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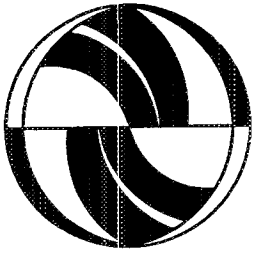
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First Year Results from Metropolitan
Phoenix**

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UCTC No. 226

**The University of California
Transportation Center**

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**Employee and Student Trip Reduction:
First Year Results from Metropolitan Phoenix**

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The University of California Transportation Center
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ABSTRACT

This study examines early trip reduction progress achieved by the Maricopa County Regional Travel Reduction Program in metropolitan Phoenix, Arizona. This study's findings are compared with selected findings about the first year progress of the South Coast Air Management District Regulation XV program in metropolitan Los Angeles.

In Phoenix, non-school employees, by far the largest commuter group, reduced their percentage of single occupant vehicle trips by 3.9%, but their total savings in average single occupant vehicle miles travelled per week was small. School employees reduced their percentage of single occupant vehicle trips by 3.6%, while students reduced this percentage by 13.4%. Both groups contributed at a higher rate to air pollution reduction through average single occupant vehicle miles reduced than non-school employees.

Two inexpensive measures, a guaranteed ride home and prize drawings, were statistically related to a reduced percentage of single occupant vehicle commutes for non-school employees. Both measures were found to be statistically related with trip reduction in metropolitan Los Angeles.

Similar studies conducted in other metropolitan areas are needed to provide additional program comparisons and address the large questions of initial and continued trip reduction progress and urban air quality improvement.

EMPLOYEE AND STUDENT TRIP REDUCTION: FIRST YEAR RESULTS FROM METROPOLITAN PHOENIX

Regional trip reduction ordinances address the vehicle emissions portion of the urban air pollution problem. Nationally, increases occurred from 1980 to 1990 in single occupant vehicle commute trips (1). Trip reduction efforts may contribute to lowering this rate of growth. Can drive alone travel behavior be changed and, if so, how much change occurs?

Two metropolitan areas, Los Angeles and Phoenix, were early (1988) initiators of regional trip reduction programs. Other major metropolitan areas, including New York, have started regional trip reduction programs in response to Intermodal Surface Transportation Efficiency Act of 1991 and Clean Air Act Amendments of 1990 mandates. This study evaluates the first year of trip reduction change in metropolitan Phoenix. These comparative results may be instructive for other regional programs.

REGIONAL PROGRAM EVALUATION

Every new trip reduction program should be evaluated over time for its initial efforts and for later progress. This study uses the approach and methods adopted by Giuliano, Hwang, and Wachs in their evaluation of the South Coast Air Quality Management District's Regulation XV in Los Angeles (2). In both studies, baseline year travel describes commuting travel before the regional program was implemented. The initial impact of the new program is shown by change in travel characteristics one year later.

Like the Los Angeles study, this study examines aggregate trip reduction at multiple work sites with diverse trip reduction approaches. This study extends the Los Angeles study by examining student as well as employee travel.

THE MARICOPA COUNTY REGIONAL TRAVEL REDUCTION PROGRAM

Air pollution in metropolitan Phoenix (urban Maricopa County) is recognized as a regional problem. Vehicle emissions are a major source. The Arizona State Legislature established the Maricopa County Regional Travel Reduction Program (MCRTRP) in 1988 under pressure from the Environmental Protection Agency after a suit was initiated by the Center for Law in the Public Interest. Other emission control measures were strengthened at the same time.

This program is less stringent than Regulation XV in enforcement and participation. Employers with 100 or more workers at a site must participate. A "good faith" effort is expected from employers. Specific requirements are (a) to survey

employees, (b) to appoint a transportation coordinator, (c) prepare a trip reduction plan, and (d) to disseminate alternate mode information (3).

Initially, the MCRTRP trip reduction goals were set as a 5% reduction each year in either the percentage of commute trips by single occupant vehicle or the percentage of commute miles travelled in single occupant vehicles. This standard was set for the program's first two years. The legislature later mandated the same standard for the third year. Employee travel data is gathered using a single survey instrument designed by the county program that applies to all employers: all students are surveyed using a separate student survey instrument. The Maricopa County Trip Reduction Ordinance, effective July 1, 1994, expanded the program. Small employers with 50 or more employees at a single work site must participate. New trip reduction goals are to reach and maintain a 60% rate of single occupant vehicle trips or miles traveled.

THE STUDY DATA SETS

This study includes the 384 employers in the program on April 31, 1992, that had completed minimum program requirements for the first two years: a baseline year employee and student survey, an approved trip reduction plan, and the first program year employee and student survey. Additional employers were in the program on this date but, while some had completed baseline year requirements, none had completed their first year plan and surveys. The first year completion qualifier insures that the measures in each employer's plan were available and changes in employee travel behavior from the baseline year to the first year were known.

The Maricopa County Regional Travel Reduction Program's approach of phasing large employers into the program before smaller employers biases the results in favor of the larger companies. Smaller employers are likely to have entered the program later and not to have completed first year requirements in spite of possible progress toward reduction goals. A maximum period of seventeen months could occur between the baseline and the second year survey because the program's baseline period began in July 1988 and ended in December 1990.

The basic unit of analysis in this study is the work site with no examination of the combined effect of several work sites operated by one employer. Two types of work sites are included in the study -- employer and school. Travel behavior is reported for 332,980 commuters: 245,421 employees at 525 non-school sites; 13,451 employees at 50 school sites; and 74,108 students at 53 school sites. The main campus of Arizona State University is the largest site; 9,344 students and 3,282 employees participated in the baseline year survey (4).

Table 1 classifies sites by standard industrial classifications and shows the importance of manufacturing (34.5% of employees), services (50.5%) including school sites (100.0%), and state and local government (13.5%). Further examination of this table shows that non-school employees are concentrated on smaller sites. Over 60% of non-school employees work on sites with less than 299 employees, over 40% on sites with between 100 and 199 employees. School employment, on the other hand, is concentrated in larger site units. Sites with over 1,000 persons include 54.7% of all students and school employees, but only 6.9% of non-school employer sites.

CHANGE IN DRIVE ALONE COMMUTING

The single most important indicator of the effectiveness of the regional program is the change in average single occupant vehicle commuting between surveys, measured in two ways: (a) change in average single occupant vehicle commuting as a percentage of total commute trips week and (b) change in the average single occupant vehicle commute miles per week.

Total Change. Table 2 compares baseline year and first average for both measures of single occupant vehicle travel. Employees had similar high levels of drive alone commutes at non-school (81.7%) and school (82.8%) sites. Their drive alone commutes were reduced during the study period at similar rates: 3.9% for non-school employee and 3.6% for school employees. Students had not only a lower baseline single occupant vehicle travel rate (42.5%), but showed the greatest decline in drive alone commutes (13.4%).

Change in drive alone commute miles shows a different trend. Average single occupant vehicle miles travelled per week declined for all three groups (Table 3). While school employees travelled fewer miles (46.3) than employees at other sites (53.5), they reduced their miles travelled by only 0.8% compared to a reduction of 1.3% for non-school employees. Students had a low initial level of miles travelled (31.2), but were able to reduce their travel by 5.7%, a rate higher than either school or non-school employees. This finding suggests that school employees and students live closer to their work sites than non-school employees.

Change by number of commuters. Another way to examine trip reduction change is to describe the change in travel behavior by employees and students. Frequency distributions of baseline and first year change for both program measures describe these changes for employees at non-school sites, school employees, and students (Figures 1-6). An aggregate shift to the right should appear from the baseline year to the first year if trip reduction occurred.

These shifts can be clearly seen for non-school employees. For drive alone percentage (Figure 1), there was a baseline peak for sites with 89-85% single occupant vehicle commuting and a rapid decline in numbers of employees at sites with lower rates. This peak shifted to the 79-75% category in the first year. The number of commuters in all higher percentage categories declined; the number of commuters in all lower percentage categories increased except for the 64-60% category.

For non-school employees, average single occupant vehicle miles per week are shown on Figure 2. The numbers of commuters were distributed in a bell-curve distribution around a peak for the baseline year at the 59-55 mile range. The number of employees in all lower mile ranges increased in the first program year, and most higher mile categories showed decreases.

School employees similarly shifted their trips. Their baseline year single occupant vehicle commutes clustered at two peaks, 89-85% and 74-70% (Figure 3). Few sites had employees with an average single occupant vehicle commute below 64-70%, suggesting a minimum level that may be difficult to reduce. The first year travel, however, showed a single peak in the 74-70% range and declines in all the higher categories except 79-75%. For single occupant vehicle miles, the baseline year pattern of a peak at the range of 44-40% miles was maintained (Figure 4). The number of employees at the peak dropped, however, and two of the four categories showed increases. Fewer employees travelled in five of the seven higher average mile categories.

A review of percentage reduced and miles travelled shows that fewer employee commuters drove alone and a small reduction in miles driven occurred. If twenty-five miles equals one pound of pollution, non-school employees reduced pollution by 2,123 pounds per week, based on a decrease of 53,079 miles from a baseline year total of 11,581,143 miles per week. School employees contributed 1,427 pounds per week from a smaller employee group and a baseline year total of 520,424 miles.

Student travel shows different commuting patterns. The baseline year percentage of single occupant vehicle commutes had one cluster of students at a high peak of 79-75% and a second, lower peak at 25-30% (Figure 5). In the first year, the number of students declined in all percentage categories higher than 79-75% and increased overall in the lower than 79-75% categories. For miles travelled (Figure 6), student commutes were concentrated in categories from 49-45 miles to 14-10 miles. The baseline peak category of 49-45 miles shifted to 34-30 miles in the first year. The student contribution to decreased pollution equalled 1,822 pounds per week, using the standard that twenty-five miles equals one pound of pollution.

Two different student groups create these aggregate trends. Alternate mode use is likely to be higher for high school students who are primarily dependent on their family for use of a car than for university students, many of whom support themselves. Separating Arizona State University students from all other students shows that this pattern exists and is strongest for the percentage of single occupant vehicle trips. Students at the main campus were two thirds of all students in the category of 79 - 75% single occupant vehicle trips, with a reported 78% baseline percentage, a 77% first year percentage, and a 1% reduction. Similarly, Arizona State University students dominated the baseline and first year category of 49-45 miles and reported a 45 mile baseline year average, a 46 mile average in the first program year, and an increase of 3%.

Trip Reduction Achievement. Trip reduction achievement required meeting one or both of the 5% trip reduction goals during the first program year. Non-school employees met the trip reduction goal on 39% of their sites; school employees met the goals on 50% of their school sites; and students met the goals on 71% of the school sites.

Chi-square analysis confirmed that non-school employees, school employees, and students were distinct populations. Employee groups differed significantly when compared for progress or lack of progress toward trip reduction and when compared for achievement or lack of achievement of trip reduction goals. School employees and students were similarly compared and were separate populations.

USE OF INCENTIVES

Each employer's plan is a mix of incentives to encourage ridesharing or other alternate modes and discourage use of drive alone commutes. The set of incentives for each site was identified for all 578 sites from each original plan document.

The quality of the incentive data is limited. Plan descriptions of 51 incentives are brief. There is no information on when an incentive is phased in during a year, so an incentive's impact could be limited by when it is initiated. Without direct monitoring of companies, a suggested measure may not be in place.

Frequency of measures by mode. The plans have an emphasis on education measures (publications/newsletters, new hire orientation) and carpool incentives (preferred parking spaces, guaranteed ride home, prizes). Incentives are grouped in the program's classification system that focuses on modes (Table 4).

Over half the non-school plans contained the following measures: preferred parking spaces for carpools (77.9%),

guaranteed ride home for carpools (69.5%), publications and newsletters about the trip reduction program (68.6%), prize drawings for carpools (67.0%), new hire orientation (58.7%), zip code matching for carpools (57.7%), and bike racks for bicycle riders (61.3%).

School sites had more uniform plans that focused on a few of the same measures most included in the non-school site plans. The most common measures were: preferred parking spaces for carpools (84.9%), publications/newsletters about the trip reduction program (73.6%), bicycle racks for bicycle riders (67.9%), new hire orientation (64.2%).

A guaranteed ride home for carpools, which can be expected to serve adult employees more than students, was included in only 17.0% of the school plans. Similarly, few school plans include zip code matching (3.8%) for carpools. Prize drawings for carpools were included in 45.3% of the school site plans.

Overall, measures that focus on eliminating trips are not a large component of the initial plans. Flexible work hours (22.1%), compressed work week (15.6%), telecommuting/work at home (11.2%) are included in non-school plans. Interestingly, 26.4% of the school sites include the option of a compressed work week compared to 15.6% of the employer sites. A shuttle between work sites, a measure that can shorten the single occupant vehicle portion of a commute or trips during the work day, was adopted by 10.3% of the employee worksites and 1.9% of the school sites.

Parking fees, coupled with alternate mode incentives, are widely discussed nationally as an economic disincentive to drive alone commutes. They are not common locally, however. Only 1.9% of the ten non-school plans and one school plan proposed a parking fee increase. Arizona State University, where parking fees are charged for students and employees, recommended a parking fee increase that was not adopted.

Baseline year values and number of measures. Statistical relationships were examined between aggregate measures of the number of measures, the baseline and first year levels of single occupant vehicle trips and single occupant miles, and trip reduction.

Using a large number of measures is one reasonable strategy for the first trip reduction plan. Each employee has more chances to respond to at least one incentive. In addition, employers with high baseline year levels of single occupant vehicle commuting may respond by offering a large number of measures in their plans in an effort to increase their chances of influencing more employees. Non-school sites had an average of 13 measures; school sites had an average of 11 measures.

There is no relationship, however, between the baseline years levels and the number of plan measures with the percentage of single occupant vehicle trips reduced for non-school sites. For school sites, student trip reduction showed no association between each measure of trip reduction and either the number of school plan measures or baseline year values. There is a low positive correlation ($r = +.26$) in the percent of school employee single occupant trips reduced and the number of plan measures, but no relationship with school employee miles reduced.

These aggregate measures offer little insight into trip reduction progress. An alternate approach to developing trip reduction plans focuses on individual measures that influence commuters to change their behavior. Each plan can be a set of measures designed to respond to the specific concerns of that set of employees and students.

Individual measures. Each measure was examined to determine whether or not a statistically significant relationship exists between the measure and both types of trip reduction: change in average percent of single occupant vehicle trips and change in average single occupant vehicle miles.

One-way analysis of means tests determined whether a measure's presence was associated with decreased single occupant vehicle commuting. Average change was compared between the group of plans offering the incentive and the group of plans not offering the incentive. Significant relationships were found only for non-school plans (Table 5).

Reduction in percentage of single occupant vehicle trips was associated with measures for four modes. A guaranteed ride home had an association with carpool, vanpool, bus, and walk commuters, while prize drawings were associated with trip reduction for vanpool, bus, and walk modes, but not carpools. The carpool measure, "Don't Drive One-in-Five" campaign also had a significant relationship with trip reduction.

Reduction in single occupant vehicle miles was associated with all five measures offered for vanpools, two bicycle measures, and one measure for both carpool and education efforts. Here, a guaranteed ride home was associated only with vanpools; prize drawings were associated only with carpools and vanpools. Preferred parking and zip-code matches were associated with vanpools, while a subsidy was associated with vanpools and bicycle riders. The "Bike-to-Work Day" had an influence on bicycle riders. The only education measure associated with reduced drive alone miles was a general category that describes specific events other than an employer's Trip Reduction Fair which usually serves all commuters.

Interestingly, incentives with direct costs to the employer were identified only for two vanpool measures, subsidy and preferred parking spaces, and the "subsidize bicycle buyers" measure. Similar measures--free parking and subsidies for carpools, preferred parking spaces for carpools and vanpools, and subsidized bus tickets--were not associated with trip reduction. The strong association of vanpool measures with a reduction in single occupant vehicle miles supports efforts to serve this group of commuters who often travel long distances.

It is important that two inexpensive measures, prize drawings and a guaranteed ride home, were statistically associated with reduced single occupant vehicle travel. Prize drawings may be effective because they maintain awareness of the trip reduction program and offer an immediate reward for participation. The frequency of prize drawings, employee eligibility requirements, and prize dollar values are not known, however.

The importance of a guaranteed ride home measure confirms that domestic and family responsibilities must be addressed as part of trip reduction efforts. These responsibilities influence the mode choice of all employees, especially women employees who disproportionately bear these responsibilities (5, 6, 7).

A PHOENIX -- LOS ANGELES COMPARISON

The use of similar analysis methods allows the comparison of selected findings from this metropolitan Phoenix study and the metropolitan Los Angeles Regulation XV study (8). There are study differences. Average vehicle ridership was measured for three regions in Los Angeles. Phoenix had a smaller number of work sites (578) than Los Angeles, where a 1,100 site sample was developed from 4032 worksites. Phoenix had fewer large work sites with 500-999 employees (15.6%) than Los Angeles (22%) and fewer sites with over 1,000 employees (6.9%) than Los Angeles (15%).

The Los Angeles study found a positive relationship between trip reduction and the number of plan measures. The study also found a positive relationship between the number of measures offered and high levels of baseline year drive alone commutes. Neither relationship appeared in the Phoenix program analysis.

Both studies found a pattern of progress toward meeting trip reduction achievement goals. Progress was greatest in Los Angeles for sites with low baseline year average vehicle ridership. In Phoenix, sites with non-school employees had the lowest achievement of the desired levels of trip reduction. For school sites, school employees were more likely and students were most likely to achieve the desired levels of trip reduction.

Both studies found that a guaranteed ride home measure and prize drawings were statistically related to trip reduction. The Los Angeles study also found that financial incentives for specific mode users, other employee benefits, and time off with pay were significantly related to trip reduction.

CONCLUSIONS

Regional trip reduction occurred in metropolitan Phoenix between the baseline and first program year. Non-school employees, by far the largest commuter group, reduced their percentage of single occupant vehicle trips by 3.9%, but their total savings in average single occupant vehicle miles travelled per week was small. School employees reduced their percentage of single occupant vehicle trips by 3.6%, while students reduced this percentage by 13.4%. Both groups contributed at a higher rate to air pollution reduction through average single occupant miles reduced than non-school employees.

School employees and students lived closer to their work sites than non-school employees. Non-school employees were influenced by the measures available in the first year trip reduction plans more than school employees or students. No trip reduction plan measures had a statistically significant relationship with school employee or student trip reduction progress.

This study finds that two inexpensive measures were statistically related to a reduced percentage of single occupant vehicle commutes for non-school employees. Both measures were found to be associated with trip reduction in metropolitan Los Angeles. Prize drawings may be effective because they maintain employee awareness of the trip reduction program and offer an immediate reward for participation. A guaranteed ride home, however, supports the view that individuals make their commuting decisions in the context of their domestic and childcare activities as well as their work environment.

These responsibilities must be considered and addressed by trip reduction programs for multiple reasons. The number of employees who can easily shift modes declines as program participation increases. These employees, who may be disproportionately women, have no alternative to driving alone if they are to meet their responsibilities outside work.

This study's findings are compared with selected findings about the first year progress of the metropolitan Los Angeles trip reduction program. Similar studies should be conducted in other metropolitan areas to provide additional program comparisons. Together, these studies address the larger questions of initial and continued trip reduction progress and urban air quality improvement.

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Table 1 Site Characteristics

	Non-School Sites: Employees (N = 525)	School Sites: Employees/Students (N = 53)
INDUSTRY		
Agriculture/Mining	01.5%	000.0%
Manufacturing	34.5	000.0
Service	50.5	100.0
Government	13.5	000.0
SIZE		
<100	02.3%	01.9%
100-199	41.0	03.8
200-299	18.3	05.7
300-499	16.0	13.2
500-999	15.6	20.8
>1000	06.9	54.7

Table 2 Single Occupant Vehicle Trips

Categories	Mean Baseline SOV %	Mean SOV % after 1 year	Change in SOV %	N
Employees at non-school sites	81.7%	78.5%	3.9%	525
School employees	82.8	79.8	3.6	50
Students	42.5	36.8	13.4	53

Table 3 Single Occupant Vehicle Miles

Categories	Mean Baseline SOV Miles	Mean SOV miles after 1 year	Change in miles	N
Employees at non-school sites	53.5 miles	52.8 miles	1.3%	525
School employees	46.3	45.9	0.8	50
Students	31.2	29.4	5.7	53

Table 4 Frequency of Measures by Mode

MEASURES	Non-School Sites: Employees		School Sites: Employees/Students	
	Number	Percent	Number	Percent
Carpooling-related Incentives				
preferred parking spaces	409	77.9%	45	84.9%
guaranteed ride home	365	69.5	26	49.1
prize drawings	352	67.0	24	45.3
zip-code matching	303	57.7	26	49.1
subsidize carpool drivers	089	17.0	06	11.3
"Don't Drive One-in Five"	023	04.4	06	11.3
free/discount parking for carpoolers	021	04.0	02	03.8
Vanpooling-related Incentives				
preferred parking spaces	190	36.2	19	35.8
guaranteed ride home	161	30.7	09	17.0
prize drawings	121	23.0	06	11.3
zip-code matching	073	13.9	02	03.8
subsidize vanpool drivers	042	08.0	00	00.0
Bus-riding Incentives				
bus-route/schedule books supplied on site	255	48.6	11	20.8
guaranteed ride home	236	45.0	16	30.2
subsidize bus tickets/passes	229	43.6	20	37.7
prize drawings	208	39.6	09	17.0
work with local transits to extend service	152	29.0	07	13.2
bus ticket/pass on site	131	25.0	13	24.5
flexible work hours for riders	079	15.0	09	17.0
Bicycle-riding Incentives				
bike racks	322	61.3	36	67.9
prize drawings	195	37.1	10	18.9
guaranteed ride home	195	37.1	09	17.0
showers and/or lockers	118	22.5	23	43.4
bike-lane maps supplied	099	18.9	17	32.1
bike safety workshops/printed materials	078	14.9	06	11.3
"Bike-to-Work Day"	083	15.8	00	00.0
subsidize bike buyers	057	10.9	15	28.3
"Bike One-out-of-Five"	000	00.0	00	00.0
Walk-related Incentives				
prize drawing	074	14.1	05	09.4
guaranteed ride home	012	02.3	00	00.0
"Walk-to-Lunch" program	001	00.2	00	00.0
Education and Communication on TRP				
cafeteria/breakroom information center	382	72.8	44	83.0
publication/newsletters on TRP	360	68.6	39	73.6
new hire orientation	308	58.7	34	64.2
Clean Air Campaign	158	30.1	08	15.1
TRP information through pay stuffers	137	26.1	01	01.9
recognition in newsletters	109	20.8	10	18.9
Transportation Fair	104	19.8	07	13.2
TRP coordinator(s)	079	15.0	11	20.8
TRP committee	059	11.2	14	26.4
other kinds of TRP fairs	050	09.5	01	01.9
Others				
flexible work hours	116	22.1	09	17.0
compressed work week	082	15.6	14	26.4
telecommuting/work at home	059	11.2	01	01.9
shuttle service between work sites	054	10.3	01	01.9
award	041	07.8	03	05.7
on-site services	026	05.0	01	01.9
capital improvements	012	02.3	08	15.1
increased parking fees	010	01.9	01	01.9
subsidize apartment close to work	008	01.5	01	01.9
miscellaneous	003	00.6	00	00.0

Table 5 Significance of Measures: Employees at Non-School Sites

MEASURES	SIGNIFICANCE	
	SOV Percentage	SOV Miles
Carpooling-related Incentives		
preferred parking spaces		
guaranteed ride home	0.05	
prize drawings		0.05
zip-code matching		
subsidize carpool drivers		
"Don't Drive One-in Five"	0.01	
free/discount parking for carpoolers		
Vanpooling-related Incentives		
preferred parking spaces		0.05
guaranteed ride home	0.01	0.05
prize drawings	0.01	0.05
zip-code matching		0.05
subsidize vanpool drivers		0.01
Bus-riding Incentives		
bus-route/schedule books supplied on site		
guaranteed ride home	0.01	
subsidize bus tickets/passes		
prize drawings	0.05	
work with local transits to extend service		
bus ticket/pass on site		
flexible work hours for riders		
Bicycle-riding Incentives		
bike racks		
prize drawings		
guaranteed ride home		
showers and/or lockers		
bike-lane maps supplied		
bike safety workshops/printed materials		
"Bike-to-Work Day"		0.05
subsidize bike buyers		0.05
"Bike One-out-of-Five"		
Walk-related Incentives		
prize drawing	0.05	
guaranteed ride home		
"Walk-to-Lunch" program		
Education and Communication on TRP		
cafeteria/breakroom information center		
publication/newsletters on TRP		
new hire orientation		
Clean Air Campaign		
TRP information through pay stuffers		
recognition in newsletters		
Transportation Fair		
TRP coordinator(s)		
TRP committee		
other kinds of TRP fairs		0.01
Others		
flexible work hours		
compressed work week		
telecommuting/work at home		
shuttle service between work sites		
award		
on-site services		
capital improvements		
increased parking fees		
subsidize apartment close to work		
miscellaneous		

Figure 1
Single Occupant Vehicle Trips by Employees at Non-School sites

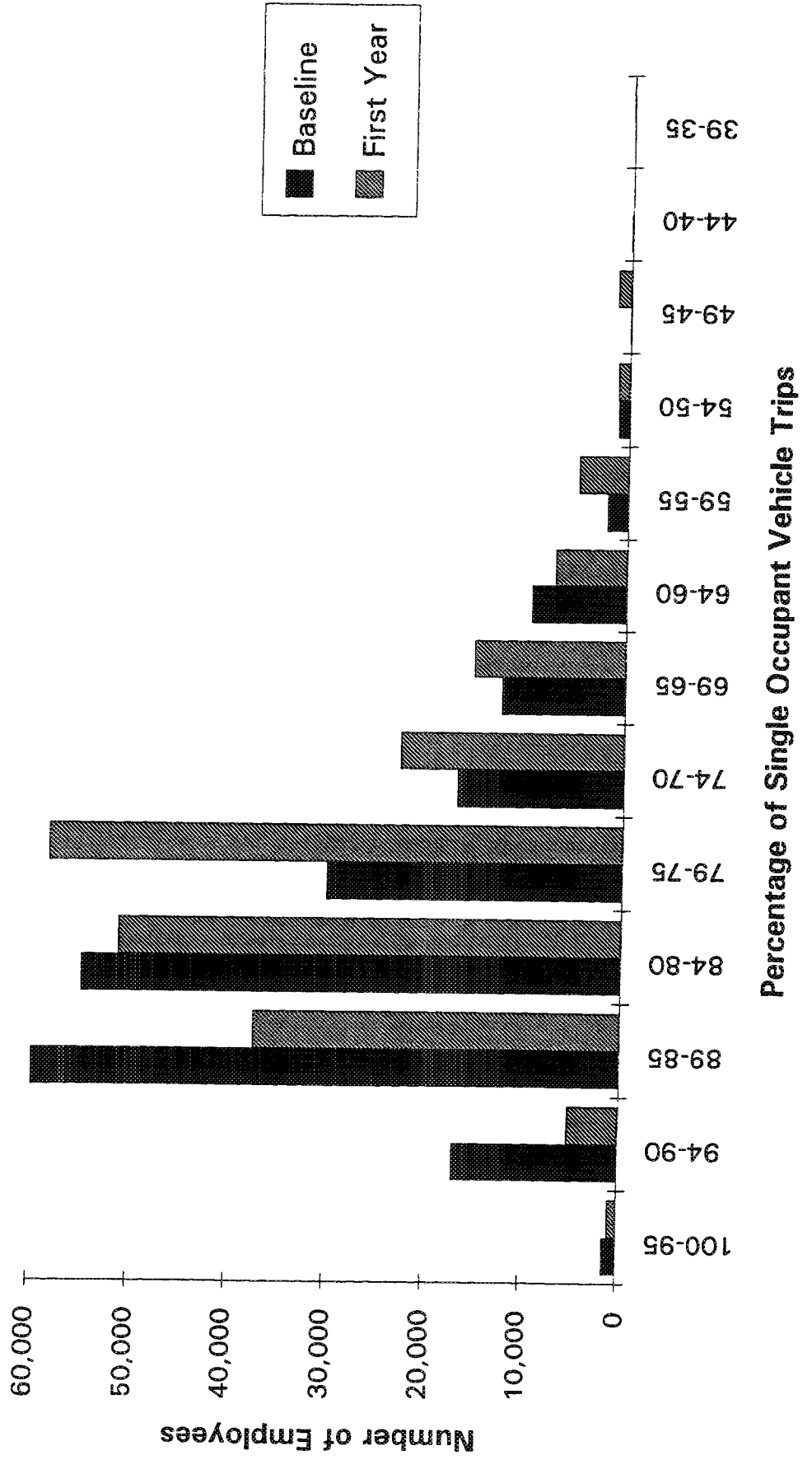


Figure 2
Single Occupant Vehicle Miles by Employees at Non-School Sites

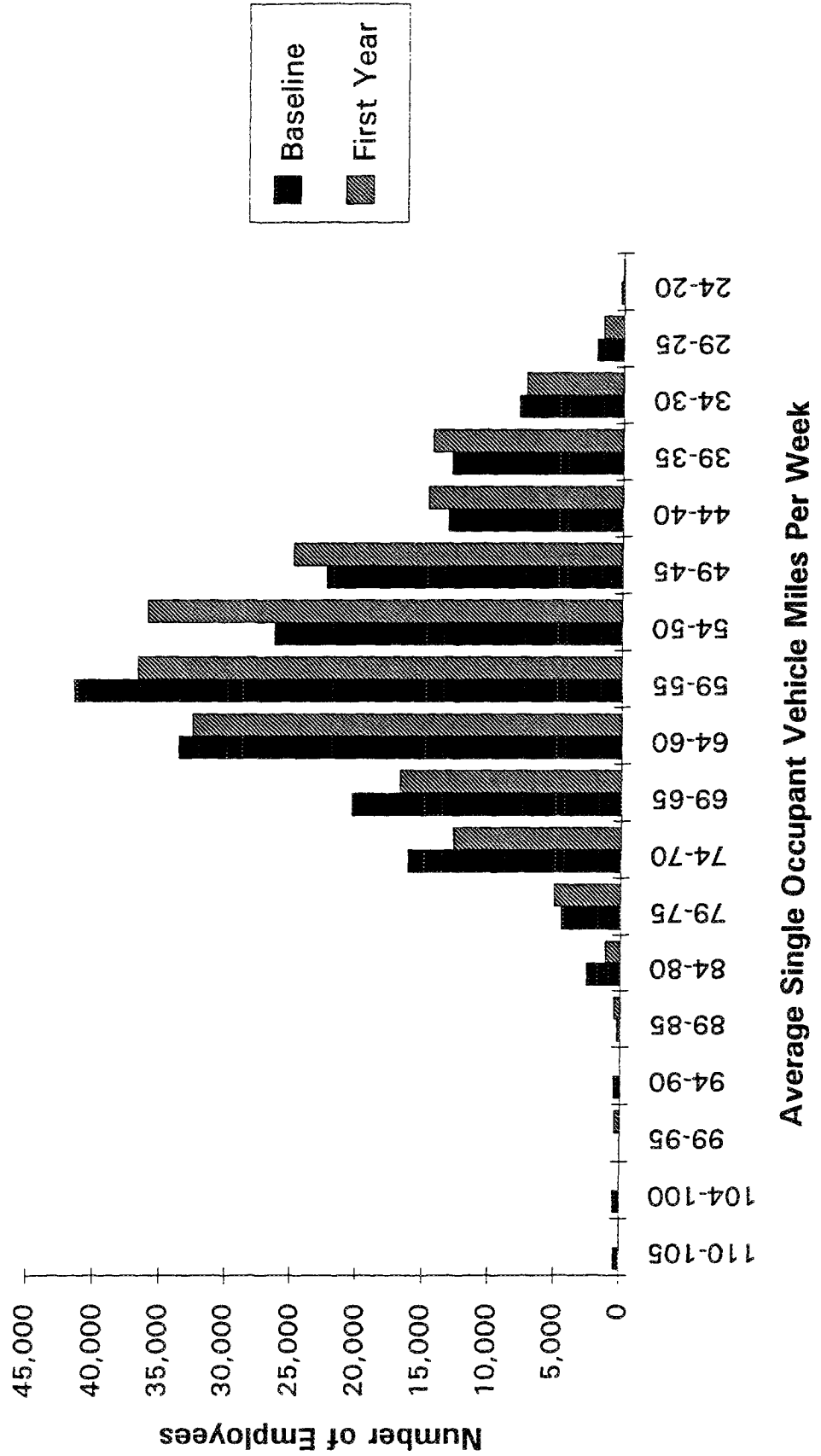


Figure 3
Single Occupant Vehicle Trips by Employees at School Sites

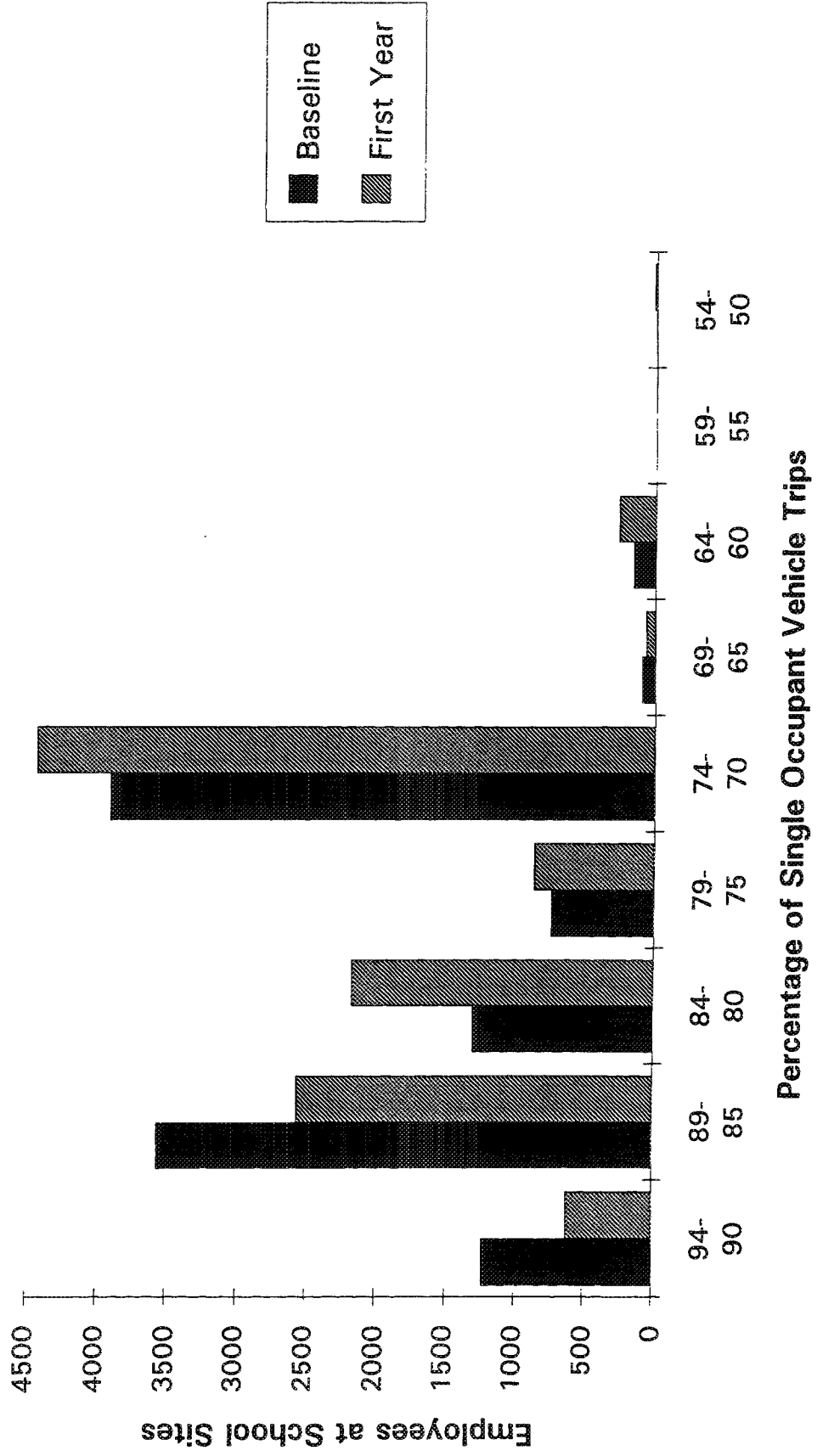


Figure 4
 Single Occupant Vehicle Miles by Employees at School Sites

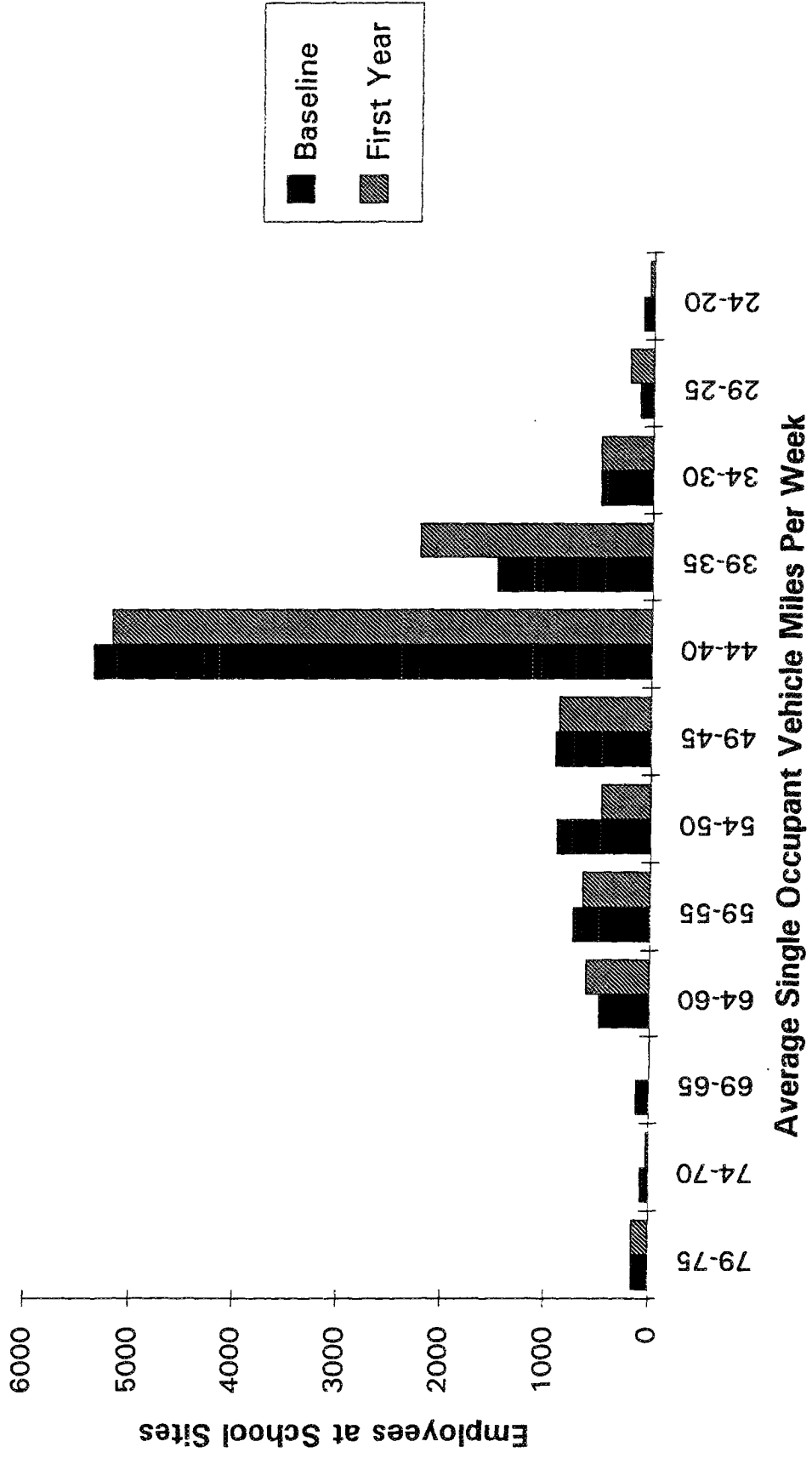


Figure 5
Single Occupant Vehicle Trips by Students

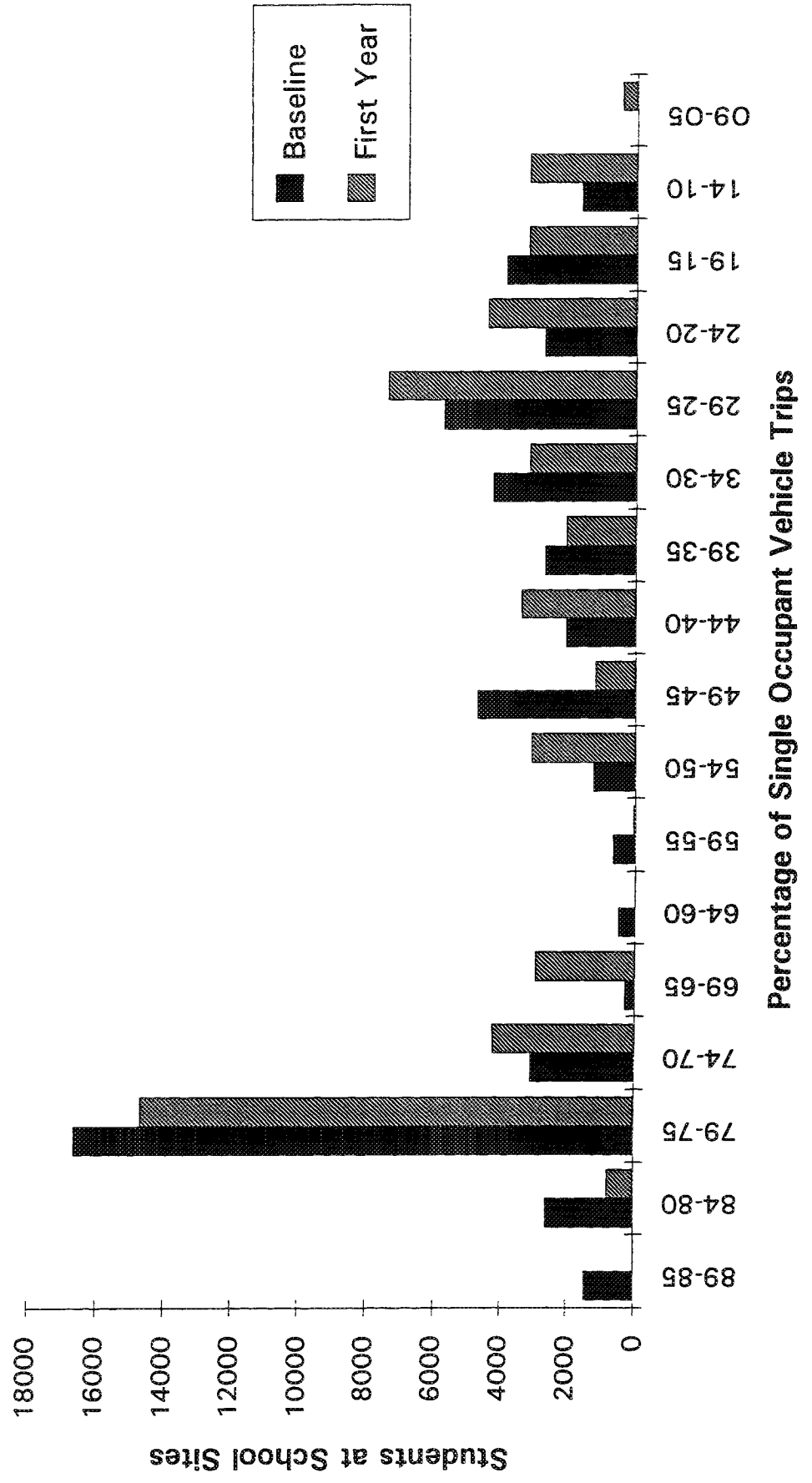


Figure 6
Single Occupant Vehicle Miles by Students

