

# Suburban Activity Center Transportation Demand Management Market Research Study

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The background and findings of a study designed to assist in planning and implementing transportation demand management (TDM) strategies at a major suburban activity center are presented. The results are based on a representative sample of all employers in the activity center with six or more employees. Three survey instruments were developed for the study: an employee questionnaire, an employer questionnaire, and a senior management survey. Data were collected from 2,600 employees and 144 employers. Interviews were completed with members of senior management of 24 of the 37 largest firms in the area. The findings suggest that major opportunities exist to improve mobility through implementation of TDM measures. The potential for traffic rerouting is shown by the heavy use of one freeway and exit and by the perception of significant congestion. Alternative work hours could make a substantial contribution to reducing demand given the peaking of employee arrival and departure times. The availability of adequate, low-fee parking suggests potential for parking management strategies. There is a willingness on the part of both employees and management to consider TDM measures. Employees are willing to consider commute alternatives to driving alone and to change work hours. Management expressed interest in adopting alternative work hours programs and in offering ridesharing incentives. They feel that employers not only have a responsibility to help reduce traffic congestion but that it is in the self-interest of business to do so. Management was also willing to participate in a cooperative effort to help solve area traffic problems.

Orange County, California, has experienced tremendous growth in jobs and population over the past 15 years and this urbanization trend is expected to continue into the 21st century. Unlike many urbanized areas with jobs concentrated in one central business district (CBD), Orange County has experienced the emergence of a complex grouping of at least 11 major activity centers spread along transportation corridors in central and north county (Figure 1). These centers cumulatively accounted for over 300,000 jobs in 1985 and are expected to contain more than 425,000 jobs (a 42 percent increase) by the year 2000.

The county's current transportation infrastructure already has been overburdened by existing travel demand associated with these centers. Even with planned and programmed improvements to the transportation network, commute times will continue to lengthen and commuter stress will become more

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FIGURE 1 Orange County activity centers.

pervasive during peak hours. Public agencies are attacking the problem with a complexity of programs and actions aimed at enlarging the local transportation system, but the initiation of transportation demand management (TDM) actions within the activity centers is the additional ingredient needed to enhance commuter mobility in Orange County.

The first step in planning and implementing TDM actions at an activity center is to obtain necessary information about travel characteristics in the center and the appropriateness of strategies for that area. The Orange County Transit District (OCTD) has recently conducted major transportation studies at two Orange County activity centers, one in Newport Beach (Newport Center) and one in the cities of Santa Ana and Costa Mesa (South Coast Metro), for these purposes. Although the findings from the South Coast Metro (SCM) activity center study as they specifically relate to TDM planning for that area

will be highlighted in this paper, the study actually had three major objectives, which will be discussed in the next section.

## STUDY OBJECTIVES

The South Coast Metro study was initiated during 1985 by the OCTD in cooperation with other public agencies and local cities. The study had three planning and research objectives:

- To expand and update the existing database,
- To assess the effects of preferential facilities on ridesharing, and
- To investigate potential for TDM strategies and their implementation.

### Database Development

Given the fast-growing nature of major activity centers in Orange County and their resultant traffic, existing studies of travel to these centers were insufficient for travel analysis, service development, and facilities design. In light of this, the first study objective was to expand and update the existing database of activity center employee travel information for application in planning studies and future marketing efforts for a preferential facilities program, as well as for transit service planning. The data collected from the study will also assist OCTD, the California State Department of Transportation (Caltrans), and others, in validating models used in travel forecasting.

### Effects of Preferential Facilities on Ridesharing

Facilities for transit and high occupancy vehicles (HOVs) are receiving increased attention throughout the nation. Orange County is no exception to this current trend with the recent opening of the preferential HOV lanes on the Costa Mesa Freeway, the upcoming implementation of preferential lanes on the San Diego Freeway, and OCTD's recent initiation of a Transitway Program for Orange County. Nationwide studies show that exclusive facilities and lanes greatly affect commuters' propensities to form carpools and vanpools and ride transit thereby reducing overall vehicle volumes within travel corridors. With this in mind, the second project objective was to investigate the potential effects that bus and carpool lanes would have on ridesharing in Orange County.

### Potential for TDM Implementation

Employers within a major activity center can play a significant role in developing and marketing programs for managing transportation demand to and within the activity center. Increasing numbers of employers have shown a willingness to take an active, rather than a passive, role in TDM programs.

However, little experience exists in conducting large-scale employer-based TDM programs within Orange County's major activity centers. Information is required pertaining to employer characteristics and their abilities to develop TDM programs within a major activity center. Toward this end, the third objective was to investigate the ability of employers within a major

activity center to jointly develop, market, and implement a comprehensive TDM strategy with the assistance of local jurisdictions and public transportation providers.

Employers in the area have been contacted and progress has been made toward the initiation of a Transportation Management Association (TMA) in the area and the establishment of a TDM program for that activity center based on study findings.

## METHOD

### Sample

The South Coast Metro area contains approximately 1,114 employers with a total of 25,545 employees. The results presented in this paper are based on a representative sample of all employers in the South Coast Metro area with six or more employees. Three survey instruments were developed for the study: an employee questionnaire, an employer questionnaire, and a survey designed to be administered in a face-to-face interview with company executives.

The objectives of the employee survey were to

- Assess commuter travel characteristics including current mode and willingness to consider alternatives, trip distance and travel time, and origin and destination of work trip,
- Assess employee work schedule characteristics, and
- Assess employee need for a car before, during, and after work.

The objectives of the employer survey were to obtain a descriptive profile of employers including

- Parking costs and availability,
- Availability of on-site services,
- Ridesharing incentives offered, and
- Work schedule policy.

The objectives of the senior management survey were to

- Obtain upper management's perception of traffic conditions,
- Obtain perception of the effects of traffic on the organization, and
- Assess willingness to participate in a cooperative effort to help solve traffic problems.

### Data Collection

With the assistance of Crain & Associates, data collection was conducted during October and November 1986. Data were collected from 2,600 employees, which represented an overall response rate of 57 percent. One hundred forty-four employer surveys were completed, which represented a 47 percent response rate; the response rate for large organizations (more than 100 employees) was substantially higher (79 percent). In February and March 1987, the interviews were completed with members of senior management of 24 of the 37 largest firms in the area, for a 65 percent response rate.

## PERCEPTION OF CONGESTION AND STRESS

### Employee Survey Results

The responses of employees indicated that they experienced significant stress and congestion during their commute to work. About a fourth (28 percent) responded that their commute was more stressful than their other daily activities. Three-fourths (77 percent) stated that streets were congested, whereas 85 percent believed that freeways they used during their commute were congested. A third (34 percent) indicated that the freeways were always congested (Table 1).

TABLE 1 EMPLOYEE PERCEPTION OF CONGESTION DURING COMMUTE

	Freeways (%)	Streets (%)
Always congested	34	18
Usually congested	29	26
Sometimes congested	22	33
Rarely congested	10	17
Never congested	5	6
Total	100	100

The longer the commute time the more severe the congestion was perceived to be. The average commute time of those who perceived the freeways as "always congested" was 43 min, compared with 22 min for those who considered them "never congested." A similar pattern occurred for perception of street congestion.

### Senior Management Survey Results

#### *Perception of Traffic Congestion and Its Effects*

Given a list of social issues, more executives indicated that traffic congestion affected their company more than any other issue. Moreover, as shown in Table 2, these executives believed that the effect of traffic congestion was severe.

TABLE 2 SENIOR MANAGEMENT PERCEPTION OF EFFECTS OF SOCIAL ISSUES ON THEIR ORGANIZATIONS

Social Issue	Percent Indicating Issue Affects Company <sup>a</sup>	Extent of Effect <sup>b</sup> (%)			
		4	3	2	1
Traffic congestion	88	50	25	15	10
A shortage of affordable housing	54	15	23	39	23
Parking	33	12	50	12	26
Quality of schools	25	0	17	68	17
Crime	17	25	25	50	0

<sup>a</sup>Percentages represent those responding yes to each item separately.

<sup>b</sup>4 is severe; 1 is slight.

Although most executives (79 percent) indicated that their company would not consider relocating if traffic conditions got worse, over half (58 percent) believed that conditions adversely affected their operations. The ways in which operations were affected are shown in Table 3.

An overwhelming majority of managers (71 percent) believed that traffic conditions affected their employees. The

TABLE 3 SENIOR MANAGEMENT PERCEPTION OF EFFECTS OF TRAFFIC CONDITIONS ON COMPANY OPERATIONS

Effect	Percent <sup>a</sup>
Delivery of products	29
Employee tardiness	29
Accessibility problems for clients or customers	21
Health claims, stress	14
Shrinking of recruitment base	7

<sup>a</sup>Percentages represent those mentioning each item.

ways in which management believed their employees were affected are presented in Table 4.

A majority of executives (61 percent) also believed that traffic in the South Coast Metro area was better when their company first moved to the area. A third (39 percent) believed that traffic in the area had become worse than in other parts of Orange County; very few (9 percent) believed that it was better. The majority (62 percent) believed that traffic conditions will be much worse in 5 yr; only a small proportion (17 percent) foresaw that conditions would be about the same or somewhat better.

TABLE 4 SENIOR MANAGEMENT PERCEPTION OF EFFECTS OF TRAFFIC CONDITIONS ON EMPLOYEES

Effect	Percent <sup>a</sup>
Tardiness	77
Stress	18
Absenteeism	12
Health claims	6

<sup>a</sup>Percentages represent those mentioning each item separately.

#### *Responsibility of Employers*

The majority of executives believed that employers have a responsibility to help reduce traffic problems in South Coast Metro. Moreover, they believed that it is in the long-run self-interest of business to get directly involved in reducing traffic congestion (Table 5).

## POTENTIAL FOR CARPOOLING OR VANPOOLING

### Employee Survey Results

#### *Distance and Time*

Almost half of all employees (40 percent) working in the South Coast Metro area commuted 10 or more mi to work (one way). The majority of employees (76 percent) had commutes of half an hour or less.

#### *Car Availability*

Almost all employees (97 percent) had a car available to get to work, but more than a fourth of the employees (28 percent)



TABLE 5 SENIOR MANAGEMENT PERCEPTION OF THE RESPONSIBILITY OF EMPLOYERS

Statement	Percent in Agreement				
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Employers have a responsibility to help reduce traffic problems in SCM	17	66	13	4	0
Attempting to solve transportation problems interferes with main purpose of business	8	8	8	55	21
It is in the long-run self-interest of business to get directly involved in reducing traffic congestion	22	70	4	4	0

indicated that they had no need for their personal car at work any day during their work week. However, a third (37 percent) indicated that they needed their car at work every day.

*Stops on Way to and from Work*

While 62 percent responded that they went directly to work with no stops, 5 days a week, most people (90 percent) did make stops on the way home. The most frequently mentioned reasons for stopping included shopping (43 percent), banking (25 percent), and eating (18 percent).

*Current Mode Choice and Willingness To Change*

The usual mode chosen by employees to get to work was driving alone (89.8 percent). However, 57 percent indicated a willingness to consider other commute modes at least 2 days a week. A comparison of current mode choice and modes employees would consider is presented in Figure 2.

*Transit*

The most frequently mentioned reasons for not using transit were that employees needed a car before or after work (37 percent) and that there was no direct service (29 percent). Infrequent service (17 percent) and lack of information (11 percent) were the next frequently mentioned reasons for not using the bus.

*Perception of Ridesharing Incentives*

Of the possible ridesharing incentives that employers might offer, employees were most favorable about “adjustments to work schedules” and “providing company vanpools or buspools.”

*Commuter Lane*

The opportunity to use a commuter lane was also viewed as an important incentive for ridesharing. A fourth (26 percent) of those who currently used a planned commuter lane indicated that they would be likely to try carpooling, vanpooling, or riding the bus in order to use a commuter lane.

**Employer Survey Results**

*Levels of Support Offered by Employers*

Most employers did not currently provide information, active assistance, or operational support for ridesharing. They had not typically provided them in the past, nor did they plan to provide them in the future. Larger firms were more likely to offer incentives than smaller firms. A comparison of the ridesharing incentives offered by large and small organizations is presented in Table 6.

*Availability of Company Car*

Most organizations (69 percent) did not have company cars at their work sites. In those organizations with company cars, the

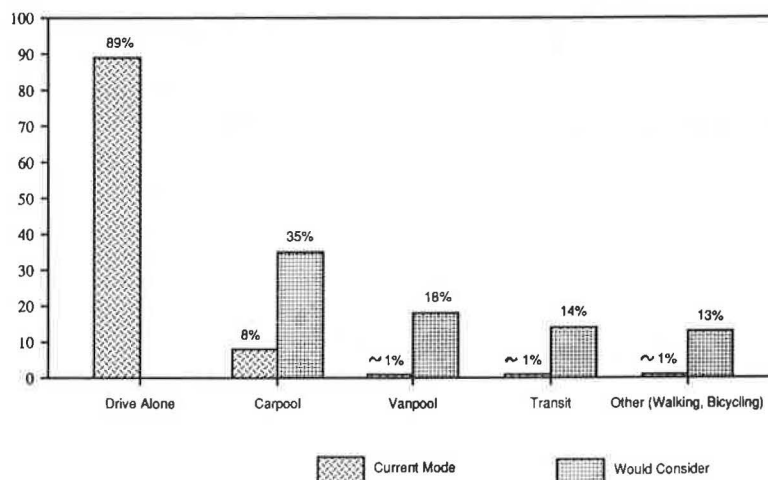


FIGURE 2 Employee commute modes.

TABLE 6 COMPARISON OF LEVELS OF SUPPORT OFFERED BY COMPANY SIZE

Support	Percent of Employers <sup>a</sup>	
	With Less Than 100 Employees	With More Than 100 Employees
<b>Information</b>		
Distribute ridesharing information to new employees	0	23
Display bus schedules and maps	3	20
Distribute matchlists	0	20
Display posters	0	27
Prepare Air Quality Management District (AQMD) traffic plan	0	17
<b>Active Assistance</b>		
Employ transportation coordinator	0	7
Conduct meetings for potential ridesharers	2	0
Find riders for vanpools	2	3
<b>Operational Support</b>		
Operate vanpools	2	7
Subsidize vanpools	2	0
Provide preferential parking for carpools	2	10
Sell monthly bus passes	0	10
Subsidize monthly bus passes	2	3
Conduct contests	0	0

<sup>a</sup>Percentages represent those responding yes to each item separately.

availability was typically limited to management and, to a lesser extent, professional and technical workers.

### Senior Management Survey Results

#### *Perception of the Effectiveness of Ridesharing Actions*

Most executives (71 percent) believed that providing more information to commuters about carpool, vanpool, and bus options and encouraging them to use these commuting modes would be slightly effective in improving mobility in the area. Only 16 percent believed that this strategy would not be effective at all.

#### *Interest in Increasing Ridesharing Incentives Offered*

The majority of senior management (72 percent) indicated that their company would be "somewhat interested" in considering increased incentives to encourage carpooling, vanpooling, or riding the bus. A small minority (13 percent) expressed no interest at all.

## POTENTIAL FOR ALTERNATIVE WORK SCHEDULES

### Employee Survey Results

#### *Employee Work Hours*

Sixty-five percent of all employees arrived at work in the 7:00 to 9:00 a.m. peak period. A fourth of this group, or 17 percent of the entire employee population, arrived at 8:00 a.m. The distribution of morning peak period arrival times is presented in Figure 3.

Sixty-seven percent of all employees left work in the 4:00 to 6:00 p.m. peak period. About a fourth of this group, or 18 percent of the entire employee population, left at 5:00 p.m. A

distribution of p.m. peak period departure times is presented in Figure 4.

#### *Employee Willingness To Change Hours*

If employers allowed their employees to change their starting times, they would begin an average of 25 min earlier. The largest proportion (16 percent) indicated that they would start at 7:00 a.m.

#### *Flexibility of Schedules*

Most employees (71 percent) had no choice in determining their work schedules (i.e., they were required to arrive and depart at specific times set by their employers). About 13 percent could choose times that then had to be approved, and about 16 percent had considerable flexibility (i.e., they could vary their start and end times on a day-to-day basis).

### Employer Survey Results

About a fourth of all employers currently offered staggered work hours (29 percent) or flex-time (23 percent). Few employers indicated that they were considering any of the schedules for future use.

### Senior Management Survey Results

#### *Interest in Adopting Alternative Work Hours*

There was some interest on the part of senior management in the large organizations to consider adoption of an alternative work schedule; 55 percent were somewhat or very interested in adopting one.

#### *Perception of Effects of Alternative Schedules on Traffic*

Most executives (96 percent) believed that allowing employees to shift work schedules to avoid peak-hour traffic was an

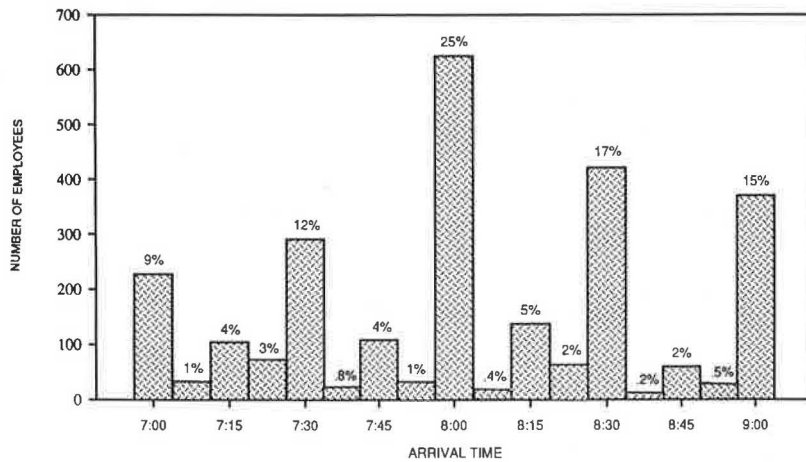


FIGURE 3 Employee arrival times (peak period 7:00 a.m. to 9:00 a.m.).

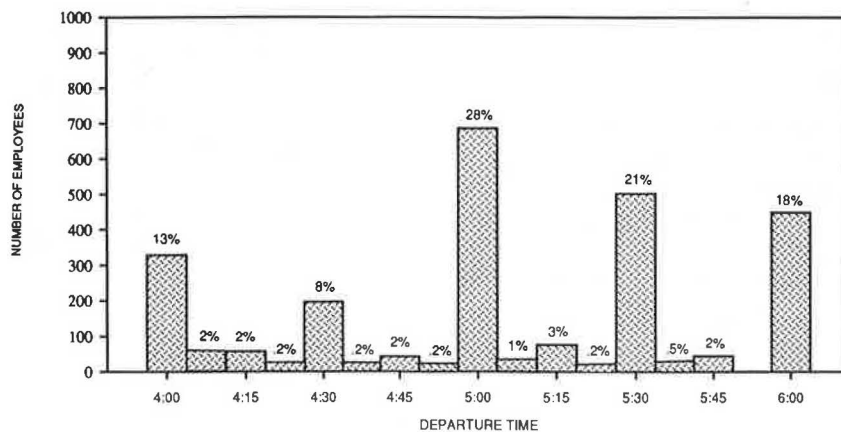


FIGURE 4 Employee departure times (peak period 4:00 p.m. to 6:00 p.m.).

effective strategy for reducing traffic in the South Coast Metro area.

**POTENTIAL FOR TRAFFIC REROUTING**

**Employee Survey Results**

One freeway route was used by a larger percentage (43 percent) of employees than any other. Of those using a freeway, one exit was used by a third (30 percent) of all employees.

**POTENTIAL FOR PARKING MANAGEMENT STRATEGIES**

**Employee Survey Results**

*Parking Costs*

Most employees (93 percent) indicated that they did not pay for parking.

*Parking Problems*

Almost all employees (91 percent) indicated that they had no difficulty in finding a parking space at the start of their work day. However, over a fourth (27 percent) indicated that they

experienced some difficulty in finding a parking space if they left work and returned during the day.

**Employer Survey Results**

*Parking Costs to Employers*

Most of the employers (80 percent) indicated that they did not pay for the cost of employee parking. Approximately a third of these employers owned their own lots. The remaining 20 percent paid for all or part of the cost of employee parking. The cost to these employers ranged from \$20 to \$55 a month per employee; the average cost was \$41 a month.

*Parking Costs to Employees*

Most employers (88 percent) indicated that parking was free for their employees. The cost to employees of the remaining companies ranged from \$20 to \$75 a month; the average cost was \$41 a month.

*Parking Subsidies for Ridesharing*

Only one organization indicated that it offered a special parking subsidy for employees who participated in ridesharing.

### Parking Situation

Although most employers did not perceive a parking shortage for employees on a regular basis, over a fourth noted occasional shortages for employees. A larger proportion indicated that shortages for visitors occurred (Table 7).

TABLE 7 EMPLOYER PERCEPTION OF PARKING SITUATION

Parking Situation	Percent of Employers	
	Employees	Visitors
No shortages	64	49
Occasional shortages	29	41
Frequent shortages	7	10
Total	100	100

## POTENTIAL FOR ON-SITE SERVICES

### Employee Survey Results

#### Use of Facilities During the Work Day

Employees used eating facilities both in the South Coast Plaza area (46 percent) and outside the area (34 percent) during the work day more than they used any other type of facility. The overwhelming majority (over 70 percent) used these facilities more than once a week. Banking facilities were the next most frequently mentioned type (27 percent in the South Coast Plaza area and 29 percent outside the area).

#### Frequency of Use

Eating facilities were also likely to be used several times a week; about three-fourths used eating facilities within the South Coast Plaza area more than once a week and almost as many used the facilities outside that area more than once a week (71 percent).

While only about a tenth of all employees (12 percent) used exercise facilities, it is interesting to note that those who did use them did so several times a week.

#### Differences Between Zones

As would be expected, the use of facilities inside or outside the South Coast Plaza area varied by zone; use of facilities in the Plaza area was greater for those working in that area.

### Employer Survey Results

#### Location of Services

A large percentage of employers indicated that a cafeteria or restaurant was located on site (38 percent) or within three blocks of their site (61 percent). The accessibility of banks or credit unions was similar.

## TMA PARTICIPATION

### Senior Management Survey Results

#### Willingness To Participate

The overwhelming majority (83 percent) of executives indicated that they would want to participate in the cooperative

effort of South Coast business people to help solve the traffic problems in the area.

#### Preferred Arrangement

The overwhelming majority of executives (95 percent) viewed a joint public and private effort as the most appropriate means for organizing a transportation management program for South Coast Metro. They believed that both groups were needed for the program to be effective.

#### Preferred Organizational Arrangement

Respondents were asked which organizational arrangement they would prefer if the Executive Task Force were made into a permanent organization. The responses were divided: a little over a third (36 percent) preferred that it continue as an Executive Task Force of OCTD; an equal proportion (36 percent) preferred that a new and totally separate organization be created; and the remainder (27 percent) preferred that it be piggybacked onto an existing business association such as the South Coast Metro Alliance, the Personnel Industrial Relations Association (PIRA), or the Personnel Employee Management Association (PERMA).

## CONCLUSIONS

The findings of this market research study suggest that major opportunities exist to improve mobility through the implementation of TDM measures. The opportunity to improve mobility through parking management strategies is evidenced by the availability of adequate, low-fee parking, which is a disincentive for ridesharing. In addition, some parking problems are evolving as the activity center continues to grow in size and density.

The potential for traffic rerouting is suggested by the heavy use of one freeway and exit, and by the perception of significant congestion. Alternative work hour programs could also make a substantial contribution to reducing demand given the peaking of employee arrival and departure times.

Moreover, there is a willingness on the part of both employees and senior management to consider alternatives that would decrease demand on the system. Employees are willing to consider commute alternatives to driving alone and to change their work hours.

Senior management expressed interest in adopting alternative work hour programs and in offering increased incentives to encourage carpooling, vanpooling, or riding the bus. They also believe not only that employers have responsibility to help reduce traffic problems, but that it is in the long-term self-interest of business to get directly involved in reducing traffic congestion. Furthermore, executives indicated that they would participate in a cooperative effort to help solve traffic problems in the area.