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ABSTRACT

Data gleaned from items relating to transportation and parking from the Commuting Student Survey are reported. The survey questionnaire was designed to provide an overview of several aspects of the commuting student's relationship with the university and was sent to a stratified random sample of 2,140 students who were enrolled for the spring 1975 semester. Highlights of the findings include the following: (1) Eighty percent of the commuters depend on their own or their family's automobile for transportation to campus. (2) Negligible use is made of public transportation. (3) Less than 5 percent of commuters use carpools, although more than half express a willingness to do so. (4) Commuters consistently underestimate the costs of driving a car to campus. (5) The greatest number of cars are present on campus or in the vicinity around 10 a.m. (6) Many commuters do not purchase parking tickets for their cars. Recommendations for solving the parking problem for both students and staff are considered. (Author/LBH)

Commuters and Parking at UNC-G

Preliminary Findings from the Commuting Student Survey

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and

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October, 1975

HIGHLIGHTS

* Four out of five commuters depend on their own or their family's automobile for transportation to campus.

* Negligible use is made of public transportation.

* Less than five percent of commuters use carpools though more than half express a willingness to do so.

* Commuters consistently underestimate the costs of driving a car to campus.

* The greatest number of cars are present on campus and in the vicinity around 10 a.m.

* Many commuters do not purchase parking stickers for their cars. A third of the commuters usually park in "C" lots; the remaining two-thirds park on city streets or whereever they can.

FOREWORD

This report on parking contains information gleaned from items relating to transportation and parking from the Commuting Student Survey. The survey questionnaire was designed to provide an overview of several aspects of the commuting student's relationship with the University and was sent to a stratified random sample of 2,140 students who were enrolled for the Spring 1975 semester. A copy of the entire questionnaire is appended at the end of the report.

The survey was general in nature and was never intended to address itself exclusively to parking. The sample was constructed so as to be representative by class. The response rate was a relatively good 41%. It should be noted that the survey samples one population at one point in time. Therefore the data do not control for such factors as shifts in class scheduling between semesters which might affect traffic patterns or day-to-day variations in transportation habits (people who usually walk but sometimes drive).

The survey provides a rough estimate of when most commuters come to campus and what method of transportation they use to get here. The reader should be cautious about making generalizations about parking for the entire University community on the basis of a survey of one subpopulation. A realistic approach to the resolution of campus parking problems would require a detailed survey of traffic and parking patterns generated by University employees, resident students, and residents of the local area as well as commuters.

This report is the first of several studies based on the Commuting Student Survey. Forthcoming reports will give a demographic profile of the commuting student and examine his academic and social experiences at UNC-G.

Commuting students make up sixty-two percent of the Fall 1975 student body and represent the principal source of enrollment growth at UNC-G. The ratio of commuters to resident students has reversed since Fall 1968 when sixty-two percent of the students at UNC-G lived in dorms. Thus, in seven years, the commuter population at the University has almost tripled growing from 2,106 in Fall 1968 to 5,872 in Fall 1975. In an effort to identify the needs and problems unique to commuting students, the Office of Student Affairs and the Office of Institutional Research conducted a survey of 2,140 commuter and resident students in the Spring of 1975. The sample survey was designed so that students in the different undergraduate and graduate classifications would be proportionately represented. A total 680 commuters and 159 resident students completed and returned the questionnaire - a response rate of approximately forty-one percent. The table below compares the survey respondents with the commuting and total student enrollment, broken down by class.

TABLE 1

Total Enrollment, Survey Sample and Commuter Respondents by Class, Spring 1975

	Total Enrollment		Survey Sample	Commuters Enrolled		Commuter Responses	
	N	%	%	N	%	N	%
Freshmen	1354	15.5	16.0	329	6.1	47	6.9
Sophomore	1312	15.0	15.5	473	8.7	60	8.8
Junior	1553	17.7	17.0	737	13.6	118	17.4
Senior	1279	14.6	14.2	760	14.0	141	20.7
Graduate Degree	1720	19.6	20.5	1631	30.1	230	33.8
*Spec. Students	1538	17.6	16.8	1490	27.5	84	12.3
Total	8756	100.0	100.0	5420	100.0	680	99.9

* Special students include Special Adult and Special and Certification Graduate students.

NOTE: Special students at the Undergraduate and Graduate level, who comprise 27.5% of the commuting student enrollment, are under represented, accounting for only 12.3% of the responses.

Students were given the opportunity at the end of the questionnaire to comment on how well the University is serving the needs of the commuter. The overwhelming majority of respondents cited parking as the major problem the commuter faces. Students complained about the scarcity of spaces close to classroom buildings, the time-consuming chore of finding a parking space after 8 a.m. and the lack of sufficient lighting around parking areas after dark. Another irritant was the car of the dorm resident, which many commuters believed occupied the most convenient spaces during the week and was moved only on weekends, when students leave campus.

Arthur Chickering notes in his book Commuter Versus Resident Students, that commuter students do not receive educational benefits equal to those enjoyed by resident students though both groups pay the same tuition.[1] The students in this study who expressed their dissatisfaction over the inconvenience and lost time caused by inadequate parking may illustrate Chickering's point. The nonacademic obstacles a commuter contends with while pursuing an education at UNC-G might easily make him feel that he's not getting his money's worth.

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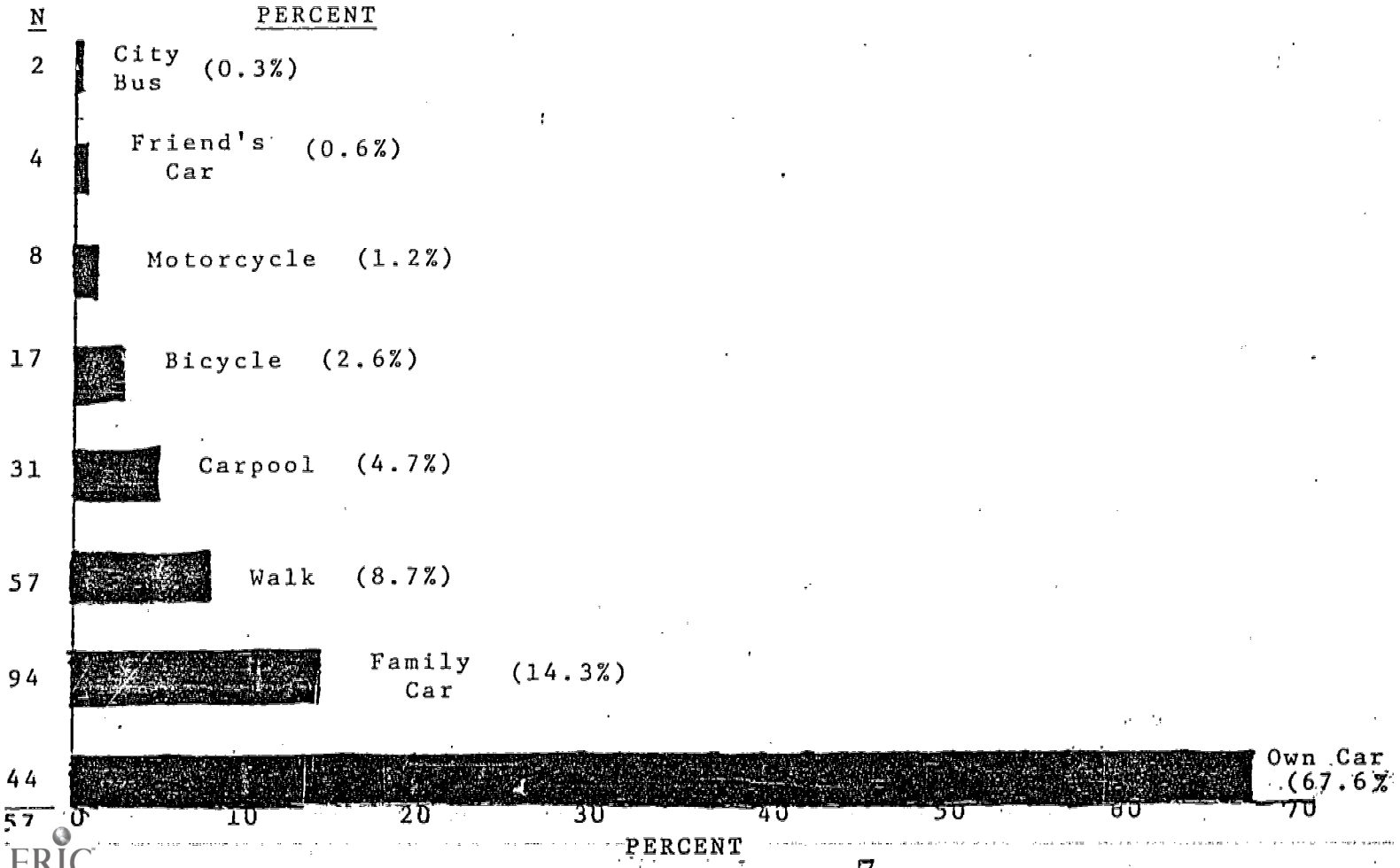
1 Arthur Chickering, Commuting Versus Resident Students (San Francisco: Jossey-Bass, 1974), p. 135

TRANSPORTATION HABITS

Isolation of the questions on the survey relating to parking and transportation tends to verify the frustrations expressed by commuters in their written comments. The automobile, of course, is the favorite mode of transportation with four out of five commuters driving their own or their family's car to campus. Walking and carpools are the third and fourth most popular means of getting to campus but lag far behind the driving student. Other modes of transportation - the bicycle, motorcycle and bus - account for less than five percent of commuter traffic, as illustrated by the graph below.

FIGURE 1

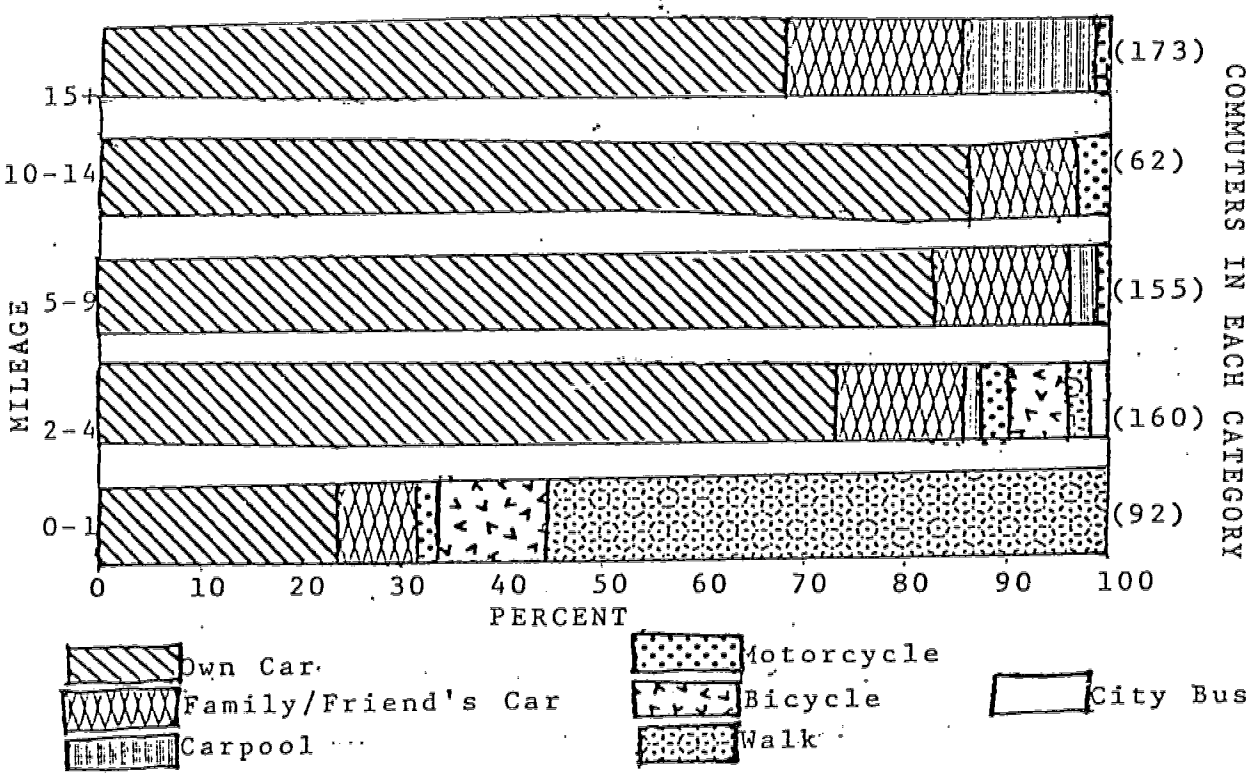
USUAL MODE OF TRANSPORTATION FOR COMMUTERS



Examination of how students arrive on campus is not meaningful without comparing how far students commute with their preferred mode of transportation. As could be expected, those living more than five miles from campus rely almost exclusively on cars to bring them to UNC-G. The "walkers" live within a mile and those using bicycles or motorcycles live within a five-mile radius. Only two respondents rode the city buses. Both lived from two to four miles from campus.

FIGURE 2

Usual Means of Transportation
By Distance From Campus



Not surprising, but readily apparent, is the infrequent use of the carpool and public transportation, especially by those students living close to campus. In the minds of commuters the city bus is the least convenient and perhaps the most expensive form of transportation available to students in the city limits. According to a spokesman for the Duke Transit Authority, the longest bus route runs about eight miles away from the downtown area. With a fare of 30 cents each way, only those students living on the periphery of the longest bus routes would seem to ride the bus far enough (16 miles for 60¢) to match the cost of gasoline for an automobile. Given the convenience factor, the car is easily preferable to the bus. However, an interesting finding of the survey is that students tend to underestimate their commuting expenses. A comparison of estimated and actual costs of driving a car to campus using the standard rate of 15¢ per mile is presented in Table 2. The figures were derived by analyzing responses to these four questions:

(1) How many miles do you travel from home or work to campus (one way)?
(2) Approximately how much do you spend on automobile operating expenses per month in traveling to and from the campus (gas, oil, tires, and insurance)?
(3) How many days per week do you come to campus?
(4) How often do you return to campus to study or attend activities or events other than classes?

TABLE 2

Estimated and Actual Round-Trip Expenditures of Students Who Drive Automobiles to Campus by Distance Commuted

Commuting Distance (Miles)	N	Students Mean Estimated Cost Per Month	Excluding Non-Class Trips		Including Non-Class Trips	
			Mean Trips/Month	Mean Cost/Month	Mean Trips/Month	Mean Cost/Mor
0-1	75	$12.98	23.0	$ 6.90	33.7	$ 10.12
2-4	155	21.90	18.9	17.02	25.1	22.60
5-9	153	27.38	18.0	37.80	23.1	48.52
10-14	59	31.36	16.7	59.94	21.1	79.14
15-24	58	32.28	13.5	79.00	17.3	100.32
25+	116	38.45	12.6	139.12	14.9	164.50

Only those students driving to campus who live within a mile overestimate their commuting expenses. Those within the two-to-four mile range spend approximately what they think they do. Commuters living farther than four miles from campus seriously underestimate their costs of transportation to and from UNC-G.

Approximately thirty percent of the commuters sampled live from two to eight miles from campus and could save by riding the bus. While not all of these students have access to a city bus, certainly more than the two-tenths of one percent who now ride the bus are able to use public transportation. The bus is not equal to the car in time or convenience. But the significantly lower cost of riding the bus ($13.50 per month for five trips a week to and from campus) means that those who can take a bus to campus but are driving cars are paying a high price for their convenience. Perhaps the University could explore alternatives with the City of Greensboro to make bus riding more attractive by working for more convenient bus schedules, publicizing available bus services, building shelters at bus stops, etc. Also, student passes for reduced fares or one ticket purchased for an unlimited number of rides during a given period of time might encourage more students to ride the bus, thereby reducing traffic congestion on campus and bolstering the public transportation system in Greensboro. The public transportation system in Greensboro has been scrutinized in a joint venture between the City of Greensboro, Duke Power Company and A & T State University. The study, "Transit Improvement Study - Greensboro, N. C." was conducted by the consulting firm of William S. Pollard of Memphis, Tennessee and will be available later this fall.

Increased use of buses would reduce some pressure on parking, but that alternative is useful only to commuters living on or near a bus line. Another way to reduce the number of cars competing for parking spaces is to encourage carpools. More than half the students in the survey (59%) expressed their willingness to use a carpool if one were available. A transportation study conducted at Georgia State University found that employed commuters had an attitudinal bias against carpools.[2] However, a breakdown of UNC-G commuters who were employed did not support the Georgia State finding. Of those commuting students who are employed, 59% were willing to use carpools if available and 41% had no wish to use carpools. The breakdown for unemployed commuters is almost identical: 60% would use carpools if available and 40% would not. Furthermore, employed commuters depended on something other than their own or their family car for transportation more often than their unemployed counterparts did. Therefore, given the fact that roughly 60% of the commuters are willing to consider the use of carpools and less than five percent currently use them, the University might encourage carpools through the increased use of rider boards, etc., which would match commuters by points of origin and arrival and departure times. The increased use of buses and carpools appear to present two partial and greatly underutilized solutions to the University's parking problem.

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[2] Theron R. Nelson and James E. Prather, A Survey of Student Travel Patterns and the Energy Crisis (Atlanta: Georgia State University, Office of Institutional Planning, 1974).

TRAFFIC PATTERNS

The inadequacy of convenient parking is most noticeable in the morning, with the majority of commuters arriving on campus before nine o'clock. The pattern of arrivals and departures is similar for each day of the week, with more than half of the commuters in the survey arriving before nine o'clock on Mondays, Wednesdays and Fridays and more than forty percent arriving before nine on Tuesdays and Thursdays. Departures follow a more gradual pattern with commuters beginning to leave before noon and approximately equal numbers leaving during the afternoon and evening hours. Graphs of arrivals and departures for Monday through Friday are presented at the end of this study.

When arrivals and departures are calculated to give the number of commuters actually on campus during given time periods, the data reveal that peak demand for parking occurs around 10 a.m. each day of the week. Table 3 gives the percentages of commuters on campus during various periods of the day and provides only a rough translation into the number of cars which are likely involved. Calculation of the number of cars rests on the assumption that (1) commuters in this survey accurately reflect the general traffic patterns of commuters enrolled in Spring 1975 and (2) eighty percent of the commuting population drive cars to campus each day. The estimate is provided only to give an impression of the relationship between traffic patterns and parking.

The reader should bear in mind some qualifications while interpreting the data in Table 3. On the one hand, the 80% estimate of commuters driving cars to campus is slightly lower than the percentage of commuters in the survey who responded that they usually drive their own or their family car to campus (81.9%). Excluded from the estimate are those who usually ride in carpools

(4.7%) and those who usually bring a friend's car to campus (0.6%). On the other hand, the calculations ignore daily variations from an individual commuter's usual mode of transportation - an oversight which might tend to inflate estimates of the number of cars seeking parking for any given day. The limitations of the data in Table 3 emphasize the need for precise information on traffic patterns for commuters and also for resident students and University employees.

TABLE 3

Percent of Commuters and the Approximate Number of Commuters' Cars on Campus and in the Vicinity During Selected Periods of Time

	Before 8 AM	8-9AM	9-10AM	10-12Noon	12-2PM	2-5PM	5-6PM
Monday %	21.7	56.2	70.0	59.7	41.1	16.3	12.5
N	(721)	(1747)	(2326)	(2071)	(1366)	(542)	(415)
Tuesday %	22.0	42.4	64.2	63.5	46.0	18.3	15.9
N	(689)	(1327)	(2010)	(1988)	(1440)	(573)	(498)
Wednesday %	23.7	55.8	69.2	58.9	41.5	15.5	12.8
N	(790)	(1861)	(2307)	(1964)	(1384)	(517)	(427)
Thursday %	21.6	40.7	62.3	63.8	46.1	18.3	16.7
N	(670)	(1262)	(1931)	(1978)	(1429)	(567)	(518)
Friday %	26.7	68.0	84.0	66.8	38.0	6.5	3.6
N	(974)	(1805)	(2229)	(1773)	(1008)	(173)	(95)

NOTE: The percentage of commuters on campus was calculated by adding arrivals and subtracting departures for each time period and dividing the result by the total number of commuters coming to campus that day. The number of cars was derived by multiplying the percentage of commuters who come to class on a given day by the total commuter enrollment for Spring 1975 (5,420) for an estimate of the number of commuters coming to campus each day of the week. Multiplying those five figures by percentages on campus during given time periods each day and reducing the result by 20 percent yields the estimate of commuters' cars on campus and in the vicinity. The numbers do not reflect the number of employee or resident cars also present.

Table 3 suggests that parking is tightest around ten a.m. and the buildup of cars on campus tapers off after mid-morning. Traffic patterns also result in congestion, a problem related to but not identical to parking. Periods of congestion occur when the parking crunch hits in mid-morning and at noon when commuters and employees leave for lunch and play musical chairs for vacant spaces when they return. Table 4 shows the extent of activity which occurs at lunch time by comparing where commuters eat lunch.

TABLE 4

Usual Place for Lunch by Miles Commuting to Campus

	Miles	On Campus	Nearby Campus	Home	Far Off Campus
(N=83)	0-1	36.1	6.0	51.8	6.0
(N=145)	2-4	32.4	10.3	44.1	13.1
(N=140)	5-9	43.6	5.7	35.0	15.7
(N=60)	10-14	40.0	13.3	31.7	15.0
(N=53)	15-24	34.0	7.5	39.6	18.9
(N=110)	25+	39.0	13.6	20.9	26.4

For every commuting interval, more than forty percent of the commuters either eat lunch at home or far enough off campus to need a car to go to lunch. While some commuters don't use a car to go home for lunch (i.e., those close enough to walk or ride a bike), and many who drive home do not return, there are undoubtedly many who do drive somewhere for lunch and return to campus. Just how many cars on campus during a given time period have been there continuously and how many have left and returned with a resulting turnover in parking spaces is difficult to ascertain. Respondents were asked on the questionnaire to put the hours of the day they were most

likely to arrive and leave campus for each day of the week. Since only one arrival and departure per day could be indicated, the assumption is made that respondents listed the time of their first arrival and last departure. Commuters and employees who leave campus for lunch and return later contribute to noon-time congestion which does not show up on a table giving the percentages of cars on campus during a given time period. Likewise, similar congestion at night cannot be measured because students do not indicate exactly what night they return to campus for study.

Table 5 gives a breakdown on how often commuters return to campus for studying or other activities by how far they commute to UNC-G.

TABLE 5

Percent Returning to Campus for Study or Other Activities

Commuting Distance (Miles)	N	Less Than Once A Week	Once Weekly	Twice Weekly	Three Times Weekly	More Frequently	Mean Trips Weekly
0-1	77	26.0	9.1	9.1	22.1	33.8	2.4
2-4	158	46.2	17.1	12.0	12.7	12.0	1.4
5-9	155	59.4	16.1	7.7	7.0	10.0	1.1
10-14	61	62.3	16.4	8.2	8.2	5.0	1.0
15-24	55	67.3	16.4	7.3	5.5	3.6	0.8
25+	114	84.2	7.0	7.0	1.8	0	0.0

As can be expected, an inverse relationship exists between how far a student commutes and how often he comes to campus for something other than class attendance. A finding which is unrelated to parking, but still important, is how seldom commuters come to campus when there is no scheduled academic activity.

The hours students prefer to come to class are one predictor of traffic patterns. Table 6 compares the time preferences for class indicated by commuters and resident students who responded to the survey.

TABLE 6

Percent of Commuters and Resident Students Preferring Classes at a Given Time

Time Periods	Commuters (N=680)	Residents (N=159)
8-10	16.7	13.8
10-12	47.2	78.9
1-2	3.1	3.3
2-4	2.2	2.6
4-6	3.8	0.0
6-9	15.3	1.3
7-10	10.9	0.0
Saturday Morning	0.8	0.0

While commuters tend to favor morning or early evening classes, resident students almost unanimously prefer morning classes. Thus, the time of greatest pressure on parking will likely remain mid-morning since evening commuters do not have to compete with university employees for parking spaces. Traffic patterns are not likely to change substantially with regard to the class schedules preferred by most commuters unless course offerings are expanded greatly after 4 p.m.

PARKING FACILITIES

A comparison of parking permits issued with available parking spaces indicated that parking spaces are indeed at a premium. Table 7 lists the number of spaces available and the parking permits issued as of October 1, 1975, according to Director of Security Newton T. Beck.

TABLE 7

Parking Permits Sold and Spaces Available at UNC-G

Designation	Permits Sold	Spaces
A-Faculty/Staff	1297	1850
C-Commuter	1541	
B-Senior/Graduate Residents	448	410
D-Freshman/Sophomore/ Junior Residents	293	162
M-Motorcycle	22	25
Other-Visitors, Reserved, Emergency, Service Areas	--	76
TOTAL	3596	2523

The oversell of "A" and "C" stickers is not so extreme as the numbers in the table suggest because some stickers are purchased for a second family car. However, parking regulations distributed when permits are purchased stipulate that only one car per family may be on campus at any given time.

During the past two years, parking space on the University has been increased by 230 spaces with addition of the Stirling Street, McIver and New Administration Building lots. However, only the Stirling lot with 150 spaces is posted for use by both commuters and staff; the McIver and New Administration Building

lots are for "A" parking only. Furthermore, commuters have only one parking lot of their own according to the current map distributed by the Traffic Office. In all other areas where they are allowed to park, commuters must compete with faculty and staff for a space in lots with "A/C" designations. Data in the table seem to indicate that the parking facilities at UNC-G have not kept pace with the growing commuting student body, and traffic congestion, like the number of commuting students, has increased markedly.

A comparison of the 1,541 permits issued with the commuter student enrollment of 5,872 for Fall 1975 indicates that most commuters do not depend on parking on campus. Students are not required to register cars, so only those planning to park on campus buy permits. Responses on the questionnaire to "Where are you most likely to park?" are evidence that the majority of commuters do not park in lots designated for them as indicated in Table 8.

TABLE 8

Usual Parking Place

Lot	Number	Percent
B	8	1.3
C	205	33.2
D	4	0.6
Private Lot	14	2.3
City Street	155	25.1
Wherever I Can	231	37.4
TOTAL	617	99.9

A comparison of when commuters usually arrive by where they are most likely to park, suggests that those arriving before 10 a.m. park in "C" lots or on city streets. The tendency to park in "C" lots or on city streets declines after mid-morning. Those who arrive later than 10 a.m. are more likely to park wherever they can. The "wherever I can" category does not decline during the day as the "C" and "city street" categories do. The complaints that Campus and City Police receive from neighbors of the University concerning parking verify the dilemma the commuter faces on where to park. The apparent heavy dependence upon street parking means that any proposals to reduce on-street parking must be carefully considered.

CONCLUSION

Parking as described in the UNC-G Centennial Plan has reached the critical stage. The University is bulging at its seams with too many cars and too few parking spaces. Given the situation that on-campus parking can not be readily expanded and the demand for available space is increasing, the commuter students appear justified in their complaints that parking is their major problem. Three alternatives are cited in the Centennial Plan as possible solutions to the parking problem:

(1) Utilize existing lots more fully by making them safer and more attractive;

(2) Explore a satelite parking program;

(3) Build large lots on the periphery of the campus.

But building bigger and better parking lots is not necessarily the best alternative in a society which must eventually reduce its dependence on the automobile. Other less extravagant options, such as more extensive use of carpools and city buses, could partially offset the demand for increased parking space. Those studying this problem should remember that the commuting student is no more to blame for the parking situation than are the faculty, staff and resident students who bring their cars to campus. University employees probably push commuters out of on-campus lots because they generally arrive earlier and stay longer than commuters. Therefore, the University should also consider faculty and staff parking needs carefully before proposing alternate approaches to the parking situation. Initially the University might require all students and employees to register their cars so that the magnitude of the problem can be measured. Such action would provide useful

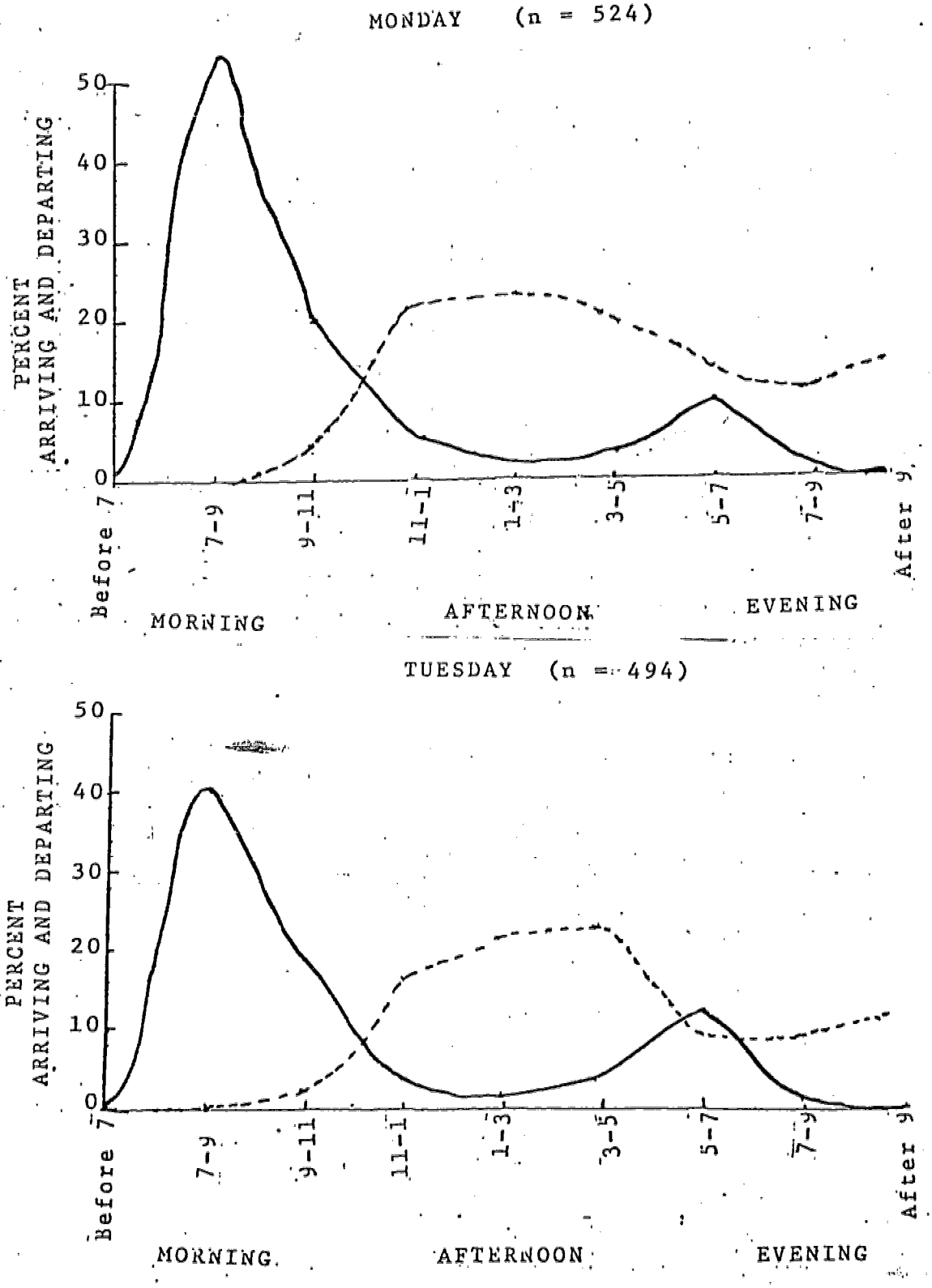
data for considering how to deal with the volume of cars on and around campus.

The commuting student survey documents the obvious: parking is a major problem at UNC-G. By providing data on traffic patterns, transportation habits and general complaints, the survey provides a starting point in identifying various facets of the problem but does not point to one or more easily agreed upon solutions. The study also emphasizes the need for the University to attack the parking problem as part of its responsibility to students who are unable or unwilling to live on campus.

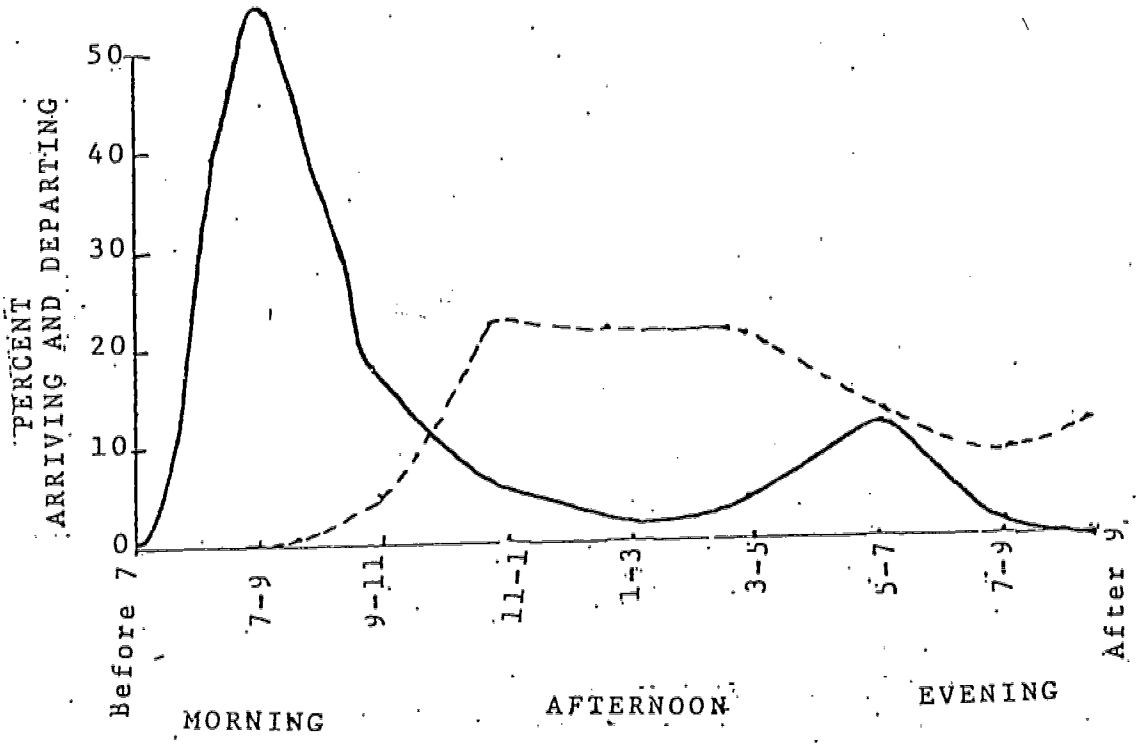
FIGURE 3

ARRIVAL AND DEPARTURE PATTERNS FOR COMMUTERS

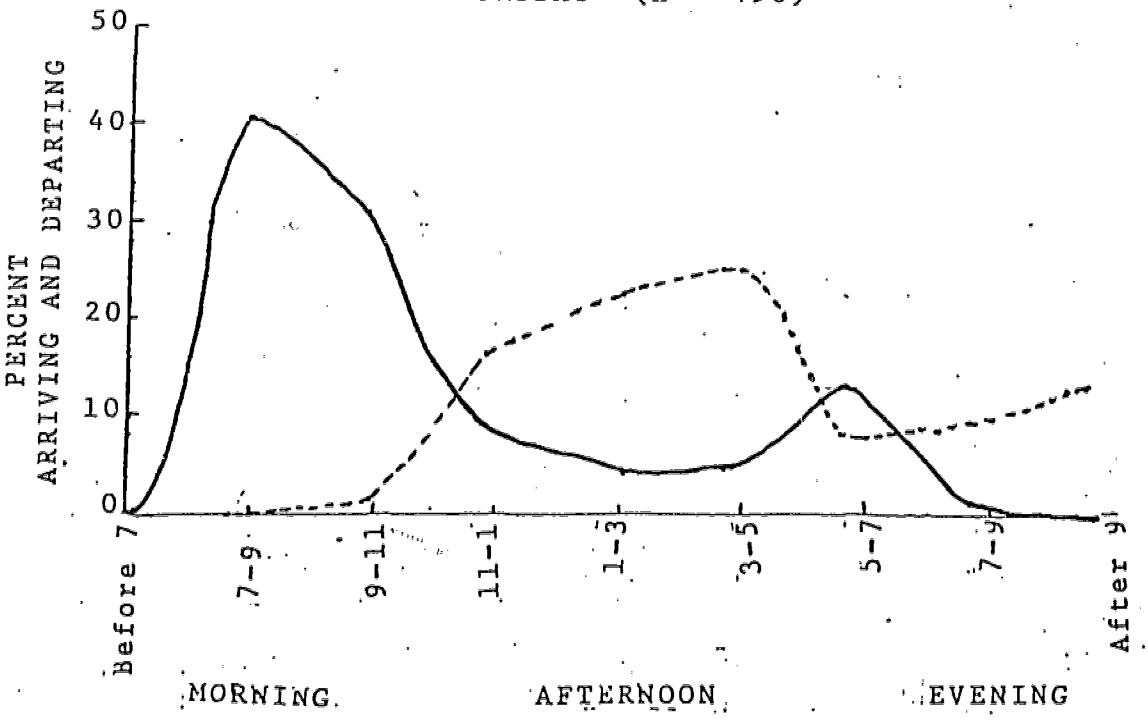
MONDAY - FRIDAY

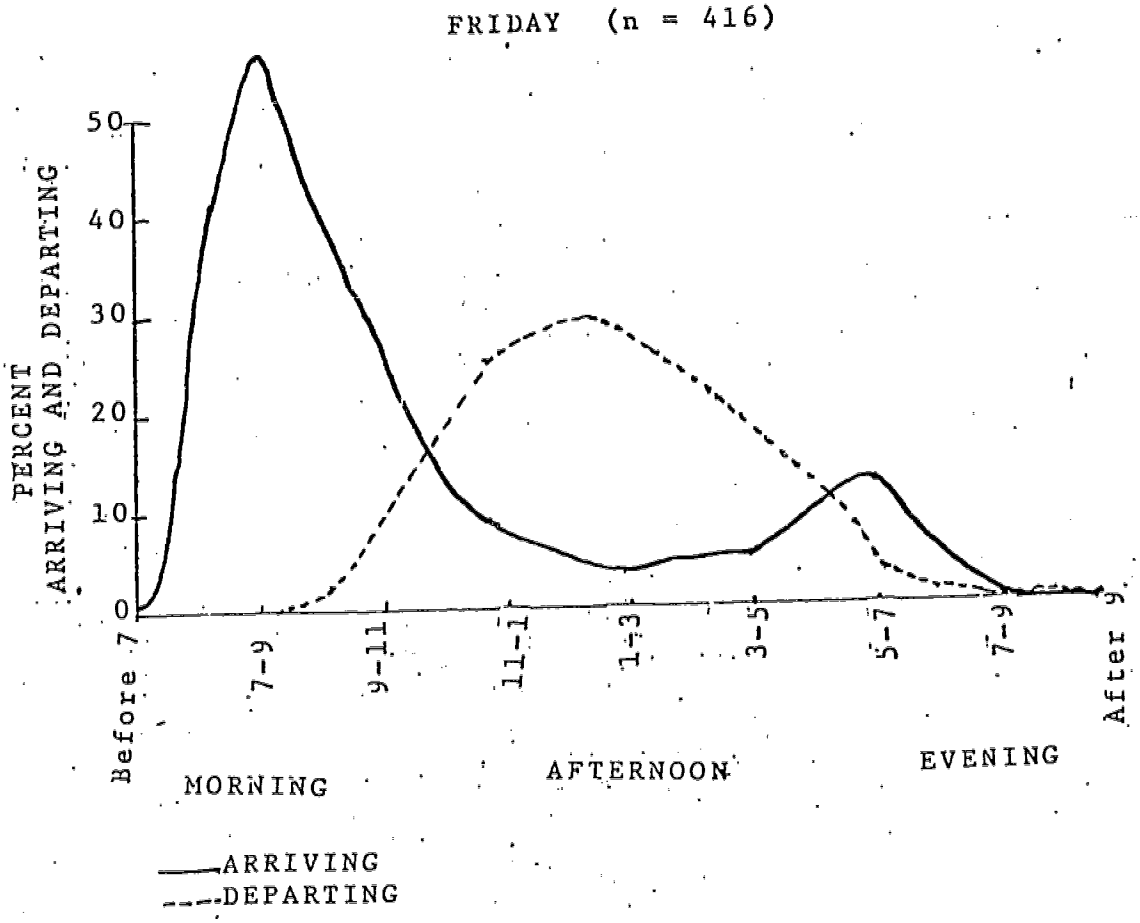


WEDNESDAY (n = 527)



THURSDAY (n - 490)




FRIDAY (n = 416)
PERCENT ARRIVING AND DEPARTING
50
40
30
20
10
0
Before 7
7-9
9-11
11-1
1-3
3-5
5-7
7-9
After 9
MORNING
AFTERNOON
EVENING
ARRIVING
DEPARTING