

BUS TRANSIT SYSTEM FOR A MAJOR ACTIVITY CENTER

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This paper examines a bus transit system for a major activity center. First, the needs of the transit system users are examined to determine what they want and expect from the bus service. Second, the attitudes of the activity center planners are examined to determine why the bus service was implemented and what benefits to the activity center are expected from the service. Third, the interaction of those perspectives is examined to predict the success of the transit system. The activity center used for this study was Michigan State University.

•THE PROLIFERATION of major activity centers such as universities, central business districts, hospital complexes, amusement parks, airports, and military bases has precipitated the need for a transit service that differs substantially from the more familiar neighborhood and extended area transit services. [Neighborhood travel consists primarily of the collection and distribution of people within a subdivision or residential area. Extended area travel refers to the line-haul movement between neighborhoods and major activity centers. More detailed discussions are given elsewhere (1, 2).]

Major activity center (MAC) transit is planned and implemented not by an entrepreneur catering to a travel market nor by a government unit concerned about making transportation available to its non-automobile-owning constituents but by an administrative planner who theoretically views transit as a means of providing design flexibility and of improving synergistically the effectiveness of the center. Thus, in MAC transit the user is not the object of the service but only one of the elements to be considered in planning the service.

This paper has 3 objectives: to examine the needs of the transit system users to determine what they want and expect from the bus service, to examine attitudes of the MAC planners to determine why the bus service was implemented and what benefits are expected from the service, and to examine the interaction of these perspectives to predict the success of the MAC transit system. The MAC used for this study was Michigan State University.

The enrollment at Michigan State University, the nation's oldest land-grant college, nearly doubled in the 9 years from 1960 to 1969, surging from 21,157 students in the fall of 1960 to 40,820 in the fall of 1969. The increase in enrollment was paralleled by a massive building program to provide classrooms, research space, and on-campus housing facilities for a majority (53 percent) of the students.

The on-campus traffic and parking problem likewise grew, forcing the administration to restrict on-campus student parking during daylight hours. The nature of the parking problem is indicated by the fact that the police were issuing approximately 1,500 traffic and parking tickets per month in order to enforce the parking restrictions, but they complained vigorously that issuing that many tickets was futile because it only alienated the campus community they were trying to serve. The students were developing a negative attitude toward the officers for giving the tickets, and the faculty felt that the officers were not effective in controlling the traffic situation.

As a result, the administration created the ad hoc Faculty-Student Motor Vehicle Committee to find workable solutions for the traffic and parking crisis. This committee made 2 recommendations. First, parking for students was to be limited to peripheral parking lots, and no driving was to be allowed anywhere on campus except by the most direct route from the peripheral parking lot to an off-campus street. Second, the committee recommended that the university develop an "efficient and sufficient bus system servicing all parts of the campus and with service under the control of the university." It should be stressed that the major emphasis of the committee's report concerned the control of traffic and parking. Thus, it appears that the proposed bus system was primarily a means to make more palatable the new parking and traffic controls. This was indicated by a statement of the chairman of the Faculty-Student Motor Vehicle Committee: "Until we devise an improved transportation system, we cannot legitimately prohibit students from driving."

Carrying out these recommendations, Michigan State University began its own bus service in the fall quarter of 1964. It ordered 8 new buses, purchased 4 used ones, and hired the manager of the Grand Rapids Transit System to administer the operation.

At first the bus system was well received; during the 1967 winter quarter, 58 percent of the on-campus residents purchased bus passes. Service was excellent with headways of 15 min on the least traveled routes and 4 min on the main routes. However, ridership decreased in the 1968 fall quarter primarily because of a substantial fare increase and the termination of growth in on-campus housing. (Ridership is primarily limited to on-campus residents because the bus service does not go off campus.)

Currently, the Michigan State University bus system owns and operates 33 buses of the 51-passenger size. During the 1968-69 school year, 24,728 passes were sold at \$14 per quarter, and 5,600,000 rides were provided.

USER EXPECTATIONS OF BUS SERVICE

Major Determinants of Bus Ridership

To determine what users desire of the MSU bus system, an analysis of bus ridership was made from 2 data sources. First, student numbers collected from the 6,831 riders during the 1969 fall term who also purchased passes during the 1970 winter quarter were used to obtain demographic data from the university registrar's master file. That data source represented 89.5 percent of all purchasers of bus passes during the 1969 fall term. Second, 568 survey questionnaires (1 in 33 sample) were mailed to on-campus students during the 1970 spring quarter. More than 80 percent (453) were returned and usable. Of those returned, 128 indicated that the respondent had purchased a spring quarter pass. The following analysis uses data from both sources to audit user expectation and to verify the findings.

To determine the factors that had the greatest effect on the students' propensity to purchase quarterly bus passes, a least squares multiple regression analysis was made on 16 independent variables obtained from the 453 completed survey forms. [A detailed description of the model development and the methodology used to compensate for the heteroscedasticity inherent in the use of a binary dependent variable is given in another report (3).] Seven of the variables were significant at the 95 percent levels or greater and explained 24 percent of the variance in the purchase of spring quarter bus passes. Those variables, ranked in order of importance, are total weekly travel distance, frequency of bus service to the student's living area, distance between living area and center of campus, sex of rider, class level, number of trips made each week, and percentage of night travel.

Total Weekly Travel Distance—This variable is a measure of the total distance students travel each week to attend class, to meet work schedules, and to participate in regular social engagements. It explains 6.34 percent of the total variance in bus ridership and was statistically significant at the 99.95 percent level. According to this analysis, an additional 7.4 percent of the students purchase quarterly passes when the average travel distance increases 10,000 ft/week.

Frequency of Bus Service to Student's Living Area—This variable, measured in minutes between regularly scheduled buses during the day, explained 5.6 percent of the

total ridership variance. Figures 1 and 2, plotted from the 90 percent sample of 1969 fall term riders, show that an additional 25 to 30 percent of the on-campus students living in an area will purchase bus passes if the frequency of service is increased from 8- to 4-min intervals. That relation held true for both sexes and at all campus locations.

Distance Between Living Area and Center of Campus—This variable, a measure of the shortest walking distance between the student's residence area and the center of campus, explains 3.72 percent of the total variance in quarterly pass purchases. Figures 1 and 2 show the importance of the bus service to the remote living area; 50 percent of the males and 75 percent of the females in those areas purchase quarterly passes.

Sex of Rider—A comparison of Figures 1 and 2 indicates that females have a greater propensity to purchase bus passes at each level of service and distance. Figure 3 shows that ridership differences between sexes are greatest during the first year at the institution but rapidly decrease as students become more familiar with the campus. A possible reason for this difference in ridership between sexes, as suggested in the open-ended section of the survey, is that girls often buy a pass as a security measure because they dislike traveling alone, especially at night. The second reason might be that miniskirts are very cold in the late fall and winter in Michigan.

Class Level—Figure 3 shows that the probability that a student will purchase a bus pass decreases each year that the student is in residence at the institution. During the 1969 fall quarter, for example, 42 percent of the freshman class (17- and 18-year-olds) and only 10 percent of the senior class (21-year-olds) used the bus system.

Number of Trips Each Week—This variable was very interesting because it indicated that a student who made many long trips each week had a strong propensity to purchase passes. If, on the other hand, the student made many short trips within the academic area, the probability of bus-pass purchase was low. Two factors would explain this relation. First, the bus system was apparently viewed by riders as a commuter service from the remote living areas to the center of campus and not as a shuttle service within the academic community. Consequently, a person who made many trips within the academic area often did not purchase a bus pass for commuter use. Second, those who made a large number of trips tended to seek to live in dorms in less remote areas so that they would not be dependent on the bus. This point was, in fact, also brought out in the open-ended part of the survey.

Percentage of Night Travel—Students who traveled primarily at night had a lower propensity to purchase passes. This was probably explained by the facts that headways between buses were greater and students were allowed to drive their automobiles on campus during the evening. Consequently, students who took classes primarily at night would probably not use the bus extensively.

Ranking of Service Variables

Because user expectations also include the type of service that is offered, the survey sought details about the ranking of service variables, the scheduling of buses, and campus movement patterns.

Table 1 gives the results of the user ranking of transit service variables. These data reveal that service variables such as headway and interval dependability were considered much more important than the comfort variables of crowding and cleanliness. It is not known, however, whether cleanliness is really considered as unimportant or whether the buses are so well kept that cleanliness is not now considered to be a problem. The low ranking of crowding, on the other hand, was surprising since the buses were very crowded during fall and winter quarters.

Ridership and Scheduling

To determine the extent of travel within the campus, questions were asked to learn where students try to schedule their classes and where they go between classes. Students strongly prefer to schedule classes in many different buildings and do not support the "living-learning complex" concept around which MSU has designed many of its dormitories (Table 2). (The preference for single-building classroom scheduling

Figure 1. Bus ridership by male students versus distance of dormitory from campus center.

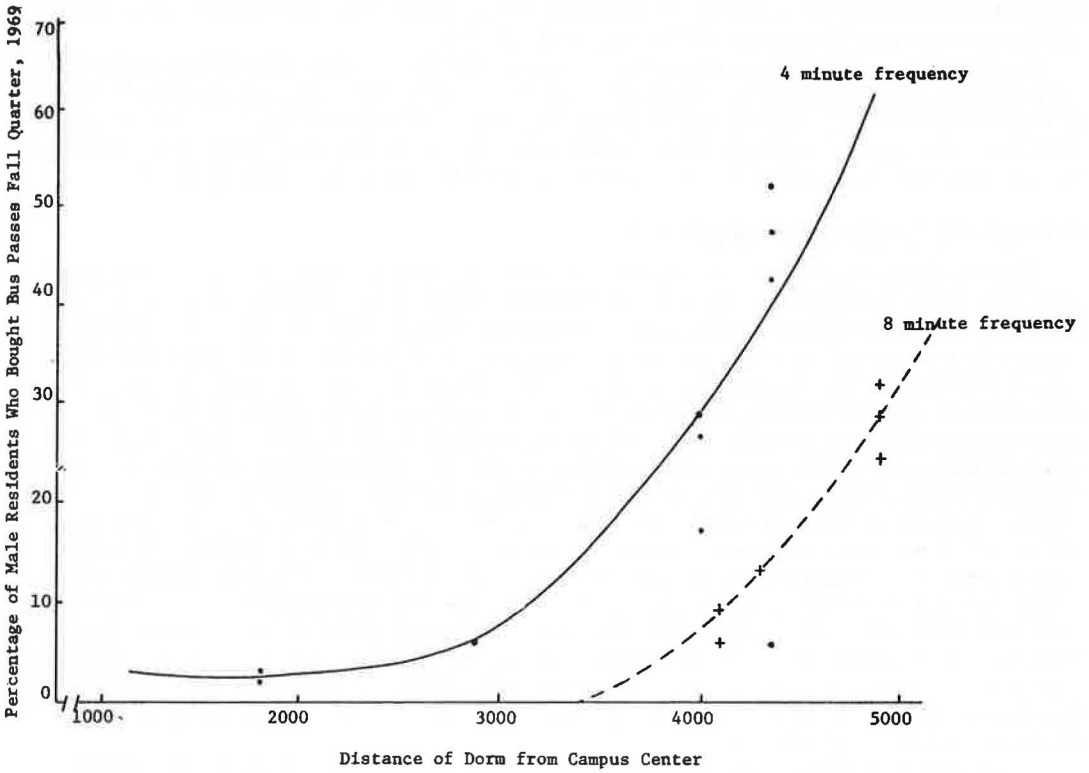
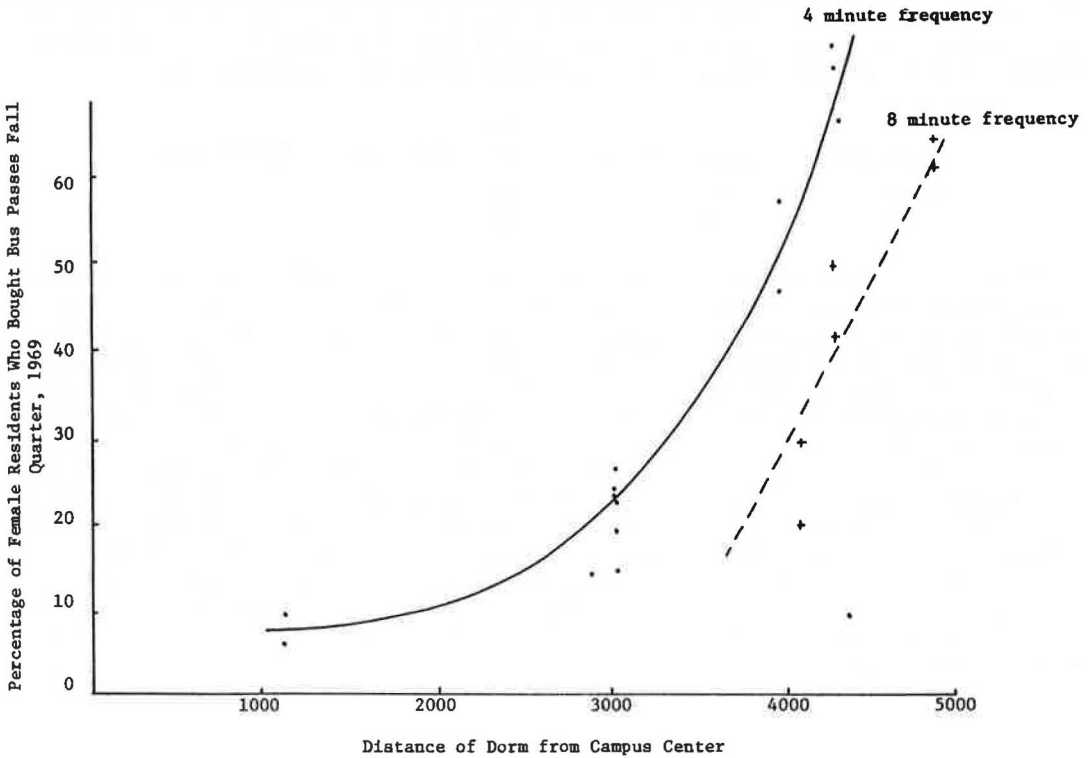


Figure 2. Bus ridership by female students versus distance of dormitory from campus center.



ranged from only 2 to 3 percent of the freshmen, sophmores, and juniors to 17 percent of the seniors and 47 percent of the graduate students.)

Furthermore, most students return to the dormitory area if they have a class break of 1 hour or more (Table 3). This break destination preference ranges from 80 percent for freshmen to 18.4 percent for graduate students. Consequently, it becomes apparent that bus users make multiple trips during each day, preferring to move from building to building for classes and to return to their dormitories during longer breaks.

Individual's Relation With Bus Service

During the pretest phase of the survey, students would frequently single out particular bus drivers they knew by name and would often indicate that these were the only drivers who provided the service the users desired of the bus system. Further investigation indicated that the operating manager felt that it was these same drivers who were frequently to blame for delays in meeting schedules and who were packing too many people on the buses. However, the respondents felt that less than strict punctuality and overcrowding were not so annoying as having the bus pull out as the student was leaving the building to catch it (Table 4). The user-preferred drivers exhibited behavior that coincided perfectly with user ranking of service variables. Those drivers regularly made it a habit to look in the doorways of each dormitory to make sure that there were no more students on the way. Also, if there were more riders who wanted to be loaded onto the bus, those drivers were vocal in joking about the crowding and trying to pack the bus so that everyone could be loaded. This behavior not only was observed by the writer but also was verbalized by both the drivers and the riders. Although punctuality was deemed to be more important when the headway between buses was greater (Table 4), in general the most important service criterion of the users appears to be to serve everyone even if the bus is slightly delayed or if overcrowding should occur.

A second area of real concern to bus riders was the apprehensive feeling about missing the bus and arriving late at their destinations. This feeling was first mentioned when bus-pass holders living in the housing area for married students were asked their reasons for driving their cars some days and riding the bus on others. The typical response was that, if they left their apartments less than 5 min before the bus was due, they would rather drive than run the risk of missing the bus. As shown below, 68 percent of the students were apprehensive about missing the bus.

<u>Respondent</u>	<u>Apprehensive</u>	Not <u>Apprehensive</u>	<u>Sample Size</u>
Riders	68.0	32.0	124
Nonriders	71.0	29.0	293

Neither sex, marital status, nor bus ridership made any significant difference in this apprehensive feeling. There are probably 2 major factors contributing to the apprehensiveness. First, people have difficulty memorizing a bus schedule because they tend to think in time blocks of 5, 10, or 15 min. In fact, the meeting of transportation schedules may well be the only scheduled activity people have that does not begin on the hour or quarter hour as most meetings and appointments do. Consequently, the memorizing of a timetable is probably foreign to a person's thought patterns. Second, because most people do not have their watches synchronized by a common source, there is probably substantial variance among watches, and people may simply lack confidence in the complete coordination of their timepieces with those of the bus drivers. In light of this fact, it was not surprising that 62 percent of all respondents felt that they should allow at least a 5-min wait at the bus stop if they were going to try to meet a bus schedule. As shown below, 82 percent of the bus riders abandon the effort required to try to meet a bus schedule, simply leaving when they are ready and taking the first bus that comes along.

Figure 3. Bus ridership versus age of student group.

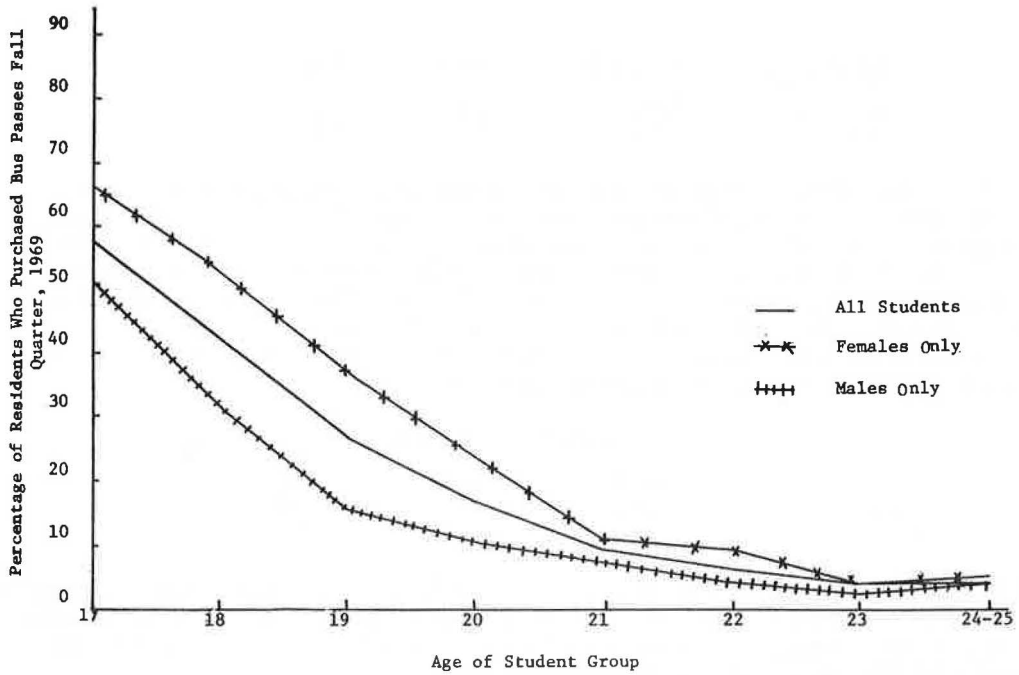


Table 1. Ranking of service variables by MSU bus riders.

Variable	Median	Median Rank	Mode	Mode Rank
Headway	1.926	1	1	1
Dependability	2.822	2	2	2
Coordination	3.423	3	2	3
Cost	3.984	4	3	4
Directness	4.361	5	5	5
Driver's attitude	5.236	6	6	6
Crowding	6.008	7	7	7
Cleanliness	7.187	8	8	8

Note: 1 = most important variable, and 8 = least important variable. Number of respondents was 128.

Table 2. Location preference for classes (percentages).

Respondent	Sample Size	All Classes in Living Complex	All Classes in Same Building	One or Two Classes in Different Buildings	Each Class in Different Building
Freshman	151	20.5	2.0	47.0	30.5
Sophomore	108	17.6	3.7	42.6	36.1
Junior	85	11.8	1.1	56.5	30.6
Senior	41	17.1	17.1	46.3	19.5
Graduate	49	8.2	46.9	38.8	6.1
All	434	16.4	8.7	46.7	28.2

Table 3. Destination preference for between-class breaks of 1 hour (percentages).

Respondent	Sample Size	Return to Living Area	Remain in Class Area	Go to Department Library	Go to Main Library	Other ^a
Freshman	152	80.0	7.2	3.3	3.7	5.8
Sophomore	110	72.5	10.9	4.5	3.1	9.0
Junior	85	72.0	4.7	5.9	4.6	12.8
Senior	41	53.0	9.7	14.6	0.8	21.9
Graduate	49	18.4	6.1	24.4	18.5	32.6

^aIncluding the Union Building and International Center.

<u>Respondent</u>	<u>Scheduled</u>	<u>Random</u>	<u>Sample Size</u>
Riders	18.0	82.0	126
Nonriders	31.8	68.2	226

Those data indicate the preference for random scheduling as opposed to the more orthodox behavior model of scheduling by departure time. However, the following data indicate that scheduling behavior is strongly dependent on the headway between bus runs: The percentage of individuals going to meet a particular schedule substantially changes if the headway increases from 8 to 15 min. This is reasonable because a rational model would predict that a person would shift his behavior to meeting a given timetable when the expected waiting time for random scheduling exceeds the time buffer normally allowed in meeting a particular bus schedule.

<u>Frequency (min)</u>	<u>Scheduled</u>	<u>Random</u>	<u>Sample Size</u>
15	76.1	23.9	21
7.5 to 8	31.5	68.5	130
4	24.5	75.5	200

In this case, the largest percentage of respondents felt that it was necessary to allow 5 min to meet a specific bus schedule. If the expected waiting time on a random basis were half of the headway, then 10-min headways would be the point where most individuals feel it prudent to begin to meet a schedule.

In summary, the users expect the MAC transit system to provide them with the flexibility they need to schedule classes throughout the campus and to travel from academic to living areas with a minimum of delay. The users are more concerned about headways and being able to board the first bus that arrives than about softness of seats, cleanliness of buses, crowding, and strictly punctual service. Although economy is important, the users are willing to pay for the service if it is convenient and frequent and if it meets their needs. The students would also like to have buses available so that they could charter them for special events such as ball games, ski trips, and tours during quarter break.

ADMINISTRATIVE EXPECTATIONS OF THE MSU BUS SERVICE

At MSU the bus service is planned by the university administration that is also directly responsible for its operation and for the formulation of transit system objectives. Because there are only a small number of persons involved in the planning and management of the transit system, administrative views and attitudes were obtained by extensive discussion and in-depth interviews rather than by quantitative methods.

To understand the administrator's perspective, it must be remembered that the original mandate given to the bus system was the product of the special ad hoc Faculty-Student Motor Vehicle Committee appointed to find some method of solving traffic and parking problems. The committee recommended the bus system primarily as a means of implementing its numerous recommendations for restricting the use of automobiles on campus and of determining who should be allowed driving privileges. In view of these facts, the bus system recommendation was implemented, and its purpose was understood to be the reduction of parking and traffic problems on the campus. The university definitely does not view itself as being in the bus business and certainly not in competition with any of the private for-hire carriers.

In fact, there is some disagreement among the administrators as to whether the bus service is actually needed at all. One point of view questions whether the system ever should have been established because the living-learning centers were designed to minimize travel on campus, and special parking and driving permits are available for the physically handicapped. Most administrators feel that there should be some form of transit service on campus to allow students greater flexibility, but they point out that this is merely another support service like the food, laundry, and lawn-mowing services and that the university should make stringent efforts to control its expenditure

in this and all support services. Although the bus service is a small item when compared to dormitories, classrooms, and research equipment, the administrators are anxious not to let the bus system use any funds that should more appropriately be spent on research and teaching—the true *raison d'être* of the university. Consequently, the administrative planners are anxious to control any unnecessary growth or empire building in the bus service just as they would in any other overhead service.

Because the bus service is in operation and at the present time self-supporting, most university administrators feel responsible for controlling costs and running the system in a professional manner. They encourage the operations personnel to keep the buses clean, to adhere strictly to published schedules, to serve all points on campus, to check bus passes, to obey safety rules, to control crowding, and to wear clean uniforms. They urge operations managers to have drivers reprimanded if buses are too crowded (unsafe), if they wait for straggling students (unnecessary delay of schedule), or if drivers talk to the students while the bus is in motion (unsafe). The drivers are constantly reminded that they are providing a "professional transit" service for the university and that they should not cater to the needs of individual riders.

Costs are controlled through a carefully administered preventive maintenance and safety program and by the effective scheduling and routing of equipment. Daily ridership counts are examined regularly so that load factors can be carefully controlled. If there are too many standees, additional buses are added; if ridership declines, then fewer buses can be used to supply the required number of seat-miles. Although there is some concern about the users of the transit service, most attention is given to the connection of all major campus locations, load factors, location of bus stops, and other MAC and cost-oriented considerations.

EFFECT OF CONFLICTING PERSPECTIVES

The MSU bus system apparently provides a valuable service to the on-campus students who live in the remote dormitory complexes: Fifty percent of the males and 75 percent of the females in those areas purchase quarterly bus passes at \$14 to \$20 per quarter. The off-campus residents also recognize the advantages of the bus transit system, having made many (fruitless) requests to the administration for service to off-campus fraternities, sororities, and apartments. As a consequence, 47 percent of the student body who would appear a priori to have the greatest need for bus service because they live farther from campus (Figs. 1 and 2) are denied bus service because they do not live in the university-supplied dormitories. That denial of service is difficult to understand from the students' point of view because the bus service could be provided without additional expenditures if some of the buses were scheduled to make the off-campus runs instead of merely circling the campus during class when there is little demand for service (Fig. 4). The potential users could also argue that there are many buses available that are not even scheduled for operation at the present time (Table 5).

However, the denial of service to students living off-campus is logical if examined from the administrative planner's point of view. First, the university is not anxious to expand this overhead service because the off-campus students are not currently posing parking and traffic problems. (Those students usually walk or park their cars in a peripheral lot.) Second, the university does not want to compete with city transit, taxi cabs, or other private for-hire carriers. Third, the service would not further the research or educational functions of the university. Fourth, and perhaps most important, off-campus service might encourage the migration of students away from university-owned housing and further decrease living-learning center usage to the point that dormitory rents would no longer cover the construction bond expense.

The offering of charter service also points out the conflict in perspectives. There are groups of students who would like to charter buses to out-of-town activities and sporting events but are unable to do so because of the university's policy of offering charter services only to billable departments within the university. From the administration's point of view, this is a logical denial because additional charter service seems to them an unnecessary proliferation of university services and one that would

Table 4. Service preference (percentages).

Item	Sample Size	Strict Punctuality	Serve Everyone	Limit Crowding
Respondent				
Riders	124	16.9	68.5	14.6
Nonriders	308	33.1	55.5	11.4
All	432	28.5	59.3	12.2
Frequency, min				
15	28	35.6	53.6	10.8
7.5 to 8	160	30.6	57.5	11.9
4	243	25.9	61.3	12.8

Figure 4. Bus ridership on inbound and outbound routes.

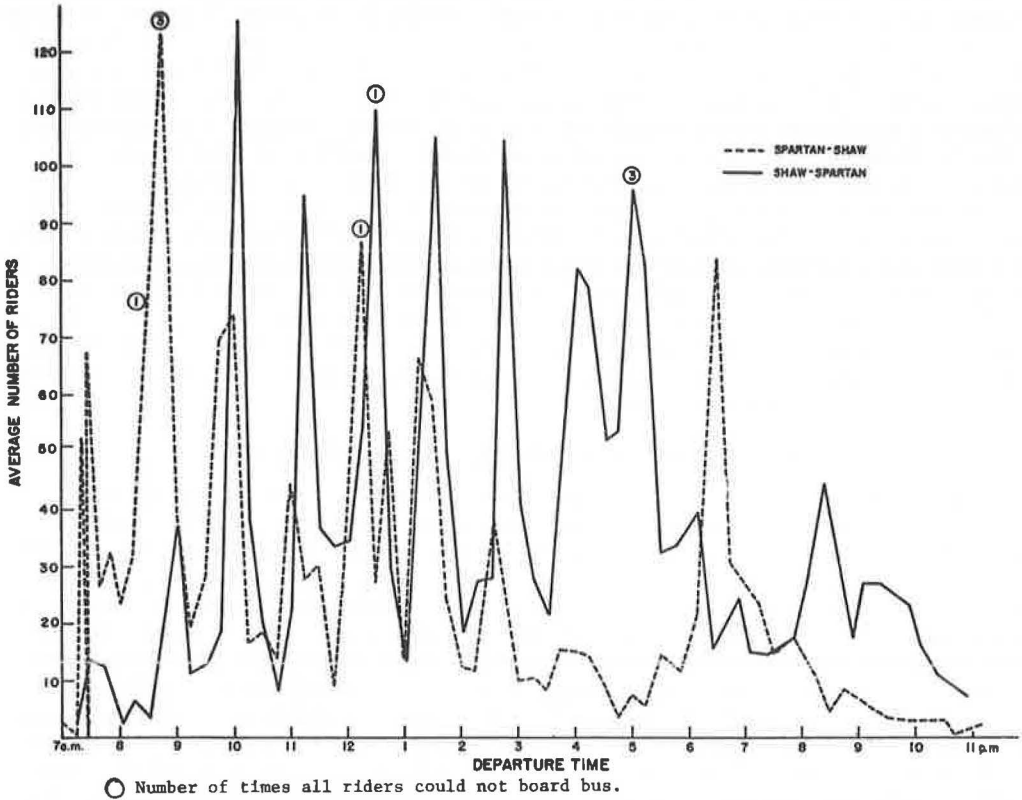


Table 5. Utilization of MSU bus system, 1969-1970.

Season	Number of Buses		Service Period	Hours	Weekly Bus-Hours		Utilization (percent)
	Owned	Leased			Available	Scheduled	
Fall	23	2	a. m.	5	625	460	73.5
			p. m.	6	750	515	68.6
			Night	5	625	125	17.3
			Weekends	16	800	128	16.0
			Total		2,800	1,228	42.3
Winter	23	5	a. m.	5	700	585	83.7
			p. m.	6	840	615	73.1
			Night	5	700	130	18.6
			Weekends	16	896	128	14.3
			Total		3,136	1,458	46.5
Spring	23		a. m.	5	575	335	58.3
			p. m.	6	690	380	55.0
			Night	5	575	117.5	20.4
			Weekends	16	736	128	17.4
			Total		2,576	960.5	37.2
Summer	23		a. m.	5	575	75	13.0
			p. m.	6	690	90	13.0
			Night	5	575	0	0
			Weekends	16	736	0	0
			Total		2,576	165	6.4

almost certainly cause conflicts with the private for-hire carriers who feel that the tax-exempt university is unfairly competing with them.

The potential user might point out, however, the system profits would have been reduced by 68 percent if, during the 5 years the buses had been in operation, the current level of charter service had not been provided. During the 1967-69 period, the service would have operated at a loss without the revenue from the current level of charter operation. Thus, the potential user would argue that both the students and the university would benefit financially if charters were aggressively solicited so that the greater use of drivers and equipment would lower the costs of quarterly bus passes or the university contribution or both.

There are also differences between the users and the planners concerning operational emphasis. The users desire a frequent service between remote living areas and the center of campus, high interval reliability, and friendly drivers. They are not concerned with a service connecting all parts of the university nor a shuttle service within the academic area with timetable punctuality, clean buses, soft seats, controlled crowding, and other factors that the administration feels to be part of a professional operation.

Until now the MSU transit system has been operating under virtually ideal conditions. There has been a very strong demand for its services, congestion has been eliminated through regulation, automobile competition is nonexistent because students cannot have cars on campus, the transit system pays no taxes or user charges, equipment is new and in excellent condition, and the demand is stable with 8 to 12 class-break peaks instead of the typical diurnal rush-hour peaks. But in spite of these favorable factors, the university transit system seems prone to the same downward spiral of increasing cost and fares and decreasing ridership and service that have plagued the rest of the transit industry. [An earlier report (3) gives a detailed analysis of demand elasticity, operating costs, and revenue.] Through administrative policy the market has been limited to include only on-campus students. As student life-styles change to favor off-campus living, this market has stagnated and may even be decreasing. The demand curve is elastic and highly sensitive to headway changes. Consequently, increasing wages and other operating costs can only lead to higher operating ratios, reductions in service, and decreased revenues. (At the present time, the bus system is operating near unitary elasticity. The very profitable operations of 1964-1969 generated sufficient retained earnings to retire the bus purchase loan. The system is now more than covering out-of-pocket cost. Consequently, the system has not yet been forced to make a decision on management strategy. However, with increasing costs, a fixed market, a unitary demand curve, and highly sensitive service-related demand, it is just a matter of time until a strategy must be developed.)

The university may respond to this dilemma in various ways: (a) It may view the service as unnecessary to the educational and research functions of the university and attempt to reduce service so that the system can remain self-supporting. This would almost certainly increase the ever-familiar downward spiral of increasing costs and fares and decreasing service and ridership until it is eventually "proved" that the service is no longer needed. (b) It may view the service as necessary "to facilitate the educational and research functions of the university" and decide to maintain a given level of service even if it must be subsidized from the university's operating budget. The subsidy can be justified by the saving in parking facilities required as a cost of stemming the tide of off-campus migration from university-owned housing. (c) It may become user-oriented with changing routes, schedules, and service to reflect the changing preferences and life-styles of the students. To follow this strategy, the university would have to begin to feel that it is in the bus business and would attempt to serve student needs even if that conflicts with other MAC goals such as the complete occupancy of university dormitories.

CONCLUSIONS

1. The success of MAC transit depends not so much on public acceptance of transit as on public acceptance of the MAC infrastructure that the transit system supports.

For example, the success of the MSU transit system is largely determined by the student acceptance of the on-campus living complexes that the transit system currently serves.

The success of MAC transit depends on its *raison d'être* as perceived, consciously or unconsciously, by its planners and managers. Consequently, the success of MAC transit cannot be judged simply by ridership or profitability but must be evaluated by how well it accomplishes its purpose. In the MSU case, the cost-benefit analysis could consider the transit system successful if the required subsidies were less than the dormitory rental income obtained from students who would otherwise have migrated to off-campus living areas.

3. The purpose of the MAC transit system may be different from the purpose of the MAC itself. The purpose of the university is to provide students and researchers with ready accessibility to a variety of classrooms, laboratories, libraries, and people. The university transit system, however, is used primarily as a commuting service from residence areas to the MAC and not to improve interaction within the MAC. [This conclusion was supported by a study (4) conducted at the University of Tennessee. Although the University of Tennessee is divided into 3 distinctively different academic sectors—the old campus, the new campus, and the agricultural campus—only 30 percent of the bus riders used the bus primarily for a shuttle between classes. The remainder used the bus service primarily to travel from the dormitories or peripheral parking lots to the appropriate academic campus.]

4. MAC travelers, at least in the MSU case, are more interested in a convenient, friendly service than in a formalized, professional service that emphasizes appearance, comfort, and rigid timetables.

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