

## **8. Evaluating Criticism of Transportation Cost Analysis**

This chapter evaluates various criticisms of transportation costing. For more detailed discussion see the report, “Evaluating Criticism of Transportation Costing” ([www.vtpi.org/critics.pdf](http://www.vtpi.org/critics.pdf)).

### **8.1 Chapter Index**

8.1 Chapter Index.....	1
8.2 Context of Criticism .....	1
8.3 Common Criticisms .....	3
a. Uncertainty – Burden of Proof	3
b. Confusion About “Externalities” and “Subsidies”	4
c. Transportation Benefits	5
d. Affordability and Vertical Equity	5
e. Roadway Cost Recovery – Conflicting Studies	6
f. Anti-Automobile, Anti-American and Anti-Consumer	7
g. Access Benefits of Roads	7
h. Problems are Self Correcting	7
8.5 Information Resources .....	9

### **8.2 Context of Criticism**

Transportation decision-makers are increasingly aware of the importance of improving transportation economic evaluation methods. The World Bank,<sup>1</sup> OECD,<sup>2</sup> USDOT,<sup>3</sup> and business journals<sup>4</sup> emphasize the importance of incorporating full costs, including indirect and external impacts, into transport policy and planning decisions, and many researchers have published transportation cost studies (see Chapter 2). In response, several reports, mostly supported by highway industries, have attempted to challenge the results of such studies. These critics raise various issues related to transportation costing methods and applications.

Some transportation costing criticism raises legitimate issues and makes a healthy contribution to discussion of costing methods and conclusions. However, some critics appear intent on dismissing transport costing rather than improving it. Those studies generally violate basic economic principles, reflect ideological perspectives, and lack peer review.

---

<sup>1</sup> World Bank (1996), *Sustainable Transport: Priorities for Policy Reform*, ([www.worldbank.org](http://www.worldbank.org)).

<sup>2</sup> European Conference of Ministers of Transport (1995), *Urban Travel and Sustainable Development*, OECD ([www.oecd.org](http://www.oecd.org)).

<sup>3</sup> FHWA (1995), *Estimating the Impacts of Urban Transportation Alternatives*, National Highway Institute, USDOT ([www.fhwa.dot.gov](http://www.fhwa.dot.gov)).

<sup>4</sup> Economist (1996), “Taming the Beast,” *The Economist* ([www.economist.com](http://www.economist.com)), 22 June.

Because of fundamental differences in perspective and philosophy, the results of the critics' analyses should not be legitimately compared with transport costing studies. Unfortunately, they frequently are. For example, the Canadian Automobile Association claims that driving is not subsidized, based on analysis that violates standard cost allocation methods and misrepresents many issues related to external costs. Critics might respond that transportation cost studies are equally biased, but most have been performed by major academic institutions or research organizations, are based on conventional economic principles, and many have peer review.

This is not to say that there are no errors, issues of disagreement, and uncertainty in the transportation costing literature, or that costing study results have not been misused. Below are some legitimate criticisms of transportation costing:

- Many cost estimates have significant variation and uncertainty. Although this is often acknowledged in the studies (some of which provide cost ranges), cost values are often reported as simple point values with little discussion of their variability. Since there are often several estimates of a particular cost, researchers should indicate the range of alternative estimates and explain why a particular estimate was selected for analysis.
- Some transportation costing studies provided insufficient details of assumptions and analysis to allow readers to understand how cost estimates were calculated.
- Published estimates usually reflect average costs, which can differ significantly from marginal costs. Marginal costs tend to vary significantly, depending on time, location and other factors, which can be difficult to measure.
- Many cost estimates are ultimately based on just a few original studies, some of which involved little research or are inappropriate for simple extrapolation to other situations. For example, some estimates of the number of parking spaces per vehicle and the portion of urban land devoted to transport facilities appear to be little more than educated guesses.
- Transportation costing may vary to reflect different context and objectives. For example, horizontal equity analysis may focus on the degree to which individuals or households bear the transportation costs they impose, while efficiency analysis focuses on whether prices reflect marginal costs. Some studies reflect a specific perspective, such as only considering costs that occur within a particular jurisdiction. Some studies fail to specify the context, or use inappropriate analysis methods (such as average rather than marginal cost values).
- It is inappropriate to add up total external costs of vehicle use and convert this into an optimal fuel tax. An optimal price structure would require several price changes to target individual externalities, subject to practical considerations.<sup>5</sup>
- It is inappropriate to add congestion externalities to motorists' travel time and vehicle operating costs when calculating total external costs, since this double counts impacts.
- Transportation costing is sometimes inappropriately presented as a moral rather than economic issue. The existence of external costs does not mean that driving is "bad," that people who drive are irresponsible, or alternative mode users are morally superior.

---

<sup>5</sup> Todd Litman (2007), *Socially Optimal Transport Prices and Markets*, VTPI ([www.vtpi.org](http://www.vtpi.org)); at [www.vtpi.org/sotpm.pdf](http://www.vtpi.org/sotpm.pdf).

### 8.3 Common Criticisms

*This section discusses some specific issues raised by transportation costing critics.*

#### a. Uncertainty – Burden of Proof

Some transportation costs are difficult to measure, due to of limited research or because they are inherently difficult to quantify. For example, external parking costs are technically easy to calculate but until recently little effort had been made to measure them, while land use impact costs of motor vehicle use are technically difficult to quantify. As a result, transport cost estimates involve various degrees of uncertainty.

But uncertainty is not unique to transportation costing, nor is it an insurmountable problem. Many decisions involve uncertainty, and uncertainty can be addressed in several ways including expert consultations, sensitivity analysis, and targeted research. Critics legitimately concerned with uncertainty should support rigorous and independent research on these issues.

Much of the variation in transportation costs can be explained and accounted for in analysis. A meta-analysis by Quinet compared the results of 14 transport cost studies performed in Western Europe from 1998-2003 (one from 1991).<sup>6</sup> It analyzed their methodologies and compared their results using regression analysis. It found that much of the variance in cost values between studies can be explained by differences in the types of costs and conditions evaluated. Scientific uncertainty is a smaller contribution of variation. It concludes that, when properly applied, cost studies can provide justifiable values that are useful for economic analysis.

Critics sometimes argue that uncertain costs should be excluded from analysis. This is analytically incorrect and skews results. It is more appropriate to use the best available estimates and apply sensitivity analysis. As stated by one expert, “*A crude approximation, made as exact as possible and changed over time to reflect new information, would be preferable to the manifestly unjust approximation caused by ignoring these costs, and thus valuing environmental damage as zero.*”<sup>7</sup>

Excluding or using only low estimates of uncertain costs is often defended as being “conservative,” implying caution. However, low cost estimates undervalue damages and risks, resulting in less cautious and conservative decisions than higher estimates. When a cost or risk is dismissed because of uncertainty, despite reasonable evidence of its existence, the results should be described as a *lower bound* of estimate, and decision makers informed that total costs are likely to be higher. Costs excluded from quantitative analysis because they are difficult to measure should be described qualitatively. For example, if transport project analysis includes no monetized estimates fo sprawl costs, land use impacts should be quantified and likely costs described.

---

<sup>6</sup> Emile Quinet (2004), “A Meta-Analysis Of Western European External Cost Estimates,” *Transportation Research D*, Vol. 9 ([www.elsevier.com/locate/trd](http://www.elsevier.com/locate/trd)), pp. 465-476.

<sup>7</sup> Richard Ottinger (1993), “Incorporating Externalities - The Wave of the Future,” in *Expert Workshop on Lifecycle Analysis of Energy Systems*, OECD ([www.oecd.org](http://www.oecd.org)), p. 54.

### b. Confusion About “Externalities” and “Subsidies”

Critics sometimes argue that congestion, crash and facility costs are not external since they are borne largely by motorists as a group. This argument reflects confusion about the concepts of external cost and subsidy. External costs are negative impacts not reflected in the price of a good. Subsidies are economic costs transferred from one individual or group to another.

These critics assume that externalities should be evaluated at the *sector* (group) level. Sector level analysis is common in politics where decisions are based on group interests but is inappropriate for economic evaluation, which deals with decisions by individual consumers and firms. Both economic efficiency and equity require that external costs be defined at the individual level for reasons discussed below:

- *Economic efficiency* requires that prices reflect marginal costs. This gives consumers accurate price signals. If road use prices fail to reflect full marginal costs, consumers will drive more than is optimal, leading to problems such as excessive congestion, facility costs, accidents and pollution. Described differently, internalizing costs gives consumers the savings that result when they drive less. Currently, if a motorist reduces mileage, the savings from reduced congestion, road and parking facility expenses, accidents and pollution are dispersed throughout society. By charging motorists directly for these costs they will individually capture the benefits that result when they drive less, which allows them to make efficient tradeoffs between the benefits and costs of each trip.
- *Horizontal equity* requires that individual consumers “pay for what they get and get what they pay for” unless a subsidy is specifically justified. External costs violate this principle, resulting in unfair cross-subsidies between individuals. Motorist’s impacts on other motorists might be equitable if each imposes and bears the same magnitude of costs, but in practice these impacts differ significantly between motorists. For example, careless drivers impose accident risks on more cautious motorists.

Sector level analysis implies that society is unconcerned with costs individuals impose on others in the same group. This is arbitrary and easily manipulated because it depends on how groups are defined. For example, is traffic noise caused by motorists from one neighborhood an internal or external cost when they drive in another neighborhood? Are motorcyclists included in the same group as car drivers for evaluating noise costs? Are noise costs internal if imposed on a resident of an automobile owning household who travels mainly by bicycle? Defining externalities at the sector level makes no more sense than to suggest that stealing is acceptable if committed against somebody who shares a “group” attribute (a common ethnic, consumer or income status).

Described differently, external costs represent a subsidy of one *good* at the expense of other *goods*. For example, free commuter parking makes driving relatively cheaper than other modes. Such distortions ultimately harm consumers by reducing their options and increasing problems such as congestion. Even commuters who drive and use free parking are worse off overall compared with a more neutral policies. For these reasons, economic efficiency and equity require individual level analysis of external impacts.

### c. Transportation Benefits

Critics argue that focusing on costs ignores transport benefits. This is untrue. As discussed in Chapter 7, most cost studies acknowledge the tremendous benefits provided by transport in general and automobile use in particular. But, most transport benefits are measured in terms of reduced costs, so cost analysis is the basis for measuring benefits.

The simple existence of benefits does not itself justify underpricing. Consumers pay directly for most goods they use regardless of how beneficial, including food, clothing and shelter, unless a subsidy is specifically justified. Broad subsidies for driving are only justified if *external marginal benefits* (people benefit overall if their neighbors drive more) are significantly greater than *external marginal costs*. Studies have found few external benefits from driving, and virtually no external *marginal* benefits.<sup>8</sup> That mobility provides benefits does not prove that *more* driving is better or that all driving should be subsidized. Direct user payments of transportation costs allows consumers to trade costs against benefits for each trip, just as a la carte restaurant pricing allows diners to choose the amount and combination of foods they want.

### d. Affordability and Vertical Equity

Critics sometimes argue that charging motorists for their external costs harms the poor. They claim that higher user fees and investments in alternative modes creates an elitist transport system that benefits the rich (who would enjoy uncongested roads), while low income motorists are forced to use inferior modes such as walking and public transportation. But these arguments ignore important points:

- Underpriced automobile travel reduces travel options and increases travel costs for non-drivers, which is vertically inequitable (i.e., it harms disadvantaged people).
- Subsidies to driving are borne elsewhere in the economy, increasing costs for housing and other consumer costs. These tend to harm low-income households, which tend to drive less than average.
- Transportation pricing reforms can be structured to support equity objectives. Fees can include targeted discounts, and revenues can be used in ways that benefit disadvantaged people, such as tax reductions and improvements to alternative modes.

---

<sup>8</sup> Werner Rothengatter (1991), “Do External Benefits Compensate for External Costs of Transport?”, *Transportation Research*, Vol. 28A, ([www.elsevier.com/locate/tra](http://www.elsevier.com/locate/tra)), p.321-328; Dr. Heini Sommer, Felix Walter, Rene Neuenschwander (1993), *External Benefits of Transport?*, ECOPLAN (Bern), March 1993.

#### e. Roadway Cost Recovery – Conflicting Studies

Some transportation costing critics attempt to demonstrate that motorists pay their fair share of costs.<sup>9</sup> However, these critics' analyses generally only consider a narrow range of external costs (generally just roadway expenditures) and violate standard highway cost allocation principles.<sup>10</sup> They often count all taxes on motor vehicles and fuels as user fees, although highway cost allocation makes a distinction between user fees and general taxes: true user fees are charged *in addition to* general taxes.<sup>11</sup> As an example, property taxes are a general tax, while municipal utility charges are user fees for particular services. A homeowner cannot fairly claim that paying their utility fees satisfies property tax obligations or vice versa. Similarly, roadway user fees are intended to reimburse governments for specific costs of road use beyond general taxes.

Suggesting that all taxes charged on automobiles and fuel are user fees is equivalent to suggesting that automobiles and vehicle fuel should be exempt from general taxes. If all taxes were treated as user fees no funds would be available for general government services, and user groups could make absurd demands: taxes on hats would be dedicated to public hatracks, and taxes on software would be dedicated to subsidize electricity.

Highway advocates often complain of fuel tax revenue “diversions” to help finance other modes, such as nonmotorized facilities and public transit services.<sup>12</sup> However, if horizontal equity requires that all motor vehicle user fee revenues be dedicated to road improvements (reflecting the principle that consumers should “get what they pay for and pay for what they get” unless a subsidy is specifically required), then they should also demand that all roadway facilities be financed through user fees. A significant portion of funding for roadways (particularly local roads), traffic services and parking facilities is from general tax revenues (as discussed in chapters 5.4, 5.6 and 5.8). In addition, motorists do benefit from improvements in alternative modes, for the sake of option value, to be available when they cannot drive, just as ship passengers finance lifeboats, and because improving alternatives is sometimes a cost effective way to reduce traffic and parking congestion problems. Since many jurisdictions exempt fuel from general taxes,<sup>13</sup> a portion of “special” fuel taxes can be considered a general tax payment.

---

<sup>9</sup> e.g. Jack Mallinckrodt (1998 / 2003), *Highway Subsidies*, <http://urbantransport.org>; at <http://urbantransport.org/hwysub.pdf>; Wendell Cox and Jean Love (1994), “Drivers Pay Their Own Way—And Then Some”, *Governing* ([www.governing.com](http://www.governing.com)); Kenneth Green (1995), *Defending Automobility: A Critical Examination of the Environmental and Social Costs of Auto Use*, Reason Foundation ([www.reason.org](http://www.reason.org)); Z. A. Spindler (1997), *Automobiles in Canada; A Reality Check*, Canadian Automobile Association ([www.caa.ca](http://www.caa.ca)).

<sup>10</sup> Hugh Morris and John DeCicco (1997), “Revisiting the Extent to Which User Fees Cover Road Expenditures in the United States,” *Transportation Research Record 1576*, ([www.trb.org](http://www.trb.org)), pp. 56-63.

<sup>11</sup> Urban Institute (1990), *Rationalization of Procedures for Highway Cost Allocation*, Trucking Research Institute ([www.atri-online.org](http://www.atri-online.org)), p. 53.

<sup>12</sup> Jonathan Williams (2007), *Paying at the Pump: Gasoline Taxes in America*, Tax Foundation (<http://financecommission.dot.gov/Documents/Tax%20Foundation%20paper%20on%20Gas%20Tax.pdf>).

<sup>13</sup> Joe Loper (1994), *State and Local Taxation: Energy Policy by Accident*, The Alliance to Save Energy ([www.ase.org](http://www.ase.org)).



**f. Anti-Automobile, Anti-American and Anti-Consumer**

Some critics claim transportation costing is unpatriotic and harmful to consumers.<sup>14</sup> They portray themselves as defending freedoms against unfair efforts to force consumers to “give up their cars” and be forced into undesirable travel modes. Cost-based pricing is described as “punitive,” as if intended to castigate motorists for bad behavior.

Such statements reflect a fundamental misunderstanding of transportation costing and the market principles on which it is based. Transport costing is not a debate about whether automobiles are “good” or “bad,” or a popularity contest between modes. It is a technical exercise to identify the full impacts of various transport options. Accurate costing information is the basis for making fair and rational transport decisions. Price reforms are not a punishment; they simply reflect direct user payment of costs, just as users are expected to pay for most goods they consume.

Transport costing and TDM programs are no more “anti-automobile” than a healthy diet is “anti-food.” An optimal diet requires an appropriate balance of foods. An optimal transport system requires an appropriate balance of mobility options. Market distortions that reduce consumer choice or underprice driving do not benefit consumers overall. Market reforms associated with least-cost investments or full-cost pricing are not intended to force consumers to give up driving that they value. Under virtually any optimal transport system motor vehicles are likely to remain a common form of transport, but some travel would probably shift to other modes because consumers consider themselves better off overall when given better choices and price signals.

Critics are wrong to claim that they are defending consumer choice. Underpricing motor vehicle use not only requires individuals to bear uncompensated costs (tax expenses, accident risk, air pollution, noise, etc.), but it also results in a less diverse transportation system, reducing consumer choices.

**g. Access Benefits of Roads**

Some critics argue that because local roads provide basic access their costs should be charged to property owners rather than to motorists. This argument may apply to the first increment of capacity (i.e., a narrow, lightly paved road), but costs for additional roadway capacity, and most maintenance and operating costs result from motor vehicle use. Economists acknowledge that it may be efficient and equitable to charge land owners for basic road access to their properties (for example, through property taxes or special levies), but any additional road quality (pavement, increased road capacity and higher design speeds) should be charged to road users.<sup>15</sup>

**h. Problems are Self Correcting**

Critics often argue that automobile costs are being solved through technological progress, for example, citing claims that air pollution has been reduced by 95% over the last few

---

<sup>14</sup> In particular Beshers, Cardato, Cox & Love, Green, Spindler and Wilson.

<sup>15</sup> USDOT (1988), “An Analysis of Highway Revenues and Cost Responsibility for Non-Users,” Appendix F, *Final Report on the Federal Highway Cost Allocation Study*, ([www.dot.gov](http://www.dot.gov)).

decades. This is an exaggeration. State and federal mandates have significantly reduced regulated tailpipe emissions under standard test conditions, but actual emissions are greater than these tests indicate because vehicles often operate outside of design conditions (cold engines, ineffective emission controls, etc.) and because not all air pollutants are regulated tailpipe emissions (including mechanical particulates and toxins).<sup>16</sup> Similarly, although technological improvements have increased vehicle occupant crash protection, much of this has been offset by increased vehicle speeds and mileage, resulting in little reduction in per capita crash risks.

---

<sup>16</sup> BTS (1997) *Mobility and Access, Transportation Statistics Annual Report 1997*, BTS ([www.bts.gov](http://www.bts.gov)), p. 109-110.



## 8.5 Information Resources

Eric Beshers (1994), *External Costs of Automobile Travel and Appropriate Policy Responses*, Highway Users Federation ([www.highways.org](http://www.highways.org)).

Roy E. Cordato (1997), *The Central Planning of Lifestyles: Automobility and the Illusion of Full Cost Pricing*, Competitive Enterprise Institute ([www.cei.org](http://www.cei.org)).

Wendell Cox and Jean Love (1994), “Drivers Pay Their Own Way—And Then Some,” *Governing* ([www.governing.com](http://www.governing.com)).

Mark Delucchi (2000), “Should We Try to Get the Prices Right?” *Access*, Number 16, University of California Transportation Center ([www.uctc.net](http://www.uctc.net)); at [www.uctc.net/access/access16.shtml](http://www.uctc.net/access/access16.shtml)

James Dunn (1998), *Driving Forces; The Automobile, Its Enemies and the Politics of Mobility*, Brookings Institute ([www.brookings.org](http://www.brookings.org)).

Kenneth Green (1995), *Defending Automobility: A Critical Examination of the Environmental and Social Costs of Auto Use*, Reason Foundation ([www.reason.org](http://www.reason.org)).

Thomas Hogarty (1998), “The Social Benefits of Personal Vehicle Travel,” *Transportation Quarterly*, Vol. 52, No. 2, ([www.enotrans.com](http://www.enotrans.com)) Spring, pp. 5-9.

Todd Litman (1999), *Evaluating Criticism of Transportation Costing*, VTPI ([www.vtpi.org](http://www.vtpi.org)); at [www.vtpi.org/critics.pdf](http://www.vtpi.org/critics.pdf)

Todd Litman and Allen Greenberg (2000), *Response to Mark Delucchi’s “Should We Try to Get the Prices Right?”* published in *ACCESS 16*, Spring 2000, VTPI ([www.vtpi.org](http://www.vtpi.org)).

Todd Litman (2006) *What’s It Worth? Economic Evaluation For Transportation Decision-Making*, VTPI ([www.vtpi.org](http://www.vtpi.org)); at [www.vtpi.org/worth.pdf](http://www.vtpi.org/worth.pdf)

Jack Mallinckrodt (1998 / 2003), *Highway Subsidies*, <http://urbantransport.org>; at <http://urbantransport.org/hwysub.pdf>.

Alan E. Pisarski (1999), *Cars, Women, and Minorities; The Democratization of Mobility in America*, Competitive Enterprise Institute ([www.cei.org](http://www.cei.org)).

Gabriel Roth, *Roads in a Market Economy*, Avebury, 1996.

VTPI, “Criticism of TDM,” *Online TDM Encyclopedia*, VTPI ([www.vtpi.org/tdm/tdm49.htm](http://www.vtpi.org/tdm/tdm49.htm)).

James Q. Wilson (1997), “Cars and Their Enemies,” *Commentary* ([www.commentarymagazine.com](http://www.commentarymagazine.com)), July, pp. 17-23.

Z. A. Spindler (1997), *Automobiles in Canada; A Reality Check*, Canadian Automobile Association ([www.caa.ca](http://www.caa.ca)).