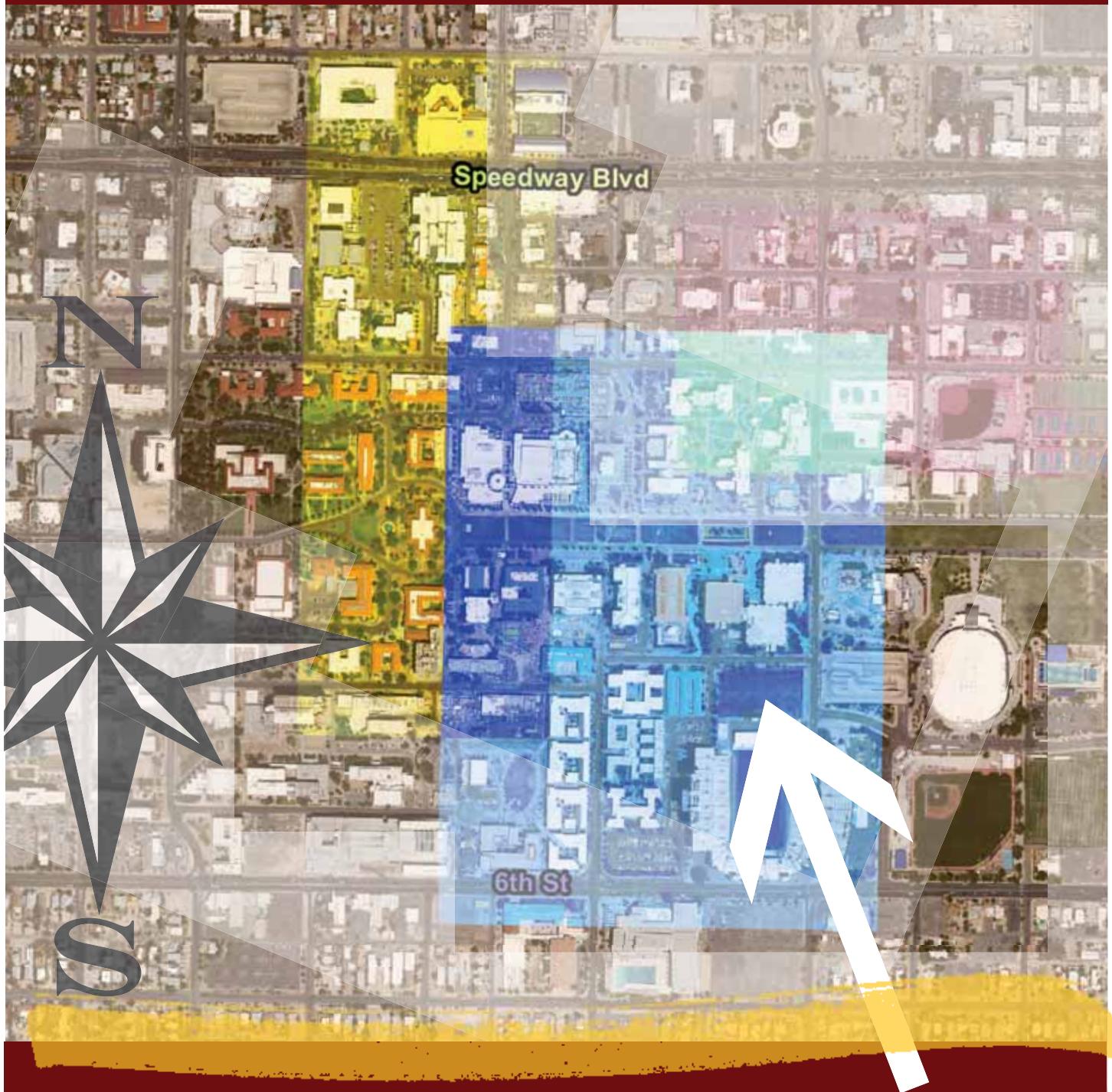


# *University of Arizona* NEEDS ASSESSMENT STUDY

## Executive Summary



## PROJECT PURPOSE and BACKGROUND

The primary goals and objectives of this study included the following:

- Provide the University with a general assessment of the existing and short-term future travel demand to and from campus by existing transportation modes.
- Provide a general means for developing planning level estimates of the potential impacts of TDM measures on automobile use for UA trips.
- Develop recommendations for specific travel demand management (TDM) measures to assist the University and the City of Tucson in addressing the growing congestion and traffic issues within the UA planning area.
- Provide recommendations for a process by which the UA can take better advantage of regional project funding available through the Pima Association of Governments (PAG) Transportation Improvement Program (TIP).
- Provide recommendations for future projects to address transportation system improvement needs within the campus planning area.
- Provide an inventory of specific alternative mode transportation facilities within the UA planning area.

Over the past 10 years the University of Arizona (UA) has increased in size from a total student plus employee head count population of 46,300 to 51,300 in 2006<sup>1</sup>. This makes the University one of the largest activity centers within metropolitan Tucson, attracting tens of thousands of person trips every weekday by all available modes of transportation. The growth of the University has occurred at the same time that Pima County population has increased from 866,000 to 980,000<sup>2</sup>. The increase in size of both the UA and the region, coupled with the



**Project Study Area**

University's location along major commuting arterials within the City of Tucson, has resulted in significant congestion and conflicts between modes of travel both within and around the campus. The congestion has increased even with significant efforts by both the UA and the City of Tucson to provide multimodal transportation system improvements to increase the supply of transportation, separate alternative modes of travel, and manage travel demand. The rapid growth has simply outpaced the effectiveness of the implemented transportation supply and demand management measures.

The 2003 *University of Arizona Comprehensive Plan* provides a vision for the UA campus to support 40,000 full time equivalent students (FTES) and a University community of 75,000. This is an additional 5,500 FTES over the year 2006 enrollment and an increase in the University community (exclusive of visitors) of approximately 23,700. This level of University growth will add significant levels of traffic to an already congested roadway network within the UA planning area. It should be noted that the University is committed to a plan of "smart growth", which does not limit student enrollment to the 40,000 FTEs assumed by the 2003 *Comprehensive Plan*.

<sup>1</sup> Source: *University of Arizona Fact Book 2006-07*, Office of Institutional Research & Evaluation.

<sup>2</sup> Source: Online PAG Regional Data Center 1997 and 2006 population estimates.

## TRANSPORTATION PERSPECTIVE

Four different UA Community groups:

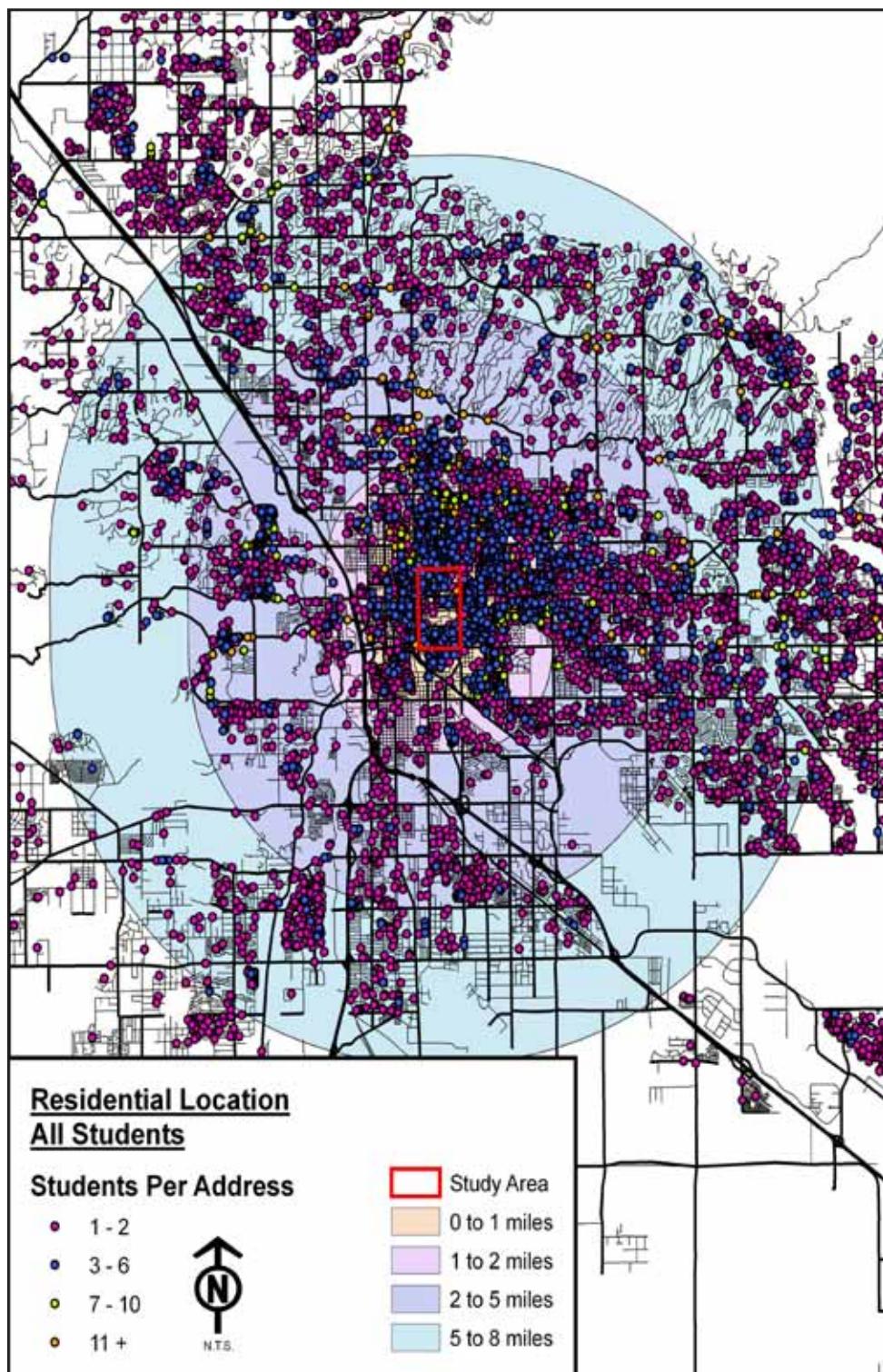
- On-campus students
- Off-campus students
- UA Employees
- UMC Employees

Factors impacting the travel demand and demand management options for each group:

- Number of individuals in each group
- Mode choice
- Residential distance from campus

## ESTIMATED UNIVERSITY POPULATION AND GROWTH

	2007 Spring Semester	Percent of Total Population	Estimated Year 2010	Percent Increase
<b>Total Students</b>	34,116	71.3%	40,000	17
Off-Campus	28,725	60.0%	32,900	15
On-Campus	5,391	11.2%	7,100	32
<b>UA Employees</b>	10,647	22.3%	12,500	17
<b>UMC Employees</b>	3,052	6.4%	3,600	18
<b>Total Population</b>	<b>47,815</b>	<b>100.0%</b>	<b>56,100</b>	<b>17</b>



## OFF-CAMPUS STUDENT RESIDENTIAL LOCATION

The spatial orientation of residential location is primarily to the north and east of campus.

- 66% of students live within 5 miles of campus.
- 29% live within 1 mile of campus.
- 55% of student parking permit holders live within 5 miles of campus.
- 43% of students living within 5 miles of campus arrive by auto.
- The spatial orientation of residential locations for UA employees was found to be very similar to that shown for off-campus students.

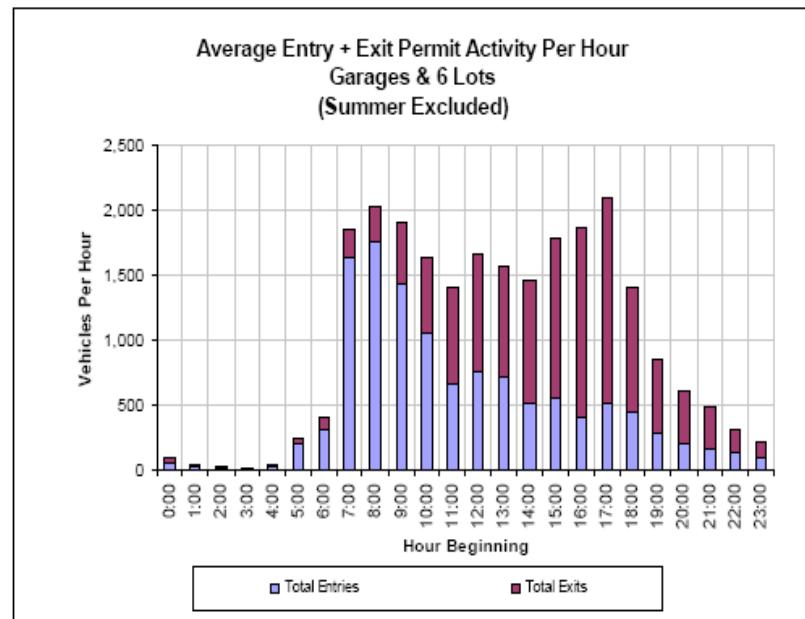
## UA COMMUNITY 2007 TRAVEL DEMAND SUMMARY

- Minimum of 42,280 daily auto trips to/from the UA by students and employees.
- 21,140 drive to UA daily.
- 59% auto mode choice overall (drive + carpool).
- 59% of the total UA population lives within 5 miles of campus.
- 40% of the drive mode choice (8,556) lives within 5 miles of campus.
- Off-campus students make up 53% of Drive mode choice, UA employees 35%, and UMC employees 12%.
- Outside of the 5 mile distance from campus the primary alternative modes are Sun Tran and Carpool.

- The activity peak-periods for the parking facilities are from 7:00 – 9:00 AM and from 4:00 – 6:00 PM. This is coincident with the peak travel periods for the adjacent streets.
- 8.5 percent of the daily UA activity occurs between 8:00 – 9:00 AM.
- 8.7 percent of the daily UA activity occurs between 5:00 – 6:00 PM.
- There is a slightly higher peaking for UA traffic than other traffic in the area.
- AM peak-hour UA traffic is approximately 3,590 vehicles per hour.
- PM peak-hour UA traffic is approximately 3,680 vehicles per hour.

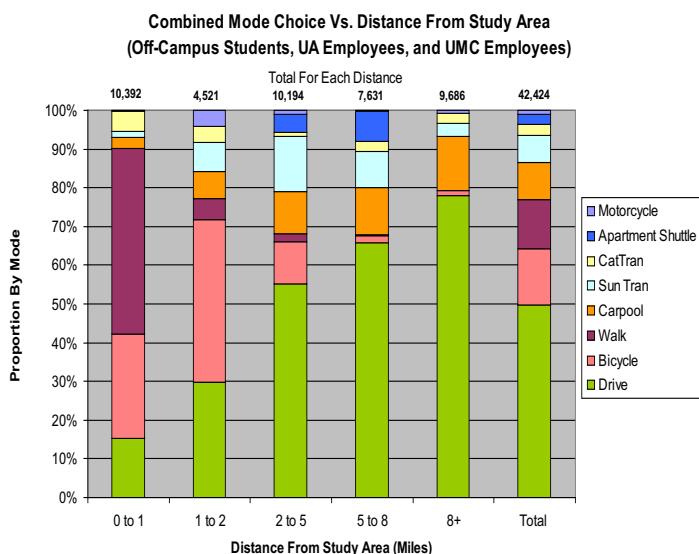
The analysis of these data suggests that reducing UA peak-hour traffic demand can have a significant impact on adjacent street traffic volume and congestion.

## COMBINED GARAGE AND PARKING LOT ACTIVITY



## 2010 TRAVEL DEMAND FORECAST

- Daily auto trips to and from campus are forecast to increase from by 15 percent from 42,280 to 48,816, or 6,536 more.
- The number of automobiles coming to campus will increase by 3,265 per day for students and employees.
- This also assumes that an additional 1,688 students will be housed on campus, per the Comprehensive Plan. An inventory and summary of alternative mode facilities was conducted as part of the study to help identify potential improvement needs. The inventory and summary included the absence of sidewalks, the location and type of curb ramps, the location and number of bicycle racks, and Sun Tran bus stop locations with and without bus shelters.



## TRAVEL DEMAND MANAGEMENT MEASURE ASSESSMENT

The primary goal of the TDM measure assessment was to identify and evaluate ways to reduce roadway congestion near the UA by managing UA traffic demand. It is very unlikely that achieving any objective related to reducing congestion and UA automobile travel will be achieved solely through TDMs directed at the off-campus student population. UA employees represent a meaningful proportion of the overall vehicular demand, while UMC employees are not as meaningful. For example, reducing UMC auto travel by 10 percent would provide only a 1.2 percent reduction in overall auto use by the UA population. UA off-campus students and employees make up 88 percent of the drive mode choice combined; therefore TDM strategies should be directed at both the UA employee and off-campus student population in order to achieve significant overall effectiveness.

Over 100 potential TDM measures in the following general categories were identified and evaluated:

- Decrease Auto Use
- Increase Alternative Mode Use
- Centralize UA Population
- Spread Travel Demand
- Decrease UA Trips
- Increase Roadway Capacity

A brainstorming and evaluation workshop, involving 12 participants from various agencies and organizations, was held from 8:30 AM to 12:00 PM on December 3, 2007 at the Pima Association of Governments (PAG) offices. The workshop

was conducted using the ThinkTank software product licensed to PAG. ThinkTank is a software application that allows participants to anonymously participate in a group decision making process. In this case the decision making involved the evaluation and ranking of TDM measures.

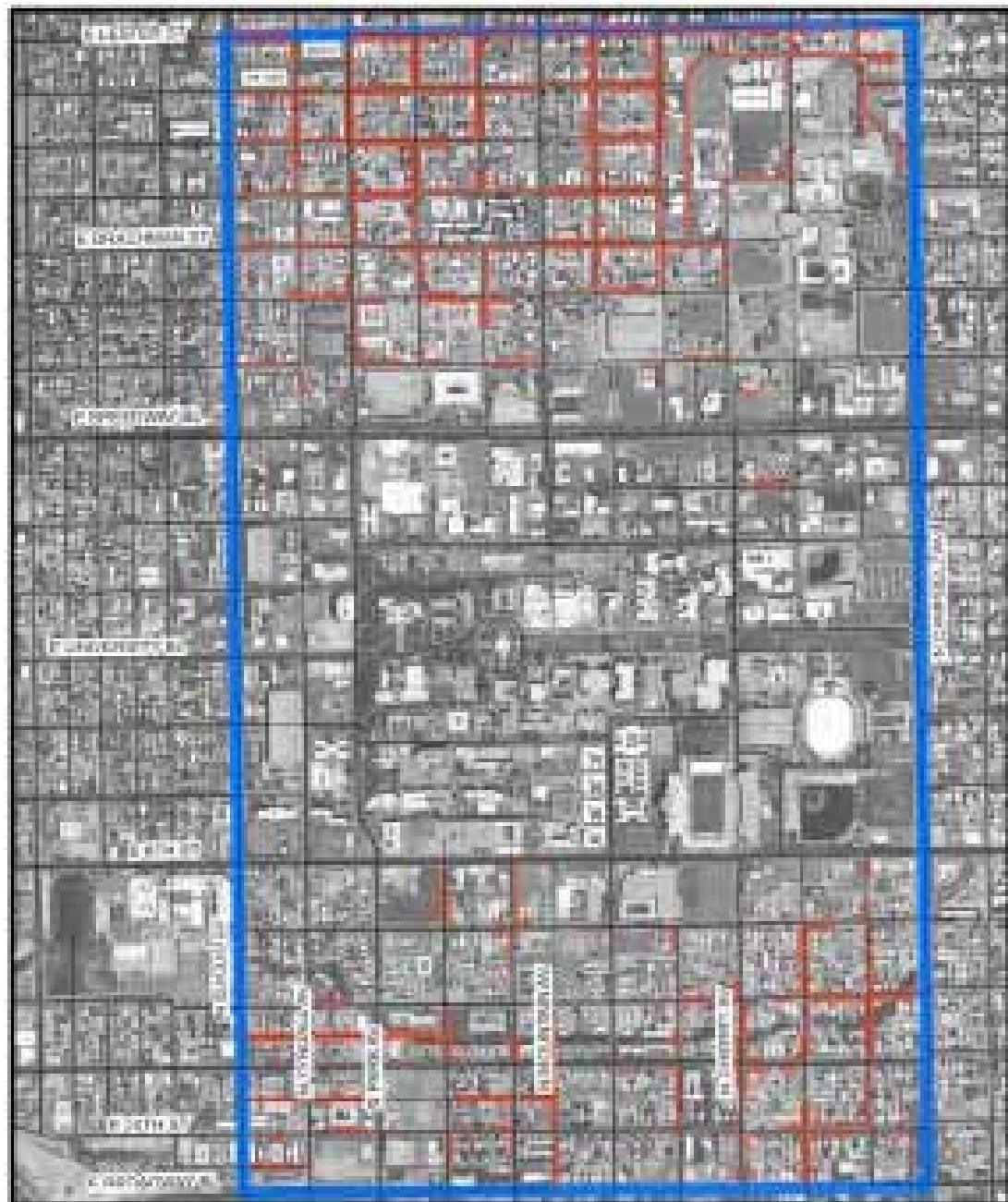
The overall top ranked TDM measure from the ThinkTank workshop was the deployment of a universal transit pass for UA students. Under this concept, all UA students would be provided a transit pass with class enrollment. The pass could be paid for through several options including a small additional enrollment fee or an increase in parking permit cost.

A TDM measure tied for the second place ranking is to increase parking cost. An analysis in this study indicated that the UA charge for student and staff parking passes is less than that charged by Arizona State University and is less than the current market rate for City of Tucson and Pima County employee parking passes.

Emphasis from the ThinkTank session was also placed on marketing and ad campaigns to increase the awareness of available transit service to students and parents.

Two TDM ideas regarding improved student marketing and information on alternative modes were ranked tied for second, a third similar idea was ranked tenth, and three others were ranked among the top twenty measures.

Four of the top twenty ranked TDM measures are designed to reduce travel to the UA by increasing staff telecommuting, providing more internet/web based classes, instituting a compressed work week program for employees, or spreading classes out with more night classes or holding classes on



— Absence of Sidewalk



Study Area

## ABSENCE OF SIDEWALK INVENTORY



Saturday. Four of the top twenty ranked TDM measures involve restricting the availability of parking or the use of automobiles by students.

The top twenty ranked TDM measures were presented to the public for review and comment at a public open house conducted on February 6, 2008 on the UA campus. Complete listings of all of the TDM measures considered and the top twenty ranked measures are provided in the project Final Report.

## TOP 10 RATED TDM MEASURES

TDM Measure	Overall Rank	Avg. Total Score (1 -10)
Universal transit pass deployment (all students get a Sun Tran/Modern Street car pass with payment of tuition and fees).	1	7.0
Increase parking cost.	2	6.8
Freshman packets should contain only alternative transportation modes.	2	6.8
Increase marketing of alternatives to parents of incoming students.	2	6.8
More telecommuting for staff.	5	6.6
More internet/web based classes.	6	6.6
Compressed work week for employees.	6	6.5
No parking permits issued to students living on campus.	8	6.4
Prohibit freshman from bringing cars to campus.	8	6.4
Ad campaign to increase awareness of alternative modes available.	10	6.3

## PUBLIC OPEN HOUSE

The Open House was attended by approximately 44 individuals representing UA students, employees, and members of the general population concerned with UA traffic related issues. Attendees were surveyed regarding their perspectives on the Top 20 TDM measures. The members of the public also ranked the universal transit pass as their top measure, and also ranked increasing UA parking cost as their number two overall measure.



## POTENTIAL UA PROJECTS FOR TIP CONSIDERATION

The following provides a brief description of potential projects for TIP funding consideration:

- Expansion of the Modern Street Car System to the north and to the east of campus.
- UA Neighborhoods Transit Circulation System Feasibility Study.
- UA Neighborhoods Sidewalk Improvement Program.
- UA Traffic Calming Study.
- Speedway Boulevard / Euclid Avenue Intersection Capacity Improvements.
- UA and Surrounding Neighborhoods Bicycle System Improvement Study.
- New HAWK Pedestrian Signals near the UA (Euclid/5th Street and Euclid/2nd Street).
- Multi-Modal Streetscape Design and Implementation (various locations).
- UA Student Ride Share Program Feasibility Analysis.
- UA Planning Area Roadway Improvements.
- Planning Area Traffic Safety Study.



# REPORT CONCLUSIONS AND RECOMMENDATIONS

The following represents a brief summary of the conclusions and recommendations developed through this study effort. The details on the development of these conclusions and recommendations can be found in the body of this report.

## EXISTING AND YEAR 2010 TRAVEL DEMAND

Over 21,100 automobile trips are made to campus each day by students and employees. This does not include automobile trips made by visitors. It was estimated that this would increase to over 24,400 by year 2010, a 15 percent increase.

Fifty-nine percent of the total off campus students, UA employees, and UMC employees live within five miles of campus. For UA employees, sixty-nine percent living within five miles of campus arrive by automobile (drive + carpool).

There is a substantial potential to reduce auto travel to campus by focusing TDMs on the students and employees living within five miles of campus, particularly those living in the two to five-mile range.

## TRAVEL DEMAND MANAGEMENT

Over 100 travel demand management (TDM) measures were evaluated as part of this study.

The universal transit pass and increasing parking cost were the number one and two measures as rated by the public and other stakeholders. Other high ranking measures included:

- Freshman packets should contain only alternative transportation modes.
- Increase marketing of alternatives to parents of incoming students.
- More telecommuting for staff.
- More internet/web based classes.

More TDM information is included in Chapter 4 with the top twenty rated TDM measures provided in Exhibit 4-5.

## UA PARTICIPATION IN THE PAG TIP PROCESS

There are several types of projects that could potentially be funded through the PAG TIP process to support transportation needs affecting travel to and from the UA. There are also a variety of potential regional funding sources that could be used to fund these projects, but not all funding sources can be applied to all project types. A general list of the types of projects that can be considered for TIP funding can be found in Chapter 6.

Also included in Chapter 6 are several project concepts that were identified through the activities of this study that have potential for being funded through the PAG TIP. These projects are:

1. Expansion of the Modern Street Car System
2. Neighborhood Transit Circulation System Feasibility Study
3. UA Neighborhoods Sidewalk Improvement Program
4. UA Traffic Calming Study
5. Speedway Boulevard / Euclid Avenue Intersection Capacity Improvements
6. UA Bicycle System Improvement Study
7. New HAWK Pedestrian Signals Near the UA
8. Multi-Modal Streetscape Design and Implementation
9. UA Student Ride Share Program Feasibility Analysis
10. UA Planning Area Roadway Improvements Study
11. UA Planning Area Traffic Safety Study

Finally, additional levels of coordination are recommended, which include:

- An internal UA TIP Committee to evaluate and develop a prioritized list of projects for potential PAG TIP funding.
- Regular and formal coordination between the UA and the local jurisdictional sponsor of any proposed TIP project.
- Increased coordination between the UA and PAG to provide any needed information for TIP consideration, including attendance by the UA at the appropriate PAG meetings.