# **U-PASS: A Model Transportation Management Program That Works**

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On September 30, 1991, the University of Washington, in cooperation with the Municipality of Metropolitan Seattle, implemented U-PASS, one of the most comprehensive transportation demand management programs in the United States. The U-PASS program was developed in response to campus and community concerns for trip reduction and improved commuter services in view of possible impacts from planned campus development. The U-PASS program is a flexible package of transportation benefits offered through a pass that allows University of Washington students, faculty, and staff to choose from a variety of commuting options at a greatly reduced price. U-PASS is a \$17.4 million 3-year demonstration program that began in October 1991. Parking system revenue funds cover 30 percent of the program. To achieve this funding level, parking fees were raised to the market rate of the University District. At a 75 percent participation rate, monthly U-PASS user fees of \$9.00 for faculty and staff and \$6.67 for students contribute 40 percent of the cost. The remaining 30 percent of the program is subsidized by the university through a variety of funding sources. After 1 year of operation, the U-PASS program has been viewed as a success and a model to other employers. Vehicle trips to campus are down 16 percent, parking lot use has decreased from 91 percent to 78 percent, transit ridership is up 35 percent, carpools have increased 21 percent and the number of vanpools grew from 8 to 20 in less than 9 months.

As the need to reduce congestion and air pollution increases, jurisdictions and developers alike face difficult choices. The following question is key: Can significant transportation demand management (TDM) strategies reduce the need to spend large, often scarce, sums of money to build more roads and parking structures? The U-PASS program, with its flexible package of benefits and unique funding approach, demonstrates that the answer is yes: significant TDM measures can have a major impact on traffic and parking.

Implemented September 30, 1991, the U-PASS program is possibly one of the most comprehensive transportation management programs (TMPs) of its kind in the United States. The program offers a flexible, broad package of high-occupancy vehicle (HOV) options through a U-PASS sticker on university identification cards. Available at a greatly discounted price, the U-PASS has been a huge success in decreasing single-occupancy vehicle (SOV) trips. Of the 50,000 people in the university community, more than 36,000 participate in the program. Trips to campus have decreased 16 percent during the morning peak period, and for the first time in memory, campus parking lots have not filled up. Monthly transit trips have increased by 35 percent, and the number of vanpools has increased to 20, up 150 percent.

By offering flexibility, something for everyone, and a unique funding strategy, U-PASS planners ensured an optimum participation rate. With a large base of participants, the cost per user for access to all of the benefits dropped significantly. For example, before the U-PASS program was implemented, a transit pass alone cost as much as \$48.00 per month. With U-PASS, costs for all HOV benefits are \$9.00 a month for staff and faculty and \$6.67 a month for students. Higher participation rates, increased SOV parking rates, and university funding sources enabled the U-PASS program to improve existing transportation alternatives, including an addition of 60,000 hr annually of transit service.

Employers with 100 or more employees in the eight largest counties of Washington are preparing to comply with the new Commute Trip Reduction Law, which requires a significant reduction in the number of SOV commute trips. Programs such as the U-PASS will play a significant role in helping employers meet their goals.

The purpose of this paper is to describe the U-PASS program, document its success, and show how TDM strategies can be effective in changing commuting behavior. It documents the history of the U-PASS program, including how the university formed a partnership with the Municipality of Metropolitan Seattle (Metro) and Community Transit (CT) to help solve the transportation impacts associated with proposed campus development. In addition, the paper documents the first-year results of the program and summarizes the lessons learned and implications for other employers.

#### BACKGROUND

#### **Campus Setting**

The University of Washington is a comprehensive teaching and research institution with more than 33,000 students and 17,000 faculty and staff. The 640-acre campus includes a major medical center and health sciences complex and is located in the Seattle neighborhood known as the University District. This district is the largest employment and activity center in King County outside the Seattle Central Business District.

More than 225,000 vehicles enter the University District each day—20,000 during the peak hour alone. It is estimated that through traffic accounts for more than 40 percent of total vehicle trips entering and exiting the area. Metro and CT both provide transit service to the University District. With the exception of the Seattle Central Business District, the Uni-

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#### City Requirements and Existing TMP

In 1983, the university and the City of Seattle entered into an agreement calling for the university to create a physical development master plan and TMP that would (a) maintain traffic to and from campus during the peak periods at 1983 levels, (b) not increase the number of vehicles parking in surrounding neighborhoods, and (c) limit the university parking supply to 12,300 spaces.

In response to these goals, the university developed a TMP that was sufficient to maintain traffic at the 1983 level and did not increase neighborhood parking impacts. Despite this success, participation in the program had decreased by 1989. Use of the parking system exceeded 94 percent; on many days student daily pay lots spilled over into surrounding neighborhoods. Both daily pay and permit carpools were declining, and ridematch applications had dropped sharply. The vanpool program, which peaked at 12 vans in 1985, declined to 8 vans by 1988. Transit pass sales had been flat for several years.

#### **DEVELOPMENT OF U-PASS**

Two factors led to strengthening the university's TMP.

First, in 1989, the university began a new general physical development plan for 1991 through 2001 (1). The plan called for the addition of 2.2 million gross  $ft^2$  of new development. The transportation impacts of the plan included 4,300 new faculty and staff, which would result in an increase of 1,000 peak-hour and 10,000 daily vehicle trips and the loss of 1,700 surface parking spaces, resulting in the need to construct four new parking garages.

Second, independent of the expected growth in faculty and staff, patient vehicle trips to the University of Washington Medical Center were also projected to increase as a result of the trend toward more out-patient care.

These concerns, coupled with the university's commitment to maintain traffic at 1983 levels and lack of growth in existing transportation programs, pointed to the need to develop a new TMP. That new TMP was U-PASS.

#### **U-PASS Program**

U-PASS is a comprehensive TDM program consisting of nine features: increased transit service, shuttle service, carpools, vanpools, ridematch, bicycles, reimbursed ride home, commuter tickets, and merchant discounts. Individuals may use any combination of these features to satisfy their varying daily transportation needs. Because the participation rate is high and parking revenue covers a portion of the costs, the price of the pass to the user is extremely low.

#### History of the Program

A task force of Metro planners and university faculty, students, and staff-was established in May 1989 to develop and implement an improved TMP at the University of Washington. The task force decided early on that there was a need to provide a range of transportation incentives as well as disincentives (e.g., increased parking rates) if a successful program was to be established. One idea was to treat transportation like a health benefit, where all would share the costs and the benefits. Access to this transportation benefit would be by way of a "universal pass" that would allow the use of many forms of alternative transportation. A review of other universities across the nation revealed that a transit pass in combination with a student identification card had been successfully implemented at a number of universities. The majority of these programs, however, were located at universities in low-density areas, and most did not include faculty and staff. Furthermore, these programs usually offered only a bus pass.

In June 1990, the task force presented its recommendations to both the University's Advisory Committee on Transportation (ACT) and Metro officials. (ACT is a committee of faculty, staff, and students appointed by the Executive Vice President of the university to give advice on transportation issues.) The recommendations called for a reduced rate universal pass, or U-PASS. This pass would be part of the university identification card and would entitle the holder to an array of transportation options.

#### **U-PASS Campaign**

Once the preliminary U-PASS program had been defined and endorsed by ACT and by Metro officials, a campaign was initiated to inform the campus community of the program's potential benefits and to gain feedback on its potential acceptance. The motto of the campaign was U-PASS: For You and the U. Campaign material stressed that the U-PASS program would benefit the user through lower prices, more commute options, and a better environment. At the same time, it would benefit the university by meeting commitments to the City of Seattle and the neighborhoods to mitigate its traffic and other environmental impacts.

Steps in the U-PASS campaign included the following:

• A brochure and other materials highlighting the U-PASS program and its benefits were distributed.

• A transportation fair was held the first week of autumn quarter 1990 to promote U-PASS.

• An advisory ballot/survey and a U-PASS brochure were mailed to all 34,000 students in November 1990 to solicit their input on the program. Students were asked if they favored the program and whether it should be mandatory or optional.

• A questionnaire and a brochure were sent to a sample of campus staff to gain their input.

• A letter was sent to all faculty and staff requesting comments on the proposed U-PASS program and parking cost increases.

• Campus groups such as the Associated Students of the University of Washington (ASUW), the Graduate and Professional Student Senate (GPSS), the Student Assembly, the Faculty Senate, and the Professional Staff Organization debated the merits of the program.

• A campuswide U-PASS forum was held in November 1990 to discuss the merits of the plan and to encourage students and staff to return their ballot surveys.

While the U-PASS campaign was under way, an ACT subcommittee was established to develop cost estimates and recommend a price structure for both the U-PASS and campus parking. This subcommittee assumed that the administration would maintain its current level of transportation subsidy and that parking rates would increase to cover existing costs, the cost of a new west campus garage, and a portion of the U-PASS expenses. The remainder of the U-PASS funds would come from sales of the pass.

#### **U-PASS Campaign Results**

Highlights and the results of the U-PASS campaign follow.

#### Student Ballot/Survey

Of the 8,304 students who returned their ballots, 7,151, or 88 percent, were in favor of the U-PASS program. Of those in support of U-PASS, 60 percent favored an optional program whereas 40 percent favored a mandatory program. More than 64 percent of those who chose an optional U-PASS were willing to pay up to \$10.00 per month for the pass.

#### Staff Transportation Survey

More than 91 percent of the respondents agreed or strongly agreed that the university should implement the U-PASS program as it was presented.

#### Campus Organizations

GPSS adopted a resolution supporting a mandatory U-PASS program for students, and the ASUW Board of Control voted for an optional U-PASS program. After much debate, the Faculty Senate voted 60 to 4 in favor of the U-PASS program and of increased parking rates to help fund it.

#### Advisory Committee on Transportation

By January 1991, the ACT subcommittee had developed a proposed U-PASS budget and financing package. The total cost of the program was estimated to be \$17,471,000 for October 1991 through June 1994 (see Table 1).

The largest single cost element of the U-PASS program is transit service. The majority of these costs come from the guarantee that the university would reimburse both Metro and CT the amount of revenue collected through pass sales and cash fares from the campus community before the U-PASS program. Through this commitment, both Metro and CT remained revenue neutral.

Both agencies have a budget of additional hours that can be implemented throughout their systems. These hours usu-

## TABLE 1 Projected U-PASS Operating Expenditures and Funding

U-PASS Element	Total Cost	Percent	
OPERATING EXPENSES	<u> </u>	<del>-</del>	
Administration	\$ 644,000	3.7	
Monitoring & Evaluation	127,000	0.7	
Information & Marketing	692,000	4.0	
Health Sciences Express	1,504,000	8.6	
Disabled Persons Shuttle	362,000	2.1	
Night Ride	769,000	4.4	
Transit Services <sup>a</sup>	12,766,000	73.0	
Vanpools	376,000	2.2	
Carpools	128,000	0.7	
Commuter Tickets	6,000	0.0	
Reimbursed Ride Home	34,000	0.2	
Bicycle Operations	63,000	0.4	
Total Expenses	\$17,471,000	100.0	
OPERATING FUNDING & REV	'ENUE		
University Sources	\$ 5.646.000	32.3	
Parking System	4,962,000	28.4	
User Fees	6,863,000	39.3	
Total Funding/Revenue	\$17,471,000	100.0	
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<sup>a</sup>This is the amount of money the University pays to Metro and Community Transit. It represents the 25 percent that is typically collected at the fare box. The remaining 75 percent (\$38,000,000) of the costs are paid by the county taxpayers.

ally go to the areas with the greatest need or the areas that show the greatest commitment to encouraging transit ridership (e.g.,by providing transit subsidies, limiting parking supply, or increasing parking fees). The U-PASS program provided such a commitment, so additional hours were committed to the university. It was agreed that the marginal cost of additional transit service would be shared equally by the university and the transit agencies.

The level of university funding (\$5,646,000) was based on past expenditures for the transit pass subsidy and other TMP elements. To generate the almost \$5 million needed from the parking system, the ACT subcommittee recommended that parking rates be increased significantly (see Table 2). The parking costs were set to approach market rates in the University District. These market rates were determined through surveys of other parking providers in the area. The subcommittee based its rate recommendations on the results of this survey and specific revenue needs.

The subcommittee also recommended that the faculty and staff permit include a free U-PASS. This would encourage SOV drivers to make occasional use of alternative modes of

TABLE 2 Recommended Parking Rates Under U-PASS Program

Parking Type	Term	Existing Oct 1990	Oct 1991	Jul 1992
Faculty/staff permit	Monthly	\$24.00	\$36.00 <sup>a</sup>	\$40.00 <sup>a</sup>
Montlake lotstudent	Daily	0.75	1.25	1.50
Daily payvisitor	Daily	4.00	4.00	4.50

<sup>a</sup>Includes free U-PASS

travel. Program materials made clear that the parking rate starting in October 1991 would be \$36.00 and that the U-PASS was an extra benefit and not something that could be declined for a reduction in rates.

Once the university and parking system revenues had been determined, the U-PASS had to be priced to cover the remaining \$6.9 million in expenses. Two different prices were developed: one for a mandatory student U-PASS and one for an optional U-PASS. Under both pricing schemes the faculty and staff U-PASS was priced higher because parking rates for faculty and staff were higher and because faculty and staff had the additional benefits of the reimbursed ride home and commuter tickets (see Table 3).

In February 1991, ACT accepted the subcommittee's recommendations concerning U-PASS expenses, proposed parking system rates, and U-PASS fees. ACT recommended to the administration that the parking fee increase be accepted and that a mandatory student U-PASS fee be proposed to the board of regents.

#### Board of Regents

In March 1991, the proposal for a mandatory U-PASS program for students was introduced to the University of Washington Board of Regents in preparation for its April meeting. After much discussion, the regents decided that the final proposal for action in April should include an optional U-PASS program. In making this recommendation, they took into account student opinion and the hope that the program could generate enough support among the students that it would not need to be mandatory.

On April 11, 1991, a public hearing was held on campus to hear testimony concerning the proposed parking rate increases and the U-PASS program. Several hundred people attended. The majority of the testimony from faculty and staff centered around the increase in parking rates. Most students testified in favor of an optional U-PASS program.

Given the results of the public hearing and additional information from staff concerning the feasibility of operating and funding an optional U-PASS program, the regents voted eight to one in favor of a 3-year demonstration U-PASS program. A goal of 75 percent student participation was assumed under the optional plan.

#### Metro Council and CT Board

On April 18, 1991, the Metro Council approved the U-PASS program with the provision to add 60,000 annual hr of new service during the 3-year life of the demonstration project. The CT Board followed suit a month later.

TABLE 3 Monthly U-PASS Cost: Mandatory Versus Optional

	Mandatory			Optional		
Population	1991	1992	1993	1991	1992	1993
Faculty/Staff	\$ 8.00	\$10.00	\$11.00	\$ 9.00	\$ 9.00	\$11.00
Students	4.00	5.00	5.50	6.67	6.67	8.00

The University, Metro, and CT spent the next 4 months negotiating separate contracts and developing an implementation plan for the U-PASS program.

On September 30, 1991, the U-PASS program officially began at the University of Washington. From the first day, it has proven to be a popular program and a tremendous success in decreasing vehicle trips to campus. Table 4 presents a summary of the program elements.

#### **U-PASS EFFECTIVENESS**

One of the most important aspects of developing any program is evaluation of the components to determine the program's effectiveness. The effectiveness of the U-PASS program was determined using three TDM measures of effectiveness: participation rate, reduction in vehicle trips, and changes in mode choice.

Data relating to these TDM measures were collected through the U-PASS evaluation and monitoring program, a joint effort by the university, Metro, and CT. Methods of collecting data included monthly monitoring of individual program elements, traffic surveys, a mail survey, and a telephone survey conducted during February and March 1992 by an independent research company (2).

#### **Participation Rates**

The goal of the program was to have a 75 percent participation rate for faculty, staff, and students. This goal was based on the desire to mitigate vehicle trips and on the need to generate student U-PASS revenue under the optional program. During the 1991–1992 academic year, U-PASS participation averaged 32,600, with a high of 37,000 during fall 1991. The campuswide average participation rate was 72 percent—74 percent for students and 68 percent for faculty and staff (see Figure 1). Among pass holders, almost 97 percent of the students and 57 percent of the faculty and staff purchased their U-PASSes directly. The remainder received theirs free with their \$36 per month parking permit.

#### **Reduction in Vehicle Trips**

In October 1991, the university conducted its annual traffic counts as required by the agreement between the city and the university (3). The results were dramatic. With the U-PASS program in operation for only 3 weeks, trips to campus in the morning had decreased 15 percent and trips from campus in the afternoon had decreased almost 9 percent compared with the previous year (see Table 5).

To determine if U-PASS would continue to affect commute trips, a special April traffic count was taken in 1991 (pre-U-PASS) and again in April 1992 (post-U-PASS) (4). The results show that the U-PASS program has continued to decrease trips to campus at an even greater level than was reported in autumn (see Table 5).

#### **Changes in Mode Choice**

The most dramatic shifts in commute modes occurred for SOV commuters and bus riders. Before the U-PASS, the dominant

Program Element	Description				
U-PASS Costs	The optional U-PASS fee was established in October 1991.				
	- Faculty/Staff: \$9.00 per month - Students: \$6.67 per month				
Parking Costs	The following parking costs were adopted to help fund the U-PASS program:				
	Parking TypeOct 91Jul 92Permit* (month)\$36.00\$40.00*Includes free U-PASSMontlake Lot (day)1.251.50Daily Pay (day)4.004.50				
Transit Service	Metro and CT will add over 60,000 annual hours of new service, a 20 percent increase, between September 1991 and February 1994.				
Circulation	Two-way transit service added to campus; Metro and CT routes serve as a campus shuttle.				
Shuttle Service	In addition to the Health Sciences Express and Disabled Persons Shuttle, a new Night Ride shuttle operating Sunday through Thursday from 6:00 P.M. to 12:30 A.M. has been added. It provides service from campus to areas north, west and east of campus.				
Carpool	Free carpool parking if the driver and passengers all have a U-PASS. Permit carpools still available for faculty and staff.				
Vanpool	Free vanpool fares for U-PASS holders on Metro and CT vanpools.				
Ridematch	Ridematch system improved and the pool for matches expanded.				
Bicycles	Install additional bike racks and bike lockers and improve bicycle routes.				
Reimbursed Ride Home	Faculty and staff are reimbursed for 90 percent of the taxi fare up to 50 miles per quarter if their usual transportation is unavailable when they must leave the University.				
Commuter Tickets	Faculty and staff U-PASS holders can purchase up to 25 commuter tickets per quarter for \$1.25 each. (This is nearly half the cost of the non-U-PASS rate.)				
Merchant Discounts	U-PASS holders receive merchant discounts at participating businesses and restaurants.				
Marketing/ Information	Activities include: - Added full-time information specialist - Joint marketing with Metro and CT - Complete new line of U-PASS brochures - New campus commuter centers/kiosks - U-PASS newsletter - Annual transportation fair/fall campaign				
Monitoring/ Evaluation	Activities include: - Annual traffic and parking survey - Annual mode choice survey - Biennial telephone survey conducted jointly with Metro - Monthly monitoring of each U-PASS element				

TABLE 4 U-PASS Program Elements

commute mode was driving alone (33 percent), followed by transit (21 percent). Since U-PASS began, the numbers have been reversed: 33 percent of the campus commuters travel by bus, and only 23 percent drive alone (see Figure 2).

Commute modes vary among campus population segments, as shown in Table 6. The number of students driving alone has dropped by almost half, from 25 percent to 14 percent of the student population. At the same time, the percentage of students commuting by transit has risen from 21 to 35. Although not as dramatic, faculty and staff drive-alone mode choice has decreased significantly and transit usage has increased 7 percent.

#### **INDIVIDUAL PROGRAM ELEMENTS**

In addition to measuring the effectiveness of the overall U-PASS program, the individual program elements were evaluated.

#### **Use of U-PASS Features**

Research has shown that commuters often do not use the same commute mode consistently. The U-PASS was designed to address these varying needs by offering flexibility. This approach has worked well. Nearly half (45 percent) of U-PASS



FIGURE 1 U-PASS participation (data from university transportation records).

holders regularly use their passes for two or more services, and 14 percent use it for at least three. The other half (48 percent) use it only for riding buses.

The bus feature of the U-PASS is by far the most used: 85 percent of all U-PASS holders have used their U-PASS to ride on Metro or CT buses (see Figure 3). The survey also confirmed that, although not as widely used, the other U-PASS features were important benefits in meeting the needs of specific markets.

#### **Changes in SOV Permit Sales**

Parking records indicate that SOV permit sales dropped 17 percent when the parking fee was increased from \$24 to \$36 per month in October 1991. When parking fees were increased to \$40 in June 1992, SOV permit sales dropped another 7.5 percent. These significant changes are due to both the increase in SOV parking rates and the availability of improved services under the U-PASS.

TABLE 5 Can	pus Cordon	Traffic	Counts
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	October			
Direction/Time	1990	1991	Percent Change	
а.м. Trips to Campus (7-9 а.м.)	7,800	6,628	(15.0)	
P.M. Trips from Campus (3-6 P.M.)	8,979	8,205	<b>(8</b> .6)	
	April			
Direction/Time	1991	1992	Percent Change	
а.м. Trips to Campus (7-9 а.м.)	7,592	6,365	(16.2)	
P.M. Trips from Campus (3-6 P.M.)	9,053	8,176	(9.7)	



FIGURE 2 Changes in mode choice (data from 1989 and 1991 transportation survey).

When asked an open-ended question on the telephone survey about the reason they had changed their usual commute mode, most students and staff cited costs. It was unclear, however, if this referred to the increased price of parking or the low cost of the U-PASS.

#### **Metro Transit Ridership**

Overall, transit trips taken by the university community have increased by 35 percent since the inception of U-PASS. In October 1990, monthly transit trips taken by students, faculty, and staff were estimated at 492,000. One year later, in October 1991, transit trips were estimated at 663,000. The 36,000 pass holders average 4.3 trips each per week. Among those pass holders who commuted to the university during the 1990– 1991 school year but were nonriders, 56 percent are now riding. Likewise, 46 percent of the pass holders who were infrequent users in 1991 (one to five rides a month) took at least two one-way trips during the week preceding the telephone survey (see Table 7).

During the week preceding the survey, 56 percent of U-PASS holders took at least one one-way ride on a Metro bus. More than one-third (36 percent) of the respondents took at least six rides.

Although the majority of trips were for commuting to or from the university, 15 percent of the trips were for noncommute purposes. Among those pass holders who lived close to campus, 39 percent of the trips were for noncommute purposes. This is significant: U-PASS holders are seeing the benefits of traveling by bus.

TABLE 6 Comparison	of	Campus	M	lode	Sp	li	t
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Mode	Student		Faculty/Staff		
	Pre U-PASS	Post U-PASS	Pre U-PASS	Post U-PASS	
Drive alone	25%	14%	49%	40%	
Carpool/vanpool	9	8	14	15	
Transit	21	35	21	28	
Bicycle	10	11	6	6	
Walk	31	28	6	7	
Other	4	4	4	4	
Total	100%	100%	100%	100%	



\* Percent of faculty/staff U-PASS holders only.

FIGURE 3 Service use among U-PASS holders (2).

#### **Carpool and Vanpool Usage**

During the 5 years preceding the U-PASS program, carpooling and vanpooling experienced little growth. During the first 9 months of the U-PASS program, the number of carpool permits rose by 21.2 percent, with a 17 percent increase in the number of participants (see Table 8). The vanpool program increased by 150 percent, from 8 to 20 vanpools with almost 200 participants. Sixty-three of the new vanpool riders (50 percent of all new riders) formerly drove alone. Before the U-PASS program began, the average vanpool fare in a university van was \$45 per month. With the U-PASS, the fare has been reduced to U-PASS fees alone: \$9.00 per month for faculty and staff and \$6.67 for students. The growth in vanpools can be attributed directly to the greatly reduced cost of commuting by vanpool under the U-PASS program.

TABLE 7 Metro Bus Rides Taken by U-PASS Holders

Rides Taken the Week Prior to 1992 Survey	1991 Non-User	1991 Infrequent User <sup>a</sup>	1991 Frequent User <sup>b</sup>
None	44%	47%	18%
One	4	8	3
Two	10	9	9
Three to Five	12	9	12
Five to Ten	27	18	45
More than Ten	3	10	13
Mean	3.3	3.5	8.4

<sup>a</sup> 1 to 5 rides per month

<sup>b</sup> More than 5 rides per month or commuted by transit

TABLE 8 Carpools and Vanpools

Туре	October	_	
	1991	1992	Percent Change
CARPOOLS			
Carpool permits	708	858	21.2
Carpool participants	1,653	1,932	16.9
VANPOOLS			
Number of vanpools	8	20	150.0
Vanpool ridership	71	197	177.5

#### **Night Ride Program**

For those who live close to campus, U-PASS provides the Night Ride shuttle to take them home after dark. (It does not operate during summer quarter.) During its first 9 months of operation, the Night Ride averaged 2,625 riders per month an average of 145 riders per night, or 24 riders per hour.

The Night Ride service was an important component in the decision to buy a U-PASS for 31 percent of both the respondents who live within 1 mi of campus and the respondents who usually walk to campus. Although only 6 percent of the university population has used the Night Ride service, 35 percent of all respondents feel safer because of it. Of those who use it, 54 percent feel safer.

The university has a 3-year contract with an outside vendor to provide the Night Ride service at a rate of \$39.00 per hour. In addition, university staff monitor both the contract and the service. The cost per rider was almost \$11.00 for the first 9 months of operation. In the future, this high cost per rider will need to be weighed against the increased participation of the campus population who walk to campus.

#### **Reimbursed Ride Home Program**

Missing a bus or carpool or having an emergency at home are some of the major concerns of the HOV commuter. The reimbursed ride home program was designed to overcome that concern, by offering a limited number of taxi rides home. University commuters perceive this to be a valuable benefit, yet usage and program costs are minimal.

Reimbursed ride home benefits are for faculty and staff only and have been used less than 15 times per month. The average taxi ride home is 8 mi and costs about \$12. Less than 1 percent of the faculty and staff with a U-PASS have ever used the reimbursed ride home, but 34 percent of the staff and 19 percent of the faculty consider it an important feature of the program.

#### **Commuter Tickets**

The commuter ticket feature for faculty and staff provides both flexibility and convenience to the non-SOV user. Information on precise usage is not available, but the sale of these tickets has doubled, from an average of 5,640 per month before the U-PASS program began to 10,730 after the program began.

#### INFORMATION AND MARKETING

To introduce the new program to the campus and to encourage high participation rates, an information and marketing program was established, a family of brochures developed, and nine campus commuter centers created. New students and employees receive program materials at orientation sessions or by mail. Program brochures, newsletters, and seasonal fliers are mailed and are also displayed at the commuter centers. Advertisements and articles in campus papers keep the program in the public eye on campus.

#### **Effectiveness of U-PASS Marketing**

The U-PASS telephone survey indicates that 74 percent of the campus population has seen or read the U-PASS User's Guide. Other U-PASS information that has reached at least half the population includes student newspaper advertisements (66 percent) and articles (63 percent) and the merchant discount brochure (53 percent).

#### **Awareness of U-PASS Benefits**

When telephone survey respondents were asked which U-PASS benefits they were aware of, by far the most common response was the bus pass, followed by merchant discounts, Night Ride, and carpooling (see Figure 4).

Students are more aware of many of the other services offered by the U-PASS than are faculty and staff. This is





especially true of merchant discounts, Night Ride, and carpooling. The faculty and staff are, of course, more aware of the reimbursed ride home and commuter tickets, services that apply only to them.

Respondents who do not have a U-PASS are less aware of services than are U-PASS holders, but 50 percent were able to mention two or more services.

#### MONITORING AND EVALUATION

To track the effectiveness of the U-PASS program, a monitoring and evaluation system was established. It includes an annual traffic count, an annual transportation survey by mail, a biennial telephone survey conducted jointly with Metro, and the monthly monitoring of each U-PASS element.

#### **Annual Traffic Count**

The university's annual October traffic count provides the best indication of the effectiveness of U-PASS to reduce vehicle trips to campus. The 5-day count is taken at the campus boundaries by means of electronic traffic counters. The count does not, however, include drivers destined for the university who park in the commercial and retail areas and neighborhoods surrounding the campus. The number of vehicles that are parked off-campus is tracked through a count of vehicles parked in the neighborhoods and through questions on the annual transportation survey.

Since the start of the U-PASS program, there has been no evidence that the number of vehicles parking in the surrounding neighborhoods has increased.

#### Transportation Survey

Transportation surveys track changes in campus mode split, times of arrival and departures, and on- and off-campus parking locations. The surveys are on a simple scan-type form and are distributed to random samples of faculty, staff, and students.

The methodology was consistent for the November surveys taken in 1988, 1989, and 1991. To determine the pre-U-PASS mode split, the 1989 survey was used, and the post-U-PASS condition was based on the 1991 survey.

#### **Telephone Survey**

To determine the U-PASS program's effect on commute modes, frequency of U-PASS use, level of awareness of program elements, and program satisfaction, the university and Metro contracted with a private research company to conduct a telephone survey of faculty, staff, and students. Between February 13 and March 18, 1991, the research company interviewed 604 students, 572 faculty, and 605 staff members.

#### LESSONS LEARNED

Many lessons have been learned through the development and implementation of the U-PASS program. First, a balanced TDM program should include both benefits and disincentives. University parking rates would never have been increased to their current level had attractive, lowcost, alternative commute options not been provided.

Second, commuting options should be flexible. People cannot always commute by the same mode every day. To accommodate commuters' varying needs, the U-PASS provides access to options on a continual basis. In addition, faculty and staff who commute at least 3 days a week by non-SOV modes may drive alone the other days with commuter tickets. In addition, all SOV permit holders are issued a complimentary U-PASS to encourage them to use it whenever possible.

Third, parking fees may be used as a disincentive as well as a significant funding source for a TDM program. Free or low-cost parking is the biggest obstacle to a successful TDM program. Not only does free or low-cost parking encourage SOV use, it precludes the use of parking revenue to fund TDM options. In the case of U-PASS, parking revenue funds almost 30 percent of the total program costs.

Fourth, a comprehensive education campaign during the program development stage helps the program gain acceptance. The year-long effort to inform the campus community about the need for the U-PASS program played a major role in its acceptance and ultimate high participation rate. In the university environment, it was critical that the key campus committees and decision makers recognized the need for the program. Once the program received their support, it was much easier to bring along the general campus population.

Fifth, be prepared to meet the demand for services if it is greater than anticipated. From the first day of the U-PASS program, bus ridership was much higher than anticipated. Because the university, Metro, and CT had plans in place, they were able to add service in a matter of days. This quick response meant that new transit riders did not become discouraged and return to their automobiles.

#### **RECOMMENDATIONS FOR FURTHER RESEARCH**

With just 1 year of U-PASS operation complete, many questions remain about the ability of the program to continue to mitigate the number of vehicle trips over time and the effectiveness of specific program elements. In addition, how important was the increase in parking rates vis-a-vis the reduced cost of non-SOV commuting?

Recommendations for further research include the following:

1. Analyze the effect of providing a comprehensive package of commute alternatives accessed by a single card versus the

2. Determine which U-PASS program element is most effective for each segment of the faculty, staff, and student markets.

3. Determine the cost-effectiveness of each program element and the U-PASS program as a whole.

4. Assess which evaluation technique—traffic counts, mail survey, telephone survey—is best for measuring the program's effectiveness.

As the program matures and additional information is collected, many of these research topics will be addressed.

#### CONCLUSION

The U-PASS program has proven to be a model TDM program that works. Its comprehensive package of low-cost commuter options, coupled with the disincentive of an increased parking rate, has resulted in a balanced TDM program with high participation. Not only did the increased parking rates serve as disincentive to driving alone, they also provided funding for 30 percent of the program. Other major employers and institutions should be able to use the structure of the U-PASS program, and the lessons learned about parking rates, to develop and implement their own TDM programs.

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