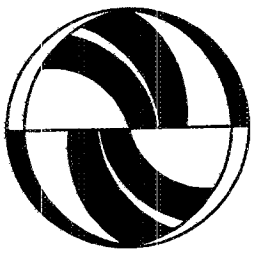

Surviving in the Suburbs: Transit's Ultimate Challenge

Robert Cervero

Working Paper
UCTC No 169

The University of California
Transportation Center

University of California
Berkeley, CA 94720

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Surviving in the Suburbs: Transit's Ultimate Challenge

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Abstract

Rapid decentralization of population and employment over the past several decades has chipped away at the American transit industry's market share. This paper examines the implications of decentralization on the ridership, operating performance, and fiscal health of the nation's largest transit operators. Based on the results of a national survey, a number of service strategies are explored that offer hope for reversing transit's decline, including: timed-transfers, paratransit services, reverse commute and specialized runs, employer-sponsored vanpools, and HOV/dedicated busway facilities. Land-use options, like traditional neighborhood designs and transit-based housing, are also examined. The paper ends with a discussion of various institutional, pricing, and organizational considerations when implementing service reforms and land-use initiatives. Century-old models involving joint public-private development of communities and transit facilities, it is argued, also deserve reconsideration.

SURVIVING IN THE SUBURBS: TRANSIT'S ULTIMATE CHALLENGE

The ongoing decentralization of American cities continues to plague the nation's transit industry Today transit finds itself competing against the automobile in an environment of low densities, dispersed trip patterns, abundant free parking, cheap fuel prices, and inhospitable walking environs And it is losing the competition. From a height of 26 billion passengers in 1946, U.S. transit patronage fell steadily for thirty years, reaching 8.8 billion in 1980. Through the 1980s, the total number of transit riders remained roughly the same, but those numbers represented a smaller share of commute trips, from 6 4 percent in 1980 to 5 3 percent in 1990 (American Public Transit Association 1991)

This paper explores the challenges of making transit work in the suburbs -- that is, making it viable, competitive, and sustaintable Performance statistics are used to compare suburban and urban transit operations in the U S Based on the results of a national survey of suburban transit operations, the paper then turns to various service strategies that appear to offer public transit the most promise in competing with the private automobile in suburbia. The paper ends with a discussion of institutional, pricing, and land-use challenges.

The challenge of making transit work in suburbia is nothing new In the keynote address at the 1940 meeting of the American Transit Association, Harland Bartholomew (1940, p 486) warned "Can we not pause long enough in this headlong decentralization process to see where we are going? The mass transportation industry is caught in a strong tide which is sweeping this and many other businesses toward disaster".

A century ago, transit and suburbanization were a packaged deal. Many suburbs of cities like Chicago, Boston, and Los Angeles were originally opened up by streetcar lines built by real estate speculators in the late 1800s, most of whom were interested in transit only as a means to reap windfall profits from land sales (Warner 1962; Schaeffer and Sclar 1980) Of course, a century ago, there was no competition to speak of. Might we not try to successfully link transit and land development like we did one hundred years ago?

Decentralization and Transit

Transit's falling fortunes in suburbia are an outcome of many factors. Traditional fixed-route services radially linked to downtowns are ill-suited for lateral, suburb-to-suburb journeys, the most rapidly growing travel market (Cervero 1986, Pisarski 1992) Also, most built environments in the suburbs are not conducive to transit riding A recent survey of several thousand office workers whose jobs were relocated from downtown San Francisco to the Bishop Ranch Office Park found that transit's modal split plummeted from 58 percent prior to the move to only 3 percent after the move (Cervero and Landis 1992)

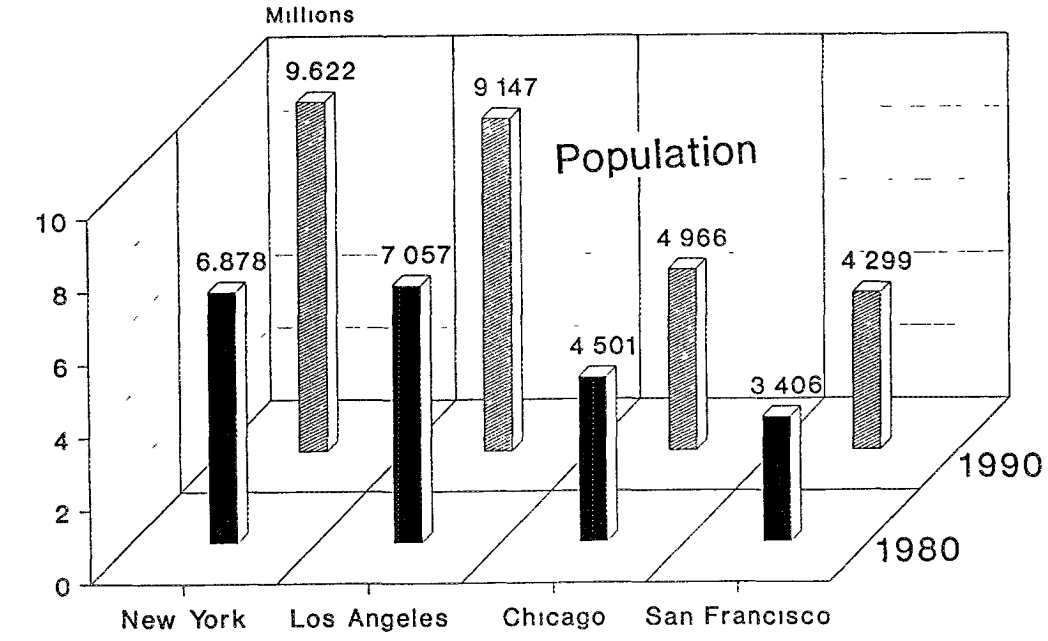
Demographics and institutions also work against transit in suburbia (Rosenbloom 1990). Suburban residents and workers tend to be more affluent and own more cars than their central-city counterparts Suburbs also produce high rates of off-peak and weekend travel, when bus headways tend to be longest. Service coordination is also sometimes hampered by a multitude of competing suburban jurisdictions. In the San Francisco Bay Area, for instance, some two dozen separate transit agencies operate bus services outside of central cities

Suburbanization and Transit Commuting

How has decentralization impacted transit? The following statistics were drawn to address this question for the nation's largest metropolises. Figure 1 shows that suburban population and employment grew rapidly in the four largest consolidated statistical areas (CSA) in the U.S.[1] Suburbanization of jobs was the dominant trend, increasing, on average, 50 percent for the four CSAs, compared to only 13 percent in their central cities [2]

The movement of jobs from the metropolitan core to the metropolitan periphery and beyond has been spurred by post-industrialization -- the restructuring of America's economy from a predominantly manufacturing base to a service and information processing economy. For example, by 1990, New York City, Philadelphia, and Boston each had more employees in white-collar service industries -- where executives, managers, professionals and clerical workers dominate -- than in the manufacturing, construction, retail, and wholesale industries combined (Kasarda 1993). Among the pull factors that have lured corporate America to the suburbs have been the availability of cheaper land and rents, easier access to labor (particularly married women seeking clerical positions), lower taxes, improved telecommunication links, and closer proximity to regional airports Push factors, like property taxes and deteriorating inner-city conditions, have also led to suburban job gains While many decentralizing jobs have involved back-office support functions, increasingly corporate headquarters and entire companies in fields like finance, retailing, and wholesaling are relocating to the suburbs (Stanback 1991) And of course, where jobs and people go, so does retailing. New York's suburban ring now has 48 fully enclosed regional malls, encompassing 49 million square feet of retail space (Hughes 1992).

Paralleling rapid suburban growth has been a diminishing role for transit. Transit commutes actually fell by around 50,000 trips per day in the Chicago region during the 1980s and increased only slightly in the other three large metropolitan areas (Figure 2). In all four metropolises, transit's modal share fell between 1980 and 1990, in the greater New York area by 10 percentage points (Figure 3) This trend was hardly limited to the biggest areas -- only 12 of the 75 largest U S. metropolitan areas registered an absolute increase in transit journeys to work during the 1980s (mostly from the sunbelt and western regions), and in only four of these (Houston-Galveston, Orlando, Dallas-Fort Worth, and San Diego) did transit's market share of work trips increase (Cervero 1993)



Suburbs = areas outside central cities

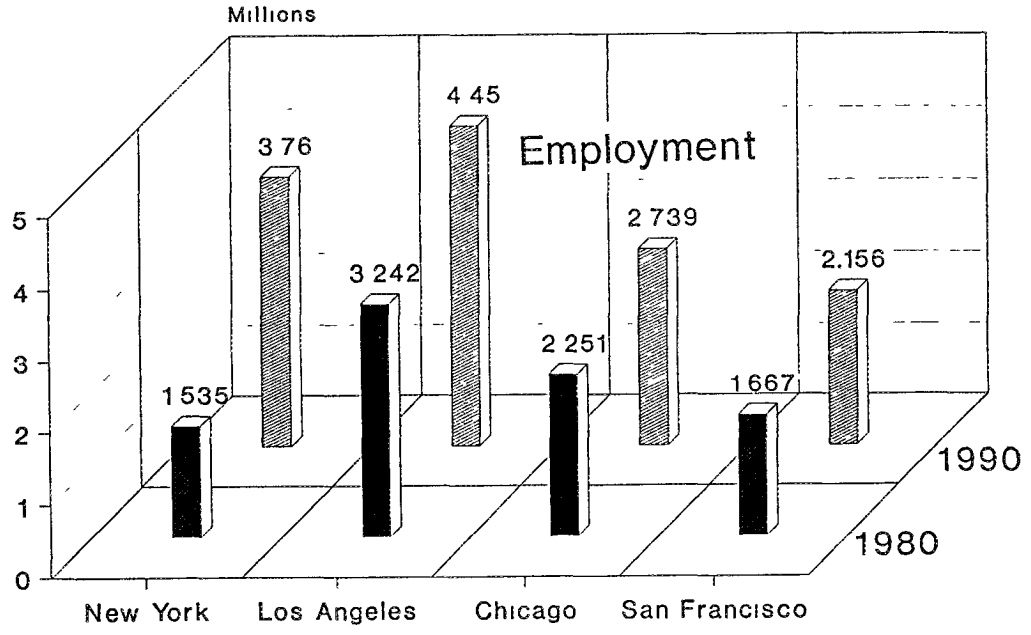


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Figure 1. 1980-90 Suburban Population and Employment Changes in Four Largest CMSAs. (Source: 1980 and 1990 U.S Censuses, Summary Tape Files 3A)

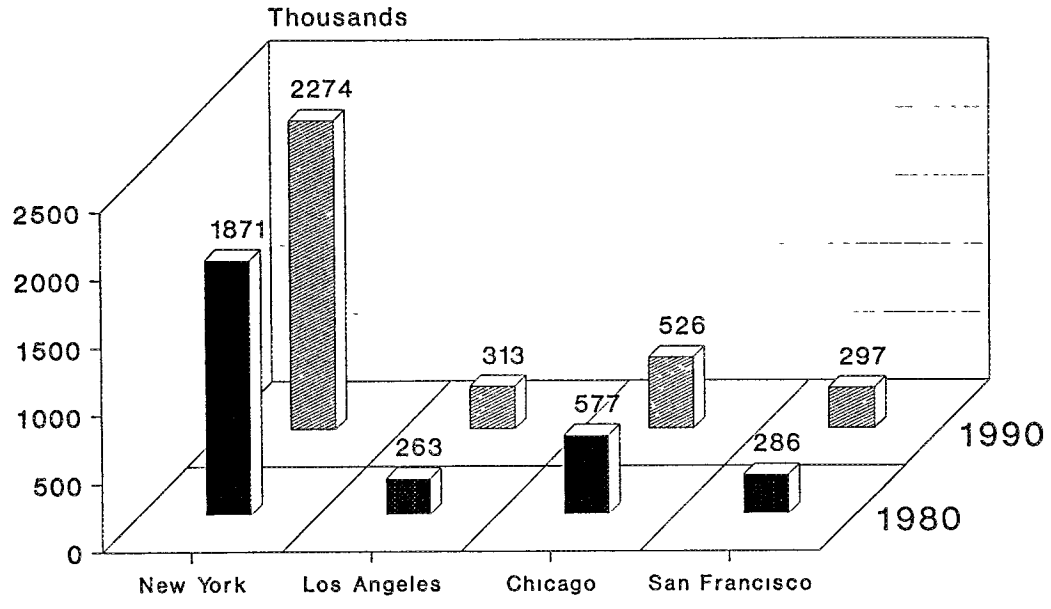


Figure 2. **1980-90 Changes in Daily Transit Commute Trips in Four Largest CSAs.** (Source 1980 and 1990 U S Censuses, Summary Tape File 3A)

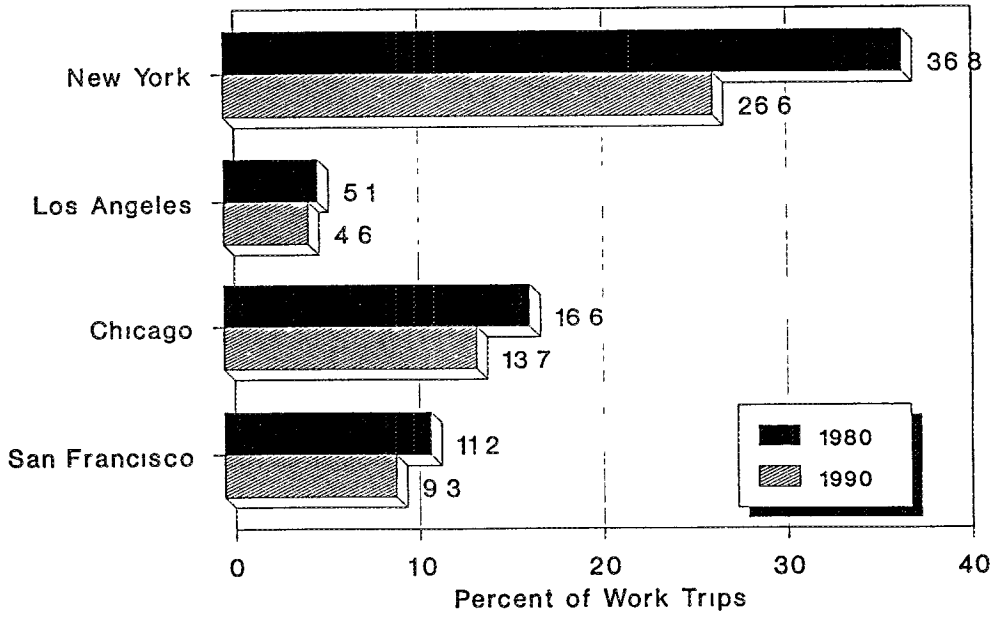


Figure 3. **1980-90 Changes in Transit Modal Splits for Work Trips in Four Largest CSAs.** (Source: 1980 and 1990 U S Censuses, Summary Tape Files 3A)

Trends Among Suburban Residents

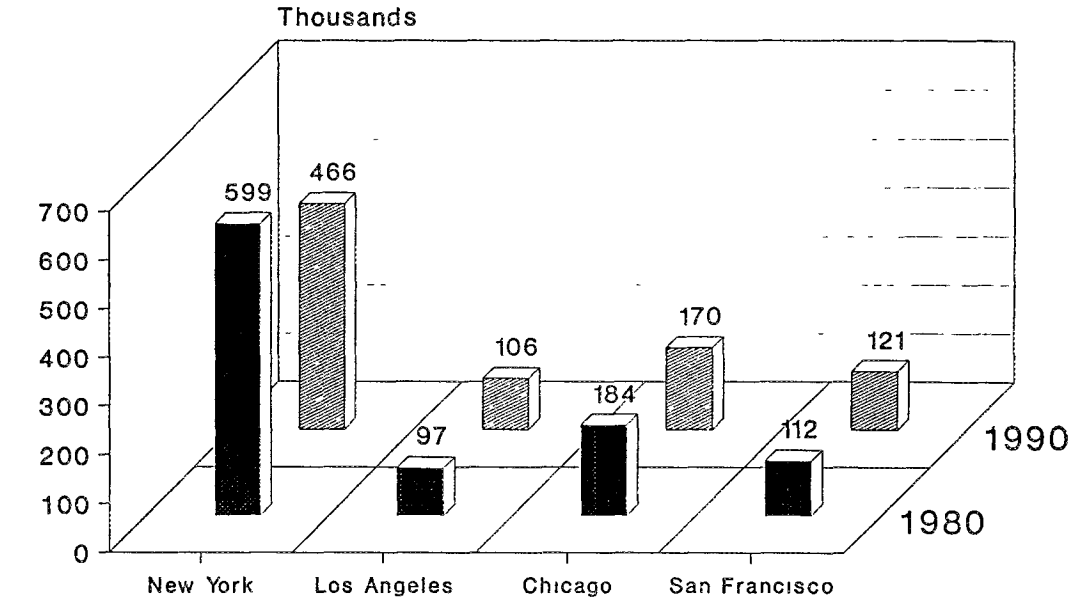
More alarming has been transit's falling fortunes among suburban residents Figure 4 shows that there were actually around 130,000 fewer daily transit work trips made by the suburban residents of the four largest metropolitan areas in 1990 than in 1980. This is despite the fact that 6.2 million residents were added to the suburbs of these four metropolises during the 1980s. The net result was an even sharper decline in transit's market share of suburbanites' commute trips than the metropolitan averages (Figure 5).

Trends in the New York metropolitan area were particularly pronounced. From 1980 to 1990, Manhattan added 54 million square feet of office space The suburban ring, including Long Island, northeast New Jersey, and Westchester County, added 173 million square feet (equal to the entire Chicago metropolitan office market) Thus, suburban counties captured two-thirds of the region's office growth during the 1980s. The impact on transit commuting was unequivocal In 1980, around one out of four suburbanites rode buses and trains to their jobs, many of which were in Manhattan, by 1990 fewer than one of ten suburbanites commuted by transit, many opting instead to drive their cars to suburban office parks and other outlying work destinations

Performance Comparisons

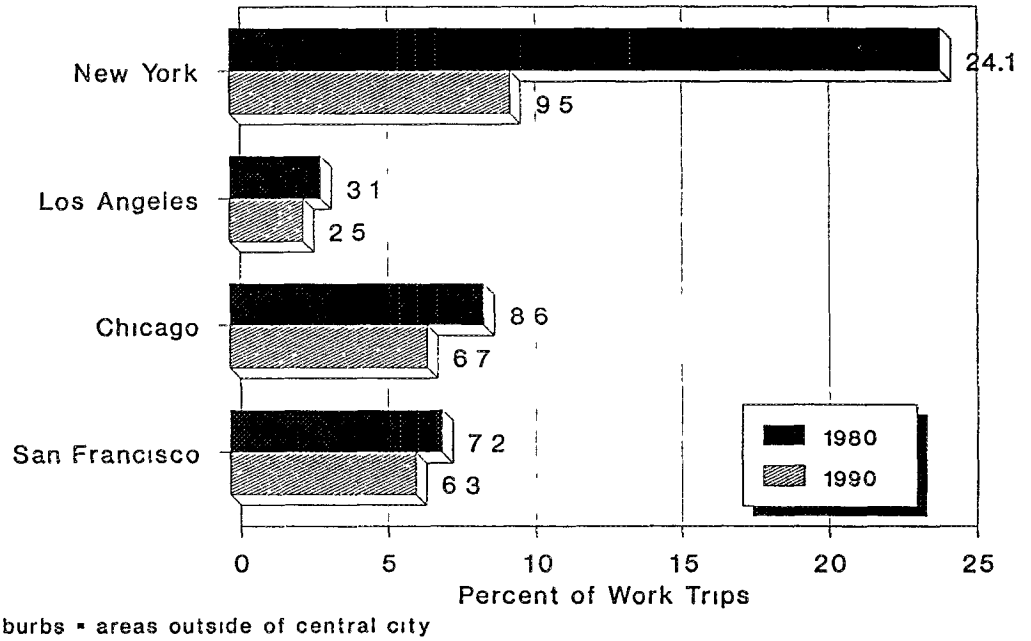
Comparing the performance of urban and suburban transit operations is fraught with difficulties, in part because operating statistics within metropolitan areas are not usually broken down to match the census definitions of the core cities and the suburbs A second-best approach is to compare operations for those metropolitan areas which have set up different transit properties to serve central city and suburban markets The best example of this is metropolitan Chicago, wherein the Regional Transportation Authority (RTA) has divided administrative and operating authority for transit in the region into two groups: CTA, in charge of rail and bus services in the city of Chicago[3], and the operators in charge of suburban commuter rail (Metra) and bus (Pace) services.

Figure 6 presents performance statistics for suburban operators as a share of regional totals for four large metropolitan areas for which suburban operators could be reasonably distinguished from urban operators [4] Statistics for metropolitan San Diego, for instance, were used in this analysis instead of the San Francisco-Oakland-San Jose Bay Area mainly because the San Diego region has two operators that operate almost exclusively in the suburbs (North San Diego County Transit and San Diego Regional Transportation Service) and two that operates mainly in the central city (San Diego Transit and San Diego Trolley) On the other hand, many of the Bay Area's large operators, like Alameda-Contra Costa County (AC) Transit and Santa Clara County Transit operate in both central cities (Oakland and San Jose) and suburban areas



Suburbs = areas outside central cities

Figure 4. 1980-90 Changes in Daily Transit Commute Trips by Suburban Residents, Large CSAs. (Source 1980 and 1990 U.S Censuses, Summary Tape File 3A)



Suburbs = areas outside of central city

Figure 5. 1980-90 Changes in Transit Share of Work Trips by Suburban Residents, Large CSAs. (Source: 1980 and 1990 U S. Census Summary Tape File 3A)

Figure 6 shows that relative to ridership and service output, suburban transit services in the four metropolitan areas shown were far more dependent on public operating assistance than their urban counterparts (except in the New York region where a large share of suburban operations are either private or contracted). This was mainly because of their low passenger volumes relative to costs (Table 1) (On a revenue mile basis, however, suburban services were cheaper than urban ones in three of the four metropolitan areas) In the Chicago region, the operating assistance per passenger for suburban services was more than four times that of urban services; on a revenue mile basis they were twice as high (Table 2). To the extent that transit's customer base shifts to suburbia, funding allocations should be responsive to these shifts Currently funding in all four metropolitan areas favor higher cost suburban services. If economic efficiency is to be rewarded, any redistribution of funding should be based on output (e.g , ridership) rather than input (e.g., service delivery) measures, balanced by some recognition of the harder task of cost-effectively serving suburban markets.

A second comparison was carried which examined urban versus suburban performance for a larger set of metropolitan areas, however using data only for the largest suburban versus urban bus operators in each metropolitan area Table 3 summarizes the findings drawn from 1991 Section 15 statistics for (urban followed by suburban) operations in the following areas. New York (NYCTA and MSBA), Los Angeles (SCRTD and OCTD), Chicago (CTA and Pace); Detroit (DDOT and SMART), San Francisco (Muni and SCCTA), and San Diego (SDTC and NCTD) [5] Again we see that, on average, urban operators outperformed their suburban counterparts in terms of farebox recovery rates and service effectiveness (in terms of passengers per mile by a factor of two) Of course the unit cost per mile or hour of urban services were substantially higher than suburban ones, however the costs per passenger were about 30 percent less Because of the longer average trip distances, suburban services cost less on a per passenger-mile basis. However since the vast majority of bus operations charge flat fares, fare revenues per passenger-mile tend to be proportionally less than those of urban operators, resulting in a higher deficit per passenger

Policy Responses: Adapt Transit Services

Transit's shrinking market shares in suburbia, its relatively poor fiscal and operating performance, and continuing restraints on government spending underscore the need to overhaul how suburban services are delivered. During the 1980s, the chief policy response to rising transit deficits was to competitively contract out services with an eye toward lowering input costs, particularly labor While this indeed slowed down the deficit growth, it did not substantially change the service features of most suburban operations. Transit is continuing to lose market share to the automobile. To effectively compete, radical surgery in how transit services are designed and delivered will be necessary.

At the simplest level, policy-makers can respond to the challenges posed by decentralization by: (1) adapting transit services, making them more flexible, demand-

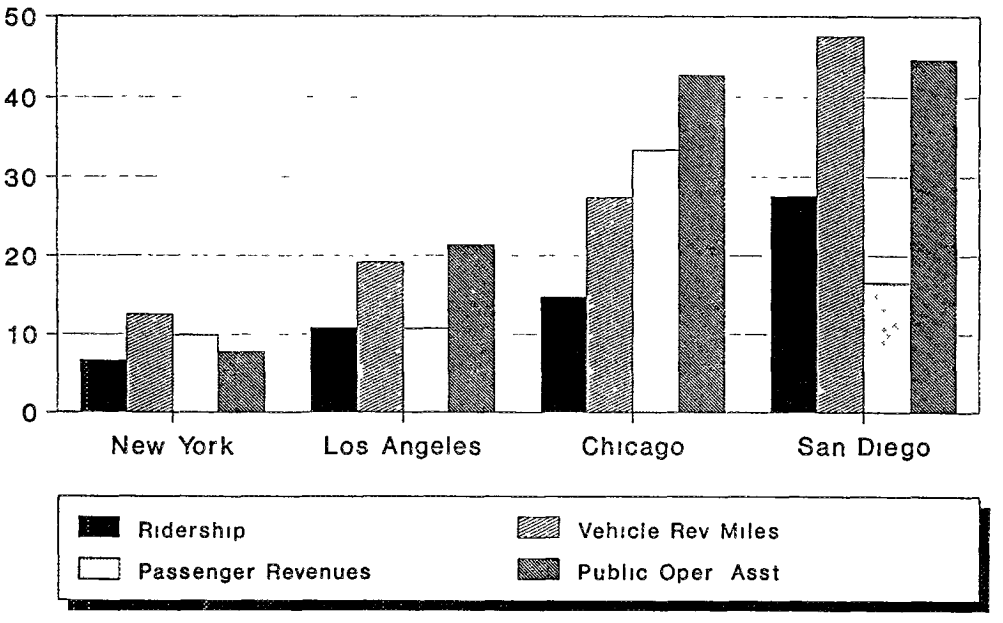


Figure 6. Suburban Transit as a Percent of Regional Totals for Four Large Metropolitan Areas, 1991. (Source APTA Section 15 Statistics, 1991)

Table 1. Operating Cost Comparisons Between Urban and Suburban Services for Four Large Metropolitan Areas, 1991

	Operating Cost per Passenger		Operating Cost per Revenue Mile	
	Urban Services	Suburban Services	Urban Services	Suburban Services
New York	$1 94	$2 43	$8 18	$5 08
Los Angeles	1 39	1 98	5 76	4 20
Chicago	1 26	3 49	5 53	7 06
San Diego	1 19	1 80	4.92	2 25

Source 1991 Section 15 data

Table 2. Operating Assistance Comparisons Between Urban and Suburban Services for Four Large Metropolitan Areas, 1990

	Operating Assistance per Passenger		Operating Assistance per Revenue Mile	
	Urban Services	Suburban Services	Urban Services	Suburban Services
New York	$1.04	$1 22	$4 40	$2.55
Los Angeles	84	1.89	3 49	4 02
Chicago	.65	2 77	2 85	5 60
San Diego	.58	1.22	2 38	1.52

Source: 1991 Section 15 data, Federal Transit Administration

Table 3. Summary Comparison of Performance Measures, Suburban Versus Urban Operators for Six Metropolitan Areas

	Farebox Recovery Ratio (%)	Operating Cost per Vehicle ($): Hour	Mile	Passengers per Vehicle Hour	Mile	Operating Cost per ($): Trip	Pass Mile
Average for Urban Operators	38 9	82 94	8.73	56 2	5 8	1 44	0 59
Average for Suburban Operators	30.4	72 81	5 24	38 8	2 9	2 06	0 42

Source 1991 Section 15 data, Federal Transit Administration.

responsive, and suitable to serving dispersed origins and destinations, (2) adapt land uses to make them more supportive of transit -- e g., greater densities and mixtures of uses. These, of course, are not mutually exclusive approaches, though pursuing the first policy complicates efforts to achieve the second.

Adapting transit to a landscape of spread out and auto-oriented development means, in many ways, making it more auto-like. Similar to telephone networks, for transit to compete in suburbia, it must cast a larger net to allow more patrons to get from anywhere to everywhere. Strategies that make transit more flexible, interconnected, and ubiquitous include initiating timed-transfer services, paratransit, reverse commute and special services, employer vanpools, transitways, and advanced technologies like automated vehicle locator systems. This section summarizes some of the recent developments with these service strategies, drawing upon a recent national survey of U S transit properties.[6]

Timed-Transfers and Transit Centers

Timed-transfers and transit centers allow buses to better serve inter-suburban trips and reduce the wait times associated with services with long headways The national survey found that 64 percent of U.S transit properties have some form of timed-transfer and transit center services Before-and-after comparisons of ridership one year after introducing timed-transfers showed systemwide ridership increases of 3 5 percent in Dayton OH (between 1990-91) and 8 5 percent in Spokane WA (during 1988) (even though ridership was falling for other transit properties in both states over the same time period). AC Transit serving the Oakland-East Bay area has begun phasing in timed-transfers with promising results to date AC Transit's ridership began falling in the mid-eighties as more and more jobs were locating in suburban areas away from its traditional routes. AC planners initiated a multi-destinational transit centers program in early 1989 Table 4 shows that ridership has risen noticeably in the two subdistricts where grid-like, interconnected services operated on a pulse schedule have been introduced. On the other hand, patronage in the rest of AC's service area where traditional radial services remain has continued to fall off.

Tidewater, Virginia (TRT) converted over to a timed-transfer network in 1991, designed by the same transit planners who first introduced timed-transfers in Edmonton in the 1970s Although TRT's ridership has fallen in recent years because of the local recession, patronage has increased at the four largest employment centers in Virginia Beach A recent survey, moreover, revealed that three-quarters of Tidewater Transit's customers prefer timed-transfers to previous services (TRT 1992).

Bellevue WA, the Seattle area's edge city and major suburban transit hub, has also had success with timed-transfers, winning over around 11 percent of core-area employees to transit commuting, a share unmatched in U.S suburbs not served by rail transit. Bellevue's caps on parking supply have also had a hand in transit's success.

Table 4. Ridership Trends Associated with the Phase-In by AC Transit of a Grid Network and Timed-Transfer System

Subdistrict	Average Weekday Ridership December 1989	December 1991	% Change
West Contra Costa County[1]	12,488	28,329	+32
Oakland-Berkeley-Alameda[2]	146,386	156,987	+7
Remainder of AC Transit Service Area	58,671	49,357	-16
SYSTEM TOTAL	226,545	234,673	+4

[1] Grid and Timed-Transfer System introduced in September 1990

[2] Grid and Timed-Transfer System introduced in April 1991

Source. AC Transit (1992)

Quite likely, suburban transit incentives need to be complemented by some form of auto restraint in most situations to generate positive results

Paratransit

Paratransit services, like shared-ride taxis and micro buses, are well suited to suburbia because of their flexible routing and curb-to-curb service features From the national survey, 22 percent of U.S transit properties were found to operate some form of demand-responsive service, though in most cases these were specialized and ADA-related. In the case of Broward County FL, five fixed-route services were converted to contracted route-deviation dial-a-ride services in 1991 -- one year latter, ridership increased from 15,000 to 27,000 per month, accompanied by a 47 percent decline in operating costs.

Private jitneys have been part of greater Miami's transportation scene for many years, serving a number of inner-city neighborhoods unserved by public transportation. Miami's jitneys carry nearly 50,000 riders per weekday, or around one-quarter of Miami Metrobus's ridership (Urban Mobility Corporation 1992). Jitneys have also been mobilized to provide cross-county services in the wake of Hurricane Andrew which left many south Florida residents without vehicles and homes, and displaced many businesses to temporary sites in northern Dade County.

One promising marriage is paratransit and AVL (automated vehicle locator) technologies Satellite vehicle tracking systems enable vehicles equipped with sensors to be located and promptly dispatched to customers so as to minimize waits, detours, and deadheading In Germany, AVL-aided paratransit services thrive in many suburban areas, providing real-time information for connecting shared-ride taxis and mini-buses with customers waiting at rail stations and shopping centers (Benke and Woodworth 1991).

The biggest barriers to successful paratransit in the suburbs are restrictive regulations, subsidized bus fares, and the prevalence of free parking Attempts to operate jitneys in Los Angeles as well as suburban-targetted on-call shuttle buses (like airport shuttles) in the 1980s were scrapped because the private operators simply could not compete with cheaper public buses and win over commuters who enjoyed free parking (Teal 1986; Cervero 1992A) Arizona deregulated its urban transit sector in the early 1980s and, because of subsidized public bus services and free parking, no significant private shared-ride paratransit services have emerged to date

Reverse Commutes and Specialized Runs

Special reverse commute and rail station feeder runs were incorporated by around 24 percent of the surveyed U S transit properties Most reverse commute services introduced in the 1970s and 1980s as "poverty abatement transportation programs" folded over time due to high attrition. A reverse-commute program initiated in the mid-1980s in greater Washington, D.C that connected inner-city residents to jobs in Fairfax County found that only 18 percent of the 255 original participants who got jobs still had their jobs two years latter (Rosenbloom 1992) In general, many of these specialized programs overestimated the extent of suburban vacancies matched to inner-city resident skills, the willingness of suburban employers to hire and train inner-city residents, and the willingness of inner-city residents to endure long commutes for low paying, often dead-end service sector jobs

The success of reverse commute services should not be gauged in transit ridership terms, however A study of another program in the Washington, D C. area found that many of the original passengers either had earned enough money to buy a car to drive to work or had met co-workers and formed carpools (Lemov 1993) Obviously, the ultimate success of reverse commute services lies in helping urban residents find jobs with some growth potential. Surveys by Pace of two reverse commute

runs, Routes 747 and 626, revealed that the services influenced the decision to take and retain the jobs of 60 to 66 percent of surveyed passengers (Paquet et al 1991). Moreover, surveys found that around 30 percent of Pace's reverse commuters formerly drove alone to work

Employer Vanpool and Subscription Services

Employer-supported vanpools and subscription services are suited for highly dispersed suburban markets, such as office parks in the exurbs Particularly where fixed route schedules cannot be justified, vans can serve the commute needs of small clusters of workers. They are most economical when employees operate vehicles Pace's subscription van services, wherein employers and Pace share van purchase and operating expenses and rely on employee drivers, enjoy an 83 percent cost recovery rate (Pace 1992). Over half of Pace's 75 vans serve the new Sears headquarters in Hoffman Estates The program has been highly successful, with around 30 percent of Sear's 5,000 suburban workers currently commuting by some form of mass transit (Gresiakowski 1993). When Sear's headquarters were in downtown Chicago, 92 percent of the workforce commuted by mass transit, so part of this success is no doubt attributable to workers' ingrained habits of patronizing transit Pace capitalized on the situation by designing an ambitious market development program that approached all employees about their individual commuting needs and delivered a rich mix of transit options (subscription bus runs, fixed route services, and carpools in addition to employer sponsored vanpools). In Sear's case and others, guaranteed ride home programs and on-site retail and other mixed-use activities have encouraged workers to join vanpools

HOV Lanes and Dedicated Busways

Dedicated busways and HOV facilities improve suburban services because, unlike rail systems, vehicles can leave guideways and filter into low-density neighborhoods, reducing the need for the dreaded transfer Around 5 percent of the surveyed U S properties have some form of HOV lanes for suburb-to-suburb runs in addition to the more traditional radial services Ottawa's 30-kilometer busway captures as many as one-third of all trips to several large shopping plazas and work centers outside of the core (Cervero 1986). Houston transitway, slated to extend to 95 miles by 1995, is already the world's largest, a seemingly perfect technology for a region that is spread out but features two dozen or more large-scale activity centers. Despite strong economic growth over the past few years, Houston's average freeway speeds and transit patronage have increased faster, and arterial congestion levels have fallen more, than any large U S. city over the past five years (Hanks and Lomax 1991; Cervero 1993).

Motivations and Reactions to Suburban Service Reforms

The national survey of 88 U S. transit properties also elicited information on why various suburban-targetted service reforms have been introduced and the reactions of

different stakeholders to these changes. From the survey, transit managers indicated that most suburban service reforms were introduced in direct response to complaints by suburban customers. The second most cited reason for initiating service reforms was to improve cost-effectiveness in response to budget pressures. Other reasons given were to stem declining ridership, improve service performance (e.g., better schedule adherence and reduced deadheading), and political pressures for fairshare allocation of services within a district.

The survey also revealed that passengers, transit managers, and transit board members were overwhelming supportive of the service changes introduced (Figure 7). Only half of transit operators and union officials, however, supported the changes and 15 percent of those surveyed had negative opinions of the changes These negative reactions can be partly attributed to the fact that many suburban service reforms have involved some private sector contracting and takeover of services.

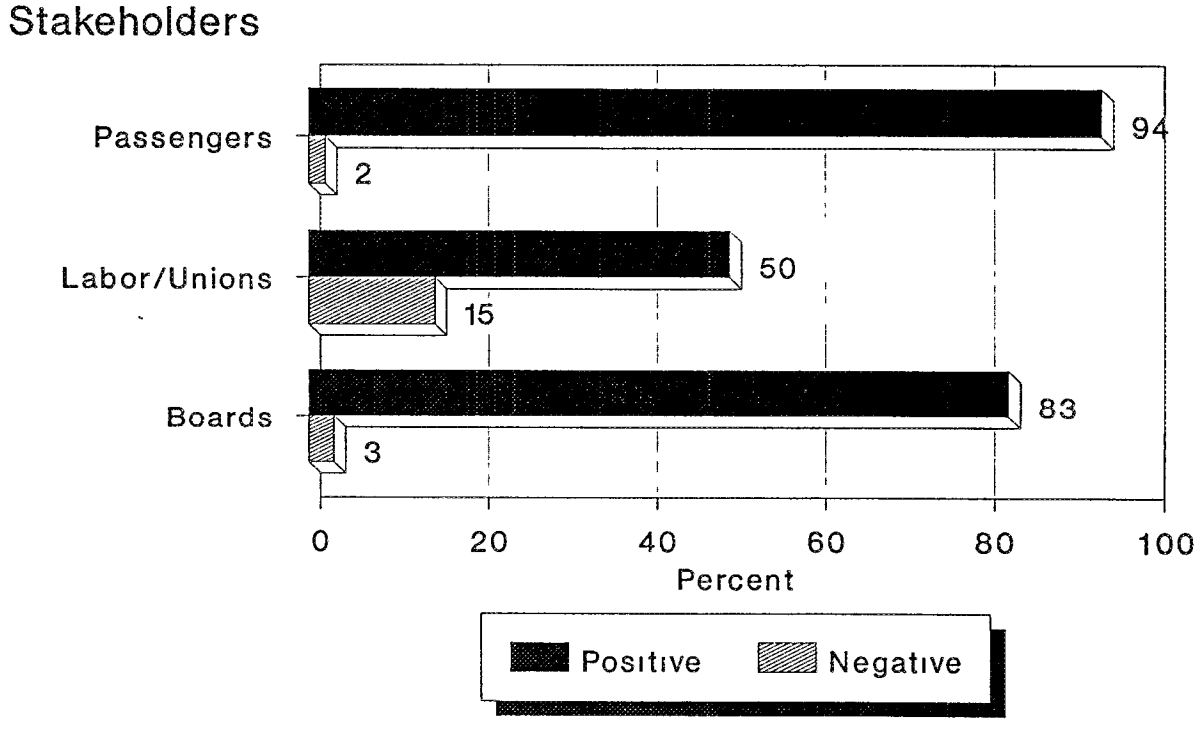


Figure 7. Reactions to Suburban Transit Service Reforms

Land Use Initiatives

A criticism of suburban-targetted strategies is that they reinforce the low-density, auto-reliant development patterns that they attempt to serve. Some observers argue that regions should be restructured so that more people will ride transit Transit works best when it connects relatively dense nodes along radial axes (Smith 1984). Having mixtures of apartments/condos, office towers, and other activities is also needed for balanced, two-way flows. Greater Stockholm and Toronto have such built environments, and operate world class rail systems that handle upwards of two-thirds of all suburban work trip origins and destinations (City of Stockholm 1989; Pill 1983)

Traditional Neighborhoods

Transit-oriented and neo-traditional developments have gained popularity in recent years as design motifs that reduce auto-dependency and create attractive environments for walking and using transit Neotraditionalists like Andres Duany and Peter Calthorpe borrow many of the successful elements of traditional turn-of-the-century transit villages: commercial cores within walking distance of a majority of residents, well-connected (typically grid) steet patterns; varying densities of housing, and mixed land uses. The jury is still out on whether designing such places in the 1990s will lure many people out of their cars A Montgomery County MD study found that workers from "transit and pedestrian friendly neighborhoods" use transit 8 percent to 45 percent more often than workers from neighborhoods conducive to automobile use (e.g., with curvilinear roads and no retail shops) All neighborhoods in the study were about the same distance away from transit facilities (MNCPPC 1992) Another recent study of "streetcar" neighborhoods (ones which at one time were served by a streetcar and have inherited higher densities, gridded streets, and mixed uses) and relatively closeby "auto" (postwar typical suburban) neighborhoods reveals some degree of elasticity between urban design and travel behavior (Cervero, et al 1993B) A comparison of Bay Area neighborhoods matched in terms of comparable average household incomes and levels of bus service intensities shows that the denser, mixed use street car neighborhoods average 5 to 8 percent more work trips by transit and 2 to 14 percent more work trips by walking or cycling.

In recognition of the need to build communities that are more easily served by transit, around 30 U S transit properties have prepared site and urban design guidelines over the past decade These guidelines are meant to encourage developers to incorporate public transportation considerations into their project designs They also aim to help local planners in their reviews of development projects Although none of the design guidelines have yet to be codified into local ordinances, around 10 of the transit properties with guidelines have prepared checklists that local planners use in evaluating the degree to which a proposed project encourages transit usage and pedestrian access

Transit-Based Housing

In some suburban areas with rail services, transit-based housing is being actively promoted In the Bay Area, BART officials have entered into joint development agreements with private homebuilders at four stations that will convert portions of park-and-ride lots to housing projects, using lease revenues to help finance replacement parking Besides boosting ridership, planners hope that the placement of new housing near rail stations will allow more riders to walk or bike to the station, yielding important air quality benefits. Short auto trips currently account for around 60 percent of access trips to suburban BART stations; these trips emit high levels of pollutants because of cold start impacts.

Recent research shows that 32 percent of residents living within 1,500 feet of a suburban BART station patronize transit to work, compared to only around 5 percent of the region's suburbanites who live more than 1,500 feet away (Cervero et al., 1993A) These market shares are less than those found in studies of ridership by proximity in suburban Toronto (Stringham 1982) and Washington, D.C (JHK & Associates 1989). Trip destination and parking policies at the workplace were the major determinants of whether those living near stations ride BART. Nearly 90 percent of suburban residents commuted by BART if they worked in downtown San Francisco and paid for parking If they worked in downtown Oakland, Berkeley, or Walnut Creek and paid for parking, around 65 percent commuted by BART. For most other destinations (where employees typically park for free), BART's share was between 3 and 12 percent As jobs continue to suburbanize, the ability of transit-based housing to serve work trips will be jeapardized. Thus, successful transit-based housing programs will need to be matched by initiatives that target more employment growth around suburban rail stations as well as policies that eliminate subsidies to commute alone, like free parking.

The Land-Use Dilemma

Other land-use initiatives that have been suggested as a means to reduce automobile dependency, and obstensibly increase the regional role of mass transit, include jobs-housing balancing, urban growth limits, and urban reinvestment All of these initiatives are politically unpopular, however, because they interfere with market forces and in the minds of most Americans involve excessive government regulation (Downs 1992) In general, land-use initiatives, as a response to transportation problems, suffer from the lack of a common vision on the ideal metropolis (i e., how a regional should be planned) and NIMBY resistance. They also receive lackluster political support because they typically yield mobility dividends only over the long run, well beyond existing politicians' terms of office

Institutional, Fiscal, and Pricing Considerations

Suburbanization also calls for creative institutional responses New regional alliances should be considered. A successful model in Germany has been transit federations. In greater Munich and Hamburg, regional federations have been formed to reverse the fragmentation of transit enterprises. These federations set fares, decide on route changes, and coordinate timetables to improve integration and avoid duplication. The concept is basic: a single organization should be managing services for the entire commuteshed of a region. Day-to-day operations of the urban, suburban, and inter-city carriers are run by individual transit companies. Managers of these companies sit on the boards of the transit federations. The federations collect all revenues and redistribute them so that each operation averages the same cost recovery rate, currently around 65 percent. Fares are totally integrated -- a ticket purchased for U-Bahn (urban rail) services lets you transfer for free to an S-Bahn (suburban rail), bus, or tram.

From a fare policy standpoint, rapid suburbanization means that costs will likely vary increasingly more among individual trips depending on travel distance and perhaps even time-of-day. Areas experiencing rapid suburban growth should address whether zonal, peak-surcharge, or other differentiated fares are needed. Of the seven U S. transit properties that in 1989 charged a flat fare within the region's main city and a zonal charge for crossing into the suburbs, the average cost recovery rate was 46 percent (Cervero 1992B). This compared to a 25 percent recovery rate for properties serving comparable metropolitan areas that had flat fares. For the three agencies that had peak/off-peak fare differentials, on average, 39 percent of operating costs were covered by fare receipts Clearly, more differentiated pricing is correlated with higher farebox recovery rates.

Rapid suburbanization will also invariably create political tensions between city and suburban agencies competing for the same shrinking piece of public operating assistance "pie". This battle is being played out in nearly all large metropolitan areas, including Chicago, Los Angeles, and San Francisco-Oakland, where multiple transit agencies vie for dedicated sales tax receipts that are returned to a regional transportation commission Two principles should be considered when addressing fiscal allocation policies First, agencies should be rewarded with public assistance by doing something that benefits the region -- such as achieving higher ridership and controlling cost Such criteria is essential to stimulating innovation. Second, funding policies should be more people than place oriented Targetting public monies to places, whether in the form of transit subsidies or enterprise zones, will yield few societal benefits if the people in those places do not gain. Perhaps the most promising people-oriented fiscal policy in the transit arena would be to convert most subsidies from provider-side to user-side. Placing funds in the hands of the intended beneficiaries of most subsidies -- those who are poor and disadvantaged -- would, along with regulatory reforms, encourage sorely needed transit service innovations among competing transit operators Everyone, inner-city and suburban residents alike, would benefit from the increased diversity in travel options

Back to the Future

Fixed-route, fixed-schedule transit services will have a difficult time competing and surviving in the suburbs. Recent census statistics reveal that transit's market shares are rapidly eroding nearly everywhere. Major policy reforms are needed. We are well advised to borrow from yesteryear as we look to the future Early streetcar suburbs were successful in part because private entrepreneurs were allowed to link transit investments and land development, producing moderately dense, mixed-use land patterns Well over half of suburban rail services in greater Tokyo are privately built, typically by large consortiums that link transit investments to new town development. In California, private tollway franchises are building four different tollways throughout the state, in hopes of reaping a nice profit, perhaps less from toll revenues than from selling land at key interchanges that the franchisers own Why are we allowing private developers to link only highway and land development in the suburbs? Why not transit as well? Private jitneys and other forms of paratransit also thrived throughout the U.S. in the early part of this century but were later regulated out of existence at the urging of taxi operators and bus companies. Why not reintroduce these services in the suburbs? Given the freedom to operate, door-to-door van and jitney services, similar to regional airport shuttles, would likely emerge in many suburban settings, tapping new market niches like suburban mall and office complexes, regional sports stadia, and recreational theme parks

The model of publicly led transit and privately led land development has been tried over the past 50 years with generally disappointing results Another option deserves serious consideration allowing developers to link transit and real estate projects and entrepreneurs to carve out new transit market niches in suburbia -- hopefully creating more transit-oriented communities in the process

While the private sector is probably best suited to responding to many of the needs of suburban travelers, there will always be a role for the public sectors as well -- assembling rights-of-ways for dedicated busways, providing start-up funds for smart transit technologies, and zoning for moderate density housing around major transit stops In combination, profit-seeking entrepreneurs and community-minded governments are in a position to create the kinds of built environments and service innovations that within a decade or two could allow transit to compete successfully with the automobile in suburbia

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Note

1. For each CSA, the suburbs are defined as areas outside of the central city, using U.S. Bureau of Census definitions on what constitutes a central city.

2. For the four largest CSAs combined, the 1980-90 population growth rates for the suburbs was 28 3 percent versus only 6 6 percent for the central cities. In terms of employment, the suburbs grew by 50.8 percent during the 1980s compared to 13.0 percent for the central cities Source: U.S. Census Bureau STF 3A.

3. CTA also operates some bus services in suburban Cook County, however these services constitute less than two percent of CTA's total annual bus hours of operations

4. Statistics are for both bus and rail transit operations in the New York, Chicago, and San Diego regions, based on 1991 Section 15 data. Data are exclusive of non-surface transit (e.g., ferries) and specialized services like dial-a-ride. For each of the following metropolitan areas, the divisions between urban and suburban operators were made as follows. (1) New York CSA Urban New York Metropolitan Transit Authority (NYCTA, Metro-North, Long Island Rail Road, SIRTOA), PATH (rail only), Queens Surface Corporation, New Jersey Transit (non-contract and urban division services), and Command Bus Company, Suburb· NYMTA Metropolitan Suburban Bus Authority, New Jersey Transit (all contract services and Suburban Transit Corporation), Weschester County Bus, Jamaica Buses, Hudson Bus Transportation, Green Bus Lines, Liberty Lines Express, New York Bus Tours, Putnam County Transit, Rockland Coaches, Suffolk Transit, Triboro Coach, and municipal services for Rockland, Clarkstown, Long Beach, and Spring Valley (2) Los Angeles CSA Urban· Southern California Rapid Transit District, Los Angeles County (LACTC) Motor Bus, and municipal services for Santa Monica, Montebello, Long Beach, Commerce, Gardena, Torrance, and Culver City; Suburban. Orange County Transit District, Omnitrans, Riverside Transit Agency, and municipal services for Laguna Beach, Arcadia, Corona, and Riverside. (3) Chicago CSA. Urban Chicago Transit Authority (including contract services, but excluding suburban Cook County bus runs); Suburban Metra (including contract services), Pace (including contract services), and municipal services for Niles and Willmette (4) San Diego MSA Urban San Diego Transit Corporation and San Diego Trolley; Suburban: North San Diego County Transit and San Diego Regional Transportation Services.

5. NYCTA = New York City Transit Authority; MSBA = Metropolitan Suburban Bus Authority; SCRTD = Southern California Rapid Transit District; OCTD = Orange County Transit District; CTA = Chicago Transit Authority, Pace = Pace Suburban Bus Division, DDOT = Detroit Department of Transportation; SMART = Suburban Michigan Area Regional Transit, Muni = San Francisco Municipal Railway and Transit; SCCTA = Santa Clara County Transit Authority, SDTC = San Diego Transit Corporation, NCTD = North San Diego County Transit Development

6. The self-administered survey was sent to all U S. transit properties with 50 or more vehicles during February and March, 1993. In all, 88 of the 192 surveys were returned, providing information on types of service strategies, impacts on ridership and operations, and attitudes toward service changes.

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