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PUBLIC TRANSPORTATION and the WORK TRIP:

a survey of area employers

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regional planning
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december 1974

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PUBLIC TRANSPORTATION AND THE WORK TRIP:
A SURVEY OF AREA EMPLOYERS

Prepared by the

Johnson County Regional Planning Commission
22½ South Dubuque Street
Iowa City, Iowa 52240

December, 1974

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I. INTRODUCTION AND SUMMARY

INTRODUCTION AND SUMMARY

The Work Trip

The work trip is of major importance for area planning due to a number of factors. First, it is generally understood that urban transportation systems, and street facilities in particular, are designed with respect to peak volumes of travel at some accepted level of service. Morning and early evening peak hour travel is largely comprised of travel to and from work. Even in a University community such as the Iowa City-Coralville area, nearly 50% of morning "rush hour" auto travel is made up of persons traveling to work. Thus to a significant degree, the work trip contributes to congestion of streets and strains the fixed capacity of transit systems.

Secondly, the diversion of travel from the auto mode to transit for the journey to work has clear environmental and energy conservation impacts. The extensive use of the automobile for the work trip may be seen as the least efficient use of this individual and flexible form of transportation. Typically, auto occupancy for travel to and from work is considerably lower than for other trip purposes. In the Iowa City-Coralville urban area, the average occupancy rate for auto travel is estimated at 1.38 persons per car for all trip purposes, but for the work trip it is only

1.10 per car (the lowest of any trip purpose).[1] Auto travel to and from work also implies long-term vehicle storage consuming large amounts of urban space and diverting its use from other productive activities. A recent analysis of parking in the 48-block central area of Iowa City indicates that over 40% of daily parking is non-University employee parking--largely off-street and with a considerably lower rate of turnover.[2]

A third reason why the work trip is a logical focus for a transit promotion study is that transit may compete relatively well with the auto in serving the demand for travel to and from work. Long-term parking costs can significantly contribute to the visible out-of-pocket costs of the auto trip and increase the attractiveness of relatively low user cost transit service. Because it is an habitual trip, the work trip allows the employee to make use of public transportation on a continuing basis with only minimal effort expended in the learning of the availability of the service available. As a result of these relatively attractive attributes of transit for the trip to and from work, transit now captures a significant portion of the work trips in the Iowa City-Coralville urban area. A survey of area bus users in 1972 found that 43.2% of transit use was made up of travel to and from work.[3] This is a considerably higher rate than for the auto mode. This study also determined that 54.7% of non-University (61.4% University) employees using the bus for work were

"choice riders," i.e., were licensed and had an auto available to them for the trip made by bus.

Finally, the work trip constitutes the clear focus for the promotion of choice ridership because of the role of the employer in the potential provision of transit information and incentives. The place of work may offer an excellent opportunity for direct and continuing information concerning the availability of bus service. Employers may also perceive cost savings (reduced parking needs, etc.), as well as general community benefits for participation in programs to promote the use of transit for travel to and from work.

Study Objectives

The transit system of the Iowa City-Coralville urban area continues to be one of the most dramatic examples in the United States of effective public transportation in a small urban area. The success of this system has been based on active transit planning and innovative implementation of transit services. The public transportation provided by Iowa City and Coralville constitutes a low-fare bus service at a relatively high level of service within a community with many physical, social, and economic attributes highly supportive of effective transit. Supplementing and reinforcing the municipal bus service is CAMBUS--the University core area bus service--which is available free to the general transit-using public.

Given the demonstrated success of the area's existing transit systems, and the level of commitment to aggressive public transportation in the future as outlined in the Area Transit Development Program,[4] this study focuses on the most prominent element of the transit market--the trip to and from work. The purpose of the study has been to determine the extent to which this critical area of transportation demand is being served by transit and to estimate the potential for its effective promotion. The specific objectives of the study were:

1. To obtain a general profile of area employment by subareas of the urban area

2. To estimate the rate of current transit usage for traveling to and from work by various groups of area employees

3. To determine the degree to which existing employers encourage and facilitate the use of transit by their employees

4. To obtain current information on work scheduling and its relationship to transit service

5. To sample employer attitudes and willingness to participate in future transit promotion programs including subsidies

Scope of Study

This study is based on information obtained in a survey of metro area employers conducted in May of 1974. The survey instrument was a mail-out survey form designed to obtain a broad spectrum of information concerning the number, type, resident location and work trip habits of employees. The survey also measured employer attitudes and policies regarding various area transportation issues.

This report focuses on metro-area employers and employees. Of the 1,275 employers located in the Iowa City-Coralville area, the rate of return of adequate responses varied considerably by their size and general location within the metro-area. While the sample includes only 15% of metro-area employers, it includes nearly half of all medium and large employers (10 or more employees) and consequently 63% of total area employees, (58% of non-University employment and 69% of University employment). On the basis of this sample, stratified by access type subareas, it has been possible in many instances to expand the data to estimates of total metro area employment characteristics of the area. For more detailed information concerning the composition of the sample, see Appendix A: Summary Procedure and Study Methodology.

Summary of Findings and Recommendations

1. AREA SUITABILITY FOR TRANSIT PROMOTION

The results of the employer survey generally indicate that there exists a good potential for various non-capital intensive programs for area transportation planning in general, and for the transit system in particular. Those non-capital intensive programs examined in this report focus on travel to and from work and include transit promotional programs, various incentives for employee transit use such as user fare subsidy, and flexible or staggered work hour scheduling.

This study generally indicates that the Iowa City-Coralville urban area constitutes a suitable environment for promotional programs aimed at encouraging transit use for travel to and from work. The Central Business District and University campus offer a strong focus for future promotional programs aimed at increasing transit work-trip use without major changes in the current transit operation.

This general conclusion is based on the findings that: (1) there exists a substantial degree of employment concentration in the central CBD-University section of the metro area (15,500 employees); (2) central area employment is predominated by metro area residents with access to the area transit system (90 percent CBD compared to 76 percent general urban area and 71 percent highway access); (3) the existing transit service to the central area provides a level of public transportation

services which is high enough to attract additional choice ridership with new non-capital intensive programs including promotional activities.

In addition to the central area potential, this study also confirms that there is a significant non-central area demand for transit work-trips currently less well served.

2. EMPLOYER INTEREST AND SUBSIDY

The study also shows that there exists a high level of interest and willingness on the part of area employers to become involved in transit promotional programs, even to the extent of providing direct incentives for employee transit use such as fare subsidy. Generally, larger and central area employers are more interested in participating in such promotional programs than other area employers.

3. TRANSIT INCENTIVES AND PARKING POLICY

Nearly half of the Central Business District employers (47%) sampled indicated a willingness to consider subsidizing employee transit use. The most frequently cited level for such subsidy for these employers was $1.50 to $2.00 per week. With downtown parking costs $10.00 per month ($2.25 per week) for storage to 10¢-15¢ per hour ($4.50-$6.75 per week) for metered parking, a daily auto storage cost for the Central Business District employees is substantial. A transit use employer benefit of $1.50 per week (10 trips) could provide a real incentive for using transit rather than the auto for travel to and from work.

4. ALTERED WORK SCHEDULES

A significant product of the study is the information obtained on the times of current work hours for employers in each of the major subarea types of the community. Given current work hours, and the relatively high degree of uniformity in the central area, increased use of mass transit facilities for travel to and from work may be expected to add to the existing strain on bus capacity that occurs during peak periods of each week day. Therefore, the degree of interest shown by employers, and particularly Central Business District and University respondents, in flexible work start and stop times or staggered hours is important for future public transportation promotion programs.

5. TRANSIT MARKET PLAN

Finally, the study strongly suggests that various promotional alternatives be evaluated as part of a marketing program for the area transit system. A background study for such a program should include the transit user requirements of employees for travel to and from work as a major element of the analysis. This study would not only generate proposed methods for increasing use of the existing transit system through promotional activities, but should also identify modifications in current operations which would provide means to meet currently unsatisfied transit market potentials.

Detailed analysis follows in the text and tables of Chapter II through Chapter V. More specific discussion is

provided in those sections concerning area employment characteristics, the current rate of area transit use, existing and potential employer promotional activities, and the feasibility of flexible work scheduling.

II. AREA EMPLOYMENT PROFILE

AREA EMPLOYMENT PROFILE

With an area resident population of 55,990, or just less than 75% of the Johnson County population,[5] the Iowa City-Coralville urban area employs an estimated 27,850 persons, more than 82 percent of employment in the county.[6] The University of Iowa is, of course, the major employer in the area and employs slightly less than half of all area employment. University campus employment is generally located centrally in the urban area. Non-University employment is not as concentrated spatially as University employment and, therefore, in this study it has been helpful to analyze separately the distribution of area employment in terms of four general subareas, each with distinct transportation access characteristics. As shown in Figure II-1, these subareas as defined for this study are:

> Central Business District (CBD): a 16-block area directly adjacent to the University campus with the highest level of radial transit access and generally the highest level of auto congestion and parking costs. Direct CAMBUS service also provides service to this area.
>
> Highway Access: Employer sites located along State primary highways and Interstate interchanges with relatively lower levels of transit service and the greatest degree of auto accessibility, particularly for non-resident employees.
>
> General Urban Area Access: All other non-campus employer sites within the urban area, with intermediate levels of transit and auto accessibility for area residents and non-resident employees.

Figure II-1:

Access Areas within the Metro Study Area

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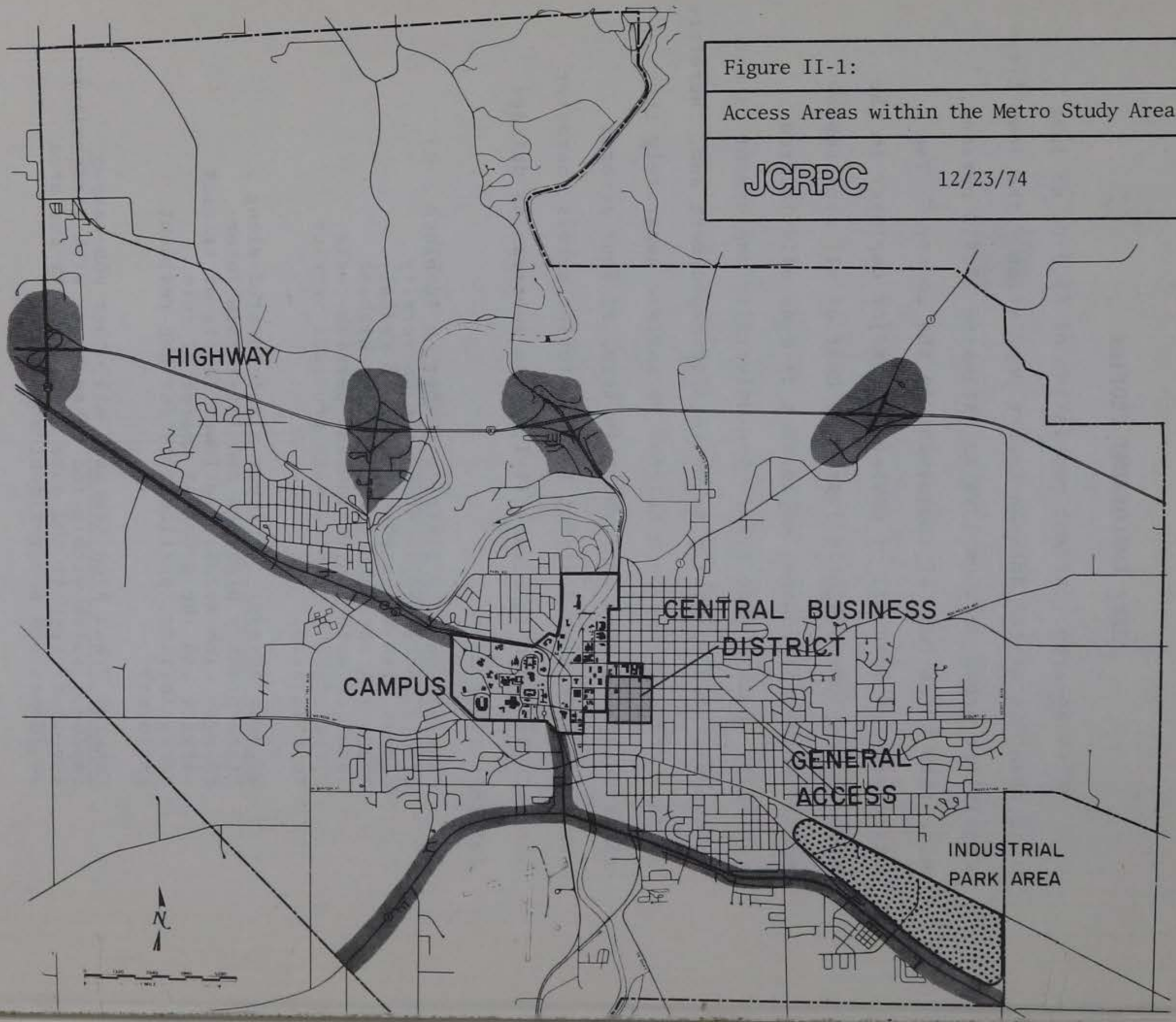


University campus: East and west campuses of the University of Iowa, centrally located in the urban area and, continguous with the central business district. Free CAMBUS service is available in all areas of the campus with headways varying from four to six minutes. Located at the focus of the radial bus route system, the East campus also has the same high level of municipal transit service as the CBD.

Within this framework, a general profile of the area employment and its important characteristics for transportation planning in the area is provided in the following tables.

Table II-1 indicates that approximately 45% of area employment is made up of University employees. The average number of employees of the non-University employer is 14.8. The average size of the Central Business District employer is somewhat less than half that of the highway access employer. Employment in the Central Business District constitutes 27% non-University employment, and together with the contiguous University campus, total approximately 15,500 central area employees, or 56% of the total metro area employment.

Table II-2 shows the breakdown of full-time and part-time employment in the area. Just less than 23% of non-University employment and over 38 percent of University employment is part-time. Of the estimated 18,603 full-time employees in the metro area, an estimated 9,878 are employed in the Central Business District-University campus area. The rate of full-time employment is significantly higher in highway and general urban area access than it is in the central area or the metro area as a whole.

Table II-3 displays the distribution of area employment

by type of economic activity of the employer. Following University employment as the dominant type of area employment, office employment comprises nearly 24 percent of the total area employment. Manufacturing and retail represent 14 percent and 10 percent respectively.

Table II-4 shows the considerable variation in the composition of the employer and employees by the three general urban access types. In the Central Business District, retail and office employment dominate with 40 percent and 24 percent each. General urban area access is largely office (49%), while the manufacturing employs the largest number of highway access employees (42%).

Table II-5 identifies where the resident employees of Iowa City-Coralville urban area work. Approximately 47 percent work for the University of Iowa. The proportion of area residents employed in the general urban and highway access areas is considerably less than the proportion of non-area residents employed in these non-central sub-areas of the metro area. Also important is the fact that over 12 percent of area residents work in the Central Business District while less than 6 percent of area employees living outside the area work in the downtown area.

Table II-6 also indicates that in those areas with the highest levels of transit access, the proportion of area resident employees is greatest. Nearly 90 percent of this Central Business District employment is made up of Iowa City-Coralville metro area residents, while only 71 percent of

highway employment groups live in the metro area. Similarly, over 83 percent of University employment lives in the metro area.

Table II-7 shows the distribution of employment in each major economic classification by employee area of residence. A major point is that while less than 11 percent of Iowa City-Coralville area residents are employed in manufacturing, 22 percent and 24 percent of area employees who live in small towns and rural areas of Johnson County work in manufacturing. While a non-area resident is as likely to be employed in a non-University office, urban area residents predominate in retail and University employment.

TABLE II-1: General Employment Profile by Access Area Type*

ACCESS AREA TYPE	EMPLOYERS		EMPLOYEES			EMPLOYER SIZE
	Number	Percent	Number	Percent Non-Univ.	Percent Metro Total	Average Number Employees
Central Business District	279	27.0%	2,953	19.3%	10.6%	10.6
General Urban Area Access	558	54.0	7,842	51.3	28.2	14.1
Highway Access	196	19.0	4,496	29.4	16.1	22.9
TOTAL NON-UNIVERSITY	1,033	100.0%	15,291	100	54.9%	14.8%
University Campus	1	-	12,559	-	45.1	-
TOTAL METRO AREA	1,034	-	27,850	-	100%	-

*The figures in this table are estimates based on an expanded sample stratified by access areas.

TABLE II-2: Full-Time and Part-Time Employment by Access Area Type*

ACCESS AREA TYPE	FULL-TIME EMPLOYMENT		PART-TIME EMPLOYMENT	
	Number	Percent	Number	Percent
Central Business District	2,115	71.6%	838	28.4%
General Urban Area Access	5,910	75.4	1,932	24.6
Highway Access	3,815	84.9	681	15.1
TOTAL NON-UNIVERSITY	11,840	74.4%	3,451	22.6%
University Campus	7,763	61.8	4,796	38.2
TOTAL METRO AREA	19,603	70.4%	8,247	29.6%

*The figures in this table are estimates based on an expanded sample stratified by access areas.

TABLE II-3: General Employment Profile by Economic Activity Type
(Employers with 10 or more Employees)

ECONOMIC CLASSIFICATION	EMPLOYERS	EMPLOYEES		EMPLOYER SIZE
	Percent	Percent Non-Univ.	Percent Metro Total	Average Number Employees
Construction	9.2%	3.8%	2.1%	24.2
Manufacturing	10.5	25.7	14.1	141.0
Retail	28.8	17.5	9.6	35.1
Office	35.9	43.3	23.8	69.4
Other	15.7	9.8	5.4	36.1
TOTAL NON-UNIVERSITY	100.0%	100.0%	54.9%	40.2
University	-	-	45.1	-
TOTAL METRO AREA	-	-	100.0%	-

TABLE II-4: Distribution of Employment by Access Area Type and Economic Activity Type

ACCESS AREA TYPE	EMPLOYERS Percent	EMPLOYEES Percent
CENTRAL BUSINESS DISTRICT		
Construction	3.7%	1.1%
Manufacturing	7.4	10.0
Retail	51.9	39.9
Office	22.2	24.3
Other	14.8	24.6
	100.0%	100.0%
GENERAL AREA ACCESS		
Construction	8.8%	3.1%
Manufacturing	7.6	17.2
Retail	22.8	15.6
Office	48.1	58.7
Other	12.7	5.3
	100.0%	100.0%
HIGHWAY ACCESS		
Construction	12.8%	5.7%
Manufacturing	17.0	42.1
Retail	25.5	12.8
Office	23.4	28.2
Other	21.3	11.2
	100.0%	100.0%

TABLE II-5: Where Employees Work by Area of Residence*

ACCESS AREA TYPE	IOWA CITY-CORALVILLE		ALL OTHER AREAS	
	Percent Non-Univ.	Percent Total	Percent Non-Univ.	Percent Total
Central Business District	22.5%	12.1%	9.1%	5.7%
General Urban Area Access	50.9	27.4	54.0	34.1
Highway Access	26.7	14.3	36.9	23.3
TOTAL NON-UNIVERSITY	100.0% 11,820	53.0% 11,820	100.0% 3,471	62.0% 3,471
University Campus	-	47.0% 10,462	-	38.0% 2,-97
TOTAL METRO AREA	-	100.0% 22,282	-	100.0% 5,568

*The figures in this table are estimates based on an expanded sample stratified by access areas.

TABLE II-6: Where Employees Reside by Access Area Type*

ACCESS AREA TYPE	EMPLOYEE RESIDENCE				TOTAL (Place of Work)	
	Iowa City-Coralville	Small Towns	Rural Johnson Co.	Other	Percent	Number
Central Business District	89.4%	6.4	4.0	.3	100.0%	2,979
General Urban Area Access	76.3%	13.6	5.7	5.0	100.0%	7,890
Highway Access	71.0%	16.8	5.7	6.5	100.0%	4,422
TOTAL NON-UNIVERSITY (Place of Residence)	77.3% 11,820	13.1% 2,003	5.4% 826	4.2% 642	100.0%	15,291
University Campus	83.3% 10,462	10.1% 1,268	2.6% 327	4.0% 502	100.0%	12,559
TOTAL METRO AREA (Place of Residence)	80.0% 22,282	11.7% 3,271	4.1% 1,153	4.1% 1,144	100.0%	27,850

*The figures in this table are estimates based on an expanded sample stratified by access areas.

TABLE II-7: Employment by Economic Activity Type by Area of Residence

ECONOMIC CLASSIFICATION	EMPLOYEE RESIDENCE				TOTAL
	Iowa City-Coralville	Small Towns	Rural Johnson Co.	Other	All Areas
Construction	1.8%	3.4%	2.6%	4.0%	2.1%
Manufacturing	10.7	22.2	33.9	23.1	13.6
Retail	10.6	7.4	7.2	1.4	9.7
Office (Non-Univ.)	23.8	24.2	22.3	27.4	24.0
University	47.5	37.5	28.0	41.7	45.2
Other	5.6	5.2	6.0	2.3	5.4
TOTAL METRO AREA	100.0%	100.0%	100.0%	100.0%	100.0%

III. CURRENT TRANSIT USE AND PROMOTION FOR THE WORK TRIP

CURRENT TRANSIT USE AND PROMOTION OF THE WORK TRIP

The tables included in this section indicate that the rate of transit use for travel to and from work is relatively high and that area employers do, to some extent, currently encourage the use of public transportation. A map of the area showing the municipal and campus transit routes is shown in Figure III-1. The extent of transit use for the work trip varies considerably by geographic area, type of employment, and various measures of the level of transit service provided to the place of work. Current transit promotional efforts of employers are generally restricted to the display of route maps and schedules and occasional verbal encouragement to use public transit.

Table III-1 shows the extent of current transit use for the work trip by each of the general access subareas. Non-University employers report that 7.3 percent of their employees use transit to travel to and from work. It can be seen that the rate of transit use varies considerably by subarea. For example, 11.7 percent of Central Business District employees make the work trip by bus, thus a factor of 1.6 greater than the non-University average rate of transit use for travel to and from work. However, due to the larger number of employees working in the general urban access area, approximately 50 percent of all transit work trips are made by this group of workers. Again, the high rate of transit use


Lantern Park
Manville
Hawkeye Apts.
W. Benton
N

reported for University employees includes CAMBUS as well as the municipal bus systems.

Table III-2 displays the rate of transit use by employees of each of the major economic classifications of employers. It shows that retail employees use transit for their trip to work at approximately twice the rate of other types of employees, but that office workers make up the largest proportion of non-University transit users (42%)

Table III-2 shows the relationship between transit work trip use and the level of transit service available at the site of employment. It indicates that slightly less than three-fourths of all area employees work either in the Central Business District-University campus central area or at a site within one block of transit service. More than 91 percent metro area work trip transit users work at sites located within the perimeter of this relatively high level of service. The rate of transit use for employees working three blocks or more from transit routes is only 2.1 percent or approximately five times less than that of the Central Business District rate. It is estimated that 3,150 employees (11%) work at some 190 places of employment located beyond the three block level of service.

Table III-4a and III-4b show the relationship between the rate of transit usage and one additional indicator of the level of transit service available to employees--schedule convenience. These tables show that for non-central area employment, the length of time required for the employee to spend at the place of employment prior to the scheduled start time (4a), and for the length of time required to wait

for the bus after work (4b) are both apparent factors in determining whether transit will be used for travel to and from work. With most bus routes outbound from the central area fifteen minutes before and after the hour, and most work hours beginning and ending either on the hour or half hour, non-central area employees find transit use for the journey to work more convenient than for the trip from work. While only 8 percent of non-central area employees would arrive as much as twenty to thirty minutes early going to work in a bus, nearly 27 percent of these employees would be required to wait this long using transit for the journey home.

Table III-5 depicts the various types of promotional activities that employers may be currently conducting. While 50 percent of all non-University employers indicate that they do nothing to encourage transit use, this varies by type of access subarea. In all types of positive promotion, Central Business District employers are most active. This is true particularly in the practice of flexibile work scheduling to allow for convenience in transit use. The most common type of promotion is the display or provision of transit maps and schedules for the general information of the employees and customers or clients.

Table III-6 shows the extent of current promotional activities of employers according to the rate of transit use of their employees. There is a clear interdependence between extensive transit use for the work trip and the attitudes and practices of the employer regarding public transportation.

Table III-7 and III-8 indicate that about 45 percent of area employers provide their employees with some form of information concerning transit service available to them and that central area employers and employers with employees who use transit extensively are more likely to provide transit information.

TABLE III-1: Transit Use for Work Trip by Access Area Type*

ACCESS AREA TYPE	TOTAL EMPLOYEES	TRANSIT USERS-EMPLOYEES			RATE OF TRANSIT USE	
		Number	Percent Non-Univ.	Percent Metro Total	Percent Area Employees	Factor[a]
Central Business District	2,953	346	31.2%	9.9%	11.7%	1.60
General Urban Area Access	7,842	555	50.0	15.8	7.1	.97
Highway Access	4,496	208	18.8	5.9	4.6	.63
TOTAL NON-UNIVERSITY	15,291	1,109	100%	31.6%	7.3%	1.00
University Campus	12,559	2,403	-	68.4	19.2	2.63
TOTAL METRO AREA	27,850	3,512	-	100.0%	12.8%	-

*The figures in this table are estimates based on an expanded sample stratified by access areas.

[a]Ratio of percent area employees using transit for a given area/percent total non-university employees using transit.

TABLE III-2: Transit Use for Work Trips by Economic Activity Classification*

ECONOMIC CLASSIFICATION	TOTAL EMPLOYEES	TRANSIT USERS-EMPLOYEES			RATE OF USE	
		Number	Percent Non-Univ.	Percent Metro Total	Percent	Factor[a]
Construction	575	10	.9%	.3%	1.6%	.22
Manufacturing	3,930	189	17.0	5.4	4.8	.66
Retail	2,675	390	35.2	11.1	14.6	2.01
Office	6,610	460	41.5	13.1	7.0	.97
Other	1,500	60	5.4	1.7	4.1	.56
TOTAL NON-UNIVERSITY	15,290	1,109	100.0%	31.6%	7.3%	1.00
University	12,560	2,403	-	68.4%	19.2%	2.63
TOTAL METRO AREA	27,850	3,512	-	100.0%	12.8%	-

*The figures in this table are estimates based on an expanded sample stratified by access areas.

[a]Ratio of percent area employees using transit for a given area/percent total non-university employees using transit.

TABLE III-3: Transit Use for Work Trip by Level of Service*
(Distance of Employer from Bus Route)

GENERAL LEVEL OF SERVICE	EMPLOYERS	EMPLOYEES		TRANSIT USERS-EMPLOYEES		RATE OF USE	
		Number	Percent	Number	Percent Total	Percent Area	Factor[a]
Central Area Service							
Non-University	279	2,953	10.6%	346	9.9%	11.7%	1.60
University	1	12,559	45.1	2,403	68.4	19.2	2.63
Other							
Less than 1 Block	336	5,172	18.6%	470	13.4%	9.1%	1.25
1-2 Block	126	2,067	7.4	64	1.8	3.1	.42
2-3 Block	96	1,945	7.0	163	4.6	8.4	1.15
No Service (beyond 3 blocks)	196	3,154	11.3%	66	1.9%	2.1%	.29
TOTAL METRO AREA	1,034	27,850	100.0%	3,512	100.0%	12.8%	-

*The figures in this table are estimates based on an expanded sample stratified by access areas.

[a]Ratio of percent area employees using transit for a given area/percent total non-university employees using transit.

TABLE III-4A: Transit Use for Journey to Work by Schedule Convenience[a]

BUS ARRIVES BEFORE WORK START TIME	EMPLOYERS	EMPLOYEES		RATE OF TRANSIT USE	
	Number	Number	Percent Total	Percent Area	Factor[b]
5 min. or less	236	3,000	24.3%	6.5%	.89
5-10 min.	188	5,900	47.8	7.2	1.00
10-15 min.	63	720	5.9	4.8	.66
15-20 min.	172	1,690	13.7	4.2	.58
20-30 min.	158	1,030	8.3	3.3	.46
TOTAL NON-CENTRAL AREA	754	12,230	100.0%	6.2%	.86

[a]Excludes "Central Area" employment, i.e. CBD and University Campus.

[b]Ratio of percent area employees using transit for a given area/percent total non-university employees using transit.

TABLE III-4B: Transit Use for Journey Home from Work by Schedule Convenience[a]

BUS LEAVES AFTER WORK STOP TIME	EMPLOYERS	EMPLOYEES		RATE OF TRANSIT USE	
	Number	Number	Percent Total	Percent Area	Factor[b]
5 min. or less	187	1,164	9.4%	7.4%	1.02
5-10 min.	107	4,843	39.3	6.9	.95
10-15 min.	139	2,189	17.7	4.9	.68
15-20 min.	90	871	7.1	2.8	.38
20-30 min.	231	3,269	26.5	N/A	N/A
TOTAL NON-CENTRAL AREA	754	12,336	100.0%	6.2%	.86

[a]Excludes "Central Area" employment, i.e. CBD and University Campus.

[b]Ratio of percent area employees using transit for a given area/percent total non-university employees using transit.

TABLE III-5: Current Promotion of Transit by Access Area Type

ACCESS AREA TYPE	PERCENT AREA EMPLOYERS			
	Provide Maps	Allow Flexible Times	Verbally Encourage	Do Not Encourage
Central Business District	40%	36%	36%	32%
Central Area Access	32	16	18	48
Highway Access	21	13	21	65
TOTAL NON-UNIVERSITY	31%	19%	22%	50%
University Campus	31	25	36	48

TABLE III-6: Current Promotion of Transit by Rate of Transit Use
(Non-University)

RATE OF TRANSIT USE	PERCENT AREA EMPLOYERS			
	Provide Maps	Allow Flexible Times	Verbally Encourage	Do Not Encourage
No Transit Work Trips	21%	4%	11%	70%
Less Than Non-University Avg.	45	20	20	35
More Than Non-University Avg.	38	40	40	29
TOTAL NON-UNIVERSITY	31%	19%	22%	50%

TABLE III-7: Transit Information Provided by Employer by Access Area Type

ACCESS AREA TYPE	WHEN TRANSIT INFORMATION PROVIDED			
	When Hired	At Regular Intervals	All the Time	Do Not Provide
Central Business District	16%	4%	40%	44%
General Urban Area Access	28	4	26	49
Highway Access	16	6	10	74
TOTAL NON-UNIVERSITY	22%	5%	27%	55%
University Campus	39	2	24	48

TABLE III-8: Transit Information Provided by Employer by Rate of Transit Use
(Non-University)

RATE OF TRANSIT USE	WHEN TRANSIT INFORMATION PROVIDED			
	When Hired	At Regular Intervals	All the Time	Do Not Provide
No Transit Work Trips	12%	2%	14%	71%
Less Than Non-Univ. Avg.	39	11	28	39
More Than Non-Univ. Avg.	2	5	43	43
TOTAL NON-UNIVERSITY	22%	5%	27%	55%

IV. POTENTIAL FOR PROMOTION OF TRANSIT USE FOR THE WORK TRIP

POTENTIAL FOR PROMOTION OF TRANSIT USE FOR THE WORK TRIP

As indicated in the following tables, there exist a reasonably strong interest among area employers in programs to promote transit use to and from work. A fairly large number of employers also indicated a willingness to provide the incentive for public transit use of a direct fare subsidy to the employee. In general, the willingness to participate in transit promotion program is greater for central area employers--Central Business District employers and University of Iowa departments.

Table IV-1 indicates that approximately 80 percent of non-University area employers, and nearly all University departments, would be willing to provide transit information for their employees. Since these employers tend to be larger than those that are not interested in this type of informational service, it is estimated that nearly 90 percent of non-University employees and 100 percent of the University employees would be reached by such a promotional measure.

Table IV-2: In response to the question "Would you be willing to participate in a mass transit promotion program for your employees (such as offering free passes or other incentives to use transit)?" 42 percent of non-University employers and 86 percent of University departments indicated that they would be willing. These employers represent 56 percent of non-University, and 86 percent of University employment. No signi-

ficant variation seems to exist among the employers of the three non-campus subareas of the community regarding their willingness to participate in a promotional program for mass transit.

However, when responding to the question "How much would you be willing to spend per week per employee to encourage transit usage?" fewer employers indicated that they would be willing to directly subsidize the transit work trips of their employees. Still, 22 percent of non-University area employers did indicate that they would be willing to subsidize employee transit use at some level. Nearly half (47%) of Central Business District employers indicated that they were willing to subsidize transit use, and at generally at a higher rate than employers located in other subareas of the community.

Table IV-3 shows the willingness of employers of each major economic activity classification to participate in a general transit promotion program and to subsidize employee transit use for travel to and from work. Office employers (59%) are significantly more interested in general promotional activities than employers in other economic classifications. Based on the response of their employers, approximately 82 percent of office employees could be reached in such a promotional campaign. There is little difference among the different types of area employers in terms of their willingness to directly subsidize employee transit use. However, larger offices are more willing than other groups and it is estimated that around 40 percent of office employees could

receive compensation from their employers for transit use to and from work. It should be noted, although, that retail and manufacturing employers are generally willing to subsidize employees at a higher weekly rate than other groups of employers.

Table IV-4 indicates that the willingness of employers to engage in promotional activities and subsidize transit use is directly related to the current level of transit use by their employees. For employees with above-average transit use for the work trip, 69 percent of their employers are willing to participate in a promotional program and 37 percent are willing to provide a transit subsidy. Additionally, for those employers willing to subsidize, the rate of weekly subsidy indicated is higher for those with higher rates of current ridership.

Table IV-5 shows that most employers (71%) would participate in a transit promotion program as a "community service." The second most-mentioned reason (22%) was in order to reduce the amount of parking required to accommodate employee auto work trips. University departments were generally more sensitive to parking considerations (48%).

TABLE IV-1: Willingness to Display Transit Information
By Access Area Type

ACCESS AREA TYPE	WILLING TO PROVIDE TRANSIT INFORMATION	
	% Employers	% Employees Affected
Central Business District	83%	72%
General Urban Area Access	84	94
Highway Access	81	88
TOTAL NON-UNIVERSITY	83%	90%
University Campus	100%	100%

TABLE IV-2: Willingness to Participate in Promotion Program and Subsidize Employee Transit Use-- By Access Area Type

ACCESS AREA TYPE	WILLING TO PARTICIPATE IN PROMOTION PROGRAM		WILLING TO PROVIDE SUBSIDY FOR TRANSIT USE		
	% Employers	% Employees Affected	% Employers	% Employees Affected	Average[a] Weekly (Mode)
Central Business District	44%	57%	47%	50%	$1.50-$2.00
General Urban Area Access	39	49	15	30	$.50
Highway Access	45	57	23	24	$ .50-$1.00
TOTAL NON-UNIVERSITY	42%	56%	22%	29%	--
University Campus	86	85	N/A	N/A	N/A

[a]Level of subsidy most frequently indicated by those employers willing to subsidize employee transit use.

TABLE IV-3: Willingness to Participate in Promotion Program and Subsidize Employee Transit Use-- By Economic Classification of Employer

ECONOMIC CLASSIFICATION	WILLING TO PARTICIPATE IN PROMOTION PROGRAM		WILLING TO PROVIDE SUBSIDY FOR TRANSIT USE		
	% Employers	% Employees Affected	% Employers	% Employees Affected	Average[a] Weekly (Mode)
Construction	17%	22%	17%	22%	$.50
Manufacturing	38	33	29	15	$ .50-$1.00
Retail	34	38	22	16	$1.50-$2.00
Office	59	82	20	40	$.50
Other	38	53	25	39	$.50
TOTAL NON-UNIVERSITY	42%	56%	22%	29%	--
University	86	85	N/A	N/A	--

[a]Level of subsidy most frequently indicated by those employers willing to subsidize employee transit use.

TABLE IV-4: Willingness to Participate in Promotion Program and Subsidize Employee Transit Use-- By Rate of Transit Use

RATE OF TRANSIT USE	WILLING TO PARTICIPATE IN PROMOTION PROGRAM		WILLING TO PROVIDE SUBSIDY FOR TRANSIT USE		
	% Employers	% Employees Affected	% Employers	% Employees Affected	Average[a] Weekly (Mode)
No Transit Work Trips	32%	36%	12%	14%	$.50
Less than Non-University Avg.	66	64	26	40	$1.00-$1.50
More than Non-University Avg.	69	86	37	30	$1.50-$2.00
TOTAL NON-UNIVERSITY	54%	70%	22%	29%	--

[a]Level of subsidy most frequently indicated by those employers willing to subsidize employee transit use.

TABLE IV-5: Reason for Participation in Transit Promotion Program

REASONS FOR PROMOTION	PERCENT YES[a]	
	Total Non-University	% Total University
As a community service	71%	71%
To reduce parking needs	28	48
As an employee fringe benefit	22	29
For greater on-time reliability	17	19
Other	9	8

[a]These percents do not total 100% because of multiple responses.

V. WORK HOURS AND TRANSIT SCHEDULING

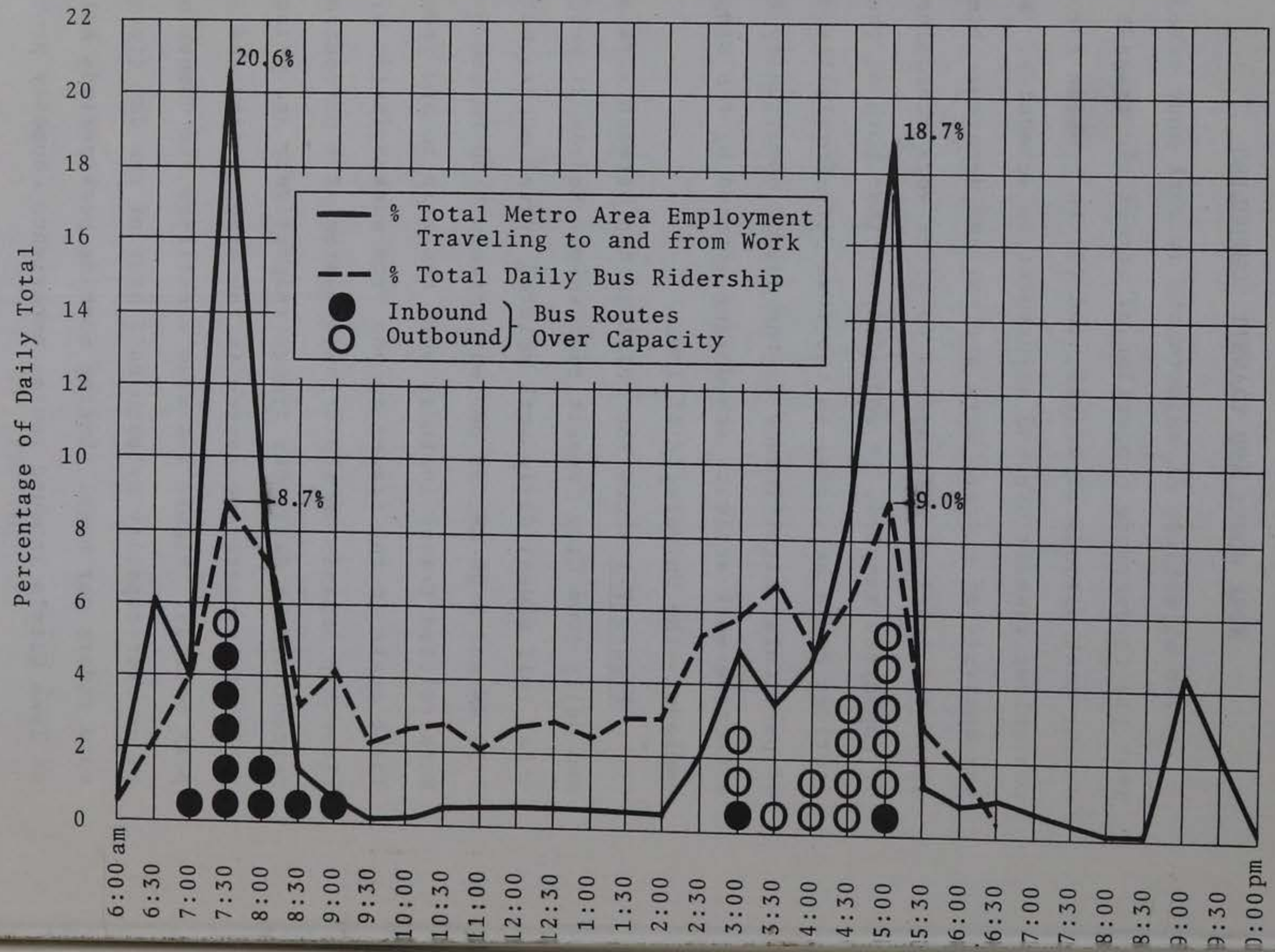
WORK HOURS AND TRANSIT SCHEDULING

Two objectives of adjustments in work hour scheduling are: (1) to decrease congestion of street and transit facilities during peak periods of travel, and (2) to provide for more convenient transit use and adjustment to schedules. Based on the analysis of current work arrival and departure times, and given the level of willingness to alter work schedules indicated by employers sampled, it would appear that both of these objectives could be served in the Iowa City-Coralville urban area. Of particular significance is the unique opportunity for effective work activity scheduling offered by the single largest employer--the University of Iowa.

Figure V-1 shows the relationship between work scheduling and daily Iowa City Transit ridership. Nearly 21 percent of total (all modes) daily work-related travel occurs between 7:30 AM and 8:00 AM; 19 percent between 5:00 PM and 5:30 PM. Work-related travel includes both the trip to and from work. These peaks in the travel to and from work coincide with peak ridership demands on the transit system--8.7 percent and 9.0 percent of the daily bus riders respectively are using the public transportation system in the same morning and afternoon peak periods. Figure V-1 also identifies the number of buses at or over-capacity by each half hour of the day (forty or more riders per bus). During morning peak periods half (5) of Iowa City's inbound routes experience capacity problems.

Figure V-1: Relationship of Work Scheduling and Peak Period Transit Use

JCRPC 12/23/74 (Iowa City Transit System Only)



Similarly, an equal number of outbound routes operate at or above capacity during the late afternoon peak. The chart suggests that it is the work-trip which contributes most to the capacity problem of the transit system.

Tables V-1a and V-1b show the percent and estimated number of persons traveling to work during all times of the day for each subarea of the metropolitan area. These figures include all modes of transportation for the work-trip (auto, bus, pedestrian, bike, etc.) and are based on the employee arrival times reported by the employers sampled in the survey. Nearly 42 percent of area travel to work occurs in the morning 7:30 AM to 8:00 AM peak half hour (60% during morning peak hour). The arrival times of highway-access area employees are generally earlier and more spread out than those for other subareas. The peak for the general urban access areas is comparable to that of the Central Business District, but a significant number of work arrivals for this area occur before the peak (12%) from 7:00 AM to 7:30 AM, while the Central Business District arrival peak extends into the 8:00 AM to 8:30 AM interval.

It is very interesting to note that the arrival times of University employees, the largest employee group, are the most concentrated of all groups. Nearly 72 percent of all University employees travel to work during the peak hour between 7:30 AM and 8:30 AM.

Tables V-2a and V-2b show the percent and estimated number of employees traveling home from work by all modes of transportation. It is clear that departure times from work

are somewhat less peaked than arrival times, and that they extend from midafternoon until early evening. Approximately 53 percent of area employees are making the trip home from work during the late afternoon peak from 4:30 PM to 5:30 PM. Again the travel of the University employees, the single largest group of employees, is the most peaked and Central Business District departures are the second-most compressed in time.

Table V-3 displays the distribution of Iowa City transit users throughout the day. As in Figure V-1, it can be seen that transit use closely coincides with the temporal distribution of travel to and from work.

Table V-4: Given the level of congestion of the fixed-capacity transit system which occurs during the peak periods of work-related travel, the willingness of employers to alter or allow for more flexible work hours is an important factor in determining the potential for increased transit use for the work trip. This table shows that approximately 38 percent of all non-University employers would be willing to consider flexible work scheduling. It should be noted, also, that 55 percent of Central Business District employers and 66 percent of University departments would be willing to implement staggered work hours. This higher rate of interest in the central area is important because (1) work-related travel is presently the most temporally concentrated for Central Business District and University employees, and (2) because the highest level of transit service is available there. Employers of both these

groups indicate that a willingness to alter work times as much as twenty to thirty minutes, an interval which would permit an immediate increase in the effective capacity of the current bus operations with twenty and thirty minute headways.

Table V-5 shows the willingness to alter work schedules by the type of economic activity of non-University employers. Retail employers are the most willing to consider staggered work hours. Office employers, on the other hand, appear to be willing to consider greater deviations from existing work hours in order to provide for better accessibility to transit.

TABLE V-1A: Travel to Work by Time of Day
Percent by Access Area Type

Time Interval[a]	Central Business District	General Urban Area Access	Highway	University Campus	METRO TOTAL
5:00 AM	3.4%	3.9%	.1%	--	1.5%
6:00	5.3	.2	.2	.3	.8
6:30	2.6	10.3	13.3	13.1	11.3
7:00	4.4	12.1	16.4	2.6	7.7
7:30	33.4	35.8	28.4	51.1	41.5
8:00	17.1	15.3	14.7	20.8	18.0
8:30	12.8	1.6	3.4	1.5	3.0
9:00	9.4	1.5	.3	.7	1.1
9:30	--	.5	1.9	--	.5
10:00	1.6	1.0	.9	.2	.7
11:00	2.4	.6	.4	--	.5
12:00 PM	1.2	.2	--	.7	.5
1:00	--	.6	1.6	.6	.7
2:00	1.1	--	--	.2	.2
2:30	--	2.0	3.6	.2	1.2
3:00	--	6.7	5.8	1.2	3.5
3:30	1.3	1.6	1.6	--	.7
4:00	--	.7	--	--	.2
4:30	1.1	.7	1.5	4.6	2.6
5:00	.8	.4	.3	--	.2
5:30	--	.2	1.6	.7	.6
6:30	--	--	--	--	--
7:00	1.1	--	--	--	.1
8:00	--	.6	.1	.2	.3
9:00	--	--	--	--	--
10:00	--	--	--	--	--
11:00	--	2.7	3.2	1.2	1.8
12:00+	3.2	.7	--	.1	.6
TOTAL DAILY	100.0%	100.0%	100.0%	100.0%	100.0%

[a]The time indicated represents the beginning point in the interval; eg. 3.4% of CBD employees travel to work between 5:00 AM - 6:00 PM

TABLE V-1B: Travel to Work by Time of Day*
Estimated Number by Access Area Type

Time Interval[a]	Central Business District	General Urban Area Access	Highway	University Campus	METRO TOTAL
5:00 AM	100	306	5	--	411
6:00	157	16	9	38	220
6:30	77	808	598	1,645	3,128
7:00	130	949	737	327	2,143
7:30	986	2,807	1,277	6,418	11,488
8:00	504	1,200	661	2,612	4,977
8:30	378	125	153	188	844
9:00	97	118	13	88	316
9:30	--	39	85	--	124
10:00	46	78	40	25	189
11:00	71	47	18	--	136
12:00 PM	35	16	--	88	139
1:00	--	47	72	75	194
2:00	32	--	--	25	57
2:30	--	157	162	25	344
3:00	38	525	261	151	975
3:30	--	125	72	--	197
4:00	--	55	--	--	55
4:30	32	55	67	578	732
5:00	24	31	13	--	68
5:30	--	8	--	--	8
6:00	--	16	72	88	176
6:30	--	--	--	--	--
7:00	32	--	--	--	32
8:00	--	47	5	25	77
9:00	--	--	--	--	--
10:00	--	--	--	--	--
11:00	--	212	144	151	507
12:00+	95	55	--	13	163
TOTAL DAILY	2,953	7,842	4,496	12,559	27,850

*The figures in this table are estimates based on an expanded sample stratified by access areas.

[a]The time indicated represents the beginning point in the time interval; eg. an estimated 100 CBD employees travel to work between 5:00 AM - 6:00 AM.

TABLE V-2A: Travel Home From Work by Time of Day*
Percent by Access Area Type

Time Interval[a]	Central Business District	General Urban Area Access	Highway	University Campus	METRO TOTAL
5:00 AM			1.0%		.2%
6:00		1.2%	--		.3
6:30		--	--	.2%	.
7:00		.2	.8	.3	.3
7:30		--	--	--	--
8:00		.5	.1	.2	.2
8:30		.1	--	--	--
9:00		--	.4	--	.1
9:30		--	--	--	--
10:00		--	--	--	--
11:00	3.4%	.1	.2	--	.4
12:00 PM	1.1	.4	.6	1.0	.8
1:00	1.2	.4	.2	.2	.4
2:00	3.4	.7	.5	--	.6
2:30	6.3	1.5	10.5	.1	2.8
3:00	1.7	7.1	2.9	9.0	6.7
3:30	1.7	11.2	10.4	3.2	6.5
4:00	13.5	13.3	14.2	3.3	9.0
4:30	13.7	14.1	26.3	12.9	15.5
5:00	33.9	28.2	13.7	52.2	37.2
5:30	5.0	1.2	.9	3.8	2.7
6:00	.7	1.1	1.2	1.3	1.2
6:30	1.2	6.2	.4	.3	2.1
7:00	--	--	--	--	--
8:00	--	--	--	--	--
9:00	7.3	9.8	13.7	6.2	8.5
10:00	--	--	--	.7	.3
11:00	--	--	--	--	--
12:00+	5.8	2.8	1.8	5.2	4.0
TOTAL DAILY	100.0%	100.0%	100.0%	100.0%	100.0%

*The figures in this table are estimates based on an expanded sample stratified by access areas.

[a]The time indicated represents the beginning point in the time interval; eg. an estimated 3.4% CBD employees travel to work between 11:00 AM - 12:00 PM.

TABLE V-2B: Travel Home From Work by Time of Day*
Estimated Number by Access Area Type

Time Interval[a]	Central Business District	General Urban Area Access	Highway	University Campus	METRO TOTAL
5:00 AM			45		45
6:00		94			94
6:30		--		25	25
7:00		16	36	38	90
7:30		--		--	
8:00		39	5	25	69
8:30		8		--	8
9:00		--	18	--	18
9:30		--		--	
10:00		--		--	
11:00	101	8	9	--	118
12:00 PM	33	32	27	126	219
1:00	36	32	9	25	102
2:00	100	55	23	--	178
2:30	186	118	472	13	789
3:00	50	556	130	1,130	1,866
3:30	50	878	467	402	1,797
4:00	399	1,043	638	415	2,495
4:30	405	1,106	1,182	1,620	4,313
5:00	1,000	2,211	616	6,556	10,373
5:30	148	94	40	477	759
6:00	21	86	54	163	324
6:30	35	486	18	38	577
7:00	--	--		--	--
88:00	--	--		--	--
9:00	216	769	616	779	2,380
10:00	--	--		88	88
11:00	--	--		--	
12:00+	172	220	81	653	1,126
TOTAL DAILY	2,953	7,842	4,496	12,559	27,850

*The figures in this table are estimates based on an expanded sample stratified by access areas.

[a]The time indicated represents the beginning point in the time interval; eg. an estimated 101 CBD employees travel to work between 11:00 AM - 12:00 PM.

TABLE V-3: Iowa City Transit Ridership by Time of Day*
(All Trip Purposes)

	INBOUND		OUTBOUND		TOTAL	
	Riders	Percent	Riders	Percent	Riders	Percent
5:00 AM	--	--	--	--	--	--
6:00	21	.6%	7	.2%	28	.4%
6:30	93	2.8	51	1.4	144	2.1
7:00	216	6.6	79	2.2	245	4.3
7:30	420	12.9	169	4.8	589	8.7
8:00	354	10.8	153	4.5	512	7.5
8:30	184	5.6	49	1.4	233	3.4
9:00	230	7.0	47	1.3	277	4.1
9:30	120	3.7	39	1.1	159	2.3
10:00	221	6.8	98	2.8	319	4.7
11:00	146	4.5	177	5.0	323	4.7
12:00 PM	144	4.4	228	6.5	372	5.5
1:00	142	4.4	221	6.3	363	5.3
2:00	215	2.5	127	3.6	209	3.1
2:30	133	4.1	229	6.5	362	5.3
3:00	169	5.2	233	6.6	402	5.9
3:30	120	3.7	328	9.3	448	6.6
4:00	103	3.2	258	7.3	361	5.3
4:30	103	3.2	334	9.5	437	6.4
5:00	154	4.7	454	12.9	608	9.0
5:30	52	1.6	147	4.2	199	2.9
6:00	43	1.3	83	2.4	126	1.9
6:30	18	.5	9	.3	27	.4
TOTAL DAILY	3,268	100.0%	3,525	100.0%	6,793	100.0%

*The information tabulated in this figure has been prepared from ridership data collected by Iowa City Transit on Wednesday, November 7, 1973

TABLE V-4: Willingness to Alter Work Schedule to Improve Accessibility of Transit
By Access Area Type

ACCESS AREA TYPE	WILLING TO ALTER WORK SCHEDULE		
	% Employers	% Employees Affected	Average[a] (Mode)
Central Business District	55%	60%	20-30 Min.
General Urban Area Access	33	18	5-10 Min.
Highway Access	35	37	10-15 Min.
TOTAL NON-UNIVERSITY	38%	29%	--
University Campus	66	59	20-30 Min.
TOTAL METRO AREA	--	38%	--

[a]Most frequent response of area employers willing to alter start and stop work times to increase accessibility to transit.

TABLE V-5: Willingness to Alter Work Schedule to Improve Accessibility of Transit
By Economic Classification of Employer

ECONOMIC CLASSIFICATION	WILLING TO ALTER WORK SCHEDULE		
	% Employees Affected	% Employers	Average[a] (Mode)
Construction	18%	9%	--
Manufacturing	17	40	5-10 Min.
Retail	38	36	10-15 Min.
Office	26	43	20-30 Min.
Other	65	40	5-10 Min.
TOTAL NON-UNIVERSITY	29%	38%	
University	59	66	20-30 Min.
TOTAL METRO AREA	38%	--	

[a]Most frequent response in each economic activity type of employers willing to alter start and stop times to increase accessibility to transit.

TABLE V-6: Interested in Developing (or Revising) Transit Routes or Schedules to Improve Service to Area

ACCESS AREA TYPE	PERCENT YES
Central Business District	67%
General Urban Area Access	45
Highway	63
TOTAL NON-UNIVERSITY	54%
University	70%

APPENDIX A: Survey Procedures and Study Methodology

APPENDIX A: Survey Procedure and Study Methodology

This study is based on an analysis of a survey sent to all employers (public and private) in Johnson County in May, 1974. A pretest survey form was developed by the Regional Planning Commission staff and distributed to twenty-five metro-area employers in October, 1973. Revisions were made in the survey instrument and a modified form was developed for distribution to University department heads and administrative sections.

The Iowa State Employment Security Commission assisted the Regional Planning Commission's staff by providing an initial master list of county employers. Using city directories, telephone books, and other sources of information, the Commission's staff updated this list in order to obtain a complete and current list of all area employers. The Iowa State Employment Security Commission then used this information in updating its files. The IESC then provided address labels for the purpose of mailing out the survey forms.

The Department of Transportation and Security of the University of Iowa also assisted in distributing the survey forms to all departments of the University and in follow-up procedures to obtain as large a sample as was possible within the time and financial constraints. Given similar constraints, follow-up procedures for non-University employers focused primarily on central area employers of the urban area and

generally on larger employers. The composition of the metro-area sample obtained is shown in Table A-1.

For those adequate questionnaires returned, the responses were coded for analysis with the Statistical Package for the Social Sciences Analysis Programs (SPSS). Address information obtained was geo-coded in terms of "urban area access type," traffic zone, and proximity to existing transit service. Schedule arrival and departure times of bus service at the site of employment were also coded for each employer.

The survey has provided considerable information concerning the profile of area employment and various transportation-related characteristics of travel to and from work. In addition to the public transit-related issues analyzed in this study with data obtained from medium and large metro area employers, the data obtained may be more fully analyzed in subsequent studies. In particular the response of rural and small town employers in Johsnon County may be examined. The general land-use information (floor space, parking data, etc.) may also be examined in subsequent studies. The information obtained on current carpooling practices and employer attitudes will also be of interest for continuing area transportation planning.

TABLE A-1: Rate of Sampling of Area Employment
Non-University

ACCESS AREA TYPE	SIZE OF EMPLOYERS										TOTAL		
	Less than 10		10-19		20-49		50-149		More than 150				
	Est. Number	Percent Sampled	Est. Number	Percent Sampled	Est. Number	Percent Sampled	Est. Number	Percent Sampled	Est. Number	Percent Sampled	Est. Number	Percent Sampled (All)	Percent Sampled (>10)
Central Business District													
Employers	214	none	29	28%	25	48%	10	70%	1	--	279	10%	42%
Employees	837	none	377	31%	694	48%	877	69%	168	--	2,953	36%	50%
General Urban Area Access													
Employers	399	none	89	45%	47	54%	17	53%	6	83%	558	14%	50%
Employees	1,449	none	1,116	50%	1,370	57%	1,186	59%	2,721	90%	7,842	57%	70%
Highway Access													
Employers	107	none	42	26%	31	65%	10	100%	6	100%	196	24%	53%
Employees	435	none	578	29%	955	60%	779	100%	1,749	100%	4,496	73%	80%
TOTAL NON-UNIVERSITY													
Employers	720	none	160	37%	103	55%	37	70%	13	85%	1,033	15%	49%
Employees	2,721	none	2,071	40%	3,019	56%	2,842	73%	4,638	91%	15,291	58%	70%

APPENDIX B: Survey Instruments (Non-University and University)

JOHNSON COUNTY REGIONAL PLANNING COMMISSION
22½ South Dubuque Street, Iowa City, Iowa 52240
(319) 351-8556

EMPLOYER SURVEY

PURPOSE: The purpose of this survey is to gather information which will help in the planning and development of transportation services including streets, mass transit, and car pool programs. To have *meaningful* plans it is essential that all local employers have their activities and needs considered in the plan development. Therefore, please complete this questionnaire as fully as possible, and return it promptly. Thank you for taking the time to assist our areawide transportation planning program.

CONFIDENTIALITY: Your response will be held confidential and will be released only when combined with data from other firms.

PLEASE: Direct this questionnaire to the most appropriate person or persons in your firm who can provide the necessary information.

(A) Employer Profile

Date: _____

(NAME AND ADDRESS OF BUSINESS)

⇦ PLEASE CHECK THE ADDRESS DATA AND CORRECT IT IF NECESSARY.

Type of business or service: _____
(e.g. service station, bank, shoe sales)

WAIT!

If firm has employees at two or more locations, please stop and call 351-8556 for separate instructions.

(B) Employee Profile

1. Categories of employees as of May 1, 1974:

Category	Full Time	Part* Time
Professional	_____	_____
Managers & Administrators	_____	_____
Sales Workers	_____	_____
Clerical Workers	_____	_____
Craftspersons	_____	_____
Laborers	_____	_____
Service & Custodial Workers	_____	_____
Total	_____	_____

⇦ (Enter number of employees)

*Part-Time is defined here as less than 30 hours per week.

2. Location of employees' residences:

_____ Iowa City–Coralville
_____ Cedar Rapids–Marion
_____ Hills
_____ Kalona
_____ Lone Tree
_____ North Liberty
_____ Oxford
_____ Riverside
_____ Solon
_____ Swisher-Shueyville
_____ Tiffin
_____ Wellman
_____ West Branch
_____ West Liberty
_____ Williamsburg
_____ Rural Johnson County
_____ All Others

⇦ (Enter approximate number of employees)

C Parking Profile

1. How many on-premise parking spaces does your firm provide?
(enter number of spaces)

_____ For employees
_____ For customers and clients
_____ Total

2. How much do you charge the users of your *on-premise* parking spaces?

Clients
- ☐ Free
- ☐ 5¢ per hour
- ☐ 10¢ per hour
- ☐ 15¢ per hour
- ☐ 20¢ per hour

Employees $_____ per _____
(hour/day/month)

3. Do you subsidize any *off-premise* parking costs for your employees or customers?

For your *employees?*
- ☐ Yes
- ☐ No

If yes, how many spaces?_____

What is the subsidy cost? $ _____ per space per _____
(day/month/year)

For your *customers?*
- ☐ Yes ("Park and Shop" etc.)
- ☐ No

If yes, what is your average total cost per day? $_____

4. Do you as an employer impose any rules or restrictions on employees parking their personal autos in areas which are generally reserved for customers and clients?

- ☐ Yes, for private on-premise parking
- ☐ Yes, for public parking areas
- ☐ No

D Transit Usage

1. Approximately how many of your employees now use a form of mass transit to get to and from work?

_____
(Number of Employees)

2. Which of the following do you do concerning mass transit use by your employees for their journey to and from work?

- ☐ Provide maps and schedules
- ☐ Allow flexible start times
- ☐ Verbally encourage use
- ☐ Do not actively encourage
- ☐ Discourage it

3. If you do provide your employees with transit information, how often do you provide it?

- ☐ When a new employee is hired
- ☐ At regular intervals, approximately _____ (daily/weekly/monthly)
- ☐ All the time (bulletin boards, etc.)
- ☐ Do not provide transit information

4. If you do not now distribute or display transit information, would you be willing to?

- ☐ Yes
- ☐ No

5. Would you be willing to consider participating in a mass transit promotion program for your employees (such as offering free transit passes or other incentives to use transit)?

- ☐ Yes
- ☐ No

6. For which of the following reasons would you be willing to participate in mass transit promotion for your employees?

- ☐ To cut down on your parking needs
- ☐ For a greater on-time reliability
- ☐ As a community service
- ☐ As an employee fringe benefit
- ☐ Other (specify) _____

7. How much would you be willing to spend per week <u>per employee</u> to encourage transit usage?

- ☐ 0 – 50¢ per week
- ☐ 50¢ – $1.00 per week
- ☐ $1.00 – $1.50 per week
- ☐ $1.50 – $2.00 per week
- ☐ Above $2.00 per week
- ☐ None

8. Would you be willing to participate in a "ride 'n shop" plan, where your business would pay all or a part of the transit fare for customers?

- ☐ Yes
- ☐ No

9. Would you be interested in developing (or revising) transit routes or schedules which might result in better service to your business and other businesses near yours?

- ☐ Yes
- ☐ No

10. Would you consider providing (separately or jointly with other firms) your own bus service for employees if your employee residences were concentrated in a reasonably few locations?

- ☐ Yes
- ☐ No

(E) Car Pool Potential

1. Does your firm actively encourage the use of car pools?

   ☐ Yes
   ☐ No

   If yes, by what means?

   ☐ Provision of preferential parking
   ☐ Provision of cheaper parking rates
   ☐ Provision of survey and clerical assistance to match potential car poolers
   ☐ Provision of money incentives to drivers and/or riders
   ☐ Provision of the car pool vehicle
   ☐ Altering of work schedules to allow matching of car poolers
   ☐ Other (please specify) _____

2. Would you be interested in initiating one or more of the above?

   ☐ Yes
   ☐ No

   If yes, which of the above appeals to you?

   ☐ a. ☐ b. ☐ c. ☐ d. ☐ e. ☐ f. ☐ g. ☐ h.

3. How much would you be willing to spend per month <u>per employee</u> to encourage car pooling?

   ☐ 0 – 50¢ per week
   ☐ 50¢ – $1.00 per week
   ☐ $1.00 – $1.50 per week
   ☐ $1.50 – $2.00 per week
   ☐ Above $2.00 per week
   ☐ None

4. If you currently have employees participating in car pools, how many are there and where do they come from? (Enter number of employees)

   _____ Iowa City
   _____ Coralville
   _____ Cedar Rapids–Marion
   _____ Rural
   _____ Other (specify)
   _____

5. a. How many employees use your business' vehicles in their regular work?

   _____
   (No. of employees)

   b. How many employees are allowed to use these business vehicles for commuting from home to work?

   _____
   (No. of employees)

   c. Are these employees charged for such vehicle use?

   ☐ Yes
   ☐ No

   d. How many such vehicles are considered available for "pooling" rides to work by other employees?

   _____
   (No. of vehicles)

(F) Floor Space Profile

(This section is very important for measuring the relationship of floor space to parking and transit demands.)

1. How many square feet* of floor space does your firm occupy?

Retail sales or service	_____	sq. ft.*
Wholesale sales or services	_____	sq. ft.*
Office	_____	sq. ft.*
Production or maintenance	_____	sq. ft.*
Storage	_____	sq. ft.*
Miscellaneous (see note)	_____	sq. ft.*
Total building area	_____	sq. ft.

*Note: floor space is defined here as net area of the building, excluding hallways, restrooms, wall thickness, etc. Such additional spaces, if known, can be entered above in the category "miscellaneous."

2. Open (outdoor) storage area _____ sq. ft.

3. How much land area does your firm occupy?

_____ sq. ft. or _____ acres Total site

G Work hours and Scheduling

1. What are your regular office/business hours? (i.e.: when is your business open to the public?)

Mon _____ to _____
Tues _____ to _____
Wed _____ to _____
Thur _____ to _____
Fri _____ to _____
Sat _____ to _____
Sun _____ to _____

2. Please enter the number of employees arriving and leaving your firm/agency on weekdays during each period (not including leaves for lunch breaks):

Morning/ Afternoon	Number of Employees Arrive	Leave	Afternoon/ Evening	Number of Employees Arrive	Leave
5:30 – 6:00 a.m.			1:30 – 2:00 p.m.		
6:00 – 6:30 a.m.			2:00 – 2:30 p.m.		
6:30 – 6:45 a.m.			2:30 – 2:45 p.m.		
6:45 – 7:00 a.m.			2:45 – 3:00 p.m.		
7:00 – 7:15 a.m.			3:00 – 3:15 p.m.		
7:15 – 7:30 a.m.			3:15 – 3:30 p.m.		
7:30 – 7:45 a.m.			3:30 – 3:45 p.m.		
7:45 – 8:00 a.m.			3:45 – 4:00 p.m.		
8:00 – 8:15 a.m.			4:00 – 4:15 p.m.		
8:15 – 8:30 a.m.			4:15 – 4:30 p.m.		
8:30 – 8:45 a.m.			4:30 – 4:45 p.m.		
8:45 – 9:00 a.m.			4:45 – 5:00 p.m.		
9:00 – 9:15 a.m.			5:00 – 5:15 p.m.		
9:15 – 9:30 a.m.			5:15 – 5:30 p.m.		
9:30 – 10:00 a.m.			5:30 – 5:45 p.m.		
10:00 – 10:30 a.m.			5:45 – 6:00 p.m.		
10:30 – 11:00 a.m.			6:00 – 6:15 p.m.		
11:00 – 12:30 p.m.			6:15 – 6:30 p.m.		
12:30 – 1:00 p.m.			6:30 – 9:00 p.m.		
1:00 – 1:30 p.m.			9:00 – 12:00 a.m.		
			Midnight to 5:30 a.m.		

3. Would you be willing to *alter* the above start/stop times for any of the following reasons?

a. to give employees better access to transit?

☐ Yes – By how much would you alter times?
☐ No

☐ 0 – 5 min.
☐ 5 – 10 min.
☐ 10 – 15 min.
☐ 15 – 20 min.
☐ 20 – 30 min.

b. to facilitate better traffic flow during peak periods?

☐ Yes – By how much would you alter times?
☐ No

☐ 0 – 5 min.
☐ 5 – 10 min.
☐ 10 – 15 min.
☐ 15 – 20 min.
☐ 20 – 30 min.

c. to fit a special transit service provided to your location?

☐ Yes – By how much would you alter times?
☐ No

☐ 0 – 5 min.
☐ 5 – 10 min.
☐ 10 – 15 min.
☐ 15 – 20 min.
☐ 20 – 30 min.

d. to give employees better access to car pools?

☐ Yes – By how much would you alter times?
☐ No

☐ 0 – 5 min.
☐ 5 – 10 min.
☐ 10 – 15 min.
☐ 15 – 20 min.
☐ 20 – 30 min.

H Community Services

1. Do you provide any special community services?

The Regional Planning Commission is assembling a directory of services available to the people of Johnson County and we would like to include a wide range of services. The kinds of things we are including in the directory are meeting rooms or other facilities available for public use, free services of any kind, service projects and generally any cultural, recreational, medical or educational activity open to the public.

☐ Yes
☐ No

If yes, please specify: _____

_____

_____

_____

2. Please indicate by the code letter which of the following benefits or services you provide or are interested in providing:

P = Provide now I = Interested in providing

For employees:

P ☐	I ☐	Child Care
P ☐	I ☐	On-the-job training
P ☐	I ☐	Off-the-job training (education)
P ☐	I ☐	Food service
P ☐	I ☐	Transportation
P ☐	I ☐	Other (specify) _____

For clients:

P ☐	I ☐	Child Care
P ☐	I ☐	Transportation
P ☐	I ☐	Other (specify) _____

I Additional information or comments concerning the survey.

_____

_____

_____

_____

_____

_____

_____

_____

EMPLOYER SURVEY

PURPOSE: The purpose of this survey is to gather information which will help in the planning and development of transportation services including streets, mass transit, and car pool programs. To have meaningful plans, it is essential that all local employers have their activities and needs considered in the plan development. Therefore, please complete this questionnaire as fully as possible, and return it promptly. Thank you for taking the time to assist our areawide transportation planning program.

PLEASE: Direct this questionnaire to the most appropriate person or persons in your department who can provide the necessary information.

A. Employer Profile

Date _____

PLEASE CHECK THE ADDRESS DATA AND CORRECT IT IF NECESSARY.

B. Employee Profile

1. Categories of employees as of May 1, 1974:

STAFF	Full Time	Part Time*
Professional	_____	_____
Managers & Administrators	_____	_____
Sales Workers	_____	_____
Clerical Workers	_____	_____
Craftspersons	_____	_____
Laborers	_____	_____
Service & Custodial Workers	_____	_____

*Part-time is defined here as less than 30 hours per week.

FACULTY

	Full Time	Part Time
Dean	_____	_____
Department Head	_____	_____
Chairman	_____	_____
Professor	_____	_____
Associate Professor	_____	_____
Assistant Professor	_____	_____
Instructor	_____	_____
Teaching Assistant	_____	_____
Research Assistant	_____	_____

2. Location of employees' residences:

_____ Iowa City-Coralville
_____ Cedar Rapids-Marion
_____ Hills
_____ Kalona
_____ Lone Tree
_____ North Liberty
_____ Oxford
_____ Riverside
_____ Solon
_____ Swisher-Shueyville
_____ Tiffin
_____ Wellman
_____ West Branch
_____ West Liberty
_____ Williamsburg
_____ Rural Johnson County
_____ All Others

Please enter approximate number of employees in each group above.

C. Transit Usage

1. Approximately how many of your employees now use a form of mass transit to get to and from work? _____

2. Which of the following do you do concerning mass transit use by your employees for their journey to and from work?

_____ Provide maps and schedules
_____ Allow flexible start times
_____ Verbally encourage use
_____ Do not actively encourage
_____ Discourage it

3. If you do provide your employees with transit information, how often do you provide it?

_____ When a new employee is hired
_____ At regular intervals, approximately _____ (daily/weekly/monthly)
_____ All the time (bulletin boards, etc.)
_____ Do not provide transit information

4. If you do not now distribute or display transit information, would you be willing to? _____yes _____no

5. Would you be willing to consider participating in a mass transit promotion program for your employees? _____yes _____no

6. For which of the following reasons would you be willing to urge participation in mass transit promotion for University employees?

_____ To cut down on your parking needs
_____ For a greater on-time reliability
_____ As a community service
_____ As an employee fringe benefit
_____ Other (specify) _____

7. Would you be interested in developing (or revising) transit routes or schedules which might result in better service to your department and other departments near yours?

_____ yes
_____ no

D. Work Hours and Scheduling

1. What are your regular office/business hours? (i.e., when is your office open to the public?)

Mon _____ to _____
Tues _____ to _____
Wed _____ to _____
Thurs _____ to _____
Fri _____ to _____
Sat _____ to _____
Sun _____ to _____

2. Please enter the number of employees arriving and leaving your firm/agency on weekdays during each period (not including leaves for lunch breaks):

Morning/ Afternoon	Number of Employees Arrive	Leave	Afternoon/ Evening	Number of Employees Arrive	Leave
5:30-6:00 am	____	____	1:30-2:00 pm	____	____
6:00-6:30 am	____	____	2:00-2:30 pm	____	____
6:30-6:45 am	____	____	2:30-2:45 pm	____	____
6:45-7:00 am	____	____	2:45-3:00 pm	____	____
7:00-7:15 am	____	____	3:00-3:15 pm	____	____
7:15-7:30 am	____	____	3:15-3:30 pm	____	____
7:30-7:45 am	____	____	3:30-3:45 pm	____	____
7:45-8:00 am	____	____	3:45-4:00 pm	____	____
8:00-8:15 am	____	____	4:00-4:15 pm	____	____
8:15-8:30 am	____	____	4:15-4:30 pm	____	____
8:30-8:45 am	____	____	4:30-4:45 pm	____	____
8:45-9:00 am	____	____	4:45-5:00 pm	____	____
9:00-9:15 am	____	____	5:00-5:15 pm	____	____
9:15-9:30 am	____	____	5:15-5:30 pm	____	____
9:30-10:00 am	____	____	5:30-5:45 pm	____	____
10:00-10:30 am	____	____	5:45-6:00 pm	____	____
10:30-11:00 am	____	____	6:00-6:15 pm	____	____
11:00-12:30 pm	____	____	6:15-6:30 pm	____	____
12:30-1:00 pm	____	____	6:30-9:00 pm	____	____
1:00-1:30 pm	____	____	9:00-12:00 am	____	____
			Midnight to 5:30 am	____	____

3. Would you be willing to alter the above start/stop times for any of the following reasons?

   a. to give employees better access to transit?

   ____ Yes-By how much would you alter times?

   ___ 0-5 min.
   ___ 5-10 min.
   ___ 10-15 min.
   ___ 15-20 min.
   ___ 20-30 min.

   ____ No

b. to facilitate better traffic flow during peak periods?

____ Yes-By how much would you alter times?

___ 0-5 min.
___ 5-10 min.
___ 10-15 min.
___ 15-20 min.
___ 20-30 min.

____ No

c. to fit a special transit service provided to your location?

____ Yes-By how much would you alter times?

___ 0-5 min.
___ 5-10 min.
___ 10-15 min.
___ 15-20 min.
___ 20-30 min.

____ No

d. to give employees better access to car pools?

____ Yes

___ 0-5 min.
___ 5-10 min.
___ 10-15 min.
___ 15-20 min.
___ 20-30 min.

____ No

E. Community Services

1. Do you provide any special community services?

The Regional Planning Commission is assembling a directory of services available to the people of Johnson County and we would like to include a wide range of services. The kinds of things we are including in the directory are meeting rooms or other facilities available for public use, free services of any kind, service projects and generally any cultural, recreational, medical or educational activity open to the public.

_____ Yes
_____ No

If yes, please specify: _____

_____

_____

2. Please indicate by the code letter which of the following benefits or services you provide or are interested in providing:

P = provide now; I = Interested in providing

For employees:

P___ I___ Child Care

P___ I___ On-the-job training

P___ I___ Off-the-job training (education)

P___ I___ Food service

P___ I___ Transportation

P___ I___ Other (specify) _____

For clients:

P___ I___ Child Care

P___ I___ Transportation

P___ I___ Other (specify) _____

F. Additional information or comments concerning the survey.

APPENDIX C: Select Comments From Respondent Employers

APPENDIX C

SELECTED
COMMENTS OF EMPLOYERS ON SURVEY AND
COMMUNITY TRANSPORTATION ISSUES

Central Business District Employers

1. Business Services Office # Employees 21

Aside from our clerical help, the employees need their cars during the day to travel from our office to the clients' offices. It is often necessary to go to most areas of the city during any one day.

2. Wholesaler # Employees 14

In this area we employ few people and their duties are so varied that we provide our own transportation. We, however, encourage car pools and the use of mass transportation for people employed in regular hours at offices or stores for the conservation of gasoline and other fuels.

3. Bar # Employees 54

It would help to move traffic if someone would stop screwing up streets such as S. Dubuque St. with island jutting out into the street. This is sheer foolishness and as a taxpayer I resent it.

4. Public Agency # Employees 31

Seems more directed to a commercial business than a public agency.

General Urban Area Access

5. Public Utility # Employees 90

Our work hours were established for most efficient scheduling. Major deviations from established schedules would present problems. It would appear this survey was designed for a large metropolitan area rather than Iowa City.

6. Wholesaler # Employees 24

Business is not directly related to public. Would possibly be willing to alter start/stop times if agreement with union okayed and if permission granted from national office.

7. Construction # Employees 20

Potential clientele not of commuter-type . . . requires individual mode of transportation for both personnel and clientele. Personnel do some car-pooling on own, but on single day, flexible basis because of changing work sites.

8. Construction # Employees 73

This survey is not related to our business as most of our employees do not come to our office, but go directly to job sites spread all over the city. Therefore, mass transit is only applicable insofar as it allows our individual employee to get to work.

9. Engineering Firm # Employees 14

Nearly all employees of our organization must be extremely flexible in regard to transportation--we often work odd hours and are often required to go to Timbucto on a moments notice, often in personal vehicles.

10. Auto Service # Employees 17

The nature of our business requires the customer's car; therefore, a "ride and shop" plan is of no use to us. Also, we need a full crew when we open, so staggering hours would not work for us. We feel that most of the questions asked in this questionnaire should apply to the downtown stores rather than outlying ones.

11. Trucking Firm # Employees 12

We agree in principle with mass transit, but each of our workers arrives at various times depending on their day to day schedule. These times are generally during hours not included in mass transit schedules.

12. Retail # Employees 3

Transit questions were difficult to answer due to the lack of bus service on S. Riverside Drive. If a bus stop is needed, my front parking lot may be used. It has a drive opening to both enter and leave by easily.

13. Nursing Service # Employees 11

While our present transportation system is expensive (we pay employees for using their car), the time loss in using transit system for in city visits would be even more expensive.

14. Retail # Employees 18

Bus service seems to pass the Wardway Plaza. It stops at every shopping center in town but this one. I must drive four miles and the bus comes to my front door at North Dubuque, but will not come to this end of town. A lot of tax money is coming from this shopping center, more than from the doctors on Gilbert Street. If the Wardway dies, the city will lose a lot of revenue ($10,000/year).

15. Transit Company # Employees 12

This is a really dumb survey to send to a transit company. Most of it is either irrelevent or ambiguous. However, I appreciate your allowing me to take a look at this survey.

Highway Access

16. Construction # Employees 24

Because of the nature of our work, in and especially out of town, mass transportation and car pooling are difficult except on out of town job when we arrange for car pools. Working hours vary greatly from day to day.

17. Manufacturer # Employees 71

Mass transit would not be feasible at this time because of our location and because many of our employees commute from other towns.

18. Auto Dealer # Employees 23

We would wish to cooperate with any community transit planning program.

19. Auto Dealer # Employees 17

Transit systems because of our business are not an asset. We have to be open when people want to see us.

20. Restaurant # Employees 29

I do not have the authority to pledge company funds for transportation.

University Campus

21. Hospital Department # Employees 95

The major problem is lack of sufficient access roads to hospital for patients, visitors, and medical staff. Present traffic pattern is most confusing to patients. Not enough Cambus to and from Hancher before 8:00 a.m. and after 5:00 p.m. for employees.

22. Hospital Department # Employees 1,496

As a community and state-wide patient care institution, University Hospitals and Clinics is unique within the University of Iowa in its requirements for adequate access roadways and parking for its patients and visitors. Mass transit and car pool programs are a totally

inadequate mode of transportation for our clients--these patients and visitors. Furthermore, because of the twenty-four hour, seven day a week, 365 days a year patient service character of this institution, faculty and staff would require a concomitant twenty-four hour, seven day a week public mass transit system if substantial reliance were to be placed upon such system by the employees of this institution.

23. Physical Education Department (Women's) # Employees 6

Our schedules are very irregular, most work late. The city streets are too poorly lighted for walking any further than necessary and the entire group is women, not electing to walk in the dark before and after riding a bus at night.

24. Housekeeping Department # Employees 203

There is little variation available for altering start/stop times due to hospital patient and staff requirements that can be done to alter hours of work but would be willing to evaluate possible changes.

25. Academic Department # Employees 52

The majority of persons employed in this department walk or bike, or use public transportation.

26. Student Health # Employees 26

It is necessary to have definite hours because we are open to the student body during specific hours.

27. Testing # Employees 31

The questionnaire is not well suited to university departments which are not free to vary procedures from campus-wide norms.

28. Academic Department # Employees 36

Mass transit will not:
a. Pick up groceries and do errands and get kids
b. Carry packages to UPS or post office
c. Deliver people to several places in a short time
d. Deliver goods to several places in a short time
e. Take people to a business lunch at the Athletic Club or Highlander
f. Get you home without many delays and a long ride
g. Let you get home for noon lunch and rest

Other points:
a. Iowa City's best transit system would probably only attract 1/3 of the populace on a "sometimes" basis. (Bad weather and non-drivers)
b. Visitors to Iowa City are carried here by car and they probably would not learn the bus system in a 1-3 day stay, or probably would not try it.

c. Small battery run cars which would go 25 miles per day and carry 1-4 people would seem to help pollution and energy problems.
d. How about open moving transport such as the Disney World type.
e. Make survey and ask each individual in Iowa City what mass transit system he would use, how often and under what conditions.
f. Measure the present cambus emissions daily and relate it to a thousand cars emissions daily.

29. Extension Division # Employees 15

Be sure to include bicycles in your planning--bikeways, lanes, signals.

NOTES

1. Iowa City: Origin and Destination Traffic Report, March, 1965; Prepared by the Iowa State Highway Commission.

2. "Financial Analysis of Proposed College Street Parking Ramp," October 1, 1971; Prepared for the City of Iowa City, Iowa, by Barton-Aschman Associates, Inc.

3. Metropolitan Transit Systems: Data Analysis and Progress Report, August, 1972; Johnson County Regional Planning Commission.

4. Final Report: Transit Development Program for the Iowa City-Coralville Urban Area, December, 1974; Prepared by Kenneth J. Dueker and Brent O. Bair, Institute of Urban and Regional Research,for the Johnson County Regional Planning Commission.

5. 1974 Special U. S. Census of Population: Iowa City, Coralville, and University Heights.

6. Source: Iowa Employment Security Commission, August, 1974 Johnson County Employment.

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