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FOSTERING COMMERCIAL TRANSIT:

ALTERNATIVES IN GREATER LOS ANGELES

by

Robert Cervero

EXECUTIVE SUMMARY

As Los Angeles grapples with traffic and related air pollution problems, congestion pricing—tolls that vary by time-of-day, depending upon traffic levels—may be introduced to reduce congestion and the air pollution it generates. Congestion pricing will likely foster a mix of commercial transit alternatives to serve those who find automobile usage too costly. Regulatory and other barriers, however, currently stand in the way of expanded private transit services in Southern California.

California communities would benefit from expanded commercial transit options, especially as congestion tolls are introduced.

Expanding transit options would:

- provide back-up transportation for those priced off of roads;
- reduce air pollution and energy consumption as motorists switch to vans and buspools;
- lower public and private transit costs and increase productivity as a result of transit competition;
- increase the array of low-cost transit options, giving low-income households affordable access to more potential work sites.

Potential transit options abound—including shared-ride taxis, dial-a-ride vans, jitneys, and commercial bus services. With few exceptions these transit options are either heavily regulated or barred in Southern California. Deregulation is necessary to increase the supply of commercial transit services. Experiences with taxi deregulation in other U.S. cities show that customers are usually rewarded with more travel options and improved services, at roughly the same fares as before.

Local, state, and federal barriers currently impede expansion of commercial transit options. The following local measures should be implemented to overcome these barriers:

- lift local controls over market entry, ride-sharing, and pricing of paratransit services;
- establish zone fares to allow the fair pricing of shared-ride services;
- establish a county-wide Paratransit Authority to consolidate all county regulations into a single ordinance.

In addition, state regulations should:

- set service standards for all passenger services and allow for open competition among all providers that meet these standards;
- set and enforce, perhaps with congestion toll proceeds, regulations regarding minimum insurance levels, as well as driver and vehicle fitness;
- relax requirements governing worker's compensation and minimum-liability insurance;
- allow employment-related vanpools to operate on a for-profit basis and serve multiple destinations.

At the federal level, labor protection regulations, such as Section 13(c) of the Federal Transit Act, continue to shield public-transit operators from competition and thus stand as significant barriers to expanded commercial services. These should be repealed. Other federal programs that should be reformed include: capital and operating assistance that provide public operators with an unfair competitive advantage; local matching biases that favor the use of public versus private transit vehicles; administrative and reporting requirements that are particularly onerous to small firms; and some OSHA and vehicle emission standards that, because they are not enforced as stringently against independent operators, place larger commercial operators at a competitive disadvantage.

Regulatory reforms are not the only way to stimulate commercial transit. One key deterrent to serving non-airport destinations with shuttle-type services is the prevalence of free or subsidized parking throughout the Los Angeles basin. Charging employees for parking would clear the way for firms like Super Shuttle and Prime Time to expand operations to downtown and elsewhere. Other measures that could stimulate more commercial transit include: HOV lanes; the development of advanced automated technologies, such as vehicle tracking and dispatching systems; and use of user-side subsidies for the transit-needy. Los Angeles's Metrorail line and other mainline service (like busways) could also encourage paratransit firms to begin operating feeder runs.

Though these actions are important, transit regulatory reform should clearly be the centerpiece of policy action to stimulate commercial transit in greater Los Angeles. Above all, congestion pricing would likely do more to stimulate transit usage than any other single factor.

I. INTRODUCTION

Congestion pricing—highway toll charges that vary by time-of-day—in the Los Angeles region will create both a need and a market opportunity for private, commercial transportation services. To the extent people are priced off of roads during rush hours, alternative back-up transportation services will be needed. Concerns over the poor being harmed the most by congestion pricing, in particular, argue for opening up the marketplace to private competition so that a diverse mix of transit options, suited to a range of incomes and travel preferences, can emerge.

Current public policies stand as barriers to many commercial transit services. Strict entry and service restrictions are placed on taxis in most U.S. cities, including Los Angeles, while jitneys, shared-ride taxis, and most other for-profit ridesharing services have generally been regulated out of existence. Because all 88 municipalities within Los Angeles County have separate taxi-franchising systems, the costs of running taxis are unnecessarily high, with limited service coordination. Most shared-ride and commuter services, like commercial shuttle vans and private buspools, fall under the purview of the California Public Utility Commission (CPUC), which at times has overly protected existing operators and imposed stringent insurance and safety requirements on new entrants. In general, laws aimed at protecting taxi firms and public transit agencies from head-to-head competition are inconsistent with the need to foster a wide range of diverse door-to-door transportation services.

This paper reviews existing barriers to commercial transit services in greater Los Angeles, explores the kinds of services most likely to be feasible, and recommends ways to encourage the emergence of such services in a congestion-pricing environment, with particular emphasis placed on identifying ways to create a more entrepreneurial and competitive environment for transit services in the Los Angeles area.

II. POTENTIAL BENEFITS OF COMMERCIAL TRANSIT

Greater Los Angeles already has perhaps the nation's largest number of commercial transit services available in the country, consisting of private buspools, dial-a-ride vans for the elderly and handicapped, airport shuttle vans, and downtown shared-ride taxis; however, the share of total vehicle miles traveled (VMT) served by commercial carriers is probably no more than 2 percent.[1]

A doubling or tripling of commercial transit travel as a result of congestion pricing could thus yield substantial environmental benefits from reduced air emissions. To the degree that motorists, particularly solo-drivers, switch over to some form of mass transit because of higher road prices, total VMT in the Los Angeles basin would decline, as would tailpipe emissions and fuel consumption. A recent study by the Environmental Defense Fund estimated that the expansion of private transit in Southern California in response to average congestion charges of $3 per round trip would reduce VMT by 1.8 percent from the year 2010 baseline estimates.[2] This would in turn lead to a 2.2 percent reduction in air pollutants—carbon monoxide (CO) and reactive organic gases (ROG).

Commercial transit providers could also be expected to increase the mix and overall quality of transit options in Southern California, thus likely attracting additional riders beyond those who switched because of higher road and parking charges. At the same time, a competitive mass transit industry would impose a market discipline, forcing public operators like Southern California Rapid Transit District (SCRTD) to contain costs and increase productivity in order to effectively compete for customers. Private vans and buspools would also provide peak hour supplements to public transit operations, relieving SCRTD and others of the need to expand costly peak-hour services.[3]

Commercial transit would also yield important social benefits, particularly by improving service quality in poorer neighborhoods and to transit-dependent groups. Illegal jitneys and van shuttles exist in many low-income neighborhoods in Southern California because of the tremendous demand for lower-priced, curb-to-curb services. Opening up the marketplace to these providers would not only likely improve safety by eliminating illicit services but would also increase service choices. Along the Metrorail Blue Line corridor, for instance, some private operators might begin connecting stations to lower-income South Central Los Angeles with feeder runs. Such connections would not only vastly increase the accessibility of the urban poor and the number of potential work sites within a 45-minute commute, but would also reduce the cost of vehicle ownership and usage (which is especially high in inner-city neighborhoods due to high insurance premiums). Improved feeder services would also reduce short auto trip-making, trips that contribute disproportionately to energy consumption and air pollution. An expanded array of mass transit services, some of which would deliver patrons curb-to-curb, would also markedly increase the accessibility of disabled persons—a national priority under the Americans with Disabilities Act (ADA).

Finally, expanded commercial transit would speed up the development of advanced transportation technologies. In order to gain a competitive edge, many private transit operators might seek to introduce such automated technologies as satellite-based vehicle tracking and dispatching systems that provide real-time information that can be used to optimize routing and inform passengers of expected arrival times. Moreover, fleets of commercial vans lend themselves to alternative fuels (and even electric power) far more readily than individually owned cars and even commercial buses. Thus, commercial transit could help stimulate the development of entirely new propulsion and fuel systems in addition to intelligent vehicles and various automated technologies.

III. COMMERCIAL TRANSIT OPTIONS

Most Southern Californians have only one or two alternatives when traveling other than by car—generally bus or taxi. For most middle-class families, buses are two slow and irregular for all but downtown trips and taxis are too expensive, thus driving has become an accepted way of life. The past several decades have shown that fixed-route, fixed-schedule, uniform-quality bus services will not lure significant numbers of people out of their cars—only 4 percent of Los Angeles workers rode the bus to work in 1980, and this share has likely since fallen.[4] Riders show tremendous diversity in travel preferences—some want fast comfortable services and are willing to pay a premium fare for them; others are satisfied to travel under slower, more-crowded conditions if given a break at the fare box. A wide array of service and price options offers the greatest hope of enticing commuters to switch their mode of travel.

A. Paratransit

Paratransit represents the full spectrum of transportation options that fall between the private automobile/taxi and the conventional bus. Paratransit fills an important market niche: like autos, they are flexible and fairly ubiquitous, connecting multiple places within a region, but at a price far below a taxi. In the United States, the most common form of paratransit has been dial-a-ride vans, most of which provide subsidized, curb-to-curb services to the elderly and disabled. Shared-ride taxis are found in a few places, most notably Washington, D.C. and even downtown Los Angeles.[5]

The few economic studies available have generally found paratransit services to be an economic asset, eliminating the need for government subsidies and relieving public transit systems of their costly peak-period burdens.[6] For example, Manila's 60,000 jeepneys (converted U.S. army jeeps that serve up to 12 riders on a semi-fixed route) are the mainstay of the city's transportation system, carrying nearly one-half of all peak-period passenger trips. Research has shown that Manila's jeepneys cost 16 percent less per seat mile than standard buses and generally provide a higher quality service (e.g., greater reliability, shorter waits) at a lower fare.[7] Small vehicles like jeepneys provide significant advantages over buses: they take less time to load and unload, they stop less frequently, and run on shorter headways. Manila's jeepney owner-operators ply their trade along corridors where short, multi-destinational trips are made, the very trips that are most costly for public transit to serve. Jeepney operators, moreover, have historically been the last to petition for fare increases. Almost all turn a profit where public-transit authorities are unable to.[8]

Table 3.1 presents a typology that summarizes the various paratransit options that might emerge under a regime of congestion pricing. The options, discussed in the remainder of this section, form a varied mix of service configurations, passenger carrying levels, market orientations, and levels of regulatory control. Importantly, those options facing the least restrictive regulatory controls, like employer-sponsored vanpools, have the greatest potential as back-up transportation services under congestion pricing. When employee-based vans are coupled with demand-responsive private services like shared-ride taxis and airport shuttle types of vans, a full spectrum of paratransit would be available to Southern Californians as an alternative to high-priced, single-occupant auto travel.

B. Shared-Ride Taxis, Dial-a-Ride Vans, and Jitneys

1. Shared-Ride Taxis

Shared-ride taxis, dial-a-ride vans, and jitneys, which comprise one class of paratransit services, respond immediately to travel requests made by phone or curbside hail, and for this they charge a premium. Whether or not taxis can serve multiple passengers is a local prerogative since taxi permits are regulated at the municipal level. Los Angeles limits shared-ride taxi services to downtown since these operations are easiest to monitor and control. As in Washington, D.C., use of the shared-ride concept outside of downtown requires some price decontrols to allow zonal fares rather than distance metering so that riders are not overcharged when drivers deviate from a route to drop off other customers. Since some passengers would prefer to avoid even modest delays, a mix of exclusive-ride and shared-ride taxis is the best way to satisfy the riding public's preferences.

U.S. experiences with substituting share-rided taxis for fixed-route bus services on a contract basis have been encouraging. In Phoenix, the local transit authority contracted with a taxi company to replace minimal-level Sunday fixed-route bus services—an arrangement that has saved over $700,000 per year. In the Norfolk-Virginia Beach area, shared-ride taxis that replaced poorly patronized bus runs in low-density areas led to a $16 per hour cost savings.[9] Cost savings in these and other shared-ride cases have generally been attributable to the use of lower paid, usually non-unionized drivers and the relaxation of restrictive work rules.

Shared-ride services offer other important benefits besides direct cost savings. One is peak-load shedding. The peak period is transit's nemesis, largely because of work rules requiring time-and-half pay for split-shift duties and overtime. As a result, the cost of running an additional bus during rush hours is usually between two and three times as much as during the off-peak.[10] Shared-ride taxis would relieve SCRTD and other municipal bus operators of the costly burden of handling more peak-hour demand generated from road congestion charges. They would not be “skimming the cream,” but rather they would help serve this additional demand, thus skimming some of the deficits public operators might otherwise incur. In Singapore, the area licensing scheme (a crude form of congestion pricing) that charges motorists a fee for entering the downtown area during the peak hours relies heavily on shared-ride taxis to absorb many displaced auto passengers, thus holding the public transit system to a much more manageable scale. Thus, it is this load-shedding feature that makes expanded paratransit services so vital to the ultimate success of any congestion-pricing scheme.

Table 3.1
Typology of Paratransit Services

	Service Type	Service Configuration	Typical Passenger Loads	Typical Regulatory Jurisdiction	Current Level of Regulatory Restriction	Primary Markets	Back-up Service Under Congestion Pricing
PRIVATE SERVICE							
Shared Ride Taxis	Demand Responsive	Many-to-Many	3-4	City	High	Downtown and congested areas	Moderate
Dial-a-Ride Vans	Demand Responsive	Many-to-Many	6-10	City/State	Low	Special/Elderly/ Handicapped; Airports	Moderate to High
Jitneys	Demand Responsive/ Hail Services	Semi-fixed Routing	6-12	City	High	Low-income neighborhoods	Moderate
Commuter Bus	Pre-arranged/ Advanced bookings	Many-to-One	30-40	State	Moderate	Commuters	High
EMPLOYER-SPONSORED SERVICES							
Vanpools	Pre-arranged	Many-to-One	6-12	State	Low	Commuters	High
Buspools	Pre-arranged	Many-to-One	30-40	State	Moderate	Commuters	High

During the off-peak, shared-ride vehicles could be available not only to the general public but also to provide specialized curb-to-curb services to senior citizens, disabled persons, and the poor. User-side subsidies, like travel vouchers, might be used to stimulate healthy competition among shared-ride service providers. Using shared-ride taxis to supplement peak-hour bus capacity as well as to provide specialized services to the mobility-disadvantaged during off-peak hours means vehicles would be efficiently used throughout the day.

2. Dial-a-Ride Vans

Dial-a-Ride vans, or shuttle vans for short, are just like shared-ride taxis except vehicles are bigger. Arcadia, La Mirada, Redondo Beach, and several other medium-size Southern California cities contract out dial-a-ride services to the private sector. Orange County Transit District (OCTD) operates the largest publicly sponsored dial-a-ride van service in the country, serving mainly elderly and poor households with some 125 vans on a contract basis.

By far the largest dial-a-ride van operations, not only in Southern California but in the entire country, are the private carriers, such as Super Shuttle and Prime Time, that serve the airport and other major transportation terminals like the downtown Amtrak station and Long Beach ferry terminal. Last year, Super Shuttle served about 110,000 passengers per month, or around 45 percent of the shared-ride airport ground transportation market. Prime Time, Super Shuttle's chief rival, has about a 30 percent market share. Largely because of a 1981 CPUC decision that deregulated the airport ground-access market previously dominated by cabs and buses, these private operators, and their smaller competitors, were able to carve out a large but unserved market niche: people who don't want to drive to the airport and don't want to take public transportation or taxi/limousine services.

3. Jitneys

Jitneys further extend the shared-ride concept by carrying up to a dozen passengers, usually in a station wagon or van, over a semi-fixed route on a fairly regular basis. Typically the operator picks up customers until the vehicle is full and makes only slight detours from a major street. Thus, jitneys are not true many-to-many services serving multiple pick-up and drop-off points, but rather are hybrids of shared-ride taxis and fixed-route buses; accordingly they are cheaper than shared-ride vehicles and sometimes even buses. Popular early in this century, jitneys were banned in most cities around World War I, victims of trolley-operators' charges of “cream skimming” and unfair competition.[11] Though jitneys may well have threatened city transit systems in 1920, a time when those systems were in their infancy and struggling to survive, they would actually benefit urban transit systems today by providing, as shared-ride taxis do, a much-needed supplement to peak-period capacity.

In California, publicly sanctioned jitneys operate in San Diego and, until several years ago, San Francisco.[12] Up to 15 jitney companies serve around 12,000 weekly customers in San Diego, operating on streets paralleling the light rail trolley and main bus routes and serving mainly lower income neighborhoods and commercial strips. Because of complaints from the local hospitality industry and tourist operators, city officials have suspended the issuance of new jitney licenses and begun to re-regulate what one decade earlier was the most deregulated taxi market in the country.

Despite restrictive laws and ordinances, the market demand for jitneys is so great in most large American cities, especially those with large numbers of recent Third-World immigrants, that they operate illegally and often openly. An estimated 400 to 500 illegal jitneys ply their trade in downtown and eastern Los Angeles. Most of these independent “gypsy” operators are un- or under-insured, do not meet vehicle or driver certification requirements, and adjust fares according to perceived market demand. Some are quite predatory, picking up radio calls and stealing prospective customers from authorized taxis. Authorities have tended to look the other way when confronting these illegal operations, including patrol officers who know there will likely be a major altercation if they try to detain a gypsy operator.

New York City, by far, is home to the nation's largest fleet of illegal jitneys. There, for-hire express vans carry 10,000 passengers to and from Manhattan each day for the same fare as a city bus; feeder runs to New York City Transit Authority (NYCTA) transit stations serve another 5,000. Run by Caribbean immigrants, largely for Caribbean immigrants, the unlicensed vans are winning growing numbers of converts from the city's buses. Surveys show that 95 percent of van passengers are former transit riders who value having a guaranteed seat and speedy, dependable service.[13]

C. Commuter Buses

In contrast to other shared-ride modes, commuter buses provide prearranged or book-in-advance services, and are usually targeted at large employment sites (many-to-one services). Commuter buses could play a key back-up role in an environment of congestion pricing since higher rush-hour charges will mainly affect commuter markets—mainly working class people with limited flexibility in scheduling trips who would be forced to pay higher tolls unless other high-quality commute options were available.

Southern California has the nation's largest supply of private, unsubsidized commuter bus services. Over a dozen private carriers run some 80 commuter runs each workday, focused mainly on large aerospace employment centers. The largest companies, like Commuter Bus Line, Antelope Valley Bus, and California Charter Bus, operate routes of 30-50 miles in length, ferrying 30-40 customers between the outlying suburbs and employment centers in western Los Angeles and Orange County. Antelope Valley Bus, for example, serves the Lockheed Aircraft facility and Edwards Air Force base in the Palmdale area and provides daily connections from the Antelope Valley to downtown and west Los Angeles.

Commuter bus operators are able to clear a profit because they can utilize labor more productively while paying lower compensation rates than SCRTD and other public transit agencies. Because labor rules are less restrictive, drivers are used for maintenance and other duties during off-peak hours. In addition, private drivers typically receive no split-time premiums or overtime pay, and far fewer fringe benefits than their public-sector counterparts.[14]

The state PUC has jurisdiction over all private common carrier bus services, thus prospective commuter bus operators must first obtain a certificate of “public convenience and necessity” from the regulatory body before initiating service. When competing bus services exist, or another operator alleges competition, the new entrant must demonstrate that existing services are inadequate to serve the market, or that a new operation will in some way materially improve services in the market. In recent years, despite protestations from SCRTD and other municipal operators, CPUC has generally granted certificates to buspools and private commuter buses that go from one-to-two origins to one-to-two destinations provided that they meet financial insurance and safety regulations.

Despite the Los Angeles area's success with private commuter buses, competition from heavily

subsidized public transit agencies—whose fares typically reflect subsidies of 60 percent or more—has retarded any large-scale expansion. Public transit agencies preempt some of the best markets, as the transit agency or CPUC may prohibit other providers from operating in these markets.

D. Employer-Sponsored Vanpools and Bus Services

Large employers sponsor vanpools and carpools throughout Southern California, while Commuter Computers tries to ridematch employees with smaller companies. An estimated 50 Southern Californian employers with 1,000 or more workers underwrite the costs of employee vanpools.[15] Local initiatives, like trip-reduction ordinances and Regulation XV (advanced by the South Coast Air Quality Management District requiring employers with more than 100 employees to reduce single-occupant vehicle travel) will likely spur even more employer-sponsored vanpooling in coming years. Several larger employers, notably Arco and Hughes Aircraft, sponsor bus services for their employees as well. Hughes' bus service, contracted out to California Charter Buses, is unique in that it operates like a regular route bus with numerous stops, caters mainly to short trips (versus private commuter buses that serve mainly long-haul trips), and riders need not subscribe.

In general, employer-sponsored transportation services are not regulated in California. Vanpools seating 15 or fewer passengers and operated by a driver headed to work are exempt from CPUC certification requirements. Firms which operate and underwrite commuter bus services for their own employees are similarly exempt. CPUC has jurisdiction only when for-profit private vanpools and subscription buses seek entry into the marketplace.

E. Competitive Contracting

Another potential form of commercial transit in Southern California is through competitive contracting of traditional public transit services. Because of deep cuts in federal and state operating assistance to public transit agencies during the 1980s, more and more agencies are bidding out new and existing services to the private sector. Studies have consistently found competitively bid services to save between 30 and 50 percent in costs.[16]

Los Angeles's experience to date with competitive contracting has been impressive. The city's downtown minibus service, DASH, which moves about 1.5 million people a year for 25 cents a ride, was first contracted out in 1985. Previously, it was operated under a continuing one-year contract by SCRTD, and was saddled with problems of declining ridership, escalating costs, bunching of vehicles, and poor marketing. Within one year of competitively bidding out the service, there was a 38-percent decrease in operating costs and a 20-percent increase in ridership and fare-box recovery. DASH services were rebid in 1988, leading to a further 30-percent cost savings and a 35-percent jump in patronage. Buoyed by these experiences, the city subsequently bid out 15 commuter bus runs previously operated by SCRTD. A recent Price Waterhouse report concluded that the costs of these services fell by over 40 percent, ridership increased by over 80

percent, and service quality improved (e.g., better on-time performance and no missed trips).[17] Surveys showed, moreover, that 43 percent of new riders switched from driving their own autos.

F. Other Commercial Options

Besides paratransit and competitively bid bus services, other kinds of free-enterprise transportation are imaginable in an environment of congestion pricing. Casual carpools, wherein individuals voluntarily form carpools to a common destination on an ad hoc basis, is one possibility. Casual carpools are common in the Bay Area. Each weekday morning, thousands of East Bay drivers pick up San Francisco-bound passengers at major transit stops in order to shave 20-30 minutes off their commute by using the exclusive high occupancy vehicle (HOV) by-pass lane that feeds into the Bay Bridge. Congestion charges on Los Angeles freeways, when combined with a network of HOV lanes, could be expected to prompt similar initiatives. Other private sector responses to congestion tolls might be the emergence of neighborhood telecommute centers, the initiation of short-term auto rental programs (as in Europe), and, in combination with advanced technologies like automated vehicle tracking and dispatching systems, the introduction of single-trip carpooling.[18]

IV. CREATING A COMPETITIVE TRANSPORTATION MARKETPLACE

Deregulation and supportive public policies are essential toward stimulating a new commercial transit market segment in Los Angeles. Deregulation would allow shared-ride taxis, private shuttle vans, jitneys, and commuter buses to compete for parts of the transit market now largely monopolized by public bus operators. While controls over safety, driver qualifications, and operating practices will always be necessary, there is no compelling reason why market entry, price, and vehicle occupancy restrictions should be placed on taxi, paratransit, and private bus operators. Such regulations impose an inefficient uniformity on the market and remove the incentive to innovate and respond to changing market conditions. Fare and service-quality restrictions lead to homogenous services. They also lead to uniform prices (that do not vary by time, parts of city, or radio-dispatch versus cruising services), thus limiting cost recovery. Past experiences with taxi deregulation in San Diego, Oakland, Seattle, and Portland show that customers are usually rewarded with more travel options and improved services (shorter average waits, newer and better maintained vehicles), at roughly the same fares as before.[19]

Deregulation's potential for spawning a rich mix of different types of urban transportation services is especially promising. Studies consistently show that commuters are far more sensitive to the quality of transportation services than price or anything else—that is, they are most likely to switch modes when given dramatic changes in travel times or comfort levels.[20] Factors such as reliability of schedules, assurances of a seat, transfer time, and availability of temperature control have proven to be key determinants of what modes travelers chose. A loosely regulated urban transportation sector offers the best chance of attracting the kinds of high-quality services that can successfully compete with the private automobile, especially for

inter-suburban commutes.

A competitive marketplace would aid public transit systems over the long run as well. Many public transit operations would restructure their services and price them more rationally and would welcome shared-ride taxis as peak-period supplements. Transit unions would likely give in to pressures to hold the line of wages and perks in order to prevent major workforce cuts.

Other forces besides road pricing in a deregulated environment will likely also work in favor of commercial transit services in Los Angeles. In the long run, higher road prices will induce locational shifts as workers and firms seek to be closer to one another in order to reduce travel costs. The resulting higher densities and mixed-use development patterns will encourage greater transit usage. And as Metrorail or other mainline services (like busways) expand, a polycentric urban form with high-density nodes at major transit stops might evolve. There would then be a market niche for various forms of feeder transit connections to stations. The Los Angeles area already has 30 subcenters with over 10,000 employees, providing the building blocks for what could eventually be an integrated system of regional private-and public-transit services.[21]

Other public policies could also positively interact with congestion pricing to stimulate commercial transit alternatives. Regulation XV holds large employers responsible for substantially increasing average vehicle-occupancy levels to their work sites; a vastly expanded paratransit sector would likely be welcomed by Los Angeles's big businesses. The Americans with Disabilities Act (ADA) requirements on fully accessible mass transit will increase the demand for paratransit service. Preferential schemes, like HOV lanes, would also help lure new transit enterprises. Orange County already has around 25 miles of HOV freeway lanes with plans for another 100 or so miles by the year 2000. Nothing will shift commuters over to shuttle vans, buspools, and shared-taxis quicker more than a dedicated lane that allows them to by-pass slow-moving freeway traffic.

Finally, several demographic and spatial trends also seem to be working in favor of commercial transit options. Los Angeles has large Central American and Asian populations, many of whom have come from countries where jitneys and private vans thrive. Those working in low-skilled jobs would likely be among the first to be priced off of roads under congestion pricing, and would thus form a substantial segment of commercial transit users. By next century, moreover, older Americans will become a dominant age cohort as the post-WWII baby-boomers begin to reach retirement age, creating a large potential market of paratransit customers. And the continued suburbanization of housing, shopping, and jobs will create a bigger demand for flexible, many-to-many transportation services than ever.

V. OVERCOMING BARRIERS

Some other major impediments stand in the way of commercial transit services in greater Los Angeles; There are, however, possible remedies for overcoming them. Table 5.1 summarizes the

institutional barriers discussed in this section.

Table 5.1
Summary of Institutional Barriers to
Commercial Transit Services in Greater Los Angeles

Government Level	Regulatory Barriers	Other Barriers
Local	restrictions on taxi supply, services (no shared-ride), and prices.	resistance from local transit/taxi firms
	multiplicity of taxi ordinances	inequities: pressure to buy back overpriced medallions
State	restrictions on inter-city van and bus supply, services, and prices	resistance from local transit/taxi firms
	stringent liability, inspection, and safety requirements	transit subsidies place private buspools at a competitive disadvantage
	significant administrative and record-keeping requirements that are burdensome to small operators	
Federal	worker protection legislation; 13(c)	public transit subsidies
	restrictions on use of federal assistance for private operations	inequitable application of safety inspections among private carriers
	local match biases that favor public transit operators	
	significant administrative and record-keeping requirements	

A. Local Paratransit Regulations

All Southern California cities have passed ordinances that regulate and license taxis and any other permitted forms of paratransit. Typical ordinances place a ceiling on the number of franchise licenses and medallions granted, prohibit shared riding of taxis, stipulate maximum distance-based fares as recorded by taxi meters, and set minimum driver qualifications and insurance coverage requirements.[22]

The City of Los Angeles limits the supply of taxis by granting exclusive five-year franchises to five taxi companies.[23] The ceiling on medallions has limited the number of cabs to 0.5 per 1,000 residents, one of the lowest ratios in the country—compared to 1.5 in Chicago, 2.7 in Boston, 3.4 in Atlanta, and 13.5 in Washington, D.C., a city with virtually unrestricted entry. One consequence has been high taxi fares, among the most costly in the nation—on average, 2.5 times as much per mile as in Washington, D.C. With high fares translating into high taxi medallion values, it is clear that the costs of monopoly privileges are being passed on to consumers.

Perhaps more onerous have been the effects of restrictions on shared-riding, tariffs, and alternative forms of paratransit like jitneys. Shared-ride taxi services are prohibited everywhere in Los Angeles and Orange Counties except downtown Los Angeles and Burbank. Requirements that all fares be distance-metered have further inhibited ridesharing. Furthermore, jitneys and other forms of flexible-route paratransit, with the exception of dial-a-ride vans (that are regulated by CPUC), have been outlawed.

All 88 cities in Los Angeles County have separate taxi ordinances, and all are different to some degree. The multiplicity of rules and regulations has led to excessive red tape, increased the costs of delivering taxi services, and inhibited service coordination.

B. Reforms

The following reforms are recommended:

- *Ordinances should be repealed to lift all controls over market entry and exit, ride-sharing, and pricing.* Experiences with similar regulatory reforms in Washington, D.C., San Diego, Seattle, and other cities show that benefits far outweigh costs. Quite simply, the marketplace itself is better at regulating supply, prices, and service mixes than government fiat. Instead, ordinances should focus solely on issues of driver and vehicle fitness, minimum liability insurance requirements, and any other matters which directly bear on public safety.

- *Zone fares should be established for shared-ride services.*[24] Distance-metered fares would still be used for exclusive-ride taxi services. Price adjustments should be made for

relatively short trips that cross a zone. Fare deregulation would not only enable shared-ride services to be offered but would also likely lead to time-of-day charges that reflect the higher costs of peak-period services. Even in Washington, D.C., where taxis are plentiful, there is a shortage of cabs during rush hours. Thus time-of-day fare differentials would ensure cost-recovery and allow resources to be efficiently priced.

- *A County Paratransit Authority should be established for the purpose of consolidating all of Los Angeles County's separate regulations into a single ordinance.* This would require state enabling legislation. Such streamlining, however, would result in a consistent, unilateral set of service and safety standards, reduce administrative and enforcement costs, and promote service coordination. A similar agency should be established in Orange County.

C. Institutional Responsibilities

The Southern California Association of Governments (SCAG), the region's Metropolitan Planning Organization (MPO), should actively promote and coordinate these local reforms. The new federal surface transportation act, Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), requires the MPO to maximize the involvement of private firms in local transportation programs in addition to promoting various congestion-management strategies. The California Congestion Management Act (AB 471) further requires Los Angeles County and 30 other urbanized counties in the state to prepare congestion-management plans. It is essential that SCAG and other planning agencies work closely with operators and implementing agencies, like local taxi companies and municipal transportation departments, in order to coordinate and expedite the implementation of various regulatory changes.

Given the multitude of organizations involved with congestion management and local paratransit policies, SCAG should form a task force, consisting not only of regional planners but also of staff from SCAQMD, LACTC, OCTC, local taxi firms, and city transportation administrators, to chart an implementation course. The task force's central charge should be to reach consensus among all bodies with jurisdiction over local taxi and paratransit services on how to best implement and coordinate regulatory reforms.

D. Overcoming Resistance

Existing taxi franchisees, SCRTD, and other local transit agencies could be expected to strongly protest all of the recommended reforms. Clearly the winners of these initiatives will be the riding public, while the losers will be the current beneficiaries of monopoly privileges. The political picture would be further clouded by the absence of any well-defined constituency of paratransit supporters. Critics might charge that an open market would lead to exclusionary practices, such as cabbies redlining minority neighborhoods and refusing to provide services to certain areas. To

date, however, there is no evidence that this is happening in cities where taxis have been deregulated. Moreover, since there might be a surplus of paratransit vehicles during off-peak hours when congestion tolls are not charged, firms might actively compete for customers in poor neighborhoods during slack hours.

The relaxation of entry restrictions on taxis and shared-ride services could also impose some inequities on medallion owners in some Southern Californian communities, some of whom have paid upwards of $70,000 for their licenses. A municipality could opt to buy back all medallions at their purchase price, but not without a substantial cash outlay. It might also be argued that those who benefited from regulation have no implicit right to special protection and must bear the risks of deregulation—no one promised them protection in perpetuity. Still, some compensation would be needed for those who paid the prevailing medallion prices under the regime of limited entry; otherwise a spate of lawsuits would be filed by those seeking to recoup their losses. One option would be to use some of the proceeds from congestion tolls to buy back medallions, thus further linking paratransit deregulation to congestion pricing.

E. State Regulations

All private bus operators in the state are regulated by CPUC. Dial-a-ride van services, airport ground transportation carriers, and for-profit vanpools are also under CPUC's jurisdiction as are any inter-city services.[25] In addition to concerns over public safety, the underlying rationale for regulating bus services has historically been that they are natural monopolies—that is, they exhibit economies of scale (where average costs decline as use increases). Under such conditions, a sole operator can most efficiently provide services.[26] To ensure high levels of transportation services throughout a region, then, regulators argue that the state has an obligation to protect carriers from excessive competition and ensure that they receive an adequate rate of return.

Over the years, a variety of controls have emerged under this regulatory banner. The chief one is that new entrants bear the burden of proof that they will serve an unmet public need before a "certificate of public convenience and necessity" is issued. CPUC examines petitions on a case-by-case basis and can, with or without a hearing, issue a certificate, deny the petition, or attach conditions. The general rule has usually been that if existing carriers provide satisfactory service, they should be shielded from additional competition. The review and hearing process can take up to six months, long enough to discourage a number of would-be upstarts from even applying. Historically, existing operators have usually prevailed in unfair competition suits.

Even if a certificate is granted, new entrants must comply with fairly stringent requirements regarding liability insurance, vehicle inspection, and driver certification. Minimum insurance premiums have increased sharply in recent years. Currently, passenger stage vehicles must be insured for at least $750,000 if they carry up to 7 passengers, $1.5 million for 8-15 passengers, and $5 million for over 15 passengers. Besides insurance premiums, private operators face expenses for periodic vehicle inspections, medical examinations, obtaining records from the

Department of Motor Vehicles, administrative time for record keeping, and meeting routine maintenance standards.

Although CPUC has historically not favored competition, in more recent times it has supported limited competition along inter-city corridors and nearly open competition within urbanized areas. In general, the natural monopoly argument for regulating entry into the urban commuter bus and van service market has lost credibility. Studies have consistently shown that with the exception of rapid rail operations, most mass transportation services operate under conditions of constant returns to scale—costs increase proportionately with production.[27] On balance, the benefits accruing to the traveling public from lifting entry controls have been viewed by CPUC as outweighing the lost market shares caused by increased competition.

F. Re-regulation?

The founder-owners of Los Angeles's two largest airport ground transportation operators, Super Shuttle and Prime Time, have complained that the CPUC has gone too far in loosening regulations and have recently sought some re-regulation of the airport business. While it took both companies around eight months to obtain CPUC licenses in the early to mid-1980s, CPUC's less restrictive outlook toward airport services has meant that most applicants can secure a permit within one month without any hearing.[28] Competition for airport services has intensified as taxis, private limousines, shuttle vans, rental cars, chartered buses, and airport coaches vie for the premium fares most airport customers are willing to pay. Both Super Shuttle and Prime Time claim to be just breaking even because of what they view as unfair competition. Because of their perilous financial situation, neither have shown much interest in expanding their operations to serve commuter markets.[29]

The biggest complaint is that small operators and independents concentrate only on the lucrative outbound services from the airport. Small operators do not haul people to the airport because of the high overhead costs of maintaining reservation, dispatching, and router systems. Rather, the small independents usually vie aggressively for curb space and loop the airport repeatedly in search of outbound customers. The large airport operators view the problem less as one of over-competition and more as one of a non-level playing field. As long as they are required to serve in-bound customers and incur the associated infrastructure expenses, over the long run they will be unable to compete with the small independents. All services will eventually fall to the lowest common denominator—a single operator who only serves outbound customers.

In response to these complaints, LAX authorities recently instituted a policy that all vans and limousines must bring a party into the airport or have an outbound reservation. Many independents still cheat the system, however, and enforcement of this new rule has been lax.[30]

Several CPUC economists believe that Super Shuttle and Prime Time problems are less related to unfair competition than they are to over-capitalization during a period when there has been a downturn in the state's economy.[31] Re-regulation, they claim, would result in an oligopoly that

would be unresponsive to market demand. If there indeed is an oversupply problem, a market shake-out will eventually occur. Small independents might also be expected to form route associations for the purposes of coordinating services and eliminating redundancies, as they have done in much of the Third World. Another eventuality might be the emergence of paratransit cooperatives and brokerage firms that contract out dispatching, routing, marketing, and maintenance services to independent driver-owners.

G. Reforms

In order to stimulate a healthy commercial bus and van sector in the Los Angeles region, the following state-level regulatory reforms and actions should be considered.

- *State regulations should explicitly set service standards for all passenger services and allow for open competition among all providers that meet those standards.* As with shared-ride taxis and jitneys, there should be no market-entry restrictions as long as new entrants meet minimum standards. One standard might be that all vehicle operators, big or small, be affiliated with some kind of radio-dispatching service that enables them to provide real-time service to all forms of passenger demand (e.g., inbound and outbound services; inner city and exurban services). Minimum reservation, dispatching, and routing service levels, whether provided in-house or through a brokerage arrangement, would safeguard public safety and allow for some degree of equity among competitors. (Service standards should probably not be set for jitneys and other semi-fixed route shared-ride services to ensure that fairly inexpensive service options are available.)

- *In concert with local authorities, regulations regarding minimum insurance levels, driver and vehicle fitness, and minimum service standards should be vigorously enforced.* Enforcement should become a state and local priority. Stepped up enforcement would no doubt require that greater resources be shifted to policing functions. To the extent that regulatory administrative costs could be lowered through consolidating municipal taxi ordinances and cutting red tape, this would allow savings to be shifted to enforcement. To eliminate illegal gypsy operations, state law should be repealed to allow localities to seize and confiscate illegally operated vehicles. Stiffer punitive measures would go a long way toward reducing illicit activities and ensuring greater service-standard compliance.

- *To reduce operating costs, serious consideration should be given to relaxing state requirements governing worker's compensation and minimum liability insurance.* Many licensed private bus and van operators are asking whether the industry can afford such a high margin of safety. According to management, around 20 percent of Super Shuttle's payroll and 10 percent of its gross revenues go to worker's compensation. Besides physical disabilities, many claims in the transportation field are also paid out to stress-related illnesses, resulting in inflated worker's compensation premiums, which have a high incidence of fraud. More stringent criteria should be set for establishing job-related

disabilities and stronger sanctions should be imposed against those attempting to cheat the system. Also, no-fault insurance reforms would help reduce costs, since transportation providers commonly cover all accident claims even when they are only marginally at fault, in part because of the notion that they have "deep pockets."

- *Employment-related vanpools should be allowed to operate on a for-profit basis and serve multiple destinations.* Current state regulations exempt non-profit vanpools from having to obtain operating certificates from the PUC. However, employees who take the initiative to form and operate vanpools should be rewarded with a reasonable profit. There is no compelling reason why enterprising workers should not be allowed to operate vanpools that serve a number of workplaces, particularly given the trend toward smaller average firm size and dispersed workplace locations. In general, vanpool entrepreneurs should be encouraged rather than stymied through state regulations.

- *A wider array of privately owned vehicles should be allowed to provide passenger services.* California might follow Tennessee's lead in this regard. There, church buses, school buses, family passenger vans, and other privately owned vehicles are doubling as commuter vehicles, especially in areas that have experienced service cutbacks because of inter-city bus deregulation.

H. Federal Regulations

The chief federal barrier to private-sector participation in providing transit services is Section 13(c) of the amended Urban Mass Transportation Act of 1964. This labor protection clause guarantees that transit employees will not be adversely affected by any program involving federal transit grants. This stipulation has been blamed for tying the hands of transit management during contract negotiations by giving labor the equivalent of veto power over federal grants. In addition to augmenting the resource base available for generous settlements, 13(c) has also promoted work rules involving guaranteed pay clauses and prohibitions on part-time employment. Moreover, 13(c) has stifled efforts to contract out services to private bus and shared-ride taxi companies. A number of smaller California communities that use taxis as substitutes for transit have avoided 13(c) problems by refusing federal funds. Larger communities like Los Angeles, however, cannot afford such independence.

Another serious impediment to commercial transit are the federal (as well as local and state) subsidies that keep most public-transit agencies afloat. When local public-transit operators offer express commuter bus services at fares subsidized by as much as 50 percent, private operators charging unsubsidized fares are hard-pressed to compete.

Other federal barriers to private-transit operations include:

- Section 3 and Section 9 capital and operating assistance is available to private operators only if they are "sponsored" by a designated recipient. Such sponsorship is rare, and if it

does occur, it involves considerable red tape and precludes private companies from becoming both the administrator and provider of local transit service.

- Federal regulations discourage the contracting of services to private companies that use their own vehicles. The federal government will cover only 50 percent of depreciation costs for private-sector vehicles versus a 75-80 percent match for publicly owned vehicles. This matching bias places private firms at a cost disadvantage.

- Private operators receiving federal funds face substantial reporting requirements which involve considerable administrative effort. Many small firms cannot afford to hire a compliance administrator to meet federal reporting requirements.

- Since most private operators do not have lift-equipped buses, full accessibility requirements imposed by the Americans with Disabilities Act (ADA) could restrain the operations of some paratransit firms and force others out of business.

- Other federal regulations like OSHA and vehicle-emission standards, impose costs that, because they are not enforced as stringently against independent operators or unlicensed gypsies, could place larger commercial operators who face periodic inspections at a competitive disadvantage.

Although federal barriers are not as imposing as local and state barriers, collectively they do add significant costs that might keep some smaller firms from entering the marketplace. At a minimum, state representatives should press Congress to repeal the 13(c) requirement and, where possible, eliminate biases that favor public operations over private ones. Operating assistance from the federal as well as state and local levels should be curtailed; if not, then assistance should only be provided to those operators that competitively bid out a significant proportion of their services or, better yet, should be passed on in the form of user-side subsidies.

I. Union Barriers

The most vocal opposition to competitive contracting and the use of commercial transit vendors usually comes from labor unions. Organized labor will vehemently fight any initiatives that are viewed as jeopardizing traditional work rules, compensation levels, and employment security. However, competition itself eventually leads to concessions. When Los Angeles first bid out the downtown DASH shuttle services, SCRTD recognized that they would have trouble winning a bid with a driver wage of $15 per hour. Working with their unions through collective bargaining sessions, the union acceded to establishing a special driver classification with a wage of roughly $9 per hour.

With an unregulated transit market and extensive competitive contracting, as the commercial transit sector expands, there will be growing pressure to unionize. There are at least two dozen

instances across the country where private firms that steadily grew from winning service contracts eventually unionized.

In general, however, unions should have little direct leverage over the future of commercial transit as long as a truly competitive marketplace exists. Competition will discipline all service-providers to be cost-efficient and innovative, with or without unions. The bigger threat is that unions will try to block any efforts to create a competitive environment, a decision which ultimately rests with local and state regulatory authorities. Once a competitive marketplace emerges, unionization would become a non-issue.

J. Barriers to Expanded Commuter Transportation Services

Expansion of Airport Dial-a-Ride Van Services into Commuter Markets - One scenario for serving those priced off of roads from congestion tolls would be to vastly expand the popular airport ground transportation services like Super Shuttle and Prime Time to serve downtown and other regional employment centers. Break-even fares for existing airport services are about 50 cents per passenger mile (at occupancies of 3-4 passengers per vehicle); fares set at this level in combination with congestion tolls could, according to an Environmental Defense Fund report, make peak-period private services profitable.[32] Several factors, summarized in Table 5.2, could impede such efforts, however. One, as a many-to-many service, commuter van transportation is fundamentally different from many-to-one airport shuttle operations. The need to operate ubiquitously, with myriad origins and destinations, imposes numerous additional costs related to vehicle dispatching and routing. Remarked Mitch Rauss, the founder and president of Super Shuttle: “It's an incredibly large leap to go from many-to-one to many-to-many services. It's a whole different ballgame. Many-to-many services for the transportation disadvantaged under ADA costs 3 and 1/2 times as much per passenger as many-to-one Super Shuttle services. I can't see many-to-many Super Shuttle vans in any universe I can imagine.”

Table 5.2

Differences in Shuttle Van Services to Airports versus Major Employment Centers

Characteristic	Airports	Major Employment Centers	Policy Response/Strategy
Service Configuration	Many-to-one	Many-to-many	Introduce AVL and other advanced transit technologies
Parking	Market rates	Free or subsidized	Introduce parking charges; cash out free parking
Peaking	Flatter; more even daily and weekly spread of demand	Sharper peaks; costlier services	Introduce flex-time and modified work schedules; promote mixed-use development
Customer Base	Business travelers; more captive markets	Routine workers; more choices of travel	Congestion charges would hurt captive commuter markets the most; reduce inequities through user-side subsidies and paratransit deregulation

The new "universe" that might begin to make large-scale many-to-many van services economically feasible is Automated Vehicle Location, or AVL, technologies. Through technologies as simple as signposts or as advanced as the Global Positioning System (GPS), the Navstar satellite-based locating system that made such a difference in the Gulf War, it is now possible to geographically monitor the real-time movement of vehicles, track on-time performance, and inform customers when vans and buses will arrive.[33] Satellite-based vehicle tracking systems would allow dispatchers or even remote computers to efficiently match vehicles with customers and reduce route detours and deadheading (i.e., non-passenger service such as return trips to the company garage). Additionally, since those choosing to ride vans to work usually do so on a regular basis, the need for advanced real-time ride-matching capabilities might be negligible as specific routes become regularized.

Perhaps an even bigger deterrent to serving non-airport destinations is the prevalence of free or highly subsidized employee parking throughout the Los Angeles basin.[34] In contrast, airports

charge market rates for parking, meaning there is less of a hidden subsidy for motoring to airports than most other destinations. Clearly, the introduction of market-based pricing like congestion tolls and commercial parking charges would vastly change the economics of providing shuttle service to other destinations.

Another impediment to enlarging the airport van shuttle market to include commuter services is that the peak periods for both markets generally coincide. The costs of purchasing extra vans that would remain idle during the midday would likely be prohibitive. Super Shuttle and Prime Time management both believe that employer-sponsored vanpools driven by worker volunteers are more cost-effective because no split shift pay penalties are incurred, as would be the case with commercial van services. Moreover, the peaks for work trips are steeper and more pronounced than for the airport business, meaning the marginal costs of commute operations would be higher. Besides a morning and late-afternoon peak, there is usually a rise in airport traffic in the midday as well as on weekends and holidays. This more even spread of demand means that airport vans and drivers can be used more fully throughout the year.[35]

Over time, congestion pricing might produce the kinds of behavioral and locational shifts that begin to make the commercial vanpool service economically feasible. In response to congestion pricing, some employers might spread out work hours or introduce flexitime or three to four day work weeks. Over the long run, higher transportation prices will encourage more people to reside closer to their jobs, leading to higher densities and a wider mixture of land uses. Greater Los Angeles would likely take on more of a polycentric urban form, providing distinct destination points for work trips. Modified work schedules and mix-use development, in particular, would more evenly spread out travel demand throughout the workday, attenuating the peaking problem.[36] While staggered work hours complicate ridematching within firms, if hours are staggered between firms at large-employment sites, there should be sufficient demand at different one-half hour intervals to enable formation of vanpools.[37]

The other significant impediment to attracting more commercial van operators to the commuter market is the perception that it is not as lucrative. Airport customers are generally considered a more captive market, in part because of the relatively high daily parking fees motorists must pay to drive themselves to the airport. The large number of business travelers who are on expense accounts and willing to pay premium fares also creates strong competition among shuttle operators. Since commute trips are made routinely and are generally unsubsidized, commuters tend to be more cost-conscious.

Despite these deterrents, it is noteworthy that Prime Time did test the waters for entering the commuter market by operating services between Pasadena and downtown Los Angeles over a six-month period last year. As with airport runs, this was a many-to-one operation, with the "one" being downtown rather than LAX. The daily vanpools lost money, however, because they could not collect a high enough charge, thus the service eventually folded. According to Prime Time management, however, they were very close to breaking even and it would likely only take one other condition, like congestion pricing or the elimination of free downtown parking, to

make the service economically viable. Prime Time also was negotiating with Los Angeles's downtown Transportation Management Association (TMA) for several months to operate a large number of for-profit subscription commuter vans from the San Fernando Valley to the central business district on a contract basis. Since Regulation XV could effectively rule out any additional parking structures for downtown Los Angeles, the TMA looked to Prime Time to handle the additional demand created by employment growth. The TMA folded, however, for both political and financial reasons, thus the service never got off the ground.

Unlike Super Shuttle, Prime Time management believes there will soon be the right economic conditions to justify an expansion into the commuter market. Congestion pricing would no doubt help to create the right market conditions. In fact, Prime Time management feels that downtown Los Angeles might offer more long-term market potential than LAX, Burbank, or even the proposed Palmdale mega-airport, since there is a virtual moratorium on downtown parking whereas airports are feverishly adding new parking structures.[38] Lastly, Prime Time is open to the possibility of providing many-to-many commuter services in the San Fernando Valley. The firm has already been approached by the Warner Center TMA and several other large Valley employers. However, because of the current economic conditions, they have opted for a steady-state operation for the immediate future.

K. Overcoming Barriers to Employer-Based Vanpools

Employer-based vanpools are more economical than commercial ones since drivers generally receive no pay for this service. They are also largely immune to the high unit costs caused by the diurnal peaking of work trips since no pay penalties are involved. Possible impediments to expanded employer-sponsored vanpools in Southern California are:

- Average firm size has been declining. For many businesses, there are too few employees at a work site to form vanpools. Regional ridesharing organizations, like Commuter Computer, are best able to build a critical mass of small firms in a particular area for the purpose of forming regular vanpools and carpools.

- Over half of all commutes in greater Los Angeles are under 10 miles, generally too short of a distance to attract vanpoolers. However, given the fact that affordable housing supplies are mainly on the far outreaches of the region, there will continue to be an expanding market of potential long-distance vanpoolers.

- Recessionary conditions have moved vanpooling and other non-business related matters down the list of corporate priorities. Regulation XV and mandatory trip reduction requirements could move it up the list of large employers, especially those downtown facing the 1.75 average vehicle ridership requirement.

- Variable work hours can complicate ridematching. One mitigating response would be to stagger hours between rather than within firms.

- Some insurance companies rate vanpools as common carriers rather than as carpools. State legislation should be enacted to classify, for insurance purposes, all passenger vehicles according to CPUC codes. This would mean that all nonprofit, employer-based vans that serve 15 or fewer passengers would be subject to less restrictive liability coverage than licensed passenger stage or common-carrier vehicles.

VI. PROMOTING COMMERCIAL TRANSIT AND EXPLOITING NEW MARKET OPPORTUNITIES

Regulatory reforms are not the only way to stimulate the commercial transit segment. They should be balanced by measures that directly promote commercial transit and exploit new market opportunities created by congestion pricing. What actions, in combination with congestion pricing, would help stimulate the commercial transit sector in greater Los Angeles?

A. HOV Lanes

Reserved lanes for carpools, vans, and buses have demonstrated they are capable of winning over significant numbers of former solo-commuters to high occupancy vehicles. A survey of commuters on the Route 55 HOV lane in Orange County found that 57 percent of respondents previously drove alone on the same freeway.[39] Orange County officials have been so encouraged by HOV's success that they plan to complete a 120-mile HOV network over the next decade that will affect every freeway in the county but one.

Interviews with managers of large private shuttle van and commuter bus operators in Southern California indicated unanimous support for developing HOV lanes throughout the region. Most were more optimistic about the prospects of HOV lanes than congestion pricing. John Kindt of Prime Time noted there is not a single HOV lane in the San Fernando Valley, Prime Time's headquarters; consequently vans take circuitous routes to try to by-pass congestion. Kindt felt that regional van, minibus, and commuter bus operations would be far more efficient and time-competitive with the private automobile if a network of HOV lanes was in place. Preferential schemes like HOV lanes, traffic signal preemption by buses, and ramp meter bypasses would go a long way toward spurring new commercial transportation enterprises in Southern California.

In theory, full market-based pricing would obviate the need for HOV lanes since charges would be high enough to optimize traffic flow. In reality, however, it would take time to achieve some semblance of marginal-cost pricing of road facilities. In the interim, HOV lanes could be viewed as a second-best tool for encouraging ride-sharing—a means of rewarding carpoolers and increasing freeway throughput as long as road prices remain below true costs.

The coupling of HOV lanes and congestion pricing would be particularly effective as part of a tollway program. HOV lanes could aid in designing differentiated tolls. Single-occupant vehicle

(SOV) lanes might be charged the highest tolls, two-person vehicles might incur a lesser charge, and three-or-more person vehicles would pay even less or gain free passage. In Houston, the U.S. city with the largest HOV network, some 85 miles in all, several tollways also have special HOV facilities. Buses, vanpools, and carpools not only receive special treatment but travel free as well. In the Bay Area during rush hours, vehicles with three or more occupants speed by solo-drivers on the entrance to the Bay Bridge and pay no toll. None of these schemes charge more for rush-hour travel, though they both reveal that HOV lanes and differential road pricing are compatible.

Stringent air quality regulations could be the motivating force behind building HOV lanes on a grand scale in Southern California. Many large employers, in fact, believe they will only be able to meet Regulation XV requirements if exclusive ridesharing lanes are built.[40] Many consider HOV lanes more palatable, politically, than significantly raising fuel taxes or introducing even modest forms of congestion pricing. The Santa Monica Freeway Diamond Lane fiasco of the seventies, however, suggested that HOV lanes themselves are not immune to political controversy in Southern California. If there was any lesson from that experience, it was that HOV lanes will likely gain political support only if new lanes are built rather than by expropriating existing ones. Another significant challenge will be connecting together disparate HOV lane segments from which to form a true regional network. Notwithstanding these hurdles, providing more HOV lanes would appear to be absolutely essential toward stimulating commercial transit alternatives in Southern California.

B. Smart Transit Vehicles and Other New Technologies

New automated technologies like AVL and intelligent vehicle highway systems (IVHS) will further encourage entrepreneurship in the transit industry. Satellite-based vehicle tracking and locating technologies mean that buses and vans can begin to match the demand-responsive, real-time performance of their chief rival, the private automobile. When fed into a central computer, this information can be used to achieve optimal dispatching and routing of vehicles. One possible future might be the emergence of paratransit communications and information-brokering firms which provide efficient dispatching and routing information to small independent operators.

In Germany, AVL-aided paratransit services flourish in many suburban areas. There, an assemblage of microbuses, minibuses, and maxibuses equipped with AVL sensors are in constant contact with a central computer that orchestrates the assignment and routing of vehicles to handle ride requests. Called Ruf-Bus, under this system the typical user arrives at a suburban rail station (S-Bahn) and then enters a destination code on a call-box which relays this information to the central computer. Average passenger waiting times of seven minutes have been reported and most paratransit operators are recovering 80 percent of full costs through the fare box, two to three times as much as most U.S. suburban transit services.[41] Portland's Tri-Met is considering adopting a similar service for its suburban markets. Also, the Burbank Media District TMO is in negotiation with private taxi companies to provide commute services for

people living and working in Burbank using technologies suited to forming single-trip carpools. Additionally, a Mobility Manager demonstration program is under way in the Pomona Valley that provides a single point of contact for relaying information on travel choices and their price-service characteristics using advanced electronic technologies—analogous to an airline reservation system.[42]

Smart cards—magnetically encoded cards that allow electronic ticketing and automated trip payments—are perhaps the one technology on the horizon that will contribute most directly to efficient transportation pricing. The Milton Keynes City Bus System in Great Britain sells slightly discounted debit cards that carry each user's account balance. Each time a patron rides a bus, the appropriate fare amount is debited. The transit agency benefits not only from reduced fare-handling expenses but also from improvements in schedule adherence allowed by the more expeditious flow card-using passengers.

Smart cards' greatest promise lies in a multimodal context. Stored-value debit cards could automatically exact charges for transit rides, parking, or traveling in congested areas. The same card used to enter a congested district (minus a debit fee), park one's car in a peripheral lot (debit again) and hop on private shuttle bus (debit again) would allow a level of tariff integration never before seen. Thus, smart cards would indirectly support commercial transit services not only by bringing efficient pricing within technological reach, but also by reducing fare-handling expenses and providing a computerized (and thus safer because it is cashless) system for reimbursing paratransit owner-operators.

Some new technologies are designed to grant priority to HOVs and thus would further promote the integration of combined HOV-tollway schemes. In Delft, Holland, image-processing devices have been installed at entrances to reserved transit/HOV lanes that can detect the number of passengers in each vehicle. Singapore uses video cameras and closed-circuit television monitors to control HOV access. Similar technologies are being explored by tollway authorities in Dallas and Houston.

C. User-Side Subsidies

The most serious objection to road pricing has always been that it will burden poor people the most. Road pricing would be particularly burdensome to young families and first-time home-buyers who trade long work trips for affordable housing on the metropolitan periphery, and who have few travel options.[43] One way to redress such inequities would be to channel at least a portion of fee income into mass transit and other travel options to the private automobile. This should be in the form of user-side rather than provider-side subsidies, however. Research has repeatedly shown that subsidies to providers usually get “leaked away” in the form of higher worker compensation rates, lower worker productivity, the expansion of unproductive services, and over-capitalization.[44] In general, in the absence of demonstrable economies of scale, the only sound economic basis for subsidizing mass transit is to aid the poor. Targeting subsidies directly at the intended beneficiaries in the form of vouchers is the only way to ensure grants-in-aid are

not wasted. To the extent the marketplace is opened up to allow private carriers to compete for voucher clients, a wide range of transportation choices—traditional and more exclusive buses, shared-ride taxis, dial-a-ride vans—will likely emerge. Open competition for these and regular customers would ensure the right mix and number of transit options are available to the riding public.

A number of user-side subsidy demonstration programs were sponsored by the Federal Transit Administration's predecessor, UMTA, in the 1970s with varying degrees of success. Most programs were tied to special elderly and handicapped services administered by human services organizations and were in small areas with limited transit options. Typically passengers would pay a nominal fare and sign a voucher that a taxi operator would later turn in for reimbursement of the balance. One demonstration was in the Harbor area of Los Angeles. There, elderly and handicapped residents would buy ten scrips for $1.50. Users would pay a fare and submit the scrip. Participating taxi operators were reimbursed weekly based on the number of scrips they had collected. While this demonstration was not part of a large program to promote commercial paratransit options in south Los Angeles, it does provide a precedence that might serve as a building block for implementing user-side subsidies on a large scale.

D. Metro Rail and Other Mainline Services

Los Angeles's Metro Rail line provides another opportunity for stimulating commercial transit alternatives. While many observers doubt that the full planned network can be economically justified, the existing Blue Line and the four-mile Wilshire line currently under construction will be a permanent addition to the area's infrastructure that should be exploited for its mainline capacity. LACTC hopes to encourage private shuttle connections to Metro Rail stations as a means of providing high-quality feeder services as well as to free up more land for high-rise joint-development projects, land that might otherwise be used as park-and-ride lots. LACTC hopes a system similar to Germany's call-a-ride system, wherein a computer assigns and routes paratransit vehicles to customers at rail stations, will eventually emerge. Congestion pricing, LACTC officials believe, would likely create the kind of financial incentives that would speed up the emergence of such services. And to the extent stations become magnets for high-density, mixed-use development, this built form would further encourage future private transit services and usage.

The Blue Line from downtown Los Angeles to Long Beach, which has been averaging over 30,000 riders per weekday, serves many low- to moderate-income neighborhoods. Significant numbers are first-generation immigrants from Latin America. Demographically, then, many Blue Line users would appear to be potential clients of jitneys and shuttle-van feeder runs that link to Metro Rail stations. Gypsy van lines in New York City currently feed thousands of outer-borough residents, many who are recent immigrants from abroad, into subway stops each day. If local officials were to legalize jitneys and loosen the regulatory restrictions on paratransit providers, similar but safer operations could emerge in Southern California.

E. Demonstration Programs and Seed Grants

A large-scale demonstration program should be initiated to test whether deregulation and other inducements to commercial transit might work in Southern California. Institutionally, smaller communities like Glendale and Burbank might be willing and more able to function as a testing ground for opening up the marketplace to shared-ride taxis, jitneys, and shuttle vans.

A demonstration grant on commercial transit might be federal and state money well spent. Since the 1991 Intermodal Surface Transportation Efficiency Act nearly doubles the appropriations for transit research and development over the next six years, the timing might be fortuitous for Congress to initiate such a demonstration, ideally as part of a larger congestion-pricing program. Another possible worthwhile area of federal assistance would be the provision of a seed grant to help stimulate the emergence of a commercial-van sector for serving commuter markets. Los Angeles's largest airport ground transportation operators seem interested in testing the commuter market but have so far refrained, especially given the prevalence of free parking and other implicit subsidies to motorists. Consideration might be given to providing some initial assistance to commercial van operators under an “infant industry” logic, just as federal assistance was originally granted in the 1960s to stimulate the public-transit sector. Ideally this infant industry aid would be in the form of user-side subsidies.

VII. CONCLUSION

Considerable barriers stand in the way of a healthy commercial transit sector emerging in greater Los Angeles. However a number of opportunities exist—like new paratransit technologies, HOV lanes, new mainline services, and a growing demographic cohort of potential shared-ride taxi and jitney users—that could help offset the deterrents. From a public policy standpoint, the major challenge in coming years will be to eliminate or at least marginalize as many barriers as possible and take actions that will capitalize on the many opportunities that exist.

The major barrier to commercial transit services today in Southern California remains overregulation. Laws and rules governing urban transportation have been built up, layer by layer, to the point where they represent serious obstacles to innovation. A byzantine network of local, regional, and state authorities has evolved for administering and enforcing these regulations. Excessive bureaucracy has meant reduced efficiency and effectiveness and has also precluded any kind of integrated, coordinated commercial transit and paratransit sector from emerging. At both the local and state levels, present-day controls should be repealed to allow freer market entry. Controls over service and pricing practices should also be lifted. Given the current fragmentation, there should be a consolidated taxi and paratransit ordinance that govern all operations in Los Angeles County, with another for Orange County. For the most part, local and state oversight should be limited to matters of insuring operators have minimum insurance coverage and meet driver and vehicle fitness standards. There is no compelling reason why price, service and supply controls should be imposed on taxis, shuttle vans, microbuses, and commuter

buses. The marketplace has proven its prowess at responding to the many and varied preferences of American consumers in other areas, so there is no reason why the same would not hold true in Southern California's urban-transit sector.

Regulatory reform should clearly be the centerpiece of policy action to stimulate commercial transit in greater Los Angeles. However, deregulation should be complemented by a number of other initiatives, including congestion pricing. Zone fares should be introduced for all services that allow ride-sharing, like jitneys and shared-ride taxis. Law enforcement agencies should also receive more funding, perhaps from congestion tolls, to ensure adequate policing of paratransit laws. More vigorous enforcement of illegal gypsies, in particular, is necessary to ensure fairness and to prevent commercial transit services from declining to the lowest common denominator. A stronger political commitment to enforcement would likely also be essential toward gaining the support of established taxi and bus operators for major regulatory reforms in the paratransit sector.

At the federal level, labor protection provisions, like 13(c), that stand in the way of commercial transit should be repealed. Provider-side operating subsidies should also be curtailed, replaced by user-side subsidies targeted at the poor. Federal transportation officials should be approached about setting up a demonstration program for deregulation and commercial transit in Southern California, perhaps based on the logic that many far-reaching initiatives such as market-entry decontrol should first be tested and also that commercial commuter van operations need some short-term seed support.

Lastly, besides congestion pricing itself, a combination of transit-incentives and auto-restraint, or “equalizer,” measures should be introduced. A regional network of HOV lanes would be an important stimulant to commercial transit. Because the commuter peak hours tend to coincide with those of airport ground transportation service and other charter operations, modified work schedules like flexitime should also be promoted. Moreover, higher density, mixed-use development should be encouraged around Metro Rail stations and major activity centers not only to create a larger market of potential transit customers but also to create a built form that will spread trip-making more evenly throughout the week. Most likely, congestion pricing itself would do more to create the kind of urban form that is conducive to transit usage than any single factor.

ABOUT THE AUTHOR

Robert Cervero is an Associate Professor of City and Regional Planning at the University of California, Berkeley, College of Environmental Design. He has just completed a book on the link between the land use and design characteristics of suburban activity centers and their commuting problems. Over the past few years he has also been doing regional economic development work in Indonesia through a World Bank project.

REFERENCES

1. This does not include work trip-related vanpools and carpools, which together make up around 8 percent of the region's travel. This estimate is based roughly on the fact that most private van and bus operations concentrate on work and work-related business travel, which make up only around 27 percent of all VMT, and that both public and private forms of mass transit carry less than 7 percent of these journeys. (Estimate: 0.27 x 0.07 = 0.019.) Sources: Federal Highway Administration, U.S. Department of Transportation, *National Personal Transportation Survey*, Washington, D.C., 1991 (preliminary estimates); Bureau of Census, U.S. Department of Commerce, *The Journey to Work in the United States*, Washington, D.C., 1984.

2. M. Cameron. 1991. *Transportation Efficiency: Tackling Southern California's Air Pollution and Congestion* Los Angeles: Environmental Defense Fund and the Regional Institute of Southern California.

3. Peak services are costly because of the additional labor costs incurred in serving demand over the diurnal peaks, spread as much as 12 hours apart, during the typical weekday.

4. Source: U.S. Bureau of Census, *Journey-to-Work Census*, Washington, D.C.: U.S. Printing Office, 1984.

5. Since December, 1991, Los Angeles has allowed all 1,350 registered taxicabs in the city to carry up to four passengers within a defined area of downtown for a flat $3.50 fare. To date, little taxi ridesharing has occurred, in part because the program has not been widely marketed. The city of Burbank recently initiated a similar program, charging a flat $3.50 for shared-ride services within the city limits.

6. The most valuable lessons on paratransit are from abroad. In Asia, Latin America, and the Middle East, a dynamic and wide-ranging paratransit sector has evolved in most cities. For a host of reasons—e.g., market entry is loosely regulated, public transit is often overburdened, car ownership is limited, and huge labor surpluses exist—what has been varyingly referred to as the "free enterprise" or "informal" transport sector thrives. Paratransit takes many names, shapes, and forms abroad, but is generally characterized by fleets of three-wheelers, jitneys, collective taxis, microbuses, and minibuses that serve customers on demand, providing either door-to-door or mainline service. These vehicles offer a wide range of services in terms of seating capacity, speeds, geographic coverage, levels of comfort and fares. Some vehicles serve local trips of two to three blocks, others serve more intermediate distance travel, while still others cover entire regions. Source: G. Roth and G. Wynee. *Learning from Abroad: Free Enterprise Urban Transportation*. New Brunswick, New Jersey: Transaction, 1982; P. Rimmer. *Ricksha to Rapid Transit* Sydney: Pergamon Press, 1986.

7. Roth and Wynne, *op cit*.

8. R. Cervero, “Paratransit in Southeast Asia: A Market Response to Poor Roads?,” *Review of Urban and Regional Development Studies* 3, 1991, 3-27.

9. A. Becker and J. Echols, "Paratransit at a Transit Agency: The Experience in Norfolk, Virginia," *Transportation Research* 914, 1983, 49-57.

10. R. Oram, "Peak Period Supplements: The Contemporary Economics of Bus Transport in the U.K. and the U.S.A.," *Progress in Planning*, D. Diamond and J. McLaughlin, eds., 1979, 83-154.

11. R. Eckert and G. Hilton, “The Jitneys,” *Journal of Law and Economics* 15, 1972, 293-325.

12. Since the early 1970s, San Francisco has allowed up to 80 jitneys on Mission Street, serving mainly Hispanic neighborhoods, with the proviso that they not undercut the municipal transit agency's fares. Because of more stringent insurance and indemnity requirements, all operations have been regulated out of business.

13. A. Mitchell, “Illegal Vans Fight Strong Guerrilla War for New York's Streets,” *New York Times*, January 24, 1992, A16.

14. Nearly all public transit employees receive automatic cost-of-living adjustments. Fringe benefits, like employer-paid health insurance and paid vacation, are universal among public transit employees. Between 1980 and 1990, fringe benefit outlays rose from 14 percent to 26 percent of the nation's total public transit operating expenditures. Job turnover rates in the public transit industry are among the lowest of any non-farm industrial sector in the United States, suggesting that many transit workers are being paid more than is necessary to attract and retain them.

15. E. Ferguson, “The Influence of Employee Ridesharing Programs on Employee Mode Choice,” *Transportation*, Vol. 17, No. 2, 1990, 179-207.

16. R. Teal, “Transportation Privatization: Experiences and Issues,” *Urban Resources*, Vol. 4, No. 1, 1986, 7-12.

17. J. McLaughlin, “Competitive Contracting and Private Sector Participation in the Provision of Public Transit,” Los Angeles: Department of Transportation, 1989.

18. Single-trip carpools would be formed by using vehicle-locator and dispatching technologies to optimally match passengers to vehicles headed to the same vicinity.

19. M. Frankena and P. Paulter. *An Economic Analysis of Taxicab Regulation*, Washington, D.C.: Bureau of Economics, Federal Trade Commission, 1984.

20. P. Mayworm, et al. *Patronage Impacts of Changes in Transit Fares and Services*, U.S. Department of Transportation, Washington, D.C., 1980.

21. G. Giuliano and K. Small, *Subcenters in the Los Angeles Region*, Berkeley: University of California Transportation Center, Working Paper 39.

22. Taxi regulations were first imposed during the 1930s, when the numbers of independent cab services exploded as a result of thousands of Southern Californians were out of work during the Depression years. Protestations that open competition would lead to violent taxi wars, predatory behavior, and unscrupulous practices were common. Municipalities justified ordinances as an exercise of police powers to protect public safety and welfare, thus defending citizens from dishonest taxi operators and undesirable fellow passengers.

23. Franchises are granted to operate mainly in different areas of the city. Each franchisee is allowed a set number of medallions that can be adjusted within a franchise period. Franchise rights are competitively bid out every five years on a staggered basis.

24. To some extent, price deregulation would enable operators to introduce zonal fares, though deregulation would likely affect price levels more than tariff structures. Institutionally, the creation of a zone system might expedite the transition to the more efficient zonal pricing (versus flat fares) for shared-ride services.

25. Regulations are set based on pertinent sections of the CPUC code, General Orders, and decisions made by the Commission. Separate regulations exist for Passenger Stage (per person pricing—e.g., commuter buses) and Charter Party (per vehicle pricing—e.g., chartered buses) services.

26. If numerous competitors were allowed into the urban transportation market, the argument goes, they would "skim the cream" by taking the most lucrative routes and leaving the unprofitable ones. However, a single transit company would allegedly operate in the public interest by operating both money-making and money-losing services, what economists call cross-subsidization.

27. J. Berechman, "Analysis of Costs, Economies of Scale and Factor Demand in Bus Transport," Institute of Transportation Studies Working Paper, Irvine, California, 1982.

28. Over 800 vehicles currently have permits to serve LAX, nearly double the number of a decade ago. According to several airport operators, there is presently enough demand to only support around 500 to 600 operators. Surveys suggest just how thin the market is being spread: Vans average 1.7 persons per vehicle, compared to an average of 1.4 persons per taxi.

29. In March 1992, Prime Time filed for Chapter 11 bankruptcy court protection from its creditors. Prime Time's problems are partly due to its merger and expansion just before the economic downturn and resulting decline in air travel. The company contends it is now operating profitably, though the immediate financial outlook remains uncertain.

30. Another proposal being considered is the establishment of two curbs—one for vans that bring inbound customers and the other for only outbound service-providers. Passengers would be able to choose between well-known providers like Super Shuttle and Prime Time versus small independents.

31. Interview with CPUC staff, February 6, 1992.

32. Cameron, op cit., 44.

33. R. Casey, et al., *Advanced Public Transportation Systems: The State of the Art*, U.S. Department of Transportation, Urban Mass Transportation Administration, 1991.

34. R. Willson and D. Shoup, "Parking Subsidies and Travel Choices: Assessing the Evidence," *Transportation* 17, 1990, 141-159.

35. Since the airport morning and evening peaks are generally heavier than the midday one, current supplies of airport vans are sufficient to the midday demand. Thus there would be no opportunity to reassign commuter vans to handle midday airport customers. Commuter vans would be most valuable as supplements to heavy holiday and weekend traffic, often the peak of the peak of airport ground transportation services.

36. R. Cervero, "Land-Use Mixing and Suburban Mobility," *Transportation Quarterly* 42, 3, 1988, 429-446.

37. R. Cervero and B. Griesenback, "Factors Influencing Commuting Choices in Suburban Labor Markets," *Transportation Research* 22A, 1987, 151-161.

38. At LAX, parking fees and other concessions are major revenue generators, helping to offset landing-fee income that falls far below airport operating costs. Typically airport management receives 90 percent of all parking fees, compared to only around 10 percent of airport ground transportation fares representing only 10 percent of airport customers. Since management makes large profits from parking, coupled with the fact that van services yield comparatively small income and are often embroiled in political disputes, parking expansion has become a management priority.

39. G. Giuliano, D. Levine, and R. Teal, "Impact of High Occupancy Vehicle Lanes on Carpooling Behavior," *Transportation*, Vol. 17, No. 2, 1990, 159-178.

40. K. Ricciardi, “Are HOVs in Your Future?”, *PTI Journal*, July/August, 1990, 18-22.

41. R. Benke and P. Woodworth, *Integrating Transit, Paratransit and Ridesharing Via IVHS/FOCCS Technologies*, Aegis Transportation Information Systems, Honolulu, 1990.

42. Jeffrey A. Parker and Associates and the International Taxicab and Livery Association, *Mobility Management and Market-Oriented Local Transporation*, Washington: Urban Mass Transportation Administration, 1991.

43. Cameron, op cit., 41.

44. D. Pickrell, *The Causes of Rising Transit Operating Deficits*, Washington, D.C.: Urban Mass Transportation Administration, U.S. Department of Transportation, 1983.