

Case Study on Impact of 4/40 Compressed Workweek Program on Trip Reduction

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The compressed workweek is often promoted as a transportation demand management (TDM) strategy. It is assumed that employees who work fewer days per week will make fewer trips per week, thus reducing demand on transportation infrastructure. A before-and-after case study by Commuter Transportation Services, Inc., examines the effects of this strategy on travel behavior by analyzing travel logs completed by employees at a Los Angeles County worksite before and after the implementation of a 4/40 compressed workweek schedule (four 10-hr days a week). Results show that employees actually made more trips on their compressed workweek day off than they did on any other day. However, employees made fewer trips per week and traveled fewer miles than when working a traditional 5/40 schedule (five 8-hr days per week). In addition, the trips made on the day off are short errands and were usually made during nonpeak periods, late morning or early afternoon. Further, the findings show that a larger percentage of the trips were being made without a return home between trips, indicating a reduction in the number of cold starts. The study concludes that a 4/40 compressed workweek program can reduce the average number of vehicle miles traveled (VMT) and thus can reduce levels of mobile source pollutants entering the atmosphere. The average reduction in VMT per week for respondents of this study, 46 mi, is equal to a \$850 annual savings in user costs and an average reduction of 2,300 lb of carbon dioxide and pollutants.

Transportation demand management (TDM) strategies are designed to increase the efficiency of existing transportation infrastructure by reducing travel demand and traffic congestion during peak travel periods. In Southern California, many transportation professionals are promoting the use of TDM strategies to reduce vehicle emission levels and air pollution in the Los Angeles Basin. TDM strategies include ridesharing, telecommuting, variable work hours, and compressed workweek programs.

In a compressed workweek program, the length of the traditional 8-hr workday is increased, allowing employees to reduce the number of days worked per week. Employees working compressed schedules report to work fewer days per week and are presumed to make fewer trips per week.

Except for the 1980 Denver Regional Council of Government experiment (1), there has been little research to determine what employees do with their additional days off. The Denver experiment evaluated both the 4/40 and 9/80 compressed workweek programs of over 7,000 federal employees in the Denver area. Particular attention was given to quantifying the indirect impacts of the modified schedules on weekly household travel patterns.

This case study parallels the Denver study and was designed to determine whether the compressed workweek program reduces total weekly trips and total weekly distances, or both, thus reducing congestion and pollution.

To understand the effects of a compressed workweek schedule on employee travel behavior, Commuter Transportation Services, Inc., (CTS) surveyed a group of employees working a traditional 5/40 schedule and surveyed the same employees after they began working a compressed 4/40 schedule. The research was conducted at the Los Angeles County Department of Public Works (DPW), a major employer in the San Gabriel Valley in Southern California. The site was chosen for the following reasons:

1. There was an opportunity to conduct before-and-after surveys,
2. A large employee population participated in the compressed workweek program, and
3. There were considerable cooperation and support from DPW management.

On September 5, 1990, DPW implemented a 4/40 program that involved 1,600 employees at the Alhambra headquarters worksite. The 1,600 employees work four 10-hr workdays each week and the building closes on Fridays.

CTS conducted a survey 2 weeks before the implementation of the program and 6 months afterward (Figure 1). The surveys were distributed to the same sample group and included a 1-week travel log (Figure 2) designed to record details of employee trips each day of the week. Experience with past surveys indicated that a response rate of 50 percent could be expected. Thus, for 100 "after" surveys to be completed by respondents who also returned a "before" survey, 300 of the 1,600 employees were randomly selected to participate in the study. (The sample group was chosen through a computer program that randomly selected 300 employees from the pool of all employees who were scheduled to be on the 4/40 compressed workweek program.)

There was concern in DPW that hardships might arise following the radical change in work schedule. There was particular concern that the 4/40 schedule might cause problems for employees with childcare needs. The survey was therefore designed to gather information about how the 4/40 schedule would affect such employees.

The effect of the compressed workweek on trip generation and travel behavior is considered by examining the following:

- Employee's day-off trips,
- Number of trips,

Trip #1
 Time: _____ am/pm (please circle one)
 Origin: (please circle one)

1	Home	1	Home
2	Work	2	Work
3	Different work site	3	Different work site
4	School for children	4	School for children
5	Child care/dependent care	5	Child care/dependent care
6	Restaurant	6	Restaurant
7	Shopping	7	Shopping
8	Post Office	8	Post Office
9	Bank	9	Bank
10	Medical	10	Medical
11	Recreation	11	Recreation
12	Visit friend or relative	12	Visit friend or relative
13	Personal business	13	Personal business

How did you traveled: (please circle one)

A	Drove alone
B	Carpooled
C	Took the public bus
D	Bicycled
E	Walked
F	Other

Distance traveled: _____ miles Time traveled: _____ minutes
 Did you travel by freeway? Yes No

Trip #2
 Time: _____ am/pm (please circle one)
 Origin: (please circle one)

1	Home	1	Home
2	Work	2	Work
3	Different work site	3	Different work site
4	School for children	4	School for children
5	Child care/dependent care	5	Child care/dependent care
6	Restaurant	6	Restaurant
7	Shopping	7	Shopping
8	Post Office	8	Post Office
9	Bank	9	Bank
10	Medical	10	Medical
11	Recreation	11	Recreation
12	Visit friend or relative	12	Visit friend or relative
13	Personal business	13	Personal business

How did you traveled: (please circle one)

A	Drove alone
B	Carpooled
C	Took the public bus
D	Bicycled
E	Walked
F	Other

Distance traveled: _____ miles Time traveled: _____ minutes
 Did you travel by freeway? Yes No

Trip #3
 Time: _____ am/pm (please circle one)
 Origin: (please circle one)

1	Home	1	Home
2	Work	2	Work
3	Different work site	3	Different work site
4	School for children	4	School for children
5	Child care/dependent care	5	Child care/dependent care
6	Restaurant	6	Restaurant
7	Shopping	7	Shopping
8	Post Office	8	Post Office
9	Bank	9	Bank
10	Medical	10	Medical
11	Recreation	11	Recreation
12	Visit friend or relative	12	Visit friend or relative
13	Personal business	13	Personal business

How did you traveled: (please circle one)

A	Drove alone
B	Carpooled
C	Took the public bus
D	Bicycled
E	Walked
F	Other

Distance traveled: _____ miles Time traveled: _____ minutes
 Did you travel by freeway? Yes No

FIGURE 1 Day 1 of travel log included with preimplementation survey of Los Angeles County Department of Public Works employees.

- Freeway trips,
- Length (distance and time) of trips,
- Time of day during which errand trips are made,
- Mode split, and
- Factors affecting the number of trips.

RESPONDENT PROFILE

Of the 300 employees surveyed, 158 responded to the first survey and 139 to the second survey. Of the 139 who returned the second survey, 108 completed both surveys.

Tests indicate that there is no significant difference between the two surveys, at the 95 percent confidence level, in the respondent's gender, number of persons per household, and number of cars per household.

Number of Cars and Household Size

There is some correlation between the number of cars per household and the number of persons per household. In the first and second surveys, the number of cars in a household increased in relation to the size of the household.

Results also indicate that most respondents had access to a car and, thus, the number of cars per household should have had a negligible effect on the number of trips made per respondent.

Type of Childcare

One of the aims of this study was to gather information on how the 4/40 schedule would affect those employees with childcare needs. Only 20 respondents (13 percent) to the first survey and 23 respondents (17 percent) to the second survey said that they currently had children in childcare. However, a test for "difference in proportion" indicated that there was no significant difference, at the 95 percent confidence level, between the number of respondents with childcare needs in the first survey and that in the second survey.

Of those respondents who had childcare needs, approximately half indicated that their children are cared for at home. Thus, the actual number of respondents using childcare outside the home is so small that conclusions regarding the effect of the 4/40 program on persons with childcare needs cannot be determined.

SURVEY RESULTS

Employee's Day-Off Trips

After the implementation of the 4/40 program, there was an increase in the number of trips made for shopping, medical or personal business, recreation, school for children, and visits to bank and post office on Fridays (see Table 1). This indicates that the respondents are using the day off for errands or personal needs. It is interesting to note that the percentage of all trips destined for home on the day off decreased from that on an ordinary Friday, indicating that a greater per-

THE DEPARTMENT OF PUBLIC WORKS FOLLOW-UP SURVEY

To help evaluate the effects of the 4/40 Compressed Work Week Program, we would like to ask you to complete the following survey and travel log.

Please answer all questions pertaining to you. All responses are confidential and will be used for planning purposes only.

-
1. At what time do you normally begin work?
 ___:___ am/pm (please circle one)
 2. At what time do you normally leave from work at the end of the day?
 ___:___ am/pm (please circle one)

ANSWER QUESTION 3 ONLY IF YOU CARPOOL WITH LESS THAN 4 PEOPLE AT LEAST 3 TIMES A WEEK, OTHERWISE SKIP TO QUESTION 4.

3. With whom do you usually carpool: (Circle all that apply.)
 - a. Household members
 - b. Non-household relatives
 - c. Co-workers
 - d. Friends, neighbors
 - e. Other (please specify) _____
4. Indicate whether you are:
 - a. Male
 - b. Female
5. How many people live in your household?
 _____ number of people in household
6. How many cars do you have in your household?
 - a. None
 - b. 1
 - c. 2
 - d. 3 or more

ANSWER QUESTION 7 AND 8 ONLY IF YOU ARE LIVING WITH CHILDREN WHO ARE UNDER 6 YEARS OLD AND NOT ENROLLED IN SCHOOL.

7. What type(s) of child care are you providing the children?
 - a. Household member (including live-in sitter) at your home
 - b. Non-household relative, friend or sitter at your home
 - c. Relative, friend or sitter at their home
 - d. Child care facility
 - e. Other (please specify) _____
8. How often do you take your child to the child care facility or to a sitter not at your home?
 - a. Never or only in case of an emergency
 - b. Once a week
 - c. Two to three times a week
 - d. More than four times a week

FIGURE 2 Follow-up survey of DPW employees.

centage of trips are being made consecutively rather than with the respondent returning home between trips.

Although the proportion of work trips as a percentage of all trips on Friday decreased from the first to the second survey, the proportion of work trips almost doubled for each workday (Monday through Thursday). In the first survey, the proportion of errand-running trips decreased; thus, in relation to all trips, work trips constituted a larger percentage.

In addition, these work trips are not commute trips to work because the percentage of trips to home decreased signifi-

cantly. Instead, the increased percentage and number of trips to work can be accounted for by trips made during the workday when the respondents returned to work from, for example, lunch or an errand. The respondents to the second survey who work a 10-hr day were probably more inclined to leave the worksite during the day than respondents working an 8-hr day. Thus, the increased work trips are most likely accounted for by short trips made as the employees returned from errands instead of by an increased number of commute trips made from home to work.

TABLE 1 PERCENTAGE OF TRIPS TO DESTINATION

DESTINATION	FRIDAY			WEEK		
	PRE PERCENT (%)	POST PERCENT (%)	PERCENT POINT CHANGE	PRE PERCENT (%)	POST PERCENT (%)	PERCENT POINT CHANGE
HOME	34.1	25.0	- 9.1	36.1	25.8	+10.4
WORK	26.5	1.6	-24.9	21.3	27.3	- 6.0
DIFFERENT WORK	4.7	0.9	- 3.8	4.1	8.0	- 3.9
SCHOOL FOR KIDS	0.9	9.3	+ 8.4	0.8	2.7	- 1.9
CHILDCARE	2.3	0.7	- 1.6	2.0	2.2	- 0.2
RESTAURANT	7.9	8.1	+0.3	5.9	4.8	+ 1.2
SHOPPING	6.3	15.7	+ 9.4	8.5	8.0	+ 0.5
POST OFFICE	0.3	2.1	+ 1.8	0.5	0.6	- 0.1
BANK	1.0	2.6	+ 1.6	0.9	0.9	- 0.0
MEDICAL	1.4	5.5	+ 4.1	0.7	1.6	- 0.9
RECREATION	4.9	8.1	+ 3.2	5.1	3.7	+ 1.4
FRIEND/RELATIVE	5.2	8.1	+ 2.9	6.4	6.8	- 0.4
PERSONAL BUSINESS	4.5	12.2	+ 7.7	7.5	7.7	- 0.2

Number of Trips

The results of the second survey indicate that the average number of trips made per respondent on the compressed workweek day off (Friday) exceeded the average number of trips made on any other day (Figure 3, Table 2). Although more trips are made on the day off than on any other day, the average total number of weekly trips made by respondents to the second survey decreased by 9 percent. This would indicate that, although more trips are being made per person on Friday, the increase is more than compensated for by a reduction in the number of trips being made on all other days (Table 2). This indicates that non-work-related trips are either eliminated or redistributed from workdays to the day off.

Freeway Trips

The proportion of trips taken on the freeway, noted in the first survey, was 39 percent; however, according to the second survey, only 34 percent of all trips were on the freeway, a reduction of 5 percent (Table 3). On Friday, however, there was a reduction of 13 percent in the percentage of trips made on the freeway, indicating that a larger percentage of day-off trips were local trips. The destination analysis confirms this hypothesis because there was an increase in the percentage of errand-running trips made on Friday (assuming that errands are accomplished locally).

Length (Distance and Time) of Trips

Although the average number of trips made on the day off exceeded the average number made on an ordinary workday,

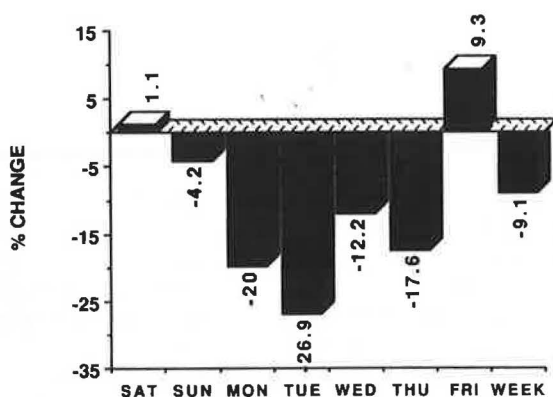


FIGURE 3 Average number of trips per respondent.

the average trip distance traveled on the day off was less than that on the ordinary workday. This is primarily because the trips were short personal errands instead of the traditionally longer commute trip to work.

The average distance for a trip, following the introduction of the 4/40 schedule, was reduced by 19 percent (Figure 4). Shorter average trip distances noted in the second survey could also explain why fewer freeway trips were made, because short trips are more likely to be made on surface streets.

Distance Traveled

Sunday showed the greatest reduction in average distance traveled per respondent (61 percent), followed by Friday (39 percent). However, the average distance traveled on Saturday increased by 10 percent (Figure 5).

These figures indicate that trip destinations were redistributed. Whereas errand trips previously made during the workday were redistributed to Fridays, longer recreational trips previously made on both Saturdays and Sundays were made on Saturdays. Sundays then became a day to relax and stay at home.

Total Weekly Distance Traveled

The average weekly distance traveled by respondents decreased by 46 mi, a 17 percent reduction (Table 3). The Den-

TABLE 2 AVERAGE NUMBER OF TRIPS PER RESPONDENT BY DAY

DAY	PRE		POST		PERCENTAGE CHANGE (%)
	TOTAL TRIPS	TRIPS PER RESPONDENT	TOTAL TRIPS	TRIPS PER RESPONDENT	
SAT	515	458	3.26	3.29	+ 1.1
SUN	488	412	3.09	2.96	- 4.2
MON	562	412	3.56	2.96	- 20.0
TUE	606	420	3.84	3.02	- 26.9
WED	556	436	3.52	3.14	- 12.2
THU	571	427	3.61	3.07	- 17.6
FRI	574	557	3.63	4.01	+ 9.3
WEEK	3872	3122	24.51	22.46	- 9.1

TABLE 3 AVERAGE DISTANCE TRAVELED PER RESPONDENT

DAY	PRE DISTANCE	POST DISTANCE	PERCENT CHANGE (%)
SAT	43.85	48.76	+10.1
SUN	44.22	27.41	- 61.3
MON	40.77	37.31	- 9.3
TUE	45.36	39.17	- 15.8
WED	41.01	41.64	+ 1.5
THU	49.47	38.63	- 28.1
FRI	52.68	38.01	- 38.6
WEEK	317.36	270.93	- 17.1

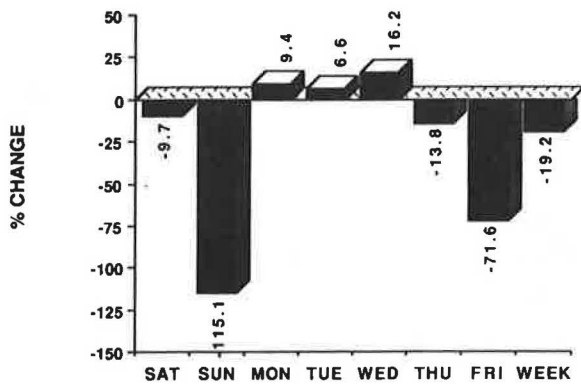


FIGURE 4 Average distance per trip.

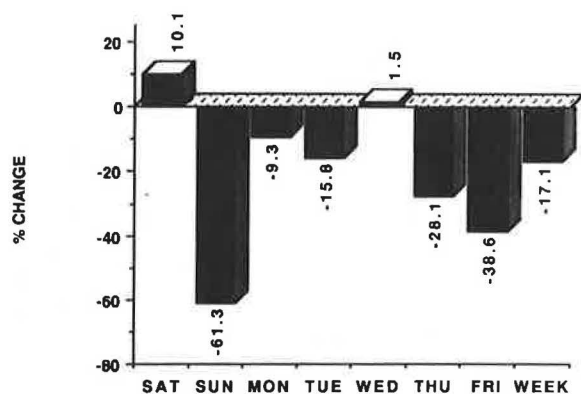


FIGURE 5 Average distance traveled per respondent.

ver Regional Council of Governments study also concluded that the introduction of the compressed workweek resulted in an average reduction in weekly distance traveled. The study found that the average weekly distance traveled per respondent decreased by 49 household vehicle miles per week, an 18 percent reduction (1).

The reduction in total weekly distance traveled is primarily equal to the reduction in vehicle miles traveled on Sunday and Friday.

Travel Time per Trip

For the week as a whole there was no significant change in the average travel time per trip. More profound changes can be seen when the days are compared individually instead of when they are compared at the aggregate weekly level. The average time per trip on Sunday and Friday of the second survey was significantly lower than that in the first survey (50 and 53 percent reductions, respectively), whereas the average time per trip for all the other days increased by 6 to 18 percent.

These figures support the hypothesis that the respondents working a 4/40 schedule made shorter trips on their days off than they did on a working Friday. In addition, on the 4/40 workdays (Monday through Thursday) the employees made fewer short errand trips; thus, the average trip time on work-

ing days was higher because the longer commute trips to and from work constituted a greater proportion of all trips.

Travel Time per Week

The total weekly travel time per respondent was reduced by 5 min or 6 percent. On a daily basis, Sunday showed the greatest percentage of reduction in total travel time per respondent (20 percent), followed by Friday (17 percent).

Whereas travel time per trip did not change, total travel time per week decreased. This is again because of the reduction in the number of total trips made.

Time of Day Errand and Work Trips Made

In both the first and second surveys, most Saturday and Sunday trips were made between 10:00 a.m. and 3:00 p.m. There was an overall increase in the percentage of trips made in mid-morning and late afternoon and a decrease in the percentage of trips made in the early morning and late evening.

Workdays (Monday through Thursday) showed an increase in the percentage of trips made between 5:00 and 7:00 a.m. and 5:00 and 7:00 p.m. as well as trips made around lunchtime. The morning and evening trips are assumed to be commute trips made to and from work, whereas the noontime trips are either errand or lunch trips made from work. On the whole, in the first survey fewer errand trips were noted between Monday and Thursday and the errand trips that were made on workdays were made during the day rather than after work. The increased percentage of trips made around lunchtime accounts for the increased percentage of trips destined for work, as noted. On Friday, the compressed workweek day off, there was a reduction in the percentage of trips made before 8:00 a.m. and after 3:00 p.m., shifting errand trips out of peak hours.

In the first survey, 94 percent of respondents began work between 7:00 and 9:00 a.m. and were evenly distributed throughout the 2-hr period. In the second survey, however, 96 percent began work between 6:30 and 7:30 a.m. Thus the time parameters within which employees began work changed from 2 hrs, 7:00 to 9:00 a.m., to 1 hr, 6:30 to 7:30 a.m. The time parameters within which the majority of respondents left the worksite also narrowed considerably.

These reduced time parameters are explained by the increased length of the workday. The employees responding to the second survey were working 10-hr days instead of 8-hr days and thus had less control over the hours they arrived at and left work. An effect of these narrowed parameters could be increased congestion between 6:30 and 7:00 a.m. and 5:30 and 6:00 p.m. around the site on Monday through Thursday.

Mode Split

The drive-alone rate for the week noted in the first survey and second survey did not change, remaining at 60 percent. The carpool rate for the week did not change either (Figure 6, Table 4).

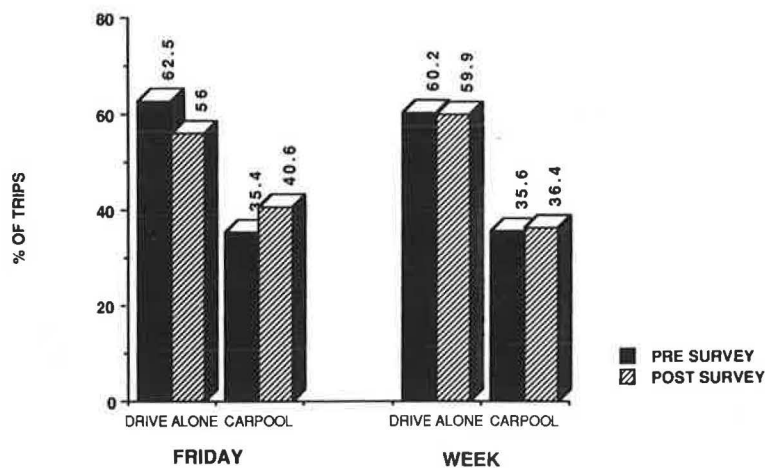


FIGURE 6 Travel mode.

These findings are similar to those in the Denver study. The results of the Denver study indicated that the compressed workweek had little effect on mode split, specifically on the drive-alone rate (1).

On Friday, however, the drive-alone rate was reduced by 7 percent and the carpool rate increased by 5 percent. These figures show some indication that day-off trips were more likely to be made with a carpool partner.

The percentage of respondents indicating “not applicable” when asked with whom they normally carpool decreased from the first survey to the second survey, from 80 to 70 percent, implying that there was a 10 percent increase in the number of respondents who made trips with a carpool partner (Figure 7). There was also an increase in the percentage of respondents who carpooled with a coworker. The percentage of respondents who indicated that their carpool partner was a coworker more than doubled, from 7 to 15 percent. These figures indicate that a significant proportion of the new carpoolers are carpoolsing with coworkers. This makes sense because employees working a 10-hr day are more likely to find a carpool partner with a similar schedule among coworkers.

Factors Affecting Number of Trips

Household Size

The households with five or more persons formed too small a sample in both surveys to make accurate observations re-

garding the trip behavior of members of larger households. The average number of trips person for the week was greatest for persons with four household members in both the first survey (27) and in the second survey (24). Households with one and three members made approximately the same number of trips in the first survey (22 and 21, respectively). Following the implementation of the compressed workweek, the average number of trips decreased for each of the household sizes. However, in the second survey, respondents with one member reduced their trips by a larger percentage (15 percent) than did those with two or four members (12 and 13 percent, respectively).

It appears that respondents with responsibilities to other household members are less likely to reduce the number of trips made in a week than respondents living alone.

Cars per Household

The number of cars per household did not seem to significantly affect the average number of trips made on any day as found in the first or second survey.

Trips Made by Respondents with Childcare Needs

There were few respondents with childcare needs and accurate conclusions about the effects of the new schedule on respondents with such needs cannot be drawn. The data indicate that respondents with childcare needs made more trips per week than did the general population. However, following the implementation of the compressed workweek schedule, the average number of trips decreased by a greater percentage (13 percent) for those with childcare needs than it did for the population as a whole (9 percent).

CONCLUSION

The implementation of the 4/40 compressed workweek schedule at the study site affected employees’ travel behavior. The survey results indicate that the respondents made more trips

TABLE 4 TRAVEL MODE AS A PERCENTAGE OF TRIPS BY DAY

MODE	PRE PERCENT (%)	POST PERCENT (%)	PERCENT POINT CHANGE (%)
FRIDAY			
DRIVE ALONE	62.5%	56.0%	- 6.5%
CARPPOOL	35.4%	40.6%	+ 5.2%
TRANSIT	0.0%	0.2%	+ 0.2%
BIKE	0.0%	0.0%	- 0.0%
WALK	1.1%	2.1%	+ 1.0%
OTHER	0.9%	1.1%	+ 0.2%
WEEK			
DRIVE ALONE	60.2%	59.9%	- 0.4%
CARPPOOL	35.6%	36.4%	+ 0.9%
TRANSIT	0.2%	0.5%	+ 0.3%
BIKE	0.5%	0.0%	- 0.5%
WALK	2.0%	1.7%	- 0.3%
OTHER	1.5%	1.5%	+ 0.0%

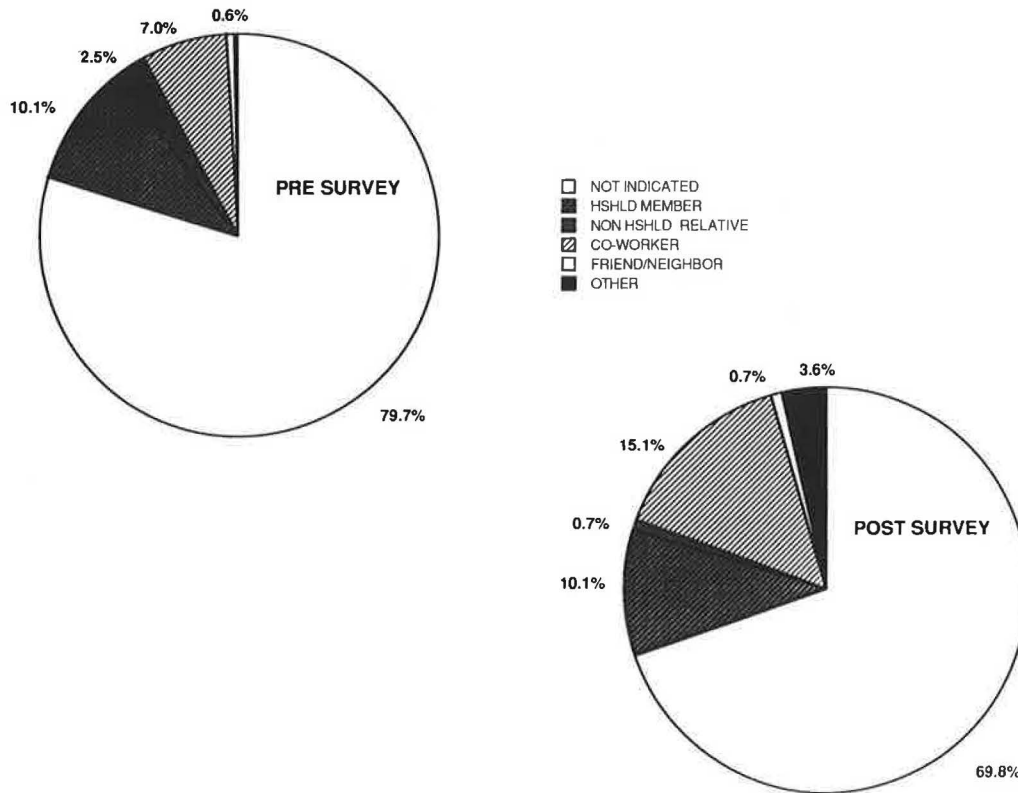


FIGURE 7 Carpool partner.

on their days off than on any other day but that these extra trips were compensated for by a reduction in the number of trips made on the remaining days of the week. Fewer trips were made per week after the implementation of the new schedule. Trips that were made, however, were shorter than those made before the 4/40 workweek was implemented; thus, there was a reduction in the average total distance traveled per respondent.

It appears that employees use the compressed workweek day off to run short errands, go shopping, or visit friends, activities that were previously conducted on Saturday. Saturday becomes a day for recreation rather than an errand-running day. The employees now have an extra weekend day, Sunday, which is used for relaxation. The results of the second survey indicated that the number of trips made and the length of trip were reduced in both distance and time, shorter trips were made on Friday, and more, slightly longer trips were made on Saturday.

Respondents arrive earlier at work and leave later, although the commute trips remain within peak travel periods. The arrival and departure time parameters are reduced; therefore, more people enter and leave the worksite at approximately the same times. Although congestion around the site may be more severe on Monday through Thursday, the respondents are making fewer trips before and after work, running errands during the workday or on their day off. On weekdays, errand trips are made at lunchtime, and on the day off most trips are also made in the middle of the day. Errand trips shifted from peak travel periods to off peak periods, thereby reducing the number of noncommute trips made during peak traffic volumes.

More day-off trips were made consecutively, resulting in a reduction in average distance traveled and in the number of pollutant-generating cold starts. The average distance traveled for the week decreased by 46 mi per respondent; the average time spent traveling decreased only slightly. This indicates that in reducing congestion and pollution, the savings may not be as great as it initially appeared: the time vehicles are actually on the road did not decrease significantly, in spite of the reduction in distance traveled.

The 46-mi weekly reduction represents nearly 2,300 mi, 81 lb of pollutants, 2,185 lb of carbon dioxide, 114 gal of fuel, and \$851 in user costs per person annually. [Pollutant, carbon dioxide, and fuel use factor data are from Division of New Technology, Materials and Research, California Department of Transportation. User cost data are from the American Automobile Association (1991).]

According to the second survey, fewer trips were taken on the freeway and more trips were taken on surface streets where fuel consumption and automobile emissions are higher than for trips made on the freeway. However, fewer trips on the freeway can help reduce freeway congestion and associated increased levels of pollution. When traffic on the freeways is congested, freeway travel would not reduce automobile emissions and mileage per gallon.

On the basis of the findings of this study, it is concluded that the 4/40 compressed workweek program is an effective strategy to reduce vehicle trips and vehicle miles traveled. It is hoped that additional research into the compressed workweek as a TDM strategy will be encouraged.

Three areas in which further research is needed are (a) change in trip destinations, (b) travel mode of work and non-

work trips, and (c) the effect of the compressed workweek on productivity, morale, and absenteeism.

The survey design for this study did not draw information from the respondent about changes in trip destination: did the respondent shop at a market close to home or to work? The survey design also did not analyze the commute-to-work travel mode. Each trip was recorded individually and not aggregated into contiguous trips. For example, a carpool trip to work would be recorded as two trips: a drive-alone trip from home to visit a friend or relative and a carpool trip from visited friend to work. This type of information would be especially useful for air quality management trip reduction plans.

Because of the scope of this project, the effect of the 4/40 compressed workweek on employee productivity was not measured. However, a previous study found that 67 percent of 4/40 schedule participants and 57 percent of 9/80 schedule participants reported improved productivity (2). More data on the effects of compressed workweeks on productivity, absenteeism, and morale are needed to determine whether a compressed workweek program will be approved by management.

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