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ACCESS Magazine

Title

ACCESS Magazine Fall 2006

Permalink

<https://escholarship.org/uc/item/8rz6f1rf>

Journal

ACCESS Magazine, 1(29)

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et al.

Publication Date

2006-10-01

Copyright Information

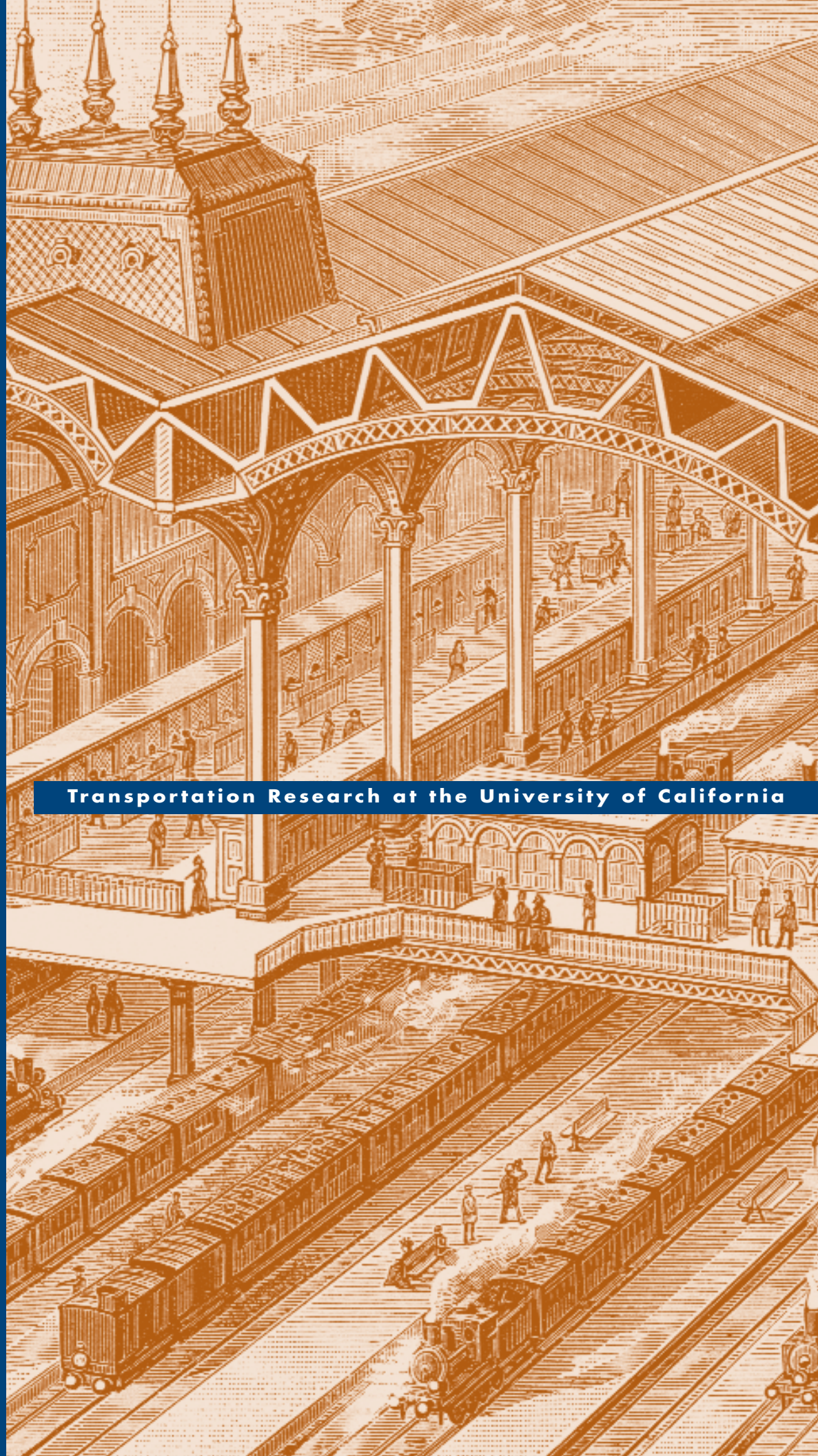
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Peer reviewed

TRANSPORTATION



FALL 2006
NUMBER 29



Transportation Research at the University of California

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The University of California Transportation Center, founded in 1988, facilitates research, education, and public service for the entire UC system. Activities have centered on the Berkeley, Davis, Irvine, Los Angeles, Riverside, and Santa Barbara campuses.

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We're All Transportation Planners

FOR EIGHTEEN YEARS the University of California Transportation Center, with help from USDOT and Caltrans, has conducted and shared research on compelling transportation issues. During those years, the issues have grown in complexity right along with growth in population and sizes of cities.

The basic problem of how to get where we need to go is ultimately solved on an ad-hoc, individual basis every day: millions of people all over the world drive in cars or crowd into buses or hop on mopeds or bicycles or walk. Each individual makes daily transportation choices based on all kinds of personal and not-so-personal circumstances—from social status to trip length to availability and price of car or rail transit or bus to local population density to time of day—often without being aware of the factors shaping the choice. And most of us remain only dimly aware of the larger ramifications of our personal choices, confronted only on an individual level by the specific consequences of a traffic jam, or the dearth of parking places, or the scramble for cash at the fare box. Smog and even heavy traffic are so common that we rarely recognize our individual contribution to them.

Daniel Sperling tells us in this issue of ACCESS why it's urgent for this to change. The accumulation of choices made by millions of personal transportation planners results in a large proportion of the emissions contributing to global warming. Sperling's report on last year's Conference on Transportation and Energy Policy at the Asilomar Conference Center spells out the work transportation specialists must undertake to mitigate one of the most pressing issues of our time. The first step, the conferees declared, is to accept the

facts that global warming is real, that transportation is a major contributor, and that we can do something about it. They called for "a portfolio of solutions" that can both reduce the causes of global warming and contribute to an efficient and effective transportation system.

As we begin to understand the global consequences of pollution, it's important to understand local effects as well. Douglas Houston and his co-authors at UCLA take a close-up look at some of the ways transportation corridors affect surrounding areas. Those who live close to heavily traveled freeways—many of whom are low-income people—pay a higher health cost than many of the people traveling on those roads.

Some people have very limited transportation choices. Not everyone has access to a private vehicle, and some have but little access to the usual alternatives such as transit. In these pages you'll find Annie Decker's consideration of what happens when low-income disabled and elderly people can't get where they'd like to or need to go.

This issue of ACCESS also contains a report from John Landis on his recent sojourn in London, offering observations on current transportation innovations there. Congestion pricing, always controversial and increasingly sought as a solution to traffic management, has had some success in London's central city, and Landis discusses some of the ways it has worked and some of the reasons for its success. He also gives us a quick review of the changes being wrought in Britain by low-cost airlines, and other matters. In the next issue of ACCESS, in the spring of 2007, we'll find out what he has to say about traffic flow on the other side of the globe—in Sydney, Australia.

—Melanie Curry
Managing Editor



DISPATCH FROM LONDON

BY JOHN D. LANDIS

FIRST IMPRESSIONS

Upon arriving in London (or any other major English city), the first thing an American notices is how few SUVs, pickup trucks, and full-sized minivans are on the roads. This is partly because of gasoline's high price, currently about \$5.80 per US gallon, and partly because English roads and parking spaces are so narrow. However, things do seem to be changing. Sales of SUVs are rising, particularly among suburbanites with children, as are sales of seven-passenger multi-purpose vehicles, which are slightly smaller versions of American minivans.

One also notices that all London Underground stations and many bus stops have real-time electronic signs informing riders of anticipated arrival times of the next few trains or buses. This technology is informative, not operational: it doesn't help the trains or buses travel any faster. However, it does give riders confidence in the transit system's reliability. Rather than wait for an indeterminate time until a train or bus arrives, riders know exactly how long they will have to stand around and fidget.

It's also notable that, whatever the law may say, pedestrians definitely don't have the right-of-way when crossing an un-signalized intersection or street. This is particularly jarring for Californians, who, as pedestrians, are used to giving oncoming drivers the evil eye if they don't stop. Given that the English refuse to make eye contact anywhere on any transportation system, greatly reducing certain social possibilities, my hometown right-of-way designation system simply doesn't work in England. Londoners—particularly younger Londoners—are also habitual jay-walkers. It doesn't matter if the crosswalk signal is red or green; if there's no car coming, there's a quick dash across the street, typically with eyes locked straight ahead. It may be that taking rather than being ceded right-of-way responsibility forces pedestrians to be more aware of their immediate surroundings. Certainly, in the six months I spent as a London pedestrian, I never witnessed any accidents. This may only be luck, however. According to the UK Department for Transport, in 2003 the rate of UK traffic fatalities involving pedestrians and cyclists was only slightly less than in the US.



CONGESTION CHARGING

The newest transportation innovation to come out of the UK is the congestion charging zone (CCZ). Introduced in February 2003, the CCZ was the brainchild of London Mayor Ken Livingstone to reduce daytime traffic congestion on London streets and to generate revenue for public transit improvements. Motorists entering London's inner ring road between 7:30 a.m. and 6:30 p.m. Monday to Friday are charged a fee of £8 (about \$14). The CCZ encompasses the City of London—the city's financial district—and the West End, its primary commercial and entertainment center. The wealthy >

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residential areas of Westminster, Kensington, and Chelsea are not currently included. Some vehicles, such as buses, minibuses, taxis, motorcycles, and alternative fuel vehicles, are exempt from the charge. Residents of the zone, about 136,000 of Greater London's seven million residents, are eligible for a ninety percent discount if they pay the charge a week or more ahead. The CCZ includes the American Embassy, but the Bush

Administration has so far refused to pay the fee, arguing that it is really a tax, from which foreign diplomats and their staffs have traditionally been exempt.

The CCZ's technology is not particularly advanced. Over two hundred closed-circuit TV cameras installed at the edge of the CCZ take video pictures of the license plates of vehicles entering the zone. The images are transmitted to a control center where they are identified and matched to the plate numbers of cars whose owners have prepaid to enter the CCZ; private vehicle owners who have not prepaid and do not pay by midnight are fined £60 (\$95).

When first adopted in February 2003, the fee was only £5 (\$8.75) per trip. Prior to its implementation, critics worried that the CCZ would produce massive numbers of misidentifications, increased traffic congestion just outside the zone, and financial hardship for businesses inside the zone. None of this came to pass.

How well has the CCZ achieved its twin goals of reducing central area traffic congestion and increasing public transit use? According to the most recent monitoring study undertaken by Transport for London, as of 2004 average congestion levels within the zone were down thirty percent. Private vehicle traffic entering the CCZ had declined from just under 200,000 cars per day in the autumn of 2002 to 130,000 in the autumn of 2004. Over the same period, the average number of bus passengers entering the CCZ during the morning peak period increased from 102,300 per day to 149,200 per day, while excess bus waiting times during the peak period

declined by nearly forty percent. This was due more to an increase in the number of buses in service than to a reduction in street congestion. The average number of Underground passengers entering central London during the weekday morning period fell by eight percent between 2002 and 2004, a decline London transport planners attribute to rising fares. Street congestion in the neighborhoods adjacent to the CCZ was largely unchanged, as were measurable air pollution levels, retail business levels, and downtown property values.

London Mayor Ken Livingstone has declared the zone a success. Despite a pledge not to raise the CCZ fee for many years, in September 2005, Livingstone increased it from £5 to £8. Similarly, despite poll results showing overwhelming public opinion against



doing so, Livingstone's office has moved to extend the zone westward to include Kensington, Westminster, and Chelsea, effectively doubling its size and more than doubling the number of CCZ residents. Livingstone argues that both steps—the fee increase and the zone enlargement—are needed to further reduce traffic congestion and localized air pollution hotspots. He says the increased revenue is essential if services on London's public transport system, including the Underground and local buses, are to be modernized and upgraded to make them more attractive to potential riders. Indeed, Livingstone's ability to realize his vision of Greater London as the world's leading city for businesses and residents rests on his ability to keep the city moving. Other cities throughout the UK are also looking at the possibility of similar zones—albeit chiefly as a means of raising revenue—and slowly but surely congestion charging and toll roads are working their way into the majority Labour Party's mainstream national transportation policy.

PUBLIC TRANSIT: THE SEARCH FOR A SUSTAINABLE BUSINESS MODEL

Traveling on public transport in London isn't cheap—unless you are over sixty, in which case it's free after 9 a.m. The least expensive ticket on the London Underground (a.k.a. the Tube) is £1.70 (\$3.00) per trip for travel within a single zone. Riding the bus is a bit less expensive, but by no means cheap. According to Transport for London, the public agency that oversees all transit service in the greater London area, in 2004 and 2005 average Tube ridership reached a record level of 2.7 million riders per day. By contrast, London area buses carried an average of nearly 5 million passengers each day. Almost fifty percent of the 3.5 million workers who commute to London each day arrive by public transport.

And yet, London's public transit system is perennially in financial trouble. Its operating costs and particularly its labor costs are too high. Its tunnels, cars, and station passageways are too narrow to comfortably accommodate peak demand. Train cars lack air conditioning and can be stiflingly hot in the summer. They are also slow. Underground stations are old, inefficiently spaced, and many are in need of renovation. Indeed, the only reasons Londoners still use the Tube in the volumes they do is because of tradition—and the fact that weekday driving and parking in and around central London is an excruciating experience.

These problems are not unique to London. Most of the world's urban rail transit systems built in the first half of the 20th century suffer from some or all of them. What makes London different is the size of its transit system, the number of bottlenecks, the backlog of unmet maintenance needs, and the lack of high-density origin nodes. ➤



GREENBELTS AND TRAVEL BEHAVIOR: BEWARE OF WHAT YOU WISH FOR

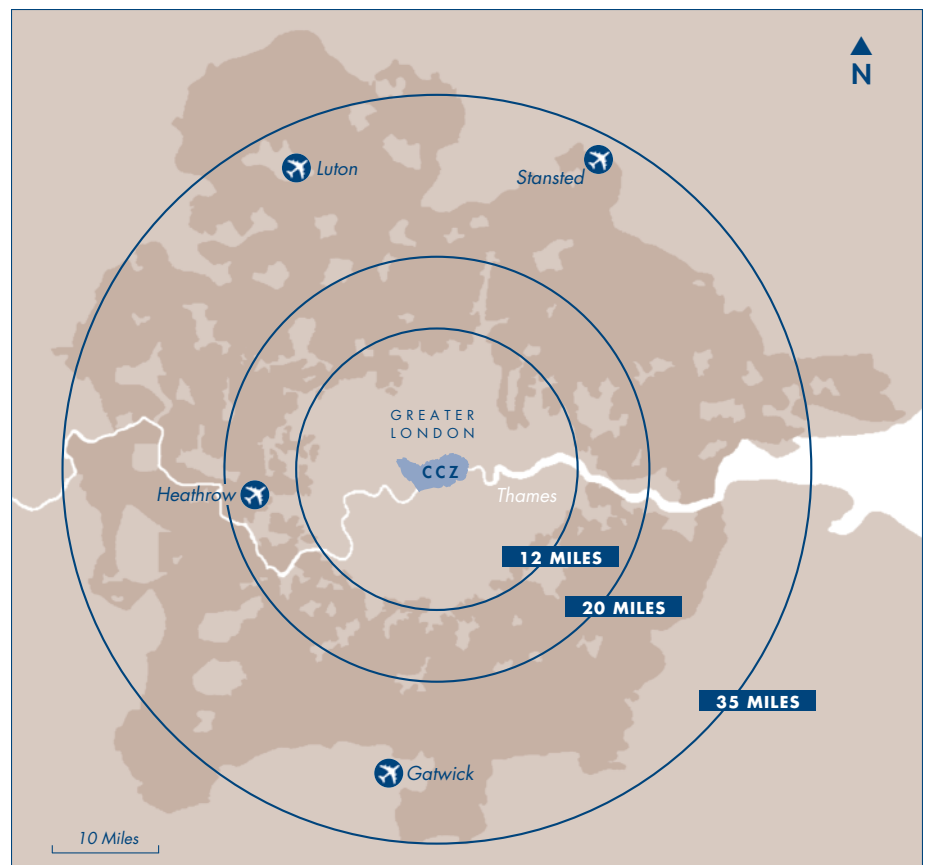
Most large English cities have been ringed by greenbelts for more than fifty years. The largest and most famous English greenbelt, the one surrounding metropolitan London, includes more than 1.2 million acres (about the same as the city of San Jose), and has remained essentially unbreached since it was established in 1955.

Evaluated against its original purpose, London's greenbelt has been remarkably successful. It has prevented American-style urban sprawl and preserved working rural landscapes and open space close to London. It has discouraged office employment from leaking out of central London, and, by reinforcing agglomeration economies, may have helped London maintain its preeminence as a world financial center.

Not all of the London greenbelt's effects have been so positive. A much-publicized 2004 government report highlighted the role of land-use regulation in general and London's greenbelt in particular in suppressing needed new housing, pushing up housing prices, and depressing housing affordability. This is a story that will be immediately familiar to any Californian.

Unable to build affordable family homes within London or its surrounding greenbelt, homebuilders and buyers have leapfrogged past the greenbelt to more distant and unprotected locations. The result has been a disjointed form of urban sprawl that, like its more continuous counterpart in America, can't be efficiently served by public transit or walking. Between 1990 and 2002, the proportion of personal trips in the UK made by private car increased from 57 percent to 64 percent, while the proportion of non-auto trips declined correspondingly. The biggest losers were local bus service and pedestrian travel.

London's Greenbelt (as adopted in 1962).
Expanded CCZ (2007).





ROAD USE, CONGESTION, AND TRANSPORT PLANNING AND INVESTMENT

As it is everywhere else in the world, traffic congestion in the UK is getting worse. A 2001 public opinion poll found that road congestion was regarded as the most serious issue facing local government.

Surface transportation planning and funding responsibilities in the US are shared by federal, state, and local governments, but in the UK all transportation planning responsibilities lie with the national government in London. It is therefore not surprising to find that the problem of traffic congestion, which is much more severe in the greater London area than elsewhere in the UK, forms the heart of current national transportation policies.

The good news is that roads in the UK aren't as congested as they might be. The bad news is that they are congested enough. Between 1990 and 2003, average traffic speeds in the London metropolitan area during the morning peak travel period fell from 16 to 15 miles per hour. This may not sound like much, but multiplied by the several million vehicles that use London area roads each morning it represents a significant increase in congestion.

The government's most recent National Transportation Policy, issued in 2004, proposes a three-theme approach to reducing congestion: (1) increased, sustained, and balanced investments in roadway, rail, and freight capacity; (2) better demand management, expanded toll roads and congestion charging, and improved accountability standards for public transit operators; and (3) a 25-year transportation planning and funding horizon to prioritize transport investments in collaboration with regional and local stakeholders. With respect to funding, the government seems to be putting its money where its mouth is. Government investments in public roads, National Rail facilities and rolling stock, and port infrastructure in 2003–2004 was up more than fifty percent over 2000–2001 levels. >

THE LOW-COST AIRLINE REVOLUTION

UK-based Ryanair, Europe's first low-cost airline, entered service in 1985 (Southwest Airlines began flying in the US in 1971). Ryanair's home base is Stansted Airport, forty miles northeast of central London. A second low-cost airline, easyJet, entered service in 1995, and offers limited flights in and out of Heathrow Airport as well as more extensive service to and from Gatwick, Stansted, and Luton airports. Several established air carriers, including British Airways, Ireland's Aer Lingus, Air France, and British Midland have since entered the market with their own low-cost flights, but Ryanair and easyJet remain the undisputed market leaders.

Ryanair operates direct service between six airports in the United Kingdom and Ireland and 85 airports in western and central Europe, including many in smaller markets. EasyJet's European destinations are similar to those of Ryanair but include some large cities as well. Both Ryanair and easyJet have copied Southwest Airlines' business model of using a single aircraft type for quick-turnaround flights of under a thousand miles. Both offer extremely low fares over the Internet. Indeed, on many Ryanair flights, passengers who book their trips two weeks in advance pay only airport taxes and fees. Service is basic, but planes are consistently full. To help control costs, Ryanair makes passengers board via outdoor stairs, even in the rain.



Passengers don't seem to mind. In 2004, Ryanair and easyJet together flew 49 million passengers while British Airways, with many more airplanes and a much more extensive route structure, flew 35.7 million passengers. In 1995, Stansted and Luton Airports—the home airports of Ryanair and easyJet—accounted for only five percent of total airline passenger arrivals and departures in Britain. By 2004, this percentage had increased to fifteen percent. Should current trends continue, Stansted will surpass Gatwick to become Britain's second largest airport (in terms of passenger traffic) some time during the next decade.

The effect on leisure travel behavior has been nothing short of amazing. Many more UK residents travel to Europe for short and long vacations than in the past and they travel much more frequently. The second-home market in Spain and southern France has boomed, largely because of an influx of UK money. Secondary cities like Manchester, Birmingham, Edinburgh, Glasgow, and Leeds are now much more closely linked to the European continent, and indeed to other parts of the UK.

The effect on other air carriers and modes has been equally dramatic. Carriers such as Aer Lingus and Air France that have adapted to the low-cost model have prospered. So too have long-distance carriers like British Airways and Lufthansa which have been able to successfully differentiate their service from that of low-cost airlines—and to keep them out of Heathrow Airport. Short-haul carriers like Swissair, Sabena, and SAS have not been as lucky and have been forced to merge. The biggest effect, of course, has been on Eurostar cross-Channel passenger rail volumes which, as of 2004, were down nearly twenty percent from their 1998 peak. Forced to compete with Ryanair and easyJet on fares, Eurostar operations lost £42 million (\$73 million) in 2004, down from £92 million (\$161 million) in 2002. Within the UK, Ryanair and easyJet's inability to get gate space at close-in urban airports with fast downtown rail connections has hampered their expansion potential while protecting existing rail operators.

To the degree that European integration moves ahead and includes the UK, it will not be because of the results of national plebiscites or administrative decisions made in Brussels. It will be because of the frequency and convenience of intra-European air travel, and because of the typical European's increased familiarity with other parts of Europe. People will start thinking of themselves both as residents of their home country *and* as Europeans—in much the same way that US residents see themselves as both Americans and residents of particular states or metropolitan areas. Such is the power and potential of travel. ♦

Professor Landis was ably assisted in this report by planning professors Michael Batty, David Bannister, and Sir Peter Hall of University College London.



FURTHER READING

Kate Barker, et.al. *Barker Review of Housing Supply - Final Report Recommendations* (London: Bank of England, 2004).

CBI-KMPG. *Congestion Charging*. CBI Policy Work Website (<http://www.cbi.org.uk/policymatrix.htm>), 2005.

National Statistics. *Transport Statistics Bulletin: Road Casualties in Great Britain; Main Results 2004*. (London: Department for Transportation, Transport Statistics, 2005).

Schaller Consulting. *Commuting, Non-work Travel, and the Changing City: An Analysis of Census 2000 Results for New York City*. 2002.

Transport for London. *Central London Congestion Charging Scheme Impacts Monitoring Summary Review: January 2005*. (London, 2005).



Asilomar Declaration on Climate Policy

BY DANIEL SPERLING

This article borrows from Chapters 1 and 15 in Driving Climate Change: Cutting Carbon From Transportation, which were co-authored with James S. Cannon and David Burwell. The Asilomar Declaration was endorsed by the TRB committees on Transportation Energy, Alternative Fuels, and Transportation and Sustainability. David Greene, Oak Ridge National Laboratory, and John E. Johnston, then with ExxonMobil Research and Engineering Company, prepared the text of the Asilomar Declaration.

CLIMATE CHANGE IS CREEPING INTO THE PUBLIC CONSCIOUSNESS. Arcane scientific debates are front page news. Best-selling authors and Hollywood movies feature climate change. Presidents and Prime Ministers are becoming conversant in climate change science and policy. It is time for the transport sector to become part of the solution. Opportunities to reduce climate impacts abound in transportation, with broad economic, environmental, and social benefits. We need new partnerships among industry, political leaders, and the public, and a new culture of innovation that builds synergies across technological and behavioral initiatives.

Climate policy first became front page news in the late 1980s, when several years of record high temperatures focused attention on what had been a remote scientific phenomenon. Its profile was further raised by the 1992 Earth Summit in Rio de Janeiro, Brazil, when delegates from 189 countries endorsed voluntary reductions in emissions of heat-trapping greenhouse gases (GHG). At the follow-up 1997 meeting in Kyoto, delegates voted to replace voluntary reductions with mandatory emission-reduction targets for industrialized nations. This Kyoto Protocol formally went into effect in February 2005 after countries contributing 55 percent of all GHG emissions had finally approved it (with Russia's approval pushing it over the required threshold). Every industrialized country in the world adopted the Protocol except the United States and Australia. >

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The Kyoto Protocol suffers from many weaknesses. It imposes no penalties for non-compliance, excludes large developing countries such as China and India, and provides many opportunities to buy compliance without any real effort to reduce emissions. Russia, for instance, with a drop in energy use from the collapse of its economy since 1990, is allowed under the Protocol to sell unearned credits to other countries. But the Protocol has focused attention on climate change and is scheduled to be replaced with a new international agreement in 2012.

Meanwhile, worldwide political commitment to GHG reduction is clearly growing, even in the US. More and more cities, states, and companies are embracing strategies to reduce GHGs. But political commitments are not yet translating into action. Emissions continue to grow, not only from the US and developing countries, but also from most Kyoto signatories.

CHANGING THE CLIMATE

While political wheels spin, greenhouse gas emissions—mostly carbon dioxide from burning fossil fuels—continue to increase. Official US government sources estimate that global CO₂ emissions increased from 21.4 billion metric tons in 1990 to roughly 6 billion tons in 2004, and expect them to increase another fifty percent by 2025, an increase of two percent per year.

Mounting emissions are contemporaneous with mounting scientific evidence that GHG emissions are likely causing significant shifts in the Earth's climate. The eight hottest years in more than a century of record-keeping occurred in the last decade. Analyses at the Center for Atmospheric Research in Colorado concluded that 75 percent of the four million square miles of permafrost in Arctic regions could melt in the next hundred years, and a multinational assessment predicted an almost complete melting of the Arctic ice cap (during the summer) by the end of this century.

The Third Assessment Report of the Intergovernmental Panel on Climate Change, representing the consensus of 1,500 scientists, concludes that the Earth's climate has demonstrably changed on both global and regional scales since the beginning of the industrial revolution, and that new and strong evidence indicates that most of the warming observed over the last fifty years is attributable to human activities. Scenarios based on a range of climate models point to an increase in global average surface temperature of 1.4° to 5.8°C over the period 1990 to 2100.

Despite mounting scientific evidence of global warming, changing climates, and melting polar ice, the exact scientific connections between increased GHG emissions and climate change remain murky. It is not clear how much, how fast, and where the climate will change, nor what the effect of that change will be on land use, biodiversity, agriculture, and fresh water supplies, to mention only a few areas of concern.

What is clear is that global emissions of GHGs are on a steep upward trajectory. Before industrialization and the widespread use of fossil fuels, the concentration of CO₂ in the atmosphere was 275 parts per million (ppm). It is now 375 ppm. Climate scientists



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believe that doubling CO₂ to 550 ppm threatens radical shifts in precipitation, temperature, and water currents. To stabilize concentrations, even at 550 ppm, would require a sharp reduction in emissions across all economic sectors—by about one third of forecasted levels for 2050 and over two thirds for 2100. Stabilizing concentrations at lower levels would require even more dramatic reductions.

There is no doubt that large rapid increases in GHG emissions have the potential to alter the climate in ways that would be catastrophic for human civilization and the Earth's ecology. And there is no doubt that the US is by far the world's leading GHG and CO₂ emitter, accounting for about 27 percent of the global total. China is projected to eclipse the US around 2020 in total emissions, but the US will remain far ahead in emissions per capita into the foreseeable future.

DRIVING EMISSIONS UP

Transportation is the fastest growing source of GHG emissions in the world. Vehicle usage continues to increase, rapidly in some regions. Within the US, transportation accounts for one third of all emissions, growing at about 1.5 percent per year. Most transportation CO₂ emissions come from cars and trucks burning petroleum fuels: sixty percent from gasoline combustion in cars, 22 percent from diesel trucks and buses, and the rest from rail, off-road vehicles, aviation, and marine transportation.

It is even worse than it seems. That is because, as conventional oil supplies become scarcer, the oil industry is turning to unconventional carbon-intensive oil sources such as tar sands and heavy oil. Manufacturing gasoline from tar sands produces about fifty percent more CO₂ emissions than making gasoline from conventional oil. Even if global oil consumption were capped, using more carbon-intensive oil sources means more GHG emissions. Amazingly, we are re-carbonizing our fuel system when virtually everyone accepts that we should be doing just the opposite.

The challenge is huge.

THE ASILOMAR DECLARATION

Alarmed by simplistic public discourse and the enormity of the climate challenge, a group of individuals organized a high-level meeting focused on transportation energy policy and investments. Two hundred leaders and experts from automotive and energy industries, start-up technology companies, governments from around the world, public interest groups, academia, and national energy laboratories assembled for three days in August 2005 at the 10th Biennial Conference on Transportation and Energy Policy at California's Asilomar Conference Center. They asked what could or should be done to reduce emissions from the transport sector. Three broad strategies for reducing greenhouse gas emissions were investigated: reducing motorized travel, shifting to less energy-intensive modes, and changing fuel and propulsion technologies.

Conference discussions revolved around four key questions. What is the role of technology versus behavioral changes? Are entirely new technologies required? ➤

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bent downward.*

What is the role of transportation? Which policy instruments might be most effective, and which most acceptable? The group never arrived at definitive answers, but several threads of agreement surfaced. These were put into writing and endorsed as the Asilomar Declaration.

DECLARATION 1: It is the consensus of the 10th Biennial Conference on Transportation and Energy Policy that climate change is real. Transportation-related GHG emissions are a major part of this global problem, and they must be reduced.


This rather bald assertion states as clearly as possible what is a broad consensus. It is important for bodies of informed and influential individuals to make simple, definitive statements.

DECLARATION 2: US national policy has so far failed to adequately address the role of transportation in climate change. This must be remedied.

International and local initiatives are expanding and will eventually force a coherent national policy to emerge within the United States and other nations. California is a leader. In June 2005, Governor Schwarzenegger signed an executive order calling for an eighty percent reduction in GHG emissions by 2050 (with intermediate goals by 2010 and 2020). Many cities and states are adopting their own goals and in some cases firm policies and rules. The public is beginning to demand governmental and corporate responsibility in this area. Many governments and companies are responding with their own roadmaps.

These are just baby steps, though, especially in the transportation sector. One assertive action is in California, which passed a law in 2002 to reduce GHG emissions from vehicles by about thirty percent by 2016. Other states have followed suit and adopted the same rules. Though the law is blessed with bipartisan support, the auto industry is challenging its legality, asserting that it is in effect a fuel economy standard and therefore falls under the authority of the federal government. The case will likely not be settled until at least 2007. California also just passed legislation calling for a 25 percent reduction in CO₂ emissions from all sources by 2020 and creating a process to enact rules to achieve that reduction.

The motivation for the California laws was inaction in Washington, DC. Inaction in climate policy was, and is, due to a variety of factors. It is explained in part by the nation's culture of individualism and consumer sovereignty, its historical abundance of energy resources, and relative isolation from international conflict. It is also due to the powerful interests of the fossil fuel industries and the financial woes of the Detroit automakers and many of their suppliers. Labor unions and the many states housing auto factories fear that GHG rules will bankrupt many companies and cause great harm to local economies. While this fear is dissipating as the far healthier Japanese and European car companies ➤



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populate the country with new factories, it remains a powerful concern. National policy makers continue to resist a national climate-change strategy, including a strategy for transportation. National debates on transportation CO₂ are characterized largely by resistance to increases in fuel economy standards. The only progress nationally in the US at this time is a minor increase in fuel economy standards for light-duty trucks.

But the challenge for the transport sector extends far beyond national fuel economy rules. A broader range of mitigation strategies is necessary, since emissions are linked to the entire range of traveler behaviors and land use decisions. And they must include adaptation strategies, since changes in climate threaten transportation infrastructure. Thus, the climate debate must address individual responsibility and government initiatives to manage land use, moderate vehicle use, and protect the integrity of the transport infrastructure.

Inaction on climate policy is also explained by the remoteness of the effects of global warming. Fortunately, solutions to climate change overlap with more politically salient challenges such as energy security, local air pollution, and traffic congestion. Intensifying tensions over these issues are likely to motivate innovation and policy action well before global warming does. In any case, Asilomar participants agreed that actions to reduce GHG emissions and oil use must accelerate.

DECLARATION 3: By judiciously crafting a portfolio of solutions, it is possible to reduce transportation-related GHG emissions while creating an efficient and effective transportation system for current and future generations.

Opportunities abound to reduce transportation-related GHG emissions. These include improved fuel efficiency, improved fuel and vehicle technologies, a more robust mix of transportation fuels, and changes in travel behavior that improve the efficiency of the transportation system. Many actions cost little and have quick paybacks, yet little progress is being made. All trends are towards creating higher emissions. Homes and jobs continue to disperse, causing people to travel ever longer distances; vehicles are becoming larger and more powerful; petroleum fuels continue to dominate; unconventional, carbon-intense petroleum sources are replacing conventional petroleum; and transit is stuck at two percent of passenger travel in the US. Because the rate of change in the transport sector is so slow—in terms of land use, vehicle turnover, and fuels infrastructure—even under the most ambitious scenarios, it will be a long time before the upward trajectory of GHG emissions is bent downward. New transportation fuels, new fuel technologies, new user behaviors, and new institutions are needed, and they are not happening.

Those few changes that are happening are negative or trivial. For example, ethanol made from corn is trumpeted as a clean fuel and received about \$3 billion in corn and

fuel subsidies in 2005, mostly from the federal government. General Motors touts ethanol in full-page color ads asserting that “yellow is green.” It is not. Corn ethanol provides no air quality benefit and little or no GHG benefit. Depending on circumstances and which assumptions and models one chooses to use, corn ethanol might increase or decrease GHGs compared to gasoline.

While lack of progress is discouraging, there are indeed many options for reducing fuel consumption and greenhouse gas emissions from vehicles. Over the last 25 years, vehicle fuel consumption rates have remained static—but not because technology is not improving. Today’s vehicles are far more energy efficient in a technical sense than vehicles of 25 years ago. What has happened is that the efficiency improvements—estimated at one to two percent per year—have been offset by increases in size and power. Twenty years ago, the average car accelerated from zero to sixty miles per hour in over fourteen seconds. Today’s cars need less than ten seconds. Today’s granny car would have qualified as a performance car 25 years ago. If performance and size had been frozen at 1981 levels, current vehicles would consume thirty percent less fuel.

With the advent of hybrid vehicle technology and improved diesel engines, and a storm of innovation in materials, electronics, and combustion, this one to two percent annual rate of improvement in efficiency should continue for many decades, resulting in large reductions in oil use and GHG emissions—but only if performance and size are capped.

Even greater improvements are possible if low-carbon fuels and advanced technologies are introduced. Fuels can be made from cellulosic matter, including grasses, trees, and crop wastes such as wheat straw. These produce forty to ninety percent fewer emissions than gasoline, considering the full cycle of production, delivery, and combustion. If vehicles are powered by electricity from the grid, emissions could drop by up to seventy percent in many regions, especially in California where coal accounts for only about twenty percent of grid electricity (versus about sixty percent elsewhere in the US). And vehicles powered by hydrogen, even when the hydrogen is made from a fossil fuel such as natural gas (as it is in the US today), would significantly reduce emissions.

Some combination of these low-carbon and advanced options—electricity, biofuels, and hydrogen—will almost certainly replace petroleum eventually. But it will take considerable time, in part because it requires a transformation of the energy, agricultural, and automotive industries.

HUMAN FACTORS

The other large set of solutions to increasing emissions is tied to shifts in travel behavior. With land use planning, tolls and other pricing schemes, investment in alternative travel modes, and improved system integration, energy-intensive travel could be reduced, along with air pollution, oil use, and greenhouse gas emissions. >



Amazingly, we are re-carbonizing our fuel system when virtually everyone accepts that we should be doing just the opposite.



The bad news is that these changes in travel behavior have proven even more challenging to bring about than changes in fuels and vehicles. The history of modern civilization is one of increasing mobility. Almost all forecasts anticipate escalating travel, even in the US, though an increasing share of it is by air (which is even more energy-intensive, but I leave that topic for others). How can the Earth sustain continuing increases in energy use? The first challenge is to create a more efficient transport system than today's monoculture of two-ton vehicles serving all purposes in all places on all roads.

Imagine a seamless multi-layered transport system with high-speed bus and rail services fed by small neighborhood vehicles and shared cars. Imagine paratransit vehicles that detour from set routes to pick up and deliver passengers on a moment's notice. Imagine greater use of telecommunications to make mode transfers seamless, and imagine more effective management of land to support these innovative services. Is this any more preposterous than transforming our energy, agricultural, and automotive industries?

Efforts to reduce, or at least restrain, travel are desirable for many reasons. Contrary to widely held beliefs in the transport community, it is not true that more vehicle travel is socially beneficial. Accessibility, yes; mobility, no. There are ways to increase accessibility without increasing mobility, as suggested above. Less vehicle travel not only reduces the threat of climate change and oil scarcity, but also reduces the total cost of transportation and can lead to more desirable and aesthetically pleasing communities.

The reality, though, is that the potential for reducing energy use and GHGs through travel behavior changes is far more modest than through low-carbon and advanced technology strategies. Consider the impressive two-and-a-half-year effort by the Sacramento region to develop a transportation and land use plan to reduce travel and enhance the region's quality of life, one of the most ambitious and engaged initiatives in the nation. Its most aggressive travel reduction scenario for 2050 produces only sixteen percent less travel per household. More reduction is plausible, but it would need a restructuring of the transportation system.

The real lesson may be that more effort must be devoted to creating synergies among strategies. If land use were managed in such a way as to encourage the use of neighborhood vehicles, then the limited performance and size of those vehicles would facilitate the use of electric power (since large expensive batteries would not be needed). If electric power interfaces were created at transit stations to allow hybrid and fuel cell vehicles to serve as paid sources of peak power backup, then both transit and alternative fuel vehicles would receive a boost. And if a variety of local strategies were developed to encourage the use of low-carbon vehicles and fuels and innovative low-carbon mobility services (such as smart paratransit), then large reductions in greenhouse gases and fuel use would be possible. These synergistic opportunities are at hand, and their benefits are broad. The historical resistance to change can and must be overcome. A new culture of innovation is needed in the transport sector. >



The historical resistance to change can and must be overcome.

A new culture of innovation is needed in the transport sector.

INNOVATION AND ACTION

As this essay suggests, and as participants at the Asilomar conference quickly concluded, dramatic changes are needed in both technology and consumer behavior. Indeed, they go hand in hand. While it is true that entirely new technologies and new services are both desirable and needed to meet the energy challenges of tomorrow, the reality is that behavioral changes in established industries and the consumer market must come first.

As to the other questions posed to conference participants—the role of transportation vis-à-vis other sectors and the effectiveness and desirability of policy instruments—it was widely understood that these questions are second order. The more salient concern is the paucity of innovation and investment, and the lack of commitment. While some strategies may not be particularly efficient in meeting societal goals, such as ethanol from corn, the real point is that creating a culture of innovation and action must be the number one strategy.

In that light, the three Asilomar declarations are not radical. Conference participants simply agreed that global climate change is real, and that it is possible to reduce GHG emissions and still have an efficient and effective transportation system. One day soon the Asilomar Declarations will likely be regarded as startlingly timid. But at this time and place they represent an important statement. The challenge, enmeshed in the 3rd declaration, is how to proceed.

The key group, the responsible party, is the consumer of transportation services—us. The consumer lies at the intersection of three public and private groups—transportation, vehicle, and energy providers; infrastructure builders and managers; and land use planners and decision makers. Ultimately it is personal behavior—how we access transportation services and how we settle upon the land—that dictates the actions of infrastructure, energy, vehicle, and transportation providers. Since every individual is his or her own transportation planner and decision maker, the challenge of climate change can be addressed only by broad empowerment and participation.

But researchers and policymakers have only a weak understanding of consumer behavior. It is increasingly clear that transportation has symbolic meaning to consumers beyond its utility—our travel behavior is clearly not explained by simplistic principles of economic rationality. Why did consumers binge on SUVs in the '90s? Why are hybrids, despite their large cost premiums, appealing to so many consumers? We are still a long way from knowing how to design effective policies that direct consumers toward more socially responsible behaviors.

One could blame automakers, oil companies, and politicians for the unsustainable energy path of the US and the world. Car companies happily supply those gas guzzling vehicles, oil companies eagerly deplete oil reservoirs, and politicians passively watch from the sideline. But they are not the real culprits. It is us: individuals acting singly as consumers and citizens. As consumers we purchase those gas guzzlers and embrace car-dependent lifestyles. As citizens we elect passive politicians unwilling to tackle oil



Fortunately, solutions to climate change overlap with more politically salient challenges such as energy security, local air pollution, and traffic congestion.

dependence and climate change. All of us are ultimately responsible. Consumers could vote with their dollars and buy fuel efficient and alternative fuel vehicles. We have not. Citizens could vote for politicians committed to reducing pollution and fuel use. We have not. We are to blame. Not totally, because it is not really true that car and oil companies innocently provide consumers only what they want or that politicians merely respond to the interests of their constituents. But ultimate responsibility does fall on each of us.

We need to reconceptualize what we know about climate change to articulate the problem effectively, to identify key questions, to develop a set of possible responses, and to prioritize what needs to be accomplished. These are not trivial tasks. The environmental community has been struggling with exactly this challenge for some time, largely unsuccessfully. They have not been able to conceptualize and articulate what is important about climate change nor develop climate action plans in ways that resonate broadly. But the failure to meet these challenges is not theirs alone. The problems face all of us.

Which brings us back to knowledge and expertise. The culture of the academic world is built around the search for knowledge. Academics speak in the languages of metrics, analytical frameworks, statistics. But as Henry Kissinger once said, “Most foreign policies that history has marked highly, in whatever country, have been originated by leaders who were opposed by experts.” He went on to say, “It is, after all, the responsibility of the expert to operate the familiar and that of the leader to transcend it.” We agree. Think of Rachel Carson on environmental awareness (*Silent Spring*), Jane Jacobs on urban planning (*Death and Life of American Cities*), and Betty Friedan on the role of women (*The Feminine Mystique*). None were experts. All were leaders.

More knowledge and more experts are certainly needed in the energy area. But lack of knowledge is not the central problem. What we need is a framework that will allow human society to create mechanisms and incentives to channel our tremendous creativity productively and efficiently. What we need is initiative and leadership. Much is at stake.

ACKNOWLEDGEMENTS

The Asilomar meeting was hosted and organized by the Institute of Transportation Studies at the University of California, Davis (ITS-Davis), under the auspices of the US National Research Council’s Transportation Research Board—in particular, the standing committees on Energy, Alternative Fuels, and Transportation and Sustainability. It was sponsored by prominent governments, companies and foundations, including American Honda Motor Company, California Air Resources Board, California Department of Transportation, Energy Foundation, Natural Resources Canada, Surdna Foundation, US Department of Transportation, US Environmental Protection Agency, US National Oceanic and Atmospheric Administration, University of California Transportation Center, WestStart-CALSTART, and William and Flora Hewlett Foundation.

All presentations at the 10th Biennial Asilomar Conference, 2005, can be accessed at <http://www.its.ucdavis.edu/events/outreachevents/asilomar2005/>. ♦

FURTHER READING

California Environmental Protection Agency. *Climate Action Team Report to Governor Schwarzenegger and the Legislature* (Sacramento, March 2006). 3 vols. http://www.climatechange.ca.gov/climate_action_team

Intergovernmental Panel on Climate Change (IPCC). *Climate Change 2001: The Scientific Basis* (Cambridge, United Kingdom: Cambridge University Press, 2001).

Daniel Sperling and James Cannon, eds. *Driving Climate Change: Cutting Carbon from Transportation* (Elsevier, 2006).

Transportation Research Board. *Integrating Sustainability into the Transportation Planning Process* (Washington, DC: The National Academies, 2005).

United Nations Framework Convention on Climate Change (UNFCCC). <http://www.unfccc.int>

Down to the Meter: *Localized Vehicle Pollution Matters*

BY DOUGLAS HOUSTON, JUN WU, PAUL ONG & ARTHUR WINER

AIR POLLUTION CONTROL PROGRAMS HAVE HELPED IMPROVE many aspects of regional air quality over the past thirty years despite tremendous growth in both population and vehicle-miles traveled. However, regional strategies to confront vehicle-related pollution are proving to be insufficient to protect the health of those who live, work, attend school, or play near major roadways. Recent air pollution and epidemiological findings suggest that harmful vehicle-related pollutants and their associated adverse health effects concentrate within a couple hundred meters of heavily traveled freeways and thoroughfares. We're just beginning to understand the health and economic costs of such localized effects, and we still know little about who is exposed to these pollutants.

Recent field studies indicate that vehicle-related pollutants such as ultrafine particles, black carbon, and carbon monoxide are highly concentrated immediately downwind from major roadways. Their relative concentration declines by as much as sixty percent at 100 meters downwind, drops to near background levels at about 200 meters, and are indistinguishable from background ambient concentrations at 300 meters. Among vehicle-related pollutants, ultrafine particles are especially worrisome since they are capable of penetrating cell walls and the blood-brain barrier and can be easily absorbed into vital organs. Diesel exhaust particulate is also a great concern as evidence is rapidly accumulating that subjects who live near roadways with a high volume of diesel vehicles are more likely to suffer from respiratory ailments, childhood cancer, brain cancer, leukemia and higher mortality rates than people who live more than 300 meters away from such roadways. Vehicle-related air pollutants have also been associated with respiratory illness, impaired lung function, and increased infant mortality. A Los Angeles County study found that pregnant women who reside within 750 feet of heavily traveled roads face a ten to twenty percent higher risk of early birth and low-birth-weight babies.

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UNDERSTANDING EXPOSURE

Although we know there are high concentrations of pollutants close to major roadways, it's harder to measure an individual's exposure because of where and when activities take place. Indoor pollutant concentrations are mediated by numerous factors including a building's ventilation and pollutant decay rates; in-vehicle concentrations are related to the exhaust of vehicles in front and to traffic densities. Individual exposure is also determined by activity level and breathing rate. For instance, young children have high breathing rates and therefore inhale a relatively larger volume of pollutants than older children or adults. Even a part of the day spent playing outdoors downwind of a major roadway could comprise a significant proportion of a child's overall daily exposure to air pollution, given the higher rate of inhalation during moderate or vigorous play.

These factors are important for understanding the magnitude of health risks near major roadways and for developing appropriate policy responses and strategies to mitigate them. Because direct measurement of pollutant levels and individual exposure is expensive and difficult, researchers are learning to model individual- and neighborhood-level exposures to air pollutants to understand how they are affected by time of day, activity, and travel patterns. ➤

UNEVEN EFFECTS AND ENVIRONMENTAL JUSTICE

The health effects of near-roadway vehicle-related pollutants are likely to be unevenly distributed across communities. Our recent finding that minority and high-poverty neighborhoods in Southern California bear over twice the level of traffic density as the rest of the region suggests that those who spend time in these areas may be disproportionately exposed to concentrated air pollution, and therefore at higher than average risk for chronic illness, lung impairment, and mortality. The same areas have been plagued in many cases by residential segregation, disinvestment, declining property values, deteriorated housing, limited business opportunities, insurance redlining, and poor schools. Such communities often have a disproportionate level of nearby environmental hazards.

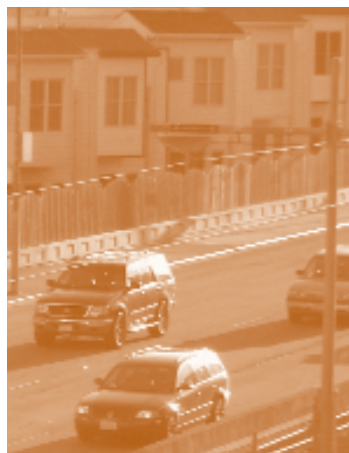
While residents of affected areas may benefit from the access provided by nearby roads, this benefit may not be proportional to the health burden they bear. Living in dense areas near major roadways can offer a number of benefits, including accessibility and affordable housing. The transportation infrastructure could be partially responsible for the presence of local job centers, which could enhance nearby employment opportunities.

A disproportionately high number of trips in many disadvantaged areas, however, are made by nonresidents commuting to job centers. Therefore, residents may suffer substantial health costs compared to nonresident commuters, who return every evening to less-polluted areas. Although rather simplistic, this scenario is supported by our finding that minority and poor residents are less likely to have a household vehicle, less likely to commute to work in an auto, and more likely to use public transit. (Heavy-duty gas and diesel transit buses are responsible for only a small portion of overall vehicle-related emissions in California. Also, over eighty percent of the bus fleet of the Los Angeles County Metropolitan Authority, the largest transit provider in Southern California, uses clean-burning compressed natural gas.)

Clearly, equity questions raised by the uneven distribution of traffic within urban regions are complicated. Without a more detailed understanding of individual activity and travel patterns, pollution dispersion patterns, and individual exposure levels, we may not fully understand the benefits and costs of living, working, and recreating in high traffic areas. Still, with growing understanding of the localized effects of vehicle-related pollutants, transportation and land use planners have enough information to formulate and implement strategies to protect the health of all city inhabitants who use these areas, including the most disadvantaged.

GOODS MOVEMENT CORRIDORS AND CONCENTRATED DIESEL POLLUTANTS

Recent and projected expansions of goods movement corridors in Southern California raise many environmental justice concerns, including the potential localized effect of diesel pollution. Heavy-duty diesel trucks emit high levels of ultrafine and fine particles, and a complex mixture of gaseous air pollutants, 41 of which are listed by the State of California as toxic air contaminants. Transportation corridors with heavy-duty



Minority and high-poverty neighborhoods in Southern California bear over twice the level of traffic density as the rest of the region.

diesel traffic such as the 710 freeway in Los Angeles tend to have higher concentrations of these harmful pollutants than a freeway with less diesel traffic such as the 405. The California Department of Transportation says that in 2002 the segment of the 710 from the Ports of Long Beach and Los Angeles through the low-income, minority communities of Lynwood, South Gate, and Bell into East Los Angeles carried over 32,000 trucks per day, comprising up to fifteen percent of all the traffic on this segment. Much of this truck traffic carries goods throughout the entire region. According to the South Coast Air Quality District, diesel particulate emissions are responsible for about seventy percent of the estimated carcinogenic risk from air toxins. Although the expansion of goods movement corridors offers regional and national economic benefits, the cumulative local health effects of diesel exhaust might be huge. Near-roadway exposure to diesel-related pollutants such as ultrafine particles, black carbon, and carbon monoxide could also be compounded by nearby rail and port activities.

POLICY AND PLANNING RESPONSES

Given the pervasiveness and necessity of urban roadways, multiple strategies will be required to address the adverse impacts of vehicle-related pollutants, especially since technological solutions for future gains in emission reduction appear limited in the near future. While gasoline vehicles have become much cleaner, on- and off-road heavy-duty diesel engines are just now being required to meet stricter emissions standards. Until recently, pollution controls on these engines were limited by the high sulfur content of diesel fuel. On-road diesel engine models of 2007 or newer sold in the United States will now be equipped with advanced pollution control technology such as particulate filters and required to use newly available ultra-low sulfur diesel fuel (ULSD). Similar requirements will be phased in over the next decade for new non-road diesel engines such as in construction, agricultural, and industrial equipment. The California Air Resources Board (ARB) suggests these new on-road diesel standards could result in a ninety percent reduction of NO_x emissions and a ninety percent reduction in particulate matter emissions compared to 2004 diesel standards.

Diesel engines are very durable, however, and can last for thirty years, which limits the near-term effectiveness of the new standards. Even though retrofitting older diesels with new emissions controls and using ULSD could help curb emissions, implementing a large-scale retrofit program is extremely challenging. The San Pedro Bay Ports recently proposed incentive programs to promote the replacement and retrofit of older heavy-duty diesels and to make alternate fuels and clean diesel more widely available.

Another strategy restricts “sensitive land uses” away from major roadways. In 2003, the California legislature responded to the evidence of high concentrations of harmful pollutants near major roadways by prohibiting the construction of public schools within 500 feet of busy roadways. Ten percent of California public schools and nineteen percent of the state’s licensed childcare centers are located within 500 feet of a major roadway. As many as 25 percent of childcare centers are located within 650 feet of a major roadway.

Subjects who live near roadways with a high volume of diesel vehicles are more likely to suffer from respiratory ailments, childhood cancer, brain cancer, leukemia, and higher mortality rates.



The California Air Resources Board recently developed recommendations for restricting residences, schools, day-care centers, playgrounds, and medical facilities near heavily traveled roadways and other air pollution sources. The board's objective is to reduce cumulative exposure from multiple sources of pollution—not just major roadways, but also sources such as distribution centers, rail yards, ports, refineries, and chrome platers. Similar proximity-based standards should become an integral part of the environmental review of transportation projects, regional transportation planning, and local land use planning.

With the recent adoption of new rules by the Environmental Protection Agency and the Federal Highway Administration, regional agencies will soon be required to demonstrate that transportation projects involving significant increases in diesel traffic (such as road expansions and new bus terminals) do not create hazardous hotspots of particulate matter. Initial guidelines for hotspot analysis include qualitative review and comparisons with similar projects in the region to identify potential impacts. This new requirement could be a step in the right direction, but since it is just now being translated into practice and lacks clear guidelines for impact assessment, it remains unclear how effective it will prove.

A large-scale re-siting of sensitive land uses away from major roadways is highly unlikely. Therefore, multiple strategies should be explored to reduce exposures and

protect public health. Further research is needed to better understand how vehicle-related pollutants disperse immediately adjacent to major roadways, and to study the extent to which barriers such as sound walls or landscape buffers can mediate the concentration of pollutants. Potential solutions may include the installation of air filtration systems in near-roadway facilities and residences to limit the intrusion of outdoor air. Strategic site design could help reduce the exposure of vulnerable populations to vehicle pollutants. For instance, playgrounds and outdoor activities at schools could be located on the side of the property farthest from major roadways. Outdoor and vigorous activities could be restricted during high traffic periods.

CONCLUSION

We're only beginning to understand the public health, policy, and societal implications of on- and near-roadway exposures to vehicle-related pollutants. Transportation and land use planners accustomed to addressing regional effects of vehicle-related pollutants through the air quality conformity process must also continue to devise new strategies or reorient existing ones to account for local health effects. For instance, smart growth plans to reduce vehicle-miles traveled through mixed-use development could reduce both near-roadway exposures and regional smog. Such development, however, should be evaluated carefully to avoid high local air pollution concentrations from multiple commercial, industrial, or transportation infrastructure. The integration of local-level concerns into regional transportation, air quality, land use, and growth planning is a daunting but worthwhile pursuit. We must localize the scale of our thinking even as we work towards regional prosperity and health. ♦

FURTHER READING

California Environmental Protection Agency and the California Air Resources Board. *Draft Air Quality and Land Use Handbook: A Community Health Perspective*. <http://www.arb.ca.gov/ch/aqhandbook.htm>.

Douglas Houston, Paul Ong, Jun Wu, and Arthur Winer, "Proximity of Licensed Childcare to Near-Roadway Vehicle Pollution," *American Journal of Public Health*, vol. 96, no. 9, pp. 1611–1617, 2006.

Douglas Houston, Jun Wu, Paul Ong, and Arthur Winer, "Structural Disparities of Urban Traffic in Southern California: Implications for Vehicle-Related Air Pollution Exposure in Minority and High-Poverty Neighborhoods," *Journal of Urban Affairs*, vol. 25, pp. 565–592, 2004.

Paul Ong, Matthew Graham, and Douglas Houston, "The Policy and Programmatic Importance of Spatial Alignment of Multiple GIS Data Sources," *American Journal of Public Health*, vol. 96, no. 3, pp. 499–504, 2006.

Paul Ong, "Auto Insurance Redlining in the Inner City," *ACCESS*, no. 25, Fall 2004.

Yifang Zhu, William C. Hinds, Seongheon Kim, Si Shen, and Constantinos Sioutas, "Study of Ultrafine Particles Near a Major Highway with Heavy-Duty Diesel Traffic," *Atmospheric Environment*, vol. 36, pp. 4323–4335, 2002.



STUCK AT HOME

WHEN DRIVING ISN'T A CHOICE

BY ANNIE DECKER

IN 2004, I surveyed almost 800 disabled and elderly people and more than 500 caregivers in a California home care program and asked about their transportation. The clients told story after story about feeling trapped in their homes and about being cut off from social networks, hospitals, and work. They provided a devastating snapshot of immobility shared throughout the country.

The people I surveyed live in Contra Costa County, which lies across the bay from San Francisco and contains everything from small post-industrial cities and suburbs to agricultural areas. All the survey respondents receive care through California's In-Home Supportive Services (IHSS) program, the largest such program in the country. Overseen by the state government, administered in 58 counties, and funded in part by federal block grants, IHSS spends close to \$4 billion a year on more than 360,000 clients who are elderly and frail or who live with disabilities. Clients typically have very low incomes.

The IHSS clients I surveyed had disabilities ranging from sight and hearing loss to paralysis, dementia, and disease. Compared with Contra Costa's population overall, clients were older (their median age was 67 years while the county-wide median is 36), African-American (30 percent vs. 9 percent), female (71 percent vs. 51 percent), and living alone (40 percent vs. 24 percent).

The Americans with Disabilities Act of 1990 (ADA) declared in its sweeping statement of purpose that the "nation's proper goals regarding individuals with disabilities are to assure equality of opportunity, full participation, independent living, and economic self-sufficiency." However, while the ADA and other factors might be opening new doors, many people have no way of getting to them. Despite the critical help that IHSS offers, the clients consistently say that they need more transportation assistance in order to live as others do.

Many face the most fundamental transportation constraint: they have no way to leave home. A 91-year-old unmarried African-American client summed up her situation: "Can't afford taxi, bus, or BART. Can't walk. Don't have a car." One-tenth of those surveyed go out "almost never," and the vast majority leaves home less than once every three days. Another client wrote, "I don't go anywhere or do anything. I can't afford to and I don't get around very well."

I asked where in the past month they could not go because they lacked transportation. About 28 percent said they could not get to a family member's or friend's home; 26 percent to a grocery store; 23 percent to a doctor or hospital; 20 percent to a drug store; 19 percent to a place of worship; and 15 percent to a social or community center. I also asked who, if anyone, went with them to social events. Seventy respondents skipped the multiple-choice question entirely, writing comments in the margin that showed I had forgotten a brutally important answer choice: "I don't go to social events," they said. "I don't go because of age and illness." "Don't remember." "No social event." "I don't go to social events because there is no one to help me get there and back." Several thought it had been at least two years since they had attended any social event. Another had not been to one in twenty years. ➤



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STUCK WITHOUT A CAR

Unlike most commuters these days, very few—about six percent—of IHSS clients “always” drive themselves when they leave home, and only one-fourth own cars, compared with more than ninety percent of Contra Costa householders. Many clients no longer can drive themselves because of financial or physical constraints: “When I became disabled I lost my home and my car,” wrote one client.

Yet cars still matter to them: more than half of the survey respondents “always” leave home by getting a ride, and about the same number considers being driven the ideal way to get around. Supporting these findings, when asked in a 2003 study what characteristics in a caregiver were “extremely important” to them, forty percent of California respondents said “having a car.” Clients prefer caregivers to have cars both for rides and so that the caregivers can respond quickly in times of need.

Why are rides in cars so desirable? To begin with, using public transit can be difficult. A quarter of survey respondents said they have to wait too long at stops: “Never know when the bus will arrive. Cannot read schedule and no place to sit and wait.” Others noted that vehicles are uncomfortable—the train is “too bumpy, causes extreme back pain”—and that bus and train fares are too high, as are fares for other modes of transportation, such as taxis and paratransit vans. Some can’t climb stairs in stations, transfer, or “get my scooter on the bus.” All these problems are compounded by long and frequent trips: “I have a lot of appointments, and hospital is forty miles away.” Car rides are also faster, which is especially important during emergencies.

Moreover, driving can be the only feasible way to reach many destinations in Contra Costa. I found that transportation issues are significantly more likely to prevent people living in remote or less accessible neighborhoods than those who live in other neighborhoods from getting to doctors’ offices and hospitals, places of worship, grocery stores, and family or friends’ homes. Clients in those areas also are less likely to leave home as often and are more likely to say that their community has no mass transit stops, that stops are too far from their homes, or that buses and trains do not go where the clients need to go. Even clients with transit close to home sometimes have trouble walking to stops (“it feels like a mile when I have arthritis in my knees,” one reported), but longer distances are especially hard for those who need places to rest, more time to cross streets, and smooth sidewalks. Although some studies have found that nondisabled drivers experience increased mobility in lower density areas such as suburbs, my findings present a different story.

Unfortunately, clients cannot rely on being driven by others. Almost half of all respondents live alone, which makes it more difficult to get an impromptu lift to buy food, for example. A recent Contra Costa focus group concluded that working family members, especially in suburban areas, do not have time to take seniors where they want to go. Seniors and the disabled do not want to burden others, so they carefully choose which favors to request. Researchers, including those mining the 2001 National Household Travel Survey, have found that seniors and disabled people abandon social, religious, and recreational trips first when they have to rely on rides from others.

No magic solution exists for all these problems, or for others detailed in survey responses. Yet the findings highlight the need for continued action. In 2003, California’s Governor Schwarzenegger unsuccessfully proposed cutting homecare services for 75,000 clients and lowering homecare workers’ pay to the minimum wage, and he has

made similar proposals since then. The Service Employees International Union (SEIU), which represents IHSS homecare workers in many California counties, including Contra Costa, helped fight such cuts. Change is needed, but not a reduction in services: what is needed is an expansion. Following are the key recommendations that my research produced.

ALLOW HOMECARE WORKERS TO PROVIDE TRANSPORTATION

California, as well as other states, should increase the transportation funding available to homecare workers and should amend rules that overly restrict the transportation help they can offer. Facilitating the direct provision of transportation to clients by caregivers promises to be both efficient and effective: caregivers are already in the clients' homes, they know where clients need to go, and many are personally invested (55 percent of those I surveyed are related to their clients). Moreover, transportation expenses and commute time contribute to high job turnover. "The pay [\$9.50 an hour] is not so good to be spending in transportation," noted one homecare worker. Another wrote, "the . . . situation is stacked against me when it takes an hour plus to simply *get* to my client's home."

IHSS homecare workers currently are paid to accompany clients to medical facilities and on certain errands, as long as the help they provide fits into the narrow category of providing personal assistance, such as aid getting in and out of cars. But caregivers are not paid for simply giving clients a ride if other help is not needed—for "chauffeuring," as a Contra Costa pamphlet calls it. Moreover, they are not supposed to use their own cars to take clients places, which puts the vast majority of clients in a bind because they do not own cars. Caregivers also are not paid for the time they spend waiting for clients, which means that they sometimes have to leave their clients at appointments or wait without pay until the clients are done. One worker complained about having to spend >





her limited personal money on “public transportation to [accompany] my client to outings (school, family, grocery store, hospital, etc.)” Nevertheless, many IHSS homecare workers feel compelled to put aside their job descriptions and help in whatever way they can.

IHSS could pay homecare workers for the time they spend waiting for clients at necessary destinations. IHSS could allow caregivers to use their own cars to transport clients, reimburse them for gas and mileage, and offer them transit passes or loans to purchase cars.

HELP DISABLED AND SENIOR CITIZENS TRAVEL INDEPENDENTLY

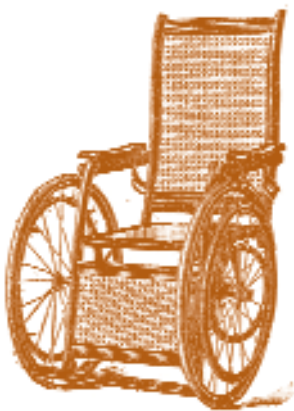
Many clients also would love to get around independently, but to do so they would need better van services, transit passes, loans for cars, and money for vehicle maintenance. They also would need public transportation designed around their physical limitations. Local and state agencies should continue to rank such improvements among their top priorities.

Transportation is only part of the solution. City planners also can continue to explore incentives for developers to build affordable housing for seniors and the disabled near public transit and key destinations. The reigning wisdom is that everyone wants the suburban dream of backyard space and fewer neighbors—and many people do. But when I asked IHSS clients, “Would you want to live in a neighborhood with more people if it meant being closer to shopping, medical, and social services?” more than half said yes, including many who already lived in higher density parts of Contra Costa. Their physical and income constraints help explain their answers: “Doctors are too far to walk to. Grocery outlet closed down last year.” “It was not as bad until they stopped bus service except for weekday mornings and evenings.” “Hoping to relocate to a more mobile independent access [area]—shopping without any assistance and feel safe.”

Similarly crucial are national policies to fund mass transit for seniors and the disabled and to support caregiver programs. Such efforts would follow in the footsteps of large-scale legislative action such as the ADA, the Older Americans Act as reauthorized in 1992, the Family and Medical Leave Act of 1993, and the New Freedom Program funded by the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) of 2005.

While many of these expansions would be expensive in the short term, they also promise to save money eventually. For example, by facilitating timely medical care, the measures could help prevent worse health problems. They could decrease workplace disruptions for family members and expensive emergency transportation. They also could increase clients’ contributions to their communities, the importance of which California recently recognized by allowing clients to receive IHSS assistance at their jobs.

The benefits of these proposals to frail elderly and physically disabled people and their homecare workers are clear. Yet other populations would benefit as well. People of all ages and physical abilities can appreciate more comfortable public transportation, improved amenities such as smoother sidewalks, and affordable housing close to necessary services. Those who worry about isolated friends and family members will experience some relief. Even more selfishly, any of us could become disabled, and all of us lose mobility over time. If we wait to address these problems, we may be the ones who have no way to get to work. ♦



FURTHER READING

Linda Bailey. *Aging Americans: Stranded Without Options* (Washington, DC: Surface Transportation Policy Project, 2004).

Annie Decker, "Effects of Land Use on the Mobility of Elderly and Disabled and Their Homecare Workers, and the Effects of Care on Client Mobility: Findings from Contra Costa, California," Master's thesis submitted to the University of California, Berkeley, Department of City and Regional Planning, 2005, <http://ssrn.com/abstract=870866>.

Leslie Gray and Lynn Friss Feinberg. *Survey of Californians About In-Home Care Services* (San Francisco, CA: Family Caregiver Alliance, National Center on Caregiving, 2003).

Nelson/Nygaard Consulting Associates. *Focus Groups I and II, Concord, CA: Barriers to Mobility*. Focus groups and stakeholder interviews (San Francisco, CA, 2003).



Atamtürk, Alper and Juan Carlos Muñoz
 “A Study of the Lot-Sizing Polytope”
 2003 UCTC 649

Bhatia, Pratyush
 “ITS / Commercial Vehicle Operations”
 2003 UCTC 623

Bhatia, Pratyush
 “Vehicle Technologies to Improve Performance and Safety”
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Blumenberg, Evelyn
 “Transportation Barriers to Employment: Southeast Asian Welfare Recipients in Los Angeles and Fresno Counties”
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Blumenberg, Evelyn and Kimiko Shiki
 “How Welfare Recipients Travel on Public Transit, and Their Accessibility to Employment Outside Large Urban Centers”
 2003 UCTC 646

Blumenberg, Evelyn and Kimiko Shiki
 “Spatial Mismatch Outside Large Urban Areas: An Analysis of Welfare Recipients in Fresno County, California”
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Boarnet, Marlon G.
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Boarnet, Marlon G. and Saksith Chalermpong
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Boarnet, Marlon G., Kristen Day, and Craig Anderson
 “Evaluation of the California Safe Routes to School Construction Program”
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Brown, Colby, Prashant Balepur, and Patricia L. Mokhtarian
 “Communication Chains: A Methodology for Assessing the Effects of the Internet on Communication and Travel”
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Brown, Jeffrey
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Brown, Jeffrey
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Brown, Jeffrey
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Brown, Jeffrey, Daniel Baldwin Hess, and Donald Shoup
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Brown, Jeffrey, Daniel Baldwin Hess, and Donald Shoup
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Brownstone, David and Kenneth A. Small
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Cairns, Shannon, Jessica Greig, and Martin Wachs
 “Environmental Justice and Transportation: A Citizen’s Handbook”
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Cao, Xinyu, and Patricia L. Mokhtarian
 “How Do Individuals Adapt Their Personal Travel? A Conceptual Exploration of the Consideration of Travel-Related Strategies”
 2005 UCTC 741

Cao, Xinyu, and Patricia L. Mokhtarian
 “How Do Individuals Adapt Their Personal Travel? Objective and Subjective Influences on the Consideration of Travel-Related Strategies for San Francisco Bay Area Commuters”
 2005 UCTC 742

Cao, Xinyu, and Patricia L. Mokhtarian
 “The Intended and Actual Adoption of Online Purchasing: A Brief Review of Recent Literature”
 2005 UCTC 743

Cassidy, Michael J. and Shadi B. Anani
 “Stationary Models of Unqueued Freeway Traffic and Some Effects of Freeway Geometry”
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Cassidy, Michael J. and Soyoung Ahn
 “Driver Turn-Taking Behavior in Congested Freeway Merges”
 2004 UCTC 722

Cassidy, Michael J. and Jittichai Rudjanakanoknad
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* **Cervero, Robert**
 “Freeway Deconstruction and Urban Regeneration in the United States”
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* **Cervero, Robert**
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Cervero, Robert and Michael Duncan
 “Walking, Bicycling, and Urban Landscapes: Evidence from the San Francisco Bay Area”
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Choo, Sangho, Gustavo O. Collantes, and Patricia L. Mokhtarian
 “Wanting to Travel, More or Less: Exploring the Determinants of the Deficit and Surfeit of Personal Travel”
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* **Choo, Sangho and Patricia L. Mokhtarian**
 “Do Telecommunications Affect Passenger Travel or Vice Versa?”
 2006 UCTC 759

Choo, Sangho and Patricia L. Mokhtarian
 “What Type of Vehicle Do People Drive? The Role of Attitude and Lifestyle in Influencing Vehicle Type Choice”
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Cheon, Sanghyun
 “An Overview of Automated Highway Systems (AHS) and the Social and Institutional Challenges They Face”
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Cheon, Sanghyun
 “Emerging Vehicle Technology and Implementation Barriers”
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Cheon, Sanghyun
 “The Deployment Efforts for Intelligent Infrastructure and Implications and Obstacles”
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Clark, William A.V. and Youqin Huang
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 “Personal Travel Management: The Adoption and Consideration of Travel-Related Strategies”
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Conroy, Pat and Jean-Luc Ygnace
 “Institutional and Organizational Factors for the Successful Deployment of Intelligent Transportation Systems (ITS): International Comparisons”
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 “Local Transportation Sales Taxes: California’s Experiment in Transportation Finance”
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Daganzo, Carlos F.
 “Reversibility of the Time-Dependent Shortest Path Problem”
 2004 UCTC 717

* Not previously listed

Daganzo, Carlos F., Jorge Laval, and Juan Carlos Muñoz
 "Some Ideas for Freeway Congestion Mitigation with Advanced Technologies"
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Daganzo, Carlos and Karen R. Smilowitz
 "Asymptotic Approximations for the Transportation LP and Other Scalable Network Problems"
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De Valois, Karen K., Tatsuto Takeuchi, and Michael Disch
 "Judging the Speed of Pedestrians and Bicycles at Night"
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Deakin, Elizabeth, et al.
 "Intelligent Transportation Systems: A Compendium of Technology Summaries"
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De Borger, Bruno and Kurt Van Dender
 "Prices, Capacities and Service Quality in a Congestible Bertrand Duopoly"
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Decker, Annie
 "The Effects of Land Use on the Mobility of Elderly and Disabled and Their Homecare Workers, and the Effects of Care on Client Mobility: Findings from Contra Costa, California"
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Erera, Alan L., Carlos F. Daganzo, and David J. Lovell
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Kurani, Kenneth S., Thomas S. Turrentine, Reid R. Heffner, and Christopher Congleton
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Lam, Terence C. and Kenneth A. Small
 "The Value of Time and Reliability: Measurement from a Value Pricing Experiment"
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* **Madanat, Samer, Sejung Park, and Kenneth Kuhn**
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 "Telecommuting, Residential Location, and Commute Distance Traveled: Evidence from State of California Employees"
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Mondschein, Andrew, Evelyn Blumenberg, and Brian D. Taylor
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Shoup, Donald C.
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Shoup, Donald
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Shoup, Donald C.
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Song, Jiongjiang and Amelia C. Regan
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Song, Jiongjiang and Amelia C. Regan
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* Not previously listed

Song, Jiongjong and Amelia C. Regan
 "Combinatorial Auctions for Transportation Service Procurement: The Carrier Perspective"
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Song, Jiongjong and Amelia C. Regan
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Sperling, Daniel
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Sperling, Daniel and Eileen Clausen
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Sperling, Daniel and Deborah Salon
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Taylor, Brian D.
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Taylor, Brian D., Douglas Miller, Hiroyuki Iseki, and Camille Fink
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 2003 UCTC 682

Thomas, John
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Van Dender, Kurt
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Verhoef, Erik T. and Kenneth A. Small
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* **Wachs, Martin**
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Wang, Chuanxu and Amelia C. Regan
 "Reducing Risks in Logistics Outsourcing"
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Zhang, H. Michael and T. Kim
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Zhang, H. Michael and T. Kim
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Zheng, Yi, Bo Wang, H. Michael Zhang, and Debbie Niemeier
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* **Zhou, Jianyu (Jack) and Reginald Golledge**
 "A Three-Step General Map Matching Method in the GIS Environment: Travel/Transportation Study Perspective"
 2006 UCTC 767

B O O K S

Please contact the publishers for information about the books listed here.

Cervero, Robert
Paratransit in America: Redefining Mass Transportation (Westport, CT: Praeger Press, 1997)

Cervero, Robert and Michael Bernick
Transit Villages for the 21st Century (New York: McGraw Hill, 1996)

Daganzo, Carlos F., ed.
Transportation and Traffic Theory (Amsterdam: Elsevier Science Publishers, 1993)

DeCicco, John and Mark Delucchi, eds.
Transportation, Energy, and Environment: How Far Can Technology Take Us? (Washington, DC: American Council for an Energy-Efficient Economy, 1997)

Garrett, Mark and Martin Wachs
Transportation Planning on Trial: The Clean Air Act and Travel Forecasting (Beverly Hills: Sage Publications, 1996)

Garrison, William L., and David Levinson
The Transportation Experience: Policy, Planning, and Deployment (Oxford University Press, 2005)

Greene, David L. and Danilo J. Santini, eds.
Transportation and Global Climate Change (American Council for an Energy Efficient Economy, 1993)

Hall, Peter Geoffrey
Cities of Tomorrow: An Intellectual History of Urban Planning and Design in the Twentieth Century (Blackwell Publishers, 2002)

Jacobs, Allan B.
Great Streets (Cambridge: MIT Press, 1993)

Jacobs, Allan B., Elizabeth S. Macdonald, and Yodan Y. Rofé
The Boulevard Book: History, Evolution, Design of Multi-Way Boulevards (Cambridge: MIT Press, 2002)

Klein, Daniel B., Adrian T. Moore, and Binyam Reja
Curb Rights: A Foundation for Free Enterprise in Urban Transit (Washington, DC: The Brookings Institution, 1997)

Shoup, Donald C.
The High Cost of Free Parking (American Planning Association, 2005)

Sperling, Daniel
Future Drive: Electric Vehicles and Sustainable Transportation (Washington, DC: Island Press, 1995)

Sperling, Daniel and James Cannon, eds.
Driving Climate Change: Cutting Carbon from Transportation (Burlington, MA: Elsevier Academic Press, 2006)

Sperling, Daniel and James Cannon, eds.
The Hydrogen Energy Transition: Moving Toward the Post Petroleum Age in Transportation (Burlington, MA: Elsevier Academic Press, 2004)

Sperling, Daniel and Susan Shaheen, eds.
Transportation and Energy: Strategies for a Sustainable Transportation System (American Council for an Energy Efficient Economy, 1995)

V I D E O S

Jacobs, Allan B., Yodan Y. Rofé, and Elizabeth S. Macdonald
 "Boulevards: Good Streets for Good Cities" (20 min.)
 1995 DVD 1

Abdulhai, Baher A.
 “Neuro-Genetic-Based Universally Transferable Freeway Incident Detection Framework”
 1996 Diss 82

Bedsworth, Louise Wells
 “Expertise and Uncertainty in Environmental Regulation: An Analysis of California’s Smog Check Program”
 2002 Diss 104

Brown, Jeffrey Richard
 “The Numbers Game: The Politics of the Federal Surface Transportation Program”
 2003 Diss 109

Brinkman, P. Anthony
 “The Ethical Challenges and Professional Responses of Travel Demand Forecasters”
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Golub, Aaron David
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Choo, Sangho
 “Aggregate Relationships Between Telecommunications and Travel: Structural Equation Modeling of Time Series Data”
 2004 Diss 112

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Crepeau, Richard Joseph
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 1995 Diss 83

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Goldman, Todd Mitchel
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Green, Andrew Dennis
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 “A Traffic Movement Identification Scheme Based on Catastrophe Theory and Development of Traffic Microsimulation Model for Catastrophe in Traffic”
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Khanal, Mandar
 “Dynamic Discrete Demand Modeling of Commuter Behavior”
 1994 Diss 86

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Koskenoja, Pia Maria K.
 “The Effect of Unreliable Commuting Time on Commuter Preferences”
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* **Kuhn, Kenneth David**
 “Uncertainty in Infrastructure Deterioration Modeling and Robust Maintenance Policies for Markovian Management Systems”
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Kulkarni, Anup Arvind
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Lee, Ming-Sheng
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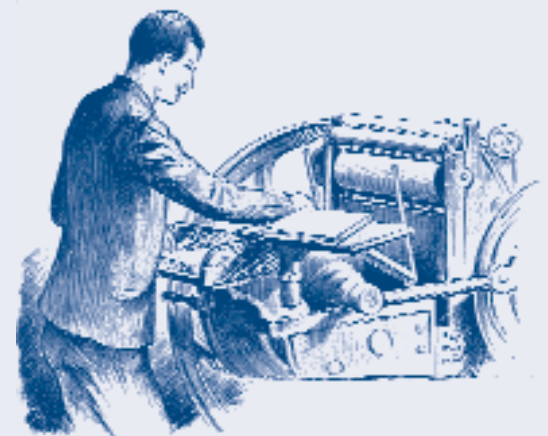
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