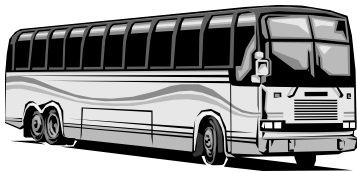


GAVILAN COLLEGE

Parking and Transportation Study Final Report Spring 2002



Terrence Willett
Director of Research
August 2002

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Summary of Findings

- 200 student spaces may meet current beginning of the semester demand
- 260 student spaces may meet beginning of the semester demand until 2006
- 50 student spaces may meet current mid-semester demand
- 65 student spaces may meet mid-semester demand until 2006
- Currently there appears to be adequate staff and disabled parking
- 85% of trips to the main campus appear to be made by solo drivers
- Parking demand could be met by more parking spaces, promoting alternative transit, and managing enrollment so that no start time comprises over 1000 enrollments at current parking capacity or about 10% of current total main campus enrollments
- Student survey respondents were more likely to be older students with non-transfer goals.
- Survey respondents in general do not appear highly satisfied with parking.
- Carpooling with a ride matching appears the most attractive alternative with quicker and more extensive bus service being next most attractive.

Recommendations

- Provide at least 65 additional parking in an area with minimal environmental impacts (this has been completed with the addition of 147 spaces in the Lot G extension)
- Make existing parking more efficient with restriping where appropriate
- Institute a carpool partner matching program and a discounted carpool parking permit
- Provide a bus pass to each student to enhance bussing convenience
- Work with local transit agencies to extend and improve public transit to our sites (discussions and data sharing have begun)
- Promote awareness of bicycle routes and safety

Introduction

In the past year, Gavilan's on campus enrollment has increased by about 10% and is projected to continue increasing by 2.3% per year. This increase has placed additional pressure on parking and transportation resources at the college. To help maintain access to the campus and improve student and employee satisfaction, the Gavilan College community intends to enhance transportation options and expand parking resources. This report serves to provide information about parking lot utilization, mode of transportation, and attitudes towards transit options and can be used in conjunction with the parking and traffic flow analysis by Maas Associates.

Methods

Gavilan Research and Parking Enforcement personnel collected data on parking lot utilization using the attached form. An initial survey and enrollment data (Figure 1) indicated that Wednesday at 10:45 am appeared to be the most impacted time for parking. This time point became the parking lot utilization survey point for the remainder of the study period. Student demand was defined as the number of vehicles parked in the 3 overflow areas (along the Athletic Field, around the Occupational Education building, and the lot near Mesa Road by the North Entrance) minus the number of empty student spaces.

Ridership by mode of transportation was determined in part by Research and Parking Enforcement personnel observing vehicles as they entered the campus during peak hours. The Santa Clara Valley Transit Authority and Paratransit provided ridership data for public bus service to Gavilan College. The Census Bureau provided additional ridership information about Santa Clara and San Benito County residents.

A survey administered in the 2nd and 3rd weeks of the semester assessed worker attitudes about alternative transit. The survey was given to a random selection of 40 Gavilan workers with 13 responses. A mail survey of student transportation attitudes was sent to a random selection of 200

Gavilan students enrolled at the main campus in six or more units. The first mailing of the survey went out May 15th, a second went out June 7th, and a final reminder card went out June 26th. Two survey came back as undeliverable. We received a total of 61 responses for a 31% response rate. A copy of the student survey is attached at the end of this report.

To assess the representativeness of our sample, I compared demographic data of respondents to nonrespondents. Demographic variables included age, city of residence, educational goals, education level, employment hours per week, enrollment status, ethnicity, gender, GPA, language, and total units attempted. Only age showed a significant relationship with response status with the average age of respondent being 2 years older than nonrespondents (Mann-Whitney U test, $Z = -2.464$, $p = 0.014$). This was supported by a classification and regression tree (CART) that used the demographic variables as predictors of survey response. The CART had an accuracy of 74.5% and split first on age then on ethnicity and educational goal as follows:

Age <= 26.125	
White, non-Hispanic	33% response rate
Latino, Other	17% response rate
Age > 26.125	
Transfer goal	36% response rate
Not Transfer goal	72% response rate

However, a forward stepwise likelihood ratio logistic regression using these variables as predictors of return resulted in a null model suggesting that none of these variables related to response rates.

To assess the seriousness of the possible bias, responses were compared between the age groups defined by the CART. Older students were more likely to be solo commuters and to cite a complex schedule as a barrier to alternative transit but showed no differences on other responses such as considering carpooling as an alternative or attitudes towards parking adequacy.

While the analysis of representativeness contains some contradictory elements, it is probably safe to assume that some response bias exists. Most likely, responses will underrepresent younger students of Latino and non-White ethnicities and should be considered when interpreting the results. Data were analyzed with SPSS 10.1.4 and Excel 2000.

Results and Discussion

Total unmet student demand showed a statistically significant linear decline of about 14 spaces demanded during peak time per week ($R^2 = 0.70, p < 0.005$). Unmet student demand at the beginning of the semester was about 200 spaces declining to about 50 spaces by mid-semester and still further to a surplus of 30 spaces by the end of the semester (Figure 2). Total empty staff parking averaged at about 20 spaces and did not show a significant linear trend over the semester ($R^2 = 0.11, p = 0.088$; Figure 3). There currently appears to be adequate handicapped parking for the moment but this parking should increase in proportion with increases in total parking.

Future student parking demand can be expected to change with enrollment. Excluding off campus members of the police and fire academies, enrollment is projected to grow to around 6,100 by Fall 2007 using a linear model ($R^2 = 0.82, p = 0.001$; Figure 4). If the proportion of unmet student demand remains constant and no new parking is provided, we would predict unmet demand to grow to about 260 for the beginning of the semester and about 65 for the mid semester by 2006.

The vast majority of vehicles observed between 8 am and 12 pm contained single occupants (Figure 5) with an average ridership of 1.43 people per car when only cars are included or 1.56 people per car when all modes of transit are included. Of 1,506 private vehicle observations only 2 bicycles were observed. These observations were mirrored by student responses to the mail survey (Figure 6). Mode of transit significantly differed between Gavilan students and workers during peak hours and total residents of Santa Clara and San Benito Counties (Figure 7). It may be that residents

of San Benito County and to some extent, Gavilan participants, substitute carpool for public transit due to the lower availability of busses in the more rural areas of the Gavilan District.

Of student survey respondents, just over a fifth agreed that there was enough parking at the main campus, just under a quarter agreed that they had no trouble finding parking, and an eighth agreed with both statements (Figure 8, Table 1). This suggests a level of satisfaction with much opportunity for improvement.

Students and workers indicated carpooling as the mode of alternative transit they would most likely consider followed by bussing and distance ed/telecommuting (Figure 9). Solo commuters more likely to say they would not consider any alternatives compared with solo commuters who also used alternatives ($\text{Chi-square}(1) = 7.136, p = 0.008$). Inhibitors to alternative transit for students were lead by a complicated personal schedule followed by the bus taking too long and being too far (Figure 10). Students who solo commuted were more likely to cite a complicated schedule as a barrier to using alternative transit ($G^2(3) = 14.726, p = 0.002$). Inhibitors for workers were primarily a complicated schedule and the bus route being too far from home. Promoters of alternative transit included ride match programs and faster, less expensive, and more extensive bus service (Figure 11). Responses to promoters were remarkable for the lack of any responses related to bicycling. Written comments were varied and included ideas about expanding parking and bus service and reducing permit and bus pass fees (Table 2).

Recommendations

It appears that current beginning of the semester demand exists for about 200 more student parking spaces. To accommodate projected future growth, at least 60 more spaces would be needed by 2007 to meet beginning of the semester demand. The 147 spaces created over the Summer should exceed mid-semester demand for the next 5 years.

Student parking demand could also be met by a series of strategies such as managing enrollment by time of day, increased use of alternative transit, and creating more parking spaces. For example, current parking demands would probably be met if no start time was allowed to have greater than 1000 enrollments at current parking capacity, which is about 10% of total Spring 2002 main campus enrollments. Increased alternative transit use could be accomplished through a ride match program for carpoolers. Also, providing semester bus passes for every student would increase the convenience of transit as they would already have a pass in their possession. Pass fees could be paid for through the registration process and/or grants that promote alternative transit. As the Gavilan district covers two transit authority territories, a special arrangement for Gavilan bus passes to be good in both Santa Clara and San Benito counties would further enhance the convenience of the transit pass. Other strategies could include preferred parking for carpoolers, a limited number of daily parking passes for full time users of alternative transit, or increased parking fees with a low income waiver. It did not appear that bicycling is an option used or considered in any significant fashion. Promoting awareness of bicycle transportation and safety such as through Bike to Work Day may increase consideration of the bicycle as a transit option for nearby residents. Overall, a combination of afternoon class scheduling, promoting carpooling, bussing, and bicycling, and adding new spaces will probably be needed to meet long term parking demand.



Figure 1. Proportion of main campus enrollments by start time of class.

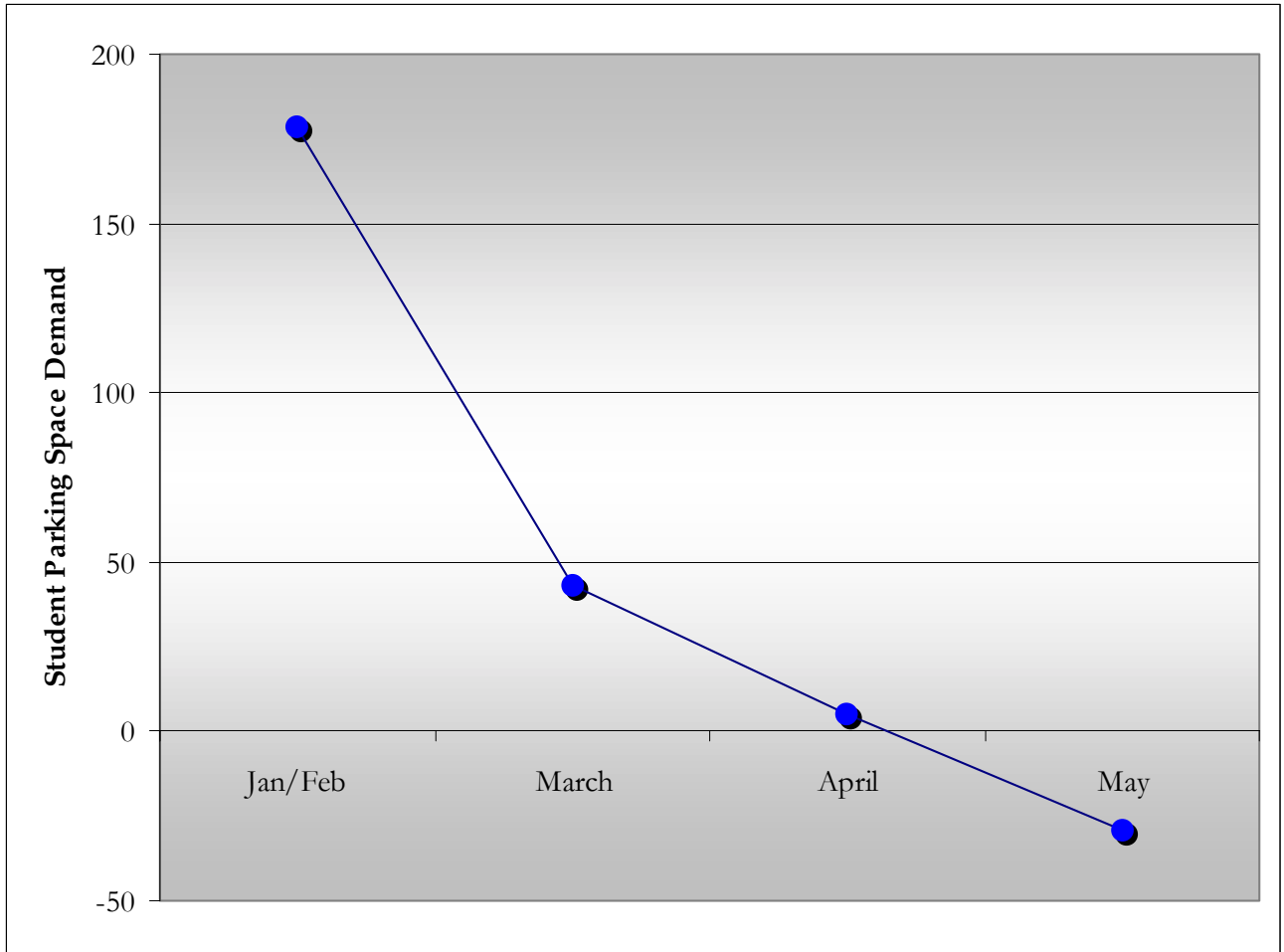


Figure 2. Estimated Median Monthly Unmet Student Parking Demand at Peak Hour.

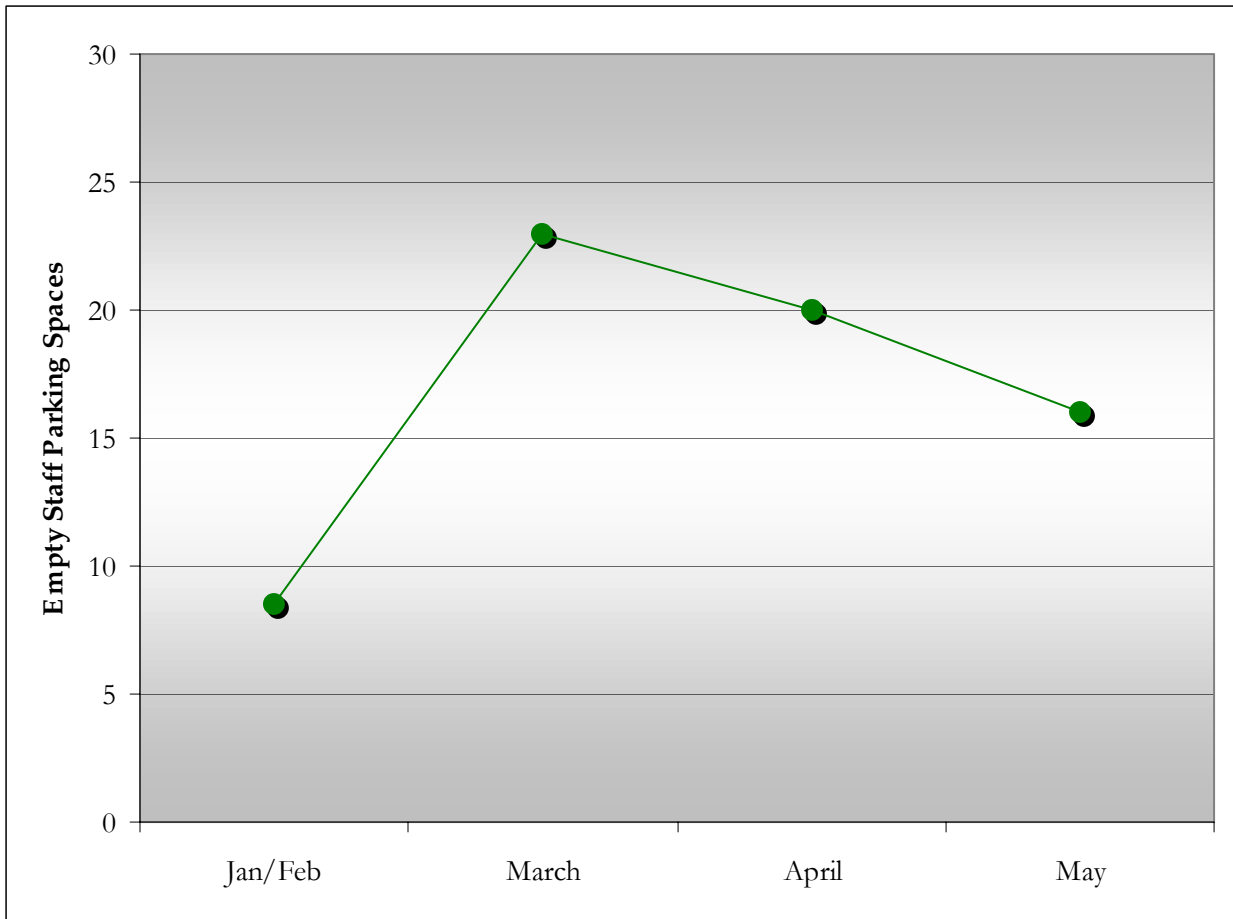


Figure 3. Median Monthly Empty Staff Parking Spaces at Peak Hour

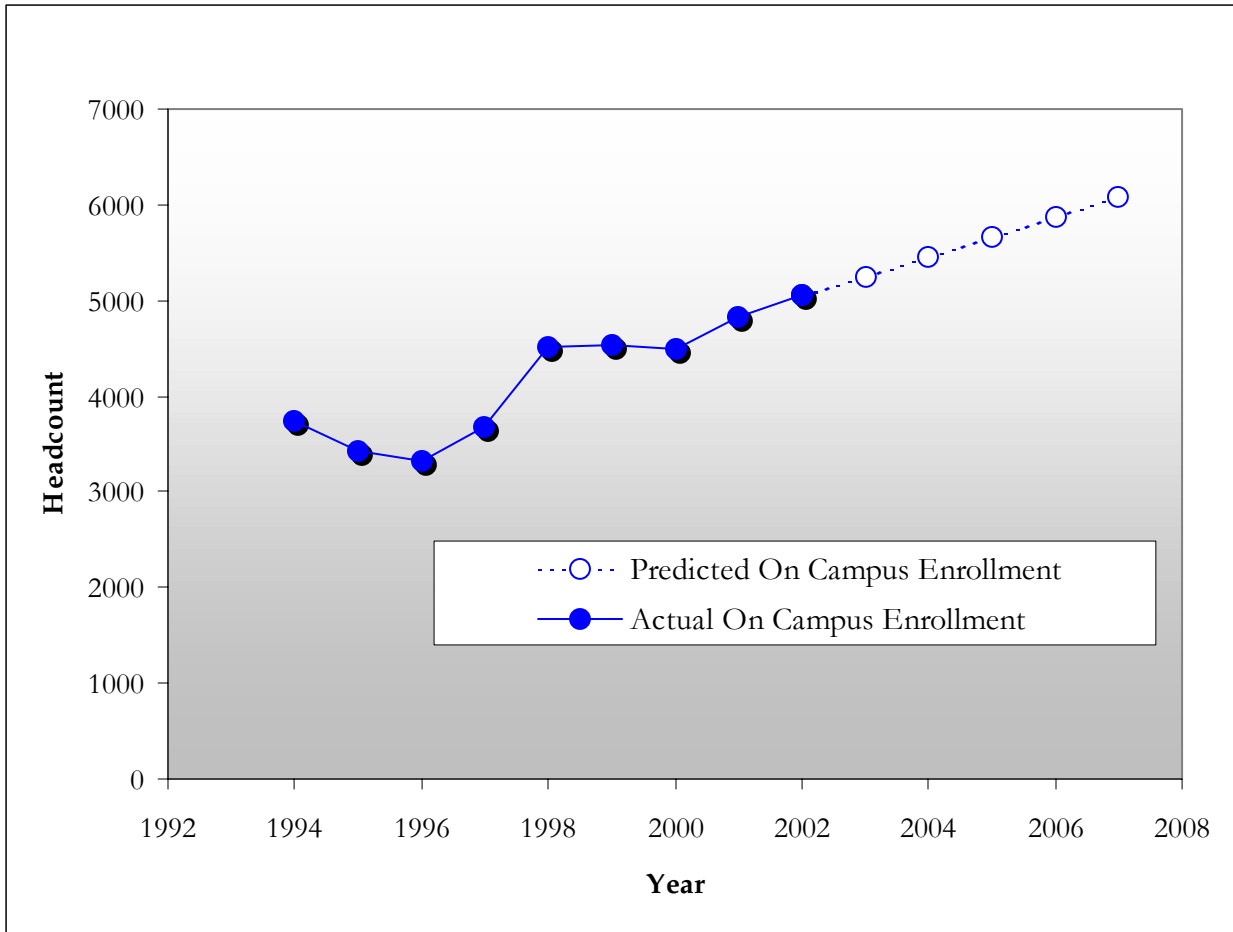


Figure 4. Actual and projected enrollments of Gavilan students excluding off campus members of the police and fire academies (JPA consortium).

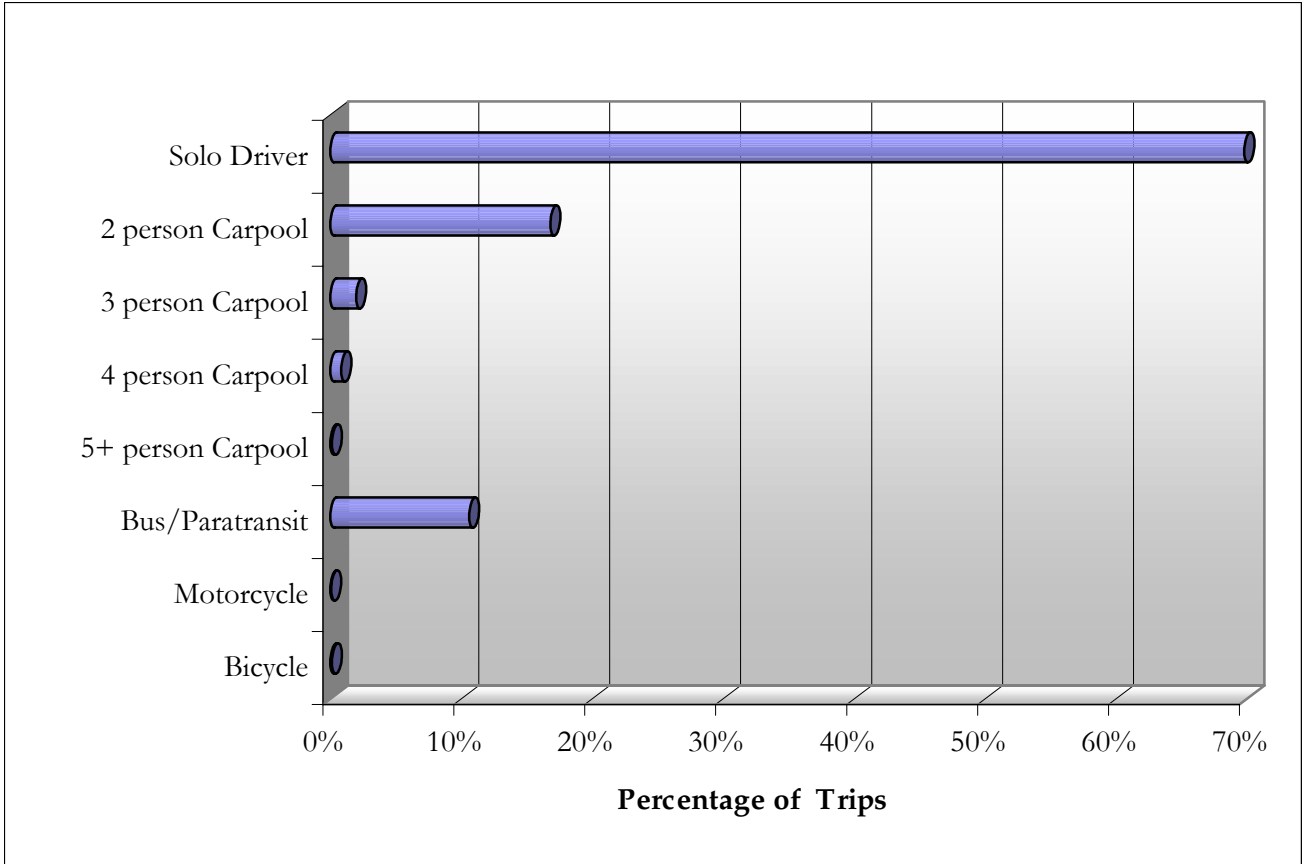


Figure 5. Private Vehicle Occupancy at Gavilan College during morning peak hours at the beginning of the semester.

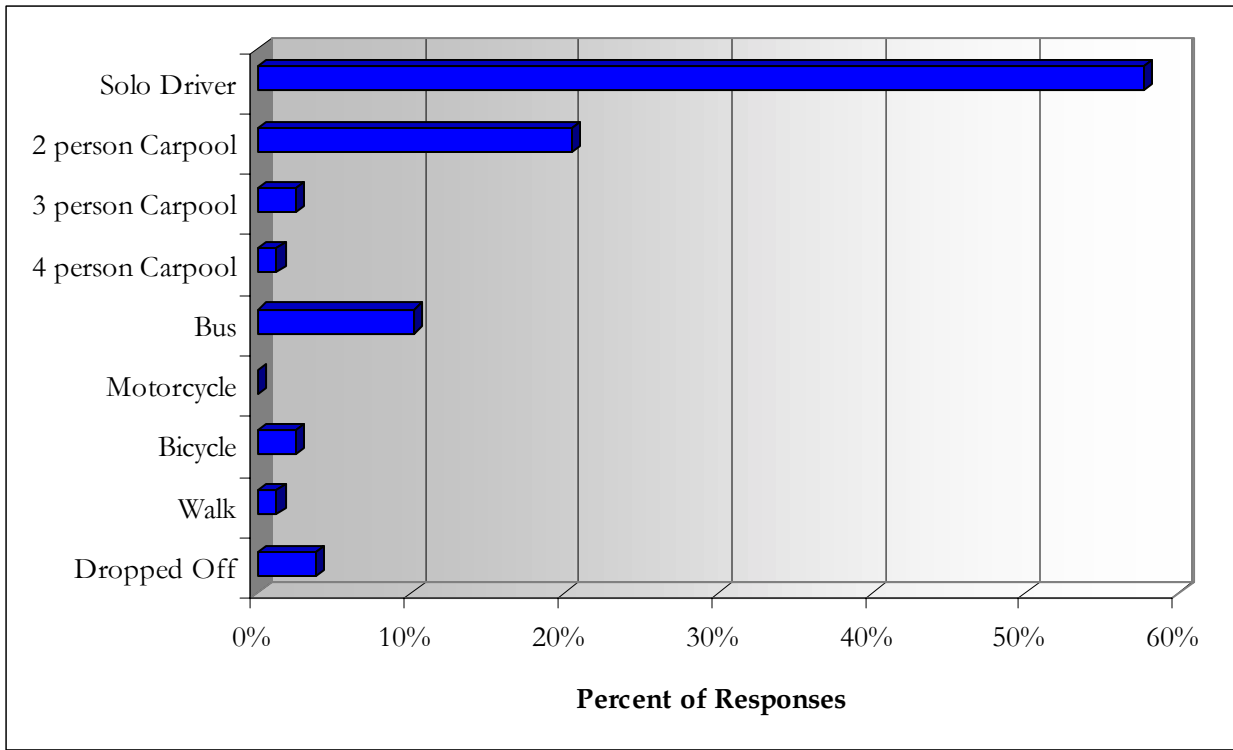


Figure 6. Primary mode of transit to the Gavilan main campus claimed by student survey respondents.

Transit Mode	Responses		
	Count	Percent	Error
Solo Driver	45	58%	7%
2 person Carpool	16	21%	10%
3 person Carpool	2	3%	11%
4 person Carpool	1	1%	11%
Bus	8	10%	11%
Motorcycle	0	0%	na
Bicycle	2	3%	11%
Walk	1	1%	11%

Dropped Off	3	4%	11%
Total	78	100%	

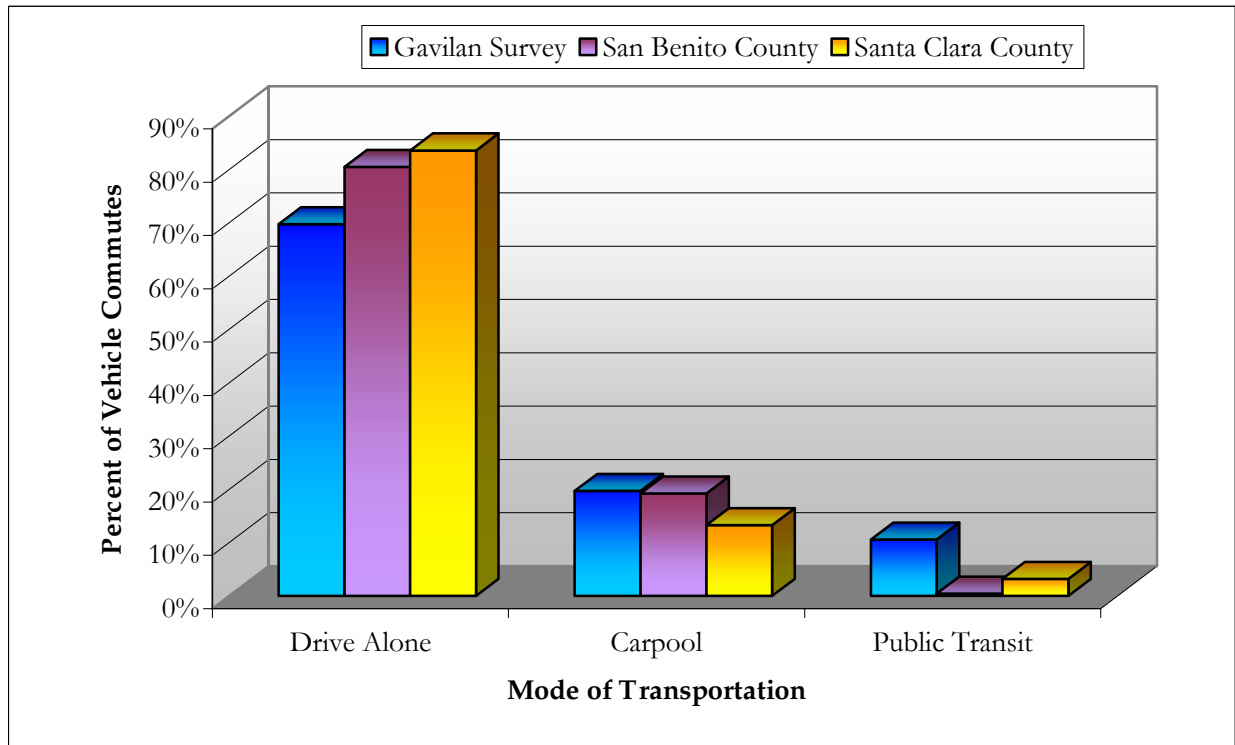


Figure 7. Mode of transit by Gavilan College students and workers during peak house and in general for residents of the counties in Gavilan College's District.

	Gavilan Survey	San Benito County	Santa Clara County
Drive Alone	70%	80%	84%
Carpool	20%	19%	13%
Public Transit	11%	0%	3%
Chi-sq	1146.01		
df	4		
p	<0.0005		

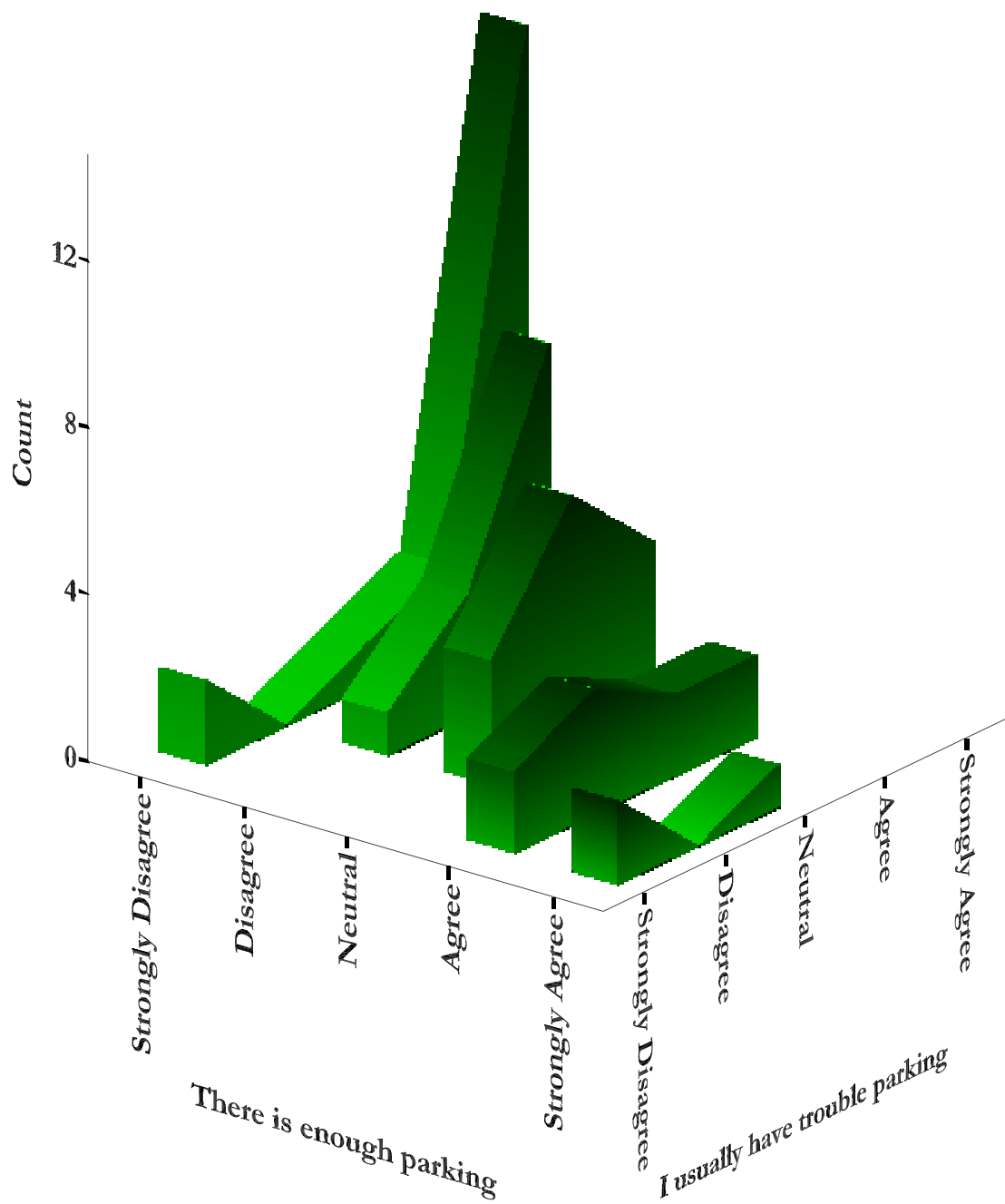


Figure 8. Responses by students about Gavilan parking adequacy.

Table 1. Crosstabulation of student responses about Gavilan parking adequacy.

		I usually have trouble finding a parking place at the main campus of Gavilan					Total	Percent	Error
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree			
I think there is enough parking at the main campus of Gavilan	Strongly Disagree	2		1	2	14	19	34%	11%
	Disagree		1	3	8		12	21%	12%
	Neutral		3	6	4		13	23%	12%
	Agree	2	3	2	2		9	16%	12%
	Strongly Agree	2		1			3	5%	13%
Total		6	7	13	16	14	56		
Percent		11%	13%	23%	29%	25%			
Error		13%	13%	12%	11%	12%			

Spearman's Rho = -0.67

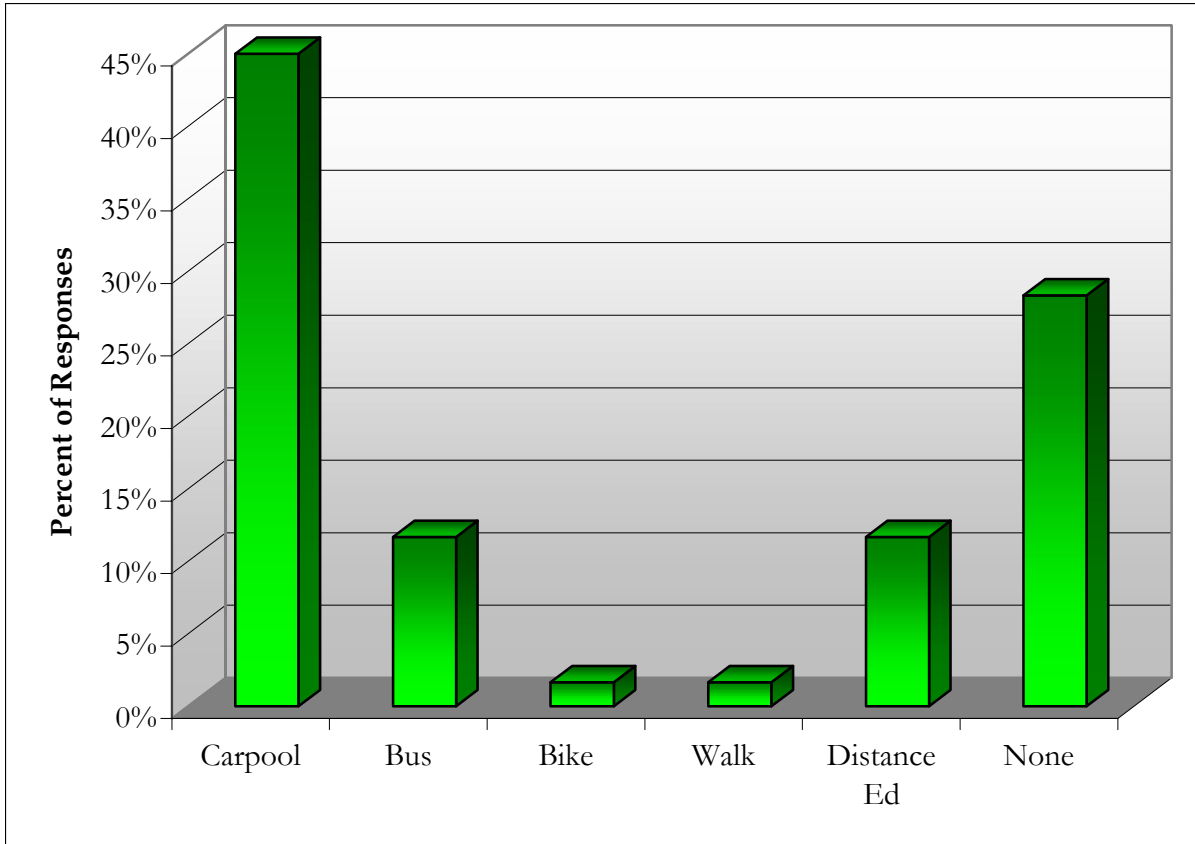


Figure 9. Type of alternative transit student respondent would consider

	Responses		
	Count	Percent	Error
Carpool	27	45%	10%
Bus	7	12%	12%
Bike	1	2%	13%
Walk	1	2%	13%
Distance Ed	7	12%	12%
None	17	28%	11%
Total	60	100%	

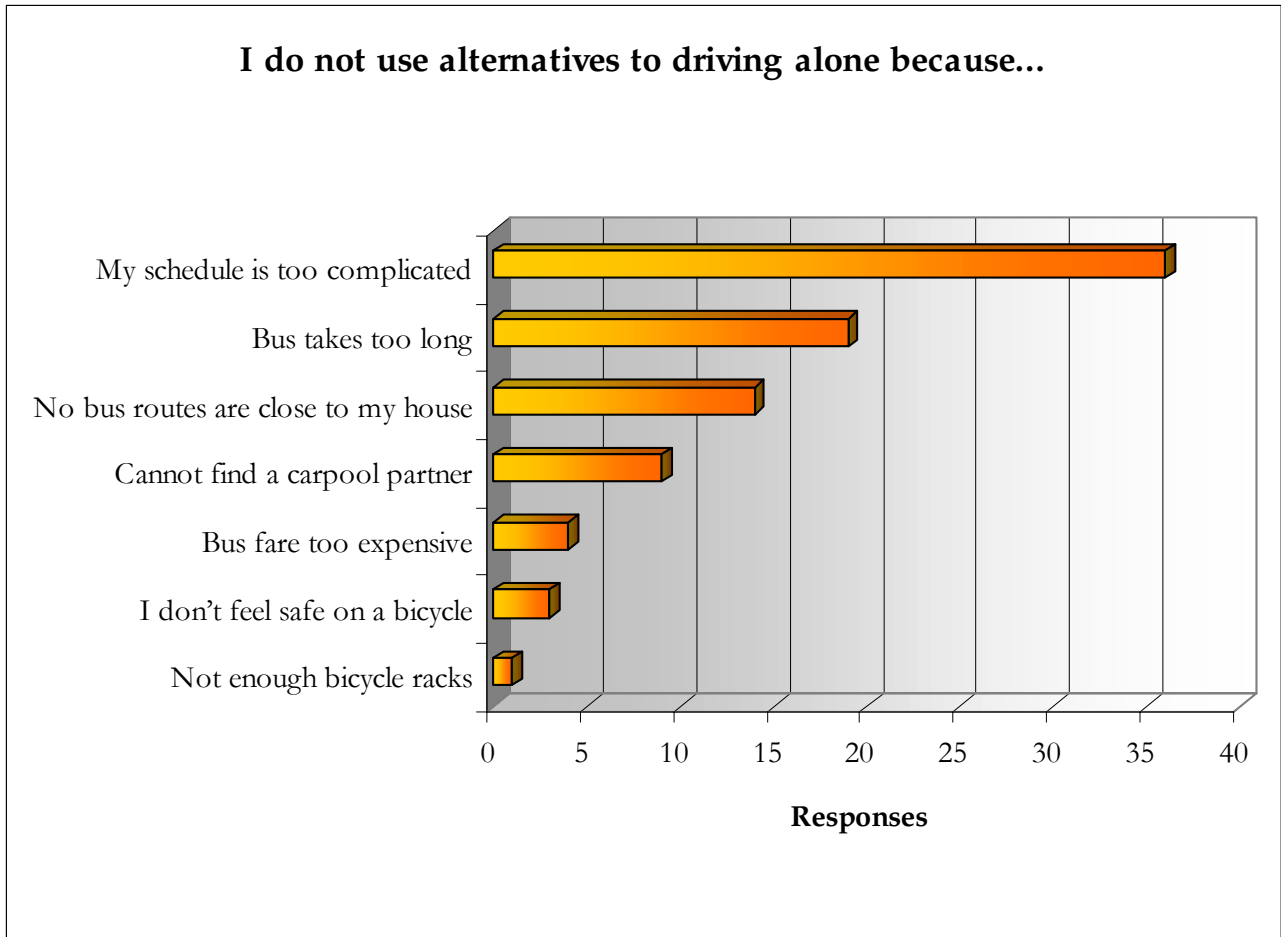


Figure 10. Student responses to alternative transit inhibitors.

	Responses		
	Count	Percent	Error
My schedule is too complicated	36	60%	8%
Bus takes too long	19	32%	11%
No bus routes are close to my house	14	23%	11%
Cannot find a carpool partner	9	15%	12%
Bus fare too expensive	4	7%	12%
I don't feel safe on a bicycle	3	5%	13%
Not enough bicycle racks	1	2%	13%
Total	50	100%	

I would consider using alternatives to driving alone if...

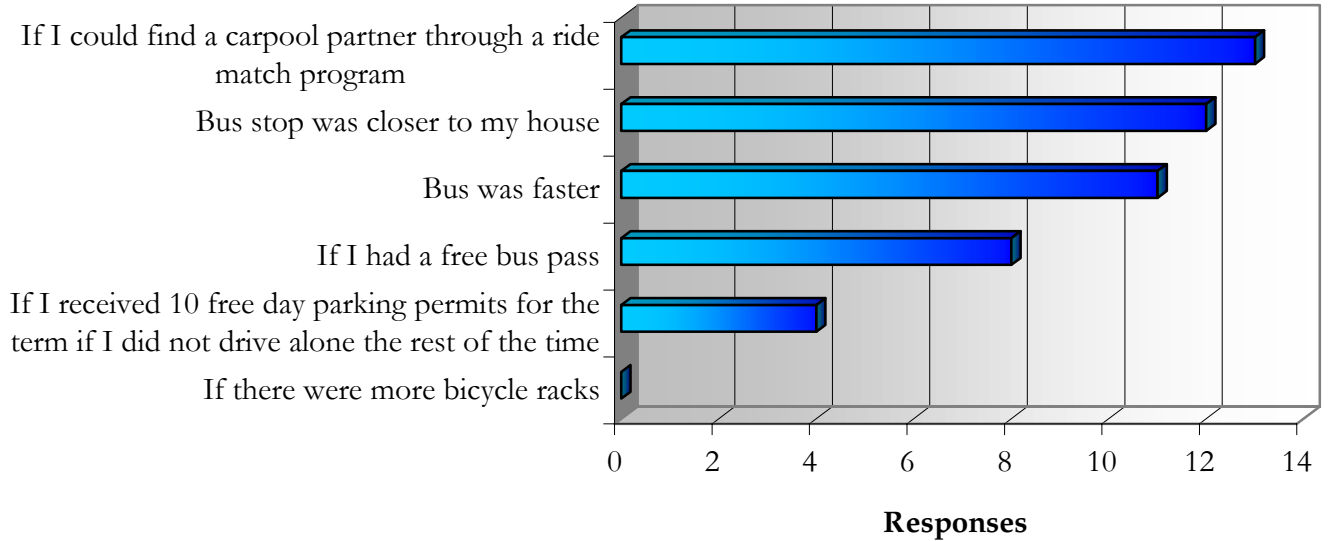


Figure 11. Student responses to promoters of alternative transit use.

	Responses		
	Count	Percent	Error
If I could find a carpool partner through a ride match program	13	22%	11%
Bus stop was closer to my house	12	20%	12%
Bus was faster	11	18%	12%
If I had a free bus pass	8	13%	12%
If I received 10 free day parking permits for the term if I did not drive alone the rest of the time	4	7%	12%
If there were more bicycle racks	0	0%	na
Total	48	100%	

Table 2. Written comments by student respondents.

1. Beginning of semester has no available parking. When you finally find a space, you are late for class.
2. It is unfair and way out of line to give parking tickets to students who park in the staff parking spaces. Sometimes, that is the only available parking. That really gets on my nerves! >:-|
3. It seems that parking is going to need expansion. I also noted that the police cadets share the parking lot so it seems as the students population grows, easier parking access would be a consideration choosing Gavilan versus Morgan Hill and such.
4. We already pay for tuition and books. I think parking and busses should be free to us or busses should not be so expensive or pay once for a day pass, not twice to come and go.
5. You need to make more parking areas for the morning, this is the worst time to find a parking place
6. As the school grows it is only common sense to realize the need for more parking
7. beginning of semester parking is really bad. As Gilroy grows Gavilan is going to have to add more parking. It is a problem that is going to grow and needs to be fixed. Carpooling can only do so much.
8. El pagode transporte es muy elevado para el salono promeio del area
9. have more parking
10. I feel Gavilan should not five out parking tickets unless there are enough spaces unlike last semester people had to park on a hill in the dirt. People drive around for at least 30 minutes looking for a parking spot and that make's us late for our class.
11. I liked the new parking last semester until you closed it. It just needed to be paved.
12. Ir todos em autobus
13. More bus routes through San Martin
14. More parking to the campus so we don't be late for classes
15. Parking is only troublesome between 10 and noon
16. Parking is too expensive
17. Parking should be free
18. Permit pass holders should get 1st priority to park. We shouldn't have to compete with contractors who reserve parking for their crews and cosmetology patrons or with pay as you go (day-hour pass) when lots are jammed we shouldn't be ticketed if we try t
19. Re-open the parking lot on the grass
20. Semester parking permits are way too expensive especially since they're mostly useless because you can't ever find a parking spot
21. Stop trying to make money off of it. Establish shuttles that run continuously between the main campus and each of the colleges other sites.
22. Take out trees for parking
23. The parking spaces are narrow especially when compared to evergreen. Crack down on those that park over the line. They take away spaces that would otherwise be available.

**Gavilan Community College Parking and Transportation and Computer Access
Survey Spring 2002**

Gavilan Community College seeks your input on improving access to the college. Please fill out and return this survey in the envelope provided.

1. How do you travel to the Gavilan main campus? (mark all that apply)

- Drove alone
- Carpool with 1 other person
- Carpool with 2 other persons
- Carpool with 3 other persons
- Carpool with 4 or more other persons
- Bus
- Motorcycle
- Bike
- Walk/Skate
- Did not go to main campus
- Other: _____

2. To what degree do you agree with the following statement: "I think there is enough parking at the main campus of Gavilan."

- strongly agree agree neutral disagree strongly disagree

3. If you usually drive alone to the Gavilan main campus, which of the following alternatives if any would you consider using either at least some of the time? (mark all that apply)

- Carpool Public Bus Bicycle Walk/Skate Distance Ed or Telecommuting None

4. I do not use alternatives to driving alone because (mark all that apply):

- No bus routes are close to my house
- Bus takes too long
- Bus fare too expensive
- Cannot find a carpool partner
- My schedule is too complicated
- I don't feel safe on a bicycle
- Not enough bicycle racks
- Not applicable
- Other (write response)

More questions on back

5. I would consider using alternatives if (mark all that apply):

- Bus stop was closer to my house
- Bus was faster
- If I had a free bus pass
- If I received 10 free day parking permits for the term if I did not drive alone the rest of the time
- If I could find a carpool partner through a ride match program
- If there were more bicycle racks
- Not applicable
- Other (write response)

6. To what degree do you agree with the following statement: "I usually have trouble finding a parking place at the main campus of Gavilan."

- strongly agree agree neutral disagree strongly disagree

7. Do you have any other comments or suggestions about parking or transportation?

8. Do you have access to a computer? Yes No Don't Know

9. About how often do you use a computer? daily weekly monthly yearly never

10. About how long has it been since you last used a computer? (write in response)

11. What do you use a computer for? (mark all that apply)

- email web browsing writing papers graphic art/multimedia games programming
- other (write in response):

12. Would you use the web to register for classes at Gavilan? Yes No Don't Know

13. Would you pay registration fees on the web? Yes No Don't Know

Thank you for taking the time to help improve access to Gavilan College!