

## Raise My Taxes, Please!

### *Evaluating Household Savings from High Quality Public Transit Service*

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### Summary

High quality public transit consists of service sufficiently convenient and comfortable to attract travel that would otherwise be by automobile. This report uses data from U.S. cities to investigate the incremental costs and benefits of high quality transit service. It indicates that high quality public transit typically requires about \$268 in additional subsidies and \$104 in additional fares annually per capita, but provides vehicle, parking and road cost savings averaging \$1,040 per capita, plus other benefits including congestion reductions, increased traffic safety, pollution reductions, improved mobility for non-drivers, improved fitness and health. This indicates that residents should rationally support tax increases if needed to create high quality public transit systems in their communities. Current planning practices tend to overlook or undervalue many of these savings and benefits and so result in underinvestment in transit quality improvements.

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## Introduction

Most North American cities, and many cities in other parts of the world, currently have low to moderate quality public transit service, intended to provide basic mobility for *captive users* (travelers who lack alternatives, also called *dependent riders*). High quality public transit can attract *discretionary users* (travelers who have alternatives, particularly automobile travel, also called *choice riders*). This reduces vehicle ownership and use, which increases overall transport system efficiency and reduces problems such as traffic and parking congestion, accidents, and pollution emissions.

High quality transit requires the following features:

- Covers a large portion of regional destinations, such as business districts, major sport and cultural facilities (arenas, theaters and conference centres), college and university campuses, and residential neighborhoods.
- Service is relatively frequent and relatively fast (a significant portion of service is grade separated and so avoids congestion).
- Waiting areas and vehicles are comfortable, safe, and easily accessible.
- Attractive stations that are well integrated into neighborhoods, creating transit oriented development (compact, mixed use development around stations).
- Affordable and convenient pricing.
- Support and encouragement features, including good walking and cycling conditions, and efficient parking management in station areas.

Conventional public transit service is comparable to economy class airline travel; it transports people with minimal convenience, comfort or prestige. High quality public transit service is comparable to first class airline travel, which responds to affluent consumers' demands for convenience, comfort and respect. Airline travelers can choose the service quality they prefer: inexpensive basic service or more expensive higher quality service. Transit users do not usually have such options. To obtain higher quality service public transit users must convince public officials that service improvements are cost effective compared with other transport system investments, and convince citizens to support any required tax increases.

This report examines the cost efficiency of public transit service quality improvements. It investigates the degree that such investments are cost effective from an average household's perspective, in particular, whether household financial savings offset additional tax burdens.

## Incremental Costs

Of the fifty largest U.S. cities, the seven with high quality transit service<sup>1</sup> spent \$329 per capita on average on transit capital and operating expenses in 2006, of which \$128 (39%) was from fare revenue and \$201 from subsidies. The other 47 cities spent \$104 per capita on average on transit, of which \$22 (21%) was from fares and \$82 was subsidies.

**Table 1 Per Capita Public Transit Expenditures, 2006 (APTA Data)<sup>2</sup>**

	Basic Transit	High Quality Transit <sup>1</sup>	Difference
Fares	\$22 (21%)	\$128 (39%)	\$106
Subsidies	\$82 (79%)	\$201 (61%)	\$119
<i>Total Expenditures</i>	<i>\$104 (100%)</i>	<i>\$329 (100%)</i>	<i>\$225</i>

*The seven U.S. cities with high quality public transit spent \$201 per capita on transit subsidies, compared with \$82 in cities with basic quality transit.*

This indicates that residents of cities with high quality public transit pay on average \$119 more in annual transit taxes per capita than in cities with basic transit service. In practice, larger subsidies are usually required to achieve high quality service because such systems require decades of capital investments (New York, Philadelphia and Boston transit systems are more than a century old). Table 2 indicates per capita annual public transit subsidies in three cities selected for their current efforts to significantly improve transit service quality. This suggests that creating high quality transit service requires \$250-350 in additional average annual per capita expenditures over several decades, although actual costs vary depending on specific geographic and urban development conditions. Much of this funding can be provided by shifting money from other sources, particularly federal and state highway funding, so in most cases little or no actual tax increases are required.

**Table 2 Public Transit Annual Subsidies In Selected Cities (APTA Data)**

City	Year	Population	Revenue	Operating	Capital	Subsidy
Denver	2008	1,984,889	\$89,942,987	\$435,523,277	\$282,758,380	\$317
	2003	1,984,889	\$51,319,917	\$283,122,632	\$277,944,080	\$257
	1998	1,517,977	\$41,749,416	\$151,618,781	\$72,497,436	\$120
Portland	2008	1,583,138	\$82,511,223	\$362,110,546	\$317,524,313	\$377
	2003	1,583,138	\$54,444,840	\$265,580,988	\$130,738,567	\$216
	1998	1,172,158	\$35,785,575	\$154,924,613	\$214,054,131	\$284
Seattle	2008	2,712,205	\$121,823,960	\$550,227,162	\$101,408,907	\$195
	2003	2,712,205	\$75,485,244	\$393,903,253	\$112,914,852	\$159
	1998	1,744,086	\$67,769,721	\$314,294,998	\$296,488,917	\$311

*This table indicates annual public transit subsidies for three cities currently investing to increase their public transit service quality. This suggests that creating high quality systems requires about \$250 annual per capita in additional taxes, beyond the \$82 required for basic service. (Population data from most recent census).*

<sup>1</sup> New York, Washington DC, Boston, San Francisco, Chicago, Philadelphia and Baltimore (Litman 2004).

<sup>2</sup> Analysis in the 2009 Urban Transport Performance Spreadsheet ([www.vtpi.org/Transit2009.xls](http://www.vtpi.org/Transit2009.xls)), based on data from the American Public Transportation Association ([www.apta.com](http://www.apta.com)), the National Transit Database ([www.ntdprogram.gov](http://www.ntdprogram.gov)), and sources described in Litman 2007. For international data see CODATU 2009.

Is this expensive? Are such investments justified? Such funding represents a major increase in *transit* spending but is small compared with total *transportation* expenditures. U.S. households currently spend about \$3,500 annually per capita on vehicles and fuel. Urban households, businesses and governments spend an estimated \$2,000 annually per capita for parking facilities (residential garages, parking lots and on-street parking). Governments spend about \$600 annual per capita on roadway facilities and traffic services, of which about \$300 is from user fees (special fuel taxes, vehicle registration fees and tolls). In addition, households also pay about \$100 annually to subsidize public transit services and \$50 in transit fares. Table 3 summarizes these expenses.

**Table 3** Typical Transportation Expenditures Per Capita (Litman 2009)

Expenses	Current Average
Vehicles	\$3,500
Parking	\$2,000
Road subsidies (excluding vehicle taxes and fees)	\$300
Transit subsidies	\$100
Transit fares	\$50
<i>Totals</i>	<i>\$5,950</i>

*Automobile transportation requires vehicles, parking and roads, the cost of which totals about \$5,800 annually per capita. Transit expenditures total about \$150 annual per capita.*

In addition to financial costs, high quality public transportation may require additional road space (for example, converting parking lanes to bus lanes) and other transit priority measures (Litman 2015), and changes to zoning codes and development policies that allow more compact development around transit stations and more efficient parking management.

## Transportation Impacts and Savings

High quality public transit attracts travel that would otherwise be made by automobile, and leverages vehicle travel reductions by creating more accessible, multi-modal communities. People who live or work in communities with high quality public transit tend to own fewer vehicles, drive less and rely more on alternative modes than they would in more automobile dependent areas (“Transit Oriented Development,” VTPI 2009). In automobile-dependent communities automobiles are used for most trips, and sprawled land use increases travel distances. In transit oriented communities residents use a mixture of modes. In carfree communities, most trips are by non-motorized modes and public transit, automobile travel is reserved for work trips (such as delivery and service vehicles) and out-of-town travel. Table 4 illustrates this concept.

**Table 4 Typical Mode Share By Trip Purpose For Various Transport Systems**

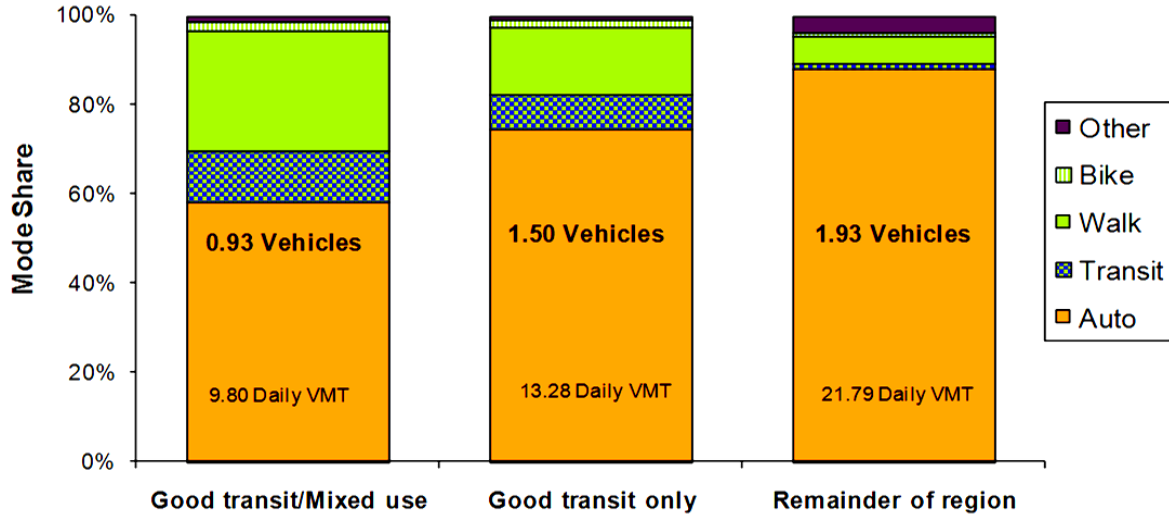
Trip Purpose	Automobile Dependent	Transit Oriented Development	Carfree
Work commuting			
School commuting			
Work-related business			
Personal travel (errands)			
Social and recreation			
<i>Total car trips</i>	21	9	3
<i>Total transit trips</i>	1	5	6
<i>Total non-motorized trips</i>	3	11	16
<b>Total trips</b>	<b>25</b>	<b>25</b>	<b>25</b>

*Residents of automobile-dependent communities use automobiles for most trips. Transit oriented development results in the use of mixed modes. Carfree development results in minimal driving.*

Cervero and Arrington (2008) found that transit oriented developments generate about half as many automobile trips as conventional, automobile-oriented development. Some of these reductions result from differences in household size (urban households tend to be smaller than suburban households) and self-selection (people who, due to need or preference, minimize their driving tend to choose more accessible, transit-oriented neighborhoods), but studies that account for these factors still show that households tend to significantly reduce vehicle ownership and mileage when they shift to locations with high quality transit (Bailey 2007; Evans and Pratt 2007; Renne 2005). Households located in Portland, Oregon’s transit-oriented neighborhoods own about half as many vehicles and drive about half as many annual miles as residents of more automobile-oriented neighborhoods, as indicated in Figure 1.

The magnitude of these impacts varies depending on the scale of analysis. Reductions in vehicle ownership and use are usually greatest close to transit stations and decline with distance. For example, vehicle ownership and use are often 40-60% lower than average at sites within a quarter mile, 20-40% lower overall for transit oriented neighborhoods, and 10-30% lower for entire urban regions that have extensive networks of high quality transit serving a major portion of neighborhoods (Litman 2005), as indicated in the following figure.

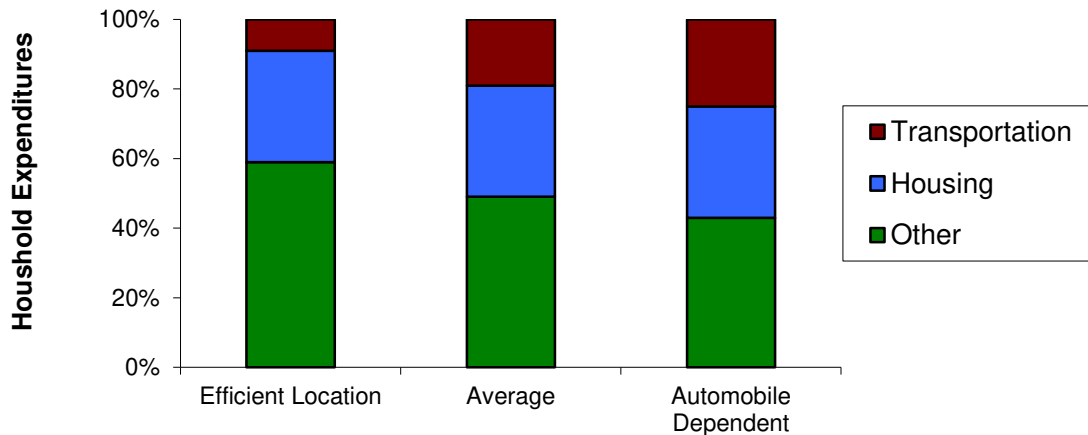
**Figure 1** TOD Impacts On Vehicle Ownership and Use (Ohland and Poticha 2006)



Residents of transit oriented developments tend to own fewer vehicles, drive less, and use alternative modes more than in automobile-oriented communities. "VMT" = vehicle miles traveled.

These reductions in automobile ownership and use cause significant household transportation cost savings (CTOD and CNT 2006; Lipman 2006; Polzin, Chu and Raman 2008; ULI 2009). Figure 2 illustrates how households located in efficient locations (neighborhoods that are close to urban centers and have good walking, cycling and public transit) spend significantly small portion of household budgets on transportation than in more automobile-dependent locations.

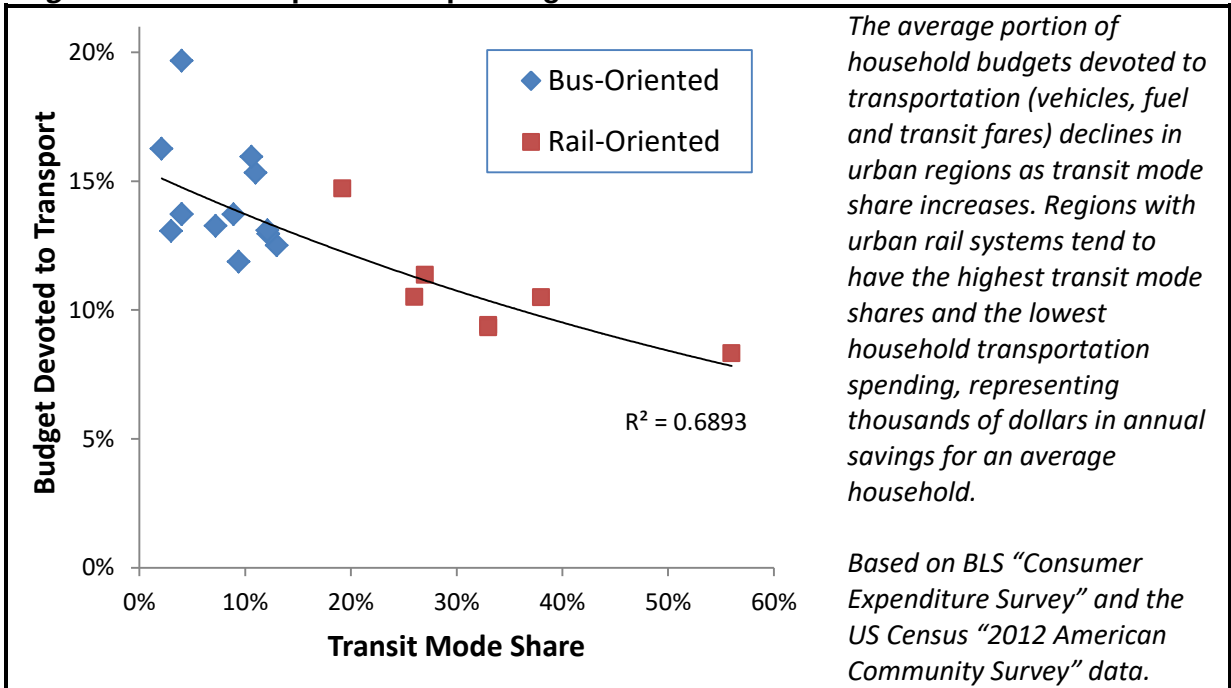
**Figure 2** Household Expenditures (CTOD 2009)



More efficient location (accessible and multi-modal neighborhoods) reduces the portion of household budgets devoted to transportation, leaving more money to spend on other goods.

By creating communities where households can own fewer cars and drive less, high quality transit and Transit Oriented Development tend to significantly reduce the portion of household budgets devoted to transportation, increasing affordability, as indicated in Figure 3. An average household in a transit-oriented community saves thousands of dollars annually in transportation costs (CNT 2010), and the affordability benefits can be even larger than these statistics indicate because many households own more vehicles and spend more on transportation than is functionally necessary, for recreation and status sake. By improving affordable mobility options, TOD allow households to save money when needed, for example if they lose income or incur unexpected expenses, options that are infeasible in automobile-dependent areas.

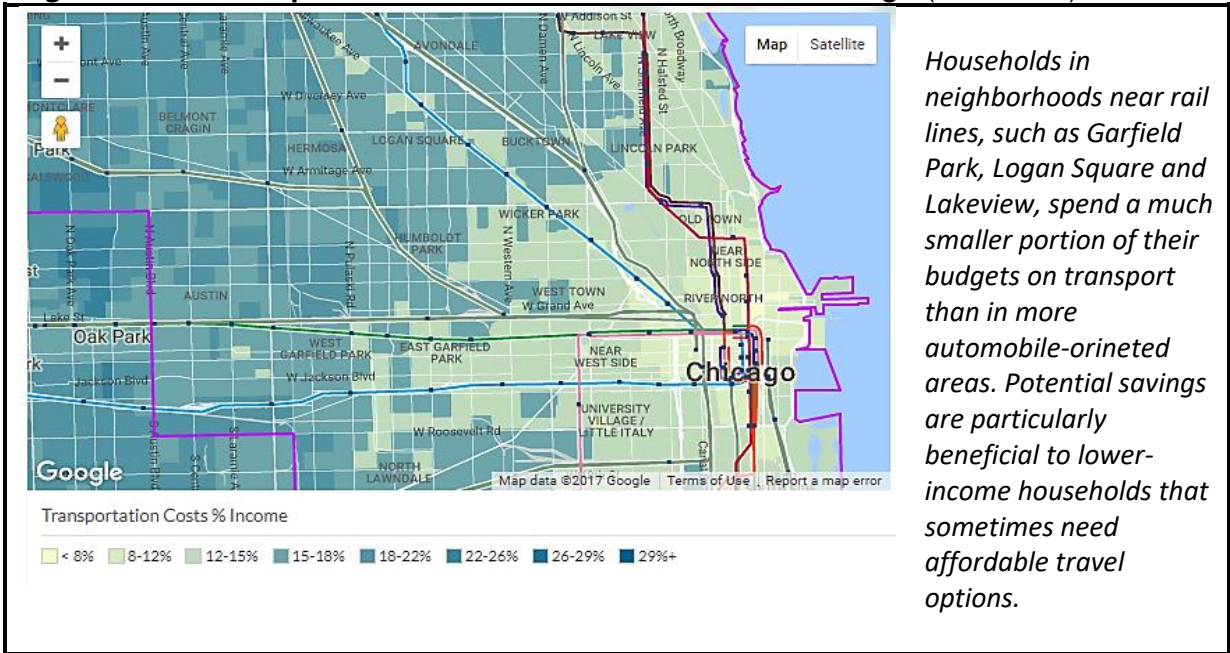
**Figure 3 Transportation Spending Versus Transit Mode Share**



Similar patterns occur within regions. TOD residents own about half as many motor vehicles as in auto-oriented neighborhoods and save on transport costs (Arrington et al. 2008). These savings are visible in *H+T Affordability Index* maps, such as the one below, which shows the low transportation spending in Chicago neighborhoods along rail lines (Chicago makes a good subject for rail impact research because it is flat and has a well-developed transit network).

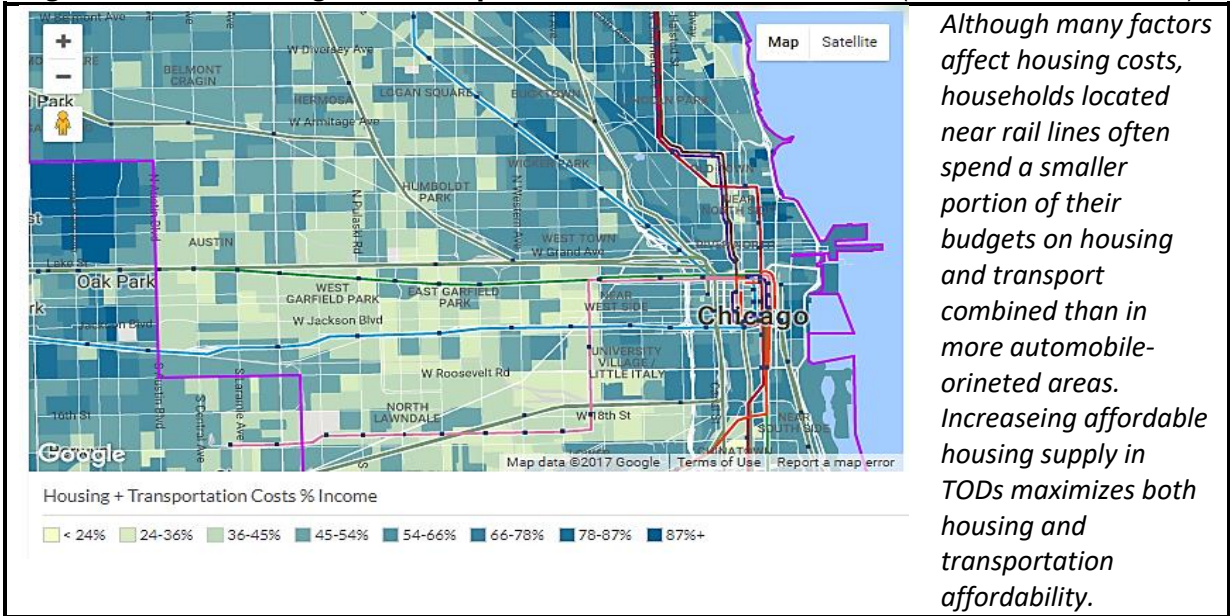


**Figure 4 Transportation Costs Relative to Income - Chicago (CNT 2017)**



Critics sometimes argue that Transit Oriented Development increases housing costs, which is not necessarily true. As Figure 5 shows, combined housing and transport costs are often lower along rail lines than in more automobile-oriented areas. The most effective way to maximize overall affordability is to increase the supply of lower-priced housing in TODs.

**Figure 5 Housing and Transport Costs Relative to Income (H+T Cost Index 2017)**





Improving public transit service quality can provide savings in various ways:

- Travelers shift from driving to public transit, reducing variable costs (fuel, vehicle wear-and-tear, parking fees and tolls).
- More accessible, compact and mixed development reduces driving distances, and allows more trips to be made by walking and cycling.
- Improving transportation options reduces the need to chauffeur non-drivers.
- With better transportation options, some households reduce their vehicle ownership.
- Reduced vehicle ownership reduces residential parking requirements, providing additional savings and benefits.

Actual impacts depend on individual household's needs and preferences. Some may not change at all, while others reduce vehicle use and expenditures more than average. Lower income households are particularly likely to use alternative modes and take advantage of opportunities for financial savings, proving affordability and equity benefits. Because they spend less on transportation overall and have additional opportunities to save even more if faced with a financial stress (such as fuel price spikes, a vehicle failure or reduced household income), households in more accessible, multi-modal neighborhoods tend to have lower home foreclosure rates (NRDC 2010).

Public transit service improvements allow, but do not force, households to reduce their automobile travel and expenditures. As a result, these travel changes and savings generally reflect consumer surplus gains, that is, households are better off overall, since they can still travel by automobile when best for them overall (possible negative consumer impacts of transit oriented development are discussed later in this report).

## Net Savings

The consumer savings provided by high quality public transportation are generally many times greater than the incremental costs of such service. On average, creating high quality systems requires residents to pay \$268 in annual subsidies and \$108 in additional fares, but saves about \$1,040 in vehicle, parking and roadway costs, providing 277% annual return on investment. Table 5 and Figure 4 illustrate these impacts.

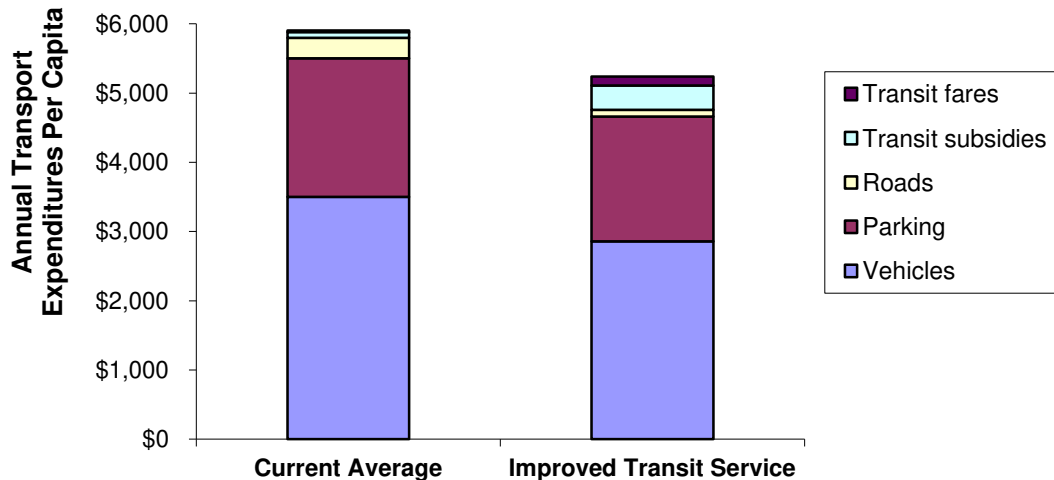
**Table 5 Transportation Expenditures In Basic and High Quality Transit Areas**

Expenses	Basic Transit	High Quality Transit	Savings
Vehicles (excluding taxes spent on roads)	\$3,500	\$2,860	\$640
Parking	\$2,000	\$1,800	\$200
Road subsidies (from general taxes)	\$300	\$100	\$200
<i>Total Automobile</i>	<i>\$5,800</i>	<i>\$4,760</i>	<i>\$1,040</i>
Transit subsidies	\$82	\$350	-\$268
Transit fares	\$22	\$130	-\$108
<i>Total Transit</i>	<i>\$104</i>	<i>\$480</i>	<i>-\$376</i>
<b>Totals Transportation</b>	<b>\$5,904</b>	<b>\$5,240</b>	<b>\$664</b>

*High quality public transit requires an additional \$268 in subsidies and \$108 in fares, but saves \$1,040 in vehicle, parking and roadway costs per capita annually, providing net savings.*

Transportation costs are not usually aggregated in this way. Transportation economic analysis generally compares transit system costs with just roadway costs; by tradition vehicle and parking costs are not considered, although road use requires a vehicle and parking facilities at each destination, costs that are reduced or eliminated if the same trips are made by public transit. As a result, such analysis underestimates the total costs of accommodating increased roadway travel and underestimates the total savings and benefits that would result from public transit improvements that allow residents to reduce their vehicle ownership and use.

**Figure 6 Typical Per Capita Savings From High Quality Transit Service**



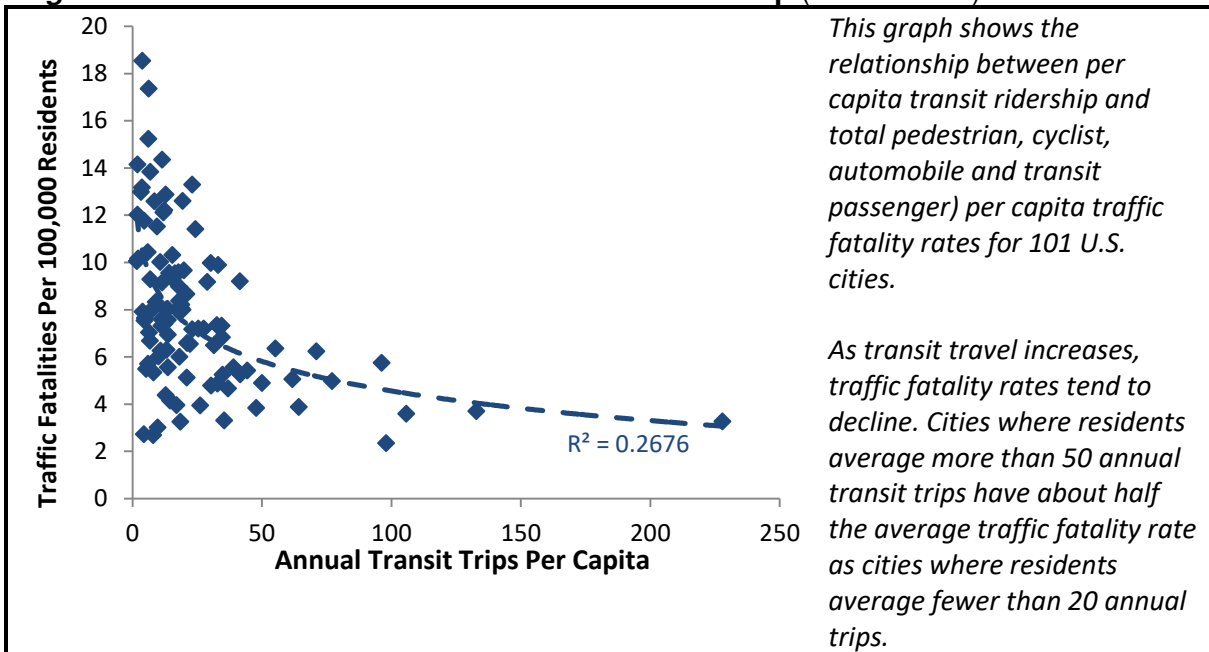
*Residents of communities with high quality public transportation spend significantly less on average on motor vehicles and transport overall, even taking into account additional subsidies.*

## Other Impacts

High quality public transit service and transit oriented development have other economic, social and environmental impacts. They tend to provide these benefits (Litman 2007):

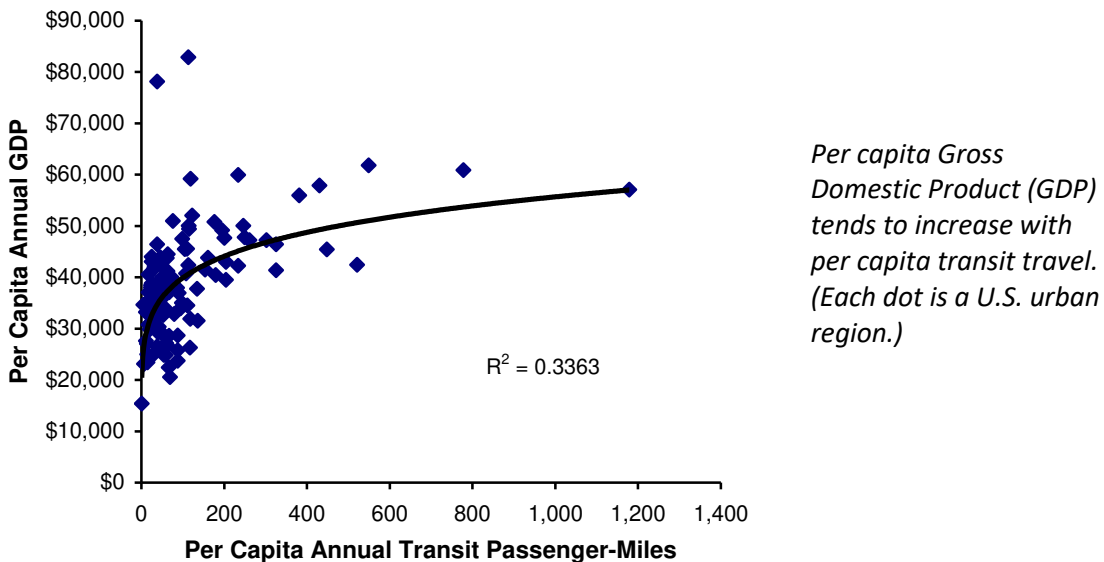
- *Reduced traffic congestion delay.* High quality, grade separated transit tends to reduce traffic congestion on a corridor by offering travelers an attractive alternative to driving during congested conditions. As congestion increases more travelers shift mode so congestion is never as severe as would otherwise occur, that is, it reduces the point of congestion equilibrium (Winston and Langer 2004). Per capita congestion delays are 30-50% lower in urban regions with high quality public transit than in otherwise comparable cities (Litman 2004 and 2011).
- *Road and parking facility cost savings.* People who live and work in areas with high quality public transit tend to own fewer cars and make fewer trips, reducing parking and traffic generation rates. By reducing traffic congestion, high quality public transit tends to reduce the need to expand roadways. This reduces road and parking costs to governments and developers.
- *Improved mobility for non-drivers, and reduced chauffeuring burdens for drivers.* People who for any reason cannot drive tend to be severely disadvantaged if they live in an automobile-dependent community. High quality public transit and transit oriented development significantly improve accessibility for non-drivers, and so reduce the need for motorists to chauffeur non-driving family members and friends.
- *Increased traffic safety.* Public transit is a relatively safe travel mode, and because residents of communities with high quality public transit drive fewer total annual miles, per capita traffic fatality rates are substantially lower in communities with high quality public transit, as illustrated in Figure 7.

**Figure 7** Traffic Fatalities Versus Transit Ridership (Litman 2016)



- *Improved public fitness and health.* High quality public transit travel tends to increase walking and cycling activity, since most transit trips involve nonmotorized links and transit, and transit oriented development improve nonmotorized travel conditions (Edwards 2008). All else being equal (for people with otherwise equal demographic factors), public transportation users are more likely to walk, walk longer average distances, and are more likely to meet recommended physical activity targets by walking than non-transit users. The chance of meeting minimum walking targets (2.4 daily kilometers walked) increases by 3.87 for each transit trip taken (Lachapelle and Frank 2008).
- *Energy conservation and emission reductions.* Transit can provide energy conservation and emission reduction benefits. Transit vehicles tend to consume less fuel per passenger-mile than driving, and by reducing traffic congestion and per capita vehicle travel, high quality public transit and transit oriented development provide additional energy savings and emission reductions. Residents of transit-oriented communities tend to consume 20-40% less fuel than they would in conventional, automobile dependent communities (ICF 2008).
- *Increased economic productivity and development opportunities.* High quality public transportation tends to support economic development in several ways. It can stimulate local economic development, for example, a new transit line or station can support redevelopment of a particular district or neighborhood. By reducing traffic congestion, road and parking facility costs and energy consumption, high quality public transit reduces transportation-related costs. By supporting more compact, infill development, high quality public transit tends to help achieve agglomeration efficiencies. As a result, per capita economic productivity tends to increase with per capita transit travel, as indicated in Figure 8.

**Figure 8** Per Capita GDP and Transit Ridership (Litman 2007)



- *More efficient land use patterns.* By encouraging more compact development and reducing the amount of land required for roads and parking facilities, high quality public transport

and transit oriented development tend to reduce sprawl, increase land use accessibility and agglomeration efficiencies, reduce per capita impervious surface area (pavement area) and associated stormwater costs and heat island effectives, support urban redevelopment, and help preserve open space (farmlands and wildlife habitat).

- *More efficient transit service.* High quality public transit tends to attract more riders and so has higher load factors which increase efficiency and revenues. For example, cities with high quality public transit have on average 33% lower transit operating costs per passenger-mile (42¢ versus 63¢) and 58% higher transit service cost recovery (38% versus 24%) (Litman 2004).

There are also some possible negative impacts, besides additional subsidy costs:

- *More compact, mixed development tends to reduce private gardens and other local greenspace, and increase noise exposure.* Higher development densities tend to reduce local per capita greenspace, particularly private gardens.
- *More compact, mixed development may increase the intensity of traffic and parking congestion.* Although residents of communities with high quality public transit drive less and so experience less per capita congestion, when they do drive they may face more intense parking and traffic congestion.
- *Transit encouragement efforts may include negative incentives.* To encourage transit ridership and achieve other planning objectives (congestion reduction, cost recovery, etc.), transit improvements are often implemented with parking pricing and sometimes road tolls, or may require converting parking lanes into busways.

Land use policies that concentrate urban development tend to increase unit land costs (dollars per acre), which can increase housing costs, and so burden lower-income households, although this can be offset by increased development density which reduces land requirements per housing unit, and other policies that increase housing affordability (“Affordability” VTPI 2009).

Some people believe that compact urban development increases social problems such as poverty, drug use and crime. While it is true that such problems are sometimes concentrated in urban neighborhoods, this resulted from the movement of wealthier household away from cities, they are not caused by urban environments themselves. There is no evidence that increasing the number of middle- and high-income households living in urban neighborhoods increases social problems, on the contrary, such problems can be reduced with more demographic mixing (low, medium and high income households locating in the same neighborhoods) and local economic development (more jobs and services located in urban neighborhoods, which increases local tax revenues) (Litman 2003). Overall, urban residents have less risk of violent death (murder and traffic crashes) than suburban and rural residents (Lucy 2002).



## Conventional Analysis

Conventional analysis often implies that investments in high quality public transit are wasteful because it underestimates many public transit benefits (Litman 2007).

- Conventional economic analysis only considers roadway expenses, ignoring vehicles and parking costs. It assumes that everybody (or at least, everybody who matters) has an automobile available that would otherwise be unused, and so assigns no vehicle or parking cost savings to transit improvements that reduce household vehicle ownership.

**Table 6 Impacts Considered and Overlooked In Conventional Planning**

Generally Considered	Often Overlooked
Congestion reduction	Vehicle ownership costs (and savings if transit improvements allow households to reduce vehicle ownership)
Vehicle operating costs	Parking cost savings
Vehicle crash rates	Downstream congestion (increased congestion on surface streets caused by increased highway capacity).
Transit fares	Additional accidents, energy use and pollution emissions caused by induced travel.

*This table indicates which impacts are considered or overlooked by conventional transportation economic evaluation. Many significant benefits of high quality public transit are often overlooked.*

- Conventional analysis evaluates transport system performance based on *mobility* (vehicle traffic speeds) rather than *accessibility* (people's ability to reach goods, services and activities). It ignores the tendency of highway expansion to stimulate dispersion, and therefore reduce land use accessibility, and the tendency of transit improvements to support more compact, mixed development and therefore improve accessibility.
- Public transit systems operate on congested urban corridors where transport facilities tend to be costly to construct and operate. Although transit projects are costly, resulting in relatively high costs per route-mile, vehicle-mile and passenger-mile, this is often cheap compared with the full costs of expanding urban highway and parking facilities.
- Simply increasing public transit service may provide insufficient savings to repay the investments (Polzin, Chu and Raman 2008). However, an integrated set of transit improvements with support policies provide much larger vehicle travel reductions and consumer savings, and so increase economic returns.
- Conventional analysis often implies that transit travel is slow, and therefore inefficient. This is not necessarily true, particularly for high quality transit integrated with transit oriented development. Where this occurs overall accessibility (the number of destinations people can reach within given time and financial costs) can be increased compared with automobile-dependent sprawl.
- Critics argue that public transit receives an excessive portion of transportation investments (more than its mode share), but these investments improve accessibility on the major urban corridors where any type of transportation project is costly but the problems are most severe and the benefits of improved accessibility are greatest, and to make up for decades of underinvestment in alternative modes.

Transportation policy analysis and planning relies on various performance indicators to identify problems and evaluate solutions (“Performance Evaluation,” VTPI 2009). These indicators focus on quantity rather than quality and so are often ineffective at evaluating transit system quality improvements.

For example, overall transportation system quality is often evaluated based on roadway *level-of-service* (LOS) or *average traffic speeds*: corridors with poor LOS ratings or low traffic speeds are considered problem areas which therefore require improvement and deserve investment. Few communities apply comparable transit level-of-service ratings that indicate where transit service is uncomfortable or slow, which therefore require improvement and investment.

Conventional transit service performance indicators, such as *dollars per vehicle-hour* or *cents per passenger-mile*, tend to focus on cost minimization rather than service maximization, and so encourage communities to avoid investments that might increase unit costs. Transit service quality improvements are often perceived (particularly by people who do not use the system) as unnecessary luxuries rather than rational improvements that respond to consumer needs, and by attracting travelers who would otherwise drive, improves overall transport system efficiency and reduces total transport system costs.

Conventional transportation system performance indicators tend to measure *mobility* (physical movement, particularly motor vehicle traffic) rather than *accessibility* (people’s ability to reach desired services and activities), which favors improvements in automobile travel over transit travel, and improvements in speed over improvements in passenger convenience and comfort, even if such improvements respond to consumer demands and are cost effective (Litman 2008a and 2008b). For example, public transit passengers value reduced crowding, more convenient user information (schedules posted at bus stops), more attractive stations, and better walking and cycling conditions around stations, but these are not reflected in conventional performance indicators. Reducing crowding increases costs per passenger-mile, and convenience and comfort improvements are not measurable unless they significantly increase ridership.

Better multi-modal performance indicators are needed to allow investments in walking, cycling and public transit to compete with investments in automobile travel (“Multi-modal Level-Of-Service,” VTPI 2009). For example, with current planning practices, transport planners typically report, “These roadways and intersections have LOS D, which indicates failure, and so needs to be expanded.” With multi-modal performance planners could report, “These corridors have roadway LOS D, transit service LOS E, and pedestrian LOS F, which indicates that transit and pedestrian improvements are the highest priority, and improving these modes can help relieve automobile traffic and parking congestion.”

## Responding To Consumer Demands

Because transportation projects often take years to implement and planning decisions have impacts that often last for decades it is important that current transport planning decisions and investments anticipate long-term future demands.

A number of current trends are increasing the value of high quality public transit and transit oriented development (Litman 2006a):

- *Aging population.* As people age their automobile travel tends to decline and demand for alternative modes and more accessible location tends to increase.
- *Rising fuel prices.* As fuel prices rise, demand for alternative modes and transit oriented locations tends to increase.
- *Growing congestion.* As traffic and parking congestion increase, the value of high quality, grade-separated public transit tends to increase.
- *Changing attitudes about urban living.* Until recently cities were considered dirty, dangerous and impoverished. Increasingly, cities are considered exciting, healthy and attractive places for successful households to reside.
- *Increasing health and environmental concerns.* High quality public transit and transit oriented development help achieve health, safety, and environmental objectives.
- *Shifting assumptions about suburban real estate value.* Recent suburban housing market devaluation eroded the assumption that suburban real estate is a superior investment.

These trends will not eliminate automobile travel, but market research indicates that an increasing portion of households prefer to drive less, rely more on alternative modes, and live in more accessible, multi-modal communities, provided that those options are convenient, comfortable, safe and affordable (Nelson 2009). One of the most effective ways to insure that these consumer demands are met is to invest in high quality public transit and implement policies to support more transit oriented development (Reconnecting America 2004).

Failure to invest in high quality public transportation deprives many households – particularly lower-income households – of their preferred transportation options, forcing them to drive more, spend more on transport, and live in more automobile dependent communities than they consider optimal, and increasing external costs such as traffic congestion and pollution emissions.

Undervaluing high quality public transit affects many types of decisions, not just funding. For example, more comprehensive evaluation of the benefits of, and demand for, transit service improvements can justify more transit priority measures such as converting parking lanes to busway; changes to development policies and planning practices that support transit-oriented development and efficient parking management; walkability improvements; and numerous other decisions that enhance transit service quality.

## How Could This Fail?

This analysis indicates the savings and benefits that *can* result from improved public transit service quality. It does not mean that every public transit project necessarily provides positive economic returns. A particular public transit project can fail in the following ways:

- It is cost inefficient or poorly managed.
- Demand (ridership) is significantly smaller than projected.
- Potential for transit-oriented development is insufficient, resulting in little leverage effect (reductions in local vehicle ownership and use).
- Lack of supportive policies (transit-oriented development, walking and cycling improvements, parking management, commute trip reduction programs) to maximize ridership and benefits.

## Conclusions: Raise My Taxes, Please!

Most North American cities offer only basic public transit service, with limited coverage and frequency, modest speeds, unattractive waiting areas, poor land use integration, and few amenities. Such service is used primarily by people who lack alternatives. In such communities, riders tend to abandon public transit as soon as feasible.

High quality public transit tends to attract travel that would otherwise be by automobile and leverages additional vehicle travel reductions by stimulating compact, mixed, multi-modal development. Even affluent residents tend to own fewer vehicles, drive less, and spend less on transportation than they would in more automobile-oriented locations.

**Figure 7 High Quality Public Transit Investments and Benefits**



*High quality public transit requires additional investments and support policies which change travel activity, providing a variety of savings and benefits to users and the rest of society.*

Providing high quality public transit service typically requires about \$268 in annual subsidies and \$108 in additional fares per capita, but reduces total transportation expenditures about 20%. For an average household this totals about \$775 annually in additional public transit expenses, offset by \$2,350 in vehicle, parking and roadway savings, providing \$1,575 in overall net savings.

Transportation costs are seldom evaluated in this way. Conventional transport project economic evaluation compares transit investments with just roadway costs; vehicle and parking costs are generally ignored although a vehicle and parking space is required for each road trip. High quality public transport and transit oriented development provide other often undervalued benefits including congestion reduction, road and parking cost savings, improved safety, improved accessibility for non-drivers, increased affordability, energy conservation, emission reductions, economic development, more efficient land use, and improved public fitness and health. As a result, conventional analysis underestimates the full savings and benefits provided by public transit investments.

Improving public transit service quality is therefore a win-win solution: most people benefit overall, including those who currently rely on alternative modes, those who switch from driving to alternative modes in response, and those who continue to drive who enjoy reduced traffic and parking congestion, reduced accident risk, reduced need to chauffeur non-drivers, and various indirect savings and benefits.

This is a timely issue. Current demographic and economic trends are increasing demand for alternative modes. Many transportation policies and planning practices that may have been justified in the past are not appropriate for the future. More comprehensive planning is needed to identify truly optimal transportation policies and projects.

Transportation planning often asks, “How much should we spend on public transit?” but in many situations it is legitimate to ask, “How much should we save?” since high quality transit allows households to spend less overall, even taking into account additional taxes. When all impacts are considered, consumers have every reason to demand, *Raise my taxes!* to create high quality public transportation in their communities.



## References

APTA (various years), *APTA Transit Fact Book*, American Public Transit Association ([www.apta.com](http://www.apta.com)). Provides information on public transit in the U.S., including data on ridership, operating costs, cost efficiency, and fares

Jeffrey Brown and Gregory L. Thompson (2009), *The Influence of Service Planning Decisions on Rail Transit Success or Failure*, Mineta Transportation Institute ([www.transweb.sjsu.edu](http://www.transweb.sjsu.edu)); at [www.transweb.sjsu.edu/MTIportal/research/publications/documents/ServicePlanningDecisions%20\(with%20covers\).pdf](http://www.transweb.sjsu.edu/MTIportal/research/publications/documents/ServicePlanningDecisions%20(with%20covers).pdf).

Robert Cervero and G. B. Arrington (2008), "Vehicle Trip Reduction Impacts of Transit-Oriented Housing," *Journal of Public Transportation*, Vol. 11, No. 3, pp. 1-17; at [www.nctr.usf.edu/jpt/pdf/JPT11-3.pdf](http://www.nctr.usf.edu/jpt/pdf/JPT11-3.pdf).

CNT (2012), *Average Annual Transportation Costs For the National Typical Household Ranked For Large Regions (2005-2009 Population Of 1,000,000 And Greater)*, Center for Neighborhood Technology ([www.cnt.org](http://www.cnt.org)); at [www.cnt.org/repository/2012-Fact-Sheet-Rankings.pdf](http://www.cnt.org/repository/2012-Fact-Sheet-Rankings.pdf).

CNT (2017), *Housing and Transportation (H+T) Affordability Index*, Center for Neighborhood Technology ([www.cnt.org](http://www.cnt.org)); at <https://htaindex.cnt.org>.

CODATU (2009), *Who Pays What For Urban Transport? Handbook Of Good Practices*, Cooperation For Urban Mobility In The Developing World ([www.codatu.org](http://www.codatu.org)); at [www.codatu.org/english/studies/handbook\\_good\\_practices.pdf](http://www.codatu.org/english/studies/handbook_good_practices.pdf).

CTOD (2009), *Mixed-Income Housing TOD Action Guide*, Center for Transit Oriented Development (CTOD) for Reconnecting America, the Center for Neighborhood Technology ([www.reconnectingamerica.org](http://www.reconnectingamerica.org)); at [http://reconnectingamerica.org/public/display\\_asset/090304mitodag0109](http://reconnectingamerica.org/public/display_asset/090304mitodag0109).

CTOD and CNT (2006), *The Affordability Index: A New Tool for Measuring the True Affordability of a Housing Choice* (<http://htaindex.cnt.org>), Center for Transit-Oriented Development and the Center for Neighborhood Technology, Brookings Institute ([www.brookings.edu/metro/umi/20060127\\_affindex.pdf](http://www.brookings.edu/metro/umi/20060127_affindex.pdf)).

EDRG (2007), *Time is Money: The Economic Benefits of Transit Investment*, Economic Development Research Group for the Chicago RTA ([www.chicagometropolis2020.org/documents/TimeisMoney.pdf](http://www.chicagometropolis2020.org/documents/TimeisMoney.pdf)).

Ryan D. Edwards (2008), "Public Transit, Obesity, And Medical Costs: Assessing The Magnitudes," *Preventive Medicine* ([www.sciencedirect.com/science/journal/00917435](http://www.sciencedirect.com/science/journal/00917435)), Vol. 46, Issue 1, January, pp. 14-21.

John E. Evans and Richard H. Pratt (2007), *Transit Oriented Development; Chapter 17, Travel Response To Transportation System Changes*, TCRP Report 95, Transportation Research Board ([www.trb.org](http://www.trb.org)); at [www.trb.org/TRBNet/ProjectDisplay.asp?ProjectID=1034](http://www.trb.org/TRBNet/ProjectDisplay.asp?ProjectID=1034).

FTA (2008), *Better Coordination of Transportation and Housing Programs to Promote Affordable Housing Near Transit*, Federal Transit Administration, USDOT and Department of Housing and Urban Development; at [www.huduser.org/Publications/pdf/better\\_coordination.pdf](http://www.huduser.org/Publications/pdf/better_coordination.pdf).

*Housing and Transportation Affordability Index* (<http://htaindex.cnt.org>) provides a comprehensive view of affordability that includes the cost of housing and transportation at the neighborhood level.

ICF (2008), *The Broader Connection between Public Transportation, Energy Conservation and Greenhouse Gas Reduction*, American Public Transportation Association ([www.apta.com](http://www.apta.com)).

Kittleson & Associates (1999), *Transit Capacity and Quality of Service Manual*, Transit Cooperative Research Program, TCRP Web Document 6, Project A-15, TRB ([www.trb.org](http://www.trb.org)); at [www4.nationalacademies.org/trb/crp.nsf/All+Projects/TCRP+A-15](http://www4.nationalacademies.org/trb/crp.nsf/All+Projects/TCRP+A-15).

Ugo Lachapelle and Lawrence D. Frank (2008), "Mode Of Transport, Employer-Sponsored Public Transit Pass, And Physical Activity," *Journal Of Public Health Policy* ([www.palgrave-journals.com/jphp](http://www.palgrave-journals.com/jphp)).

Barbara Lipman (2005), "Something's Gotta Give: Working Families and the Cost of Housing," *New Century Housing*, Vol. 5, Iss. 2, Center for Housing Policy; at [www.nhc.org/pdf/pub\\_nc\\_sgg\\_04\\_05.pdf](http://www.nhc.org/pdf/pub_nc_sgg_04_05.pdf).

Todd Litman (2003), *Evaluating Criticism of Smart Growth*, Victoria Transport Policy Institute ([www.vtppi.org](http://www.vtppi.org)); at [www.vtppi.org/sgcritics.pdf](http://www.vtppi.org/sgcritics.pdf).

Todd Litman (2004a), *Rail Transit In America: Comprehensive Evaluation of Benefits*, Victoria Transport Policy Institute ([www.vtppi.org](http://www.vtppi.org)); at [www.vtppi.org/railben.pdf](http://www.vtppi.org/railben.pdf); summarized in "Impacts of Rail Transit on the Performance of a Transportation System," *Transportation Research Record 1930*, Transportation Research Board ([www.trb.org](http://www.trb.org)), 2005 pp. 23-29.

Todd Litman (2005), *Land Use Impacts On Transportation*, Victoria Transport Policy Institute ([www.vtppi.org](http://www.vtppi.org)); at [www.vtppi.org/landtravel.pdf](http://www.vtppi.org/landtravel.pdf).

Todd Litman (2006a), "Changing Travel Demand: Implications for Transport Planning," *ITE Journal*, Vol. 76, No. 9, ([www.ite.org](http://www.ite.org)), September, pp. 27-33; at [www.vtppi.org/future.pdf](http://www.vtppi.org/future.pdf).

Todd Litman (2006b), *Transportation Affordability: Evaluation and Improvement Strategies*, Victoria Transport Policy Institute ([www.vtppi.org](http://www.vtppi.org)); at [www.vtppi.org/affordability.pdf](http://www.vtppi.org/affordability.pdf).

Todd Litman (2007), *Evaluating Public Transit Benefits and Costs*, Victoria Transport Policy Institute ([www.vtppi.org](http://www.vtppi.org)); at [www.vtppi.org/tranben.pdf](http://www.vtppi.org/tranben.pdf).

Todd Litman (2008a), "Valuing Transit Service Quality Improvements," *Journal of Public Transportation*, Vol. 11, No. 2, Spring, pp. 43-64; at [www.nctr.usf.edu/jpt/pdf/JPT11-2Litman.pdf](http://www.nctr.usf.edu/jpt/pdf/JPT11-2Litman.pdf); more complete version at [www.vtppi.org/traveltime.pdf](http://www.vtppi.org/traveltime.pdf).

Todd Litman (2008b), *Build for Comfort, Not Just Speed: Valuing Service Quality Impacts In Transport Planning*, VTPI ([www.vtpi.org](http://www.vtpi.org)); at [www.vtpi.org/quality.pdf](http://www.vtpi.org/quality.pdf).

Todd Litman (2009), *Transportation Cost and Benefit Analysis*, VTPI ([www.vtpi.org/tca](http://www.vtpi.org/tca)).

Todd Litman (2011), *Smart Congestion Relief: Comprehensive Analysis Of Traffic Congestion Costs and Congestion Reduction Benefits*, Victoria Transport Policy Institute ([www.vtpi.org](http://www.vtpi.org)); at [www.vtpi.org/cong\\_relief.pdf](http://www.vtpi.org/cong_relief.pdf); summarized in "Evaluating Rail Transit Benefits: A Comment," *Transport Policy*, Vol. 14, No. 1 ([www.elsevier.com/locate/tranpol](http://www.elsevier.com/locate/tranpol)), January 2007, pp. 94-97.

Todd Litman (2015), *When Are Bus Lanes Warranted? Considering Economic Efficiency, Social Equity and Strategic Planning Goals*, presented at the Threadbo 14 Conference, September, Santiago, Chile; at [www.vtpi.org/blw.pdf](http://www.vtpi.org/blw.pdf).

Todd Litman (2016), *The Hidden Traffic Safety Solution: Public Transportation*, American Public Transportation Association ([www.apta.com](http://www.apta.com)); at <https://bit.ly/2JCTpZq>.

Todd Litman (2017), *Selling Smart Growth*, Victoria Transport Policy Institute ([www.vtpi.org](http://www.vtpi.org)); at [www.vtpi.org/ssg.pdf](http://www.vtpi.org/ssg.pdf).

William Lucy (2002), *Danger in Exurbia: Outer Suburbs More Dangerous Than Cities*, University of Virginia ([www.virginia.edu](http://www.virginia.edu)); at <http://arch.virginia.edu/exurbia/death-in-exurbia.pdf>.

Carrie Makarewicz, Peter Haas, Albert Benedict and Scott Bernstein (2008), *Estimating Transportation Costs for Households by Characteristics of the Neighborhood and Household*, Transportation Research Board 87th Annual Meeting ([www.trb.org](http://www.trb.org)).

Arthur C. Nelson (2009), *The New Urbanity: The Rise of a New America*, University of Utah Metropolitan Research Center; summary at [www.froogalizer.com/news/research-on-homeownership-rate-through-2030.html](http://www.froogalizer.com/news/research-on-homeownership-rate-through-2030.html).

NRDC (2010), *Reducing Foreclosures and Environmental Impacts through Location-Efficient Neighborhood Design*, Natural Resources Defense Council ([www.nrdc.org](http://www.nrdc.org)); at [www.nrdc.org/energy/files/LocationEfficiency4pgr.pdf](http://www.nrdc.org/energy/files/LocationEfficiency4pgr.pdf).

Gloria Ohland and Shelley Poticha (2006), *Street Smart: Streetcars and Cities in the Twenty-First Century*, Reconnecting America ([www.reconnectingamerica.org](http://www.reconnectingamerica.org)).

Richard H. Pratt (1999-2007), *Travel Response To Transportation System Changes*, TCRP Report 95, Transportation Research Board ([www.trb.org](http://www.trb.org)); at [www.trb.org/TRBNet/ProjectDisplay.asp?ProjectID=1034](http://www.trb.org/TRBNet/ProjectDisplay.asp?ProjectID=1034).

Steven E. Polzin, Xuehao Chu and Vishaka Shiva Raman (2008), *Exploration of a Shift in Household Transportation Spending from Vehicles to Public Transportation*, Center for Urban Transportation Research ([www.nctr.usf.edu](http://www.nctr.usf.edu)); at [www.nctr.usf.edu/pdf/77722.pdf](http://www.nctr.usf.edu/pdf/77722.pdf).

Reconnecting America (2004), *Hidden In Plain Sight: Capturing The Demand For Housing Near Transit*, Center for Transit-Oriented Development; Reconnecting America

([www.reconnectingamerica.org](http://www.reconnectingamerica.org)) for the Federal Transit Administration ([www.fta.dot.gov](http://www.fta.dot.gov)); at [www.reconnectingamerica.org/pdfs/Ctod\\_report.pdf](http://www.reconnectingamerica.org/pdfs/Ctod_report.pdf).

John L. Renne (2005), *Transit-Oriented Development: Measuring Benefits, Analyzing Trends, And Evaluating Policy*, Dissertation, Rutgers State University.

TranSystems Corporation (2007), *Elements Needed to Create High Ridership Transit Systems: Interim Guidebook*, TCRP Report 111, Transportation Research Board ([www.trb.org](http://www.trb.org)); at [http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp\\_rpt\\_111.pdf](http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_111.pdf).

ULI (2009), *Beltway Burden: The Combined Cost of Housing and Transportation in the Greater Washington, DC Metropolitan Area*, ULI Terwilliger Center for Workforce Housing, Urban Land Institute ([www.uli.org](http://www.uli.org)); at <http://commerce.uli.org/misc/BeltwayBurden.pdf>.

VTPI (2009), *Online TDM Encyclopedia*, Victoria Transport Policy Institute ([www.vtpi.org/tdm](http://www.vtpi.org/tdm)).

Clifford Winston and Ashley Langer (2004), *The Effect of Government Highway Spending on Road Users' Congestion Costs*, Brookings Institute ([www.brookings.edu](http://www.brookings.edu)).

Lloyd Wright (2003), "Mass Transit Options," ([www.gobrt.org/SourcebookMassTransitOptions.pdf](http://www.gobrt.org/SourcebookMassTransitOptions.pdf)) and "Bus Rapid Transit" ([www.gobrt.org/SourcebookBRT.pdf](http://www.gobrt.org/SourcebookBRT.pdf)), modules in the *Sustainable Transport: A Sourcebook for Policy-makers in Developing Cities*, published by the Sustainable Urban Transport Project – Asia ([www.sutp-asia.org](http://www.sutp-asia.org)) and Deutsche Gesellschaft fur Technische Zusammenarbeit ([www.gtz.de](http://www.gtz.de)).

[www.vtpi.org/raisetaxes.pdf](http://www.vtpi.org/raisetaxes.pdf)