, inflation-adjusted cost of public transit. Even the highly subsidized fares are higher than they otherwise would have been if transit costs could have been held to the 400 percent increase experienced by the consumer price index. The transportation sector was not especially hard hit by rising costs over this timeframe. The cost of owning and operating a car rose by about 350 percent[30] (i.e., less than the overall inflation rate). The *Dollars and Sense* report, itself, admits to rising real fares for transit users.[31]

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[27] Camph, *Dollars and Sense,* p. 39.

[28] Thomas Rubin and James Moore, *Better Transportation Alternatives for Los Angeles,* (Reason Public Policy Institute, September 1997), p. 4.

[29] *Consumer Price Index* (Bureau of Labor Statistics; <http://stats.bls.gov> 1997).

[30] *Your Driving Costs,* American Automobile Association (various years).

[31] Camph, *Dollars and Sense,* p. 32.

Two broad measures confirm the declining efficiencies of public transit. On the one hand, there is the deterioration in cost-effectiveness represented by the decline in passenger boardings per dollar of operating expenditures. Between 1970 and 1995, the real, inflation-adjusted cost per passenger boarding more than doubled—rising from 90 cents to $1.94.[32] On the other hand, there is the deteriorating operational effectiveness represented by the declining number of passenger boardings per vehicle mile of travel. In 1965, there were more than four passenger boardings per vehicle mile. By 1995, there were less than three boardings per vehicle mile.[33] Public transit systems are spending more and traveling further to carry fewer passengers. Much of this decline in performance was incurred by extending transit further into metropolitan suburbs where there were fewer potential customers. This was an ill-conceived expansion from an economic perspective, but may have been deemed necessary to obtain broader political support for transit subsidies. Carrying fewer passengers per mile and at greater cost are not signs of improved customer service or of better value for the customers' money.

Figure 4: Transit Passengers Per Vehicle Mile

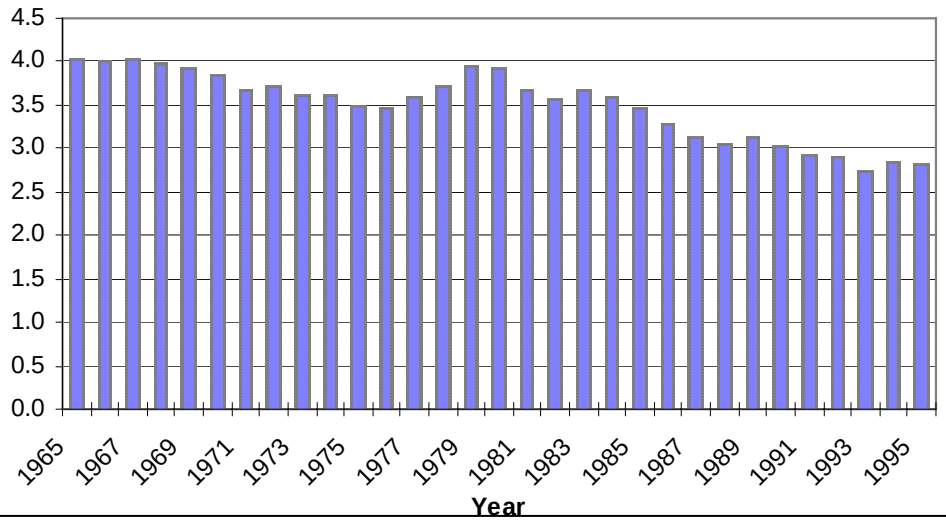

Table 4: Alleged Benefit Vs. Real Cost From Congestion Reduction ($ In Millions/Year)

City	*motorist cost of subsidizing transit	**congestion cost w/o transit
Atlanta	$200	$76

[32] Wendell Cox, "U.S. Urban Public Transport Change in Operating Cost/Passenger & Productivity 1970-1995" in *Urban Transport Fact Book* (http://www.publicpurpose.com/ut-95prd.htm).

[33] *Transit Fact Book* (American Public Transit Association, various years).

Baltimore	$215	$65
Boston	$664	$257
Buffalo	$60	NA
Chicago	$1,008	$464
Cincinnati	$39	$13
Cleveland	$176	$21
Columbus, Ohio	$35	NA
Dallas	$352	$50
Denver	$199	$33
Detroit	$131	$59
Honolulu	$111	$31
Houston	$251	$84
Los Angeles	$677	$458
Miami	$171	$63
Milwaukee	$73	$14
Minneapolis	$121	$36
New Orleans	$77	$24
New York	$4,357	$3,100
Philadelphia	$583	$163
Phoenix	$48	$17
Pittsburgh	$204	$54
Portland	$209	NA
San Antonio	$60	$13
San Diego	$134	$25
San Francisco	$837	$473
San Jose	$192	$25
Seattle	$389	$111
St. Louis	$102	$21
Washington, DC	$564	$483

Sources:

* *Transit Profiles for the 1994 National Transit Database Report Year* (Federal Transit Administration, December 1995), various pages; *1994 Highway Statistics* (Federal Highway Administration, October 1995), p. V-72. The modal split between transit and auto travel was calculated by the author in order to apportion the subsidy shares between auto and transit travelers.

**Donald H. Camph, *Dollars and Sense: The Economic Case for Public Transportation in America*, Campaign for Efficient Passenger Transportation, 1900 L St.., NW, #602, Washington, DC 20036; ph. 202-775-1580 (June 11,1997), pp. 79-80.

Thus, even transit users, the targeted beneficiaries of public transit subsidies, may have been poorly served by operating inefficiencies that have pushed fares to higher levels than might otherwise have prevailed. Perhaps, then, their return on investment is not quite as "handsome" as transit proponents would like to imagine.

D. Return-on-Investment for the Motorist

The final alleged beneficiary of these purported "handsome" returns on investment is the "motorist who never uses transit." The basis for this claim is transit's impact on traffic congestion. The *Dollars and Sense*

report asserts that without transit there would be more cars on the road and higher congestion costs.[34] Avoiding these congestion costs constitutes the claimed benefit to motorists. While we can all agree that reducing traffic congestion is highly desirable, it does not necessarily follow that spending money on public transit is the most cost-effective way to achieve this objective. The lack of cost effectiveness of the transit option is demonstrated by the figures we find in the *Dollars and Sense* report itself. A review of the top 30 cities cited in the report reveals that in no instance is the alleged benefit from congestion reduction larger than the motorists' tax cost of subsidizing the transit systems. That is, using the calculated benefits presented by the author of the *Dollars and Sense* report we find that the asserted congestion-mitigation benefits of transit for motorists are less than the cost to the motorists of obtaining them. The case for "handsome" returns on investment for motorists collapses based on the evidence presented by the advocates of transit.

Table 5: Traffic Reduction Measures for the Phoenix Region Ranked by Cost-Effectiveness

			Traffic		Air Quality	
Option	Timing Of Impact	Additional Cost/Year (Millions)	Traffic Impact	Cost/1% (Millions)	Pollution Reduction (Tons/Year)	Cost/Ton
Proximate Commuting	near term	none	3.0%	none	11,000	none
4/10s Work Week	near term	none	1.4%	none	5,000	none
Jitneys	near term	none	0.5%	none	1,900	none
Flex Time	near term	none	0.3%	none	1,000	none
Privatize Buses	near term	none	0.2%	none	750	none
Guaranteed Ride Home	near term	$0.4	0.4%	$1.0	1,500	$270
Telecommuting	near term	$3.4	2.0%	$1.7	7,500	$450
HOV to HOT Lanes	near term	$4.0	2.0%	$2.0	7,500	$530
Synchronize Signals	near term	$16.0	8.0%	$2.0	30,000	$530
Congestion Pricing	near term	$20.0	10.0%	$2.0	37,000	$540
Freeway Management	near term	$17.0	2.0%	$8.5	7,500	$2,300
Complete Freeways	long term	$100.0	8.0%	$12.5	30,000	$3,300
Bus Expansion	near term	$138.0	0.8%	$172.5	3,000	$46,000
Light Rail	long term	$57.0	0.2%	$285.0	750	$76,000

Sources:

Alternative Transportation System Task Force Report to Governor Fife Symington (November 15, 1996), p. S-11 and Matthew Rowell, *et al., The Cost Effectiveness and Magnitude of Potential Impact of Various Congestion Management Measures* (Arizona Department of Transportation, March 1997), p. 39.

There are numerous other means for reducing traffic congestion that are more cost-effective than spending money on transit. Two studies carried out for the Phoenix metropolitan region in the 1996-1997 timeframe

[34] Camph, *Dollars and Sense*, pp. 79–84.

found that transit was an inefficient means of mitigating traffic congestion compared to a variety of other options.[35] (A brief description of each of these options is given in Appendix B.)

Table 6: Transit's Impact on Traffic, 1994

City	*Transit Share Of All Travel	**Transit Share Of Work Trips
Atlanta	1.9%	4.6%
Baltimore	3.4%	7.4%
Boston	6.5%	10.4%
Buffalo	1.3%	4.5%
Chicago	5.5%	13.4%
Cincinnati	1.2%	3.6%
Cleveland	2.0%	4.5%
Columbus, Ohio	1.0%	2.7%
Dallas	0.7%	2.3%
Denver	1.8%	4.2%
Detroit	1.0%	2.3%
Honolulu	8.5%	NA
Houston	1.7%	3.7%
Los Angeles	1.8%	4.5%
Miami	3.0%	4.2%
Milwaukee	1.6%	4.8%
Minneapolis	1.4%	5.2%
New Orleans	3.9%	6.9%
New York	14.4%	26.9%
Philadelphia	4.7%	10.1%
Phoenix	0.8%	2.0%
Pittsburgh	2.5%	7.9%
Portland	2.6%	5.4%
San Antonio	1.8%	3.6%
San Diego	1.6%	3.2%
San Francisco	5.1%	9.1%
San Jose	1.5%	NA
Seattle	3.5%	6.2%
St. Louis	1.1%	2.8%
Washington, DC	5.1%	13.3%

Sources:

**Transit Profiles for the 1994 National Transit Database Report Year* (Federal Transit Administration, December 1995), various pages; *1994 Highway Statistics* (Federal Highway Administration, October 1995), p. V-72.

**Wendell Cox, "U.S. Employment & Public Transport Work Trips: 1960-1990," in *Urban Transport Fact Book* <http://www.publicpurpose.com/ut-jwt60.htm> Since transit trips are typically shorter than auto trips, these percentages overstate transit's share of total travel.

This analysis is for one metropolitan region; however, the order of magnitude of difference in impact for transit versus the other options indicates that transit is likely to compare unfavorably in most urban

[35] *Alternative Transportation System Task Force Report to Governor Fife Symington* (November 15, 1996), p. S-11 and Matthew Rowell, *et al.*, *The Cost Effectiveness and Magnitude of Potential Impact of Various Congestion Management Measures* (Arizona Department of Transportation, March 1997), p. 39.

settings. So little of urban travel occurs on transit that it is difficult for it to muster a very good showing when compared to other options. Single-digit shares of the person-miles of travel are common for most urban transit systems. Even if we were to focus on the work trips that are most commonly associated with peak period traffic congestion, we find transit's share is still relatively small.

The notion that motorists enjoy "handsome" returns on investment from transit expenditures cannot be sustained by the data. Motorists would be much better served by a variety of other actions aimed at reducing congestion or smoothing traffic flow.

Part 4

Social Issues

No discussion of public transit can be concluded without considering issues outside the calculation of economic and financial benefits. Public transit does not look like a good investment when careful scrutiny is applied to its economic and financial performance. Often, those who advocate greater expenditures on public transit assert that a consideration of broader social issues will place public transit in a more favorable light. In this regard, the *Dollars and Sense* report raises three key items that merit closer examination: travel safety, the impact of transit subsidies on the poor, and the equity of government's transportation-spending decisions. We will take a look at each of these.

A. Travel Safety

One of the more egregious claims made by the *Dollars and Sense* report is that transit improves traffic safety. Travel on transit is alleged to be 20 times safer than travel by car.[36] What the report should have said is that riding in a bus is 20 times safer than getting hit by a bus. When it comes to traffic collisions size matters. Occupants of bigger vehicles tend to survive at higher rates than occupants of smaller vehicles. In this regard, being a transit passenger is safer than being a passenger of an automobile. However, no safety analysis can be complete without evaluating the total risks involved in the crashes in which transit vehicles are involved. When we do this a very different picture emerges.

In 1996, there were 111 fatalities as a result of transit bus crashes. Only five of these fatalities were bus passengers. The other 106 were occupants of the vehicles that collided with the buses.[37]

When we calculate fatalities per vehicle mile of travel for transit buses, we come up with a fatality rate of 5.05 per 100 million vehicle miles.[38] This compares unfavorably with the fatality rate for all urban motor vehicle travel (including motorcyclist fatalities, as well as pedestrians and bicyclists killed by motor vehicles) of 1.17 per 100 million vehicle miles in 1996.[39] *Dollars and Sense* implies that more bus use will mean safer roads. This claim is false.

Of course, the above figures are for on-the-road travel. What about rail transit? Does it offer safety benefits? Heavy rail, of the type represented by the Washington, D.C. metro subway, reported a fatality rate of .75 per

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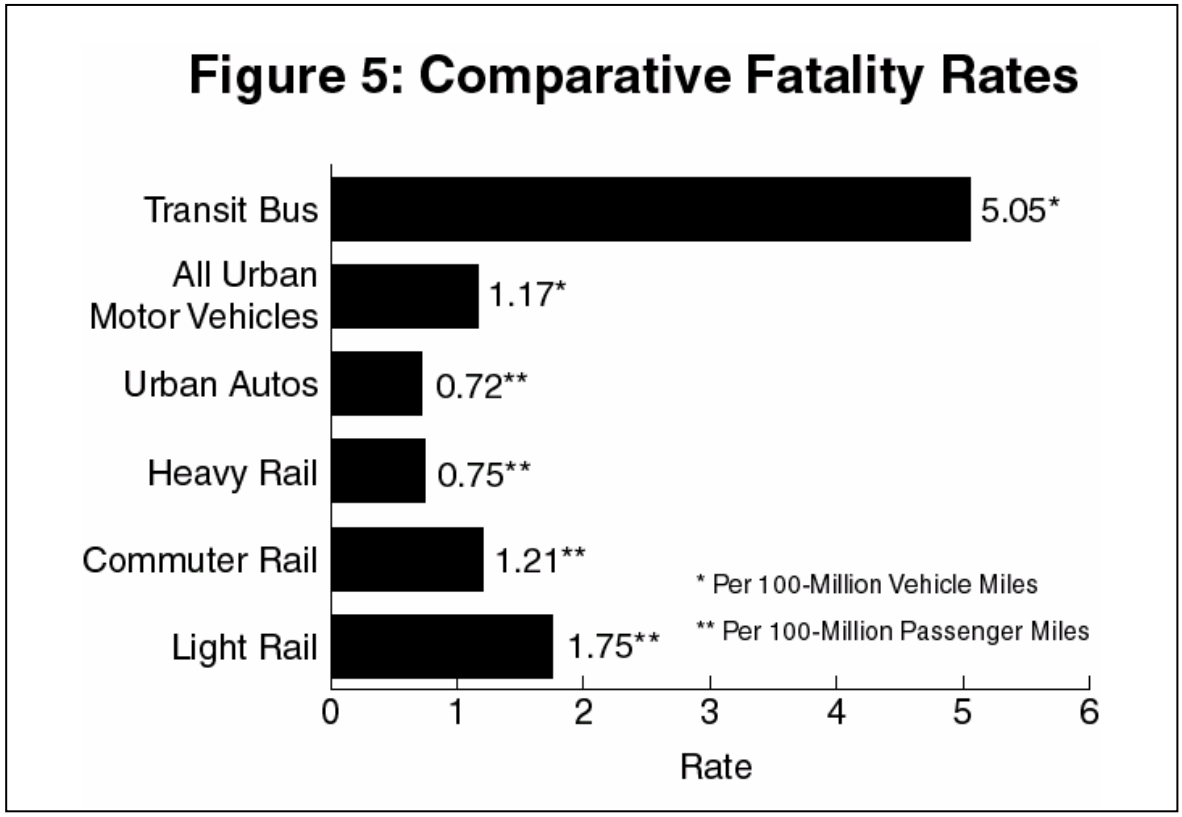
[36] Camph, *Dollars and Sense,* p. 40.

[37] *1996 Motor Vehicle Crash Data from FARS and GES,* Bureau of Transportation Statistics, U.S. Department of Transportation, pp. 63, 81, 105.

[38] This is calculated by dividing the 111 fatalities by the 2.2 billion vehicle miles of travel for transit buses reported in the *1996 Transit Fact Book,* p. 81.

[39] *Highway Statistics 1996* (Federal Highway Administration, 1997), p. V-112.

100 million passenger miles in 1995. This is comparable to the urban auto fatality rate of .72 per 100 million occupant miles (this differs from the 1.17 fatality rate per 100 million vehicle miles because it adjusts for the vehicle occupancy rate—i.e., the total number of persons in the automobile). Other modes of rail transit don't fare as well. Commuter rail, of the type represented by Amtrak-style trains, reported a fatality rate of 1.21 per 100 million passenger miles. Light rail, the rail option favored by more and more local government officials, reported a fatality rate of 1.75 per 100 million passenger miles.[40]



The *Dollars and Sense* report's contention that public transit is saving lives is not supported by the data. On the contrary, public transit may be contributing to a higher urban travel risk.

B. Helping the Poor

Helping the poor extricate themselves from poverty is another purported benefit of tax-subsidized public transit. The idea is that without public transit, the poor would have no way of getting to work. If they can't get to work they can't hold jobs and would be forced into poverty and onto welfare.[41] Whether expanding the subsidies expended on public transit is an efficient means of achieving the objective of helping the poor to get to work is the crucial question. Even among the poorest segments of the U.S. population, 80 percent of the travel is in cars. Less than 10 percent is via public transit.[42] Further, those with incomes

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[40] Wendell Cox, "U.S. Urban Transport Safety: Fatality Rates from 1990-1995" in *Urban Transport Fact Book* <http://www.publicpurpose.com/uts-9095prd.htm>.

[41] Camph, *Dollars and Sense*, p. 64.

[42] *Commuting in America II* (Eno Transportation Foundation, 1996), p. 56.

under $15,000 constitute a minority of transit riders.[43] The *Dollars and Sense* report confirms this by pointing out that 60 percent of transit riders have incomes of more than $20,000 per year.[44] Further, the worst-performing segments of most transit systems are the long-haul routes that extend into the suburbs to serve the more affluent who are commuting to downtown jobs.[45] Far from being a program oriented toward helping the poor, the Congressional Budget Office concluded in a 1983 report that most of the expense in public transit is incurred serving those who appear capable of bearing the cost of their own transportation.[46]

The *Dollars and Sense* report asserts that "each dollar invested in low-cost mobility services reduces the cost of these programs [i.e., welfare] by 60 cents."[47] Perhaps the author of the *Dollars and Sense* report doesn't realize that spending a dollar in order to save 60 cents is not the best of trade-offs. Considering the significantly negative effects on economic growth imposed by diverting scarce resources from profitable uses in the private sector to fund deficit-ridden public transit systems, it seems probable that the poor would have been better off if the government had never initiated the subsidy program. There would have been more jobs at higher pay. Most of those who are poor now would have had higher incomes and all the things that higher incomes could buy. It is also possible that transit fares would be lower.

C. Equity

Public transit advocates repeatedly claim that public policies favor the automobile. In absolute dollar terms, the amount of public sector expenditures on roads is substantially larger than expenditures for public transit. In 1995, we find that government, at all levels, spent over $90 billion on roads.[48] During this same year, we find government, at all levels, spent about $23 billion on public transit.[49] Public-sector spending on roads is four times as large as its spending on transit. Before we leap to the conclusion that this is unfair we ought to consider the ratio of use for highways versus transit. In 1995, there were over 3.7 trillion person-miles of travel on roads.[50] For this same year, there were around 35 billion passenger miles of travel on public transit.[51] Of government expenditures on roads and transit combined, transit receives about 21 percent of the outlays, but provides less than 1 percent of the total passenger travel. These figures do not include credit for the use of roads to move freight—another considerable benefit that would appear to merit a share of the public expenditures on transportation.

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43 *Ibid*., p. 60 and *Transit Fact Book* (American Public Transit Association, 1996), p. 79.

44 Camph, *Dollars and Sense*, p. 36.

45 For example, the operating cost per passenger for the express routes in Phoenix (the ones that run only during the peak period to carry downtown workers to and from their jobs) is about $2.40. The system's average operating cost per passenger is about $1.50. See *Short Range Transit Plan FY 1996-97 through 2000-01*(Regional Public Transportation Authority), p. 28 and *Transit Profiles: Agencies in Urbanized Areas Exceeding 200,000 Population* (Federal Transit Administration, December 1995), p. 193.

46 *Public Works Infrastructure: Policy Considerations for the 1980s* (Congressional Budget Office, April 1983), p. 49.

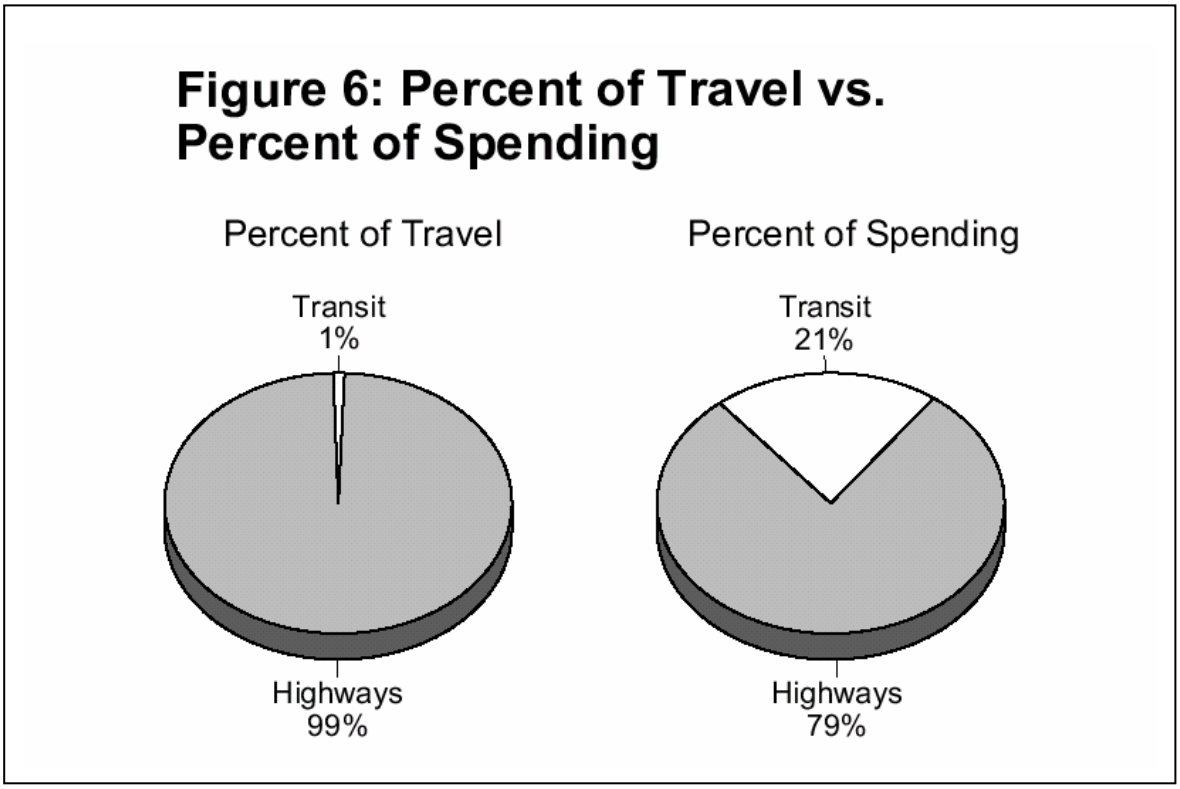
47 Camph, *Dollars and Sense*, p. 41.

48 *Highway Statistics 1994* (Federal Highway Administration), p. IV-8.

49 *1996 Transit Fact Book* (American Public Transit Association), p. 53.

50 *Highway Statistics 1995* (Federal Highway Administration), p. V-92.

51 *1996 Transit Fact Book* (American Public Transit Association), p. 80.



Aside from the issue of total outlays is that of the source of the outlays. The *Dollars and Sense* report asserts that "motor vehicle users pay for only 53 percent to 69 percent of the social costs of motor vehicle use."[52] There is much debate among transportation analysts over which "social costs" are legitimately attributable to auto use. Even if we accept these figures at face value, motorists would still be paying a substantially larger share of their costs than transit users. Transit riders pay only about 33 percent of the cost of their trips.[53] An analysis of costs and subsidies by mode of travel in urban regions conducted by the Natural Resources Defense Council (no fan of the automobile) indicates that transit receives greater net subsidies when all costs, including externalities are considered.[54]

Table 7: NRDC Estimates of Costs & Subsidies (cents/person-mile)

	Auto	Bus	Rail
Costs			
• Facilities & Services	3.1-3.7	50.1	44.1
• Externalities	10.2-19.2	2.5-7.4	2.7-7.1
User Payments	.7	14	14
Net Subsidy	***12.6-22.2***	***38.6-43.5***	***32.8-38.2***

Source: Jose Gomez-Ibanez, *Pitfalls in Estimating Whether Transport Users Pay Their Way* (Kennedy School of Government, Harvard University, July 1996).

[52] Camph, *Dollars and Sense*, p. 28.

[53] *1996 Transit Fact Book* (American Public Transit Association), pp. 58, 64.

[54] Jose Gomez-Ibanez, *Pitfalls in Estimating Whether Transport Users Pay Their Way* (Kennedy School of Government, Harvard University, July 1996).

D. Infrastructure Savings

One of the most highly publicized contentions of *Dollars and Sense* was its claim that huge numbers of additional freeway lane-miles would be required if there were no public transit. Table S-1 of this report implies that thousands of additional freeway lane-miles would be required to cope with all the additional cars added to the system in New York, Chicago, Los Angeles, Washington, Philadelphia, and Boston, as well as hundreds of additional lane-miles in other major urban areas. Aside from the fact that eliminating public transit is nowhere under consideration, the report's estimated impact is grossly exaggerated.

If we assume that public transit were somehow to vanish from these cities, the impact on freeway capacity would need to be measured by estimating how many additional cars would be on the freeways during the peak period. This would give us a reasonable estimate of the amount of additional capacity that would be needed., as shown in Table 8. The contrast with the figures used in *Dollars and Sense* is dramatic. In every case, that report grossly over-estimated the potential impact (in part, by incorrectly assuming that all former transit users would drive on the freeway rather than on surface streets). Given that transit's share of travel has been in a steady decline for the last 50 years, highway users would get better returns if more of the taxes they pay were actually invested in increased roadway capacity rather than on transit expansions that will be underused.

Table 8: Estimates of Additional Freeway Capacity if Transit Did Not Exist (freeway lane-miles)

Urban Area	D&S Estimate	More Reasonable Estimate
New York	160%	11%
Chicago	93%	5%
Los Angeles	27%	2%
St. Louis	9%	1%
Portland	27%	3%
San Francisco	55%	4%
Milwaukee	33%	2%
Detroit	12%	1%
Minneapolis	22%	2%
Philadelphia	72%	4%
Washington	71%	6%
Boston	78%	5%
Dallas	7%	1%
Phoenix	12%	1%

Source: Wendell Cox, "Notes on *Dollars and Sense:The Economic Case for Public Transportation in America*," in Urban Transport Fact Book, http://www.publicpurpose.com/ut-$&sns.htm

Part 5

Who's Choosing Transit?

Part of transit advocates' strategy in promoting transit subsidies is to create the appearance of a groundswell in favor of more transit spending. The idea is that if everyone, or at least large majorities, are jumping on the transit bandwagon it can't be a bad idea. Along these lines, the *Dollars and Sense* report falsely claims that transit ridership has been increasing despite real increases in fares,[55] and that over 75 percent of urban regions are "choosing rail transit."[56] We have already observed that transit's share of urban person-miles of travel has been in decline for decades. Given the likelihood of continued increases in personal income, transit's share can be expected to continue to decline. Fewer and fewer urban travelers are *choosing* transit.

A look at the financial and ridership statistics for America's largest transit systems may help to illustrate the unimpressive results achieved. In city after city, public transit is a financial failure. As the table: *Statistics for 30 City Transit Systems (1994)* shows,[57] every single one of these transit systems operates at a loss. Riders pay a minor share of the costs of their own transportation. Taxpayers are compelled to contribute the majority of the funding to keep these systems running. Transit serves a tiny fraction of the urban travel needs.

The dwindling share of urban travel served by transit has not seemed to deter local government officials' ambitions to venture into the construction of new rail-transit lines. Local government officials imagine that they are adding a travel option by building new rail lines. For the most part, though, they are cannibalizing existing bus services. A significant proportion of the "new" rail transit riders turn out to be former bus riders. In Los Angeles, it is estimated that only 10 percent to 15 percent of the riders on the newly constructed rail lines are attracted from automobiles. The remaining 85 percent to 90 percent were formerly bus riders.[58] This phenomenon is not unique to Los Angeles. It is common wherever new rail lines are implemented.[59] Worse, the high cost of rail construction may lead to cutbacks in bus service. This is what happened in Los Angeles. Now, total transit ridership is about 30 percent lower than it was before the rail lines were opened.[60]

Table 9: Statistics for 30 City Transit Systems (1994)

[55] Camph, *Dollars and Sense*, p. 32.

[56] Camph, *Dollars and Sense*, p. 8.

[57] Federal Transit Administration database, internet < http://www.fta.dot.gov>.

[58] Peter Gordon and Harry Richardson, *The Facts About Gridlock in Southern California* (Reason Foundation, August 1993).

[59] *Public Works Infrastructure: Policy Considerations for the 1980s* (Congressional Budget Office, April 1983), p. 48.

[60] Thomas A. Rubin and James E. Moore, II, *Better Transportation Alternatives for Los Angeles* (Reason Foundation, September 1997), p. 4.

City	Financial Data ($In Millions)				Travel Data				
	Transit Passenger Revenue	Total Transit Expenses	Net Surplus/ (Deficit)	% Paid By Riders	Passenger Miles (Millions)	Passen-ger Trips (Millions	Mi/ Transit Trip	Auto Vmt/Yr (Millions	Transit Share Of Travel
Atlanta	$75.1	$279.1	($204.0)	27%	591.6	142.7	4.1	29875.6	1.9%
Baltimore	$89.8	$312.8	($223.0)	29%	530.0	107.1	4.9	15069.8	3.4%
Boston	$196.0	$905.6	($709.6)	22%	1366.5	398.8	3.4	19787.4	6.5%
Buffalo	$21.0	$81.8	($60.8)	26%	88.8	30.6	2.9	6696.7	1.3%
Chicago	$527.4	$1,594.0	($1,066.6)	33%	3104.4	542.2	5.7	53361.9	5.5%
Cincinnati	$27.5	$67.3	($39.8)	41%	133.3	29.2	4.6	10804.0	1.2%
Cleveland	$42.9	$222.4	($179.5)	19%	270.2	60.2	4.5	13033.4	2.0%
Columbus	$10.7	$46.2	($35.5)	23%	84.6	18.0	4.7	8176.0	1.0%
Dallas	$22.0	$376.9	($354.9)	6%	247.6	54.4	4.6	35374.7	0.7%
Denver	$26.5	$229.4	($202.9)	12%	236.3	62.7	3.8	12944.4	1.8%
Detroit	$41.8	$173.6	($131.8)	24%	300.6	74.1	4.1	30660.0	1.0%
Honolulu	$24.6	$145.9	($121.3)	17%	385.4	78.4	4.9	4149.0	8.5%
Houston	$41.9	$297.0	($255.1)	14%	480.4	83.8	5.7	27614.8	1.7%
Los Angeles	$235.7	$925.1	($689.4)	25%	1706.1	437.7	3.9	94104.3	1.8%
Miami	$62.4	$238.7	($176.3)	26%	389.7	83.4	4.7	12811.1	3.0%
Milwaukee	$34.3	$108.2	($73.9)	32%	180.2	57.7	3.1	10913.5	1.6%
Minneapolis	$47.0	$169.7	($122.7)	28%	262.9	65.6	4.0	18327.7	1.4%
New Orleans	$38.0	$117.9	($79.9)	32%	219.6	77.1	2.8	5365.5	3.9%
New York	$2,921.2	$8,011.7	($5,090.5)	36%	14498.6	2505.5	5.8	86131.2	14.4%
Philadelphia	$259.7	$871.8	($612.1)	30%	1333.3	329.5	4.0	26861.8	4.7%
Phoenix	$15.3	$63.8	($48.5)	24%	129.1	33.3	3.9	16765.9	0.8%
Pittsburgh	$55.3	$264.0	($208.7)	21%	316.4	76.0	4.2	12468.4	2.5%
Portland	$29.4	$244.5	($215.1)	12%	258.9	63.8	4.1	9670.7	2.6%
San Antonio	$13.0	$74.3	($61.3)	17%	179.5	47.4	3.8	9855.0	1.8%
San Diego	$44.4	$180.7	($136.3)	25%	327.0	68.6	4.8	19642.8	1.6%
San Francisco	$232.9	$1,115.2	($882.3)	21%	1584.9	362.9	4.4	29492.0	5.1%
San Jose	$18.8	$213.8	($195.0)	9%	190.5	45.4	4.2	12353.4	1.5%
Seattle	$71.0	$474.1	($403.1)	15%	599.2	95.7	6.3	16590.3	3.5%
St. Louis	$23.7	$127.1	($103.4)	19%	211.9	48.2	4.4	19550.5	1.1%
Washington	$309.4	$903.2	($593.8)	34%	1515.9	340.2	4.5	28438.6	5.1%

Sources: *Transit Profiles for the 1994 National Transit Database Report Year* (Federal Transit Administration), various pages. and *1994 Highway Statistics* (Federal Highway Administration), p. V-72.

Once we get past local government officials' enthusiasm for rail transit we find that the majority of citizens voting on whether to authorize rail starts or expansions are voting against them. Only two out of the 18 transit initiatives placed before voters in the last five years have been approved.[61] It's not as if well-financed special interests are funding campaigns against these transit initiatives. Proponents of increased transit spending in Phoenix, Denver and other cities have typically outspent opponents by huge margins on transit tax ballot propositions.

[61] Wendell Cox, "U.S. Urban Rail Referendum Results" in *Urban Transport Fact Book* <http://www.publicpurpose.com/ut-railv.htm>.

Part 6

Conclusion

The *Dollars and Sense* report opens with a bold assertion that spending more money on public transit makes sense because "the benefits to motorists, to businesses, to transit riders, and to American society as a whole far outweigh the costs."[62] We have examined the arguments and data presented on behalf of this assertion. They do not stand up to scrutiny.

The *Dollars and Sense* report contends that despite being shortchanged by government transportation policies that favor the automobile and which have forced public transit systems to raise fares, ridership has increased. An examination of the data reveals that public transit gets a disproportionately large share of government transportation expenditures. In fact, taxes paid by automobile users are diverted to fund public transit expenditures.[63] There are no similar tax levies on transit users to fund roads. Despite this advantage, ridership on public transit has not kept pace with urban population growth or urban travel. Its share of person-miles of travel in urban regions has declined.

The *Dollars and Sense* report contends that everyone—transit riders, motorists, businesses, and taxpayers—receives a "handsome" return on the government's investment in public transit. The data do not support this claim. Government subsidies have facilitated runaway transit operating costs that have pushed fares to levels higher than they likely would have been otherwise. The *Dollars and Sense* report's own figures show that motorists receive less in benefits than they must pay in taxes to support these transit systems. The continued financial losses experienced by public transit systems have diverted capital from profitable business investments and lowered the economy's growth rate. Taxpayers have financed systems whose performance has steadily worsened over the last three decades.

The *Dollars and Sense* report contends that spending more on transit would improve safety, enhance mobility for the poor, and provide a more equitable allocation of government's transportation expenditures. The data do not support these claims either. Bus transit causes more traffic fatalities per vehicle mile than automobiles do. The overwhelming majority of poor working people rely on other means of transportation to get to work. Based on the number of people served, public transit receives 20 times more of government transportation spending than it should based on the number of persons served.

The *Dollars and Sense* report contends that there is a massive tide of support rising on behalf of public transit. The dwindling share of urban person-miles of travel captured by transit systems contradicts this

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[62] Camph, *Dollars and Sense*, p. 7.

[63] *Highway Statistics 1996*, p. IV-28.

contention. Further, when voters have been asked to approve new or expanded rail transit systems in public referenda they have overwhelmingly said no.

Beneficial products and services do not require compulsory funding from the taxpayers. Their value is demonstrated by customers who voluntarily pay the full cost of what they consume. The fact that even its advocates insist that transit could not survive without involuntary extractions from taxpayers is an admission that, as presently offered, public transit does not provide value equal to its cost.

Part 7

About The Author

John Semmens has been with the Arizona Department of Transportation since 1976 in a variety of capacities. Currently, he is a project manager in the Department's Research Center. It should be noted, though, that the views expressed in this paper should not be construed as representing the official position of the Department. Over the last 20 years, Mr. Semmens has authored over 200 reports, papers, and articles on various transportation related topics.

Part 8

Appendix A: Selected Statistics

Table A-1: Selected Statistics

Year	Transit										Auto
	Farebox Revenue (Millions)	Costs (Millions)	Net (Millions)	Passenger Pays	Riders (Millions)	Passenger Miles (Billions)	Vehicle Miles (Millions)	Pass./ Vehicle Mile	Cost/ Transit Rider	Cost/ Passenger Mile	Cost/Mi. For Cars
1965	$1,444	$1,454	($10)	99%	8253	42	1965	4.2	$0.18	$0.03	$0.09
1966	$1,479	$1,516	($37)	98%	8083	42	1944	4.2	$0.19	$0.04	$0.09
1967	$1,556	$1,623	($67)	96%	8172	41	1960	4.2	$0.20	$0.04	$0.10
1968	$1,563	$1,724	($161)	91%	8019	41	1953	4.1	$0.21	$0.04	$0.10
1969	$1,626	$1,846	($220)	88%	7803	41	1931	4.0	$0.24	$0.05	$0.11
1970	$1,707	$1,996	($289)	86%	7332	37	1850	4.0	$0.27	$0.05	$0.11
1971	$1,741	$2,152	($411)	81%	6847	34	1816	3.8	$0.31	$0.06	$0.13
1972	$1,728	$2,242	($514)	77%	6567	33	1726	3.8	$0.34	$0.07	$0.13
1973	$1,798	$2,536	($738)	71%	6660	33	1809	3.7	$0.38	$0.08	$0.13
1974	$1,940	$3,239	($1,299)	60%	6935	35	1890	3.7	$0.47	$0.09	$0.13
1975	$2,043	$3,752	($1,709)	54%	6972	35	1973	3.5	$0.54	$0.11	$0.14
1976	$2,236	$4,083	($1,847)	55%	7081	35	2010	3.5	$0.58	$0.12	$0.14
1977	$2,354	$4,367	($2,013)	54%	7286	36	2005	3.6	$0.60	$0.12	$0.15
1978	$2,450	$4,789	($2,339)	51%	7616	38	2014	3.8	$0.63	$0.13	$0.15
1979	$2,648	$5,611	($2,963)	47%	8130	41	2033	4.0	$0.69	$0.14	$0.18
1980	$2,805	$6,711	($3,906)	42%	8235	41	2079	4.0	$0.81	$0.16	$0.21
1981	$3,045	$7,622	($4,577)	40%	7964	40	2121	3.8	$0.96	$0.19	$0.24
1982	$3,457	$8,314	($4,857)	42%	7741	39	2114	3.7	$1.07	$0.22	$0.24
1983	$3,504	$8,736	($5,232)	40%	7887	39	2101	3.8	$1.11	$0.22	$0.24
1984	$5,228	$12,957	($7,729)	40%	8376	42	2297	3.6	$1.55	$0.31	$0.23
1985	$5,276	$14,077	($8,801)	37%	8001	40	2330	3.4	$1.76	$0.35	$0.23
1986	$5,754	$15,248	($9,494)	38%	7560	38	2495	3.0	$2.02	$0.40	$0.23
1987	$5,927	$16,022	($10,095)	37%	7469	37	2588	2.9	$2.15	$0.43	$0.25
1988	$6,361	$17,272	($10,911)	37%	7376	37	2636	2.8	$2.34	$0.47	$0.27
1989	$6,257	$17,169	($10,912)	36%	7671	38	2663	2.9	$2.24	$0.45	$0.31
1990	$6,786	$17,979	($11,193)	38%	7407	37	2691	2.8	$2.43	$0.49	$0.33
1991	$6,804	$19,332	($12,528)	35%	7177	36	2721	2.6	$2.69	$0.54	$0.37
1992	$6,798	$20,034	($13,236)	34%	7268	36	2732	2.7	$2.76	$0.55	$0.39
1993	$7,115	$20,679	($13,564)	34%	6993	35	2759	2.5	$2.96	$0.59	$0.39
1994	$7,643	$22,695	($15,052)	34%	7093	36	2728	2.6	$3.20	$0.64	$0.40
1995	$8,100	$24,700	($16,600)	33%	6962	35	2770	2.5	$3.55	$0.71	$0.41

Sources: *Transit Fact Book* (American Public Transit Association, 1979), *1996 Transit Fact Book* (American Public Transit Association), Wendell Cox, "U.S. Urban Public Transport Ridership: 1970–1995" in *Urban Transport Fact Book* (http://www.publicpurpose.com/ut-95prd.htm#table), and American Automobile Association.

Part 9

Appendix B: Congestion-Reduction Measures

Following is a description of the data shown in the table on congestion reduction measures that appears on page 13. For each traffic-reduction mitigation option the following data are presented:

- **Timing of impact:** Most of these options can be put into effect within a very short time period (one or two years) and the impacts felt within that time period. Two of the options involve substantial construction that would take many years to accomplish. Both the traffic and air quality impacts of these two options could only be experienced in the longer term.

- **Additional cost:** This is the estimated annual amortized cost (in dollars of 1997 purchasing power), over-and-above expenditures already made or committed. For some options, the additional cost is significant. For others the cost may even be non-existent.

- **Traffic impact:** This is the estimated percentage reduction in traffic that is expected to result from the successful implementation of each option.

- **Cost/1 percent:** This is the hypothetical cost to achieve a one percent impact on traffic for each option. This "standardizes" the measurement applied to each option and can be used as a means of assessing the cost-effectiveness of each option.

- **Pollution reduction:** The annual pollution reduction in tons for each option is estimated.

- **Cost/ton:** The cost per ton of pollution reduction is estimated. This "standardizes" the measurement applied to each option and can be used as a means of assessing the cost-effectiveness of each option.

Each of the measures is briefly described as follows:

Proximate Commuting is an idea developed by Gene and Carolyn Mullins.[64] Instead of trying to get commuters to give up their cars, proximate commuting seeks to shorten their work trips. The work trip is

[64] Mullins & Associates, 220 West Mercer St., Suite 500, Seattle, Washington, 98119-3954.

shortened by moving the place of employment closer to the employee's home. While not a viable strategy for many types of businesses, proximate commuting would appear highly suitable for businesses that have multiple work sites. Businesses fitting this description would include banks, restaurant chains, retail chains, public schools, and some government offices (for example, Motor Vehicle Division offices that issue driver's licenses and registrations). To the extent feasible, workers could be transferred to work sites closer to their homes. Their commute distances would be reduced. This would help reduce some of the peak period traffic volume.

4/10s Work Week: The "normal" work schedule for the last two generations in America has been five-eight-hour-days per week. This requires ten work commute trips per week. Typically, these trips occur at the height of the peak period of traffic congestion in both the morning trip to work and the evening trip home from work. Shifting the work schedule to four-ten-hour-days per week would reduce the weekly work commute trips by 20 percent. In addition, to accommodate the longer workday, either the trip to work or from work will be shifted away from the height of the peak period of traffic congestion.

Jitneys: Rather than trying to jealously preserve transit stops as an exclusive monopoly for traditional public transit buses, they could be made accessible to competing transit vendors. This would create more opportunity for purveyors of "jitney" type transit service. A jitney would typically be a van or small bus that would follow a semi-fixed route. It could offer more door-to-door service than a larger bus. Both waiting time and in-vehicle travel time for passengers would be reduced. Jitney riders report that they feel safer on jitneys than on city buses since jitney drivers are more apt to refuse to pick-up disorderly or dangerous passengers. Jitneys are also most popular in corridors that serve the transit dependent.[65] Jitneys have been successful in a number of U.S. and foreign cities, often offering a higher quality, yet lower priced service than public transit buses.[66]

Flex time would modify the "normal" work week by shifting the hours of work. The most severe traffic congestion is clustered around travel times that are synchronized with the "normal" 9-5, Monday through Friday schedule. If work schedules could be changed, some trips could be shifted away from the peak traffic times to less congested periods. To the extent that work trips might be spread out over a wider interval, the peaks of the peak periods will be lower. This would help reduce some of the capacity overloads that aggravate the traffic congestion problem.

Privatize the Existing Bus Service: There are several ways that private sector operators can operate at lower cost than publicly owned transit buses. First, private companies are more apt to buy "off-the-shelf" buses. This can save a considerable amount over the cost of buses built to city-specific standards. Second, the wages paid by private bus companies are more apt to be in line with the market for the skill levels required to drive buses. Third, private companies usually have lower administrative costs. Headquarter staffs of private companies will be smaller and less bureaucratized than municipal transit agencies' headquarter staffs.

Guaranteed Ride Home: One factor that deters many from carpooling is the inflexibility that it often imposes on participating members. On the one hand, participants do not want to inconvenience their

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[65] *Alternative Transportation System Task Force Report to Governor Fife Symington* (November 15, 1996), p. C-16.

[66] Daniel Klein, *et al., Curb Rights: A Foundation for Free Enterprise in Urban Transit* (Brookings Institution, 1997), pp. 41–46.

fellow carpool members by making them wait in the event work demands run past the normal quitting time. On the other hand, participants have a fear of being stranded and miss the carpool connection (or last bus) if they must work overtime. A remedy for this that has been fairly successful is the "guaranteed ride home" program employed by some companies. A guaranteed ride home program would encourage carpooling by ensuring that participants would not have to either inconvenience fellow carpool members or risk being stranded. Under these programs, employers bear the expense of a taxi for the employee's ride home. On a per ride basis, this sounds expensive—averaging $53 in one study. However, since the guaranteed rides are infrequently used they may be more appropriately viewed as a cost-effective "insurance" premium.[67]

Telecommuting reverses the basic work process by moving the work to the workers rather than moving the workers to the work. Instead of getting in a car or on a bus and transporting his or her body to work, the telecommuting employee sends the work to his or her employer by telephone, or e-mail transmission over the internet. The contrast in time and energy required to transport a person vs. transporting the work is quite dramatic. Moving a 150 lb. person 12 miles in a one-ton automobile on a twice per workday commute will consume about 50 minutes of time. It will cost a little over $10 (44 cents/mile x 12 miles x 2 commute trips/workday). Sending in a whole day's work by telephone or internet will take a few minutes and cost a few cents.

Converting HOV to HOT Lanes: Instead of letting the unused HOV capacity go to waste, it could be "rented" to single occupant vehicles (SOVs). Drivers of SOVs who were willing to pay a fee for the privilege would be permitted to drive in the underutilized HOV lanes during the periods when the general purpose lanes are congested. Thus, the previously exclusively HOV lanes would be converted into HOT (high occupancy/toll) lanes.[68] The State Route 91 tollway in California is, in fact, a HOT facility. This strategy provides some traffic congestion relief, not only for the SOVs paying to get into the HOV lane, but also for the SOVs left behind in the general purpose lanes.

Synchronize Traffic Signals: States that have pursued improvements in traffic signal coordination have reported good results. The benefits to highway users in terms of saved time and fuel have been substantial. A traffic signal coordination program in California reported a reduction in traffic delay of 14 percent.[69] A study in Texas reported a reduction in traffic delay of 30 percent.[70] In Arizona, the "Rhodes" study found reductions in traffic delay of 27 percent when traffic monitoring computerized signals were used.[71] If similar results could be achieved throughout the area, traffic congestion in the Phoenix metropolitan region could be reduced by about 8 percent.

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[67] Christopher Park, "Evaluation of Second-Year Effectiveness of Guaranteed Ride Home Service at Warner Center Transportation Management Organization," *Transportation Research Record #1338* (Transportation Research Board, 2101 Constitution Avenue, NW, Washington, D.C. 20418, 1991).

[68] Gordon Fielding and Daniel Klein, *High Occupancy/Toll Lanes: Phasing in Congestion Pricing a Lane at a Time* (Reason Foundation, 3415 S. Sepulveda Blvd., Los Angeles, CA 90034, November 1993).

[69] Peter S. Parsonson, *Signal Timing Improvement Practices, Synthesis of Highway Practice #172* (National Cooperative Highway Research Program, Transportation Research Board, 2101 Constitution Avenue, NW, Washington, D.C. 20418, 1992).

[70] *Benefits of the Texas Traffic Light Synchronization Grant Program II* (Texas Department of Transportation, February 1995).

[71] *Rhodes: Real-Time Traffic-Adaptive Signal Control* (Systems and Industrial Engineering Department, University of Arizona, 1997).

Congestion Pricing: Roads are subject to wide fluctuations in demand. As a result, road capacity that is inadequate during some hours of the day is grossly excessive at other times of the day. One of the remedies for this peak/off-peak fluctuation in demand is "congestion pricing." The idea behind congestion pricing is that the vehicles using the roads during the peak periods be charged more than those vehicles using the highways during the off-peak periods. The prospect of having to pay a higher price to use the roads during a specified period is expected to dissuade some drivers from using the roads during these periods.

Freeway management systems involve a variety of devices that control ramp metering, variable message signs, radio transmission of traffic information, on-board navigation systems, and route-guidance systems. The U.S. Department of Transportation estimates that freeway management systems can reduce traffic delay by 20 percent to 48 percent and vehicle fuel consumption by up to 40 percent. Adding a freeway management system to a freeway that currently doesn't have such equipment will increase capacity by the equivalent of half as much as adding a new lane at about one-eighth the cost of a new lane.[72]

Complete Freeways: Expensive as building new freeways may be, they will serve more person-miles of travel per tax dollar spent than typical public transit systems provide.

Bus Expansion: The bus expansion proposed for the Phoenix region would have roughly doubled existing bus miles of service. Service during peak periods would have been increased by up to 33 percent. Service during off-peak weekdays would have been increased by up to 33 percent. Weekend service would have been increased by more than 100 percent. Bus routes would have been extended into areas not presently covered by scheduled service.[73]

Light Rail: The Phoenix region's proposal envisioned a $1.6 billion 20 mile light rail system.[74]

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[72] *Intelligent Transportation Infrastructure Benefits: Expected and Experienced* (U.S. Department of Transportation, January 1996).

[73] *Phoenix Citizens' Plan to Relieve Traffic Congestion,* as approved by the City Council, April 29, 1997.

[74] *Public Transit Financial Forecast* (City of Phoenix, 1997).

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