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Is Jobs-Housing Balance a Transportation Issue?

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Is Jobs-Housing Balance a Transportation Issue?

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Jobs-housing balance has become a major planning and public policy issue. Despite its popularity and apparent acceptance among public policy makers as a solution for traffic congestion and air pollution problems, there is little consensus on what jobs-housing balance means and little evidence that a jobs-housing balance policy would have any significant effect on these problems. The jobs-housing balance policy is premised on the idea that job and housing location choices are closely linked, and that policy intervention is required to achieve a balance of housing and jobs. Existing evidence suggests that the relationship between where people choose to live and work is complex, and may have little to do with job access considerations. Further, patterns of urban growth and travel indicate that balancing occurs as part of the urban development process. It is concluded that jobs-housing balance is not an effective solution for traffic congestion and air pollution concerns. Rather, these problems are better addressed in a more direct way.

Jobs-housing balance has become a major planning and public policy issue. The concept has attracted particular attention in Southern California, where clean air goals have become the central focus of both long and short range planning efforts. Despite its popularity and apparent acceptance among public policy makers, however, there is little consensus on what jobs-housing balance means and little evidence that a jobs-housing balance policy would have any significant impact on traffic congestion or air pollution.

This paper presents an assessment of jobs-housing balance. The concept, its historical roots, and its expected contribution to traffic congestion and air pollution problems are discussed. Then, the reasons why jobs-housing balance policy has attracted much attention among planners and policy makers are explained. Conceptual issues related to jobs-housing balance policy are addressed and existing evidence on patterns of urban growth and travel are evaluated. This evidence suggests that balancing occurs as part of the urban development process, and that commuting patterns are not closely related to jobs-housing balance. Finally, the overall viability of jobs-housing policy is assessed, and recommendations for addressing traffic congestion and air pollution concerns in a more direct way are provided.

WHAT IS JOBS-HOUSING BALANCE?

Jobs-housing balance is a new label for a planning concept that has a long history: the balanced or self-contained com-

munity (1-3). A balanced community is one in which residents can both live and work. Implicit in the concept is a broad mix of housing types to accommodate households (workers) of a range of income categories. Jobs-housing balance applies this concept to contemporary metropolitan areas. Jobs-housing balance refers to the distribution of employment relative to the distribution of workers within a given geographic area. A community is considered balanced when these distributions are approximately equal, and when available housing choices complement the earning potential of available jobs.

The central concern of jobs-housing balance as it relates to transportation policy is the journey to work. The concept implicitly assumes that workers choose to work as close to home as possible (or that workers choose homes as close to their jobs as possible). If a given area has a much greater concentration of employment than resident workers, workers must be drawn from other areas, leading to longer commutes. Similarly, if resident workers greatly outnumber job opportunities, they must seek jobs in other more distant areas. Even when the number of jobs and workers is approximately equal, long commutes may result if the mix of jobs and housing are not compatible. Thus, all other things equal, the more balanced the community, the shorter the commute.

There are many problems involved in establishing a workable definition of jobs-housing balance. Because of differences in household size, workforce participation rate, etc., it cannot be defined simply as a ratio of jobs to dwelling units. Dwelling units are also not identical, so the mix of housing available within a given area must somehow be compared to the mix of jobs. True balance would involve perfectly complementary housing and job characteristics. In addition, some acceptable range of balance must be identified. For example, is ± 10 percent of the regional average appropriate or achievable? How is such choice to be made?

An equally difficult problem is that of geographic scale. What is the appropriate spatial unit for measuring jobs-housing balance? Regions are balanced by definition, as they are identified as economically self-contained units, but regions are large spatial entities. The concept implies a commuting range: the mix of housing within a reasonable commute distance from a given employment site. However, defining a reasonable commute range is clearly arbitrarily (e.g., is 20 min more reasonable than 30 min?). Furthermore, the dispersed distribution of employment characteristic of U.S. metropolitan areas implies overlapping commute sheds, and jobs-housing balance assessment must somehow incorporate these multiple-employment locations.

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WHY JOBS-HOUSING BALANCE HAS BECOME A MAJOR POLICY ISSUE

Jobs-housing balance policy is proposed as a solution for traffic congestion problems. Congestion is increasing rapidly in high-growth areas as a result of a stable supply of transportation facilities and constantly increasing travel demand. Suburban areas that have become the focus of rapid employment growth such as the I-680 corridor in Contra Costa County, California, or Tyson's Corner, Virginia, have experienced severe increases in traffic congestion (4). Central city areas undergoing extensive redevelopment, such as the Wilshire corridor in Los Angeles, are also becoming heavily congested. Jobs-housing balance provides an obvious and apparently simple solution for traffic congestion: move workers and houses closer together, thereby reducing the amount of commuting and its consequent peak-period congestion.

Jobs-housing balance is not complementary to the traditional transportation policy goal of improving mobility. It could be argued in fact that transportation improvements promote jobs-housing imbalances by reducing the cost of travel and thus creating incentives for more travel. Improving mobility is based on accessibility considerations, that is, on the perceived value of providing access to spatially dispersed activity opportunities. Jobs-housing balance, on the other hand, seeks to promote less travel (shorter trips) by developing appropriate mixes of land use.

The link between jobs-housing balance problems and traffic congestion is made in various ways. Rapid employment growth in suburban areas has led to concerns that the future job base would outstrip the local workforce, leading to additional congestion problems. For example, plans for the Hacienda Business Park area in Pleasanton, California, called for about 60,000 jobs at build-out. If all jobs were held by local residents, the workforce would require about 44,000 dwelling units, compared to the existing general plan build-out of 21,400 units (5). Consequently, substantial in-commuting of workers from other communities is anticipated. This in-commuting overlaid on a complex pattern of cross-commuting is expected to generate additional congestion.

Jobs-housing balance policy also reflects more general concerns about developing and maintaining communities with an adequate variety of employment and a housing mix affordable to a wide range of income levels. Exclusionary zoning practices, growth limitations, rising development costs, and rapid economic growth have resulted in a shrinking supply of affordable housing in many metropolitan areas (6-8). The lack of affordable housing is perceived to be related to traffic problems: in a search for lower-cost housing, workers move to outlying areas far from their jobs, thus incurring long commutes and contributing to traffic congestion (9). If affordable housing were available near their jobs, it is reasoned, lower-income workers would not have to commute so far, and traffic congestion would correspondingly decrease.

In addition, jobs-housing balance policy complements growing public pressure to manage or limit growth. Over the past decade, rapid population growth in many areas has created demand for all manner of public facilities, yet has not generated the additional tax revenue to fulfill these demands. Among the most visible of these facility problems is traffic congestion, and it is often the focus of growth management

plans or growth limits. Jobs-housing balance provides public agencies with a politically acceptable means of responding to these concerns by placing controls on new development.

Finally, the potential promise of jobs-housing balance may be almost irresistible. In Southern California, for example, the adopted long-range regional plan includes a growth management plan that incorporates a jobs-housing balance element (10). The growth management plan promotes jobs-housing balance by redirecting just 9 percent of new jobs and 5 percent of new housing expected between 1984 and 2010 to job-poor and housing-poor areas, respectively. The Southern California Association of Governments (SCAG) land use and travel forecast models estimate that these shifts will result in a 35 percent reduction in vehicle-miles of travel, and commensurate reductions in vehicle emissions. (These estimates have been subject to much criticism and debate among local policy makers and interest groups.) Given such optimistic projections, it is certainly not surprising that jobs-housing balance policy has been met with great enthusiasm by many Southern California planners.

IS JOBS-HOUSING BALANCE A VIABLE POLICY?

Viability of jobs-housing balance policy rests on two critical assumptions: first, that policy intervention is required to achieve jobs-housing balance, and second, that there is a significant causal relationship between jobs-housing balance and travel behavior. This section discusses related conceptual issues and existing empirical evidence.

Policy Intervention to Achieve Jobs-Housing Balance

The history of urban and regional development suggests that jobs-housing balance is part of the development process. As cities grow and decentralize, typically a first wave of residential development is followed by a second wave of commercial and industrial development. This process has been extensively documented both by geographers and by urban historians (11-13). This process also makes economic sense. Absent significant institutional or political barriers, jobs and workers would be expected to be located in close proximity to one another. Because travel constitutes part of the costs of providing goods and services, efficient producers would seek to minimize this cost. Excessive travel costs would generate higher production costs that would in turn reduce a region's competitive advantage.

Barriers to Jobs-Housing Balance

The argument for policy intervention therefore hinges on whether institutional or political barriers to jobs-housing balance exist. There is certainly reason to suspect such barriers do exist. First, current fiscal problems of local governments could result in policies that would inhibit jobs-housing balance. Local governments have responded to the loss of traditional revenue sources in part by favoring revenue-enhancing development (retail and commercial, as well as other nonresidential uses) and by avoiding development that

could add to municipal costs (for example, lower-cost housing) (14). Moreover, new development is expected to pay its own way (15). Thus, incentives facing both public and private sectors promote the most profitable types of development. Consequently, redevelopment projects typically replace deteriorated housing with offices and luxury apartments in central cities, whereas shopping centers and research parks have become favored accompaniments to large single-family housing tracts in the suburbs. Such policies may inhibit provision of housing in jobs-rich areas or job formation in housing-rich areas.

Another potential barrier to jobs-housing is the exclusionary zoning practices characteristic of many suburban municipalities (9). Local jurisdictions have used zoning powers not only to protect fiscal resources but also to protect existing residents from undesired land uses (16). Low-income housing is a frequent target of such policies, as are uses perceived to have any negative environmental impact. Such practices, particularly if used extensively, can restrict the supply and location of low-cost housing opportunities.

Evidence of Jobs-Housing Balance

Given that it is certainly possible for mismatches between jobs and housing to exist, it is appropriate to determine whether such mismatches have in fact been observed, and whether the balancing process described earlier can be documented. Unfortunately, data limitations restrict the extent to which these issues can be explored. Some partial evidence is described here.

The sequential process of population and employment growth is presented in Table 1. It gives population and employment data from 1940 to 1985 for Orange County, California, one of the five counties that make up the Los Angeles metropolitan area. Orange County grew rapidly as a residential suburb of Los Angeles workers, beginning in the 1950s. Jobs began to follow the population in the 1960s and 1970s, and by 1980 the county was achieving balance. This process is indicated by the change in the employment-population ratio from a low of 0.19 in 1955 to 0.46 in 1985.

Another way of illustrating this process is by comparing the number of resident workers with the number of jobs within a given area. Table 2 presents this comparison for two different years, 1974 and 1988, for the five counties within the Los Angeles metropolitan area. These comparisons are only approximate, as the job data are generated from wage data (and thus exclude self-employed workers), whereas the worker data is based on updates of U.S. census data. Los Angeles, the most heavily urbanized county, was balanced in both years, with an approximately equal number of resident workers and jobs. Orange County is moving toward balance; the increase in the number of jobs was greater than that of resident workers over the time period. Riverside-San Bernardino and Ventura counties, on the other hand, became less balanced over the same period. These are the region's outlying counties that are the new residential suburbs. As the development process proceeds, these counties should shift toward balance in the 1990s.

A third piece of evidence regarding the distribution of jobs and housing in the Los Angeles region is shown in Figure 1, in which the ratio of jobs to occupied housing units is graphed as a function of distance (in miles) from the Los Angeles

TABLE 1 POPULATION AND EMPLOYMENT FOR ORANGE COUNTY, CALIFORNIA

Year	Population	Employment	E/P Ratio
1940	135,900	41,800	.31
1950	219,400	46,600	.21
1955	434,800	81,500	.19
1960	748,900	165,800	.22
1965	1,175,800	293,100	.25
1970	1,456,700	418,900	.29
1975	1,729,300	568,800	.33
1980	1,932,700	843,800	.44
1985	2,088,300	961,600	.46

Source: Compiled from U.S. Census data, County of Orange Census updates, and State of California Economic Development Department data.

TABLE 2 LABOR SUPPLY AND DEMAND BALANCE TRENDS IN THE LOS ANGELES REGION

County	Resident Workers	1974 Ratio		Resident Workers	1988 Ratio		Change in Ratio (%)
		Jobs	Wrks/Jobs		Jobs	Wrks/Jobs	
Los Angeles	3,263,000	3,082,500	1.059	4,173,100	4,121,900	1.012	-4.4
Orange	775,300	565,400	1.371	1,345,600	1,140,100	1.180	-13.9
Riverside/ San Bernardino	465,400	351,900	1.323	939,700	648,700	1.449	9.5
Ventura	171,700	124,000	1.385	351,700	230,600	1.525	10.1

Source: State of California Employment Development Department.

central business district (CBD). The data are 1987 estimates generated by the regional planning agency. Given a regional average of 1.35 workers per occupied housing unit, Figure 1 shows that most of the urbanized region is approximately balanced. The downtown core area is job rich, but not to the extent that might be imagined. Further, the area 5 to 10 mi from the CBD is job poor, suggesting a surprising amount of balance overall within the total 10-mi range. Finally, the area from 10 to 50 mi from the CBD is quite balanced, and it contains two-thirds of all the region's housing units and jobs.

These data support the idea that jobs-housing balance occurs as part of the urban development process, at least at the gross spatial level for which data are available. Admittedly, these data cannot capture any mismatches that might exist between the types of jobs and housing. However, such mismatches seem unlikely. When job growth is disaggregated by sectoral composition (e.g., manufacturing, services, wholesale, and retail trade), employment increases are found in all major sectors throughout the region. Moreover, because jobs within each sector cover a range of skill and wage levels, it appears that a large mix of jobs is available throughout the region.

Additional evidence that jobs-housing balance exists is provided by an earlier study that examined the degree of homogeneity of local municipalities (17). The purpose of the study was to determine whether the Tiebout hypothesis (which states that individual households choose residences located where public facilities, amenities, and the associated tax burden match their preferences, a process resulting in homogenous communities) was supported by the actual make-up of different communities. If in fact households "vote with their feet," population characteristics such as income, ethnicity, or education level should be relatively homogeneous within municipalities and heterogeneous between them. Using 1970 census data from all municipalities with a population of at least 1,000 in the 12 SMSA's of Pennsylvania, it was found that population characteristics within municipalities were similar to that of the region as a whole. That is, there was as much heterogeneity within municipalities as between them, prompting the conclusion that the stereotypical homogeneous suburban community had little basis in fact. Although exclusionary practices may be widely used, the results of this study suggest that they may not be effective in achieving homogeneity within communities.

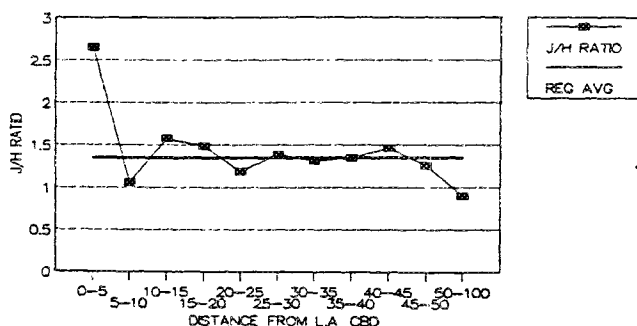


FIGURE 1 Jobs-housing ratio by distance from Los Angeles CBD, 1987.

Jobs-Housing Balance and Commuting

The second premise of the jobs-housing balance argument is a causal link between balance and commuting. Conceptual issues related to jobs-housing balance and commuting are discussed first.

Factors Affecting Where People Live and Work

There are several reasons why this causal link between commuting patterns and jobs-housing balance may not exist. First, it is not clear that living close to work is a high priority for most people. Studies of residential location choice indicate that many factors beyond housing price and characteristics are involved in where people choose to live. These include neighborhood quality, availability of parks and other amenities, quality of schools, racial and ethnic mix, microclimate characteristics, etc. (18-20). Thus, even if balance between worker and housing attributes could be demonstrated, it does not follow that workers would in fact choose to live in the local area.

Second, compared to housing costs, commuting costs are small (21). Because housing costs generally decline with distance from major employment centers, additional commuting costs can be traded off for cheaper housing. Thus, many households choose to live in outlying areas, consume more housing, and commute further to work. Notable here is the strong preference among U.S. households for single-family housing. These two points suggest that it is difficult to predict where workers might live, because their willingness to incur longer commutes vastly increases the number and variety of housing choices available to them.

Third, there are a growing number of multiple-worker households. Locational decisions for these households are even more complex, and living near one household member's job may mean living far from another's.

Finally, jobs-housing policy must rely on the regulation of structures, such as provision of housing units at specific affordability levels, or provision of commercial or industrial square footage, yet there are no assurances regarding the use of these structures over time. Household mobility is high in the United States, and most people hold several different jobs over their working careers. Employer mobility is increasing as well, as a greater proportion of U.S. industry is made up of "footloose" activities. In some areas, institutional barriers like rent control or property tax policy may inhibit residential relocation even when jobs change. For example, California's Proposition 13 reassesses property value only at the time of sale or major structural change. Thus, even if the mix of residential units and commercial and industrial sites were somehow perfectly matched, and even if the resulting jobs base were perfectly matched with the resident workforce at some point in time, balance would likely be short-lived.

Given all of these considerations, then, it would appear that the only way to guarantee that workers live near their jobs would be to mandate the housing choices of workers. Although this idea brings all the ills of the 19-century factory town in mind, there are several examples of related efforts in more recent years, such as affordable housing programs

that give priority to local workers, employer-based housing programs (for example, on-campus university housing offered often at below-market rates to faculty and staff), or priority hiring programs for local workers.

The relationship between jobs-housing balance and traffic congestion is also subject to question. The journey to and from work is not the only source of peak-period travel. In fact, recent research indicates that work trips account for only about one-fourth of all weekday person-trips, and that work trips do not constitute a majority of trips even during peak periods. Nonwork travel is the single largest category of travel and is increasing at the most rapid rate (22). The effect that jobs-housing balance might have on nonwork trips is uncertain. For all these reasons, then, jobs-housing balance is probably not significantly related to commute patterns, and jobs-housing policy is unlikely to have much effect on traffic congestion.

Evidence of Jobs-Housing Balance and Commuting

The demonstration of a significant relationship between jobs-housing balance and commuting patterns is critical to the policy intervention argument. Interestingly, an extensive literature review revealed that this issue has been given little attention, and that little empirical evidence exists to support or refute the idea. The concept of jobs-housing balance influencing commuting patterns is reasonable. Large concentrations of jobs (downtowns, major suburban centers) have to draw workers from a large commute shed. Conversely, when jobs are dispersed (e.g., have a similar distribution to that of population), commutes should be shorter.

Some related evidence is provided by 1980 U.S. census data. Table 3 presents mean commute times for two residence location categories (inside the central city, outside the central city) and three workplace categories (CBD, inside central city, and outside the CBD, outside central city). Percent shares of total commuting are also listed. Table 3 indicates that CBD workers have the longest commute, whereas commuters who both live and work outside the central city have the shortest commute. These suburban areas presumably have more dispersed employment. Commuters who both live and work in the central city have the next shortest average commute, but it is notably longer than that of the suburb-to-suburb commuters.

The national data do not permit controlling for possible concentrations of employment outside the CBD. For example, it is possible that the inside central city jobs are more clustered than the outside central city jobs, thus explaining the longer commutes. The 1980 Los Angeles region commute flow data can be used to further explore this idea. Table 4 presents mean commute distances for workers by place of work. Work locations are classified as centers if they have at least 10,000 jobs and a density of at least 10 jobs per gross acre. Core centers refer to the centers clustered around downtown Los Angeles; other categories are self-explanatory. The employment-population ratio for each location category is also presented.

The table indicates that, as expected, workers with jobs in centers have longer commutes than workers with jobs outside centers, except in the case of the outer counties. However, within each category (center, not within center), there is no apparent relationship between balance and average commute distance. Indeed, as a group the suburban county centers are

TABLE 3 JOURNEY TO WORK TRAVEL TIMES BY ORIGIN-DESTINATION CATEGORIES IN THE LARGEST URBANIZED AREAS, 1980 (23)

Place of Work	Place of Residence			
	Inside Central City		Outside Central City	
	Travel Time (min)	% Share of Trips	Travel Time (min)	% Share of Trips
CBD	33.4	4.5	42.1	3.7
Inside CC, Outside CBD	25.5	24.7	33.0	14.3
Outside CC	29.9	6.8	19.5	45.7

TABLE 4 MEAN COMMUTING DISTANCE AND EMPLOYMENT-POPULATION (E/P) RATIOS BY JOB LOCATION

	Within Centers		Not Within Centers	
	Distance (Miles)	E/P	Distance (Miles)	E/P
LA Downtown	13.9	1.47		
Other Core Centers	11.2	1.14		
Other LA County Centers	13.2	1.80		
<u>LA County Total</u>	13.0	1.48	10.8	.32
Orange County	11.3	2.80	9.9	.39
Outer Counties*	8.3	2.27	8.8	.25
TOTAL	12.7	1.55	10.3	.32

*Riverside, San Bernardino, Ventura.

far more unbalanced than even downtown Los Angeles (assuming that the employment participation rate is relatively constant throughout the region), yet average commute distances are shorter. Commutes for workers with jobs not within centers exhibit the same patterns; outer county workers have the shortest commutes.

These results suggest that there are other factors involved that contribute to generally shorter commutes in suburban areas independent of structural or jobs-housing balance considerations. These may include the presence of negative externalities in central city areas; the relative homogeneity of suburban areas (making it easy to locate near one's job, or conversely negating any advantage to living far from one's job); the concentration of highly specialized jobs in central core areas, or the preferences of workers for low-density environments.

Cervero (24) focuses on the jobs-housing mismatch issue in his recent study of suburban employment centers (SECs). Defining a 3-mi radius as the appropriate commute shed for each SEC, he notes that the observed high average rents and selling prices of the available housing implies that it would be unaffordable to many SEC workers. However, such a comparison does not consider multiple-worker households, and affordability is determined by household income. Moreover, the availability of secondary wage earners has been identified as primary motivation for the suburbanization of back-office activities, e.g., shifting lower-wage jobs to suburban locations in response to labor force ability (25). Also, a 3-mi radius implies a much shorter commute range than typically exists within U.S. metropolitan areas (26).

Cervero (24) also reports average work trip distance and time for 12 of the SECs in his sample as 11.1 mi and 24 min, respectively. He contrasts these with Pisarsky's (26) national estimate for the average suburb-to-suburb commute of 9 mi and 18 min, on the basis of 1980 census data, and attributes the difference to rising congestion and widening jobs-housing imbalance. Although the difference fits with the jobs-housing mismatch explanation, it is also possible that the difference is caused simply by sampling differences, because the SEC data come from a variety of sources, and may nor may not be representative of suburban employment centers in general.

Only one recent study has dealt directly with the relationship between jobs-housing balance and commuting. Using 1985 cross-sectional data from the suburbs of San Francisco, Cervero (9) found that longer commutes are associated with jobs-housing mismatches, particularly for low-wage workers

in affluent suburban employment centers. Housing cost and availability were found to be significant explanatory factors in residential location choice, and in areas where the housing stock within the employment zone did not match the characteristics of workers in the zone, more interzonal commuting was found to occur. The Cervero study also documents jobs-housing imbalances within local communities both in the San Francisco and Chicago regions. This study provides some limited evidence that jobs-housing mismatches can lead to longer commutes.

Commuting Patterns in Planned Communities

Another approach to examining the relationship between jobs-housing balance and commuting is to look at commute patterns of workers living in planned communities. Planned communities are by definition balanced; they are conceived of as self-contained units with a mix of housing and jobs. Planned communities provide balance opportunities: job and housing mixes are matched so that people have the opportunity to work close to home. The two most famous post-World War II planned communities in the United States, Reston, Virginia and Columbia, Maryland, are both considered successful in terms of developing a balanced community. If jobs-housing balance promotes shorter commutes, such patterns should be evident in planned communities. An extensive study of planned communities in the United States was undertaken during the 1970s. Part of the study involved a comparative analysis of travel patterns between 15 matched pairs of planned and unplanned communities (27).

Table 5 presents some findings regarding the commute characteristics of heads of households in the two groups of communities. The data are based on surveys conducted in 1972–1973. The degree of similarity between the two groups is remarkable. Workers in planned communities are not more likely to live and work in the same communities than their counterparts in unplanned communities. It is important to note that the average share of workers working in their home communities reported by Zehner (27) favorably corresponds with Cervero's reported findings based on 1985 data—about 20 percent for suburban communities with large employment centers (4). The propensity to live and work in the same community does not appear to be related to jobs-housing balance. Even in communities with large job concentrations (e.g., more jobs than workers), the majority of workers in

TABLE 5 COMPARISON OF JOURNEY TO WORK CHARACTERISTICS IN PLANNED AND UNPLANNED COMMUNITIES (27)

	PLANNED COMMUNITIES	UNPLANNED COMMUNITIES
Share of Workers Employed in Community of Residence	14.0%	16.0%
Median Worktrip Time	25.0 min	25.0 min
Median Worktrip Distance	9.9 mi	10.8 mi
Percent of Trips $0 \leq 5$ mi	27.0 %	30.0 %
Percent of Trips > 5 mi ≤ 15 mi	37.0 %	34.0 %
Percent of Trips > 15 mi	36.0 %	36.0 %
Auto Mode Share (Drive Alone + Carpool)	94.0%	94.0%

the Zehner study were found to work outside their home community.

Table 5 also indicates that work trip characteristics, including distance, travel time, and mode, are almost identical for workers in the two groups. Moreover, median distance to work for planned community residents was found to be only weakly related to jobs-housing balance. These results suggest that many factors are involved in journey-to-work distances, and that planned communities do not necessarily promote shorter commutes. As discussed early in this section, residential location choice is a complex process in which job proximity considerations may play a minor role.

Jobs-Housing Balance and Wasteful Commuting

Another perspective on the potential effectiveness of jobs-housing balance policy is provided by the urban economics literature. Several recent studies have tested the relationship between commuting distances and the distribution of jobs and housing (28–30). The most popular urban economic theory hypothesizes that workers choose residences by trading off commuting and housing costs so as to maximize utility. Workers are willing to commute only to the extent that its cost is offset by housing cost savings. When all jobs are assumed to be located in the center of the city, this optimization process results in a declining density distribution of housing around the center that in turn determines the total amount of commuting (31). The total amount of commuting associated with the equilibrium solution is thus a theoretical minimum. In essence, this means that workers (in the aggregate) are located as close as possible to their jobs.

Comparing the prediction of this ideal model with observed commute patterns has indicated that actual commuting far exceeds the predicted amount. This extra or unexplained commuting has been termed “wasteful commuting” (28). It is the amount of commuting that cannot be explained by the relative locations of jobs and housing. Hamilton’s study indicated that actual commuting was about 8 times as great as that predicted by the model. Indeed, actual commuting was almost as great as that predicted by a completely random distribution of workers and jobs. White (29) controlled for the actual distribution of jobs and workers, and Cropper and Gordon (30) controlled for differences in housing preferences. Cropper and Gordon’s study of the Baltimore area estimated the average required commute to be about 5 mi, compared to the actual average commute of 10 mi. Simply stated, these studies indicate that a large proportion of all commuting cannot be explained by job access considerations, housing preferences, or other such factors.

Can Jobs-Housing Balance Be Justified as a Transportation Policy Objective?

The available evidence suggests that jobs-housing balance is not a transportation issue. Rather, jobs-housing balance occurs as part of the urban development process. Metropolitan areas expand as households seek lower-cost housing at the periphery; as these new settlements develop, this growing labor force attracts employers. This characterization of the urban development process implies that the outermost sub-

urbs will always be unbalanced, despite policy intervention. Another Southern California example is illustrative. Rancho Santa Margarita is a new planned community located in southeast Orange County. Rancho Santa Margarita suffers from serious transportation access problems. Plans for a future freeway that would traverse the area are in progress, but construction is years away. Santa Margarita developers set out to develop a balanced community, in part to offset transportation problems. The Rancho Santa Margarita marketing program includes an aggressive campaign to attract employers. In contrast, residential building permits are contingent on phased transportation infrastructure requirements, and consequently residential construction is lagging behind demand. Thus, although employment is being promoted and housing production is being constrained, local households far outnumber local jobs.

Similarly, downtown areas will remain unbalanced, primarily because of high land values that make only very high density development economically feasible. Given the preference of many workers for lower-density living environments, even aggressive downtown housing programs are not likely to result in significant reductions in commuting. However, the downtown core represents a declining share of total metropolitan employment, and therefore, from a metropolitan perspective, it is a shrinking part of the transportation problem.

The available evidence also suggests that the relationship between jobs-housing balance and commuting holds only in general terms. Although isolated examples of jobs-housing mismatches have been identified at the community level, there is little evidence suggesting that such mismatches have significantly affected commuting patterns. Regulatory policies aimed at improving jobs-housing balance are thus unlikely to have any measurable impact on commuting behavior, and therefore cannot be justified as a traffic mitigation strategy.

TRANSPORTATION SOLUTIONS FOR TRANSPORTATION PROBLEMS

Jobs-housing balance has emerged from concerns about the lack of affordable housing both in central cities and suburbs, the desire to maintain the economic viability of downtowns, the prevalence of exclusionary zoning practices that have restricted the supply and variety of housing available in suburban areas, and the emergence of employment centers in suburban areas. All of these issues are made more complex by the more generalized concern over growing traffic congestion. Jobs-housing balance puts these problems together and attempts to solve all of them. It is important to note that the concerns that have motivated the current interest in jobs-housing balance are valid. The fact that jobs-housing balance is unlikely to solve transportation problems does not imply that such policies cannot play a role in solving other urban problems. Rather, the point is that these problems are more likely to be solved if separated and dealt with directly. In the case of traffic congestion, this means focusing directly on congestion—on the fact that for many hours each day travel demand exceeds supply.

Travel behavior research shows that travel decisions are made on the basis of cost and convenience (32). Because traveling costs both time and money, people choose alternatives that minimize their travel expenditures. They will

choose when, where, and how they travel on the basis of the relative cost and convenience of alternatives available. Use of the private automobile is heavily favored under current conditions. It is clearly the most convenient means of travel, and individual travelers do not pay the full costs of automobile trips. Individual travelers do not pay for the congestion or the environmental pollution they cause, and they often do not directly pay for other costs such as parking, street maintenance, and police enforcement. Consequently, like any other consumer good that is priced too low, the single-occupant automobile is used too much, and peak-period congestion is the result.

It is beyond the scope of this paper to provide an analysis of urban congestion. However, to briefly summarize, solving the problem requires either increasing the supply of transportation facilities, increasing their productivity by carrying more people with fewer vehicles, or reducing demand. Much research has been conducted on the issue of urban traffic congestion (33–36). Some of the most promising strategies proposed for addressing urban congestion include improved transportation system management (e.g., signal coordination, bypass lanes, and ramp metering); transportation demand management (parking management, alternative work hours, and ridesharing programs); transit and pedestrian-oriented site design; expansion and diversification of public transit services; and congestion pricing.

However, travel behavior research also indicates that the short-run demand for automobile travel is relatively inelastic, meaning that large changes in cost or convenience will initially generate only small changes in demand. Thus effective congestion mitigation strategies are often costly, politically unpopular, or both. It is therefore tempting to focus on indirect (and politically popular) policies like jobs-housing balance. However, solving traffic congestion problems will require direct policies—policies that influence the choices of individual travelers.

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REFERENCES

1. E. Howard. *Garden Cities of Tomorrow*. London, 1902.
2. C. Purdom. *Town Theory and Practice*. London, 1921.
3. L. Mumford. *The Urban Prospect*. Harcourt, Brace, and World, New York, 1968.
4. R. Cervero. *Suburban Gridlock*. Center for Urban Policy Research, Rutgers University, New Brunswick, N.J., 1986.
5. *The Jobs Housing Balance in the City of Pleasanton*. Gruen & Gruen and Associates, San Francisco, 1981.
6. D. E. Dowall. *The Suburban Squeeze: Land Conversion and Regulation in the San Francisco Bay Area*. University of California Press, Berkeley, 1984.
7. K. T. Rosen and F. Katz. Growth Management and Land Use Controls: The San Francisco Bay Area Experience. *AREUEA Journal*, Vol. 9, 1981, pp. 321–344.
8. D. Windsor. *Fiscal Zoning in Suburban Communities*. Lexington Books, Lexington, Mass., 1979.
9. R. Cervero. Jobs-Housing Balancing and Regional Mobility. *Journal of the American Planning Association*, Vol. 55, No. 2, 1989, pp. 136–150.
10. *Growth Management Plan*. Southern California Association of Governments, Los Angeles, Calif., 1988.
11. B. J. L. Berry, ed. *Urbanization and Counterurbanization*. Sage Publications, Beverly Hills, Calif., 1976.
12. L. Masotti and J. Hadden, eds. *The Urbanization of the Suburbs*. Sage Publications, Beverly Hills, Calif., 1973.
13. P. Muller. *Contemporary Suburban America*. Prentice-Hall, Englewood Cliffs, N.J., 1981.
14. E. S. Mills and W. Oates. *Fiscal Zoning and Land Use Controls*. Heath-Lexington Books, Lexington, Mass., 1975.
15. T. Snyder and M. Stegman. *Paying for Growth*. Urban Land Institute, Washington, D.C., 1986.
16. A. Downs. *The Need for a New Vision for the Development of Large U.S. Metropolitan Areas*. The Brookings Institution, New York, 1989.
17. H. Pack and J. Pack. Metropolitan Fragmentation and Suburban Homogeneity. *Urban Studies*, Vol. 14, 1977, pp. 191–201.
18. J. R. Follain and E. Jimenez. Estimating the Demand for Housing Characteristics: A Survey and Critique. *Regional Science and Urban Economics*, Vol. 15, 1985, pp. 77–107.
19. P. D. Linneman. The Demand for Residence Site Characteristics. *Journal of Urban Economics*, Vol. 9, 1981, pp. 129–148.
20. J. Quigley. Consumer Choice of Dwelling, Neighborhood and Public Services. *Regional Science and Urban Economics*, Vol. 15, 1985, pp. 41–63.
21. R. Muth. Models of Land Use, Housing and Rent: An Evaluation. *Journal of Regional Science*, Vol. 25, No. 4, 1985, pp. 593–606.
22. H. Richardson and P. Gordon. Counting Nonwork Trips: The Missing Link in Transportation, Land Use and Urban Policy. *Urban Land*, Sept. 1989, pp. 6–18.
23. P. Gordon, A. Kumar, and H. Richardson. Congestion, Changing Metropolitan Structure, and City Size in the United States. *International Regional Science Review*, Vol. 12, No. 1, pp. 45–56.
24. R. Cervero. *America's Suburban Centers*. Unwin Hyman, Boston, Mass. 1989.
25. K. Nelson. Labor Demand, Labor Supply, and the Suburbanization of Low-Wage Office Work. in M. Stoyur and A. J. Scott, eds., *Production, Work and Territory*. Allen and Unwin, London, 1986.
26. A. Pisarsky. *Commuting in America*. Eno Foundation for Transportation, Inc., Westport, Conn., 1987.
27. R. Zehner. *Access, Travel and Transportation in New Communities*. Ballinger, Cambridge, Mass., 1977.
28. B. W. Hamilton. Wasteful Commuting. *Journal of Political Economy*. Vol. 90, No. 5, 1982, pp. 1035–1053.
29. M. White. Urban Commuting Journey Are Not "Wasteful." *Journal of Political Economy*. Vol. 96, No. 5, 1988, pp. 1097–1110.
30. M. Cropper and P. Gordon. Wasteful Commuting; A Re-examination. *Journal of Urban Economics*. Vol. 29, No. 1, 1991, pp. 2–13.
31. E. Mills and B. Hamilton. *Urban Economics*, 3rd ed. Scott, Foresman, Glenview, Ill., 1984.
32. T. Domencich and D. McFadden. *Urban Travel Demand; A Behavioral Analysis*. North Holland, Amsterdam, 1975.
33. K. Orski. The Changing Environment of Urban Transportation. *Journal of the American Planning Association*, Vol. 48, No. 3, 1982, pp. 309–314.
34. S. Rosenbloom. Peak-Period Traffic Congestion: A State of the Art Analysis and Evaluation of Effective Solutions, *Transportation*, Vol. 7, No. 2, 1978, pp. 167–191.
35. *Special Report 172: Transportation System Management*. TRB, National Research Council, Washington, D.C., 1977.
36. M. Wachs. Transportation Demand Management: Policy Implications of Recent Behavioral Research. *Journal of Planning Literature*, Vol. 5, No. 4, 1991, pp. 333–341.

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