

# Mobility of NDSU Students

## Transit Survey Results

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# Mobility of NDSU Students: Transit Survey Results

Transit services are important to the North Dakota State University community. A transit survey was developed in fall 2002 to determine students specific transportation needs and to explore options and opportunities in meeting those needs. The Small Urban and Rural Transit Center (SURTC), a research program within the Upper Great Plains Transportation Institute (UGPTI), and NDSU student government developed the transit survey.

Student Government President James Burgum e-mailed a letter asking NDSU students to participate in the survey. A direct link to the survey was included in the e-mail. The survey was designed to investigate a number of issues regarding campus transit use, user perceptions and user opinions about the quality of services provided by Metropolitan Area Transit (MAT) and the Campus Circulator. The results of this survey are intended to help plan the transit services provided on and to the university campus.

This preliminary report is a snapshot of survey results. The report is divided into six sections: 1) student demographics, 2) movement demands of campus students, 3) student perceptions of MAT services, 4) student perceptions of parking issues, 5) demand for the NDSU Circulator, and 6) campus accommodations for transit. SURTC received responses from 1,665 students who completed the 35-question survey. Their information provides insight into many transit issues including behavioral response to current land use and transit services. This will be important to monitor changes in student perceptions in response to changes in transit services and design through future surveys. A more detailed report will be published this spring.

Of the 1,665 students who responded, 941 or 56.5 percent were female, and 724 or 43.5 percent were male. In checking registration records, campus enrollment is 43.4 percent female and 56.6 percent male. The percentage of women who responded to this survey is proportionately higher than the percentage of women attending NDSU.

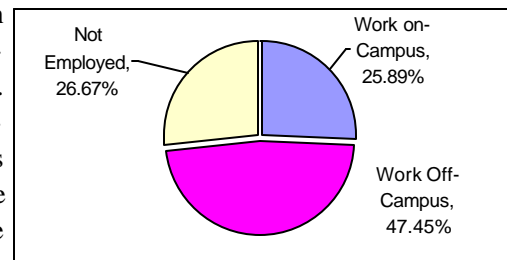
It is not possible with an electronic on-line survey to ensure equal participation from all student classifications. Nevertheless, there was distribution among all class levels from freshman through graduate level (Table 1). The junior class had the lowest proportion of representation, and graduate students and freshman responders were slightly greater than actual class proportions.

**Table 1. Survey Response Distribution Compared to Actual Class Distribution**

Classification	Actual Class Distribution (%)	Class Number	Response from Class	Survey Number
Freshmen	23.2	2587	20.9	348
Sophomores	19.7	2205	19.8	329
Juniors	16.7	1864	22	367
Seniors	26.4	2940	26.6	443
Grad Students	11.4	1272	9.8	163
Non classified	2.5	278	1.0	15
Total	100	11,146	100	1665

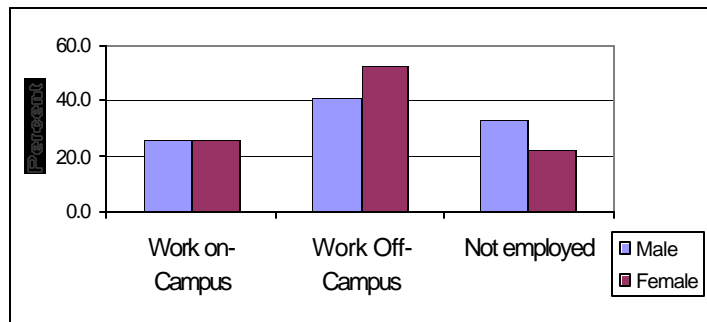
The most disproportionate representation for students who completed the survey was between full-time and part-time students. Ninety-five percent of the respondents were full-time students, while only 79.6 percent of the student body has full-time status. Just over 98 percent of the freshmen and sophomores who completed the survey were full-time students. This may indicate full-time students are more interested in transit than their part-time counterparts. There could be a number of reasons for this including financial, scheduling, convenience and saving time.

Student’s employment status almost always has an impact on their response to personal environmental issues. About one-fourth of the survey respondents were not employed (Figure 1). Almost half of the respondents work off-campus, while one-fourth work on-campus. Just over 26 percent of NDSU students are not employed. There are some noted differences in the behavior of employed and not-employed students that will be discussed throughout this report.



**Figure 1. Student Work Status**

A further breakdown shows that on campus there is an even split between male and female employees, however, off-campus more women than men work. There is no survey information available to explain this difference.



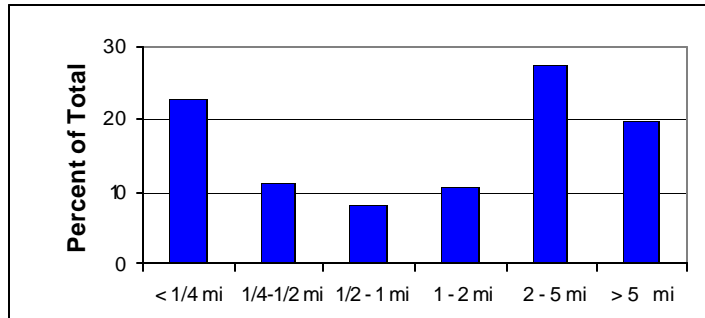
**Figure 2. Employment by Gender**

Whether students live on or off-campus was another explored variable. The survey respondents were divided, two-thirds living off-campus and one-third living on campus. According to the Campus Life office, there is dorm capacity for about 29 percent of students. It was also determined that 59 percent of students living off campus considered their address temporary. This may imply that a large percentage of the students living off campus are from outside the Fargo-Moorhead area.

We received a good distribution across many categories. The class distribution was within six percentage points and the students living on and off-campus was within four percentage points. We were unable to get off-campus employment numbers for that comparison.

# Movement Demands of Campus Students

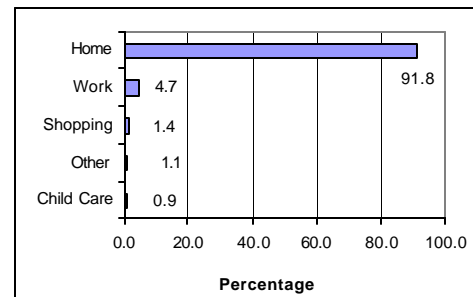
This section will show movement patterns of NDSU students, to, from and around campus. The survey results in this section tell how far students live from campus, where they are coming from, what time period they spend on campus, how they most often travel to campus, how many have access to motor vehicles, what determines their mode of travel and whether their mode changes in the winter. This information is helpful in determining what services can be offered that will fit into the normal movement activity of the student body.



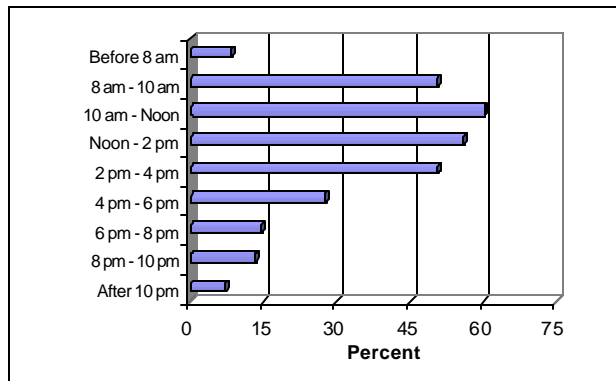
**Figure 3.** Distance Students Live from Campus

Even though about 75 percent of students are employed, almost 92 percent of the responding students are coming to campus from home, 4.72 percent are coming from work and the rest (3.5 percent) from other places. Evidently a large percentage of students work either at night or on days when they don't have class. For students arriving for afternoon classes, just over 12 percent are coming from work

Students live at various distances from campus ( Figure 3). When dividing the respondents by gender, more male students live within a mile of campus than female. This may explain why a higher proportion of women responded to the survey than men. The overall response showed about 52.6 percent lived within two miles of campus.

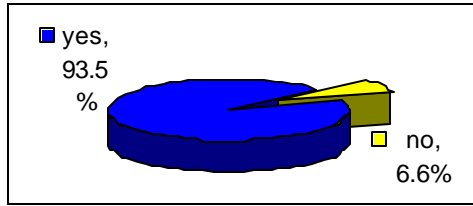


**Figure 4.** Where Students Leave From Before Arriving on Campus



**Figure 5.** Times When Students are on Campus

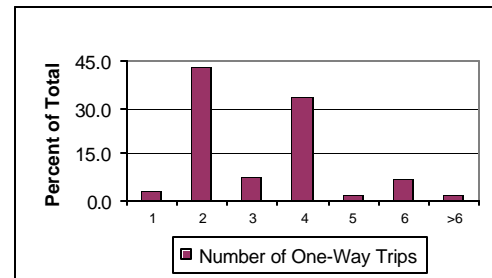
The majority of responding students are on campus from 8 a.m. till noon (Figure 5). The 10 a.m. until noon time period is when the highest concentration of students is on campus. The 8 a.m. to 4 p.m. time period relates to normal classroom schedules, which are during the normal work day of 8 a.m. to 5 p.m.



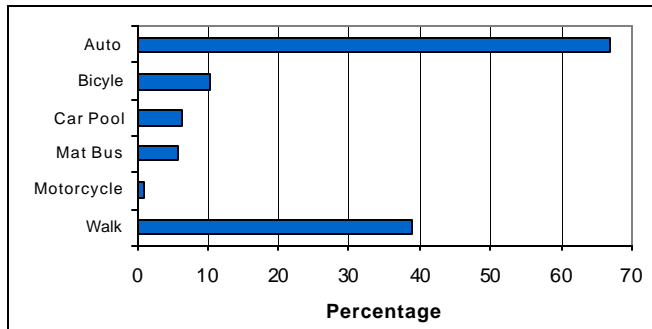
NDSU students are very mobile, with 93.5 percent having access to motor vehicles (Figure 6). According to Independent Insurance Agents of America and College Parents of America, nearly 70 percent of college students have either their own or use of their parents' car at school. This means NDSU is well above the national average.

**Figure 6.** Students with Cars

The majority of students go to and from campus either once (two one-way trips) or twice a day (four one-way trips) (Figure 7). Twice as many upper-class students make two trips a day than lower-class students. Whether they work on- or off-campus makes very little difference in trip frequency.



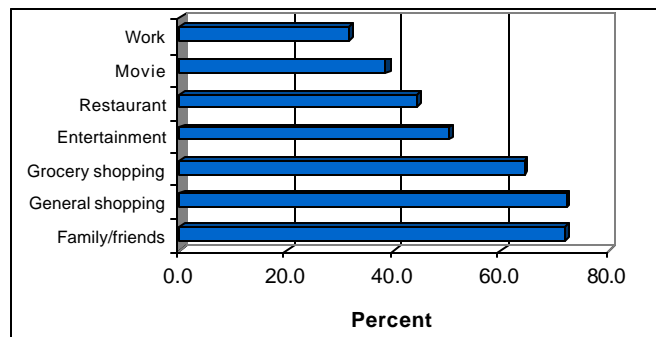
**Figure 7.** Number of One-Way Trips



**Figure 8.** Students Mode of Travel to Campus

Students who live on-campus were asked why they most often leave campus. Visiting family and friends, and general shopping are the two most common reasons (Figure 9). Not employed students who work on-campus most often leave to go shopping, while the students employed off-campus most often leave to go to work.

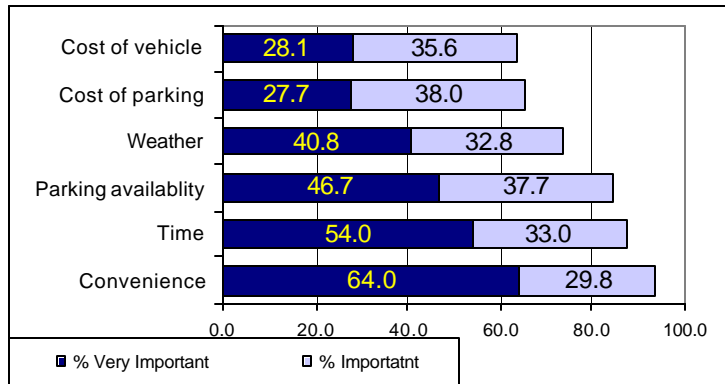
By far the majority of students either drive or walk to campus, probably in large numbers each day. About 10 percent of students ride a bicycle from time to time. Only 5.7 percent of students said they most often use the MAT bus when traveling to campus (Figure 9). When respondents were divided between living on and off-campus, only 6.34 percent and 5.46 percent respectively indicated they use MAT services.



**Figure 9.** Why On-Campus Students Leave



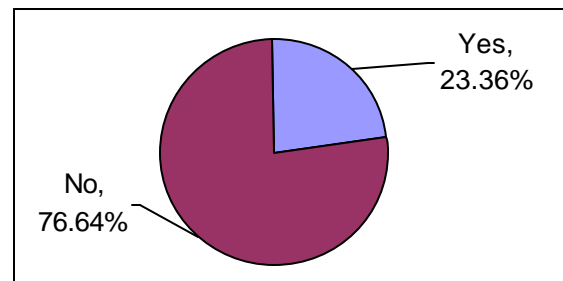
The survey asked the respondents to indicate how important the following factors were in deciding on their mode of travel: convenience, cost of vehicle, cost of parking, weather, parking availability and time element.



Students clearly indicated that time and convenience are the two most important factors (Figure 10). The cost of parking and the cost of vehicles are the least important; however, the availability of parking has some influence on the decision-making process. The important factor here is that more than 90 percent of the respondents indicated that convenience is important in deciding what mode of transportation to use.

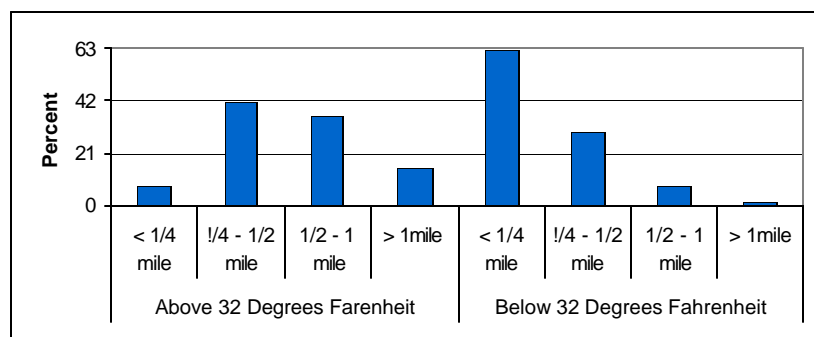
**Figure 10.** What Influences Mode of Travel

If a student has a car, he or she can travel any time of the year regardless of the outdoor temperature. However, if a student walks or rides a bicycle, the weather may influence the choice of mode. Results showed that 23.3 percent of the students choose their mode of travel because of weather (Figure 11). Considering only 12.8 percent of the student respondents indicated they use the bus, there appears to be a window of opportunity to address the transit needs of more students. It may not be realistic for transit to expect to be able to capture all of these students, but it does seem there is room for growth in ridership.



**Figure 11.** Weather Influences Mode of Travel in Winter

Students were asked how far is too far to walk to campus in differing temperatures. In above freezing temperatures, the response was mixed between 1/4 mile to one mile (Figure 12). In below freezing temperatures, the majority said 1/4 mile or less. North Dakota winters can be harsh, with 20- to 50-below-zero wind chills. These conditions make it difficult for anyone, even appropriately dressed for the cold, to walk or stand outside for an extended period walking to school or waiting for a bus.



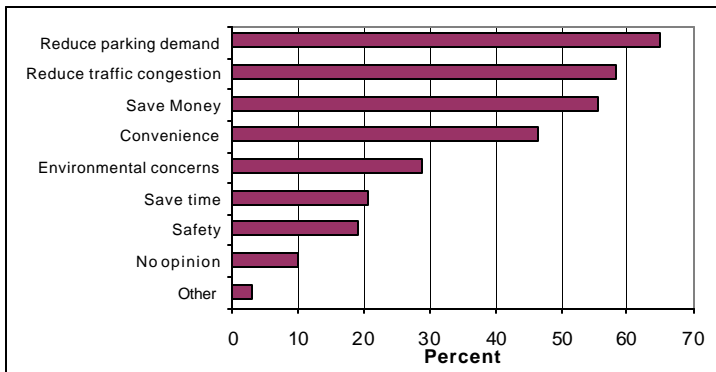
**Figure 12.** Reasonable Walking Distance by Temperature

The survey has shown us some interesting facts about NDSU student movement activities. This data reveals 47.4 percent of students travel more than two miles to campus; almost 92 percent travel from their homes and they are on campus from 8 a.m. to 4 p.m.; 93.4 percent have access to vehicles; almost 45 percent of students make only one trip daily to campus and a majority prefer to drive. Convenience and time have a major influence in the decision on what mode of travel and approximately 23 percent change their mode of travel in the winter. The large percentage of students who have access to vehicles on campus is probably a negative for transit even though parking is a problem. Also, the large supply of parking slots and parking permits on campus encourage the use of the automobile and discourage the use of transit.

# Student Perceptions of MAT Services

This section of the report focuses on the student respondent’s perceptions about the quality of MAT transit system services. The quality of service is measured by responding to the following questions: the benefits of public transit, whether students have used MAT, why students use MAT, what keeps students from using MAT, what MAT characteristics were important, what their last experience was like, how long students were willing to wait for MAT, willingness to use MAT for Tri-College attendance and willingness to pay for MAT services. This type of investigation reflects real perceptions about the services offered by MAT. Some of these are tangible items that MAT administration can react to, or at least be aware of, when designing promotional campaigns and route organizing.

There are many benefits to public transportation. The students were given the following list of benefits and were asked which were the most important to them: 1) safety, 2) convenience, 3) reduced traffic congestion, 4) environmental concerns, 5) saving time, 6) saving money, and 7) reduced parking demand for the slots. On the NDSU campus, reduced parking demand is seen as the most important benefit for public transit (Figure 13).

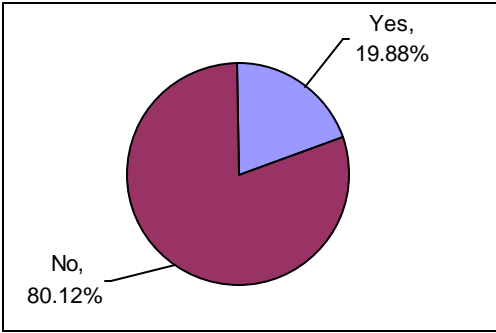


**Figure 13.** Benefits to Riding Public Transit

Environmental concerns were fifth in importance for NDSU students. This seems to be a more important issue at other universities. Emissions from commuter traffic by individuals’ vehicles going to and from work is one of the leading causes of the decline in air quality from the production of dioxides by our vehicles. (Campus Transit 2000: Analyzing Student Attitudes ) As the community’s population continues to grow, environmental issues may assume a higher profile.

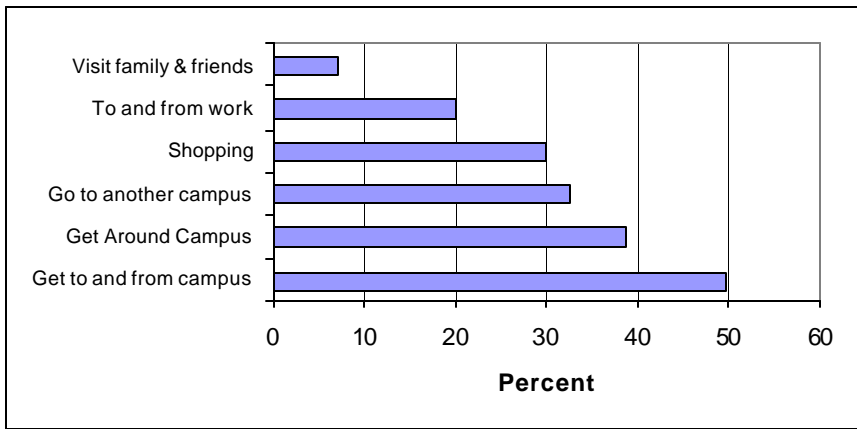
Four issues that may be beneficial for the NDSU Circulator to publicize as benefits to using public transit are reduced parking demand, reduced traffic congestion, saving money, and convenience. Reduced parking demand and traffic congestion are the two major benefits to using transit by NDSU students. This indicates how issues and problems within local communities dictate the reasons people use transit.

Students indicated that reducing parking demand was the most common reason for using MAT . NDSU receives from MAT the total ridership for each month, however, those numbers do not reflect the percent of student body that may have ridden the MAT bus. Survey results show that 19.88 percent of the student body have ridden the MAT bus (Figure 14). Projecting that percentage to the entire student body would mean approximately  $(11,146 \times 19.88 = 2216)$  2,216 students have ridden the Mat bus. Whether students live on- or off-campus does not influence the percentage of students using MAT. The results do show that 42.9 percent of the graduate students have used the MAT bus, while 15.8 percent of the freshmen and sophomores and 18.3 percent of the juniors and seniors have used the MAT bus.



An important issue is what motivates students to use MAT. **Figure 14.** Students Using MAT by Percent

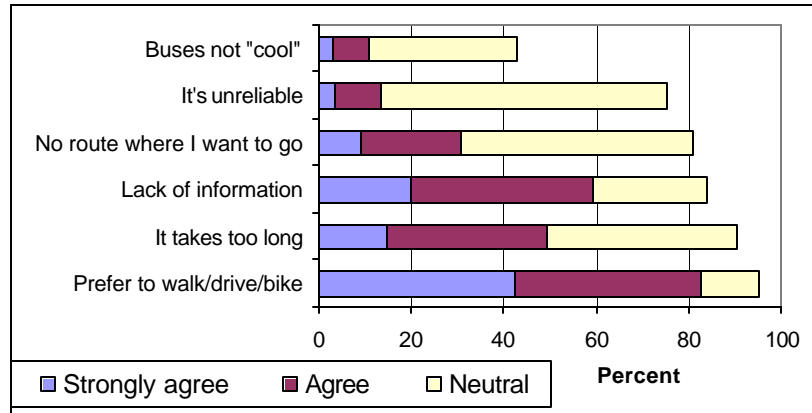
The survey respondents were asked to state their most important reasons for using MAT from among the following choices: to get around campus, to go to and from campus, going to another campus, shopping, going to and from work, and visiting family and friends. The response “to get to and from campus” was the leading reason for using MAT. The convenience of getting around campus was the second reason. This signals that MAT routes should focus on getting



**Figure 15.** Reason Students use MAT

services to the students who go from home to campus. As was noted, 47.3 percent of the students living off-campus live two or more miles from campus. A much higher percentage of students who work on campus use MAT – 32.8 percent; those who work off campus – 16.4 percent, and of those who are not employed, 12.9 percent use MAT.

The students were to identify the reasons that keep them from riding MAT. We provided six potential reasons and asked students to indicate how strongly they agreed, or disagreed on a scale of 1 to 5. The Likert scale is 1 to 5 were 1=strongly agree, 2=agree, 3=neutral, 4=disagree, and 5 strongly disagree. The selected reasons were: 1) preference to drive or walk, 2) buses are not “cool,” 3) lack of information, 4) lack of routes to destinations, 5) unreliability, and 6) rides taking too long. Figure 16 shows respondents who strongly agreed (shown in the first section of the bar) agreed (shown in the second section of the bar), or were neutral (shown in the third section of the bar). The primary reason students do not ride transit is their desire to drive, walk or ride bicycle. These modes tend to offer the students more freedom to go directly where they choose. The second reason is the rides take too



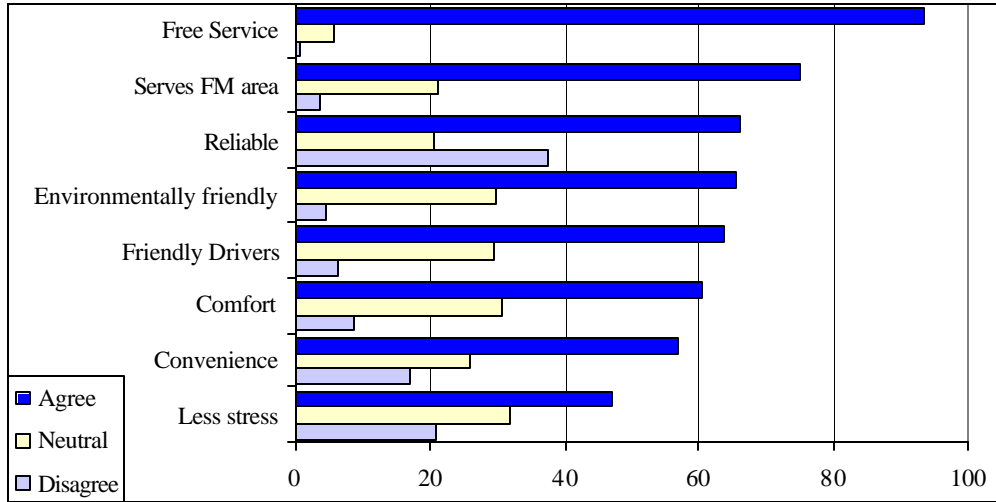
**Figure 16.** What Influences the Mode to Travel

long. This suggests that MAT has to look for the most direct routes possible for students and work on developing realistic customer expectations. Lack of information is the third most mentioned reason for not riding the MAT transit system in the community.

The characteristics of transit services that are important to customers are analyzed next. To accomplish this we looked at a number of value characteristics such as free service, less stress than driving, convenience, comfortable ride, friendly drivers, arriving on time, environmental friendliness and serving the Fargo-Moorhead area. The respondents could agree, be neutral or disagree with the characteristic statements. The following were the four most important ridership characteristics that NDSU students valued from MAT:

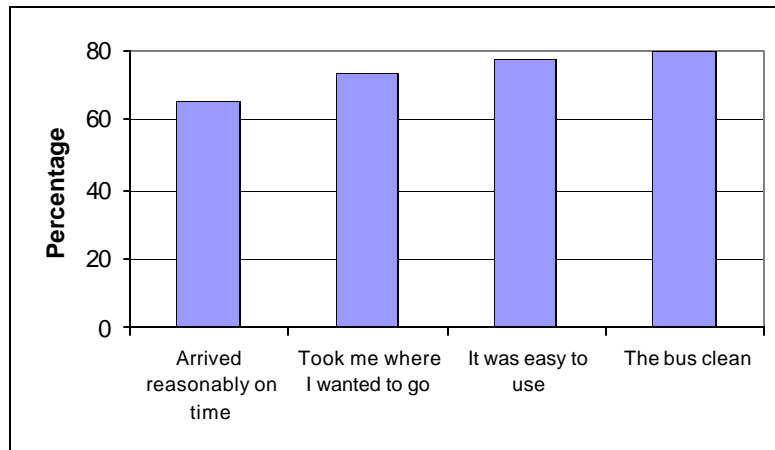
- free service,
- larger than campus service,
- being reliable, and
- environmental friendliness.

It can be noted from this survey that all of these characteristics have a great deal of value to the MAT customers at NDSU. MAT should look at promoting these benefits, noting the importance of paying for service by some indirect revenue source; the importance of timeliness, and emphasizing there are fewer emissions from transit than from individual cars in morning and evening commutes.

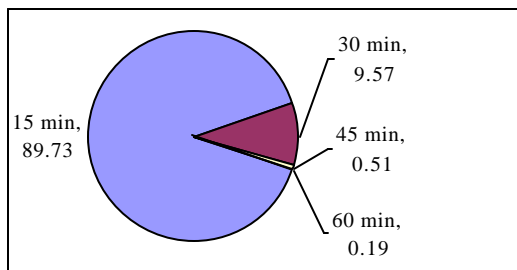


**Figure 17.** Important Characteristic Values of Public Transportation by NDSU.

It is helpful to be aware of how customers perceive their previous MAT service experiences. This section tells us what the customers value, and if MAT services are living up to its customer's expectations. MAT received the lowest rating for meeting schedules, which means either they are late or they are giving the customers incorrect information. Providing a clean bus is a customer expectation that MAT is close to achieving. MAT received high ratings for buses being easy to use.



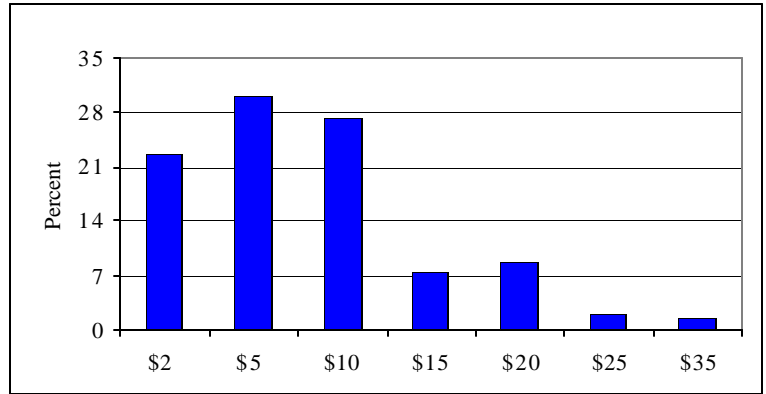
**Figure 18.** Explanation of Experiences



**Figure 19.** Percent of respondents willing to wait a given time.

In the transit business, buses are always trying to make schedules. This is important because many people have definite time schedules they are following. Americans live in a fast paced society and are not willing to wait very long. A wait of more than 15 minutes will have a huge negative affect on ridership (Figure 19). The fact that buses may run behind schedule causes anxiety for people with full agendas.

One of the main factors that determine the value of a service is if the customer is willing to pay and how much is he or she is willing to pay for the service. The fact that more than 47 percent of the survey respondents are willing to pay \$10 or more for MAT services reveals high appreciation for the services.



**Figure 20.** How Many are Willing to Pay More

The survey contained three questions regarding the Tri-College system. First, students were asked if they plan to take Tri-College courses. If they responded yes, the second question they were asked is if the courses would be during the daytime or evening. Third, the students were

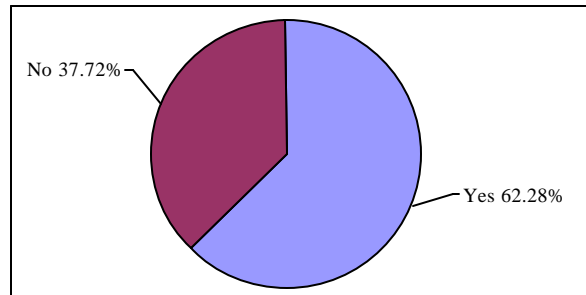
asked if they would take MAT to attend these courses. Nine percent (152 respondents) of the surveyed students intend to take Tri-College courses next year. If that number is projected out over the whole student body ( $11,146 \times .0919 = 1,024$ ), that equates to approximately 1,024 students. The majority plan to take daytime classes (79.6 percent). Forty-six percent indicated they would use MAT to attend Tri-College courses and 25.7 percent indicated “maybe”. It is difficult to project the Tri-College ridership due to many uncertainties in students’ schedules. Minnesota State University of Moorhead (MSUM) and Concordia students may want to use the MAT bus for Tri-College courses, thereby increasing ridership.

We learned from this set of questions that students tend to use MAT more for going to and from campus and going to and from classes on campus. It is important for the buses to have the free pass for the students, serve the Fargo-Moorhead area, be reliable or on time, and there is also some value in being environmentally friendly. MAT buses are clean and easy to use by their customers evaluation. The two main reasons students do not use MAT is they prefer to walk, drive or bike, and that MAT takes too long. The majority of people are willing to wait up to 15 minutes for the MAT buses, and 47 percent of the respondents would be willing to spend \$10 for MAT services. The main reasons for using public transit are to reduce parking demand and reduce traffic congestion. The answers to these questions gave insight to ways MAT can improve services

# Student Perceptions of Parking

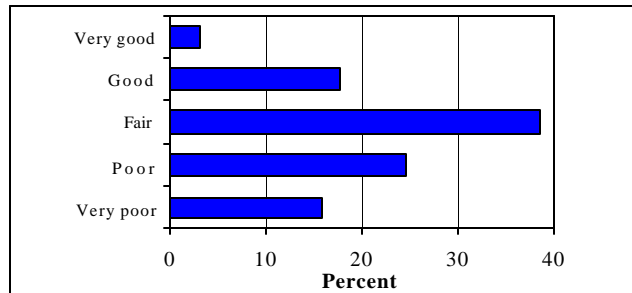
Parking is generally a major issue on most campuses. We addressed parking in this survey to identify what percent of students own parking permits, and students views on the cost of parking and the convenience of parking on the NDSU campus.

About two-thirds of survey respondents have parking permits. If this number is representative of the student body then 6,944 permits were issued (11,146 students x 62.3%). However, according to Tim Lee, campus police, there are only 5,439 regular and 260 temporary parking permits on campus totaling 5,699. University parking statistics indicates there are 2,085 parking spots for student residents, 14 for resident hall directors, 1,410 for off-campus residents and 571 for married students at student housing, and 77 designated disabled parking spots throughout campus. These numbers equal 4,157, or about 79 percent of the total parking permits sold.



As we found out earlier, 62 percent of the student body had parking permits. If this percent is projected to the entire student body, it would yield almost 6,900 parking permits. An over sold condition may explain why students are not happy

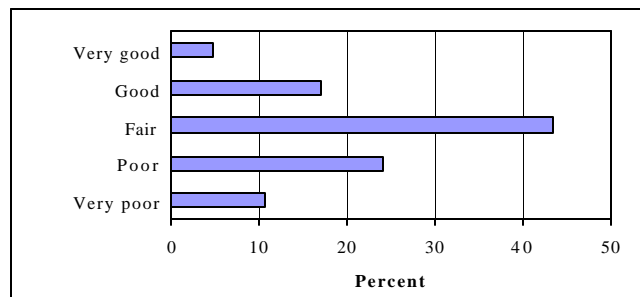
**Figure 21.** Students with Parking Permits



**Figure 22.** Parking Convenience

with the parking accommodations; just under 5 percent rated convenience as very good (Figure 22). Conversely, these results show that more than 45 percent of the respondents rated parking accommodations either poor or very poor. For students who live off-campus, just over 84 percent rated parking convenience as fair or poor, and 80 percent of students who work off campus rated parking fair or poor. This may be favorable for transit.

Parking affordability has the same shaped graph as parking convenience. A fair rating is a little higher fat more than 40 percent of the respondents. When analyzing by classification, the upper classes, junior through graduate, graded even higher percent poor on affordability than the lower classes, freshmen and sophomores. Theoretically, this should be advantageous to transit usage when students perceive parking as



**Figure 23.** Parking Affordability

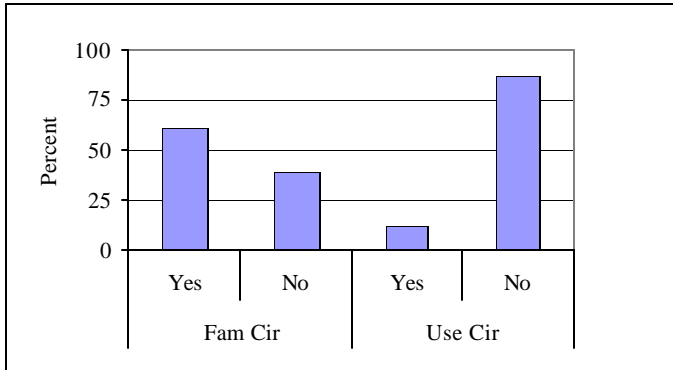


unaffordable. It also could mean students may be willing to pay more if assured that a parking spot is available when needed.

One of the complaints by many students is their inability to find parking slots when needed. The oversold condition explains this dilemma. Both parking affordability and parking convenience have a high percentage of fair or poor rating. A poor and very poor rating for convenience and affordability is just above 30 percent, and the very good rating for both is less than 5 percent. These low approval ratings should be favorable for transit.

## Demand for the NDSU Circulator

Four questions were asked to help identify the current demand for the NDSU Circulator. We wanted to gain insight into student familiarity with the Circulator, the usage of the Circulator, whether there are additional locations on campus where students want the Circulator to stop because the distance is too far to walk, and how long students would be willing to wait for the Circulator. Responses to these questions gave good indications of the value of the NDSU Circulator.

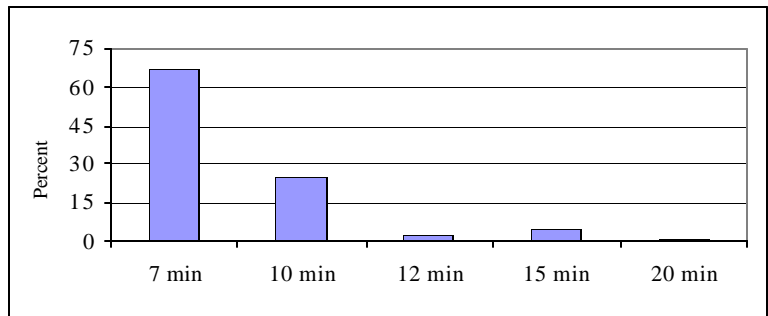


**Figure 24.** Student Who are Familiar With or Use the Circulator

A little more than half of the students indicated they were familiar with the campus Circulator, but when asked if they used the Circulator the number dropped to only 12.8 percent. Some of the comments from students indicated the Circulator needs to stop at more locations, schedules were not convenient for users to access, people were unfamiliar with the bus schedules and a need for more bus shelters. Most of these concerns deal with promotion of the service and understanding of available services on the Circulator. This may imply the need to develop routing that is better coordinated with student movement.

In the comment section of the survey, a number of students mentioned a need for additional bus stops. However, in the survey question regarding additional bus stops, only 15.5 percent of the respondents indicated a need for more stops. Almost half, 46.6 percent, of the students said there are locations on campus which are too far apart for walking. When questioned as to how many use the campus Circulator, only 12.8 percent indicated they had ridden on the Circulator. This percent difference would indicate there is room for growth in ridership with improved services. It also appears that there are services currently available that students are not fully utilizing. A more extensive marketing program may be needed to convey the information to interested students on availability of NDSU Circulator.

Some students are patient and are willing to wait up to 10 minutes for the Circulator, but the majority are only willing to wait seven minutes (Figure 25). Because of campus class schedules, the Circulator needs to strive to be dependable and on time. Information pertaining to the scheduled times the bus will arrive at each bus stop must be posted at all locations and readily available to the whole student body at all times. When dividing the student body into three classification groups (graduate; freshman and sophomore; and junior and senior), a higher percent of the graduate students were willing to wait up to 10 minutes than either of the other two groups.



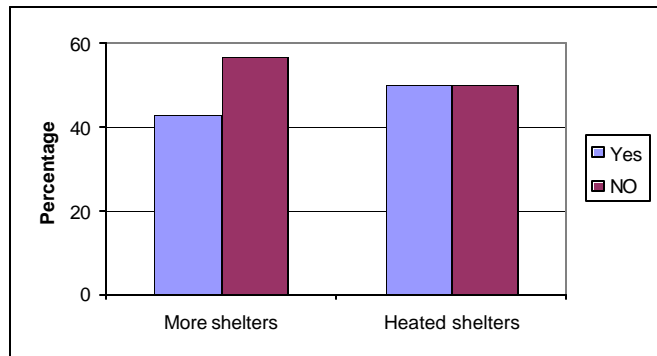
**Figure 25.** Time Students are Willing to Wait for Circulator

Demand for the NDSU Circulator can be identified by looking at the number of students familiar with, and the number of students using, the Circulator. There seems to be a large disparity between the two percentages, yet, at the same time a number of students indicated there are a number of locations on campus located too far apart for comfortable walking. The largest percentage of students are willing to wait up to seven minutes for the Circulator. This implies how important it is for the Circulator to be on schedule.

# Campus Transit Accommodation

This section includes the last three questions answered by the survey respondents. The questions were about the number of shelters on campus, whether heated shelters were desired and the need for additional bus stops.

We asked students if they thought NDSU should have more shelters and if they should be heated shelters (Figure 26). The two responses on shelters appear in Figure 26. The results showed that 43 percent of students wanted more shelters and 50 percent of students wanted heated



**Figure 26.** Desires for More and Heated Shelters

This response indicates additional investment into shelters and heated shelters would be well received by a large number of students. It is important that transit developers be sensitive to the needs of the users because transit is competing with the comfort and ease of private vehicles.

The last issue had to do with additional bus stops. Just over 15 percent of the respondents indicated more stops/locations were necessary. The survey respondents made the following suggestions: Churchill, Dakota Drive apartments, the Fargodome, Dolve Hall, FA lot, Memorial Union, music building, parking lots, Reed-Johnson Hall, Stockbridge, T-lot, University Village and Wellness Center. The Circulator already stops at some of these places so this may imply there is some communication gap between the information available to student users and what the students perceive as available services of the NDSU Circulator.

The last set of questions may imply that transit services on campus are in fact better than many students perceive them to be. Nevertheless, the students would appreciate an increase in the number of bus shelters, both heated and unheated, and they would also like more bus stops.

In responding to this survey, NDSU students gave very useful information about themselves, including demographics about the student body, an idea of current student movement around campus, the value of the current MAT services, their perceptions of the parking situation on campus, current demand for the NDSU Circulator and opinions about the current accommodations for transit on campus.

The next step is for NDSU to respond to the viewpoints of the student body. Responding in a positive manner will encourage growth in transit use, while no response or a negative response will stifle growth of transit on the NDSU campus.