

How Fair is Road Pricing? Evaluating Equity in Transportation Pricing and Finance

September 29, 2010



BIPARTISAN POLICY CENTER

This paper was prepared by a consultant to the Bipartisan Policy Center's National Transportation Policy Project (NTPP). The opinions and recommendations in this paper are those of the consultant alone and not of the Bipartisan Policy Center or the members of NTPP.



How Fair is Road Pricing? Evaluating Equity in Transportation Pricing and Finance

September 29, 2010

Prepared by
Brian D. Taylor, PhD, AICP
Professor and Chair of Urban Planning
Director, Institute of Transportation Studies
UCLA School of Public Affairs



BIPARTISAN POLICY CENTER

The background of the page is a faded, high-angle aerial photograph of Los Angeles. It shows the dense urban grid of the city, with numerous skyscrapers in the downtown area and a multi-lane highway in the lower-left corner. The image is overlaid with a semi-transparent grid pattern that is more prominent on the left side. At the very top, there is a solid blue horizontal bar, and below it, a small section of a green and blue grid pattern.

Acknowledgements

The author thanks Alexandra Evans and Rebecca Kalauskas who conducted background research for this paper, Hiroyuki Iseki and Eric Morris for their comments and suggestions, and Deborah Kim and Kim Tran who helped with editing and formatting.

Table of Contents

| | |
|--------------------------------|----------|
| Executive Summary | 1 |
|--------------------------------|----------|

| | |
|--|----------|
| Overview of Transportation Pricing, Finance, and Equity | 5 |
|--|----------|

| | |
|---|----|
| Putting Transportation Pricing and Finance Equity in Context | 5 |
| Competing Views of Fairness and Equity | 6 |
| From Theory to Practice: Transportation Pricing and Finance Equity | 7 |
| Geography and Equity | 9 |
| Equitable Transportation Programs versus Equitable Transportation Systems | 12 |
| The Divorce of Pricing and Finance in Transportation Policy | 13 |
| Why the Push to Reunite Pricing and Finance? | 13 |
| Transportation Pricing Equity: Compared to What? | 14 |

| | |
|---|-----------|
| Case Studies: Addressing Equity Concerns in Practice | 19 |
|---|-----------|

| | |
|--|----|
| Dedicating revenues to transit service and road improvements in the tolled corridor | 20 |
| Limited scale and phased, incremental implementation | 20 |
| Public outreach and education | 21 |

| | |
|--|-----------|
| Conclusion: What's a Fair Price for Transportation? | 23 |
|--|-----------|

| | |
|---------------------------|-----------|
| Bibliography | 25 |
|---------------------------|-----------|

| | |
|--|-----------|
| Appendix: Five Case Studies of Equity in Electronic Road Tolling Projects | 35 |
|--|-----------|

| | |
|---|----|
| San Diego's I-15 HOT Lanes: Public Outreach Campaign & Revenue Dedicated to Transit | 35 |
| Minnesota's I-394 MnPass: Bipartisan Support Quells Equity Objections | 36 |
| German Toll Collect: Moving Towards a Fair Distribution of Costs | 37 |
| Stockholm Congestion Tax: Pilot Program Allows Policy Adjustments | 39 |
| New York City Congestion Pricing: Perceived Inequities Help to Kill the Proposal | 41 |

Tables

| | |
|---|-----------|
| Table 1. Justice and Public Finance | 7 |
| Table 2. Defining Efficiency, Effectiveness, and Equity in Transportation Policy | 8 |
| Table 3. Confounding Notions of Equity in Transportation Finance | 10 |
| Table 4. Linking Equity, Efficacy, and Efficiency in Evaluating the Performance Transportation Programs and Systems | 11 |
| Table 5. Comparing the Equity of Congestion Tolls and Transportation Sales Taxes | 15 |



Pricing is not only a way to substantially increase transportation system efficiency, it is also a way to address and correct substantial inequities in our current systems of transportation finance.



Executive Summary

Concern with the sustainability of auto-dependence, chronic metropolitan traffic congestion, and decades of erosion in the buying power of motor fuel taxes has left many public officials looking for ways to increase the efficiency, equity, and financial stability of transportation systems. One approach to increasing transportation efficiency and securing new revenues is to meter road use with electronic tolls. Tolling can increase efficiency by varying prices to better distribute roadway use, thereby reducing congestion delays and increasing the throughput of vehicles. Tolling can increase equity by transparently linking prices paid and costs imposed by road users. And tolling can increase financial stability by creating steady streams of revenue that rise and fall with system use. Thus unlike most other measures for congestion alleviation—such as road capacity expansion or new public transit lines—that entail costs but few revenues, congestion pricing both makes our existing road system work better and generates revenues to help pay for its own implementation.

While technological advances make such tolling easier, cheaper, and more reliable than ever, many worry that charging people for driving on public roads is unfair, even un-American. Such concerns reflect the complex, and sometimes confusing, nature of road pricing and its outcomes. This paper examines road pricing equity from a variety of perspectives to facilitate understanding of various road pricing strategies. Given the often competing views of equity, this paper develops an evaluation framework that incorporates three distinct bases for evaluating equity—equal freedom of choice, equal opportunities, and equal outcomes. This transcends the sometimes ideological characterizations of equity to allow for a more practical consideration of the fairness of transportation finance and pricing. It finds that, by some definitions of equity, pricing may disproportionately affect the poor; for example, pricing may cause lower-income travelers to alter their travel patterns more than those who are wealth-

ier. However, in many more respects pricing would be to the advantage of the poor; for example, its revenue could reduce or replace regressive sales taxes that are increasingly used to fund transportation. Pricing would benefit those with lower incomes because higher-income individuals tend to drive the most and are more likely to travel on congested routes, and thus would pay most of the tolls. In addition to income effects, road pricing would increase fairness over our current transportation finance system because it places the primary responsibility for paying for the transportation system on those who use it, and not on those too poor to afford autos or who choose to travel by other means.

The paper then reviews five case studies of road pricing—in San Diego, Minneapolis-St. Paul, Germany, Stockholm, and New York—to explore how equity concerns have been raised and addressed. It finds that equity was a central question in each case, alternatively motivating:

- (1) The acceptance of pricing (Germany),
- (2) The funding of alternative modes (San Diego, Minnesota, and Stockholm),
- (3) Mid-course restructuring of the pricing program to address public concerns (Stockholm), and
- (4) Successful opposition to a pricing proposal (New York).

In practice, successful mitigation of equity concerns has entailed:

- Careful planning of the project or program, paying attention to the dedication of toll revenues to both transit and highway improvements in and around the tolled areas to create constituents for the pricing program,
- A geographic scope limited to central, congested zones, particular travel corridors, or particular market segments,

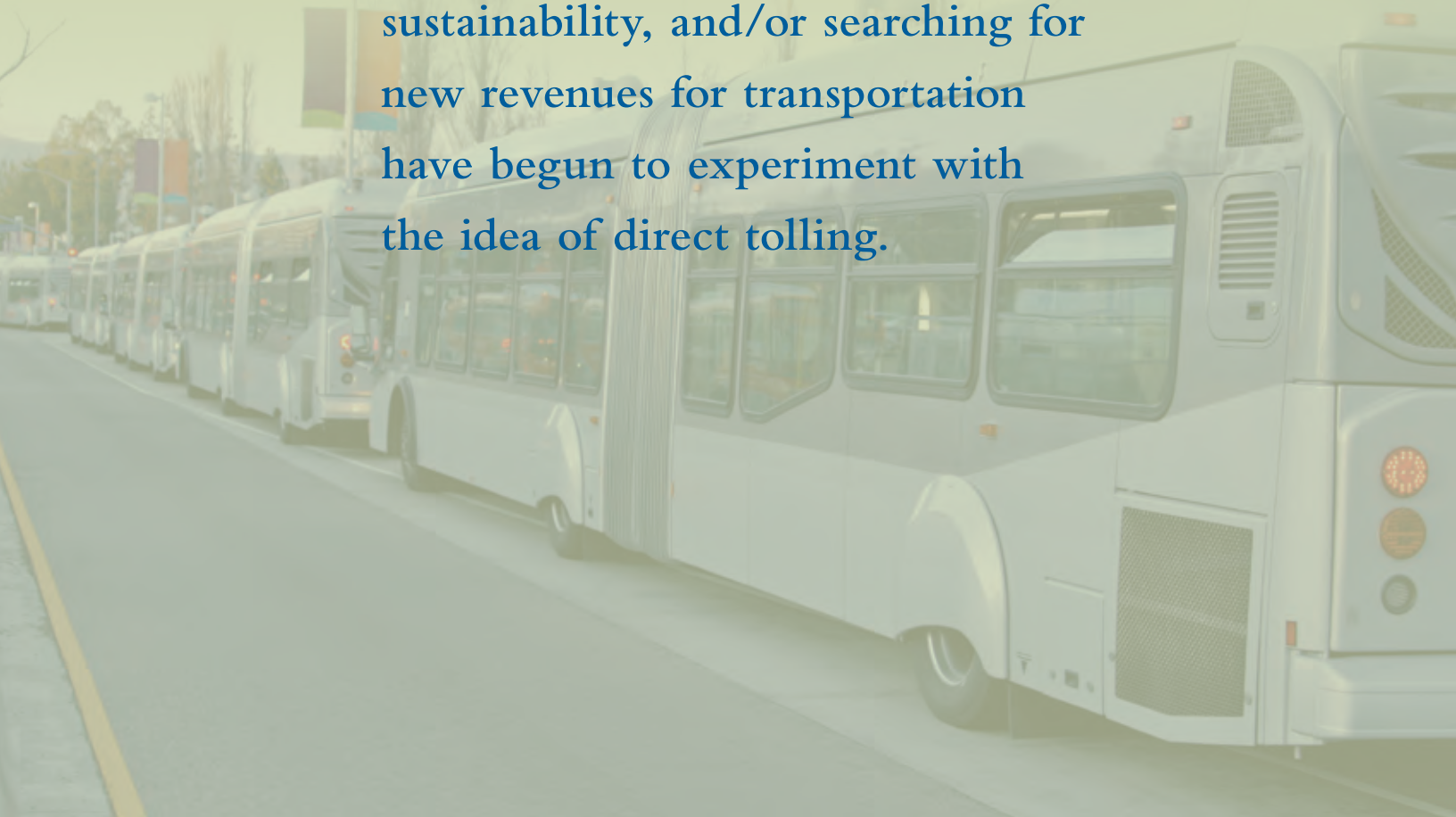
-
- Incremental implementation to allow for mid-course adjustments in project development, and
 - Ongoing, substantive, and sincere public outreach and education efforts that meaningfully influence program design.

Such efforts have increasingly turned equity objections to pricing on their head by presenting pricing as not only a way to substantially increase transportation system efficiency, but also as a way to simultaneously address and correct substantial inequities in our current systems of transportation finance. The equity analysis outlined in this paper is intended to foster such comprehensive evaluations of road pricing equity vis-à-vis other forms of transportation finance in the years ahead.





Technological limitations have long created obstacles to effective road pricing, but as these barriers have receded public officials interested in reducing congestion, increasing environmental sustainability, and/or searching for new revenues for transportation have begun to experiment with the idea of direct tolling.



Overview of Transportation Pricing, Finance, and Equity

Allowing drivers to crowd onto roadways without regard to the costs their travel imposes on others increases traffic delays, fuel consumption, vehicle emissions, crashes, and, quite possibly, sprawling development. Economists and transportation analysts have long touted the potential efficiency benefits of directly charging users for the costs their travel imposes on society, providing incentives to motorists to drive less or at least in less congested

Charging fees to drive on roads raises concerns among many fair-minded people that lower-income people might be unfairly priced off roads.

ed places and at less congested times. Technological limitations have long created obstacles to effective road pricing, but as these barriers have receded public officials interested in reducing congestion, increasing environmental sustainability, and/or searching for new revenues for transportation have begun to experiment with the idea of direct tolling. However, charging fees to drive on roads—fees that rise and fall with the level of congestion, vehicle weight, and so on—raises concerns among many fair-minded people that lower-income drivers might be unfairly priced off roads.

Is road pricing fair? This paper examines this question from a variety of perspectives. It begins by looking at the circumstances that have led public officials to consider experimenting with tolls. It then considers the broader context of social equity and discusses why, in the context of transportation finance, various views of equity often conflict. The paper then applies this practical ethical framework to transportation finance/pricing equity. The paper further explores how the tensions between equitable transportation finance programs (such

as the federal highway trust fund) and equitable transportation systems (such as the Washington Metro) have led most elected officials to inappropriately separate transportation pricing from finance in policy debates. Next, the paper compares the equity of road pricing with the increasingly popular technique of dedicating local sales taxes to transportation. Finally, the paper summarizes and draws lessons from the findings of five case studies where pricing has been considered or implemented around the world, to see how equity concerns have emerged and been addressed. The details of these case studies are summarized in the appendix.

Putting Transportation Pricing and Finance Equity in Context

Nearly all transportation policy and planning debates concern finance, and nearly all transportation finance debates concern equity. To some, this second assertion may seem puzzling, even counter-intuitive. But the way that public officials think of equity in transportation pricing and finance is far different from the way that most social scientists or transportation analysts would define the term. Thus, “equity” gets defined quite differently by different interests at different times. To paraphrase former Supreme Court Justice Potter Stewart, most of us cannot precisely define equity or inequity in transportation finance, but we think that we know it when we see it.

There are two principal ways one can think about transportation equity: We can conceive of transportation as an end in itself or as a means to an end. Transportation analysts typically think the latter: they consider transportation to be a “derived demand” which we harbor not because we enjoy travel for travel’s sake but because we need transportation in order to engage in non-transportation-related activities. One stands on a crowded subway each morning not for the thrill of the ride, but to

get to work on time; one searches for a parking space at the grocery store not for the pleasure of finding an open space, but to stock one's house with food. Transportation is an important, often critical, link to education, paid work, recreation, health care, culture, and many other aspects of quality living. Planners, policymakers and public officials are rightly concerned that most members of society have sufficient levels accessibility. So in addition to public goods and market failure rationales, many public officials justify public investments in transportation on the grounds that they provide for the basic mobility and accessibility needs of disadvantaged members of society regardless of ability to pay.

In addition to ability to pay, access is affected by age, sex, physical ability, cognitive ability, and cultural background. Indeed, a large body of research examines how the young and the old, the disabled, and the poor suffer from lower levels of mobility and accessibility¹. The focus here, however, is on four questions about the public sector role in transportation:

- (1) Who pays for transportation?
- (2) How do they pay?
- (3) Who benefits from transportation?
- (4) How do they benefit?

Competing Views of Fairness and Equity

Many transportation economists and policy analysts characterize equity along two dimensions: horizontal and vertical. *Horizontal equity* considers how members of the same group (the elderly, bus riders, and so on) fare relative to one another. *Horizontal equity* is achieved, for ex-

ample, when all members of the same income class pay equal taxes. *Vertical equity*, on the other hand, considers how members of different groups (poor vs. wealthy, drivers vs. non-drivers, etc.) fare relative to one another. *Vertical equity* is achieved, for example, when taxes are levied on households proportional to the ability to pay. While *horizontal* and *vertical equity* are central concepts in taxation and finance, questions of transportation equity run much deeper and are summarized in Table 1.

Public investments in transportation are sometimes justified in that they provide for the basic mobility and accessibility needs of disadvantaged members of society regardless of ability to pay.

How can we make sense of such a disparate set of competing theories, and how can they be applied, separately or in concert, to practical questions of road pricing? Arguments over transportation pricing and finance frequently directly or indirectly incorporate parts of the theories described in Table 1, but often in an internally contradictory, even illogical, fashion. Voters, and the people they elect, frequently judge policies that distribute scarce resources based on instinct or feeling formed by limited or incomplete introductions to the many ideas of distributive justice. Indeed, public opinion research has consistently found that most people's conception of justice is highly variable and complex; studies of both stated preferences and actual behavior show that people switch among characterizations of justice according to the situation.² Members of the public, and the officials whom they elect, will frequently argue that roadway tolls would be unfair because they dispropor-

1 See, for example, Blumenberg & Waller 2003; Bullard & Johnson 1997; Deka 2004; Clifton & Lucas 2004; Garrett & Taylor 1999; Hodge 1995

2 Frey 2003; Tetlock 2002; Rozin et al. 1999; Gladwell 2002

Table 1. Justice and Public Finance

| Theory of Justice | Conception of Justice in Relation to Public Finance |
|----------------------------------|---|
| <i>Strict Egalitarianism</i> | Each member of society receives the same magnitude of goods and services irrespective of contribution. |
| <i>Difference Principles</i> | Individuals have equality in basic rights and liberties, but society is better off when individual success is cultivated and allowed to benefit individuals directly. |
| <i>Resource-based Principles</i> | Goods and services are equally distributed at the outset, but there is little or no cross-subsidization from that point forward. |
| <i>Desert-based Theories</i> | Those who increase wealth in society are entitled to benefit directly from that wealth. |
| <i>Libertarianism</i> | Consensual transfers of goods and services within a society are just by definition. |

tionately affect the poor, and yet officials campaign for and voters approve highly income-regressive sales and other non-transportation-use-based tax increases earmarked for transportation. This may be because tolls are highly visible, while sales taxes—levied in small amounts over very large numbers of transactions—are not. Or it may be simply that sales taxes are common and familiar, and therefore escape scrutiny, while things like congestion charges are less familiar, inviting skepticism.³ But in either case such distinctions are not based on consistently applied principles of equity.

From Theory to Practice: Transportation Pricing and Finance Equity

A common dilemma in public policy involves evaluating the tradeoffs between efficiency and equity. Policy

analysts sometimes complicate matters further by adding efficiency to the mix (Table 2).

But whether considering efficiency alone or in concert with efficacy, these two measures are often considered to be in tension with equity. Indeed, proposals to improve the efficiency and efficacy of transportation systems—such as through congestion pricing—are often objected to on equity grounds. Such protests notwithstanding, it is not evident that efficiency, efficacy and equity in transportation finance are incongruent.

Transportation finance programs can have three broad effects:

- (1) Generating revenues
- (2) Changing travel behavior
- (3) Redistributing income among people, groups, and places.

³ Derrick & Scott 1998

Table 2. Defining Efficiency, Effectiveness, and Equity in Transportation Policy

| | |
|-------------------|--|
| Efficiency | The ratio of outputs (lane miles of new roadway) to inputs (expenditures on land, labor, and capital). |
| Efficacy | The ratio of consumption (passengers) to outputs (vehicle hours of transit service). |
| Equity | The relative distribution of transportation inputs (transportation revenue collections), outputs (transportation expenditures), or consumption (driving on roads). |

For example, congestion pricing, which aims to reduce traffic delay, emissions, and fuel consumption by variably pricing scarce road space has long been favored by economists as a way to substantially increase efficiency in managing traffic congestion.⁴ Revenues collected for transportation from non-transportation-based sources, like the increasingly popular local option transportation sales taxes, are used to provide transportation capacity and affect travel as well. By disconnecting the consumption of transportation capacity from the prices paid for travel, non-transportation-based finance instruments—like sales taxes and general obligation bonds—discourage travelers from considering how their travel choices impose costs on society through congestion delays, noise, emissions, and so on.

A relatively large body of research suggests that travelers with lower incomes are more sensitive to variations in fares, tolls, and fees than higher income travelers.⁵ However, a similarly well-established body of research shows that higher income travelers are more likely to travel longer distances in peak hours and in peak directions—precisely the locations where congestion tolls are likely to be highest.⁶ Therefore, a lower income traveler is more likely to be discouraged by a

toll from making a peak-hour, peak-direction trip. On the other hand, because wealthier travelers are more likely to be tolled, shifting from sales and other non-transportation-based taxes for transportation to peak-based tolls would in many cases shift the burden of transportation finance away from lower income travelers as a group (Schweitzer & Taylor 2008). Improving equity in transportation finance is not a simple task, and the most discernable effects are not necessarily the most important.

Disagreements over equity in transportation pricing and finance arise from the competing and contradictory ways that equity is both framed and evaluated. Further complicating matters is the wide variety of *reference units* by which one can measure the equity of a given policy's effects. For example, financing and pricing modes on the basis of trips, passenger-miles-traveled, or on a per capita basis all yield different measures of equity. These factors combine to intensify confusion and misunderstanding among public officials and the public over the fairness of transportation finance.

Borrowing from the theories of distributive justice described above, we can say that egalitarian philosophies emphasize outcomes, difference or resource-based philosophies emphasize opportunities (or vertical equity), and libertarian philosophies emphasize markets (or horizontal equity). Each of these philosophies can, in turn, be

4 Walters 1961; Mohring 1970; Small, Winston, & Evans 1989

5 Cohen 1987; Giuliano 1994; Harvey 1994; Richardson & Bae 1998; Santos & Roley 2004

6 Dittmar et al. 1994; CARB 1995; Frick et al. 1996; Sullivan 2000

applied to different actors, or units of analysis—individuals, groups, or jurisdictions—in transportation pricing and finance debates. While “units of analysis” may seem itself an abstract concept, it allows us to understand how and why people so often talk past one another in debates over transportation finance. The concept allows us to clearly describe the divergent conceptions of equity that the more common concepts of *horizontal* and *vertical equity* simply cannot (Table 3).

In general, transportation scholars tend to focus on *individual equity*,⁷ advocates and activists are more likely to focus on *group equity*,⁸ while elected officials are most concerned with *geographic equity*. This focus on geography is because representation in the U.S. is organized spatially into a hierarchy of jurisdictions. And because it is elected officials who oversee the collection and distribution of transportation funds, most debates in transportation pricing and finance center first and foremost on questions of *geographic equity*.

Geography and Equity

Geographic equity arises frequently in the context of federal transport policy. For example, some states tend to generate more in federal motor fuel tax revenues than they receive in fuel-tax-funded federal expenditures, while other states tend to receive more in federal transportation funding than their motorists generate in federal fuel taxes. This redistribution of federal fuel tax revenues from “donor” states to “donee” states has been hotly debated in Washington for decades and helped delay the passage of both the TEA-21 legislation in 1998 and the SAFETEA-LU legislation in 2005.

Supporters of redistribution argue that it causes wealthier states to cross-subsidize poorer states, allows us to have an inter-connected national highway system, and guarantees a basic level of public transit in most urban areas. Such redistribution is often used to justify federal involvement in transportation finance. However, critics have countered that the redistribution reflects a rural bias in the federal transportation program (especially for highways), and research has shown that it actually redistributes funds from poorer states (those with less fiscal capacity) to richer ones (with more fiscal capacity).⁹ This redistribution may also transfer funds from states with high levels of transit use to states where driving dominates.¹⁰

Transportation scholars tend to focus on individual equity, advocates and activists are more likely to focus on group equity, while elected officials are most concerned with geographic equity.

Critics of the redistribution of federal transportation revenues further contend that the national highway system is largely in place, and the most significant transportation investment needs are in congested urban areas. If all federal fuel tax funds were simply returned to states exactly in proportion to their collection, there would be no rationale for a federal fuel tax; it could be eliminated and states would then be free to collect as much as they needed from higher state fuel taxes.¹¹

7 Fullerton & Rogers 1993; Due & Mikesell 1994; Besley & Rosen 1998; Derrick & Scott 1998; Bento et al. 2005; Santos & Catchesides 2005; Shoup 2005; Jia & Wachs 1998; Sanchez et al. 2003; Blumenberg 2003

8 Blumenberg & Ong 2001; Raphael & Rice 2000; Raphael & Stoll 2000; Hodge 1995; Garrett & Taylor 1999; Deka 2004; Forkenbrock 2001

9 Lem 1997

10 De Cerreno et al. 2003

11 Roth 1998

Table 3. Confounding Notions of Equity in Transportation Finance

| Unit of Analysis | Type of Equity | | |
|--|--|---|---|
| | <i>Market Equity</i> | <i>Opportunity Equity</i> | <i>Outcome Equity</i> |
| Geographic States, counties, legislative districts, etc. | Transportation spending in each jurisdiction matches revenue collections in that jurisdiction. | Transportation spending is proportionally equal across jurisdictions. | Spending in each jurisdiction produces equal levels of transportation capacity/service. |
| Group Modal interests, racial/ethnic groups, etc. | Each group receives transportation spending/benefits in proportion to taxes paid. | Each group receives a proportionally equal share of transportation resources. | Transportation spending produces equal levels of access or mobility across groups. |
| Individual Residents, voters, travelers, etc. | The prices/taxes paid by individuals for transportation should be proportional to the costs imposed. | Transportation spending per person is equal. | Transportation spending equalizes individual levels of access or mobility. |

Source: Adapted by author from Levy, Meltsner, and Wildavsky 1974.

Along these lines, some have argued that systems of transportation pricing and finance favor suburbs over central cities. Chen argues that the intra-metropolitan distribution of federal transportation dollars and local non-transportation-based taxes for transportation tend to favor developing over developed areas and suburbs over central cities (as well as highways over public transit and rail transit over buses).¹² Chen in effect criticizes market equity return-to-source rationales in favor of funding distributions based instead on opportunity or outcome equity. Likewise, Bullard, et al. complain that higher rates of street and highway expenditures in growing suburban areas are biased against disproportionately minority areas.¹³

Given overriding political concerns with geographic equity in the distribution of transportation revenues, distortions emerge when transportation use or demand does not vary comparably across jurisdictions. Public transit is perhaps the most striking example of this. Transit ridership is concentrated spatially in the largest, most densely developed cities. About one-third of all transit passengers in the U.S. are in the New York metropolitan area. The ten largest U.S. transit systems carry over 60 percent of all riders; the hundreds of other, smaller systems carry less than 40 percent of all passengers.¹⁴ In the *realpolitik* of public transit finance, however, debates center on how resources are doled out to jurisdictions and the *suppliers* of transit service, with little regard for the enormous spatial variation in the *consumers* of transit service.

¹² Chen 1994

¹³ Bullard, Johnson, and Torres 2004

¹⁴ Taylor and McCullough 1998; Taylor, Miller, Iseki, & Fink 2009

The New York Metropolitan Transit Authority (NY MTA) alone carries over 27 percent of the nation's transit riders each year.¹⁵ During the six years between 1995 and 2000, federal capital and operating subsidies combined averaged \$0.20 per unlinked passenger trip on NY MTA. In contrast, riders on Chapel Hill Transit in North Carolina, which carries 0.03 percent of the nation's transit riders, enjoyed federal transit subsidies which averaged \$0.97 per trip during the 1990s.¹⁶ Such geographic disparities are not confined to federal transportation finance. In California, the San Francisco Municipal Railway carries nearly half (45 percent) of all Bay Area transit riders, but receives just 10 percent of the subsidies allocated

through the state Transportation Development Act (TDA). On the other hand, Santa Clara Valley Transit Authority in the San Jose area carries 11 percent of all Bay Area transit riders yet receives over one-third of the region's TDA transit subsidies.¹⁷

The reason for these disparities is quite straightforward: representation in Congress and most state legislatures (with the exception of the U.S. Senate) matches the geographic distribution of voters, not urban transit patrons. Geographic equity, therefore, allocates public transit funding "equally" among jurisdictions, often regardless of how the funds are used. The centrality of the imperative of geopolitical equity in transportation policy and

15 American Public Transportation Association (APTA) 2003a

16 APTA 2003a, 2003b

17 Metropolitan Transportation Commission 2003; Taylor 1991

Table 4. Linking Equity, Efficacy, and Efficiency in Evaluating the Performance Transportation Programs and Systems

| | Program Performance | System Performance |
|-------------------|---|--|
| Efficiency | <ul style="list-style-type: none"> ■ Has low administrative and overhead costs relative to the revenue collected. | <ul style="list-style-type: none"> ■ Optimizes provision of transportation service for a given level of expenditure. |
| Efficacy | <ul style="list-style-type: none"> ■ Is politically feasible: has stable political support, is popular with voters, and has little opposition from powerful stakeholders. ■ Revenues generated meet needs and are stable and predictable. | <ul style="list-style-type: none"> ■ Optimizes utilization of existing capacity. ■ Lowers transportation costs and promotes economic development. |
| Equity | <ul style="list-style-type: none"> ■ Is perceived as treating places and jurisdictions fairly. ■ Major stakeholders and interest groups perceive they are treated fairly. | <ul style="list-style-type: none"> ■ Provides all users with transportation access, regardless of circumstances (age, income, disability, etc). ■ Is progressive based on the ability to pay. ■ Charges users in proportion to the costs they impose on the system and society. |

Source: Brown et al. 1998.

planning can hardly be over-emphasized. It explains why Texas received \$2.7 billion *less* in federal fuel tax revenues between 1956 and 1994 than motorists in Texas paid in federal fuel taxes. In contrast, Hawaii has received \$2.2 billion *more* than motorists in Hawaii paid in federal fuel taxes; for every \$1.00 in federal fuel tax generated in Hawaii, the state has received \$4.11 in fuel-tax funded appropriations.¹⁸ It also explains why new rail transit systems were built in Atlanta, Miami, and many other sprawling Sunbelt cities over the last quarter century, while the long-planned Second Avenue subway in transit-oriented Manhattan has yet to carry a passenger.¹⁹

Arguments in favor of some transportation finance schema are often made on geographic equity grounds, while equity arguments against some proposals are most often made on group or individual equity grounds.

Evidence of the geo-political equity imperative can be seen in the equity arguments over transportation pricing and finance. Arguments *in favor* of some transportation finance schema are often made on geographic equity grounds, while equity arguments *against* some proposals are most often made on group or individual equity grounds. For example, calls to raise the guaranteed minimum return of federal motor fuel tax dollars to “donor” states prior to the passage of the recent federal SAFETEA-LU surface transportation legislation were nearly always cast in terms of geo-political equity. The common political focus on geographic equity notwithstanding, arguments against congestion tolls, peak-hour transit pricing,

or weight-distance truck tolls are often cast as unfair to the poor or to individual owner-operator truck drivers. But as Wachs (1994) has noted, concern over the plight of the poor under various pricing proposals is frequently made by self-interested parties (trucking, auto clubs, etc.) who, “seem to have little concern over the well-being of the poor or of working women when considering other policy initiatives, such as sales tax increases to support the expansion of rail lines.”

Equitable Transportation Programs versus Equitable Transportation Systems

This overriding concern with the geographic equity of transportation funding among states, districts, and jurisdictions ensures a political focus on the expenditure effects of transportation *finance programs*. This makes it challenging to consider how transportation funding decisions affect the efficiency, efficacy, or equity of *transportation systems*. Table 4 offers an overview of how we might simultaneously evaluate the performance of transportation finance programs and systems in each of these realms; note how differently equity is framed with the two.

Program performance criteria evaluate how well a finance mechanism meets tests of political acceptability and administrative ease. These questions tend to be prominent in policy debates. *System performance* criteria, on the other hand, address how finance mechanisms influence the use and performance of the transportation system itself. System performance criteria acknowledge that finance policies are not just about collecting and distributing money. Pricing and finance instruments also profoundly affect the way transportation services are provided and the way citizens use them, though elected officials often act as though this were not the case. Put simply, not pricing travel affects choices and behaviors about the use of the transportation system as profoundly as pricing travel does.

¹⁸ Poole 2001

¹⁹ Lawlor 1995

The Divorce of Pricing and Finance in Transportation Policy

With all of the attention paid to the politics of geographic equity, public officials frequently fail to consider how transportation finance programs affect the use and performance of the transportation system. Yet the use and finance of transportation systems are tightly intertwined and cannot be considered separately. Fees imposed on users in proportion to the costs users impose on society are typically the finance mechanisms that will best optimize resource allocation, efficiency and transportation system efficacy. User fees make people more aware of the costs of travel (in the form of wear and tear

The transportation finance system and the performance of the transportation system are mutually reinforcing.

on the system, delay imposed on others, environmental damage, and so on). Such information encourages drivers to forego trips or shift low priority trips to less socially costly times of day, routes, modes, or destinations.

But despite the obvious and well-documented relationship between the pricing of transportation systems and their use, public officials are frequently loathe to even *consider* accurate pricing of transportation systems. What to build and where to build it, for example, are often treated as entirely separate from who should pay and how they should pay for it. But how both the supply of and demand for transportation are influenced by user costs is neither abstract nor trivial. The fares, fees, tolls, and taxes paid by travelers affect their decisions on where to travel, when to travel, how to travel, and even whether to travel. Use of the transportation system in turn greatly influences the maintenance and new capac-

ity “needs” of the system, which affects the finance system. Thus, the transportation finance system and the performance of the transportation system are mutually reinforcing.

Consider the case of truck-weight fees as an example of how the transportation finance system affects user decisions. Damage to pavements caused by heavy trucks increases significantly with weight per axle. Many people are surprised to learn that a relatively small share of trucks with heavy axle loads does most of the damage to roads.²⁰ Yet for decades many states levied truck weight fees based on the weight of *empty* trucks, and tollways frequently set rates based on the number of axles per vehicle. Both policies encourage truckers to load heavy weights onto as few axles as possible, and thereby *maximize* damage to roadways. Such truck fee systems increase maintenance and rehabilitation costs in comparison to jurisdictions where fees are assessed in ways that encourage truckers to reduce axle weights. Thus, changing the way that fees are levied on trucks would change truckers’ behavior, and, in turn, substantially lower maintenance costs without necessarily increasing either taxes or revenues.

Why the Push to Reunite Pricing and Finance?

Most transportation economists agree that transportation finance programs should, as much as possible, charge users the *marginal social cost* of travel.²¹ The term *marginal* refers to the cost of providing for one additional trip, given that others are already using the system at the same time. For example, when a car gets on a the crowded freeway, it takes up space that other automobiles can no longer occupy, it imposes some delay on

20 Small, Winston, & Evans 1989; USDOT FHWA 1997; Forkenbrock 2001

21 Walters 1961; Mohring 1970; Small, Winston, & Evans 1989; Murphy & Delucchi 1998

vehicles upstream, and it also causes some amount of pavement damage. If there are very few vehicles already on the freeway, then the cost of providing for that one additional car is very small. On the other hand, if there are many cars already on the freeway, one additional vehicle can slow other cars upstream and increase congestion to a surprising degree. In such cases, the marginal cost of accommodating an additional car is large. The term *social* refers to the costs that society pays for providing for that one additional vehicle. These social costs result mostly from congestion, pollution, noise, vehicle crashes, and road wear and tear.

The same holds true for the provision of public transit. The marginal cost of providing additional peak period or peak direction public transit is much greater than the marginal cost of providing transit service in off-peak times or in non-peak directions. This is because transit agencies must size their labor force and vehicle fleets to meet peak levels of demand, regardless of whether these workers and vehicles sit idle at other times.²² Yet flat transit fares do not reflect these significant variations in costs by time and direction, resulting in inefficiencies similar to those found on metropolitan road systems.

A large body of research shows that the current transportation finance programs do not make users pay the marginal social cost of vehicle use.²³ Yet as the role of the motor fuel tax has declined relative to non-transportation-related instruments like sales taxes, other non-transportation-based taxes, and bonds, we are actually moving further away from marginal social cost pricing of transportation.²⁴

So in crafting our current system of surface transportation finance, we have often paid careful attention to geo-political equity questions regarding from where revenues for transportation are collected and where they are expended. But in doing so we have come to increasingly depend on highly income-regressive sales

Lower income individuals are paying a greater share of costs for a system that is providing declining level of service.

and other local taxes unconnected with transportation use. As a result, jurisdictional equity is trumping not only transportation efficiency and efficacy but group and individual equity as well. In other words, lower-income individuals are paying a greater share of the costs for a system that is providing a declining level of service. Moreover, declines in service quality are directly related to our reliance on regressive revenue sources.

Transportation Pricing Equity: Compared to What?

As revenues for transportation have lagged far behind the growth in travel and congestion in recent years, elected officials are looking for new ways of funding transportation. But a waxing anti-tax climate, thanks in part to concerns about rising fuel prices, has made it all but impossible to increase traditional sources of transportation revenues. These include the motor fuel user tax, which has been the foundation of transportation finance for nearly a century.

Amid such a challenging fiscal climate, many public officials are for the first time open to considering various forms of road pricing. But for the most part these

²² Taylor, Garrett, & Iseki 2000

²³ USDOT 1997; Littman 2002; Delucci 1996; California Department of Transportation (Caltrans) 1997; Forkenbrock & Schweitzer 1997; CARB 1995; National Cooperative Highway Research Program (NCHRP) 1994; Pozdena 1995; Puget Sound Regional Council (PSRC) 1997

²⁴ Goldman & Wachs 2003; Sciara & Wachs 2007

Table 5. Comparing the Equity of Congestion Tolls and Transportation Sales Taxes

| Unit of Analysis | Type of Equity and Level of Equity (underlined) | | |
|--|--|---|---|
| | Market Equity | Opportunity Equity | Outcome Equity |
| Geographic States, counties, legislative districts, etc. | <p><i>Congestion Toll:</i> <u>High</u> if expenditures are targeted to where the revenues are collected.</p> <p><i>Sales Taxes:</i> <u>High</u> if expenditures are targeted to where the revenues are collected.</p> | <p><i>Congestion Toll:</i> <u>High</u> if revenues are used to improve transportation service in the jurisdiction where the revenues are collected.</p> <p><i>Sales Taxes:</i> <u>Moderate</u> because revenues collected from all consumers, including light travelers, are likely to improve service for travelers where the taxes are collected.</p> | <p><i>Congestion Toll:</i> <u>Low</u> unless expenditures targeted to areas with low levels of mobility.</p> <p><i>Sales Taxes:</i> <u>Low</u> unless expenditures are targeted to areas with low levels of mobility.</p> |
| Group Modal interests, racial/ethnic groups, etc. | <p><i>Congestion Toll:</i> <u>High</u> if revenues are targeted to groups in rough proportion to who pays in.</p> <p><i>Sales Taxes:</i> <u>Low</u> because light users of transportation systems are almost certain to cross-subsidize heavy transportation system users.</p> | <p><i>Congestion Toll:</i> <u>High</u> if the revenues are spent to improve transportation services for groups from whom the tolls are collected.</p> <p><i>Sales Taxes:</i> <u>Moderate</u> if the revenues collected from all consumers are used to improve transportation services for all consumers.</p> | <p><i>Congestion Toll:</i> <u>Low</u> unless expenditures are targeted to groups with low levels of mobility.</p> <p><i>Sales Taxes:</i> <u>Low</u> unless expenditures are targeted to groups with low levels of mobility.</p> |
| Individual Residents, voters, travelers, etc. | <p><i>Congestion Tolls:</i> <u>High</u> if revenues are targeted to improve facilities, communities occupied by toll payers.</p> <p><i>Sales Taxes:</i> <u>Low</u> because tax payments are unrelated to transportation system costs imposed or benefits received.</p> | <p><i>Congestion Tolls:</i> <u>Moderate</u> because transportation toll revenues are likely to indirectly benefit individual travelers.</p> <p><i>Sales Taxes:</i> <u>Low</u> because transportation expenditures are unlikely to be returned to taxpayers in proportion to payments.</p> | <p><i>Congestion Toll:</i> <u>Low</u> unless expenditures are targeted to individuals with low levels of mobility.</p> <p><i>Sales Taxes:</i> <u>Low</u> unless expenditures are targeted to individuals with low levels of mobility.</p> |

officials remain wary, because pricing is so new, risks a possible political backlash, and might be, or at least seems to be, unfair.

It is in this climate that many equity arguments against road pricing transportation are posed. Many fear that poor people will simply be priced off roads and left with inadequate alternatives, leaving free-flowing systems for the wealthy. Such social equity concerns are indeed important, but they ignore the inequities of our *current* transportation finance system.

Many fear that poor people will simply be priced off roads and left with inadequate alternatives, leaving free-flowing systems for the wealthy.

Under the logic of *market equity* described in Table 3, equitable taxes are those levied on each individual in proportion to the costs imposed or benefits received by that individual. In practice, the benefits of pricing are more complex, ephemeral, and normative than the costs imposed by pricing.²⁵ When road pricing has been attempted, it has usually sought to internalize the many social (noise, emissions, delay) costs of travel. Within this rubric, charging users according to the incremental costs they impose on society, like the congestion they create when using the transportation system, is equitable. On the other hand, the logic of *opportunity equity* described in Table 3 suggests that a method of finance based solely on the costs each individual imposes on society may burden the poor. From this (*vertical equity*) perspective, an equitable finance program will treat

fairly people who have different abilities to pay, with ability measured primarily by income.

Current transportation user fees, like the motor fuels tax and driver's license fees, fare well under *market equity* principles, but less well under *opportunity equity*.²⁶ In contrast, transportation sales taxes—because they are income-regressive and unconnected with transportation system use—tend to fare poorly under both *market equity* and *opportunity equity*. Given that local option sales taxes for transportation and electronic roadway tolling are the two of the most frequently debated new forms of transportation finance,²⁷ they are compared in Table 5 with respect to the multiple dimensions of equity outlined in Table 3.

While many scholars have examined equity in sales taxes²⁸ and many more have examined the equity of congestion pricing,²⁹ only one study has directly compared equity effects of sales taxes for transportation versus congestion pricing.³⁰ This paper examines the household incomes of the toll payers on the State Route 91 High-Occupancy/Toll Lanes in Orange County, California and compares them to the household incomes of those who would have paid had the four lanes of expressway capacity been financed with revenues from Orange County's local option sales tax. The authors find that two kinds of transfers would occur if the facility had been paid for by sales taxes instead of tolls. The first would be a transfer from middle- and upper-middle income households to the highest and lowest income households. The very highest income

25 FHWA 1997

26 Chernick & Reschovsky 1997; Poterba 1991; Wiese, Rose, & Schluter 1995

27 Abrams 2007; Committee for the Study of the Long-Term Viability of Fuel Taxes for Transportation Finance 2006; Hymon 2008; Hymon & Weikel 2008; Sorensen & Taylor 2006

28 Derrick & Scott 1998; Due & Mikesell 1994; Poterba 1996; Santi 1994

29 Arnott, de Palma, & Lindsey 1994; Cohen 1987; Giuliano 1994; Glazer & Niskanen 2000; Richardson & Bae 1998

30 Schweitzer & Taylor 2008

households would pay more in absolute terms (because high income people buy so many goods and services subject to the sales tax), while the lowest income households would pay substantially more as a proportion of their incomes (because a large share of purchases by low income households are subject to the sales tax). The second kind of transfer would be from people who travel in the corridor frequently to people who drive very little. Currently the users of the toll lanes (who voluntarily pay a toll ranging from \$1.25 to \$10.00 depending on direction and time-of-day to bypass nine miles of frequently congested “free” lanes) carry the entire burden of retiring the debt on the \$200 million (2008 \$) capacity expansion. Sales tax finance, on the other hand, would spread the burden over hundreds of thousands of consumers, most of whom never travel in the lanes.

Drawing on both Schweitzer & Taylor and the broader literatures on sales tax and congestion pricing equity, Table 5 applies the transportation finance equity evaluation framework to congestion pricing versus sales tax.³¹

Given that the rise of transportation sales taxes represent the most significant change in transportation finance over the past two decades, Table 5 suggests that, in comparison with our current system of transportation finance, a user fee system based on the principles of marginal cost pricing (or its proxy in the form of road pricing) would clearly increase *market equity* and may increase overall *opportunity equity* as well. As noted earlier, travel behavior research has shown that use of the highway system in congested conditions is positively correlated with income. That is, higher-income travelers tend to spend a larger share of their travel time in traffic congestion than do lower-income travelers.³² Thus, a shift to a transportation finance system that charges drivers more on congested routes and less elsewhere

would actually charge more to higher-income travelers and thus fare well in terms of *market equity* when compared to our current finance system.³³

While this framework allows us to consider the many possible dimensions of the equity of congestion pricing vis-à-vis sales taxes for transportation, such systematic evaluations have rarely been performed in practice. How have equity issues in road pricing been raised, and how have they been dealt with in actual pricing programs and projects? The following section examines five notable case studies of road pricing where equity issues have played a central role, to examine how they arose and how they have been mitigated (or not) in practice.

33 This comparison suggests that outcome equity is currently a radical notion in public policy. Equal outcomes, given only limited public policy influence over inputs, is much harder to achieve, so it requires extreme precision in targeting the particular units of analysis. For example, targeting expenditures to equalize outcomes among geographic areas obligates funds and consumes resources that might otherwise be available to increase outcome equity among groups with low levels of mobility, or among individuals with low levels of mobility. While *market and opportunity equity* do not have to be incongruous, specific outcome equity objectives require more trade-offs with other types of equity and units of analysis.

31 Schweitzer & Taylor 2008

32 Dittmar et al. 1994; Deakin & Harvey 1995; Frick et al. 1996; Sullivan 2000



The result is sometimes an equity paradox whereby efforts to use pricing to bring the distribution of transportation costs and benefits in line are opposed as unfair by those who disproportionately benefit from current finance regimes.

Case Studies: Addressing Equity Concerns in Practice

Since road pricing is an umbrella term for many different types of tolling policies—such as cordon tolls that charge travelers to enter certain districts, high occupancy toll (HOT) lanes, and weight-distance based fees—the fairness issues raised often depend on the particulars of the road pricing initiative. Cordon tolls and HOT lanes generally receive far more criticism on equity grounds than weight-distance fees, which charge (mostly commercial) users for distance traveled, not

tolls are also more likely than other road pricing models to be criticized on geographic equity grounds; that is, they are criticized for treating residents, employees, or travelers in some areas differently than others.

While most people think of equity in opposition to pricing, proponents of pricing are frequently motivated by a desire to correct inequities in transportation finance.

As background research, this paper examined equity debates surrounding congestion pricing programs in: San Diego, Minneapolis-Saint Paul, Germany, Stockholm, and New York City. (The findings from these case studies are summarized in the appendix). These five cases collectively show that the three scales of transportation finance equity—individual, group, and geographic equity—can motivate both support for and opposition to road pricing proposals. While most people think of equity in terms of opposition to pricing, pricing proponents are frequently motivated at least in part by a desire to correct inequities in current systems of transportation finance. The result is sometimes an equity irony whereby efforts to use pricing to bring the distribution of transportation costs and benefits in line are opposed as unfair by those who disproportionately benefit from current finance regimes.

locations traveled. Programs that utilize a pay-as-you-go model of project finance tend to raise fewer objections based on fairness, and in fact are often hailed as improving equity by explicitly linking tolling and project finance.³⁴ In contrast, HOT lanes have often been dubbed “Lexus Lanes” and criticized as an unfair way for wealthy residents to buy their way out of congestion, leaving the less well-to-do stuck in the congested free lanes.^{35 36} Like HOT lanes, cordon tolls (such as exist in Stockholm and London, and as were proposed for New York), are often subject to extensive scrutiny on equity grounds because such tolls impose a new fee on what was previously perceived as free. Given their geographic focus, cordon

Just as people’s equity perceptions vary based on the type of road pricing proposal, the most effective approaches to mitigating equity concerns are situationally dependent. However, some lessons can be generalized.

- (1) The dedication of revenues is critical. Successful programs have commonly dedicated toll revenues to transit and road improvements across the transportation system, thereby creating constituents for the toll revenues.
- (2) Limited scale and phased implementation helps. Limited scales keep the scope of the pricing program focused on the problems at hand. Phased, incremental implementation—such as the trial approach followed by a plebiscite employed in Stockholm—allows officials the opportunity to

³⁴ Sorensen & Taylor 2005

³⁵ Sorensen & Taylor 2005

³⁶ Though of course, if true, the incidence of the fees with respect to income would be entirely progressive. In other words, if only rich people used congestion-priced lanes, the financial burden of congestion tolls would fall entirely on the rich. But data on the actual use of congestion-priced lanes in the U.S. show that these toll lanes—even when there exists an unpriced parallel alternative—are used by travelers across the income spectrum.

adjust the program to address equity issues that arise during implementation.

- (3) Public dialogue is essential. Open and ongoing public dialogue on equity questions during project planning and development is common to every successful case of pricing implementation.

An important part of this dialogue has been a consideration of inequities in current systems of transportation finance, and how these might be addressed with a move to road pricing.

Dedicating revenues to transit service and road improvements in the tolled corridor

In the case of San Diego's I-15 HOT lanes, toll revenues were dedicated to transit improvements to increase corridor travel options in an explicit effort to address

Whether toll revenues are dedicated to transit, highways, or both, geographic equity concerns are most frequently assuaged by dedicating the revenues to improvements in the tolled area.

equity concerns. However, while transit improvements are often funded with toll revenues, an exclusive focus on transit has proven problematic in other projects. In Stockholm and New York City transit funding proposals were downscaled and funds were shifted to roadway improvements in response to complaints that funding only transit with revenues was unfair to drivers and their passengers. In Stockholm, outer suburban residents complained about geographic equity—that toll

revenues collected from suburban commuters went to transit improvements that primarily benefitted central city and inner-ring suburban residents. In response, some of the toll revenues were shifted to road projects favored by suburbanites. This adjustment contributed significantly to increasing public acceptance of the congestion pricing program in Stockholm and its eventual endorsement by voters. In the case of the ill-fated New York proposal, however, a politically acceptable modal and geographic balance of revenue dedication was never reached. Some critics of the pricing proposal complained that a modal split of toll revenues between transit and roadways would not leave sufficient funding for the increased transit service that would be needed to accommodate the increase in demand due to the pricing of driving in Manhattan. In any event, whether toll revenues are dedicated to transit, highways, or both, geographic equity concerns are most frequently assuaged by dedicating the revenues to improvements in the tolled area.^{37 38}

Limited scale and phased, incremental implementation

Successful implementation has typically entailed careful attention to reducing political risk and uncertainty about what can be new, unfamiliar, and—to many elected officials—potentially threatening pricing programs. Road pricing projects have commonly been limited in geographic scope to central, congested zones (Stockholm), corridors (San Diego and Minnesota), or particular market segments (such as commercial trucking in Germany). Further, the phased, incremental

37 Small & Gomez-Ibanez 1998

38 King, Manville, and Shoup (2007) argue persuasively that revenues from road pricing projects should be dedicated primarily to the communities through which priced highways run, rather than to corridor highway or transit improvements, as these communities bear the brunt of the traffic, noise, and pollution generated by congested roads. Doing so, argue the authors, is both fair and would create a natural and powerful constituency for road pricing.

implementation plan has proved effective. The case of Stockholm's central area congestion fee is particularly instructive. Despite strong support from planners and key public officials, greater Stockholm residents were—by a 2 to 1 margin—initially opposed to the proposal. To garner sufficient support to move forward, the project was structured at the outset as a short-term, fixed-end-date pilot test, which was followed by a thorough evaluation. The evaluation helped make a series of modifications to the program to address equity concerns; the modified pricing program was then put to a vote of the people, who voted to permanently adopt the modified central area pricing program. Had the program been put to a vote prior to the pilot test, it would have been resoundingly defeated. But a fixed-term pilot test proved far less threatening, allowing Stockholmers to see first-hand the dramatic congestion reductions caused by the pricing program and allowing planners to adjust the program to address equity concerns that arose during the test.

Public outreach and education

As the San Diego and Minnesota cases demonstrate, public outreach is critical to addressing equity concerns in order to achieve popular and political acceptance of pricing. These public outreach efforts have been most effective when public feedback is sincerely and substantively incorporated into the project design.³⁹

Such outreach efforts are critical because traffic congestion is both widely despised and poorly understood. Traffic delays are non-linear; adding or removing a relatively small number of vehicles from roads can have a surprisingly large effect on congestion. This non-linearity is non-intuitive, making most people unfamiliar with road pricing doubtful that it could meaningfully reduce congestion absent draconian tolls. This prevailing skepti-

cism toward pricing makes outreach and education especially important.

Successful implementation of pricing has therefore required effective and ongoing communication with public officials, drivers, voters, and the media. Successful

Outreach and education efforts have assuaged concerns about equity by highlighting the potential of pricing to correct inequities in transportation finance.

examples of public outreach have emphasized how road pricing improves travel conditions for all residents, not just those wealthy enough to pay the fees. Further, the idea that pricing programs increase traveler options—such as HOT lanes that allow drivers to decide on a trip-by-trip basis whether to pay for time savings, or corridor transit improvements that offer meaningful alternatives to driving—is often a central element of public education.

Outreach and education efforts have also presented opportunities to assuage concerns about the equity of the proposed system by highlighting the potential of pricing to correct inequities in *current* systems of transportation finance.⁴⁰ This was a primary focus of outreach efforts in Germany, where rapid increases in commercial trucking were viewed by officials as problematic (the highway network was becoming increasingly congested) and inequitable (the system was seen as not sufficiently financed by the trucking industry, especially non-German truckers).

39 Niskanene et al. 2003; Weinstein & Sciara 2006

40 Schweitzer & Taylor 2008



The current trend in transportation finance—toward dedicated non-transportation-based taxes—is, by most measures of equity, less fair than most forms of marginal cost transportation pricing, like congestion tolls, which are ironically where equity concerns are most often raised.

Conclusion: What's a Fair Price for Transportation?

While equity may indeed be in the eye of the beholder, this paper has shown that it is possible to systematically consider and evaluate any transportation finance instrument—including roadway pricing—in terms of the many possible dimensions of equity. But careful, systematic evaluations of transportation pricing and finance equity remain quite rare. Instead claims of inequity or bias are often tossed about in debates over transportation pricing and finance with little or incomplete supporting evidence. While no scheme can satisfy all possible dimensions of equity, it is pos-

Pricing has been presented as both a way to substantially increase transportation system efficiency and to address substantial inequities in of transportation finance.

sible to offer comparative equity assessments of various approaches to transportation pricing and finance, and to conclude that efficiency and equity are not always at odds. Further, this paper has shown that the current trend in transportation finance toward dedicated non-transportation-based taxes (like local sales taxes) is, by most measures of equity, less fair than most forms of marginal cost transportation pricing, like congestion

tolls, which are ironically where equity concerns are most often raised.

Finally, the review of five case studies of road pricing programs conducted for this paper shows that equity was a central issue in each, alternatively motivating (1) the implementation of pricing (Germany), (2) the funding of alternative modes (San Diego, Minnesota, and Stockholm), (3) mid-course restructuring of the pricing program in response to voter concerns (Stockholm), and (4) successful opposition to a pricing proposal (New York). In practice, successful mitigation of equity concerns has entailed:

- Limiting geographic scope to central, congested zones, particular travel corridors, or particular market segments,
- Ongoing, substantive and sincere public outreach and education efforts that have meaningfully influenced program design, and
- Incremental, phased implementation that allows for corrections and adjustments during implementation and pilot testing.

Such efforts have increasingly turned equity objections to pricing on their head by presenting pricing as both a way to substantially increase transportation system efficiency *and* to address and correct substantial inequities in our current systems of transportation finance.



Bibliography

- Abrams, Jim. 2007. Frozen Gas Tax Leads to Toll Roads. *USA Today*, 20 May 2007. Accessed at: http://www.usatoday.com/news/washington/2007-05-20-3066887318_x.htm
- American Public Transportation Association. 2003a. *Public Transportation Ridership Statistics*. Accessed at: <http://www.apta.com/research/stats/ridership>
- American Public Transportation Association. 2003b. *Transit Statistics*. Accessed at: <http://www.apta.com/research/stats>
- Arneson, Richard. 1990. Liberalism, Distributive Subjectivism, and Equal Opportunity for Welfare. *Philosophy and Public Affairs*, 19:158-194.
- Arnott, R., de Palma, A., Lindsey, R. 1994. The welfare effects of congestion tolls with heterogeneous commuters. *Journal of Transport Economics & Policy*, 28: 139–161.
- Balducci, Patrick and Joseph Stowers. 2008. *State Highway Cost Allocation Studies: A Synthesis of Highway Practice*. National Cooperative Highway Research Program Synthesis 378. Washington, DC: Transportation Research Board.
- Bento, Antonio, Lawrence H. Goulder, Emeric Henry, Mark Jacobsen, and Roger Von-Haefen. 2005. Distributional and Efficiency Impacts of Gasoline Taxes: An Econometrically-Based Multi-Market Study. *American Economic Review*, Papers and Proceedings, 95(2).
- Berger, J. 2008. Congestion Pricing: Just Another Regressive Tax? *New York Times*, April 20. Accessed at <http://www.nytimes.com/2008/04/20/nyregion/nyregionspecial2/20colwe.html?scp=1&sq=Congestion+Pricing%3A+Just+Another+Regressive+Tax&st=nyt>
- Besley, Timothy J. and Harvey Rosen. 1998. Vertical Externalities in Tax Setting: Evidence from Gasoline and Cigarettes. *Journal of Public Economics*, 70(3): 383-398.
- Blumenberg, Evelyn. 2003. Transportation Costs and Economic Opportunity Among the Poor. *Access* 23: 40-41.
- Blumenberg, Evelyn and Paul Ong. 2001. *Cars, Buses, and Jobs: Welfare Program Participants and Employment Access in Los Angeles*. TRB Paper 01-3068. Accessed at: <http://www.uctc.net/papers/544.pdf>
- Blumenberg, Evelyn and Margy Waller. 2003. *The Long Journey to Work: A Federal Transportation Policy for Working Families*. Transportation Reform Series, Brookings Institution Center on Urban and Metropolitan Policy.
- Bogart, J.H. 1985. Lockean Provisos and State of Nature Theories. *Ethics*, 95(4): 824-836.
- Brodsky, R. L. 2007. *Interim Report: An Inquiry into Congestion Pricing as Proposed in PlaNYC 2030 and S.6068*. New York: New York State Assembly, Committee on Corporations, Authorities and Commissions. July 9.
- Brown, J. 2001. Reconsider the Gas Tax: Paying for What You Get. *Access*, 19: 10–15.
- Brown, J. M. DiFrancia, M. C. Hill, P. Law, J. Olson, B. D. Taylor, M. Wachs and A. Weinstein. 1998. *The Future of California Highway Finance*. Berkeley, CA: California Policy Seminar.
- Buckeye, K. R., & Munnich, L. W. 2004. Value Pricing Outreach and Education: Key Steps in Reaching High-Occupancy Toll Lane Consensus in Minnesota. *Journal of the Transportation Research Board*, 1864: 16-21.

Bullard, Robert D. and Glenn S. Johnson. 1997. Just Transportation. In *Just Transportation*, eds. Bullard, Robert D. and Glenn S. Johnson, 7-21. Stony Creek, CT: New Society Publishers.

Bullard, Robert D. and Glenn S. Johnson, eds. 1997. Epilogue. In *Just Transportation*. 173-177. Stony Creek, CT: New Society Publishers..

Bullard, Robert D., Glenn S. Johnson, and Angel O. Torres, eds. 2004. *Highway Robbery: Transportation Racism and New Routes to Equity*. Cambridge, MA: South End Press.

California Department of Transportation (Caltrans). 1997. *Transportation Financing—Vehicle Miles Traveled (VMT) Measurement and Assessment*. Transportation Planning Program. Sacramento: Caltrans.

California Air Resources Board (CARB). 1995. *Transportation Pricing Strategies for California: An Assessment of Congestion, Emissions, Energy, and Equity Impacts*. Draft Report by Elizabeth Deakin and Greig Harvey to the California Air Resources Board and the TCM Working Group Berkeley, CA: Deakin/Harvey Consulting.

Carens, Joseph. 1981. *Equality, Moral Incentives and the Market*. Chicago: University of Chicago Press.

Chen, Don. 1994. *Social Equity, Transportation, Environment, Land Use, and Economic Development: The Livable Community*. Paper presented at the Transportation, Environmental Justice and Social Equity Conference in Chicago. Nov.16-17. Accessed at <http://www.fta.dot.gov/library/policy/envir-just/backcf.htm>

Chernick, Howard and Andrew Reschovsky. 1997. Who Pays the Gasoline Tax? *National Tax Journal*, 50(2), June:233-259.

Christman, John. 1991. Self-Ownership, Equality, and the Structure of Property Rights. *Political Theory* 19(28): 28-46.

Civitas. 2006. *Background to The Stockholm Trial*. Accessed at <http://www.curacaoproject.eu/documents/stockholm-trial.pdf>

Clifton, Kelly and Karen Lucas. 2004. Examining the Empirical Evidence of Transportation Inequality in the U.S. and the U.K. In *Running on Empty: Transport, Social Exclusion, and Environmental Justice*, ed. Karen Lucas, 15-36. Bristol, UK: The Policy Press.

Cohen, G.A. 1995. *Self-Ownership, Freedom, and Equality*. New York: Cambridge University Press.

Cohen, Y. 1987. Commuter Welfare Under Peak-Period Congestion Tolls: Who Gains and Who Loses? *International Journal of Transport Economics*, 3, 239-266.

Commission for Integrated Transport. 2006. *Road Charging Scheme: Europe—Germany*. Accessed at: <http://www.cfit.gov.uk/map/europe-germany.htm>

Committee for the Study of the Long-Term Viability of Fuel Taxes for Transportation Finance. 2006. *The Fuel Tax and Alternatives for Transportation Funding: Transportation Research Board Special Report 285*. Washington, DC: Transportation Research Board.

Daniels, Norman. 1990. Equality of What? Welfare, Resources, or Capabilities? *Philosophy and Phenomenological Research*, 50: 73-296

De Cerreno, Allison L.C. and Mark Seaman. 2003. *Dividing the Pie: Placing the Transportation Donor-Donee Debate in Perspective*. The Rudin Center for Transportation Policy and Management, New York University, May. Accessed

at <http://www.nyu.edu/wagner/transportation/files/dividingpie.pdf>

Deka, Devajyoti. 2004. Social and Environmental Justice Issues in Urban Transportation. In *The Geography of Urban Transportation*, 3rd Edition, eds. Hanson, Susan and Genevieve Giuliano, 332-355. New York: The Guilford Press.

Delucci, Mark. 1996. Total Cost of Motor-Vehicle Use. *Access*. 8: 7-13.

Derrick, F.W. and C.E. Scott. 1998. Sales Tax Equity: Who Bears the Burden? *The Quarterly Review of Economics and Finance*. 2: 227-237.

Dittmar, Hank, Karen Frick, and David Tannehill. 1994. Institutional and Political Challenges in Implementing Congestion Pricing: Case Study of the San Francisco Bay Area. In *Curbing Gridlock: Peak-Period Fees to Relieve Traffic Congestion: Transportation Research Board Special Report 242*. Washington, DC: Transportation Research Board.

Doll, C., & Schade, W. 2005. How using the Revenues of the German HGV motorway system efficiently and equitably under different regulatory frameworks and institutional settings: Lessons from the EC-funded research project REVENUE. Berlin: 4th Infra-Train Conference.

Due, J.F. and J.C. Mikesell. 1994. *Sales Taxation*. Washington, DC: Urban Institute.

Dworkin, Ronald. 2000. *Sovereign Virtue*. Cambridge: Harvard University Press.

Dworkin, Ronald. 1981. What is Equality? Part 1: Equality of Resources. *Philosophy and Public Affairs*, 10: 185-246.

Evans, A. E. 2006. A Review of the Politics and Perceptions of Road Pricing. ITS Working Paper. Los Angeles: UCLA Institute of Transportation Studies.

Forkenbrock, David J. and Lisa A. Schweitzer. 1997. *Environmental Justice and Transportation Investment Policy*. Public Policy Center, University of Iowa.

Forkenbrock, David J. 2001. Comparison of Freight Rail and Truck External Costs. *Transportation Research, Part A*, 35A(4): 321-337.

Frey, Bruno S. 2003. Why Are Efficient Transport Policy Instruments So Seldom Used? In *Acceptability of Transport Pricing Strategies*, eds. Schade, Jens and Bernhard Schlag, 63-74. Oxford, UK: Elsevier Ltd.

Frick, Karen T., Steve Heminger, and Hank Dittmar. 1996. Bay Bridge Congestion-Pricing. Project: Lessons Learned to Date. *Transportation Research Record: Journal of the Transportation Research Board*, 1558: 29-38.

Fullerton, D. and D.L. Rogers. 1993. *Who Bears the Lifetime Tax Burden?* Washington, DC: The Brookings Institution Press.

Galston, William A. 2005. *The Practice of Liberal Pluralism*. Cambridge, UK: Cambridge University Press.

Garrett, Mark and Brian Taylor. 1999. Reconsidering Social Equity in Public Transit. *Berkeley Planning Journal*, 13: 6-27.

Giuliano, Genevieve. 1994. *Equity and Fairness Considerations of Congestion Pricing*, National Academies Press, Curbing Gridlock: Peak-Period Fees to Relieve Traffic Congestion- Special Report 242(2): 250-279.

Gladwell, Malcolm. 2002. *The Tipping Point: How Little Things Can Make a Big Difference*. Boston: Little, Brown.

- Glazer, A., Niskanen, E. 2000. Which consumers benefit from congestion tolls? *Journal of Transport Economics & Policy*, 34: 43–54.
- Goldman, Todd and Martin Wachs. 2003. A Quiet Revolution in Transportation Finance: The Rise of Local Option Transportation Taxes. *Transportation Quarterly*, 57 (1): 19–32.
- Hakim, D. 2007. Report Recommends Rejecting Plan on City Traffic. *New York Times*, July 9. Accessed at <http://www.nytimes.com/2007/07/09/nyregion/09congest.html?scp=1&sq=Report%20Recommends%20Rejecting%20Plan%20on%20City%20Traffic&st=cse>
- Hakim, D. 2007. Silver Challenges Health Benefits Promised in Manhattan Toll Plan. *New York Times*, June 12. Accessed at <http://www.nytimes.com/2007/06/12/nyregion/12silver.html?scp=1&sq=Silver+Challenges+Health+Benefits+Promised+in+Manhattan+Toll+Plan&st=nyt>
- Halvorson, R., & Buckeye, K. R. 2006. High-Occupancy Toll Lane Innovations: I-394 MnPASS. *Public Works Management Policy*, 10(3): 242–255.
- Harsman, B. (2003). Success and Failure: Experiences from Cities. In Schade, J. & B. Schlag, *Acceptability of Transport Pricing Strategies*, 137–151. Oxford: Elsevier.
- Harvey, Greig W. 1994. Transportation Pricing and Travel. *National Academies Press, Curbing Gridlock: Peak-Period Fees to Relieve Traffic Congestion—Special Report*, 242 (2): 90–114.
- Hayek, Friedrich A. 1960. *The Constitution of Liberty*. London: Routledge.
- Hodge, David C. 1995. My Fair Share: Equity Issues in Urban Transportation. In *The Geography of Urban Transportation*, 2nd Edition, ed. Susan Hanson, 359–375. New York: Guilford Press.
- Hymon, Steve. 2008. U.S. Offers Funds for Toll Lanes. *Los Angeles Times*, 24 April. Accessed at: <http://articles.latimes.com/2008/apr/24/local/me-congestion24>
- Hymon, Steve and Dan Weikel. 2008. MTA Votes to Seek Sales Tax Hike to Fund L.A. County Transit Roads. *Los Angeles Times*, 25 July. Accessed at: <http://www.latimes.com/news/local/la-me-salestax25-2008jul25,0,7015819.story?track=rss>
- Jia, Wenya and Martin Wachs. 1998. Parking and Affordable Housing. *Access*, 13: 22–25. Accessed at: <http://www.uctc.net/access/access13.pdf>
- Kai, Nielsen. 1979. Radical Egalitarian Justice: Justice as Equality. *Social Theory and Practice*, 5(2): 209–226.
- Keep NYC Congestion Tax Free. 2007. *Congestion Pricing in the Manhattan Central Business District: Let's Look Hard Before We Leap*. New York: Keep NYC Congestion Tax Free.
- King, David, Michael Manville, and Donald Shoup. 2007. For Whom the Road Tolls: The Politics of Congestion Pricing. *Access* 31: 2–7.
- Lamont, Julian. 2003. Distributive Justice. In *Stanford Philosophy Encyclopedia*. Accessed at: <http://plato.stanford.edu/archives/fall2003/entries/justice-distributive/>
- Lamont, Julian. 1997. Incentive Income, Deserved Income, and Economic Rents. *Journal of Political Philosophy*, 5: 26–46.
- Lawlor, M.J. 1995. Federal Urban Mass Transportation Funding and the Case of the Second Avenue Subway. *Transportation Quarterly*, 49(4): 43–54.

- Lem, Lewison Lee. 1997. Dividing the Federal Pie. *Access*, 10: 10-14.
- Littman, Todd. 2002. *Transportation Cost and Benefit Analysis*. Victoria, BC: Victoria Transport Policy Institute.
- May, A. D., & Sumalee, A. 2003. One Step Forward, Two Steps Back?: An Overview of Road Pricing Applications and Research Outside the United States. *International Perspectives on Road Pricing*, 73-88. Key Biscayne: Transportation Research Board.
- Metropolitan Transportation Commission. 2003. *2002 Annual Report*. Accessed at: http://www.mtc.ca.gov/publications/AnnualReport-02/MTC_02_Annual_Report.pdf
- Miljöavgiftskansliet/Congestion Charge Secretariat, C. O. (2006). *Facts and results from the Stockholm Trials*. Stockholm.
- Miller, David. 1989. *Market, State, and Community*. Oxford: Clarendon Press.
- Miller, David. 1976. *Social Justice*. Oxford: Clarendon Press.
- Mohring, Herbert. 1970. The Peak Load Problem with Increasing Returns and Pricing Constraints. *American Economic Review*, 60(4): 693-705.
- Munnich, L. W., & Kenneth, B. R. 2007. I-394 MnPASS High-Occupancy Toll Lanes: Planning and Operational Issues and Outcomes. *Transportation Research Record: Journal of the Transportation Research Board*, 1996: 49-57.
- Murphy J. and M. A. Delucchi. 1997. A Review of the Literature on the Social Cost of Motor-Vehicle Use in the United States. *Journal of Transportation and Statistics*, 1(1), January: 15-42.
- Nash, C., & Sansom, T. 2001. Pricing European Transport Systems: Recent Development and Evidence from Case Studies. *Journal of Transport Economics Policy*, 35, Part 3: 363-380.
- National Cooperative Highway Research Program. 1994. *Alternatives to the Motor Fuel Tax for Financing Surface Transportation Improvements. Draft Summary Report, NCHRP 20-24(7)*. Washington, DC: Transportation Research Board.
- Neuman, W. 2008. Congestion Pricing Plan is Panned in Albany. *New York Times*, January 31. Accessed at <http://www.nytimes.com/2008/01/31/nyregion/31congest.html?scp=1&sq=Congestion+Pricing+Plan+is+Panned+in+Albany&st=nyt>
- Nicholls, David. 1975. *The Pluralist State*. New York: St. Martin's Press.
- Niskanen, E., & Nash, C. 2008. Road Pricing in Europe—A Review of Research and Practice. In *Road Pricing, the Economy and the Environment*, ed. C. Jensen-Butler, 5-29. Berlin: Springer.
- Niskanen, E., de Borger, B., de Palma, A., Lindsey, R., Nash, C., Rouwendal, J., et al. 2003. Phased Approach. *Leeds: Implementation of Marginal Cost Pricing in Transport—Integrated Conceptual and Applied Model Analysis (IM-ICAM)*.
- Niskanen, E., de Palma, A., Lindsey, R., Marler, N., May, T., Nash, C., et al. 2003. Pricing of Urban and Interurban Road Transport: Barriers, Constraints and Implementation Paths. *Leeds: Implementation of Marginal Cost Pricing in Transport—Integrated Conceptual and Applied Model Analysis (MC-ICAM)*.

- Nozick, Robert. 1985. *Anarchy, State and Utopia*. New York: Basic Books.
- Ong, Paul. 2004. Auto Insurance Redlining in the Inner City. *Access*: 40-41.
- Palma, A. d., Lindsey, R., & Niskanen, E. 2006. Policy Insights from the Urban Road Pricing Case Studies. *Transport Policy*: 149-161.
- Poole, R. W. 2007. A Swedish Take on Congestion Pricing. *Newsday*, July 22.
- Poole, Jr., R.W. 2001. *Commercializing Highways: A "Road-Utility" Paradigm for the 21st Century*. Los Angeles: Reason Public Policy Institute.
- Poterba, James. 1991. Is the Gasoline Tax Regressive? *Tax Policy and the Economy*, 5: 145-164.
- Poterba, James. 1996. Retail Price Reactions to Changes in State and Local Sales Taxes. *National Tax Journal*, 27, Fall: 169-179.
- Pozdena, R.J. 1995. *Where the Rubber Meets the Road: Reforming California's Roadway System*. Los Angeles: The Reason Foundation.
- Puget Sound Regional Council (PSRC). 1997 System Performance Report. Accessed at: [http:// www.psrc.org/ projects/cms/pdf-files/spr_1997.pdf](http://www.psrc.org/projects/cms/pdf-files/spr_1997.pdf)
- Raphael, Stephen and Lorian Rice. 2000. *Car Ownership, Employment, and Earnings*. JCPR Working Paper 179. Chicago: Joint Center for Poverty Research.
- Raphael, Steven and Michael Stoll. 2000. *Can Boosting Minority Car Ownership Rates Narrow Inter-Racial Employment Gaps?* Chicago: Joint Center for Poverty Research.
- Rawls, John. 1971. *A Theory of Justice*. Cambridge: Belknap.
- Rawls, John. 1993. *Political Liberalism*. New York: Columbia University Press.
- Richardson, H. and C. Bae. 1998. The Equity Impacts of Road Pricing. In *Road Pricing, Traffic Congestion, and the Environment: Issues of Efficiency and Social Equity*, eds. E. Verhoef and K. Button, 247-262. London: Edward Elgar.
- Roth, G. 1998. *Roads in a Market Economy*. London: Avebury.
- Rothengatter, W., & Doll, C. 2002. Design of a User Charge for Heavy-Duty Vehicles on German Motorways Considering the Objectives of Efficiency, Fairness, and Environmental Protection: Findings from the EU research project DESIRE. *IATSS Research*, 26(1): 6-16.
- Rozin, P., Lowery, L., Imada, S., & Haidt, J. 1999. The CAD Triad Hypothesis: A Mapping Between Three Moral Emotions (Contempt, Anger, Disgust) and Three Moral Codes (Community, Autonomy, Divinity). *Journal of Personality and Social Psychology*, 99(4): 574-586.
- Sadurski, Wojciech. 1985. *Giving Desert Its Due*. Holland: Dordrecht.
- Sanchez, Thomas W., Rich Stolz and Jacinta S. Ma. 2003. *Moving Toward Equity: Addressing Inequitable Effects of Transportation Policies On Minorities*. Harvard Civil Rights Project and the Center For Community Change. Accessed at: [http://www.civilrightsproject.harvard.edu/ research/transportation/MovingtoEquity.pdf](http://www.civilrightsproject.harvard.edu/research/transportation/MovingtoEquity.pdf)

-
- SANDAG. (n.d.). I-15 Managed Lanes. Accessed at <http://www.sandag.org/index.asp?projectid=34&fuseaction=projects.detail>
- Santi, L. 1994. Estimates of the State Sales and Use Tax on Arkansas Households, 1989–1995. *Arkansas Business & Economics Review*, 27(1): 10–18.
- Santos, G. and T. Catchesides. 2005. Distributional Consequences of Gasoline Taxation in the United Kingdom. *Transportation Research Record: Journal of the Transportation Research Board*, 1924: 103–111.
- Santos, G. and Roley, L. 2004. Distributional Impacts of Road Pricing: the Truth Behind the Myth. *Transportation*, 31: 21–42.
- Savage, J. 2006. Alliance: Yes to Congestion Charging. *The Local: Sweden's News in English*. Accessed at: <http://www.thelocal.se/5077/20061001/>
- Schade, J., & Schlag, B. 2003. *Acceptability of Transport Pricing Strategies*. Oxford: Elsevier Ltd.
- Schreffler, E. N., Golob, J., & Supernak, J. 1998. *I-15 Congestion Pricing Project Monitoring and Evaluation Services: Task 3.3.1 Phase I Implementation Procedures, Policies, Agreement and Barriers*. San Diego: San Diego State University Foundation.
- Schweitzer, Lisa and Brian D. Taylor. 2008. Just Pricing: The Distributional Effects of Congestion Pricing and Sales Taxes. *Transportation*, 35(6): 797–812.
- Sciara, Gian-Claudia and Martin Wachs. 2007. Metropolitan Transportation Funding: Prospects, Progress, and Practical Considerations. *Public Works Management & Policy*, 12(1): 378–394.
- Shoup, Donald. 2005. *The High Cost of Free Parking*. Chicago: Planners Press.
- Shoup, Donald and Phillip Vincent. 1975. *Equity in Financing the California Transportation Plan*. Report to the California Department of Transportation. Sacramento: Caltrans.
- Small, Kenneth. 1992. *Urban Transportation Economics*. New York: Harwood Academic Publishers.
- Small, Kenneth, Clifford Winston and Carol A. Evans. 1989. Pavement Wear and Road Durability. In *Road Work: A New Highway and Pricing Investment Policy*, 37–68. Washington, DC: The Brookings Institution.
- Small, Kenneth. A. and Jose Gomez-Ibanez. 1998. *Road Pricing for Congestion Management: The Transition from Theory to Policy*. UCTC Report 391. Berkeley: University of California Transportation Center.
- Smirti, Megan, Alexandra Evans, Michael Gougherty, and Eric Morris. 2007. Politics, Public Opinion, and Project Design in California Road Pricing. *Transportation Research Record: Journal of the Transportation Research Board*, 1996: 41–48.
- Sorensen, P. A. 2006. Review and Synthesis of Innovative Electronic Tolling Applications Worldwide. ITS Working Paper. Los Angeles: UCLA Institute of Transportation Studies.
- Sorensen, Paul A. and Brian D. Taylor. 2005. *Review and Synthesis of Road-Use Metering and Charging Systems*, commissioned by the Transportation Research Board Committee for the Study of the Long-Term Viability of Fuel Taxes for Transportation Finance. Washington, DC: The National Academies Press.

Sorensen, Paul A. and Brian D. Taylor. 2006. Innovations in Road Finance: Examining the Growth in Electronic Tolling. *Public Works Management & Policy*, 11(2): 110-125.

Steiner, H. 1981. Liberty and Equality. In *Political Studies*, 29(4), 555-569.

Stewart-Ladewig, L & Link, H (2005) Increasing the Acceptability of Road Charges for HGV Transit Traffic, German Institute for Economic Research, Berlin.

Sullivan, Edward. 2000. *Continuation Study to Evaluate the Impacts of the SR 91 Value-Priced Express Lanes*. Sacramento, CA: California Department of Transportation.

Taylor, Brian D. 2004. The Geography of Urban Transportation Finance. In *The Geography of Urban Transportation*, Third Edition, eds. Susan Hanson and Genevieve Giuliano, 294-331. New York: The Guilford Press.

Taylor, Brian D., Mark Garrett, and Hiroyuki Iseki. 2000. Measuring Cost Variability in Provision of Transit Service. *Transportation Research Record: Journal of the Transportation Research Board*, 1735: 101-112. DOI: 10.3141/1735-13.

Taylor, Brian D. and William S. McCullough. 1998. Lost Riders. *Access*, 13: 26-31.

Taylor, Brian D., Douglas Miller, Hiroyuki Iseki, and Camille Fink. 2009. Nature and/or Nurture? Analyzing the Determinants of Transit Ridership Across U.S. Urbanized Areas. *Transportation Research, Part A: Policy and Practice*, 43(1): 60-77.

Taylor, Brian D. 1991. Unjust Equity: An Examination of California's Transportation Development Act.

Transportation Research Record: Journal of the Transportation Research Board, 1297: 85-92.

Taylor, B. D. 1995. Program Performance Versus Transit Performance: Explanation for Ineffectiveness of Performance-Based Transit Subsidy Programs. *Transportation Research Record: Journal of the Transportation Research Board*, 1496: 43-51.

Tetlock, P. E. 2002. Social Functionalist Frameworks for Judgment and Choice: Intuitive Politicians, Theologians, and Prosecutors. *Psychological Review*, 109(3): 451-471.

Transek. 2006. *Equity Effects of the Stockholm Trial*. Stockholmsförsöket.

U.S. Department of Transportation, Federal Highway Administration (FHWA). 1997. *Federal Highway Cost Allocation Study Final Report*. Washington, DC: U.S. Department of Transportation, Federal Highway Administration.

U.S. Department of Transportation, Federal Highway Administration. Highway Statistics 2000. Washington, D.C. Accessed at: <http://www.fhwa.dot.gov/ohim/hs00>.

U.S. Department of Transportation, Federal Highway Administration. Highway Statistics 2001. Washington, D.C. Accessed at: <http://www.fhwa.dot.gov/ohim/hs01>

U.S. Department of Transportation. 2008. *Low-Income Equity Concerns of U.S. Road Pricing Initiatives*. Urban Partnership Resources. Accessed at: <http://www.upa.dot.gov/resources/lwincequityrpi/index.htm>

Wachs, Martin. 2003. Then and Now: The Evaluation of Congestion Pricing in Transportation and Where We Stand Today. *International Perspectives on Road*

Pricing, Conference Proceedings 34. Washington, DC: Transportation Research Board.

Wachs, Martin. 1994. Will Congestion Pricing Ever be Adopted? *Access*, 4:15-19.

Walters, A.A. 1961. The Theory and Measurement of Private and Social Cost of Highway Congestion. *Econometrica*, 29(4): 676-99.

Weinstein, A., & Sciara, G.-C. 2006. Unraveling Equity in HOT Lane Planning: A View from Practice. *Journal of Planning, Education and Research*, 26(2), 174-184.

Wieland, B. 2005. The German HGV-Toll. *European Transport*, 31: 118-128.

Wiese, A., R. Rose and G. Schluter. 1995. Motor-Fuel Taxes and Household Welfare: An Applied General Equilibrium Analysis. *Land Economics*, 71: 229-249.



In most cases, sincere and comprehensive planning and community outreach efforts have shown that equity criticisms can be fully addressed.

Appendix: Five Case Studies of Equity in Electronic Road Tolling Projects

The case studies below explore how equity concerns have been raised and addressed in five very different tolling contexts. These five cases were selected because equity issues were central at some point in the planning and implementation process, and because the circumstances and outcomes differ substantially from one another. The mitigation efforts examined ranged from improving public outreach to dispel equity misconceptions to dedicating revenues to offset both real and perceived inequities. While elaborate compensation programs, such as FAIR lanes that would provide toll credits for low-income drivers, have been proposed, none have yet been put into practice.⁴¹ Although equity concerns have delayed, and in one case helped to kill road pricing projects, equity concerns have not been consistently proven to be a deal breaker. In most cases, sincere and comprehensive planning and community outreach efforts have shown that equity criticisms can be fully addressed.

San Diego's I-15 HOT Lanes: Public Outreach Campaign & Revenue Dedicated to Transit

In converting the existing, underutilized high-occupancy vehicle (HOV) lanes to HOT lanes along the I-15 corridor in the suburbs north of downtown, San Diego transportation officials were able to avoid extensive equity objections by spearheading a comprehensive outreach campaign and dedicating revenue to transit improvements along the corridor. The HOT lane development was designed to address both the worsening congestion in the San Diego region and the dearth of public transit in the I-15 corridor. In 1996, the I-15 HOT lanes opened with single-occupant vehicles initially being permitted to pay into the lanes with a flat monthly fee. Phase II, FasTrak, was introduced in 1998; this incorporated the world's first fully dynamic

variable congestion toll (wherein tolls rise and fall in real-time with traffic levels) to assure free-flowing traffic. Single occupant vehicles now pay a variable fee via transponders that track which cars use the lanes and bill drivers monthly. To improve corridor transit, revenues from the toll lanes are dedicated to funding the Inland Breeze Express Bus Service from Rancho Bernardo to downtown San Diego.

Throughout the planning and implementation of the HOT lanes, an ongoing public dialogue was encouraged by transportation officials. One of the project's most outspoken champions was Jan Goldsmith, the former mayor of the north San Diego County city of Poway and a newly elected State Assembly member, who adopted the issue as one of his primary causes. In the course of pushing for the I-15 HOT lanes, Goldsmith penned several op-ed pieces in local papers and appeared on numerous local talk radio shows. He also went to considerable effort to meet individually and repeatedly with the various stakeholders to build support among elected officials and the public. Goldsmith aggressively and enthusiastically touted the project as a means to generate revenues for needed services from an existing underutilized facility without raising taxes.

The San Diego Association of Governments (SANDAG) was also instrumental in communicating with the general public and media through a well-planned marketing campaign that included I-15 Express Lane newsletters and a series of town hall-style meetings.⁴² In addition to these education efforts, SANDAG employed focus groups and opinion surveys to frequently assess the public perception of the HOT lanes, particularly regarding the perceived fairness of the facility.⁴³ As part of these efforts, SANDAG established a Policy Advisory Committee and a Citizen's Advisory

41 Weinstein & Sciara, 2006

42 Evans, Gougherty, Morris, & Smirti, 2006

43 Weinstein & Sciara, 2006

Committee which were very active in the planning phase. Various consultants also played important roles in the planning phases by producing a series of analytical reports to support decision-making regarding the setting of prices, public relations, and operational issues.⁴⁴ By incorporating public opinion surveys into the planning process, SANDAG was able to adjust its design to assuage equity concerns as the project evolved.

Once the I-15 HOT lanes opened, several evaluation studies tracked user demographics to address concerns that the lanes might become Lexus Lanes for the rich. Although the users of the I-15 HOT lanes were found to have higher average incomes than drivers in the parallel, free lanes, the lanes were used by middle, lower-middle, and some lower income drivers as well. Furthermore, opinion surveys conducted after the opening of the lanes found widespread support across all income groups and among both users and non-users. The San Diego officials were successful in selling the HOT lanes as a new transportation choice for all drivers, which aided in increasing approval levels of the project (USDOT, 2008). In addition, the increased utilization of the former HOV lanes reduced free-lane congestion, contributing importantly to the project's popularity.

The San Diego case demonstrates the importance of incorporating community input and outreach into the program design process from the outset. The I-15 project also illustrates the potentially important role that revenue dedication can play in assuaging equity critics. By funding transit service, the HOT lanes improved transportation options for drivers and non-drivers alike. One important equity issue remains, though: once tolling is established as a revenue source, local officials must balance the sometimes competing objectives of optimal traffic flow versus revenue maximization (and perhaps some traffic delays).

Minnesota's I-394 MnPass: Bipartisan Support Quells Equity Objections

HOT lanes proposals in the Minneapolis region weathered over a decade of criticism before finally moving forward in 2005. Although Minnesota transportation officials attempted to follow the San Diego's HOT lanes implementation model, Minnesota residents and political leaders proved much more critical of the HOT lane concept than those in San Diego. Much of this criticism focused on equity concerns, with opponents repeatedly dubbing the facility "Lexus Lanes." However, a broad bipartisan political coalition, which focused on public education and outreach, was eventually able to overcome and quell many of the equity concerns.

The Minnesota Department of Transportation (Mn/DOT) and the Twin Cities Metropolitan Council had been exploring the possibility of introducing value pricing in the Minneapolis/St. Paul metropolitan area since 1994. In 1997, the state legislature approved a HOT lane demonstration project on I-394, a congested freeway route in Minneapolis's western suburbs. However, the proposal met with strong initial resistance from the public and was subsequently withdrawn; much of the public outcry centered on questions of fairness. The Minnesota Governor at the time, Arne Carlson, responded to the public objections by rejecting Mn/DOT proposals to incorporate HOT lanes as part of Minnesota's transportation plan.⁴⁵ For a time, the proposal appeared dead.

Not to be deterred, a 30-member Value Pricing Advisory Task Force, consisting of state legislators, area mayors, and business, environmental, and transportation leaders, pushed a new demonstration project proposal beginning in 2001. Led by researchers at the Hubert Humphrey Institute at the University of

44 Schreffler, Golob, & Supernak, 1998

45 Sorensen & Taylor, 2005

Minnesota and funded through Federal Highway Administration (FHWA) value pricing grants, the coalition repeatedly and publicly championed value pricing through an aggressive communications campaign. As part of the campaign, a series of local and regional workshops were conducted to address citizen concerns. This public dialogue eventually led to bi-partisan support for the project. MnPass (as the project came to be known) planners also used focus groups and opinion surveys to assess the public perception of HOT lanes.⁴⁶ As a result of this outreach work, public acceptance began to grow.

Beyond the education campaign, several other factors likely contributed to waxing support for the project. In the early 2000s, the Minnesota state budget deficit exceeded \$4 billion, and the governor had pledged no new taxes. Furthermore, the Minneapolis-St. Paul metropolitan area's population was growing rapidly, exacerbating traffic problems on the already congested road network. Thus, congestion had become one of the top issues on the public agenda. Bipartisan support, along with the backing of newly elected Governor Tim Pawlenty and Lt. Governor and Transportation Commissioner Carol Molnau, led to the passage of 2003 legislation that allowed for the conversion of HOV lanes to HOT express lanes. The legislation also stipulated that revenue was to be used first to pay back the state highway trust fund for the costs of implementation and administration of the project. Any excess revenue was to both enhance transit service in the corridor and to expand corridor road capacity.⁴⁷

With the legislation and public support in place, the Minnesota HOT lanes opened along I-394 in May 2005. The lanes featured dynamic pricing, with tolls varying from 25 cents to \$8.00 depending on congestion

level.⁴⁸ As with the San Diego case, the MnPass program reduced congestion levels across the entire corridor, not just in the MnPass lanes. And similar to the San Diego case, although higher income drivers are somewhat more likely to purchase MnPass transponders and use the lanes, drivers of all income levels participate in the MnPass program, contributing to public acceptance of the project.⁴⁹

German Toll Collect: Moving Towards a Fair Distribution of Costs

In contrast to the two previous case studies, the German Toll Collect program was motivated explicitly by a desire to develop a more equitable distribution of transportation costs among road users. With rise of international trucking in the European Union, the Toll Collect Program was structured to charge commercial users fairly for the costs they impose on the German highway system and to encourage the movement of goods by rail.⁵⁰

Located in the heart of Europe, Germany has long served as a central hub for European transport. The Single European Market and the development of the European Union have dramatically increased the amount of intra-European trade and, in turn, levels of truck traffic traveling through Germany. This growth is expected to continue, with projections (made prior to the current economic downturn) of a 64 percent increase in truck traffic between 2005 and 2015.⁵¹ As truck travel has increased, so have the costs of maintaining and upgrading German highways, since heavy trucks do vastly more damage to roadways than cars do. Estimates indicate that up to 35 percent of truck vehicle miles of travel in Germany are

⁴⁶ Weinstein & Sciara, 2006

⁴⁷ Buckeye & Munnich, 2004

⁴⁸ United States Government Accountability Office, 2006

⁴⁹ Munnich & Kenneth, 2007

⁵⁰ Rothengatter & Doll, 2002

⁵¹ May & Sumalee, 2003

driven by about 470,000 foreign trucks each year.⁵² Prior to Toll Collect, Germany was not able to collect much revenue from the foreign vehicles, as fuel taxes paid in other countries remained in those countries.

In an attempt to fairly distribute the increasing road maintenance costs among users, the German government sought to incorporate distance fees for all heavy trucks on German roadways. In January 2005, Germany introduced the Toll Collect System, which electronically charges all trucks over 12 tons fees that vary according to distance traveled, vehicle weight, and vehicle emissions. Every truck is equipped with an on-board unit that utilizes GPS and digital road maps to track the vehicle's use of the highway network and assesses the appropriate fee automatically. Although some trucks still pay tolls manually, the German Toll Collect System is the first large-scale operation road pricing project that utilizes satellite-based electronic fee collection technology.⁵³

Research has long found that roadway damage increases exponentially with axle weights, depending on the "design capacity" of a given roadway.⁵⁴ That is, road damage is greatest when a vehicle's weight exceeds a road's design capacity (which is determined largely by roadbed composition and thickness). Accordingly, the Germans devised a fee system that varied with vehicle weight in rough proportion to the damage costs imposed.⁵⁵

As with the San Diego road pricing programs, the allocation of the revenue collected from road users also plays a significant role in the public's perception of the equity of the tolls. Twenty percent of German Toll Collect revenue is returned to the toll operator to cover

basic operation costs. The remaining 80 percent is dedicated to the federal transport network (50 percent to roads, 38 percent to rail, and 12 percent to inland waterways). Dedicating the net revenues to freight infrastructure, mostly highways, proved critical to achieving the acceptance of Toll Collect by trucking organizations.⁵⁶

Although the Toll Collect program was initially conceived of as a mechanism to more equitably distribute infrastructure costs, many within the trucking industry viewed the charges as unfair. In a 2005 survey, road users reported the belief that the charges would be more equitable if vehicle related taxes were reduced or a fuel tax rebate for those paying road charges was introduced.⁵⁷ Some users have also criticized the lack of transparency in determining the Toll Collect fees, which to the uninitiated may appear arbitrary. Furthermore, some users reported the opinion that the program would be more equitable if the truck tolls were consistent across all European countries, rather than current system whereby each country implements different road finance systems.⁵⁸ Given that studies have repeatedly suggested that heavy trucks inflict more damage on roadways than they pay in road taxes, it is perhaps unsurprising that truckers would express dissatisfaction with a new pricing regime that explicitly and intentionally shifts more of the finance burden in Germany onto heavy vehicles.

As the Toll Collect case illustrates, perceptions of equity and fairness vary among those who now pay less or more in highway tolls and taxes. Although German residents and government officials widely viewed Toll Collect as a logical step towards a fairer distribution of costs, many truckers viewed the system as a new and unwarranted burden. Such complaints notwithstanding, the explicit focus on fairness and the dedication of the

⁵² Hensher & Puckett, 2005

⁵³ Hensher & Puckett, 2005

⁵⁴ Small, Winston, & Evans, 1989; USDOT FHWA, 1997; Forkenbrock, 2001

⁵⁵ Rothengatter & Doll, 2002

⁵⁶ Doll & Schade, 2005

⁵⁷ Stewart-Ladewig, 2005

⁵⁸ Stewart-Ladewig, 2005

revenues to roadway and goods movement improvements have combined to quell opposition and keep the system in place.

The German Toll Collect case is directly relevant to current debates over whether, how, and when to transition to a VMT-based user fee here in the U.S. While a substantial majority of highway cost allocation studies in the U.S. have likewise found that heavy vehicles do not pay taxes and fees in proportion to the costs they impose on highway systems,⁵⁹ truckers and trucking interests in the U.S. have frequently objected to proposals to use tolling to bring the prices paid by heavy trucks in line with costs imposed (to increase both efficiency and equity) as unfair—reflecting a status quo bias so common in public policy. While such fairness concerns were raised by truckers in Germany, the explicit focus of the Toll Collect program on redressing inequities in the previous highway finance system helped overcome these objections.

Stockholm Congestion Tax: Pilot Program Allows Policy Adjustments

Although various congestion charging proposals for the Stockholm area had been discussed since the 1970s, they did not gain any traction until the late 1990s when mounting environmental concerns led to renewed political pressure to reduce traffic congestion and its associated emissions. The 2002 Swedish general election led to an agreement between the Social Democrats, the Left Party, and the Green Party that included a provision allowing for a congestion pricing trial in Stockholm. In June 2003, the Stockholm City Council passed a proposal to introduce such a trial, and the Swedish Parliament, the Riksdag, passed the Congestion Charges Act in June 2004, allowing Stockholm experiment to proceed.⁶⁰

Stockholm area residents had little direct experience with congestion pricing and overwhelmingly opposed the central area cordon fee by a margin of two to one. Much of this opposition pertained to fairness issues, particularly concerns over geographic inequity; citizens felt that central area residents and employees would be unfairly burdened by fees not levied elsewhere.

The trial began in 2006 when a fee that varied by time of day was levied on all vehicles traveling within a 29.5 square-kilometer central Stockholm ring. The revenue raised during the trial period was dedicated to public transit improvements in the Stockholm region. By both reducing congestion and enhancing public transit, planners of the congestion fee sought to improve sustainable accessibility to Stockholm's downtown core. In order to maintain access to the city center throughout the trial, improvements to the public transportation system began prior to the implementation of the congestion tolls. The improvements constituted the largest coordinated expansion of the transit system since the initial Underground subway construction project in the 1950s.⁶¹ Most of the public transportation improvements focused on enhancing bus service by introducing new routes and new buses. Rail lines and existing bus lines were improved as well. Finally, park and ride sites received funding for improvement.⁶²

At the conclusion of the trial period in July 2006, the Congestion Charge Secretariat evaluated the trial run by examining a number of criteria reflecting the aims of and motives behind the congestion pricing program. The Secretariat study determined that, during the congestion toll period, traffic in central Stockholm decreased by 22 percent, exceeding expectations, and public transit ridership increased by six percent. The study also concluded that carbon dioxide emissions

59 USDOT FHWA, 1997; Balducci & Stowers, 2008

60 Civitas, 2006

61 Civitas, 2006

62 Civitas, 2006

within inner-city Stockholm decreased by 40 percent. However, the effect of the reduced congestion levels on citizens' perceptions of the urban environment proved difficult to measure.⁶³

Although some complaints focused on the perceived unfair distribution of taxes, a study conducted during the trial period found that during one two-week period, almost half of all privately owned cars in Stockholm paid the congestion tax at least once. However, the study also concluded that 75 percent of the revenue was collected from fewer than 100,000 vehicles, which is approximately one-fifth of all cars in Stockholm County.⁶⁴ Furthermore, because Stockholm's congestion fee covers the entire downtown (an area larger, for example, than the zone in London), the congestion tax charges most auto commuters from outlying suburbs, which has contributed to perceptions of equity.⁶⁵

Although significant opposition arose among residents of the outer suburbs, the study found that the average payment by northern outer suburbs residents was only SEK 78 (\$11 USD) per person/year, compared to SEK 500 (\$70 USD) per person/year for residents of the inner city.⁶⁶ The trial study concluded that residents of the inner city and Lidingö overall paid approximately twice as much as residents of other areas, with men (who are more likely to drive in Sweden) paying almost twice as much as women. Households with higher discretionary incomes paid nearly three times as much as households with lower discretionary incomes, and employed residents paid about three times as much as unemployed residents. Because higher-income residents proved more likely to pay the congestion tolls, the burden of the tolls during the trial was highest,

on average, among affluent men living in a two-adult household with children located in the inner city or in Lidingö (Transek, 2006). In total, the Stockholm congestion fee increased car travel costs by 31 percent for residents of the inner city, 11 percent for residents of the inner suburbs, and only 5 percent for residents of the outer suburbs—where opposition to the fee was highest.

At the conclusion of the trial, the continuance of the program was put before the voters in a general referendum in September 2006. Residents of Stockholm voted in favor of maintaining the congestion fee, while residents of outlying suburbs voted to do away with it. The combined vote was a slim majority (52%) in favor of continuing the program. Even though the residents of the inner city paid a greater share of the tax, they also experienced the greatest benefit, with significantly reduced traffic levels through their neighborhoods, faster auto and transit travel times, and enhanced transit options financed by the fee.⁶⁷

In the September 2006 election, the Green Party, whose leaders had originally introduced the congestion fee, lost. However, a new Alliance of center-right parties collectively decided to reinstate the congestion tax, honoring the Stockholm residents' vote. During political debates over whether to continue the fee, a compromise altered the use of revenue from the congestion tolls; it would now be divided between new road construction in and around Stockholm and transit improvements, instead of being dedicated solely to transit as was done during the trial.⁶⁸ One of the new projects to be funded by the tax is a \$3 billion north-south expressway running underground through the western suburbs. With this new use of congestion tax revenue, overall support for the policy increased from 52 percent to 67 percent—

63 Miljöavgiftskansliet/Congestion Charge Secretariat, 2006

64 Transek, 2006

65 Poole, 2007

66 Transek, 2006

67 Transek, 2006

68 Savage, 2006

a complete reversal from the two-thirds majority which had initially opposed the program prior to the trial.⁶⁹ With these new levels of support, the modified congestion tax was reintroduced in September 2007 on a permanent basis.

The trial period implementation in Stockholm allowed transportation officials to test a controversial pricing proposal for which equity concerns had been raised. This gave public officials considerable political cover had the trial proven ineffective or unpopular. By introducing the congestion fee on a trial basis, residents were able to experience the congestion reduction effects first-hand, provide feedback to policymakers, and ultimately make a more informed decision when it came time to cast a ballot. To quell opposition from suburban voters who felt unfairly taxed during the trial, the revenue was split between central city transit and suburban highway projects, resulting in supermajority support for the now permanent program.

New York City Congestion Pricing: Perceived Inequities Help to Kill the Proposal

The congestion pricing proposal in New York City is an illuminating story of equity concerns helping to kill a project. Proposed by New York City Mayor Michael Bloomberg in April 2007, the initiative was met with both fanfare and fierce political and public opposition. Many of the arguments against the proposal focused on equity issues, both geographic and economic. As designed, the congestion pricing initiative would have charged vehicles entering Manhattan south of 60th Street \$8 and vehicles traveling within the zone \$4 during designated peak hours. The revenue collected would have been dedicated to mass transit improvements to help accommodate the many former drivers

expected to switch to transit. Furthermore, had the proposal been approved, New York City would have received an additional \$354 million of federal funding for mass transit improvements.

While the new revenue streams proved attractive to many elected officials, opposition to the project was never sufficiently quelled. In response to persistent vocal opposition to the proposal, the New York State Legislature failed to grant the necessary legislative authority for the program to proceed by the deadline for the receipt of the federal funding in April 2008.

Equity concerns with the proposal were raised by poverty advocates and elected officials representing low-income districts, as well as a number of politicians representing wealthy suburban districts. While the expression of these equity concerns was sincere among many critics, it's likely that such objections by others were largely tactical. Regardless, those campaigning against congestion pricing were successful in wielding inequity fears to help sink the proposal.

As with the other cases reviewed here, equity issues motivated pricing proponents as well. Although New Jersey vehicles account for only 24 percent of those entering the New York City CBD, their drivers pay 45 percent of all Manhattan bridge toll revenues. In comparison, Manhattan drivers contribute only 7 percent of the total toll revenues, while residents of the other four boroughs pay 29 percent. Under the proposed congestion pricing program, residents of Manhattan would have paid a larger share of the much larger pot of revenues—between 28 and 31 percent—while residents of the other four boroughs would have paid between 38 and 49 percent of the tolls, and New Jersey residents between 7 and 17 percent. Proponents argued that this was a more equitable distribution of burden than the current system, since the revenue collected would be used primarily to fund

⁶⁹ USDOT, 2008

transit improvements that would benefit the residents of New York City.⁷⁰

As the proposal moved through the legislative process, equity issues were frequently cited as a key reason to oppose the legislation. Among the most vocal opponents were members of NYC Congestion Free, who frequently cited equity concerns.⁷¹ New York State Assemblyman Richard Brodsky, a Democrat from Westchester County, helped to spearhead opposition to the proposal.⁷² Brodsky claimed congestion pricing would be regressive, disproportionately burdening working and middle class residents. In July 2007, Brodsky produced a report purporting to support his assertion.⁷³

In addition to opposition from suburban representatives, many politicians from Manhattan, Brooklyn, and Queens strongly opposed the measure. Assembly Speaker Sheldon Silver, a representative of Manhattan's Lower East Side, backed Brodsky in opposition to congestion pricing. Silver voiced concerns that the neighborhoods surrounding the congestion pricing zone would be transformed into virtual parking lots, serving those who would drive in from the outlying areas and then park at the border of the zone to avoid the charges. Therefore, Silver argued, traffic levels would not be reduced in neighborhoods such as Harlem, the South Bronx, and Bedford-Stuyvesant. Many supporters of congestion pricing cited improved air quality as one of the benefits of the program, but Silver argued that the city's poorest neighborhoods would in fact experience no improvement in their air quality and perhaps would even experience decreased air quality due to increased traffic at the edge of the ring doing little to battle the

high asthma rates in these neighborhoods.⁷⁴ In the New York City Council vote, council members from Brooklyn and Queens opposed the congestion pricing bill by a margin of nearly two to one.

Overall, however, representatives from the Bronx and Manhattan voted overwhelmingly in favor of the congestion pricing plan, moving it forward to the state legislature. But once in Albany, 16 of the 18 state assembly members from Queens signed a letter opposing the plan.⁷⁵ Assemblyman Hakeem Jeffries, a representative of Brooklyn neighborhoods Prospect Heights, Bedford-Stuyvesant, and Clinton Hills, joined with Brodsky in opposing to the proposal on the grounds that it imposed an unfair burden on working families. Some representatives from Brooklyn also claimed that the plan would geographically isolate residents of the borough by forcing drivers to pay a toll to cross Manhattan on the way to New Jersey.

But while concerns with the impacts on low-income households were raised by many, not all elected officials believed that the congestion pricing initiative would negatively affect their lower-income residents. Assemblyman Keith L.T. Wright, a Democrat representative from Harlem, supported the congestion pricing, as did the city councilwoman for East Harlem and the South Bronx, Melissa Mark-Viverito, who cited equity as a major reason behind her support of the proposal. In particular she questioned the sincerity of elected officials from suburban communities who claimed to be concerned about the impact of the congestion tolls on lower-income residents. Mark-Viverito argued that her lower-income constituents would benefit from reduced traffic from outlying suburbs en route to the CBD, resulting in improved air quality and public health. Noting that only five percent of commuters from

⁷⁰ USDOT, 2008

⁷¹ Keep NYC Congestion Tax Free, 2007

⁷² Berger, 2008

⁷³ Hakim, 2007; Brodsky, 2007

⁷⁴ Hakim, 2007

⁷⁵ Neuman, 2008

Brooklyn, Queens, Staten Island, and the Bronx travel to Manhattan by private car, Mark-Viverito argued that congestion pricing revenues would benefit the public transit systems that transport the majority of commuters in the five boroughs.⁷⁶

As the deadline for receiving federal funds neared in April 2008, equity arguments persisted among pricing proponents and opponents with no movement toward consensus. Speaker Silver determined that there was not enough support in the Assembly to justify bringing the enabling legislation to a vote, which effectively killed the proposal.

The New York City experience suggests that equity concerns—both sincere and tactical—can indeed kill congestion pricing projects. The case of New York shows that geographic equity concerns—in particular, who pays and which areas might be negatively affected—can be multi-faceted and murky. Because questions about the geographic equity effects of the program were not adequately addressed by program proponents, *uncertainty* over who, and where, would win and lose led to the demise of congestion pricing in Manhattan.

⁷⁶ USDOT, 2008



National Transportation Policy Project Members

PROJECT CO-CHAIRS

Dennis Archer—Former Mayor of Detroit

Sherwood Boehlert—Former United States Congressman from New York

Slade Gorton—Former United States Senator from Washington

Martin Sabo—Former United States Congressman from Minnesota

Alan Altshuler—Harvard Professor (Kennedy School of Government and Graduate School of Design); former Massachusetts Secretary of Transportation

Jack Basso—American Association of State Highway and Transportation Officials (AASHTO); former Assistant Secretary for Budget and Programs, United States Department of Transportation

Lillian Borrone—Board Chair of the Eno Transportation Foundation; former Senior Executive of Port Authority of New York and New Jersey

Tom Downs—Chairman, Veolia Transportation NA; former CEO of Amtrak; former Commissioner of New Jersey Department of Transportation; former President of the Eno Transportation Foundation

Mike Erlandson—Vice President Government Affairs, SUPERVALU

Douglas Foy—President, Serrafix Corporation; former President of the Conservation Law Foundation, former Secretary of Commonwealth Development, Commonwealth of Massachusetts

Jane Garvey—Former Administrator of the Federal Aviation Administration; former Deputy Administrator of the Federal Highway Administration

David Goode—Former CEO of Norfolk Southern Corporation

Douglas Holtz-Eakin—President, American Action Forum; former Director of Congressional Budget Office

Nancy Kete—Former Director of EMBARQ-The World Resources Institute's Center for Sustainable Transport

Ann Klee—Vice President, Corporate Environmental Programs, General Electric

Mark Lasswell—President, Transportation Business Group, CH2M Hill Companies

William Lhota—President and CEO of the Central Ohio Transit Authority (COTA); former senior executive at American Electric Power

Bob Lowe—President and CEO of Lowe Enterprises, Inc.

Sean McGarvey—Secretary-Treasurer, Building and Construction Trades Department, AFL-CIO

Bryan Mistele—President and CEO of INRIX

James Runde—Managing Director and Special Advisor of Morgan Stanley

Tom Stricker—Vice President, Technical & Regulatory Affairs and Energy & Environmental Research, Toyota Motor North America, Inc.

Chris Vincze—Chairman and CEO of TRC Companies

Martin Wachs—Director of RAND Corporation's Transportation, Space, and Technology Program; Professor Emeritus at the University of California Berkeley

Dr. John Wall—Vice President and Chief Technical Officer at Cummins Inc.

Lynda Ziegler—Southern California Edison, Senior Vice-President, Customer Service



BIPARTISAN POLICY CENTER

1225 I Street, NW Suite 1000
Washington, DC 20005
202.204.2400
www.bipartisanpolicy.org

