

ECONOMIC IMPACTS of COTA on CENTRAL OHIO

PREPARED BY

THE MID-OHIO REGIONAL PLANNING COMMISSION

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Economic Impacts of COTA on Central Ohio

Prepared By

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T A B L E O F C O N T E N T S

Executive Summary.....3

Introduction.....5

Methodology.....6

Economic Benefits of COTA.....8

 COTA Ridership.....8

 Purpose of Trip.....11

Transit Dependent Versus Riders by Choice.....12

 Ridership.....12

 Purpose of Trip.....15

Effects on Riders.....16

Community Benefits.....22

 Introduction.....22

 Air Quality.....22

 Energy Conservation.....23

 Reduced Accidents & Casualty Loss.....23

 Reduction in Parking and Highway Maintenance.....27

 Congestion.....30

 Employment.....30

 Special Services.....30

 Other Services.....32

 Social Benefits.....32

 Return on Public Investment.....33

Bibliography.....36

Appendix I

Appendix II

Appendix III

Appendix IV

LIST OF TABLES

Table 1	Ridership of COTA by Selected Demographic Characteristics in Percents
Table 2	COTA Ridership compared to the General Population
Table 3	Gender of COTA Patrons
Table 4	Estimated Number of Annual One-Way Trips Taken on COTA for Each Trip Purpose
Table 5	Type of COTA Service compared to Transit Dependent and Choice Riders
Table 6	Ridership of Transit Dependent Riders by Selected Demographic Characteristics in Percents
Table 7	Ridership of Choice Riders by Selected Demographic Characteristics in Percents
Table 8	Estimated Number of Annual One-Way Trips Taken on COTA by Trip Purpose for Transit Dependent and Riders by Choice
Tables 9, 10 and 11	Distribution and Cost of Trips by Purpose for Alternative Trip Modes of Travel
Tables 12 and 14	Distribution and Cost of Trips by Purpose for Alternative Trip Modes of Travel
Table 13	Annual COTA Trips That Would Not be Made by Purpose
Table 15	Value of COTA Air Quality Improvements
Table 16	Annual Energy Conservation Savings
Table 17	Annual Value of Accident Reduction
Table 18	Annual Road Maintenance Savings
Table 19	Project Mainstream Trip Purpose for Reservation and Subscription Trip per Average Weekday
Table 20	Cost/Benefit Ratio using 1986 Figures

EXECUTIVE SUMMARY

The main purpose of this study was to find the overall impact of the Central Ohio Transit Authority on the local economy. The major findings are as follows:

COTA RIDERSHIP

According to 1986 ridership figures, there are about 24 million trips taken on COTA annually; 90,000 trips are made each day (about 35,000 different individuals). Most COTA patrons (87%) use local service compared to express and crosstown services. More than half of all trips are taken for work purposes.

Approximately 16,800 transit dependent patrons have the availability of transportation because of COTA. Of the transit dependent riders, 50 percent were able to use COTA for work trips. An estimated 18,200 patrons are riders by choice. Seventy percent of these riders chose COTA to make their work trips. Riders by choice tend to have higher incomes, work full-time and ride the bus more than 5 times a week. Dependent riders generally earn less, and work less full-time and more part-time than choice riders. There are approximately 8,400 individuals that rely on COTA and have no other means of transportation for work trips.

EFFECTS ON RIDERS

If COTA no longer existed, serious impacts would be realized within the community. Convenience and flexibility would be lost if COTA were no longer operating. Transportation expenditures would increase significantly compared to riding the bus. Spending on food, clothing, appliances, and personal items would be reduced due to increased transportation cost, or loss of employment. The downtown area would suffer the most, since over half of all purchases by COTA riders are made there. Higher transportation costs would have a negative effect on medical and educational purposes. COTA patrons could not improve job skills, therefore, not be able to obtain a new job, or advance at an existing job. Medical treatment may be put off if there were no transportation available.

The most serious setback for those who rely on COTA would be the loss of a job or having to take a pay cut in order to find a job within walking distance. Not only would there be a strain on the unemployment compensation, but welfare and other social services would have an extra burden.

COMMUNITY BENEFITS

Benefits to the community include: improved air quality and more energy conservation, a reduction in auto accidents and casualty losses, as well as a reduction in parking demands and highway maintenance. Reduced congestion, employment opportunities, and special services that are offered

by COTA are other important benefits to the community. Overall, COTA acts as a facilitator for transportation and commerce in the Franklin County area.

RETURN ON PUBLIC INVESTMENT

Costs included COTA's annual operating expenses for 1986 and the multiplier effect of the half cent sales tax was divided by 9 years.

Benefits include: the possible loss of wages and multiplier of COTA patrons who rely on COTA for work trips, multiplier of COTA's payroll, travel cost savings, savings from reduced accident and casualty loss, savings from reduced air pollution, highway maintenance savings, unemployment compensation savings.

BENEFITS

Wages and Multiplier	\$136,200,000
Multiplier of COTA Payroll	28,912,786
Travel Cost Savings	7,320,140
Accident, Casualty Savings	1,770,976
Air Quality Savings	438,112
Highway Maintenance Savings	352,675
Unemployment Compensation Savings	<u>17,035,200</u>
Total Benefits	\$192,029,889

COSTS

COTA Operating	\$41,598,688
Half Cent Sales Tax and Multiplier	<u>23,706,200</u>
Total Costs	\$65,004,900
COST/BENEFIT RATIO	1:\$2.95

The cost/benefit ratio for COTA shows that for every \$1.00 spent for public transit, there are economic benefits of \$2.95 to the region.

Based on COTA's 1988 fiscal budget and projected operating statistics, the 1988 cost/benefit ratio is projected to be 1:\$3.01.

COTA Economic Study

INTRODUCTION

Overview of COTA

The Central Ohio Transit Authority (COTA) is the major public transportation provider for Franklin County, Ohio. COTA complements greater Columbus' strong and growing economy that exists today. COTA has enhanced the downtown and other outlying areas by providing transportation for many people in Columbus with local, crosstown, and express service to most of Franklin County. Transportation for persons who are transportation handicapped is provided under contract to a private operator.

COTA currently operates 63 routes in its system with a total of 343 buses. COTA carried over 24 million passengers in 1986. Average weekday ridership is just under 90,000 persons a day. It is estimated that there are 35,000 individuals riding COTA each day.

COTA's service is utilized by choice riders. People who live in the outlying areas use COTA's express services for work trips downtown. Inner city residents also use COTA to get to outlying areas for work, shopping and other purposes.

COTA's contributions to the Columbus area economy are significant. Public transportation has been provided to the poor, elderly, young and handicapped people who have no other viable means of transportation.

METHODOLOGY

This study serves two main purposes: first, it assesses and quantifies the benefits of COTA to the central Ohio economy; second, it demonstrates the positive return on investment in quality transportation.

Study intentions are to determine what impact, economic and otherwise, COTA has on the region. This study investigates the effect on riders and non-riders if COTA were not available to the community. Transit dependent versus choice riders will be examined in terms of ridership and impacts on the economy.

Two planning methods were used in the study. The methodologies were chosen to illustrate the impact COTA has on central Ohio's economy. A map of COTA's service area can be seen in Appendix I.

The first method was an on-board survey conducted by MORPC. This questionnaire of 14 questions sought information on how often COTA was used, purpose and amount spent on trip, how else the trip would have been made, and general demographic information. A sample of the survey and responses can be seen in Appendix II. Responses in Appendix II include: all responses; transit dependent; and choice riders. Out of 824 completed surveys there were 810 valid responses, making 98 percent of the surveys valid. Accuracy at the sample size varies by data item. The lowest number of responses received was on the income variable.

The accuracy of the income variable was found to be .94 based on the standard error of the mean. Thus, all data items are accurate to a minimum of 94 percent, based on the sample size.

The survey was administered during June 1987 aboard COTA buses by MORPC staff. All able persons aboard the bus were asked to respond to the survey. A random sample of routes with significant ridership were selected. Buses were surveyed throughout the day in order to ensure representatives of ridership. Due to lower ridership on the weekends compared to weekdays, surveys were not administered.

Route types were selected to parallel COTA's route distribution. Percentage of routed types for COTA and the survey were as follows:

<u>Service Type</u>	<u>COTA</u>	<u>Survey</u>
Local	87	80
Express	7	11
Crosstown	6	9

The number of passengers that completed the on-board survey is listed below:

Bus Route Number -----	Number of Responses -----	Percent -----
1	108	13.3
2	117	14.4
3	15	1.9
4	114	14.1
5	24	3.0
6	39	4.8
7	39	4.8
8	29	3.6
9	31	3.8
10	80	9.9
11	14	1.7
16	25	3.1
18	17	2.1
35	37	4.6
45	17	2.1
46	11	1.4
61	24	3.0
83	28	3.5
88	8	1.0
89	23	2.8
96	10	1.2
	---	-----
	810	100.0
	===	=====

Source: On-Board Survey

A second method was the use of COTA's 1986 annual report. The 1986 Annual report had the latest complete set of audited operating statistics. This information was used to calculate revenue inputs and outputs. Two sources of input revenues were (1) revenue from operating systems and (2) tax revenues. Output costs were: operation of system, and existence or fixed costs. A detailed analysis of this information is in the summary where cost/benefits are examined.

Federal Highway Administration (FHWA) data was used for calculations of distances traveled. Census data was used for average vehicle occupancy. AAA and the Department of Energy operating figures were also used for estimating expenditures.

ECONOMIC BENEFITS OF COTA

COTA Ridership

In 1986, over 24 million riders were served by COTA. Throughout the year 90,198 average weekday passengers made COTA trips. Of these riders, 53 percent made trips during the peak hours (6:00 a.m. - 9:00 a.m. and 3:00 p.m. - 6:00 p.m.) and 47 percent made trips during off peak hours. Average Saturday passengers was 40,612, and average Sunday passengers was 12,351.

Data in Table 1 describes the demographic characteristics of COTA riders. Of those who ride, 61 percent use COTA five or more days a week, 16 percent ride three to four days a week, 9 percent ride one to two days per week, 7 percent ride two to three times a month, and 7 percent ride less than once a month.

Ridership patterns are affected by several demographic factors such as income, age, and gender. Seventy percent of those who ride COTA are individuals with incomes of less than \$14,999, 57 percent of these patrons ride 5-7 days a week compared to 6 percent that only ride less than monthly. The other income groups of \$15,000 and above account for 30 percent of all riders of which 71 percent ride 5-7 days a week and only 8 percent ride less than monthly. In other words, 66 percent of the 5-7 day a week patrons have an annual income of \$14,999 or less, compared to 34 percent of those patrons that earn \$15,000 or more.

COTA ridership is the strongest in the 18 to 34 age groups with 52 percent of total ridership and 60 percent of this group riding 5-7 days a week. When comparing COTA's ridership and Columbus' general population by age, the following assumptions can be made:

1. COTA ridership closely relates to the general population for all but the 18 and under, and 18-34 age groups.
2. The 18 and under age group COTA ridership is 16.82 percent less than the general population.
3. However, COTA's ridership for the 18-34 age group is 20 percent higher than the general population.

Further analysis shows that COTA's ridership for the 18-24 age group is 19.3 percent higher than the general population's age distribution. (see Table 2) Most people (54.7 percent) have been riding COTA for over 5 years. Furthermore, 39 percent rely on COTA for their transportation needs, and 48 percent would not be able to make the trip without COTA.

Table 2

Age of COTA Patrons Compared to the General Population

Age	COTA	ODUC
Under 18	12%	28.82%
*18-34	52%	31.92%
35-44	13%	12.90%
45-54	9%	8.84%
55-64	7%	8.55%
65+	6%	8.86%

*Breakdown

18-24	30%	10.68%
25-34	22%	21.24%

Source: On-Board Survey and Ohio Data Users Center

Gender does not affect ridership, but more than half (58 percent) of COTA riders are women, compared to the general population of 52% women. Of the females that ride, 35.8 percent ride 5-7 days a week compared to 25 percent of the men. (see Table 3)

Table 3

Gender of COTA Patrons Compared to the General Population

Gender	COTA	ODUC
M	42%	48.11%
F	58%	51.88%

Source: On-Board Survey and Ohio Data Users Center

Most COTA patrons have either full or part-time employment. Fifty-three percent of all COTA patrons work full time and 23 percent work part-time. About 19 percent of all COTA riders are unemployed and 5 percent are retired. Most COTA patrons (38 percent) work full time and ride the bus 5-7 days per week.

Table 1

RIDERSHIP OF COTA BY SELECTED DEMOGRAPHIC
CHARACTERISTICS IN PERCENTS

	+ 5 Days/ Week	3-4 Days/ Week	1-2 Days/ Week	2-3 Days/ Month	Less Than Monthly
Total Sample	61	16	9	7	7
Family Income -----					
\$ 0-10,000	23.6	8.4	3.8	3.7	2.1
\$10-14,999	16.7	4.7	3.0	2.3	2.0
\$15-19,999	9.7	1.5	0.3	0.5	1.1
\$20-24,999	5.5	1.2	0	0	0.8
\$25-29,999	3.0	0.6	0.2	0.3	0.3
\$30-34,999	1.8	0.2	0.2	0.5	0
\$35-39,999	0.2	0.3	0	0	0.2
\$40,000 +	0.8	0.6	0	0	0.2
Age ----					
Under 18	5.9	1.8	2.3	1.3	1.2
18-24	18.0	5.4	2.6	1.9	2.4
25-34	13.8	4.8	1.4	1.2	1.4
35-44	9.4	1.7	0.4	1.3	0.4
45-54	5.8	1.4	0.6	0.6	0.5
55-64	5.3	0.5	0.1	0.4	0.6
Over 65	2.3	1.0	1.3	0.5	0.5
Gender -----					
Male	25.0	6.9	4.1	2.7	3.2
Female	35.7	9.6	4.5	4.5	3.8
Employment -----					
Full-Time	38.1	7.2	2.1	2.7	3.1
Part-Time	13.2	3.8	2.7	1.6	1.4
Unemployed	7.5	4.3	3.0	2.1	2.0
Retired	2.1	1.0	0.8	0.7	0.5

Source: On Board Survey

Purpose of Trip

COTA provides transportation for a variety of reasons. As shown on Table 2, data from the on-board survey indicates the primary purpose of 14,736,000 of these trips was for work, while the remaining trips were for all other purposes. Table 4 also shows the percentages of each type of trip taken on COTA. The figures below reflect primary trip purposes only.

Table 4

ESTIMATED NUMBER OF ANNUAL ONE-WAY TRIPS TAKEN
ON COTA FOR EACH TRIP PURPOSE

Type -----	Number of Trips -----	Percent of Total -----
Work	14,736,000	61.4
Shopping	1,680,000	7.0
Medical	1,488,000	6.2
School	1,872,000	7.8
Personal Business	1,584,000	6.6
Social	1,128,000	4.7
Recreation	408,000	1.7
Other	1,104,000	4.6
	-----	-----
TOTAL	24,000,000 =====	100.0 =====

Source: On Board Survey

Ridership statistics and other data from the on-board survey, reflect the number of annual one-way trips for each trip purpose on COTA. It has been estimated that 61 percent of riders use COTA primarily for work trips. About 8 percent of all trips are for school, and 7 percent of all COTA trips are for personal business and shopping trips. Six percent are for medical trips. Social and other type trips make up 5 percent, and 2 percent of all trips are for recreational purposes.

Transit Dependent versus Riders by Choice

Ridership

Transit dependent riders defined by MORPC are those riders who are not able to make the trip without COTA. Approximately 11,520,000 million trips are taken by captive riders per year. (48 percent of all COTA ridership) These people rely on COTA for the majority of their transportation needs. Out of all COTA riders 43,200 transit dependent trips are completed each day. About 16,800 captive riders use COTA services each day.

Riders by choice were defined by those persons who have alternative means of transportation in order to make their trip. The total number of non-captive riders is about 12,480,000 million trips or 52 percent of all COTA trips.

Table 5 indicates that most of the transit dependent riders live within the City of Columbus and not in the outlying areas where service is mostly of the express type. More transit dependents use crosstown service than riders by choice (7 percent). It would appear that riders by choice use transit that is more direct and less time consuming than transit dependent riders who have to use transit.

Table 5

	Transit Dependent	Choice	Total
Local	85%	76%	79%
Express	4%	18%	12%
Crosstown	11%	6%	9%
	<u>100</u>	<u>100</u>	<u>100</u>

Demographic differences between transit dependent and riders by choice can be seen on Tables 6 and 7. It appears that transit dependent riders tend to have lower incomes than riders by choice. More riders by choice than transit dependent are employed full-time, which is reflected in their higher incomes. More women are transit dependents than men compared to the even gender distribution of riders by choice.

Table 6

RIDERSHIP OF TRANSIT DEPENDENT RIDERS BY SELECTED
DEMOGRAPHIC CHARACTERISTICS IN PERCENTS

	+ 5 Days Week -----	3-4 Days Week -----	1-2 Days Week -----	2-3 Days Month -----	Less Than Monthly -----
Percent of Total Ridership	58.7	17.2	10.7	8.4	5.0
Family Income -----					
\$0-9,999	30.4	11.2	4.6	5.3	1.7
\$10-14,999	17.8	4.3	4.0	1.7	1.7
\$15-19,999	6.3	2.0	0.3	0.3	0.7
\$20-24,999	2.3	0.3	0	0	0.7
\$25-29,999	2.3	0	0	0.3	0.0
\$30-39,999	0.3	0	0	0.3	0
\$40,000 +	0.3	0.7	0	0	0.3
Age ---					
Under 18	8.6	2.2	2.4	1.9	1.1
18-24	18.6	4.6	2.7	2.2	2.4
25-34	10.8	5.7	1.9	0.8	0.5
35-44	8.9	1.6	0.3	1.6	0.3
45-54	4.6	1.4	0.8	0.5	0.5
55-64	3.8	0.3	0	0.5	0
Over 65	3.2	1.9	2.2	0.8	0.3
Gender -----					
Male	22.0	6.5	3.5	1.9	3.0
Female	36.7	11.1	6.5	6.5	2.2
Employment -----					
Full-Time	29.8	4.5	1.4	2.8	1.9
Part-Time	16.2	4.2	3.3	1.7	1.4
Unemployed	9.7	7.2	4.5	2.8	1.4
Retired	2.8	1.7	1.4	1.1	0.3

Source: On Board Survey

Table 7

RIDERSHIP OF CHOICE RIDERS BY SELECTED
DEMOGRAPHIC CHARACTERISTICS IN PERCENT

	+ 5 Days Week -----	3-4 Days Week -----	1-2 Days Week -----	2-3 Days Month -----	Less Than Monthly -----
Percent of Total Ridership	62.9	15.0	7.0	6.1	9.0
Family Income -----					
\$0-9,999	16.9	5.8	3.2	2.3	2.6
\$10-14,999	16.0	4.7	2.0	2.9	2.3
\$15-19,999	12.8	1.2	0.3	0.6	1.5
\$20-24,999	8.5	2.0	0	0	0.9
\$25-29,999	3.8	1.2	0.3	0.3	0.6
\$30-34,999	3.2	0.3	0.3	0.6	0
\$35-39,999	0.3	0.6	0	0	0.3
\$40,000 +	1.2	0.6	0	0	0
Age ----					
Under 18	3.5	1.5	2.3	0.8	1.3
18-24	16.9	6.3	2.5	1.8	2.5
25-34	16.4	3.8	1.0	1.5	2.3
35-44	10.1	1.5	0.5	1.0	0.5
45-54	7.1	1.5	0.3	0.8	0.5
55-64	6.3	0.8	0.3	0.3	1.3
Over 65	1.5	0	0.5	0.3	0.8
Gender -----					
Male	27.9	7.0	4.5	3.5	3.5
Female	34.4	8.2	2.7	2.7	5.5
Employment -----					
Full-Time	45.8	9.7	2.5	2.8	4.3
Part-Time	10.2	3.3	2.3	1.5	1.5
Unemployed	5.3	1.8	1.8	1.5	2.5
Retired	1.5	0.3	0.3	0.3	0.8

Source: On Board Survey

Purpose of Trip

Transit dependent and riders by choice use COTA for all types of purposes. Most (70 percent) of the choice and dependent (50 percent) riders use COTA for work trips. As shown on Table 8 more dependent riders use COTA for shopping, medical, school, and social trips. It can be assumed that dependent riders need to use the bus for those purposes other than work.

Table 8

ESTIMATED NUMBER OF ANNUAL ONE-WAY TRIPS TAKEN ON COTA BY TRIP PURPOSE FOR TRANSIT DEPENDENT AND RIDERS BY CHOICE

Type	-Transit Dependent--		--Riders by Choice--	
	Number	%	Number	%
Work	5,760,000	50	8,736,000	70
Shopping	1,267,200	11	499,200	4
Medical	1,036,800	9	499,200	4
School	1,152,000	10	748,800	6
Personal Business	806,400	7	748,800	6
Social	806,400	7	374,400	3
Recreational	115,200	1	374,400	3
Other	576,000	5	499,200	4
TOTAL	11,520,000		12,480,000	

Source: On Board Survey

EFFECTS ON RIDERS

To determine the potential effects on riders if COTA no longer existed, survey respondents were asked what means of transportation were available on a regular basis. The results indicated that alternative modes of transportation are accessible to only 52 percent of COTA riders. These patrons indicated that they could drive their cars, borrow an automobile, get a ride with friends or family, carpool, walk, or bicycle. The remaining 48 percent of COTA riders are dependent on the buses for transportation. In either case, convenience and flexibility would be lost if COTA was no longer operating. Additional impacts for COTA patrons are considered below.

If COTA was no longer available, 36 percent of its patrons would drive their own automobiles, 9 percent would borrow an automobile, 1 percent would carpool, and 12 percent would ride with family or friends. Tables 9, 10, and 11 show the distribution of trips by purpose for each of these alternative modes of travel. In each case, over two-thirds of the trips made via these alternative modes of travel would be work trips. A much smaller proportion of the trips made via these alternatives would be for other trip purposes such as shopping or social.

Table 9

Annual COTA Trips that Would be Made by Car Owners		8,640,000
Trip Purposes	Percent	Annual Trips
Work	73.4	6,341,760
Shopping	4.3	371,520
Medical	3.6	311,040
School	3.6	311,040
Personal Business	5.0	432,000
Social	1.8	155,520
Recreation	2.2	190,080
Other	6.1	527,040
	-----	-----
	100.0	8,640,000
	=====	=====
Expenditures for Car Operation		\$ 9,570,343
Patron Expenditures for COTA		\$ 2,730,240

Net Savings:		\$ 6,480,103
		=====

Source: On Board Survey and FHWA Auto Operating expenditures

Table 10

Annual COTA Trips that Would
be Made by Borrowing a Car 2,160,000

Trip Purposes -----	Percent -----	Annual Trips -----
Work	67.3	1,453,680
Shopping	6.4	138,240
Medical	1.8	38,880
School	7.3	157,680
Personal Business	8.2	177,120
Social	3.6	77,760
Recreation	1.8	38,880
Other	3.6	77,760
	-----	-----
	100.0	2,160,000

Expenditures for Borrowing a Car	\$2,261,520
Patron Expenditures for COTA	\$ 682,560 -----
Net Savings:	\$1,578,960 =====

Source: On Board Survey and FHWA Auto operating expenditures

Table 11

Annual COTA Trips that Would
be Made by Carpool 240,000

Trip Purposes -----	Percent -----	Annual Trips -----
Work	81.0	194,400
Shopping	3.8	9,120
Medical	3.8	9,120
School	3.8	9,120
Personal Business	3.8	9,120
Social	0.0	0
Recreation	0.0	0
Other	3.8	9,120
	-----	-----
	100.0	240,000
 Expenditures for Carpool		 \$ 114,517
Patron Expenditures for COTA		\$ 75,840 -----
Net Savings:		\$ 38,677 =====

Source: On Board Survey and FHWA Auto operating expenditures

The above tables also compare the cost of riding COTA with the cost of each alternative mode of travel. Car operation includes both fixed and variable costs. Depreciation, insurance, and taxes are, for the most part, fixed; these costs will be present regardless of whether the car is driven daily or monthly. Gas, maintenance, and parking costs are directly related to car usage. As usage increases, so do these costs. (See Appendix 3 for a description of calculations for alternative mode costs.)

When contrasted with the cost of riding a bus, each of these three alternatives would result in a significant increase in transportation expenditures. The cost difference between the alternative and COTA is \$6.8 million for those who would drive their own cars, \$1.6 million for those who would borrow a car, and \$38,677 for individuals who would carpool.

Since 42 percent of COTA patrons earn less than \$10,000 annually, this additional demand on income would probably result in decreased spending on other items. Discretionary spending on food, clothing, appliances, and personal items would be reduced to compensate for newly increased transportation costs. The COTA survey indicated that 43 percent of patrons' purchases were made in the central business district. As a result, shopping cutbacks would probably be reflected most in downtown retail sales.

Higher transportation costs might also be met by cutting back on educational or medical purchases. This could have several negative effects. Education allows individuals to improve skill levels, and thereby qualify for a larger number of higher paying jobs. Without educational opportunity, COTA patrons who are unemployed or employed in low wage jobs would likely retain their current position. Discretionary medical purchases might be delayed. This could result in aggravation of medical problems that otherwise could be cured via immediate treatment.

A large proportion of COTA's patrons do not have access to reliable transportation alternatives. Tables 12 and 13 show the distribution of COTA trips for these patrons.

Table 12

Annual COTA Trips that Would be Made by Asking Family or Friends to Provide a Ride		2,880,000
<u>Trip Purposes</u>	<u>Percent</u>	<u>Annual Trips</u>
Work	53.5	1,540,800
Shopping	7.9	227,520
Medical	6.2	178,560
School	9.1	262,080
Personal Business	7.1	204,480
Social	7.9	227,520
Recreation	2.1	60,480
Other	6.2	178,560
	-----	-----
	100.0	2,880,000
Expenditures for Riding with Family or Friends		\$ 0
Patron Expenditures for COTA		\$ 910,080

Source: On Board Survey

Table 13

Annual COTA Trips that Would
Not Otherwise be Made 11,508,480

Trip Purposes -----	Percent -----	Annual Trips -----
Work	50.1	5,771,520
Shopping	10.7	1,232,640
Medical	8.6	990,720
School	9.8	1,128,690
Personal Business	7.4	852,480
Social	6.8	783,360
Recreation	0.9	103,680
Other	5.7	645,120
	-----	-----
	100.0	11,508,480

Source: On Board Survey

If COTA was not available, 12 percent would ask family or friends for a ride. Thirty-nine percent indicated that they cannot drive and rely on COTA for most of their transportation needs. Again, the type of trips that would be most affected are work trips. No cost comparison between COTA and these two alternatives is made because the two do not incur any travel costs. However, the consequences of a loss of COTA is much more serious for these people. Of those who indicated that they could not make their trip without COTA, 50 percent were riding COTA to get to and from work. If no satisfactory transportation alternatives could be found, these people would have to leave their current jobs. The number of jobs at stake is 8,400. Potential lost wages are \$68.1 million. The loss of wages is calculated by multiplying 8,400 jobs by an average wage of \$8,119 for transit dependent patrons. While some of the transit dependents would be able to find employment within walking distance, it would not be an option available to all. Loss of employment could very quickly lead to increased demand for welfare, unemployment compensation, and other social services.

For other trip purposes, the effect of the loss of public transportation would be twofold. First, the trips may not be made. Transit dependents indicated that 50 percent of their trips are for purposes such as shopping, medical, or education. Second, the potential loss of income due to increased transportation costs or lost wages means that any expenditures that are made for these purposes would probably be decreased.

The final alternative travel mode mentioned by COTA patrons was walking or biking. This option is available to 15 percent of those surveyed. Table 14 shows the number of trips for each purpose that would be made by walking or biking if COTA was no longer available. While work trips still predominate, the proportion of trips for other purposes has increased. Because walking or biking is considered to be an expense-free choice, there is no cost comparison with COTA. However, these patrons would still be affected if COTA no longer existed. COTA would give these individuals ready access to their destinations. While walking or biking is an option, it would probably be used less often for discretionary purposes (such as shopping or social trips) than would COTA.

Table 14

Annual COTA Trips that Would be Made on Foot or by Bicycle		720,000
<u>Trip Purposes</u>	<u>Percent</u>	<u>Annual Trips</u>
Work	46.5	334,800
Shopping	7.1	51,120
Medical	2.7	19,440
School	11.6	83,520
Personal Business	11.6	83,520
Social	10.7	77,040
Recreation	2.7	19,440
Other	7.1	51,120
	-----	-----
	100.0	720,000
Expenditures for Walking or Biking		\$ 0
Patron Expenditures for COTA		\$ 227,520

Source: On Board Survey

In summary, if COTA were no longer operating, the result would be negative for both current and potential riders. The impacts include added travel expense, loss of flexibility and convenience, and potential inability to engage in basic activities such as work, recreation, shopping, and obtaining an education.

COMMUNITY BENEFITS

Introduction

This section will examine the economic benefits provided to all residents of central Ohio. These positive externalities include: improved air quality, energy conservation, reductions in parking demand, road maintenance, casualty loss and accidents. The benefits listed above are distributed to all central Ohio residents regardless of whether they are COTA patrons or receive direct financial gain because of COTA.

Basically, economic benefits are derived by subtracting the costs of operating a particular COTA product from the costs the community would incur if there was no transit system. The key assumption made is that the costs to the community would increase if there was no transit service due to the increased use of the private automobile by persons currently patronizing COTA. The increased use of private automobiles is represented numerically as additional vehicle miles traveled (VMT). The annual additional VMT is calculated using the equation for transportation improvements in the COTA air quality and energy conservation section of MORPC Transportation Improvement Program (TIP). The equation is:

Additional VMT = (Annual COTA passengers * 4.2) / 1.5 where:

4.2 = the average trip length by COTA passengers

1.5 = the average auto occupancy by COTA passengers

Another key assumption made in the analysis is use of national statistics where the availability of local data makes it cost prohibitive to collect. The source of this data is journals and handbooks published by professional organizations such as the Institute of Transportation Engineers and the Environmental Protection Agency. In previous MORPC studies, the use of secondary, national data for local projects has proven quite satisfactory.

Air Quality

Improved air quality is an important benefit provided by COTA to all central Ohio residents. Because of the decrease in annual VMT, the amount of pollution emissions is reduced by several tons every year. Several studies have allocated dollar costs to air pollution. Based on the National Commission on Air Quality 1981 report entitled To Breathe Clean Air and the Federal Highway Administration report, Fundamentals of Air Quality, an estimated \$340.00 is saved for every ton of air pollution not emitted. This cost figure accounts for improvements in human health, reduced household cleaning costs, and reduced damage to crops, vegetation, and materials.

The most common pollutants emitted from internal combustion engines are hydrocarbons (HC) and carbon monoxide (CO). Table 15 outlines the annual savings of reduced air pollution from between 1981 through 1986. As Table 15 shows, hydrocarbons and carbon monoxide have been reduced by over 10,750 tons from 1981 through 1986. In dollar terms, the net economic benefits to central Ohio has been \$3,659,807.24 over the five-year period. An average of 126.2 tons of HC and 1667.4 tons of CO are reduced annually, with an annual savings of over \$609,967.90 per year. The emission reductions are based on the United States Environmental Protection Agency's Mobile Source Emission Factors. (The EPA factors assume: an average temperature of 50 degrees Fahrenheit, a travel speed of 19.6 miles per hour, 100 percent of vehicles in cold start mode, and a vehicle mixture of 88.2 percent automobiles and 11.8 percent other vehicles.)

Energy Conservation

Another benefit of the Central Ohio Transit Authority is energy conservation. Almost 8 million gallons of fuel have been saved since 1981, with an average reduction of over 1.3 million gallons per year. The savings in dollars have been nearly \$11 million over the six-year period, with an average annual savings of over \$1.8 million.

Table 16 outlines the economic benefit of energy conservation provided because of COTA. The amount of fuel conserved is based on the annual VMT reduction divided by the Franklin County automobile fleet consumption rates times the average annual fuel prices minus the fuel expenditures by COTA and lost revenue in fuel tax paid by automobile drivers.

Reduced Accidents and Casualty Loss

Placing a financial value on life and property is a difficult task. The Institute of Traffic Engineers Transportation and Traffic Engineering Handbook lists a value of \$.023 per vehicle mile for accident reduction. The annual reduction multiplied by this figure gives the annual savings in accidents. The amount of savings due to a reduction in accidents is shown in Table 17.

From 1981 through 1986, over \$8.6 million worth of accident reductions occurred, with an average reduction of \$1.4 million. It should be noted that this is "gross benefit", that is, the value of accidents per bus mile traveled is not subtracted from the value of accidents attributable to the reduced VMT.

Table 15

VALUE OF COTA AIR QUALITY IMPROVEMENTS

Fiscal Year	Auto VMT Saved	Gross HC Reduction (tons/year)	Gross CO Reductions (tons/year)
1981	52,374,000	209.1	2,362.1
1982	57,078,000	195.3	2,323.1
1983	46,565,610	138.8	1,675.0
1984	68,832,593	174.1	2,135.2
1985	73,491,869	153.6	1,810.8
1986	76,998,956	134.7	1,550.0
Total 1981 - 1986	375,341,028	1,005.6	11,856.1
Average	62,556,838	168	1,976

Fiscal Year	Bus HC Emissions (tons/year)	Bus CO Emissions (tons/year)
1981	32.1	241.8
1982	39.1	309.6
1983	40.2	297.8
1984	42.8	317.5
1985	45.2	335.5
1986	46.5	349.6
Total 1981-1986	245.8	1,851.8
Average	41.0	308.6

Fiscal Year (tons/year)	Net HC Reduction (tons/year)	Net CO Reduction	Net Value of Reduced HC & CO
1981	177.0	2,120.3	\$ 781,089.79
1982	156.1	2,013.5	737,673.30
1983	98.6	1,377.1	501,764.70
1984	131.4	1,817.7	662,691.60
1985	108.4	1,475.3	538,475.80
1986	88.2	1,200.3	438,112.04
Total 1981 - 1986	759.8	10,004.3	\$3,659,807.24
Average	126.6	1,667.4	\$ 609,967.90

Source: MORPC Transportation Improvement Program

Table 16

ANNUAL ENERGY CONSERVATION SAVINGS

Fiscal Year	Auto VMT Saved	Franklin County Fuel Consumption (miles/gallon)	Gallons of Gasoline Saved
-----	-----	-----	-----
1981	52,374,000	15.0	3,491,600
1982	57,078,000	15.8	3,612,532
1983	46,565,610	16.7	2,788,360
1984	68,832,593	17.6	3,910,943
1985	73,491,869	18.6	3,951,176
1986	76,998,956	19.6	3,928,518
Total 1981 - - 1986	375,341,028		21,683,128
Average	62,556,838		3,613,855

Fiscal Year	Average Gasoline Price (dollars/gallon)	Gross Amount of Gasoline Expend. Saved by Consumers	Bus Miles Traveled (miles/year)
-----	-----	-----	-----
1981	\$1.35	\$ 4,713,660.00	7,684,452
1982	1.28	4,624,040.51	8,234,028
1983	1.22	3,401,799.05	8,358,852
1984	1.20	4,693,131.35	9,717,846
1985	1.18	4,662,387.38	10,269,363
1986	1.13	4,439,225.50	11,113,786
Total 1981 - - 1986		\$26,534,243.79	55,378,327
Average		4,422,373.97	9,229,721.17

Table 16

ANNUAL ENERGY CONSERVATION SAVINGS

(Continued)

Fiscal Year	Bus Fuel Consumption (gallons/yr.)	Annual COTA Fuel Expense	Ohio Gas Tax for Individual Drivers (dollars/gallon)
-----	-----	-----	-----
1981	1,921,113	\$ 2,041,693.00	\$0.10
1982	2,058,507	2,183,745.00	0.12
1983	1,990,203	2,172,164.00	0.12
1984	2,429,462	2,314,721.00	0.12
1985	2,567,341	2,397,787.00	0.12
1986	2,778,447	2,115,696.00	0.12
Total 1981 - - 1986	13,745,072	\$13,225,806.00	
Average	2,290,845	\$ 2,204,301.00	

Fiscal Year	Annual Value of Lost Tax Revenue	Bus Fuel Tax Paid by COTA	Net Savings in Fuel Consumption
1981	\$ 340,423.67	\$ 19,211.13	\$ 2,331,543.33
1982	402,081.13	20,585.07	2,038,214.37
1983	314,701.16	19,902.03	914,933.90
1984	445,018.52	24,294.62	1,933,391.83
1985	448,467.68	25,673.41	1,816,132.69
1986	443,637.71	27,784.47	1,879,891.79
Total 1981 - - 1986	\$2,394,329.87	\$137,450.72	\$10,914,107.92
Average	\$ 399,054.98	\$ 22,908.45	\$ 1,819,017.99

Source: MORPC Transportation Improvement Program

COTA helps reduce the regional costs of road maintenance, although the reduction is minimal when compared to the overall road maintenance expenses in the region. A Cleveland State University study entitled "An Analysis of Highway Finance in Ohio: Current Practice and Alternative Approaches" prepared for the Ohio Department of Taxation in 1982, occasioned the road maintenance costs per vehicle mile traveled to various types of vehicles. The costs occasioned to automobiles is \$0.0079 per mile and the costs occasioned to buses is \$0.023 per mile traveled. The annual savings in road maintenance is shown in Table 18. Using the costs allocation figures from the Cleveland State study, the average annual savings in road maintenance due to COTA is \$281,915.42, with over \$1.6 million having been saved from 1981 through 1986.

Table 18

ANNUAL ROAD MAINTENANCE SAVINGS

Fiscal Year	Auto VMT Saved	Automobile Cost Occasioned (dollars/mile)	Gross Savings in Highway Maintenance
1981	52,374,000	\$0.0079	\$ 413,754.60
1982	57,078,000	0.0079	450,916.20
1983	46,565,610	0.0079	367,868.32
1984	68,832,593	0.0079	543,777.49
1985	73,491,869	0.0079	580,585.76
1986	76,998,956	0.0079	608,291.75
Total 1981 - - 1986	375,3411,028		\$2,965,194.12
Average	62,556,838		\$ 494,199.02

Fiscal Year	Annual Bus Miles Traveled	Bus Cost Occasioned (dollars/mile)	Annual Costs Occasioned to COTA
1981	7,684,452	\$0.023	\$ 176,742.40
1982	8,234,028	0.023	189,382.64
1983	8,358,852	0.023	192,253.60
1984	9,717,846	0.023	223,510.46
1985	10,269,363	0.023	236,195.35
1986	11,113,786	0.023	255,617.08
Total 1981 - - 1986	55,378,327		\$1,273,701.52
Average	9,229,721		\$ 212,283.59

Fiscal Year	Net Savings in Road Maintenance
1981	\$ 237,012.20
1982	261,533.56
1983	175,614.72
1984	320,267.03
1985	344,390.41
1986	352,674.67
Total 1981 - - 1986	\$1,691,492.60
Average	\$ 281,915.43

Source: Analysis of Highway Finance in Ohio: Current Practice and Alternative Approaches

Congestion

If COTA service were not available to the community, more people would make use of existing cars, buy cars, or take taxi trips, thus more vehicles would be on the streets and freeways during peak and non-peak hours. Travel time and costs would increase due to congestion for both bus users and non-users. Based on estimates from the on-board survey, 16,100 number of cars would be added to the streets of Columbus.

Employment

The affect that COTA has on employment and wages in the area is positive. COTA employs approximately 797 people and its payroll was (minus taxes) \$14.5 million. A second point is that an estimated 8,400 individuals with total incomes of \$68 million would be unable to keep their jobs if it were not for COTA. Transit service enables employment and reduces labor costs resulting from an increased labor pool.

COTA's presence in the community has been a factor in the location of business in the area. A transit service can be an important factor in where a business will locate within the community. Transit provides access to clients, employees, and professional services throughout the service area.

Special Services

Project Mainstream

COTA offers specialized transportation (Project Mainstream) for persons who are elderly or handicapped, who cannot ride COTA's regular routes. A transportation operator provides this service under contract with COTA. Those individuals who are eligible for this service use a reservation or subscription service for their transportation needs.

Currently, Project Mainstream provides about 5,000 trips per month (60,000 per year) within the COTA service area. Ten lift-equipped converted Dodge Maxi-vans and taxis (when possible) are used to provide door-to-door with assistance upon request service. While there are no trip priorities, Project Mainstream offers: subscription service for those going to the same location, at the same time, once a week or more, and Reservation service for other, less frequent or varied trips.

This type of service affects the central Ohio economy in a positive manner. Clients of Project Mainstream use the service for work, school, medical reasons, and social or recreational events. Of all the subscription trips about 66 percent are for work, and 16 percent are for medical reasons. The reservation trips meet a more spontaneous need with 42 percent of the trips for medical reasons, and 25 percent for social or recreational trips. (see Table 19)

Since Project Mainstream patrons were not surveyed, MORPC was unable to make any estimates about wages or spending figures, although it should be noted that these persons would probably not be able to make their trips. Therefore, Project Mainstream users should be considered transit dependents.

Table 19

PROJECT MAINSTREAM TRIP PURPOSE
FOR RESERVATION AND SUBSCRIPTION TRIPS
PER AVERAGE WEEKDAY

Type of Trip -----	Reservation -----		Subscription -----	
Purpose In	#	%	#	%
Work	8	13	118	66
Medical	25	42	30	17
School	12	20	10	5
Social/ Recreation	15	25	20	11
	--	--	--	--
TOTAL	60	100	178	100

Source: Dave Systems Inc.

Senior Citizens On the Town (SCOT)

Another special service that COTA offers is the SCOT program. This service is offered to senior citizen groups to provide trips for shopping, special events and social programs. SCOT is offered during midday and evening hours for groups of 30 or more with Golden Buckeye Cards. The SCOT program served approximately 21,787 passengers making 825 trips in 1986.

Through COTA making the SCOT program available, many senior citizens are able to make trips that otherwise would not be made. The inexpensive bus fare not only lets more seniors travel more often, but is the least expensive anywhere in the community for this type of transportation.

Other Services

Reduced Fares

COTA provides assistance through reduced fares for the elderly and other special services. These services include the Good as Gold and Key Cards. Fares are also reduced at midday (off-peak).

Zoo Bus

The COTA Zoo bus provides direct transportation to the Columbus Zoo and Wyandot Lake. The bus (with hand paintings of rare zoo animals) makes five direct trips each day from the downtown area during the summer.

Christmas Coach

Three COTA buses are used during the month of December to enable people to tour downtown Columbus' "White Lights of Christmas". Tours of downtown merchants' holiday decorations are offered hourly. Over 18,000 people made trips on the Christmas Coach in 1986.

Other

COTA offers special bus service for community functions throughout the year. These functions include the Ohio State Fair; Red, White, and Boom; the Greater Columbus Arts Festival; and the Columbus 500. By providing these services, traffic problems are eased and people who may not be able to afford the cost of traveling and parking are able to attend the above functions.

Social Benefits

Intangible benefits of COTA's service cannot be quantified. COTA services provide a higher quality of life for transit dependent riders, like those who use COTA's regular service, Project Mainstream, SCOT and other services mentioned above. Without bus service not only would these people not be able to travel to work, but other trips such as shopping, school, medical and social, to mention a few, would not be possible.

COTA also provides a cost effective means of transportation for choice riders. Instead of using a car or some other means of transportation that can cost more than riding the bus, people choose COTA for their trips. For many choice riders the bus is more convenient than any other mode of transportation.

Return on Public Investment

A cost/benefit ratio was derived from COTA costs and benefits to and from the community.

Costs Included:

COTA's total operating expenses for 1986 were \$41,598,688. This cost includes labor, fringe, services, materials consumed, utilities, claims and insurance, taxes, purchased transportation, leases and rentals, miscellaneous, and depreciation. Depreciation accounts for \$5,532,963 of the \$41,598,688 total. For an outline of COTA's operating costs minus depreciation, see Appendix IV. The 1986 Annual Report had the latest complete set of audited operating statistics available.

The half cent sales tax collected from 1981-1985 totaled \$106,677,917. This was divided by nine years of operation to equal \$11,853,100 in annualized costs to the public. The cost per year was then multiplied by 3 (multiplier of 1 to 2 which is the estimated loss of money generated in the local economy due to paying the tax) to equal \$23,706,200.

Benefits Included:

Possible Loss of Wages from the transit dependent riders plus a multiplier of 1 to 1. The loss of wage estimate of \$68.2 million was multiplied by 2 to equal \$136,200,000. The multiplier of 1 was used because the average incomes of transit dependent riders was less than \$10,000.

COTA's payroll to employees minus State and Federal taxes came to \$14,456,393.93. A multiplier of 1 to 2 was used, but the original dollar amount was not used on the benefits side of the equation as it is applied as a cost. \$14,456,393.93 was multiplied by 2 to equal \$28,912,786. A multiplier of 2 was used because the COTA averages \$22,000 per employee.

Travel cost savings is calculated by using the estimated net savings if COTA was used rather than trips made by car (6,840,103), borrowing (\$1,578,960), and carpooling (\$38,677). These savings were totaled and had the cost to use COTA subtracted. Those who incur more of a cost to use COTA than another mode of travel include a ride from family or friends and making the trip by walking or riding a bike. These costs were \$910,080 for having a friend or family providing the trip, and \$27,520 cost savings to travel by foot or bike. The total of cost savings to use COTA was \$8,457,740 and the costs to use another means of making the trip was \$1,137,600, thus the difference was \$7,320,140.

Accident and casualty savings calculations for 1986 were \$1,770,975.98. This figure was found by multiplying auto vehicle miles saved and costs of accidents per vehicle mile. $76,998,956 \times \$0.023$.

Air quality savings of \$438,112.04 were used. Calculations is as follows: Net hydrocarbon reduction in tons plus net carbon dioxide reduction in tons multiplied by \$340.00. It has been estimated by the FHWA that \$340.00 is saved for every ton of air pollution that is not emitted.

Highway maintenance savings were \$352,674.67. Calculations included annual maintenance costs occasioned to COTA minus gross savings in highway maintenance. \$608,291.75 minus \$255,617.08.

Unemployment compensation savings is calculated by taking 8,400 jobs and dividing it into the possible loss of wages of 68.2 million. An average of \$8,119 is earned by each employee. This is divided by 52 weeks to equal \$156.00 per week. Since 50% of earnings is payed by unemployment an average of \$78 is payed out each week. Multiply \$78 by 26 weeks maximum pay period and an unemployment savings at \$17,035,200 is derived.

Table 20

Cost/Benefit Ratio using 1986 Figures

BENEFITS

Wages and Multiplier	\$136,200,000
Multiplier of COTA Payroll	28,912,786
Travel Cost Savings	7,320,140
Accident, Casualty Savings	1,770,976
Air Quality Savings	438,112
Highway Maintenance Savings	352,675
Unemployment Compensation Savings	\$17,035,200

Total Benefits	\$192,029,889

COSTS

COTA Operating	\$ 41,598,688
Half Cent Sales Tax and Multiplier	23,706,200

Total Costs	\$ 65,004,900

COST/BENEFIT RATIO 1:2.95

For every dollar spent by COTA, \$2.95 in economic benefits is derived.

Based on COTA's fiscal budget and projected operating statistics, the 1988 cost/benefit ratio is projected to be 1:\$3.01.

Overall, the benefits mentioned above improve the quality of life for all citizens of central Ohio. Because of COTA, jobs are created for COTA employees, thus generating more dollars in the central Ohio economy. Many COTA patrons are able to keep their job and/or reduce travel costs because of COTA. Patrons who have other means of transportation would be spending

more on transportation costs if COTA was not available to them, therefore, less money would be spent on other purchases.

Accidents and casualties are reduced, making the roads and highways safer. Calculations have shown that air quality is higher because of public transportation. Reduced wear and tear on the highways from fewer cars means less dollars that go towards highway maintenance.

Another aspect of the higher quality of life, is more people can work because of public transportation. Since more people are employed, less strain is put on welfare and unemployment compensation. Furthermore, Columbus citizens that do not have any other means of transportation are able to utilize COTA's services if they choose and if they have accessibility to area routes.

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APPENDIX I

MAP OF COTA'S SERVICE AREA

APPENDIX II

Sample of the COTA On-Board Survey and Survey Results for: all riders; transit dependent riders; and riders by choice. Unlikelies are those surveys that appeared to be filled out improperly or unlikely spending occurred.

MID-OHIO REGIONAL PLANNING COMMISSION

SURVEY QUESTIONNAIRE

Dear COTA Rider:

810 cases

The Mid-Ohio Regional Planning Commission is conducting a survey of COTA passengers which is designed to measure COTA's economic impact in central Ohio. Please fill out the entire questionnaire as carefully as possible and return it to a poll taker sitting by the bus doors. All answers are strictly confidential. Thank you for your cooperation and enjoy your COTA trip.

1. How often do you ride COTA?

- 7 less than monthly
- 7 2 to 3 days per month
- 9 1 to 2 days per week
- 16 3 to 4 days per week
- 61 5 or more days per week

2. What was your primary purpose in riding COTA today? (Please put a "1" beside your main reason, a "2" beside your secondary reason, etc.)

- 61 work
- 7 shopping
- 6 medical (doctor's office, clinic, hospital, etc.)
- 8 school
- 7 personal business (for example, going to the post office)
- 5 social (for example, visiting friends)
- 2 recreation (for example, visiting a museum or park)
- 5 other (please explain, _____)

3. Are you on your way home?

- 55 yes
- 45 no

4. How much money did you spend on the following items during your COTA trip today?

- \$ 1.74 meals (food, including snacks which you ate away from home)
- \$ 2.65 clothing

\$. 79 appliances and furniture (for example, a washer/dryer, range, television set, etc. Please list even if you are not bringing the item home yourself)

\$. 97 medical services

\$ 1 . 47 professional services (for example, legal fees, insurance premiums, etc. Please include even if you will be billed at a later date)

\$. 37 recreation (for example, a movie or sporting event)

\$. 74 personal items (for example, newspaper, magazine, gum, cigarettes, household items, etc.)

\$ 1 . 21 groceries

\$. 73 other (please explain _____)

5. At which locations did you make your purchases today, for example, downtown Columbus, Northland Mall, Lane Avenue Shopping Center, etc.?

6. What means of transportation are available to you on a regular basis? (check all that apply)

 36 I own an automobile.

 9 I am able to borrow an automobile from a relative or friend.

 12 My family or friends can give me a ride.

 1 I am able to carpool with co-workers or acquaintances.

 3 I am able to walk or bicycle to almost all of my destination's.

 39 I can not drive and rely on COTA for most of my transportation needs.

7. If there was no COTA bus service, would you have been able to make this trip today?

 52 yes 48 no

8. Where did you get on the bus?

_____ and _____

9. Where did you get off the bus?

_____ and _____

10. Are you employed? 53 full-time 23 part-time
19 not employed 5 retired

11. What is your annual income? (you personally)

42 less than \$10,000 per year
29 \$10,000 - \$14,999 per year
13 \$15,000 - \$19,999 per year
7 \$20,000 - \$24,999 per year
4 \$25,000 - \$29,999 per year
3 \$30,000 - \$34,999 per year
1 \$35,000 - \$39,999 per year
1.5 more \$40,000 per year

12. What is your age?

12 under 18
30 18 to 24
22 25 to 34
13 35 to 44
9 45 to 54
7 55 to 64
6 over 65

13. What is your sex?

58 female 42 male

14. When did you start using COTA for transportation?

54 more than 5 years
11 3 to 5 years ago
7 2 to 3 years ago
9 1 to 2 years ago
19 less than 1 year ago

MID-OHIO REGIONAL PLANNING COMMISSION

SURVEY QUESTIONNAIRE

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384 cases

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- 8 2 to 3 days per month
- 11 1 to 2 days per week
- 17 3 to 4 days per week
- 59 5 or more days per week

2. What was your primary purpose in riding COTA today? (Please put a "1" beside your main reason, a "2" beside your secondary reason, etc.)

- 50 work
- 11 shopping
- 9 medical (doctor's office, clinic, hospital, etc.)
- 10 school
- 7 personal business (for example, going to the post office)
- 7 social (for example, visiting friends)
- 1 recreation (for example, visiting a museum or park)
- 6 other (please explain, _____)

3. Are you on your way home?

- 49 yes
- 51 no

4. How much money did you spend on the following items during your COTA trip today?

- \$ 1.74 meals (food, including snacks which you ate away from home)
- \$ 3.30 clothing

\$. 58 appliances and furniture (for example, a washer/dryer, range, television set, etc. Please list even if you are not bringing the item home yourself)

\$ 1. 31 medical services

\$. 97 professional services (for example, legal fees, insurance premiums, etc. Please include even if you will be billed at a later date)

\$. 45 recreation (for example, a movie or sporting event)

\$. 82 personal items (for example, newspaper, magazine, gum, cigarettes, household items, etc.)

\$ 1. 48 groceries

\$. 56 other (please explain _____)

5. At which locations did you make your purchases today, for example, downtown Columbus, Northland Mall, Lane Avenue Shopping Center, etc.?

6. What means of transportation are available to you on a regular basis? (check all that apply)

15 I own an automobile.

13 I am able to borrow an automobile from a relative or friend.

30 My family or friends can give me a ride.

6 I am able to carpool with co-workers or acquaintances.

14 I am able to walk or bicycle to almost all of my destination's.

60 I can not drive and rely on COTA for most of my transportation needs.

7. If there was no COTA bus service, would you have been able to make this trip today?

_____ yes 100 no

8. Where did you get on the bus?

_____ and _____

9. Where did you get off the bus?

_____ and _____

10. Are you employed? 40 full-time 27 part-time
26 not employed 8 retired

11. What is your annual income? (you personally)

53 less than \$10,000 per year
29 \$10,000 - \$14,999 per year
10 \$15,000 - \$19,999 per year
3 \$20,000 - \$24,999 per year
3 \$25,000 - \$29,999 per year
2 { \$30,000 - \$34,999 per year
 \$35,000 - \$39,999 per year
 more \$40,000 per year

12. What is your age?

16 under 18
31 18 to 24
20 25 to 34
13 35 to 44
8 45 to 54
5 55 to 64
8 over 65

13. What is your sex?

63 female 37 male

14. When did you start using COIA for transportation?

59 more than 5 years
10 3 to 5 years ago
6 2 to 3 years ago
8 1 to 2 years ago
17 less than 1 year ago

MID-OHIO REGIONAL PLANNING COMMISSION

SURVEY QUESTIONNAIRE

Dear COTA Rider:

413 cases

The Mid-Ohio Regional Planning Commission is conducting a survey of COTA passengers which is designed to measure COTA's economic impact in central Ohio. Please fill out the entire questionnaire as carefully as possible and return it to a poll taker sitting by the bus doors. All answers are strictly confidential. Thank you for your cooperation and enjoy your COTA trip.

1. How often do you ride COTA?

9.0 less than monthly

6.1 2 to 3 days per month

7.0 1 to 2 days per week

15.0 3 to 4 days per week

62.9 5 or more days per week

2. What was your primary purpose in riding COTA today? (Please put a "1" beside your main reason, a "2" beside your secondary reason, etc.)

69.9 work

4.0 shopping

4.3 medical (doctor's office, clinic, hospital, etc.)

6.3 school

6.1 personal business (for example, going to the post office)

3.0 social (for example, visiting friends)

2.5 recreation (for example, visiting a museum or park)

3.8 other (please explain, _____)

3. Are you on your way home?

60 yes

40 no

4. How much money did you spend on the following items during your COTA trip today?

\$ 1.77 meals (food, including snacks which you ate away from home)

\$ 2.13 clothing

\$ 1.01 appliances and furniture (for example, a washer/dryer, range, television set, etc. Please list even if you are not bringing the item home yourself)

\$.68 medical services

\$ 1.99 professional services (for example, legal fees, insurance premiums, etc. Please include even if you will be billed at a later date)

\$.30 recreation (for example, a movie or sporting event)

\$.68 personal items (for example, newspaper, magazine, gum, cigarettes, household items, etc.)

\$.99 groceries

\$.92 other (please explain _____)

5. At which locations did you make your purchases today, for example, downtown Columbus, Northland Mall, Lane Avenue Shopping Center, etc.?

6. What means of transportation are available to you on a regular basis? (check all that apply)

55.8 I own an automobile.

16.0 I am able to borrow an automobile from a relative or friend.

35.8 My family or friends can give me a ride.

9.4 I am able to carpool with co-workers or acquaintances.

16.3 I am able to walk or bicycle to almost all of my destination's.

20.0 I can not drive and rely on COTA for most of my transportation needs.

7. If there was no COTA bus service, would you have been able to make this trip today?

100 yes 0 no

8. Where did you get on the bus?

_____ and _____

9. Where did you get off the bus?

_____ and _____

10. Are you employed? 65.2 full-time 18.8 part-time
12.9 not employed 3.0 retired

11. What is your annual income? (you personally)

30.8 less than \$10,000 per year

27.9 \$10,000 - \$14,999 per year

16.3 \$15,000 - \$19,999 per year

11.3 \$20,000 - \$24,999 per year

6.1 \$25,000 - \$29,999 per year

4.4 \$30,000 - \$34,999 per year

1.5 \$35,000 - \$39,999 per year

1.7 more \$40,000 per year

12. What is your age?

9.3 under 18

30.0 18 to 24

24.9 25 to 34

13.6 35 to 44

10.1 45 to 54

9.1 55 to 64

3.0 over 65

13. What is your sex?

53.5 female 46.3 male

14. When did you start using COTA for transportation?

49.6 more than 5 years

10.8 3 to 5 years ago

8.5 2 to 3 years ago

10.5 1 to 2 years ago

20.6 less than 1 year ago

APPENDIX III

Estimation of Cost of Alternative Trip Modes

A summation of variable automobile expenses was used to determine the car operation costs for those COTA patrons who own an automobile. Based on a 1986 update of Federal Highway Administration data by the Rideworks of Greater New Haven and 1987 AAA estimates, car costs of maintenance, accessories, parts and tires; gas and oil; and taxes were averaged for five sizes of automobiles. The result was 9.32 cents per mile. An average vehicle trip distance of 8 miles is based on 1983 Federal Highway Administration data. This distance was multiplied by the per mile operating costs to determine average trip cost for cars.

COTA survey data was used to estimate that the destination of 60 percent of all COTA trips is downtown. A recent MORPC study determined that the average parking cost downtown is \$1.65 per day. The parking cost used in this analysis (49.5 cents per trip) was determined by multiplying \$1.65 by 60 percent and dividing by 2. Parking costs were applied to those who would drive, borrow a car, or carpool.

For those who said they would drive, trip cost was divided by 1.12 (car occupancy rate, U.S. Census, 1980). Trip cost was divided by 2.6 (carpool average, MORPC) for those who would carpool. For those who would borrow a car, costs of gas and parking were summed.

Other alternative modes of transportation mentioned by COTA patrons include getting a ride from family or friends, walking, or biking. These modes were assumed to be free of cost. Individuals receiving rides occasionally from family or friends are unlikely to contribute to auto expenses. Walkers and bicyclists will likely spend the same or less time traveling as those in autos. Bicycle maintenance is minimal.

The corresponding cost for making a COTA trip was determined by dividing passenger revenue by the number of passengers for all of 1986. In 1986, 24,000,000 trips were made on COTA.

APPENDIX IV

- OPERATING EXPENSES OTHER THAN DEPRECIATION:	
- Labor.....	18,063,499
- Fringe benefits.....	9,061,877
- Services.....	1,505,230
- Materials and supplies consumed.....	3,896,289
- Utilities.....	1,004,981
- Claims and insurance.....	1,019,631
- Taxes.....	281,776
- Purchased transportation.....	691,446
- Leases and rentals.....	127,739
- Miscellaneous.....	<u>413,527</u>
- Total.....	<u>36,065,995</u>
- DEPRECIATION	
- On assets acquired with government grants.....	5,078,465
- On assets acquired with Authority equity.....	<u>454,228</u>
- Total.....	<u>5,532,693</u>
- TOTAL OPERATING EXPENSES.....	41,598,688

Source: COTA's 1986 Annual Report