

# Carpooling with Co-workers in Los Angeles: Employer Involvement Does Make a Difference

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Carpool rates in Los Angeles are the highest of all metropolitan areas in the United States. But the carpool rate has not changed here since 1991, even with a mandatory employer-based vehicle trip reduction regulation involving over 6,000 employers and nearly 2 million commuters. Carpooling with co-workers has been increasing while carpooling with friends and family has been decreasing. Therefore, employer-based efforts have been responsible for maintaining regional rideshare rates. An analysis was conducted comparing co-worker carpoolers and carpoolers who ride with friends and family based on commute behavior, employment characteristics, attitudes toward the commute, and demographics. Carpooling with co-workers has produced greater reduction in vehicle trips and vehicle miles traveled than carpooling with family and friends. Those riding with co-workers are far more likely to consider commuting costs, comfort, and stress—perhaps a function of relatively long commute distances. More men, more commuters in the 30- to 39-year age group, more whites and blacks, and more commuters with household incomes of \$50,000 or greater are now carpooling regularly as a result of employer efforts.

Convincing commuters to use alternatives to driving alone to work has been difficult. Nationwide, the percentage of commuters driving alone to work has increased significantly, from 64 percent in 1980 to 73 percent in 1990. One of the few urban areas found to buck this trend is Los Angeles, where the incidence of drive-alone commuting has increased only slightly, from 69 percent in 1980 to 70 percent in 1990 (1).

Of the commuting alternatives available in Los Angeles, carpooling is the most widely used. In fact, of the 10 largest urban areas, Los Angeles has the highest carpool rate (2). But, despite significant efforts to change commuter behavior over the last 3 years, there has been no change in drive-alone and carpool commute shares in the area (Figure 1).

The explanation most widely offered is that no alternative can compete with the freedom and convenience of drive-alone commuting. Increasingly people's lives are so fast-paced and complicated that one must drive alone to work to "chain" different work and nonwork trips, and time is becoming more precious.

Nevertheless, federal and state legislation, with the aim of reducing air pollution from mobile sources and increasing the capacity of our highways, has pointed to a role and responsibility of employers to help reduce vehicle trips and miles traveled by encouraging their employees to use alternatives to driving alone to work. Accordingly, in Los Angeles, Rule 1501 was phased in by the South Coast Air Quality Management District beginning in 1988, which man-

dates large employers to plan and implement vehicle trip reduction programs. Since the launch of the regulation, virtually all progress among affected employers to date has been the result of increases in carpooling (3).

These factors in combination—lifestyles with increasing need for unrestricted auto travel and increasing employer responsibility for encouraging employees to use alternatives to driving alone to work—have produced a somewhat predictable result in Los Angeles: a growth in carpooling with people from work (from the same company or another company close by) and a decline in carpooling with friends and family (Figure 2). The percentage of carpoolers riding with "co-workers" has increased from 34 percent in 1991 to 42 percent in 1993; conversely, the percentage of carpoolers riding with friends or family members has declined from 66 percent in 1991 to 58 percent in 1993. It is apparent that without employer initiatives, regulated or voluntary, the carpool rate would have decreased dramatically during this period. While "convenient" carpooling (with friends or family) is no longer reliable as a source of increases in vehicle trip reduction, "active" carpooling (with co-workers) has made important gains through employer-based efforts.

## PURPOSE

The purpose of this analysis is to learn about the commute behavior and attitudes of carpoolers who ride with co-workers. Past efforts to identify key variables that explain whether a commuter will choose to carpool have found that many factors play a role, and none alone has a high level of predictive power. But now that the segment of carpoolers whose partners are co-workers is growing, a look at the characteristics of this segment compared to those who carpool with friends and family may prove enlightening. If the co-workers carpool group is different in significant ways, the analysis will help employers identify new prospects and motivate employees to switch from driving alone to forming carpools with co-workers. In addition, the analysis will help policy makers understand and realize the potential of employer-based regulations.

## METHOD

The analysis is based on a comparison of the two carpool groups' commute behavior, employment characteristics, attitudes toward the commute, and demographic characteristics.

The data are from the 1993 State of the Commute survey conducted by Commuter Transportation Services (CTS). Since 1989,

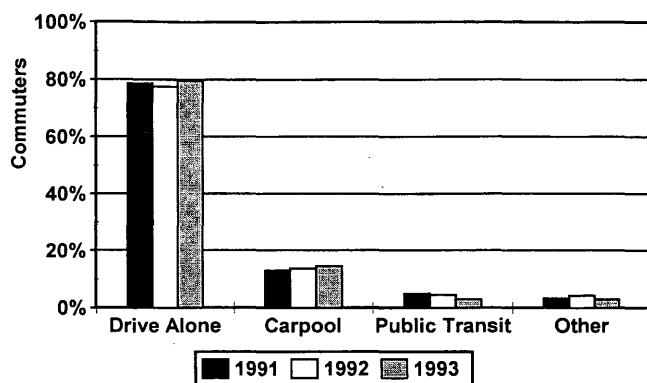


FIGURE 1 Commuter mode shares—greater Los Angeles, 1991 to 1993 (4–6).

CTS has conducted an annual survey of commuters who work full time away from the home in the five-county southcoast region. For each of the last three surveys—1991, 1992, and 1993 (4–6)—a total of 2,500 interviews were conducted by telephone among a randomly selected sample, with 500 each in Los Angeles, Orange, Riverside, San Bernardino, and Ventura counties. When combining the data for all counties, the sample was weighted for the number of workers in the county and the number of full-time workers in the household.

Respondents are asked how they usually travel to work. Those who report that they carpool are then asked who they carpool with on an open-ended basis. Responses are then coded into the following categories: (a) household members; (b) nonhousehold relatives; (c) co-workers; (d) friends, acquaintances, neighbors; and (e) someone from a matchlist.

Thus, those who have co-workers as partners may be carpooling with someone who works for the same company or someone who works for another company located nearby. At some point in the carpool arrangement, presumably either of these may be referred to by respondents as a “friend.” So, in part, the response may depend on how the relationship is viewed, and partnerships of co-workers that have been maintained for some time are likely to be referred to as carpooling with friends.

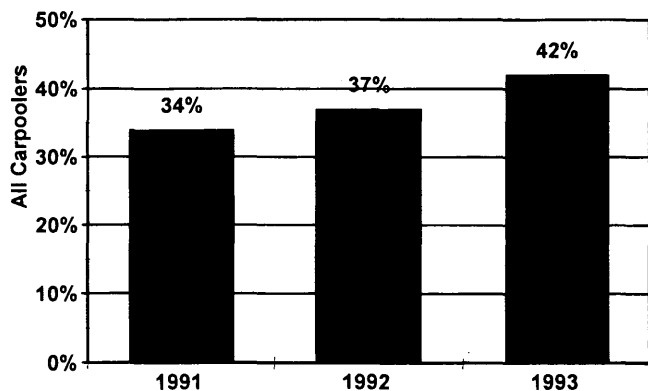
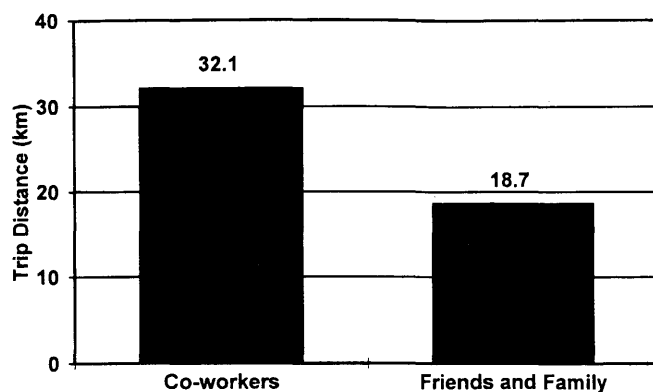


FIGURE 2 Carpooling with co-workers, 1991 to 1993 (4–6).



Note: 1 km = 0.6 mi.

FIGURE 3 One-way trip distance by carpool group.

## COMPARISON OF TWO CARPOOL GROUPS

### Commute Behavior

#### Distance

Co-worker carpools have nearly twice the one-way commute distance of friends and family carpools, 32.2 km (20.0 mi.) versus 18.7 km (11.6 mi.) (Figure 3). There are several possible explanations for this phenomenon. First, in finding the optimal household location, a family will not usually locate such that several family members have a long commute to the same general destination. This means that carpools of family members are located closer to their destination, thereby decreasing the average commute distance for the family and friend carpool group.

Second, at long commute distances, there is a greater probability of finding a suitable carpool partner among co-workers than among family and friends. This is because co-workers are usually more plentiful than friends and family members, have the same commute destination, and probably have a similar work schedule.

Third, carpoolers with longer trip distances receive greater financial and emotional benefit than carpoolers with shorter trip distances. Employer-based carpool matching efforts, which advertise cost and savings through carpooling and offer financial subsidies to carpoolers, will be more effective with long-distance commuters than short-distance commuters, thereby increasing the number of long-distance carpools among co-workers, and increasing the average commute distance for all co-worker carpools.

#### Use of Freeways, High-Occupancy Vehicle Lanes, and Park-and-Ride Lots

Because of the difference in average commute distances, it is not surprising that freeway use is far more prevalent among co-worker carpools (64 percent) than among friend and family carpools (51 percent). The usage of high-occupancy vehicle (HOV) lanes among those freeway users with access is higher among co-worker carpools than among family and friend carpools (80 versus 68 percent). Therefore, the success of future marketing of new HOV facilities will depend, at least in part, on employer-based efforts to

encourage carpooling. Similarly, park-and-ride lots are used more frequently by co-worker carpools than by family and friend carpools, which suggests that employer-based carpool matching efforts should consider using park-and-ride lots as connecting points.

#### *Length of Time in Current Carpool Arrangement*

Family and friend carpools have greater longevity on average than do co-worker carpools (Figure 4).

There are several factors contributing to this disparity. First, as previously suggested, after a length of time a co-worker carpool partner would be considered (and in response to a survey question be referred to as) a "friend." Second, there is a higher level of social compatibility and stability for the group of family and friend carpools, since the members probably knew each other prior to the inception of the carpool. The members of the co-worker carpool may or may not have known each other before they began carpooling. This unfamiliarity leads to a number of carpool arrangements that are terminated quickly because the members were not socially compatible. This group of failed carpools brings down the average longevity for the co-worker group as a whole. Third, work arrangements and schedules change more frequently than friend and family relationships, which create a number of carpools with a short duration because of schedule or even employment changes. Finally, employer-based encouragement is relatively new, largely a function of new regulations.

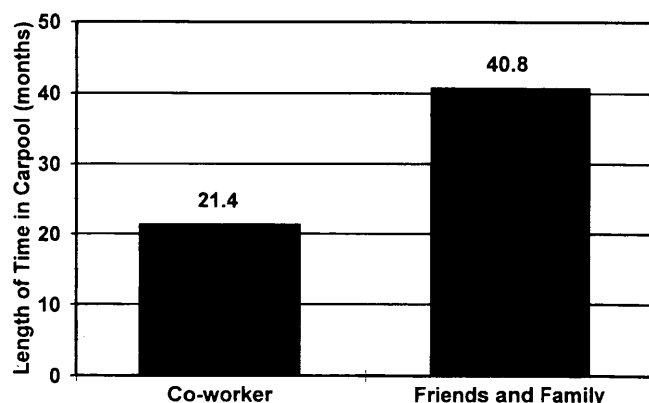
#### *Previous Commute Mode*

More than 8 in 10 of those who now carpool with co-workers previously drove alone to work, compared with only over 5 in 10 of those who now carpool with family and friends (Figure 5). Consequently, the formation of carpools among co-workers actually reduces more vehicle trips than the formation of carpools among family members and friends.

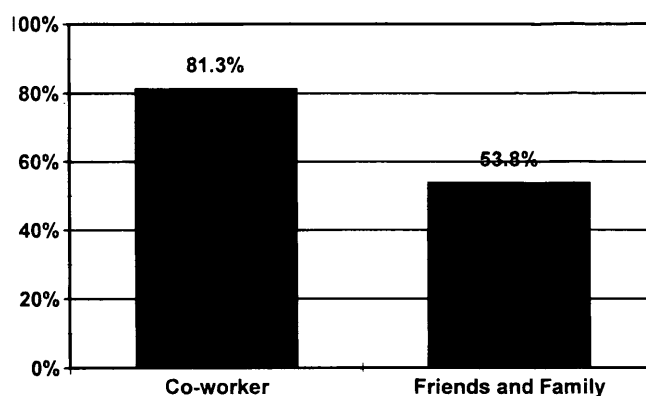
### **Employment Characteristics**

#### *Company Size*

Carpoolers who have co-workers as partners are more likely to work for large companies than carpoolers who have family members or



**FIGURE 4** Average months in carpool by carpool group.



**FIGURE 5** Percentage of carpoolers converting from driving alone by carpool group.

friends as partners. Not only are large companies mandated to encourage carpooling at their work sites, but by virtue of their large size (100 or more employees at a work site), they have a better chance of creating practical carpool arrangements than do smaller employers. Not surprisingly, carpoolers riding with co-workers are more likely to report being offered incentives to rideshare than carpoolers who ride with family and friends (Figure 6).

#### *Industry and Occupation*

Members of the different carpool groups are employed in different industries. Commuters who carpool with co-workers are much more likely to be employed by finance, insurance, and real estate companies than are those who carpool with family members and friends. This also holds true to a lesser extent in the construction and service industries. Conversely, commuters who carpool with family and friends are more likely to be employed in the manufacturing, transportation, or wholesale trade industries than are those who carpool with co-workers. The carpool groups are represented more or less equally in other industries.

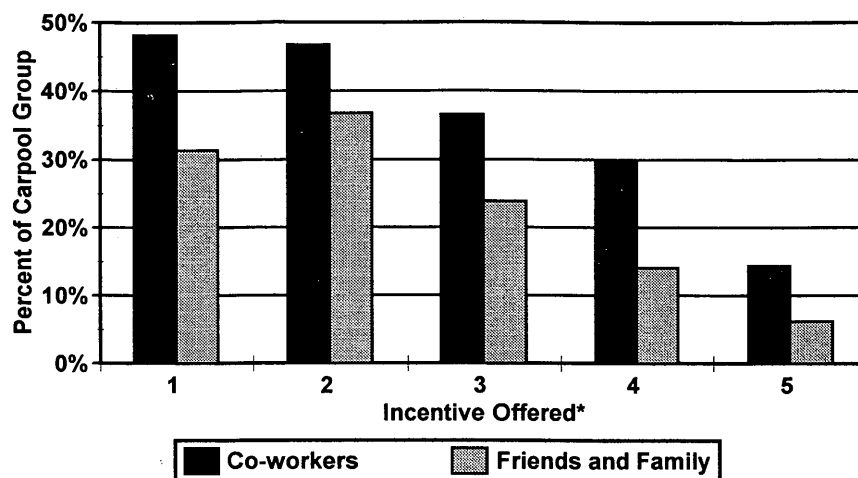
Both groups of carpoolers—those who have co-workers as partners and those who have family and friends as partners—are likely to classify their jobs as "production/crafts" or "maintenance." Carpoolers with co-workers are more frequently employed in "secretarial/clerical" or "middle management" positions than those in the family and friends carpool group, whereas those in the friends and family group are more often employed in the "sales" and "professional" occupations (Figure 7).

### **Attitudes Toward Commute**

#### *Mode Choice Factors*

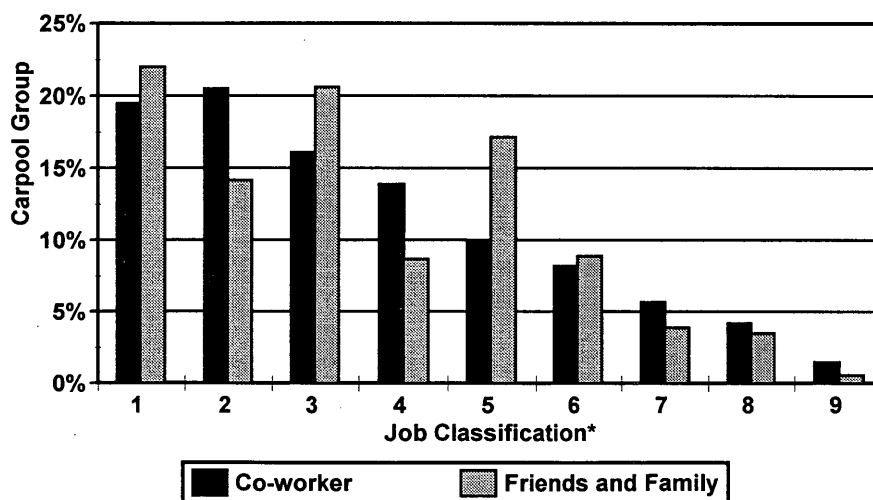
The survey asks commuters to cite the factors they consider when choosing their commute mode on an open-ended basis. Responses have been coded and collapsed into the groups shown in Figure 8.

The most frequently stated mode choice factors for both carpool groups fall into the convenience and flexibility group, but these factors are considerably more important to the friends and family group than to the co-worker carpool group. Employers can facilitate



\* Incentive Codes: 1. Ridesharing information. 2. A custom carpool matching service. 3. Preferential parking for ridesharers. 4. Monetary subsidies for ridesharers. 5. Employer sells a bus or rail pass.

FIGURE 6 Perceived availability of ridesharing incentives by carpool group.



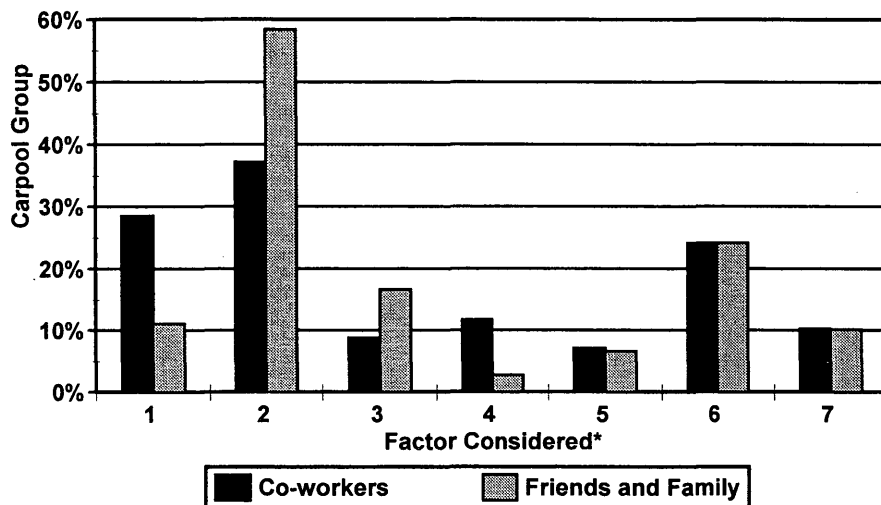
\* Job Classification Codes: 1. Production/Crafts. 2. Secretarial/Clerical. 3. Professional. 4. Middle management. 5. Sales. 6. Maintenance. 7. Senior management. 8. Construction. 9. Other.

FIGURE 7 Job classification by carpool group.

ridesharing by allowing employees some flexibility in the starting and ending times of the workday, and by matching the commuter with truly appropriate ridesharing arrangements. However, only by overcoming the perception that ridesharing is inconvenient will employers make progress in achieving their ridesharing goals.

Commute cost is far more likely to be considered by co-worker carpoolers. In fact, co-worker carpoolers are more likely to cite cost

than travel time. This suggests employers can convert some drive-alone commuters to ridesharing by offering monetary subsidies to ridesharers, or by charging for parking for employees who commute by driving alone. Monetary subsidies and free parking are easily understood by the commuters as direct cost saving measures, and therefore are appealing to a broader range of employees than are many other ridesharing incentives.



\* Mode Choice Factors (Collapsed): 1. Cost. 2. Flexibility and Convenience. 3. Practicality. 4. Comfort and stress. 5. Privacy and safety. 6. Travel time to work. 7. Other factors.

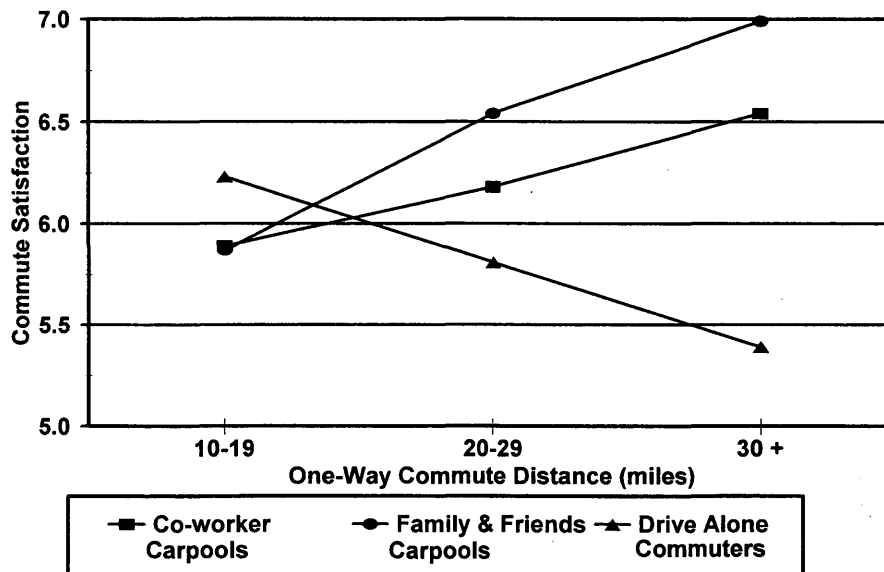
FIGURE 8 Mode choice factors considered by carpool group.

#### Commute Satisfaction Rating

One would expect commute satisfaction to have a strong inverse relationship to commute distance. While this holds true for drive-alone commuters, both carpool groups show a positive relationship between commute satisfaction rating and distance (Figure 9). This demonstrates an increase in benefits, both tangible and intangible, realized by carpoolers as travel distance increases. A "share the cost: share the driving" message should be integral to all employer-based ridesharing promotions.

Because commute satisfaction increases with distance for commuters carpooling with co-workers, employers can expect success in rideshare conversion among those employees with the most to gain, those with the greatest commute distances. Identifying acceptable ridesharing partners, however, becomes more difficult as commute distance increases, largely because of lower residential densities. Consequently, the development and growth of an extensive regional commuter database for rideshare matching is critical.

Another factor that helps explain the surprising relationship between commute satisfaction and distance is expectations. As



(Overall commute satisfaction: "1" least satisfactory and "9" most satisfactory)

FIGURE 9 Commute satisfaction by distance by commuter group.

commute distance increases, one would expect to be increasingly less pleased with the commute: note the satisfaction for commuters driving alone (Figure 9). However, for commuters carpooling with family and friends, the long commute may serve a social function. For commuters carpooling with co-workers, the social aspect may be superseded by substantial financial savings resulting from shared driving costs, although the social benefits may not be lost completely.

## Demographic Characteristics

### Gender

Women are more likely to carpool than men in general. However, co-worker carpools are more gender-balanced than are family and friend carpools (Figure 10).

### Age

For persons under age 30, a carpool partner is far more likely to be a friend or relative. For persons in the 30- to 39-year age group, a carpool arrangement is far more likely to be with a co-worker than a friend or family member (Figure 11). Perhaps a certain level of

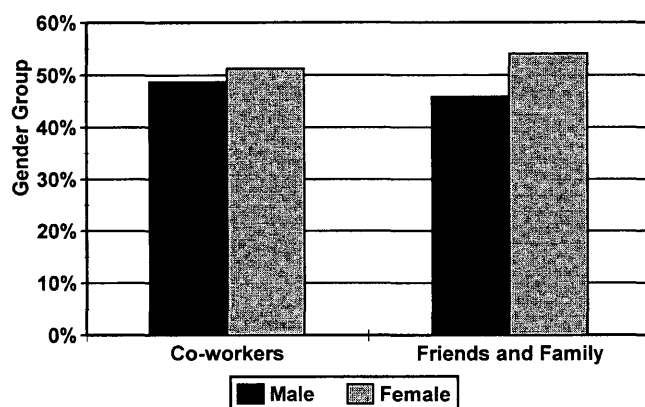


FIGURE 10 Gender by carpool group.

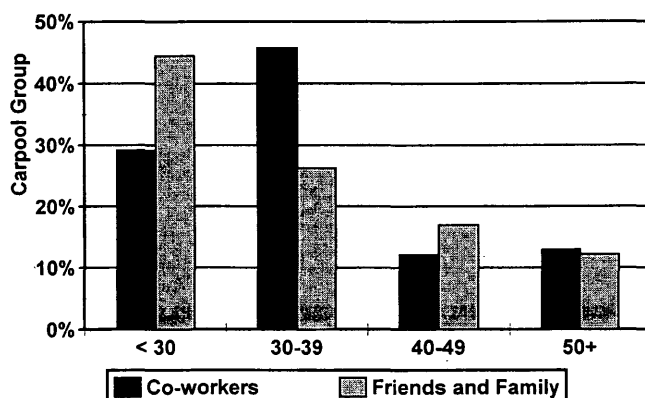


FIGURE 11 Age distribution by carpool group.

TABLE 1 Average One-Way Commute, All Commuters

Age Group	Mean Commute Distance [km (mi)]
<20	16.9 (10.5)
20-29	22.5 (14.0)
30-39	26.2 (16.3)
40-49	25.6 (15.9)
50-59	19.6 (12.2)
>60	22.7 (14.1)

maturity may be necessary for co-workers to form and maintain a carpool.

This phenomenon is also a function of travel distance, as commuters age 30 to 39 have a longer average one-way commute distance than other age groups. Among carpoolers, the difference is even more pronounced (Tables 1 and 2).

### Ethnicity

Whites and blacks are overrepresented in the co-worker carpool group. Hispanics and Asians are overrepresented in the family and friends carpool group (Figure 12).

### Income

There is also disparity between the levels of household income for the two groups. Only 35 percent of the commuters in the family and friends carpool group have an annual household income of \$50,000 and over, as compared with 46 percent of the co-worker carpool group (Figure 13). This indicates that employer-based efforts to increase carpooling are expanding the income profile of carpoolers upward. The greater concern about commute costs among co-worker carpoolers, therefore, is more likely a function of commute distance than income.

## CONCLUSIONS

While regional work trip carpool rates in Greater Los Angeles have not changed over the past 3 years, carpooling with co-workers has accounted for an increasing share of all carpooling. Therefore, without employer-based efforts, carpooling rates would surely have decreased.

Carpooling with co-workers has produced greater reductions in vehicle trips and vehicle miles traveled than carpooling with family and friends.

Not surprisingly, carpool incentives offered by employers have induced more carpooling with co-workers. In addition to employer incentives, co-worker carpools are more likely than family and friend carpools to be facilitated by publicly provided facilities, including HOV lanes and park-and-ride lots.

TABLE 2 Average One-Way Commute, Carpoolers

Age Group*	Mean Commute Distance [km (mi)]
<30	22.7 (14.1)
30-39	29.6 (18.4)
40-49	22.2 (13.8)
>50	26.1 (16.2)

\* Groups collapsed due to small sample sizes.

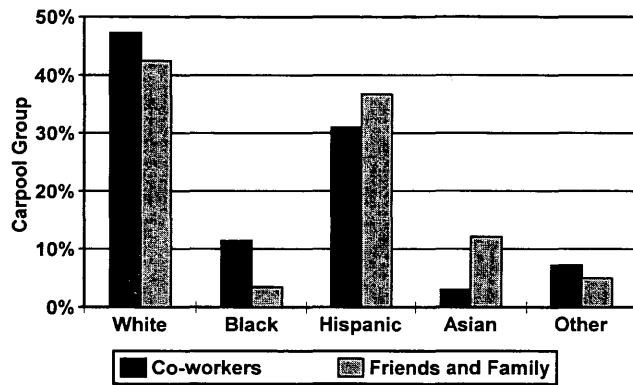


FIGURE 12 Ethnicity by carpool group.

Because of their long commute distance, carpoolers who ride with co-workers are more likely to use a freeway during their commute. Usage of available HOV lanes is higher for this group than the group of family and friends carpoolers. Thus, successful implementation of future HOV lane projects rely heavily on employer-based efforts to encourage carpooling.

Compared to carpoolers who ride with family and friends, carpoolers who ride with co-workers are twice as likely to consider commuting costs when making their commute mode choice, and are twice as likely to consider comfort and stress. Thus, drive-alone commuters who cite these considerations are prime targets for conversion to co-worker carpools.

Commute satisfaction is a positive function of distance for carpoolers, and a negative function of distance for drive-alone commuters. This means employers can expect some success in carpool formation for employees with longer commute distances, provided there are suitable carpool partners. To maximize the likelihood of finding a suitable carpool partner, an extensive regional database for rideshare matching employers is essential.

Employer-based rideshare marketing efforts have broadened the demographic profile of carpoolers. More men, more commuters in

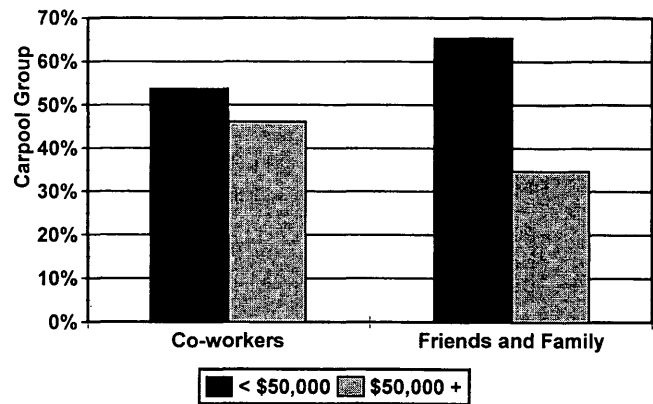


FIGURE 13 Annual household income by carpool group.

the 30 to 39 age group, more whites, more blacks, and more people with household incomes of \$50,000 or greater are now carpooling.

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