

# Background

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## Urban Transportation Policy Requires Factual Foundations

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**Abstract:** *The 2010 Heritage Foundation report “Washington’s War on Cars and the Suburbs” disputed Transportation Secretary Ray LaHood’s claims that public transit produces substantial economic benefits, consumes only one-fifth the energy of cars, and saves billions in other costs. The author of the 2004 American Public Transportation Association report, Todd Litman, has taken issue with “Washington’s War.” The following paper is a response to Litman’s recent claims—and finds that new rail transit systems have not attracted drivers from their cars for commutes; transit funding increases are far out of proportion to any increase in ridership; transit attracts few drivers because of its limited competitiveness with the car; and the purported cost benefits have been exaggerated. Wendell Cox explains how outdated numbers and ambiguous definitions form the basis of today’s urban transportation policy.*

In 2009, Secretary of Transportation Ray LaHood touted the purported benefits of urban rail systems (subways, light rail, and commuter rail) on his Department of Transportation blog, contending that public transit produces substantial economic benefits, is far more energy efficient than cars, and saves billions in congestion and accident costs.<sup>1</sup> All of Secretary LaHood’s assertions are derived from a 2004 Canadian study prepared for the American Public Transportation Association (APTA),<sup>2</sup> America’s principal transit-lobbying organization.

The June 2010 Heritage Foundation report “Washington’s War on Cars and the Suburbs” critiqued the

### Talking Points

- In 2009, Secretary of Transportation Ray LaHood touted the purported economic, energy, and time-saving benefits of urban rail systems—based entirely on a 2004 study for the American Public Transportation Association (APTA), America’s principal transit lobbyist.
- A 2010 Heritage Foundation report, “Washington’s War on Cars and the Suburbs,” critiqued the Secretary’s claims. Todd Litman, the author of the APTA study, took issue with the Heritage report, though he was unable to undermine the conclusion of “Washington’s War” that many of LaHood’s claims are inconsistent with available data.
- This new 2011 paper evaluates Litman’s responses to “Washington’s War”—and concludes that newer large rail systems have *not* attracted drivers from their cars for work trips; increased transit funding produces a much smaller corresponding increase in transit ridership; transit costs are excessive, precluding potential for expansion; transit has only limited competitiveness with the car; and the claimed benefits of transit are exaggerated.

This paper, in its entirety, can be found at:  
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Secretary's claims.<sup>3</sup> The author of the APTA study, Todd Litman of the Victoria Transportation Policy Institute, responded to the Heritage report.<sup>4</sup> None of Litman's comments undermines the conclusion of "Washington's War" that "many of the claims and assertions that U.S. Secretary of Transportation Ray LaHood makes on behalf of the transit industry are inconsistent with the data." This paper evaluates Litman's responses to "Washington's War"—and concludes that:

- Newer large-rail transit systems have *not* attracted drivers from their cars for work trips;
- Increases in transit funding tend to produce a considerably smaller corresponding increase in transit ridership;
- Transit's capital and operating costs are excessive and preclude its potential for expansion;
- There is little potential for transit to attract drivers from automobiles for the vast majority of urban trips because of transit's limited competitiveness with the car; and
- The claimed benefits of transit have been exaggerated, including economic impacts, energy efficiency, and savings in congestion, consumer, and accident costs.

Based on their research, Clifford Winston of the Brookings Institution and Vikram Maheshri of the University of California, Berkeley, noted that:

Because no policy option exists that would enhance the social desirability of most urban rail transit systems, policymakers only can be advised to limit the social costs of rail systems by curtailing their expansion. Unfortunately, transit systems have been able to evolve because their supporters have sold them as an antidote to the social costs associated with automobile travel, in spite of strong evidence to the contrary.<sup>5</sup>

Public policy should be based on reality, otherwise financial resources are likely to be misallocated, a situation already evident in federal transit policy. This is especially a concern in light of the imperative for reducing the federal budget deficit and the need to find cost-effective solutions for congestion relief.

### Rail and Traffic Congestion

The APTA report compares transit in cities (a term indiscriminately used for at least four differing definitions in the APTA report).<sup>6</sup> The APTA report compares "cities" with large rail systems (New York, Chicago, Philadelphia, Washington, Boston, San

1. "Public Transportation Delivers Public Benefits," Welcome to the Fast Lane: The Official Blog of the U.S. Secretary of Transportation, June 2, 2009, at <http://fastlane.dot.gov/2009/06/public-transportation-delivers-public-benefits.html> (December 29, 2010).
2. Todd Litman, "Rail Transit in America: A Comprehensive Evaluation of Benefits," Victoria Transport Policy Institute, October 25, 2004. The cover indicates that the report was "Produced with support from the American Public Transportation Association." As of April 11, 2010, the document has been removed from the APTA Web site; for a summary, see Todd Litman, "Rail Transit in America: A Comprehensive Evaluation of Benefits," Victoria Transport Policy Institute, October 25, 2004, at [http://www.apta.com/gap/policyresearch/Documents/rail\\_transit\\_summary.pdf](http://www.apta.com/gap/policyresearch/Documents/rail_transit_summary.pdf) (December 29, 2010). Since August 2009, Litman has periodically updated the 2004 document with newer information and analysis, with the latest version dated December 7, 2010, at <http://www.vtppi.org/railben.pdf> (December 29, 2010). This paper principally addresses the document dated October 25, 2004, which was the basis of the Transportation Secretary's blog as well as subsequent comments related to that document that have been raised by Litman.
3. Wendell Cox, "Washington's War on Cars and the Suburbs: Secretary LaHood's False Claims on Roads and Transit," Heritage Foundation *Special Report* No. 79, June 17, 2010, at <http://www.heritage.org/Research/Reports/2010/06/Washingtons-War-on-Cars-and-the-Suburbs-Secretary-LaHoods-False-Claims-on-Roads-and-Transit>. The report criticized the Secretary's use of a five-year-old report when his staff should have been able to produce research that was more up-to-date.
4. The responses include updates of "Rail Transit in America" (and a personal letter to the author dated November 29, 2010).
5. Clifford Winston and Vikram Maheshri, "On the Social Desirability of Urban Rail Transit Systems," *Journal of Urban Economics*, Vol. 62, No. 2 (September 2007), p. 381.
6. See section "Lack of Clarity in the Use of Urban Terms" in this paper below.

Francisco, and Baltimore) to “cities” without large rail systems.<sup>7</sup>

The APTA large rail classification includes:

- Older rail urban areas, with rail systems that opened mostly before World War II, when automobile availability was substantially more limited than today. The older rail urban areas are New York, Chicago, Boston, and Philadelphia.
- Newer rail urban areas, where all or nearly all of the rail system was opened after 1970, by which time the automobile had come to dominate urban travel. The newer urban rail areas are Baltimore, San Francisco, and the Washington, D.C., area.

“Washington’s War” stated that the APTA report hypothesizes how costs would differ in urban areas if rail transit service did not exist. Litman responded that the APTA report “does not speculate on how costs would change with and without rail.” But such speculation is, indeed, at the very heart of the APTA report: It attributes—highly disputed—cost savings to the existence of large rail systems.<sup>8</sup>

The pre-war conditions under which the older rail systems were built have little relevance to modern urban areas that do not have older larger rail systems. This point is made by Winston and Maheshri: “Rail operations, unfortunately, are best suited for yesterday’s concentrated central city residential developments and employment opportunities; they are decidedly not suited for today’s geographically dispersed residences and jobs.”<sup>9</sup>

As automobile use has become dominant, urban areas with older rail systems have increasingly come to resemble the urban areas without them. Nearly all population and employment growth has been outside the urban cores, while rail transit service is concentrated in the cores.

For example, Manhattan—which covers less than half the area of Disney World—contains the second largest downtown area (central business district) in the world and is the destination of 45 percent of the nation’s urban rail work trips.<sup>10</sup> Yet, Manhattan lost 350,000 jobs between 1956 and 2007, while employment in the New York City suburbs rose by more than 2,000,000.<sup>11</sup> As the appendix to “Washington’s War” notes, the suburbs of New York resemble the suburbs of more automobile-oriented urban areas, such as Atlanta, Houston, or Portland, Oregon, more than they resemble the city of New York.

There is little from a policy perspective that is transferable between the older rail transit urban areas and other urban areas that are considering building or expanding rail systems. The more appropriate models for urban areas contemplating rail are the newer rail systems. Their performance is analyzed below.

Litman indicates that residents of urban regions with high-quality rail transit drive about 20 percent fewer annual miles than residents of regions that lack such rail systems. This is not the case in the newer large rail urban areas.<sup>12</sup> According to Texas Transportation Institute data, in 2007, per capita

7. This paper uses “urban area” (also called urbanized areas) where data is available. Otherwise, “metropolitan area” (as defined in 2008) are used. This precedence indicates the author’s preference for urban areas as the urban form most appropriate for analysis. Core cities are not appropriate for use in comparisons between metropolitan areas or urban areas, nor can urban areas be equated with metropolitan areas.
8. See, for example, the APTA report, pp. 12, 16, 17, 19, 22–27, 33.
9. Winston and Maheshri, “On the Social Desirability of Urban Rail Transit Systems,” p. 363.
10. Calculated from U.S. Census Bureau, “American Community Survey,” 2008, at <http://www.census.gov/acs/www/> (January 4, 2011).
11. Calculated from Bureau of Labor Statistics data and Edgar M. Hoover and Raymond Vernon, *Anatomy of a Metropolis: The Changing Distribution of People and Jobs Within the New York Metropolitan Area* (Cambridge, Mass.: Harvard University Press, 1959).
12. To determine the impact of older large rail systems on vehicle travel would require a more comprehensive analysis, which would need to consider the costs and benefits of the alternative urban development that would have occurred if there had been no rail transit and other factors.

## Work Trip Market Shares During Rail Expansion

### Large Rail Metropolitan Areas

	Drivers (Cars)	Car Passengers	Mass Transit	Work at Home	Other
<b>Baltimore</b>					
1980	69.1%	12.8%	10.0%	1.4%	6.7%
2009	80.5%	5.5%	6.6%	3.3%	4.1%
<b>Change</b>	<b>16.4%</b>	<b>-57.1%</b>	<b>-34.1%</b>	<b>138.0%</b>	<b>-38.4%</b>
<b>San Francisco</b>					
1970	64.9%	8.9%	15.5%	2.3%	8.5%
2009	67.1%	5.9%	14.4%	5.5%	7.2%
<b>Change</b>	<b>3.3%</b>	<b>-34.1%</b>	<b>-6.8%</b>	<b>140.3%</b>	<b>-14.6%</b>
<b>Washington</b>					
1970	60.0%	13.0%	16.3%	1.9%	8.9%
2009	71.1%	6.2%	13.4%	4.6%	4.7%
<b>Change</b>	<b>18.5%</b>	<b>-52.0%</b>	<b>-17.6%</b>	<b>143.3%</b>	<b>-47.6%</b>
<b>Average Change</b>	<b>12.7%</b>	<b>-47.7%</b>	<b>-19.5%</b>	<b>140.5%</b>	<b>-33.5%</b>

Source: Author's calculations using data from: U.S. Census Bureau, 2009 American Community Survey, at [http://factfinder.census.gov/servlet/DatasetMainPageServlet?\\_program=ACS&\\_submenuid=&\\_lang=en&\\_ts=](http://factfinder.census.gov/servlet/DatasetMainPageServlet?_program=ACS&_submenuid=&_lang=en&_ts=) (February 2, 2011); U.S. Census Bureau, 1970 Census, Census of Population and Housing, Characteristics of the Population, at <http://www.census.gov/prod/www/abs/decennial/1970cenpopv1.html> (February 2, 2011); National Transportation Library, Research and Innovative Technology Administration, "Journey to Work Trends in the United States and its Major Metropolitan Areas: 1960-1990," at <http://ntl.bts.gov/DOCS/473.html> (February 2, 2011).

Table 1 • B 2515  heritage.org

auto use in the three newer urban rail areas averaged virtually the same as in urban areas without large rail systems (Baltimore was 4.2 percent higher, San Francisco 3.8 percent lower, and Washington, D.C., 0.1 percent lower).<sup>13</sup>

There is no evidence that automobile travel has been diverted to the newer rail systems. There has been virtually no net reduction in the share of automobiles used for work commutes (Table 1). The number of work trips by automobile drivers (which is also the number of automobiles) rose as a share of total work trip travel in each of the newer large rail metropolitan areas, ranging from 3.3 percent in San Francisco to 16.4 percent in Baltimore and 18.5 percent in Washington, D.C. (from the last pre-rail expansion Census year, which varies by metropolitan area, as indicated in Table 1, to 2009).<sup>14</sup> At the same time, transit's market share fell in each of these metropolitan areas, with losses of 6.8 percent in San Francisco, 17.6 percent in Washington, D.C., and

34.1 percent in Baltimore. Transit cannot substitute for automobile use when automobile use rises more than total travel, as has been the case in each of the newer small rail metropolitan areas.

"Washington's War" also noted that car travel to Washington, D.C.'s downtown during peak travel periods increased between 1975 (before the Metro-rail system opened) and 2006. This is a stunning finding inasmuch as Metrorail is by far the busiest newer rail system in the nation (carrying more passengers than any system except the New York subway). Washington's downtown is the third largest in the nation and peak period travel to large downtown areas represents transit's best chance for removing cars from the road. Nearly all of the rail transit gain has been from previous bus and car pool passengers (not drivers). Transit has taken riders from passenger seats in cars, but the drivers and their cars have remained and have increased.

13. Calculated from data in David Schrank and Tim Lomax, "2009 Urban Mobility Report," Texas Transportation Institute, July 2009, at <http://mobility.tamu.edu/ums/report/> (December 30, 2010).

14. Calculated from U.S. Census Bureau data.

## Transit's Excessive Costs

"Washington's War" provided analysis showing that transit receives a disproportionate share of federal transportation funding (based on a previous Heritage Foundation report, "Federal Transportation Programs Shortchange Motorists").<sup>15</sup> Litman objects to the methodology in "Federal Transportation Programs Shortchange Motorists," which simply mirrored the method in an earlier report by the U.S. Department of Transportation.<sup>16</sup>

"Washington's War" noted that transit costs have increased far more than riders, even after adjustment for inflation. In effect, over the past quarter century, each 10 percent increase in transit expenditures has been associated with a 6 percent increase in riders. This means that taxpayers and riders received \$0.60 in value for each new dollar spent. At the same time, overall transportation costs, including the cost of driving, were *declining* relative to inflation. Transit's declining cost-effectiveness hobbles its potential to increase its market share, which has dropped 35 percent since 1982.<sup>17</sup>

Even so, these data understate the extent of transit's cost crisis. Randal O'Toole of the Cato Institute has surveyed unfunded pension and other post-employment benefit liabilities at a number of the nation's largest transit agencies. These cost elements are not reported through the Federal Transit Administration's National Transit Database. O'Toole's sample of the transit agencies in the large rail urban areas indicates unfunded liabilities of more than \$20 billion.<sup>18</sup> These unfunded liabilities have accrued principally from the failure to pay annual obligations, a practice that continues at some transit agencies.

With these cost control difficulties, additional funding for transit is not likely to produce a correspondingly higher level of service or ridership.

## Transit and Access in Urban Areas

As "Washington's War" notes, "The share of trips captured by rail transit in corridors outside those leading to a few of the nation's largest downtown areas is small and cannot reduce traffic congestion perceptively."<sup>19</sup> The reality is that the overwhelming majority of people have access to cars, and transit is not a practical (competitive) option for the overwhelming majority of their trips.

Litman agrees that improved employment access increases productivity and further notes that "this applies equally to transit." This is true, and "Washington's War" did not indicate otherwise. Yet, Litman appears to consider excess time spent on transit as not having an economic cost. To the extent that transit travel takes longer than free-flowing travel by car, time is lost just as surely as in cars during traffic congestion. Excess travel time is excess travel time, whether by car, rail, or bus.

All things being equal, the mode of travel is immaterial. However, all things are not equal. Transit cannot provide access throughout an urban area that competes with the car except for a small minority of trips, which is why the vast majority of urban trips are not made by transit.

Nonetheless, transit provides some automobile-competitive services, principally in corridors to the nation's largest downtown areas. Litman cites three such cases, all of which involve a water crossing: (1) from Brooklyn to Manhattan (less than 5 miles across the East River), (2) from Cambridge to Bos-

15. Wendell Cox and Ronald D. Utt, "Federal Transportation Programs Shortchange Motorists: Update of USDOT Study," Heritage Foundation *Background* No. 2283, June 8, 2009, at <http://www.heritage.org/Research/SmartGrowth/bg2283.cfm>.
16. U.S. Department of Transportation, Bureau of Transportation Statistics, "Federal Subsidies to Passenger Transportation," December 2004, at [http://www.bts.gov/programs/federal\\_subsidies\\_to\\_passenger\\_transportation/pdf/entire.pdf](http://www.bts.gov/programs/federal_subsidies_to_passenger_transportation/pdf/entire.pdf) (January 5, 2011).
17. Cox, "Washington's War on Cars and the Suburbs," pp. 4–6.
18. This data requires a review of the Comprehensive Annual Financial Reports of each transit agency. See Randal O'Toole, "Fixing Transit: The Case for Privatization," Cato Institute *Policy Analysis* No. 670, November 10, 2010, at <http://www.cato.org/pubs/pas/PA670.pdf> (December 30, 2010).
19. Cox, "Washington's War on Cars and the Suburbs," p. 19.

ton (less than 5 miles across the Charles River), (3) and from Oakland to San Francisco (less than 10 miles across San Francisco Bay).

But there are many more trips within urban areas than between such locations. Overall, average work commute times by transit are considerably longer than single-occupant automobile trips in each of these metropolitan areas—82 percent longer in New York, 62 percent longer in Boston, and 69 percent longer in San Francisco.<sup>20</sup>

Litman claims that “Washington’s War” always considers transit an inferior mode of transport. To the contrary, the report notes “the important role that transit plays in carrying a large share of commuters to a few of the nation’s largest and principally pre-automobile downtown areas.”

However, automobile-competitive transit is principally limited to the highest demand corridors serving a small number of large downtown areas (which typically have between 10 percent and 20 percent of metropolitan employment). Transit has serious access difficulties in competing with the automobile. Transit stops and stations are not within walking distance of many residences and jobs in urban areas. In Portland Metro’s service area, 28 percent of residences and 18 percent of jobs will be beyond walking distance from transit service in 2020,<sup>21</sup> even after one of the nation’s most aggressive rail building campaigns. Further, even where there is transit service, most trips in an urban area require time-consuming transfers. Service is not always available and service frequencies are often unattractive. Unlike transit, automobiles provide direct and rapid access between virtually all origins and destinations in the urban area.

Indeed, Alain Bertaud, formerly of the World Bank, shows the insurmountable challenges faced by transit in attempting to serve low-density or polycentric urban areas (such as exist in the United

States) and that reconfiguring such urban areas for transit use would be impractical.<sup>22</sup>

It is thus not surprising that no serious vision has been proposed for automobile-competitive transit systems that connect destinations throughout the urban area. This includes the largest work-trip market—travel between suburban homes and jobs.<sup>23</sup>

### Housing Costs, Migration, and Large Rail Metropolitan Areas

“Washington’s War” noted that higher housing costs in large rail metropolitan areas are to be expected because of their more prescriptive land-use regulation policies (often referred to as “smart growth,” “growth management,” or “compact city” policies), which raise the price of housing. More prescriptive land-use policies tend to ration land for development, driving up land and, thus, housing prices. “Washington’s War” provided evidence of this connection from some of the world’s leading economists.

Litman objects to the well-documented relationship between prescriptive land use policies and the loss of housing affordability, claiming that some smart growth regulations raise housing costs and some do not. This is true. However, the smart growth policies generally favored by planners that restrict land supply, such as urban growth boundaries, house-building quotas, and moratoria and other regulations that prohibit or limit development on the urban fringe, are associated with higher housing costs in metropolitan areas, without regard to any regulatory relaxations.

Litman cites a Brookings Institution study as indicating that smart growth can have a positive or negative impact on housing affordability. In fact, the study indicates that “the housing price effects of growth management policies depend heavily on how they are designed and implemented. **If the policies serve to**

20. Calculated from data in the American Community Survey, 2007.

21. Metro Regional Government, “Regional Transportation Plan: Land Use, Growth and Travel Demand (Chapter 2),” 2004, at [http://library.oregonmetro.gov/files/2004rtp\\_chapter2.pdf](http://library.oregonmetro.gov/files/2004rtp_chapter2.pdf) (December 30, 2010).

22. Alain Bertaud, “The Spatial Organization of Cities: Deliberate Outcome or Unforeseen Consequence?” May 2004, at [http://alain-bertaud.com/images/AB\\_The\\_spatial\\_organization\\_of\\_cities\\_Version\\_3.pdf](http://alain-bertaud.com/images/AB_The_spatial_organization_of_cities_Version_3.pdf) (February 1, 2011).

23. Alan E. Pisarski, “Commuting in America III,” Transportation Research Board, 2006.

restrict land supplies, then housing price increases are expected.”<sup>24</sup> (Emphasis in original.) That, of course, has been the result.

Litman also claims that smart growth reduces combined housing and transportation costs, based on the Center for Neighborhood Technology’s (CNT) Housing and Transportation Index. The author has previously noted methodological problems that render the CNT Housing and Transportation Index unreliable for measuring transportation and housing costs.<sup>25</sup>

Further, Secretary LaHood has expressed his support for “livability” (smart growth or growth management) policies forcing people to live in higher densities and discouraging automobile use. The reality is that such policies deny households the choice of less expensive housing on larger lots on the urban fringe. Their choices would be limited to higher density surroundings, where traffic congestion and air pollution are more intense.<sup>26</sup>

At the same time, “Washington’s War” showed the domestic migration patterns that resulted in 3.2 million people moving from the large rail metropolitan areas to other areas of the country between 2000 and 2008. Approximately 1.2 million people moved to the 43 other major metropolitan areas, and the balance of 2 million moved to smaller metropolitan areas and rural areas. It seems likely that this exodus is at least partly related to the higher cost of living, especially housing, in the large rail metropolitan areas.

Yet, Litman indicates that “many people are moving back into cities.”<sup>27</sup> Later Census Bureau migra-

tion data indicates just the opposite: Between 2000 and 2009, the central counties of metropolitan areas with populations of more than 1,000,000 lost 4.6 million domestic migrants, while the suburban counties gained 2.6 million.<sup>28</sup> The central counties of large rail metropolitan areas lost 2.5 million domestic migrants. The suburban large rail metropolitan area counties also lost, but a smaller 800,000.<sup>29</sup>

### Exaggeration of Transit Benefits

As indicated in “Washington’s War,” the Transportation Secretary’s blog exaggerated the benefits of transit.

**Economic Impacts.** “Washington’s War” concluded that “the purported economic benefits are both minuscule and unachievable and would be more than offset by the high costs of transit service expansion.”

Secretary LaHood claimed that “each 1 percent of regional travel shifted from automobile to transit increases regional income about \$2.9 million” (not billion), based on the APTA report. “Washington’s War” noted the insignificance of this finding by pointing out that \$2.9 million is equal to about eight days of sales at a typical Costco warehouse store.

Litman responds that if high-quality transit could reduce automobile expenditures in the San Antonio metropolitan area (which was the subject of the research cited in the APTA report) by 20 percent, annual fuel and vehicle costs would be reduced by \$1.4 billion. This is an absurd speculation. A 20 percent reduction in automobile demand is equal to 20

24. Arthur C. Nelson, Rolf Pendall, Casey J. Dawkins, and Gerrit J. Knaap, “The Link Between Growth Management and Housing Affordability: The Academic Evidence,” The Brookings Institution, February 2002, p. 24, at <http://www.brookings.edu/reports/2002/02housingaffordability.aspx> (December 30, 2010).

25. Wendell Cox, “The Muddled CNT Housing and Transportation Index,” NewGeography, April 23, 2010, at <http://www.newgeography.com/content/001526-the-muddled-cnt-housing-and-transportation-index> (December 30, 2010).

26. The problems with “livability” are outlined more extensively in another article: Wendell Cox, “The Livable Communities Act: A Report Card,” NewGeography, September 9, 2010, at <http://www.newgeography.com/content/001761-the-livable-communities-act-a-report-card> (January 5, 2011).

27. Todd Litman, “Rail Transit in America: A Comprehensive Evaluation of Benefits,” Victoria Transportation Policy Institute, August 6, 2010, p. 46.

28. The county level is the lowest level of geography for which the Census Bureau reports domestic migration data. No data is available at the municipality level, except where municipalities are composed of one or more complete county.

29. Cox, “Washington’s War on Cars and the Suburbs,” p. 15.

times the market share of transit in San Antonio, double that of the New York metropolitan area, and at least five times that of the Chicago, San Francisco, or Washington, D.C., metropolitan areas. Even if reducing vehicle travel by 20 percent were plausible, the costs of the necessary transit service expansion would dwarf the savings.

More important, however, the detailed analysis of urban rail by Winston and Maheshri finds the maximum possible economic benefit of urban rail to consumers to be less than the cost to society in subsidies.<sup>30</sup> They conclude that “as long as rail transit continues to be erroneously viewed in this way by the public, it will continue to be an increasing drain on social welfare.”<sup>31</sup> Litman does not comment on these devastating findings.

**Energy Efficiency.** “Washington’s War” concluded that “U.S. Department of Energy data indicate a much smaller difference between rail transit and automobile energy intensity. Regulations have been adopted that will make automobiles more energy efficient than rail transit.”

Secretary LaHood’s claim, based on the APTA report, was that rail transit consumes only one-fifth as much energy (80 percent less) per passenger mile as automobile travel. “Washington’s War” noted that Secretary LaHood’s contention was based on APTA-sponsored research (presumably peer reviewed) that *excluded* the energy required to generate the electric power necessary to move subway trains, light rail trains, and commuter rail trains.<sup>32</sup> This resulted in an overstatement of rail transit’s energy efficiency that rendered the Secretary’s claim

invalid. The reality, according to the authoritative source, the U.S. Department of Energy’s *Transportation Energy Data Book*, was that rail transit’s efficiency advantage over the cars was 30 percent, not 80 percent.<sup>33</sup>

Litman responded by citing newer research by Mikhail Chester and Arpad Horvath at the University of California, Berkeley,<sup>34</sup> which estimates fuel efficiency for rail transit systems in San Francisco and Boston. This is valuable research, which provides some of the first estimates of “life-cycle” energy impacts (from mineral and fuel extraction to vehicle disposal). Chester and Horvath do not estimate national rail transit energy consumption per passenger mile.

“Washington’s War” further noted that the most fuel-efficient hybrid cars are already more fuel efficient per passenger mile than rail transit and that substantial automobile fuel efficiency gains are expected.<sup>35</sup> (Improvements of 40 percent or more are projected by the U.S. Department of Energy over the next 25 years.<sup>36</sup>) Litman responds that transit fuel-efficiency improvements will occur as well, due to technological improvements and increased load factors, though he provides no projections of the extent.

Even so, the falling fuel efficiency advantage of rail transit is of no more than academic interest as long as cars are not being taken off the road during congested periods, which is indicated by the data from the three newer large rail metropolitan areas (see the section “Rail and Traffic Congestion” above).

30. In a response, Litman suggests that \$1.4 billion could be saved annually in the San Antonio area if automobile demand were reduced 20 percent by high-quality transit.

31. Winston and Maheshri, “On the Social Desirability of Urban Rail Transit Systems,” p. 381.

32. The error was not Litman’s, but that of the cited work. This illustrates the citation risks that can occur where errors were not caught in the peer review process.

33. Calculated from data in Stacy C. Davis, Susan W. Diegel, and Robert G. Boundy, *Transportation Energy Data Book*, Edition 29, United States Department of Energy, June 30, 2009, Table 2-12, at <http://www-cta.ornl.gov/data/index.shtml> (December 30, 2010).

34. Mikhail Chester and Arpad Horvath, “Environmental Life-Cycle Assessment of Passenger Transportation: An Evaluation of Automobiles, Buses, Trains, Aircraft, and High Speed Rail in the United States,” University of California, Berkeley, Paper vwp-2008-2, 2008, at <http://www.sustainable-transportation.com> (December 30, 2010).

35. Cox, “Washington’s War on Cars and the Suburbs,” pp. 4–6.

36. Calculated from U.S. Department of Energy, “Annual Energy Outlook: 2010.”



**Congestion Cost Savings.** The conclusion of “Washington’s War” was that “work-trip travel times are longer and traffic congestion is more intense in the large-rail metropolitan areas than in the 43 metropolitan areas without intense rail systems. The costs of lost time (including longer travel times due to congestion and *the excess time of transit travel*) are thus *higher* in large-rail metropolitan areas. Further, these longer travel times retard economic and employment growth and result in higher rates of unemployment for lower-income households.” (Emphasis added.)

A principal criticism in “Washington’s War” was Secretary LaHood’s use of the dated claim of congestion savings attributable to transit in the APTA report, since much newer data were available. Moreover, the newer data showed a 45 percent *decline* in the purported cost savings.<sup>37</sup> This was not a criticism of the APTA report (which was not outdated when it was published), but rather of the Secretary, for relying on data that had materially changed. (This does not indicate agreement with the purported congestion cost estimates at either level, which have been critiqued in another Heritage Foundation report.<sup>38</sup>)

Litman claims that congestion costs per capita are lower in large rail urban areas than in comparably sized other urban areas and notes that “Washington’s War” did not compare congestion costs using urban areas of similar size. On the contrary, a relevant comparison was provided (Table 4 in “Washington’s War”), which demonstrated that in urban areas of similar size, average work commutes<sup>39</sup> are longer in large rail urban areas than in other urban areas. The average commuter in a large rail metropolitan area spends approximately one hour more than automobile commuters traveling to and from work each week. For commuters, congestion costs are largely the cost of excess travel time,

which is longer, not shorter, in the large rail metropolitan areas. Further, the longer commutes in the large rail metropolitan areas are often the result of more intense traffic congestion, which increases fuel consumption and consumer costs.

The Texas Transportation Institute’s “Annual Mobility Report” indicates no per capita congestion cost advantage in the three newer large rail urban areas:

- Washington, D.C.’s per capita congestion costs were \$638 in 2007, compared to \$607 in other urban areas without large rail systems whose populations range between 3,000,000 and 5,000,000.
- Baltimore’s per capita congestion costs were \$550 in 2007, compared to \$499 in the other urban areas.<sup>40</sup>
- San Francisco was the exception, with per capita congestion costs of \$597 in 2007, slightly below the average of \$607 for urban areas with large rail systems. It is notable, however, that three of the eight urban areas without large rail systems in this category had congestion costs that are lower than those of San Francisco.

**Consumer Cost Savings.** “Washington’s War” concluded that “transportation (and housing) costs are higher, not lower, in large rail metropolitan areas.”

The point was based on Secretary LaHood’s claim of consumer transportation cost savings in the large rail metropolitan areas. The APTA report reaches this conclusion by using data from the U.S. Bureau of Labor Statistics Consumer Expenditure Survey for metropolitan areas. This series has substantial problems, which are discussed in “Washington’s War.”

More important, the Consumer Expenditure Survey is not a cost of living index because it includes a substantial discretionary element that

37. Cox, “Washington’s War on Cars and the Suburbs,” p. 6.

38. Wendell Cox and Randal O’Toole, “The Contribution of Highways and Transit to Congestion Relief: A Realistic View,” Heritage Foundation *Background* No. 1721, January 27, 2004, at <http://www.heritage.org/Research/UrbanIssues/bg1721.cfm>.

39. A per capita measure.

40. Calculated from data in Schrank and Lomax, “2009 Urban Mobility Report.”

mixes costs and desires. For example, consumer expenditures on new cars can vary substantially, even though luxury cars and economy cars provide the same basic level of mobility. The average price of a new car in the United States is more than double the price of the least expensive new car.<sup>41</sup>

This illustrates the fact that consumer tastes (discretionary factors) are an important driver of consumer expenditure surveys.

A cost of living index requires a standardized “shopping basket” of goods and services. ACCRA (formerly called the American Chamber of Commerce Research Association) produces the most widely used cost of living index and was used in “Washington’s War.”

Litman objects to the use of the ACCRA cost of living index because it measures costs for the highest quintile of households (top 20 percent). However, the ACCRA cost of living index is appropriate as used in “Washington’s War” because the *variation* in the cost of living tends to be similar between metropolitan areas, regardless of income level.

For example, housing is the largest element of household costs. A statistical analysis<sup>42</sup> of American Community Survey data indicates a strong, near perfect relationship between the high quartile (top 25 percent of household income) median house price, and the median house price. Further, a near perfect relationship exists between the high quintile median house price and the low quintile (bottom 20 percent of households in income). ACCRA measures transportation costs using car operating costs (gasoline and maintenance). These also vary similarly among income classifications by metropolitan area. Thus, the ACCRA cost of living index provides a reliable measure of the differences in cost of living by metropolitan area.

**Roadway and Parking Cost Savings.** “Washington’s War” concluded that “the roadway and parking estimates are invalid because they are based on automobile driver attraction rates that are far beyond the levels indicated by experience.”

Litman dismisses the Washington counts, indicating a preference for on-board surveys of rail riders to estimate cars that have been removed from the road by rail. He notes that “this analysis ignores the fact that a major portion of downtown Washington, D.C., vehicle trips are not for commuting.” In fact, the cited cordon count includes *all* travel to the Washington core during the morning peak period, regardless of purpose.

If rail had removed cars traveling into Washington, fewer cars would be on the road. However, there are more cars, as the counts indicate. Moreover, as described above, work commutes by car have continued to increase at a greater rate than overall travel in each of the three newer large rail metropolitan areas (Washington, Baltimore, and San Francisco).

**Accident Cost Savings.** “Washington’s War” concluded that “the overwhelming majority of transit services are not time-competitive with automobiles, which is a principal reason why most people travel by automobile. The purported potential accident savings are insufficient to deter households from using cars to achieve important economic and other benefits.”

Litman responds by suggesting that “Washington’s War” assumes “that rail transit is always slower and less desirable than driving.” But “Washington’s War” does *not* say that rail transit is always slower (as is indicated by the words “the overwhelming majority of transit services are not time-competitive with automobiles” nor is there any statement to the effect that transit is always less desirable than driving).

41. In 2006, consumers paid \$22,651 for the average new car. U.S. Department of Energy Vehicle Technologies Program, “Fact #520: May 26, 2008—Average Price of a New Car, 1970–2006,” at [http://www1.eere.energy.gov/vehiclesandfuels/facts/2008\\_fotw520.html](http://www1.eere.energy.gov/vehiclesandfuels/facts/2008_fotw520.html) (December 30, 2010). By comparison, the least expensive new car had a list price below \$10,000. MSN Money, “The Cheapest Cars to Own in 2006,” at <http://moneycentral.msn.com/content/Savinganddebt/Saveonacar/P14039> (December 30, 2010).

42. Based on data from the 2009 American Community Survey covering the 50 major metropolitan areas included in “Washington’s War on Cars and the Suburbs.” The median house price was strongly related to the upper quintile house price, with a coefficient of determination ( $R^2$ ) of 0.99 (1.00 is perfect), with a coefficient of 0.699 (median house price related to upper quintile house price), with a p-value (probability) of less than 0.0001.

A citation error in the APTA report (now corrected) precluded evaluation of Secretary LaHood's accident claim. However, the information in the 2004 "Measuring Sprawl and Its Impact," presumably peer reviewed, is not valid for the analysis (in either the cited publication or the APTA report) because it mixes data from metropolitan areas and sub-metropolitan areas.<sup>43</sup>

## New York, London, and Paris

**New York City's Dominance.** Litman objects to the characterization in "Washington's War" that rail data is driven by travel patterns in New York City.

Yet, American Community Survey data for 2008 indicates that 95 percent of rail travel to work locations in the New York metropolitan area was to destinations in the city of New York, despite the fact that the city has only 45 percent of metropolitan area employment. The city of New York—with only 3 percent of the nation's employment—accounts for nearly 60 percent of the nation's commutes by rail. However, only 2.1 percent of travel to work locations outside the city of New York (where most people in the metropolitan area live and work), is on rail transit. This is little more than one-third the average rail market share in the other metropolitan areas with large rail systems (5.8 percent). Only Baltimore has a lower rail market share than work trips to the suburbs of New York.<sup>44</sup>

**Federal Transportation Funding.** Litman notes that "even with USDOT policy changes, the majority of federal transportation planning and invest-

ment resources are devoted to highways." This is true. In 2008, slightly more than 75 percent of federal highway and transit funding was for highways. The expenditure level for transit, however, is far higher than justified by transit use. Transit accounts for barely 1 percent of the nation's surface passenger transportation and none (zero percent) of its surface freight movement, yet it receives nearly 25 percent of federal funding.

This misallocation of resources seems likely to continue. Much of the problem is political, leading Winston and Maheshri to conclude that "rail's social cost is unlikely to abate because it enjoys powerful political support from planners, civic boosters, and policymakers."<sup>45</sup>

**London and Paris.** A comment is required on Litman's endnote No. 5 in "Evaluating Rail Critiques,"<sup>46</sup> which refers to the research by Rémy Prud'homme and Chang-Woon Lee cited in "Washington's War."<sup>47</sup> Litman's claim that Prud'homme and Lee's research "concludes that Paris is more economically productive than London because it has invested more in public transit and has less sprawl which increases employment access" could lead to misunderstandings of the roles of transport and urban form in London and Paris. This is a concern because of the admiration that many in the urban planning community hold for European transport and land use patterns. Litman's characterization of the Prud'homme and Lee research is incomplete. Furthermore, Prud'homme and Lee also suggest an important role for roads:

43. The error is not Litman's, but the result of an analysis problem in the cited source: Reid Ewing, Rolf Pendall, and Don Chen, "Measuring Sprawl and Its Impact," Smart Growth America, 2004, at <http://www.smartgrowthamerica.org/sprawlindeX/MeasuringSprawl.PDF> (December 30, 2010). This research mixed sub-metropolitan (primary metropolitan statistical areas) and metropolitan data (metropolitan statistical areas), thus making it invalid for metropolitan comparisons (which the authors did anyway), for traffic accidents or any other purpose. This author published criticism to this extent shortly after "Measuring Sprawl and Its Impact" was released. Wendell Cox, "Providence: Least Sprawling Metropolitan Area," *The Public Purpose*, No. 82 (August 2004), at <http://www.publicpurpose.com/pp82-prv.pdf> (December 30, 2010). The primary metropolitan statistical area designation (sub-metropolitan) has since been replaced with "metropolitan division" by the Census Bureau.

44. All data calculated from the American Community Survey, 2008.

45. Winston and Maheshri, "On the Social Desirability of Urban Rail Transit Systems," p. 362.

46. Todd Litman, "Evaluating Rail Critiques," August 6, 2010.

47. Rémy Prud'homme and Chang-Woon Lee, "Size, Sprawl, Speed and the Efficiency of Cities," *Observatoire de l'Économie et des Institutions Locales*, November 1998, at [http://www.rprudhomme.com/resources/Prud\\$27homme+\\$26+Lee+1999.pdf](http://www.rprudhomme.com/resources/Prud$27homme+$26+Lee+1999.pdf) (December 30, 2010).

Our indicator for sprawl (or any indicator of sprawl for that matter) is much larger for London than for Paris. Transport speed is greater in Paris than in London. The latter is explained by the marked difference in transport infrastructure spending patterns over the past decades: Paris has invested much more than London, in public transportation and even more so perhaps in roads.<sup>48</sup>

Thus, Prud'homme and Lee attribute the superior productivity of the Paris labor market to *both* its higher transportation speed and its lesser degree of sprawl. Moreover, they suggest that the contribution of roads to this superiority in productivity is *perhaps* greater than that of transit.

In fact, London's greater sprawl results *from* its anti-sprawl policy. London's greenbelt<sup>49</sup> (on which American urban growth boundaries, such as in Portland, San Diego, and San Jose are modeled) makes much of the metropolitan area off limits to development and increases travel times and distances. The result is a less productive London. The London greenbelt accounts for more than half the land inside the 30-mile radius used in the research cited by Prud'homme and Lee.

In addition, the Paris highway system is inestimably better than London's. London has a single freeway ring road (the M-25), approximately 15 miles from the core and for the most part in the greenbelt, *outside* the urban area, but inside the metropolitan area. There is little freeway mileage inside the M-25. Paris, on the other hand, has an inner ring freeway (the Boulevard Périphérique), three to four miles from the core, and two mostly completed outer ring freeways (the A-86 and the Francilienne).

Six radial freeways penetrate the outer rings and reach the inner ring. Thus, in addition to having a superior transit system, Paris has become more productive by avoiding the draconian land use policies of London and building what is probably Europe's most comprehensive freeway system.

Further, London's anti-sprawl policies are a principal reason why its housing is among the smallest and most expensive in the world. Former Bank of England Monetary Policy Committee member Kate Barker found (in a report commissioned by the Labour government) that smart growth policies, such as its greenbelts are a principal reason why housing prices have risen so much more in the United Kingdom than in continental Europe. In 2009, the median multiple (median house price to median gross household income ratio) in the United Kingdom was 5.1, well above the historic norm of 3.0 or less and well above that of U.S. metropolitan areas that have not adopted smart growth land rationing policies (such as Dallas–Fort Worth, Houston, Atlanta, Indianapolis, and Kansas City).<sup>50</sup>

**Lack of Clarity in the Use of Urban Terms.** “Washington's War” notes that the APTA report uses the term “city” for three distinctly different urban definitions—(1) metropolitan areas, (2) urban areas, and (3) central cities, which are also municipalities—virtually interchangeably, without specifying which definition is meant in any of the instances.<sup>51</sup> This is akin to comparing apples to oranges.

A peer-reviewed article by Litman in the *Transportation Research Record*, based on the APTA report, exhibited a similar lack of clarity.<sup>52</sup> This ambiguity can be misleading. In 2000, for instance, the differences between cities as central cities, cities as urban

48. *Ibid.*

49. A greenbelt is an area encircling an urban area in which virtually no development is permitted. The London greenbelt covers approximately three times the area of the London urban area. Greenbelts drive land prices up by rationing land for development, which raises housing costs.

50. Wendell Cox and Hugh Pavletich, “6th Annual Demographia International Housing Affordability Survey: 2010,” Demographia, 2010, at <http://www.demographia.com/dhi.pdf> (December 30, 2010).

51. Definitions can be found in Cox, “Washington's War on Cars and the Suburbs,” p. 3.

52. Todd Litman, “Rail Transit and Commuter Rail: Impacts of Rail Transit on the Performance of a Transportation System,” *Transportation Research Record* No. 180 (2006), at <http://trb.metapress.com/content/y1j5v644r6j1w845/> (December 30, 2010). Litman does not use the terms “metropolitan area” and “urban area” (or “urbanized area”) in this article. He indiscriminately characterizes these differing geographical areas and core municipalities as “cities.”

areas, and cities as metropolitan areas are considerable (see Figure 1):

- The central city of Atlanta had one-tenth the population of the Atlanta metropolitan area;
- The central city of Atlanta had just over one-eighth the population of the Atlanta urban area; and
- The metropolitan area had an approximately 20 percent higher population than the urban area.

The differences in transportation can also be substantial. Transit work trip market shares in central cities can be up to four times that of the corresponding metropolitan areas.<sup>53</sup>

There is nothing inappropriate about using the same term to describe different meanings as in the APTA report. However, it is necessary to ensure which of the multiple meanings is intended in each instance. This required clarity was virtually absent from the APTA report.

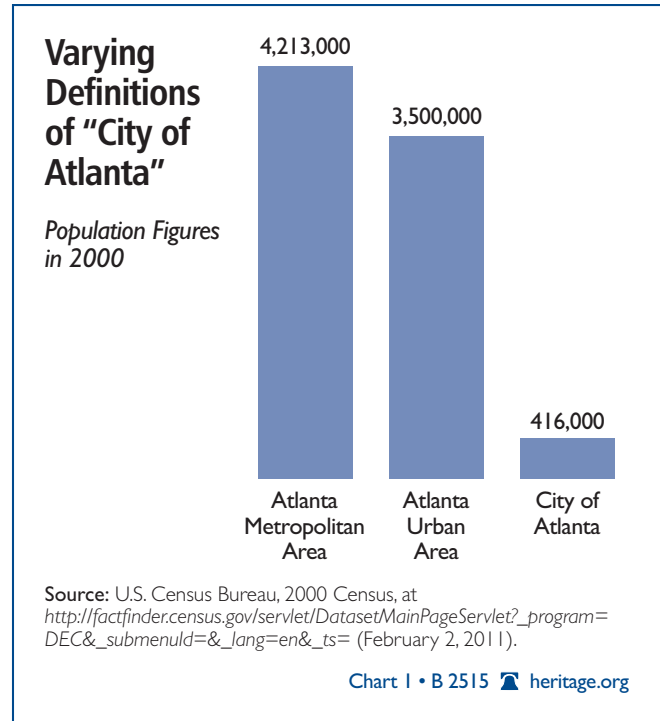
Litman responds that “these differences are indicated in the report *and its references*.” (Emphasis added.) However, it is not appropriate to require the reader to consult cited references to discern which of the multiple meanings of a term are intended in a particular instance.

More important, and contrary to Litman’s claim, “these differences” were not indicated in the APTA report used by Secretary LaHood, nor were they evident in the December 2009 edition, seven months after the Secretary’s blog post, which was the latest report used in “Washington’s War.”

Some label revisions were, however, included in Litman’s August 6, 2010, version of “Rail Transit in America.” Following are the differences between the version of the APTA report issued before “Washington’s War” and the version of the APTA report that contained the initial responses to “Washington’s War” (differences underlined).

Before “Washington’s War” (October 2004 and December 2009 versions):

“Seven cities are classified as ‘Large Rail,’ meaning that more than 20% of commutes are by trans-



sit, and more than half of transit passenger-miles are by rail...”

After “Washington’s War” (August 2010 version):

“Seven cities are classified as ‘Large Rail,’ meaning that more than 20% of central city commutes are by transit, and more than half of transit passenger-miles are by rail...”

Before “Washington’s War” (October 2004 and December 2009 versions):

“This figure shows the portion of commutes by rail and bus transit. Only a few cities have rail systems large enough to significantly impact regional transportation system performance.”

After “Washington’s War” (August 2010 version):

“This figure shows the portion of central city commutes by rail and bus transit. Only a few cities have rail systems large enough to significantly impact regional transport system performance.” A footnote (No. 1) was also added to the August 2010 “Rail Transit in America,” which did not appear in either the December 2009 edition or the 2004 APTA

53. Cox, “Washington’s War on Cars and the Suburbs,” Table 1.

report: <sup>54</sup>The term city in this report generally refers to a major central city and its surrounding urban region.

Finally, Litman's August 2010 version of "Rail Transit in America" introduces the term "urban region," which is still insufficiently precise. The term "urban region" did not appear in the 2004 APTA report that was the basis of Secretary LaHood's blog post.

Even so, the lack of clarity in the APTA report continues. In Table 16 ("New York Impact on Analysis Results") in the November 28, 2010, version of "Rail Transit in America," Litman continues to use very different definitions of "city" without differentiation. The table contains eight data elements and supplies data for four definitions of New York City. Only one of the elements (the second, "Central City Transit Mode Share") is labeled to indicate the particular New York City definition intended.<sup>54</sup> The four New York City definitions are as follows (the year 2000 population and land area are shown to indicate the incompatibility of the data):

- Two data elements (2 and 3) show data for the municipality of New York. The municipality of New York is wholly within the state of New York. (Year 2000 population: 8 million; 300 square miles.)
- Three data elements (1, 4, and 5) show data for the New York urban area. The New York urban area is in the states of New York, New Jersey, and Connecticut. (Year 2000 population: 17.8 million; 3,350 square miles.)
- Two data elements (4 and 5) show data for the New York metropolitan area. The New York metropolitan area (as defined for the data used in the APTA study) is in the states of New York, New Jersey, Connecticut, and Pennsylvania. (Year 2000 population: 21.2 million; 13,100 square miles.)
- One data element (8) shows data for the New York primary metropolitan area. A "Primary metropolitan area" (a designation now replaced by the term "metropolitan division") was a part of a

metropolitan area, that is, a sub-metropolitan area. In 2000, the New York primary metropolitan area was one of 15 primary metropolitan areas in the New York metropolitan area. The New York primary metropolitan area (as defined for the data used in the APTA study) is wholly in the state of New York. (Year 2000 population: 9.3 million; 1,400 square miles.)

The four definitions vary by more than 150 percent in population (21 million compared to 8 million) and more than 40 times in land area (13,100 square miles compared to 300 square miles). The lack of labeling is not the end of the problem—the use of different definitions requires a rationale, which is not provided in the APTA report.

In June 2009, when Secretary LaHood posted his comments on the 2004 APTA report, the APTA report was already outdated. Years of newer data were available for various indicators. The Secretary of Transportation is the highest transportation official in the United States and had more than sufficient financial resources to access current data, yet did not use it.

## Peer Review

Litman expresses deep respect for peer-reviewed research and seems to dismiss research if he thinks it is not. Peer review can be helpful, but it also has serious limits, such as a tendency to exclude reviews from peers who hold different opinions. Peer review is not without error and peer-reviewed papers are not anointed with *ex cathedra* status. Indeed, this paper cites three instances in which material errors appear to have survived peer review—(1) the incomplete transit energy consumption research, (2) the sub-metropolitan area data used in metropolitan comparisons, and (3) Litman's own *Transportation Research Record* article, which included a similar lack of clarity with respect for urban terms.

The critical test of research is whether or not it can withstand scrutiny. It is not sufficient to simply dismiss research because it has not been peer

54. Todd Litman, "Rail Transit in America," November 28, 2010, Table 16, at <http://www.vtpi.org/railben.pdf> (accessed December 7, 2010). Litman does not keep the previous versions of his documents posted once they are revised. This Web address now links to Litman's most recent version of January 6, 2011.

reviewed. A report is sufficiently vetted when it is free of mistakes that cloud or undermine its analysis.

### **Conclusion**

As the nation faces the necessity of reducing its threatening budget deficit, it will be important for policymakers to have reliable information on both costs and performance of transit systems. Difficult choices will have to be made. As new priorities are selected, all government programs will need to be evaluated objectively and in the context of their

contribution to public purposes. This will require objective analysis, factual and up-to-date data and a commitment to the “bottom line” of obtaining the most value for every tax dollar. As this paper and “Washington's War” show, the public discussion of transit has often fallen short of these necessary standards.

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