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BEYOND GAS TAXES: LINKING DRIVING FEES TO EXTERNALITIES

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INTRODUCTION: WHY DRIVING IS TOO CHEAP

In 2000, 230,957,227 passenger autos, pickups, and vans are estimated to have traveled approximately two-and-a-half trillion miles in the United States.¹ As posted gasoline prices, media coverage, and politicians constantly remind us, American drivers pay plenty for all of these miles. For 1997, the most recent data available, the total cost of owning, maintaining, and operating a vehicle cost 53 cents per mile.² Even if the cost per mile remained at this level for 2000, cars cost drivers over \$1.3 trillion.

Increasing gas prices in 1999 and 2000 have heightened the sense of market vulnerability that drivers feel, and politicians have proved quite willing to do what they can to keep gas cheap: several states acted to remove state gasoline taxes, and the Clinton Administration approved tapping into the nation's Strategic Oil Reserve.

In this climate of seemingly expensive gasoline, it is difficult to convince drivers that driving is misleadingly cheap. Yet, several studies have shown that this is clearly the case. All Americans, not just drivers, pay an additional steep price for these cars and miles in the form of congestion, pollution, increased space covered by pavement, and rising public expenditures to accommodate drivers. **The Federal Highway Administration (FHWA) places a mid-range estimate for 2000 of the total social costs of driving—including the costs imposed on society by crashes, pollution, noise, and congestion—at a staggering \$446.3 billion, almost 18 cents per mile.** Table 1 shows that other studies indicate that this estimate of social costs may be conservative; some figure social costs at almost \$1 trillion per year.

How much do drivers themselves pay for the social costs they create? Drivers paid an estimated \$80.6 billion in fuel and vehicle taxes and tolls in 2000;³ much of these revenues, however, are dedicated to highway expansion and maintenance. Auto insurance companies paid out \$108.4 billion in loss claims in 1999,⁴ some of which covered losses other than accidents. Even if we consider all of these payments as compensation for social costs of driving, drivers cover less than half of the total bill created by cars. **Other drivers, non-drivers, and society at large cover the remaining \$257 billion in costs that driving creates.**



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Several studies, including Redefining Progress's *The Roads Aren't Free* (1998), describe the implicit and explicit subsidies that drivers receive from taxpayers, non-drivers, and other drivers. These studies hypothesize that people would own fewer cars and use them less frequently if they had to pay the full social costs of driving. Most recommend higher gas taxes as the way to capture these costs from drivers.

While gas taxes may be appropriate to shift more of the costs of auto-source pollution onto drivers, Redefining Progress (RP) now believes that other policies would be more politically feasible and more effective in reducing the subsidies society provides drivers. This report provides an economic framework for analyzing and advocating sound transportation pricing policies. We link the "externalities," or spillover costs, of a particular activity related to automobiles, to the poor pricing signals that exacerbate these costs. Based on this link, we suggest policies designed to provide better price signals to drivers and to internalize externalized costs.

**TABLE 1:
ESTIMATES OF TOTAL SUBSIDIES TO DRIVERS**

STUDY AUTHORS	\$/GALLON*	ANNUAL TOTAL (\$BILLION)
KETCHAM & KOMANOFF	5.53	730
LITMAN	7.08	935
MACKENZIE, DOWER, & CHEN	3.03	400
MOFFET & MILLER	2.86 – 5.00	378 – 660
VORHEES	4.78	631
OFFICE OF TECHNOLOGY ASSESSMENT	3.39 – 6.81	447 – 889
DELUCCHI	3.13 – 7.55	413 – 997
COBB	1.60**	184**

* Additional cost of a gallon of gas if drivers paid the full cost of driving.

** Based on 115 billion gallons annual consumption.

Estimates of other studies based on 132 billion gallons annual consumption.

Source: John Holtzclaw, “America’s Autos on Welfare: A Summary of Subsidies,” October 1996, <http://www.preservener.com/ATAutoWelfare.html>

THE STRATEGY: LINK POLICIES TO EXTERNALITIES

A coherent market-based tax shift strategy clearly connects a tax with the environmental problem it addresses. Linking the “inaccurate” prices of driving with the social costs they exacerbate strengthens the case for transportation tax shifts by targeting the problem more precisely. Suggesting a complementary use for the revenue raised by the tax that further corrects the problem provides additional logical ammunition. In these examples, we use the link between driving externalities and the pricing deficiencies that cause them to suggest appropriate tax shift policies.

PROBLEM: TRAFFIC CONGESTION

THE EXTERNALITY. Road congestion results from many factors, including limited transit alternatives and sprawling development that increases commuting distances. Fundamentally, however, congestion reflects too much demand for a product in fixed supply—space on the roads. The externality occurs because, while drivers may factor how traffic conditions will affect their own travel time into deciding to drive, they have no incentive to consider how their presence on the road affects anyone else. As a result, drivers don’t face the full cost incentives of avoiding traffic.

Sitting in traffic is not just a frustration; the monetary losses from congestion are also enormous. A report by the Texas Transportation Institute estimated that in 1997 alone the costs

EXTERNALITIES ARE SUBSIDIES TO DRIVERS

Driving is underpriced in the United States in the sense that cars and driving create “externalities,” the term that economists use for costs (and benefits) that spill beyond the buyer and seller during market transactions. A driver pays for gasoline, insurance, and repairs in order to derive the benefits of driving, but not for the traffic and pollution that affect nearby people, when she gets behind the wheel. Non-drivers also pay taxes to help build and maintain roads for the benefit of drivers. Externalities are really subsidies—people who don’t enjoy the benefits of driving still share some of the costs.

Several key economic points justify the need for better pricing of driving and of owning cars:

EXTERNALITIES ARE REAL COSTS

Externalities do not just matter to economists. They cost society real dollars and real time and create real health hazards (which also cost dollars and time). Worse, these costs are spread among members of society without regard for who bears responsibility for their cause or has the ability to pay them.

THE MOST ECONOMICALLY EFFICIENT WAY TO CHARGE FOR AN EXTERNALITY IS TO TAX ITS SOURCE

Externalized costs occur because of market failures: there is no “market” for pollution or congestion, and hence no explicit price that drivers pay for these social ills. A tax on the externality solves this problem by charging specifically for the damage created. In a sense, the tax creates a price for the externality and acts the same as any other cost that drivers take into account when deciding how much to drive.

Many advocates suggest raising gasoline taxes to better charge drivers for the externalities they create. This makes good economic sense for reducing the social costs that gasoline directly creates (pollution, global warming). And by making driving more expensive, gas taxes would reduce the number of cars on the road causing congestion and accidents. However, if the goal is to reduce congestion, charging for road use during peak traffic periods will reduce congestion less expensively than will raising gas taxes. Of course, political feasibility and administrative complexity also affect the efficacy of a particular pricing strategy.

DRIVERS AND BUSINESSES CURRENTLY PAY HEAVY COSTS IN LOST TIME ON ROADS

Higher driving fees will raise costs for drivers and businesses that do not change their driving habits. But they already pay a steep price in traffic congestion, which costs drivers time and businesses money. Emphasizing the lost time and money created by a system of cheap gas and roads, and how could better pricing of driving can help, can help broaden the support for transportation tax shifting. Drivers would also benefit from the reduction in greenhouse gas emissions resulting from fewer cars on the road and from better transportation alternatives that allow them to drive less.

ENVIRONMENTAL TAXES ARE FREE-MARKET MECHANISMS

Effective market systems do not give away something costly or valuable for free, yet this is what currently happens with driving “markets”. Markets charge prices based on the cost of providing goods and on people’s demand for them. Environmental taxes and driving fees reflect true costs, just like markets do.

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of congestion for the fifty largest urban areas totaled \$72 billion, including the time lost and fuel burned in traffic.⁵ The U.S. FHWA places a mid-range estimate of costs from congestion for 2000 at \$61.8 billion.⁶ These figures don't even include public money spent on highway expansion and other measures specifically designed to relieve congestion.

Traffic is a visceral issue for drivers, as they feel helpless to prevent the loss of mobility; "road rage" is perceived to be a growing concern to drivers. Traffic also costs businesses billions of dollars each year by increasing the time costs of getting their employees and products from where they need to be.

Because traffic is such a ubiquitous malady in our cities and suburbs, and should only worsen as the population grows and spreads, congestion is potentially a powerful motivator for reform. A worthwhile strategy may center on educating drivers and businesses about how increased driving fees in congested areas can be a part of the traffic solution.

TAX SOLUTION: CONGESTION PRICING

One of the fundamental roles of market prices is to ration scarce services. Most roads have free or inexpensive access, and hence have no price mechanism for controlling the number of cars that use road capacity. Many transportation advocates therefore have encouraged expanded and improved pricing for road use, at least when congestion is bad enough to slow the flow of traffic.

In addition to imposing tolls, some highway authorities are experimenting with road pricing during peak demand hours. Drivers who use these roads during peak hours are charged a fee, levied electronically through an automatic tracker (similar to toll systems such as EZ Pass or FasTrack) at points of entry; at other times, there is no fee. California, Texas, and Florida have projects that charge tolls that vary with the time of day.

Another road pricing strategy involves high-occupancy/toll (HOT) lanes, which are a variant on high-occupancy vehicle (HOV) lanes. While HOVs restrict use during certain hours to autos with multiple travelers, HOT lanes also allow solo drivers to pay for riding in the lane. This system retains the incentive to carpool, but better ensures against underutilization of lane capacity, a common criticism of HOV lanes. HOVs have a unique appeal in that they provide incentives to carpool without charging money, which avoids the problem of regressivity of driving fees.

The incentive to vacate cars during peak hours could be increased by using revenues from highway congestion pricing to offer discounts on public transit use during rush hours.

One potential problem is that with this "reverse peak pricing", however, is that peak driving periods correspond to peak public transit ridership, and so discouraging driving could overtax train and bus capacity. Another option is to use revenues to expand employer-provided transit checks to employees. A drawback of focusing efforts on expanding the transit checks system is that only those with jobs would benefit.

PROBLEM: AUTOMOBILE ACCIDENTS

THE EXTERNALITY. Additional drivers on the road increase the risks of collisions with other drivers, pedestrians, and bicyclists.⁹ In 1997 (the last year for which published figures are available), 13.8 million motor vehicle accidents killed over 43,000 drivers, bicyclists, pedestrians, and motorcyclists.¹⁰ Additionally, damage from accidents that are not covered by insurance creates higher insurance rates for other drivers and taxes for taxpayers. To cover the potential costs of accidents, drivers in most states are required to purchase liability insurance, which mitigates the externalized costs of accidents.

The problem is that insurance rates don't vary much with mileage driven, a key factor in accident risk. Since driving more miles within a broad range doesn't increase liability rates, a driver's incentives to drive do not reflect the additional accident risk, and cost, that driver creates.

How much do we all pay for motorist accidents? The U.S. FHWA mid-range estimate for 2000 for the cost of accidents is \$339.9 billion.¹¹ Drivers paid \$135.3 billion in commercial

and private passenger insurance for liability and physical damage in 1999, while insurance companies covered \$108.4 billion in losses and adjusted expenses incurred by policyholders.¹²

SOLUTION: PAY-AT-THE-PUMP OR PAY-AS-YOU-DRIVE INSURANCE

Advocates and transportation planners have suggested that "pay-at-the-pump insurance" would better assign insurance costs to drivers according to accident risk. Such a system would place a surcharge on gasoline that would pay specifically for insurance costs; this would correlate insurance costs with fuel use and mileage. While this system would improve the pricing of insurance, it would do so only indirectly by raising the overall cost of driving. As a result, drivers with more fuel-efficient cars would pay less in insurance per mile driven than other drivers.¹³ Another problem is that the insurance surcharge would not consider a driver's safety record in assigning insurance costs.



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THE HIGH COST OF “FREE” PARKING

Most researchers and advocates agree that subsidized parking is one of the biggest culprits in encouraging people to drive. While not a direct tax on road congestion, eliminating subsidized destination parking removes significant incentives to drive, especially for urban commuters, so long as transportation alternatives to driving exist.

In addition to increasing congestion, accident risk, pollution, and highway depreciation, free parking extracts costs from pedestrians and bicyclists in downtown areas by increasing dangers for non-drivers. This incentive is particularly costly during rush hours, especially in locations where public transportation provides viable alternatives to driving.

Research shows that offering employees a cash equivalent to the cost of employer-provided parking

provides employees a powerful incentive to choose alternative transportation over driving. A study by transportation analyst Patrick Siegman examined 88,000 employees in 10 metropolitan areas. It found that an average cash payout of \$46 per month reduced the demand for parking by 26%. Surprisingly, even areas with little or no public transit options showed parking demand elasticities very close to the average.⁷ A study by California’s RIDES found that “locations with free parking have a drive-alone rate of 78.5%, while those without free parking have a drive-alone rate of 36.7%. For those with free parking, the transit use rate is 5.7%; for those without, it jumps to 43.9%.⁸ These studies suggest that encouraging employers to offer a parking “cashout” instead of free parking may be among the most effective strategies against congestion.

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More accurate than pay-at-the-pump insurance rates would be pay-as-you-drive plans. Insurance based on mileage driven (and driving record) would offer incentives to drive less, since insurance prices would better reflect drivers’ accident risk. A new partnership between Progressive Auto Insurance and the U.S. Environmental Protection Agency seeks to alter drivers’ insurance rates monthly, based on mileage driven.¹⁴ The disadvantage of this approach would be the potentially significant administrative expense of tracking mileage and recalculating drivers’ rates annually.

NAGGING QUESTION: WILL ONLY THE WEALTHY BE ABLE TO AFFORD TO DRIVE?

Tax shifting would improve market incentives and generate revenue to improve the efficiency of the tax system, reduce environmental damage, or both. Effect incentives that address externalities will inherently increase the costs of driving. Given that lower-income people spend a higher proportion of their income on transportation expenditures, a driving tax shift would likely fall hardest on low-income drivers, particularly those with limited transportation alternatives. In fact, if transportation price incentives are successful in changing people’s behavior, lower-income drivers seem more likely to drive less. Critics rightfully caution that driving would become a luxury good available only to the wealthy.

While regressivity of driving fees is a serious concern, doing nothing to improve our transportation problems is also likely to impact low-income households disproportionately. Purchasing, operating, and maintaining a car is an expensive undertaking, and our society prioritizes mobility by auto over other modes that would particularly benefit those than cannot afford cars. Because driving is too cheap, it seems irrational to develop alternatives that would serve low-

income households particularly well. These households are also more likely to bear the environmental burdens of pollution and global warming resulting from cheap gas and subsidized driving.

Still, a priority of driving fees should be to soften the impact of higher prices for those that are most vulnerable. Several options are available. The simplest plan could distribute fees raised from a Vehicle-Miles Traveled charge equally to all citizens (or vary with income); those that drove less an average number of miles would receive more money than they pay. As long as the rebate amount did not vary with driving activities (which would offset most of the incentives of increased fees), a rebate would make economic sense. It recognizes that all citizens pay to accommodate drivers. It also

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would emphasize the revenue-neutrality of the tax shift, and thus offer political advantages.

While rebating the revenue would soften the financial impact of driving fees, it surrenders the opportunity to use the revenues to improve transportation options for everyone. Viable, convenient, and affordable alternatives to using and owning cars would not only allow drivers to change their driving habits but also preserve and expand the mobility of those most affected by higher driving fees.

A possible compromise between preserving incentives and redistributing revenues is the use of tax credits that could provide financial rewards for those who reduce their driving. These could be administered through annual registration fees, and could raise or lower fees based on mileage driven the previous year. Another possibility would be to extend transit checks, which provide discounted or free public transit tickets, to anyone whose yearly driving falls below a benchmark of vehicle-miles traveled.

CURRENT PROPOSALS: SOME GOOD, SOME BAD

Given the consensus among transportation analysts and advocates that we need to discourage driving by raising private driving costs, have governments responded by proposing and passing new tax shift policies? Hardly. If anything, the opposite has been true, as politicians have sought to cut various vehicle fees and taxes. Most notable among these is the gas tax, which has been under intense scrutiny both at the state and federal level since prices jumped during the summer of 2000. Although some states (Kansas and Louisiana) resisted the push to cut taxes, several states have proposed or authorized at least temporary repeal of their gasoline taxes in an attempt to lower prices for motorists.

Additionally, several states, including South Carolina, California, Oklahoma, and Minnesota, have proposed reducing vehicle license or registration fees. While registration fees might discourage some people from purchasing cars, they provide no incentive to reduce driving once the car is purchased.

Still, recent voter actions give some cause for optimism. In November 2000, Massachusetts voters rejected a “reverse tax shift” that would have granted tax credits for tolls paid on certain state roads, bridges, and tolls.¹⁵ New Jersey voters approved a constitutional amendment to dedicate their petroleum products’ gross receipts tax to transportation programs (although not entirely public transit).¹⁶ In March 2000, the city of Phoenix voted to raise tax rates to improve public transit and air quality, but unfortunately they decreased the effectiveness of the measure by paying for externalities with sales taxes instead of driving taxes.¹⁷ Additionally, Washington’s Blue Ribbon Commission on Transportation has suggested increases in the state’s gas taxes, as well as new commuter taxes, tolls, weight-based fees, and ride-sharing credits, although these have not translated into legislative proposals yet.¹⁸

CONCLUSIONS: WHAT PRICE FREEDOM?

The automobile has radically transformed transportation, with undeniable benefits for a huge percentage of Americans. It has for many decades been an integral part of the American dream. The lone individual rides off into the sunset, free to go where and when he wants, utterly independent. In fact, he is incredibly dependent, not only on the car but also on the subsidies non-drivers and other drivers pay to keep driving affordable.

This ingrained cultural association between the car and freedom is perhaps the greatest obstacle to correcting transportation pricing. Opponents assail the idea of charging more to drive as an encroachment on an inalienable right as well as government intrusion into the free market. But cheap gas and free access to roads for drivers that create hundreds of billions of dollars of costs for everyone in our society makes for a very expensive “free” market.

The long-run challenge is to convince drivers and car owners that tax shifting can enhance, and not threaten, their quality of life, their freedom, and yes, even their wallets. The benefits of a driving tax shift can outweigh the costs even possibly for drivers themselves, especially as drivers become increasingly frustrated with time wasted in traffic jams.

While accurate pricing is a fundamental part of improving the functionality and fairness of our transportation systems, prices alone won’t accomplish this. Changing the culture of driving requires that people also have the transportation choices that allow them to respond to price signals. Better choices and prices must be in place before people start to realize that transportation and driving aren’t the same thing.



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OTHER REDEFINING PROGRESS PUBLICATIONS ON RELATED TOPICS

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The Roads Aren't Free: Estimating the Full Social Costs of Driving and the Effects of Accurate Pricing, by Clifford W. Cobb (1998)

Tax Waste, Not Work: How Changing What We Tax Can Lead to a Stronger Economy and a Cleaner Environment, by M. Jeff Hamond, Stephen J. DeCanio, Peggy Duxbury, Alan H. Sanstad, and Christopher H. Stinson (1997)

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ABOUT REDEFINING PROGRESS

Redefining Progress is a nonprofit research and policy organization based in Oakland, CA, that believes that genuine progress entails providing a better life for all within the capacity of nature.

RP tools and policies emerge from three "Big Ideas":

SUSTAINABILITY

Sustainability is rooted in the realization that ever more of us live on a planet with shrinking regenerative capacity. RP uses the Ecological Footprint to document overuse of resources and workshops to explore fair and effective ways to live once more within the means of nature.

ACCURATE PRICES

Accurate Prices advances market mechanisms and incentives that provide accurate feedback about the full cost of our purchases and decisions to ourselves, others, and Nature.

COMMON ASSETS

Common Assets recognizes the value of our natural and community-based resources in strengthening our communities. RP fosters policies to improve the health of these resources so that they can efficiently and equitably meet the basic needs of our communities and households.

RP also applies these Big Ideas to the problem of **global warming** through two campaigns to promote fair and low-cost policies to address climate change.



NOTES

- 1 U.S. Federal Highway Administration. 2000. "Addendum to the 1997 Federal Highway Cost Allocation Study Final Report." Viewed at <http://www.fhwa.dot.gov/policy/hcas/addendum.htm#N_1_>.
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- 8 "RIDES Commute Profile: 1999." Viewed at <<http://www.rides.org/cp99/parking.shtml>>.
- 9 The relationship between cars and accidents is complicated because fewer cars lead to faster average speeds of driving, which can create more damaging accidents. Researchers believe that accident rates are a U-shaped function of congestion: accidents occur frequently with little congestion with cars traveling at higher speeds, with rates declining as congestion initially causes cars to decelerate, then increasing again as congestion increases and more cars crowd roads.
- 10 National Safety Council. 1999. Accident Facts, as reported in U.S. Department of Commerce, Statistical Abstract of the United States, Table 1041.
- 11 U.S. Federal Highway Administration. 2000. "Addendum to the 1997 Federal Highway Cost Allocation Study Final Report." Viewed at <http://www.fhwa.dot.gov/policy/hcas/addendum.htm#N_1_>.
- 12 Source: Insurance Information Institute, New York. Includes premiums paid for private passenger auto liability and physical damage.
- 13 Fuel-efficiency does somewhat correspond inversely with insurance hazard. Heavier cars, such as sport utility vehicles, have been shown to do more damage in accidents and get worse gas mileage than lighter vehicles. In this sense, pay-at-the-pump insurance would appropriately assign insurance costs based on fuel consumption.
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