RURAL TRANSIT RESEARCH NEEDS IN THE MOUNTAIN PLAINS REGION

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June 1992

Technical Report Documentation Page

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
MPC 92-16		

4. Title and Subtitle	5. Report Date
Rural Transit Research Needs in the Mountain-Plains Region	June 1992
	6. Performing Organization Code

7. Author(s)	8. Performing Organization Report No.
John D. Bitzan and Kimberly J. Vachal	

9. Performing Organization Name and Address	10. Work Unit No. (TRAIS)
Upper Great Plains Transportation Institute North Dakota State University Fargo, ND	11. Contract or Grant No.

12. Sponsoring Agency Name and Address	13. Type of Report and Period Covered
Mountain-Plains Consortium North Dakota State University Fargo, ND	Project Technical Report
	14. Sponsoring Agency Code

15. Supplementary Notes

Supported by a grant from the U.S. Department of Transportation, University Transportation Centers Program

16. Abstract

This study is the first step in a research program dedicated to finding solutions to the challenges faced in the rural transit sector. The Mountain-Plains Region is especially sensitive to the future success of rural transit operations because a large sector of the population in the Region is dependent on public transit for access and mobility. The objective of this study is to develop a research agenda that provides solutions to problems experienced by rural transit operations in the Mountain-Plains Region. Several characteristics that differentiate rural public transit from its urban counterpart are described.

17. Key Words	18. Distribution Statement
rural transit, Mountain-Plains region	

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of Pages	22. Price
		86	

Acknowledgement

This report has been prepared with funds provided by the United States Department of Transportation to the Mountain-Plains Consortium (MPC). The MPC member universities include North Dakota State University, Colorado State University, University of Wyoming, and Utah State University.

EXECUTIVE SUMMARY

This study is the first step in a research program dedicated to finding solutions to the challenges faced in the rural transit sector. The Mountain Plains Region is especially sensitive to the future success of rural transit operations because a large sector of the population in the Region is dependent on public transit for access and mobility. The objective of this study is to develop a research agenda that provides solutions to problems experienced by rural transit operations in the Mountain Plains Region.

A plan for research in the rural transit sector must consider the unique qualities associated with this sector. Several characteristics that differentiate rural public transit from its urban counterpart are described. Also, demographic and migratory trends that will influence the importance of public transportation in rural areas are identified.

Five research topics defined as a base for assessing rural transit research priorities are transit safety, evaluation, efficiency, policy, and technology. Section 18 transit administrators, operators, and passengers were surveyed to determine the importance of research in each of these areas.

Based on the survey results, safety, efficiency, and policy should be top priorities for an agenda of rural transit research. Safety is an important aspect of rural transit and should be considered in any rural transit research. To remain successful, rural transit operations will need to increase efficiency as funding becomes more limited. Research to find new sources for improving efficiency will benefit all rural transit operations. Finally, government policy is a very important part of the rural transit environment. Future research should ensure government policy is directed at encouraging efficiency within the rural transit sector.

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CHAPTER 1

INTRODUCTION

Rural passenger transportation is an important part of rural life for many. Some rural residents rely on public transportation for access to basic services, such as medical appointments, grocery shopping, and recreational activities. Furthermore, many rural residents depend on public transportation for mobility.[1] In 1988, more than one fourth of all public transportation demand was generated in rural areas.[2]

However, until recently, public access and mobility in rural areas was virtually ignored by researchers in the transportation sector. Several case studies of rural transit systems were sponsored by the Urban Mass Transit Administration. However, the majority of research funding went into urban transit in the past. In recent years, the federal government has recognized the importance of rural transit and is attempting to enhance the environment for rural transit operations.

In 1986, the Rural Transit Assistance Program (RTAP) was created by Congress.[3] State and national RTAP programs coordinate efforts to provide training, technical assistance, research, and support to rural transit providers nationwide. The emphasis of

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[1]Access is identified with necessities, while mobility is associated with increasing quality of life. Access is necessary for satisfying 'basic needs' such as medical appointments, grocery shopping, and organized activities. Mobility improvements enable transit dependent individuals to socialize and increase recreational activities.

[2]Wallin, Theodore O. "Volunteer/Based Rural Transportation Alternatives," *Specialized Transportation Planning and Practices.* Vol. 2. Gordon and Breach, Science Publishers, Inc. 1988, p. 27.

[3]American Public Works Association. *National Trends in the Urban Mass Transportation Administration's State Rural Transit Assistance Programs: The Benchmark Report.* prepared under a cooperative agreement with U.S. Department of Transportation, Urban Mass Transportation Administration, 1989.

RTAP is to collect information from secondary sources. Only a small portion of RTAP funding is allocated to research.[4]

While RTAP has greatly improved the accessibility of information pertinent to rural transit, it has done little to satisfy the growing need for transit research specific to rural transit interests. Several recent trends support the premise of an increased need for rural transit research. These trends include migration of young rural residents to urban areas, aging of the rural population, deterioration of rural roads, and the federal government's goal of increased transit efficiency.

PROBLEM STATEMENT

A program of rural transit research is especially important to the Mountain Plains Region (MPC), where most areas are sparsely populated and the distribution of the population covers vast areas (Figure 1). Despite their potential cost and diseconomies, rural transit services are essential to the maintenance of a rural population (particularly elderly) base in the region. Without the mobility that transit services afford rural residents in the MPC region, many

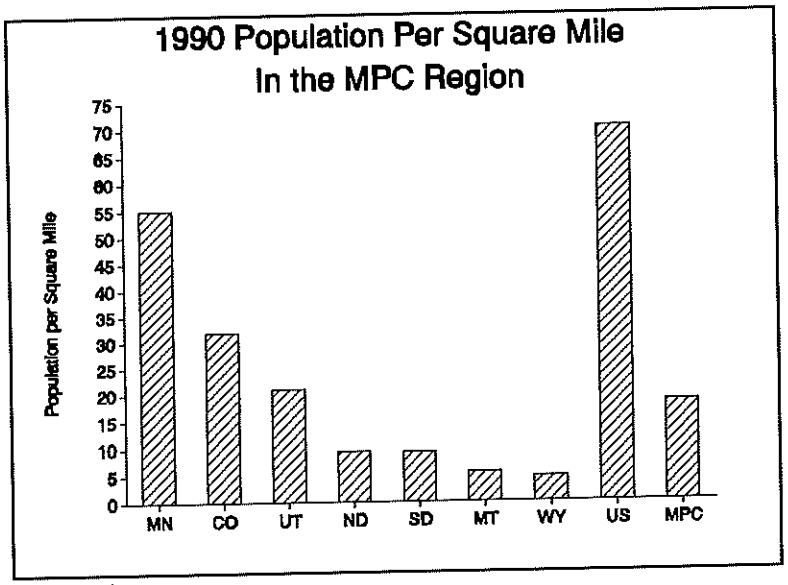

Figure 1

[4]Only 5 percent of the funding for the state program went towards research in 1989. Similarly, a small portion of the funding for the national program went towards research in 1989. UMTA, RTAP.

have no choice but to relocate to urban areas. An increased outmigration to urban areas would have a negative impact on the quality of life in rural and urban areas.

RESEARCH OBJECTIVES

The primary purpose of this study is to develop a research agenda which provides solutions to the problems experienced by rural transit operations in the Mountain Plains Region. In order to achieve this, the specific objectives of the study are:

1. to examine factors that make rural transit unique;
2. to examine trends that will affect the future of rural transit and rural transit research;
3. to examine possible research topics from a review of the literature;
4. to survey transit administrators, managers, and passengers in the MPC region to obtain their opinions on what research in rural transit in the region is important; and
5. to set future research priorities.

REPORT ORGANIZATION

The first section of this report describes the characteristics that differentiate rural transit from urban transit. Next, trends that are likely to shape the future of rural transit are identified. After a discussion of research topics, identified through a literature review, the results of transit administrator, transit manager, and transit passenger surveys are analyzed. A proposed program for rural transit research is then presented, based on survey results.

CHAPTER 2

UNIQUE CHARACTERISTICS OF RURAL TRANSIT

Rural transit has several characteristics that differentiate it from its urban counterpart. They include a need-based ridership, a low population density, poor road and bridge quality, and a different social environment. These characteristics contribute to the unique challenges faced by rural transit operators. This chapter discusses each of these characteristics.

NEED-BASED RIDERSHIP

The first factor that differentiates rural transit from urban transit is its ridership base. The majority of urban transit riders use transit as an alternative to other forms of transportation, while most rural transit riders use transit for their only form of access and mobility. Users in urban areas routinely utilize public transit to avoid traffic congestion. Because there aren't any problems with congestion in rural areas, the majority of rural transit riders are the elderly, disabled, and low income, who are totally dependent on public transportation for access and mobility.

Serving the large need-based transit population presents problems for rural transit providers. Because many transit-dependent riders require extra services or facilities (e.g. wheelchair lifts), the costs associated with providing service to them is often greater. Further, these riders are often unable to pay for the cost of the transit. Thus, rural transit providers are faced with high-cost, low-revenue service.

While there are many problems in providing service to the need-based population, the importance of service to this population is great. Need-based riders use transit to purchase essential food and clothing items, to attend medical appointments, and to visit

friends and relatives. Rural transit research should take into account the difficulties in, and importance of, providing service to these special needs groups.

POPULATION DENSITY

Another factor that differentiates rural transit from urban transit is the low population density. Low population densities create a revenue shortfall for transit systems for two reasons. First, low population density translates into a small tax base. The lack of tax revenues means fewer funds are available for subsidizing rural transit operations. Low population density also contributes to low farebox revenues relative to costs. Because of the long distances between passengers, transit costs per passenger are high. Thus, if the same fare per passenger were charged in rural and urban areas, the revenue shortfall per passenger would be greater in rural areas.

RURAL ROAD AND BRIDGE QUALITY

A third factor that provides unique challenges for rural transit providers is the poor condition of roads and bridges in rural areas. Poor road and bridge quality have increased vehicle operating costs and time-related costs. Expenses for vehicle maintenance and fuel, which are substantial for transit operators, have increased greatly in rural areas because of the continued deterioration of rural roads and bridges. Further, driver wage costs and opportunity costs for riders realized in rural areas have increased with the deterioration of road and bridge quality.

SOCIAL ENVIRONMENT

Finally, the social environment of rural areas differentiates rural transit from urban transit. Crime against transit passengers and operators, vandalism of transit vehicles, and other problems experienced by urban transit providers are rarely

encountered by rural transit providers. Likewise, some problems experienced by rural transit providers are rarely experienced by urban providers, such as vehicles getting stuck on snow covered rural roads, vehicles becoming damaged by animals in rural storage areas, and having difficulty gaining access to vehicles that are parked in the drivers' garages.

CHAPTER 3

EMERGING TRENDS

Several emerging trends suggest that providing rural transit services will become more challenging in the future. These trends include a continued increase in the age of the rural population, continued migration of young rural residents to urban areas, continued deterioration of the rural roads system, and a change in focus by the federal government. Thus, rural transit systems will need to be more efficient and effective in order to assure continued survival. A research program that supports rural transit is the first step in helping these systems become more efficient and effective. A well-planned research program can provide useful and relevant information for rural transit systems, considering the unique characteristics and future needs of these systems.

AGING RURAL POPULATION

The first trend important to the future of rural transit is demographic. Due to advances in medicine and a declining birth rate, the United States population is aging considerably. While those above age 60 accounted for about 13 percent of the population in 1960, they are expected make up nearly 25 percent of the population by the year 2020 (Figure 2).

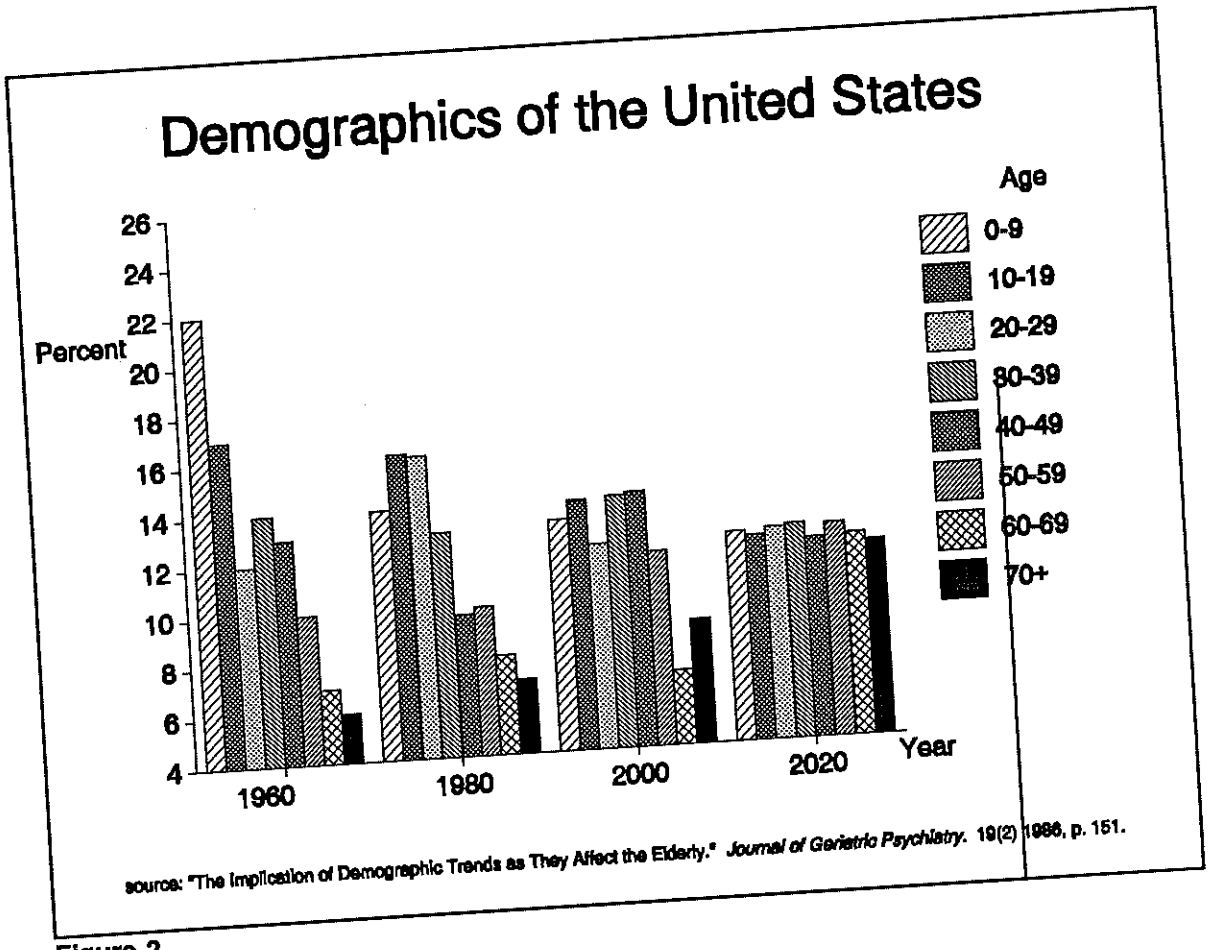

Figure 2

In rural areas this trend is even stronger, partially because of the outmigration of young rural residents. Figure 3 shows that the rural population has aged considerably in relation to the urban population. It seems likely this trend will continue as long as economies in rural areas are unable to provide incentives that attract younger generations.

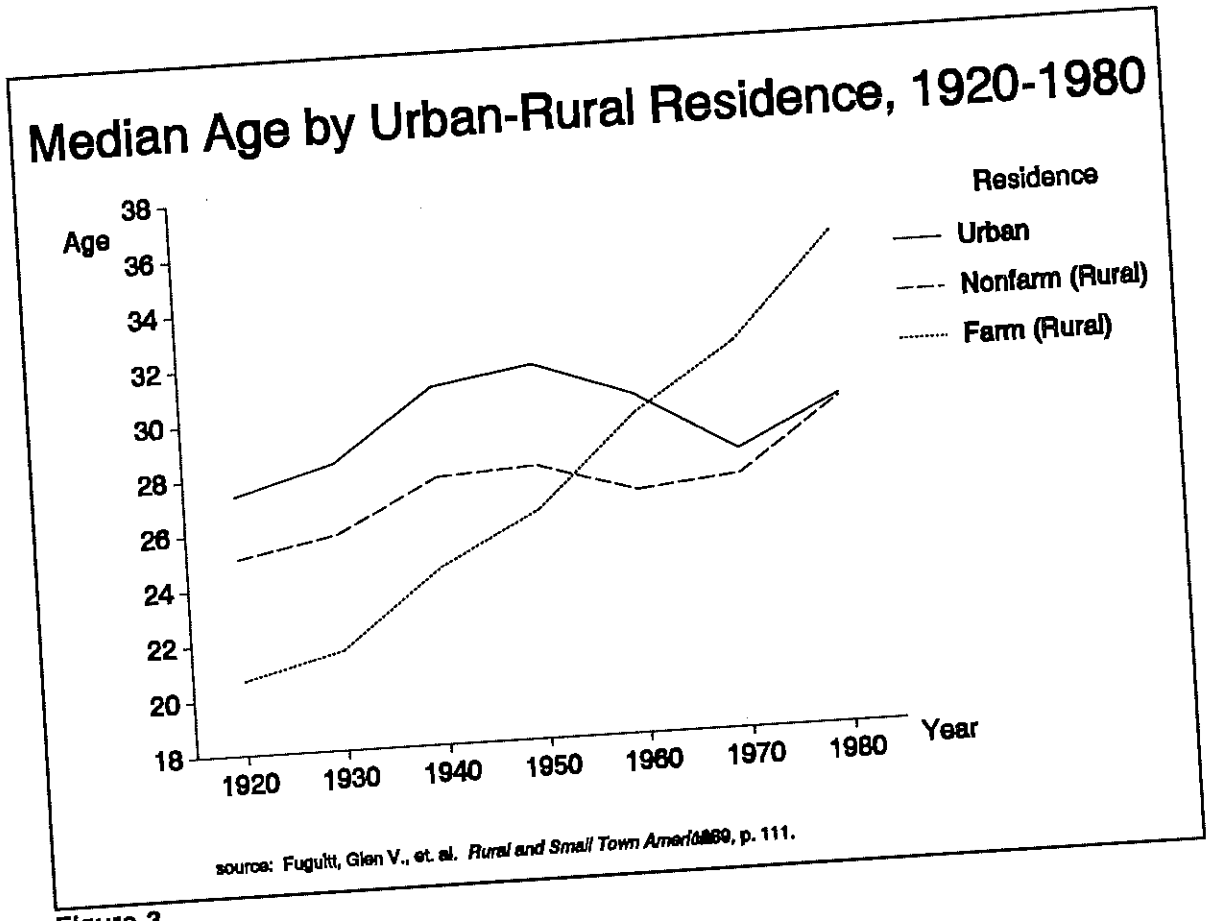

Figure 3

This suggests that the nation's dependence on public transportation (particularly in rural areas) for basic mobility and access to services will continue to increase. This increasing dependence on public transit is expected, since personal mobility becomes more limited with age. A 1981 survey showed that 14 percent of the nation's population, who were 65 years and older, indicated that "getting transportation to stores, doctors, places of recreation, and so forth" was "a very serious problem" for them.[5] The 1980 census data

[5]Lowy, Louis. "Implications of Demographic Trends as They Affect the Elderly," *Journal of Geriatric Psychiatry*. Boston University, Boston, Massachusetts. Vol. 19(2). 1986, pp. 149-174.

show that mobility decreases dramatically with age.[6] Thus, the importance of rural and specialized transit is expected to expand in the future as the median age of the rural population increases (Figure 4).

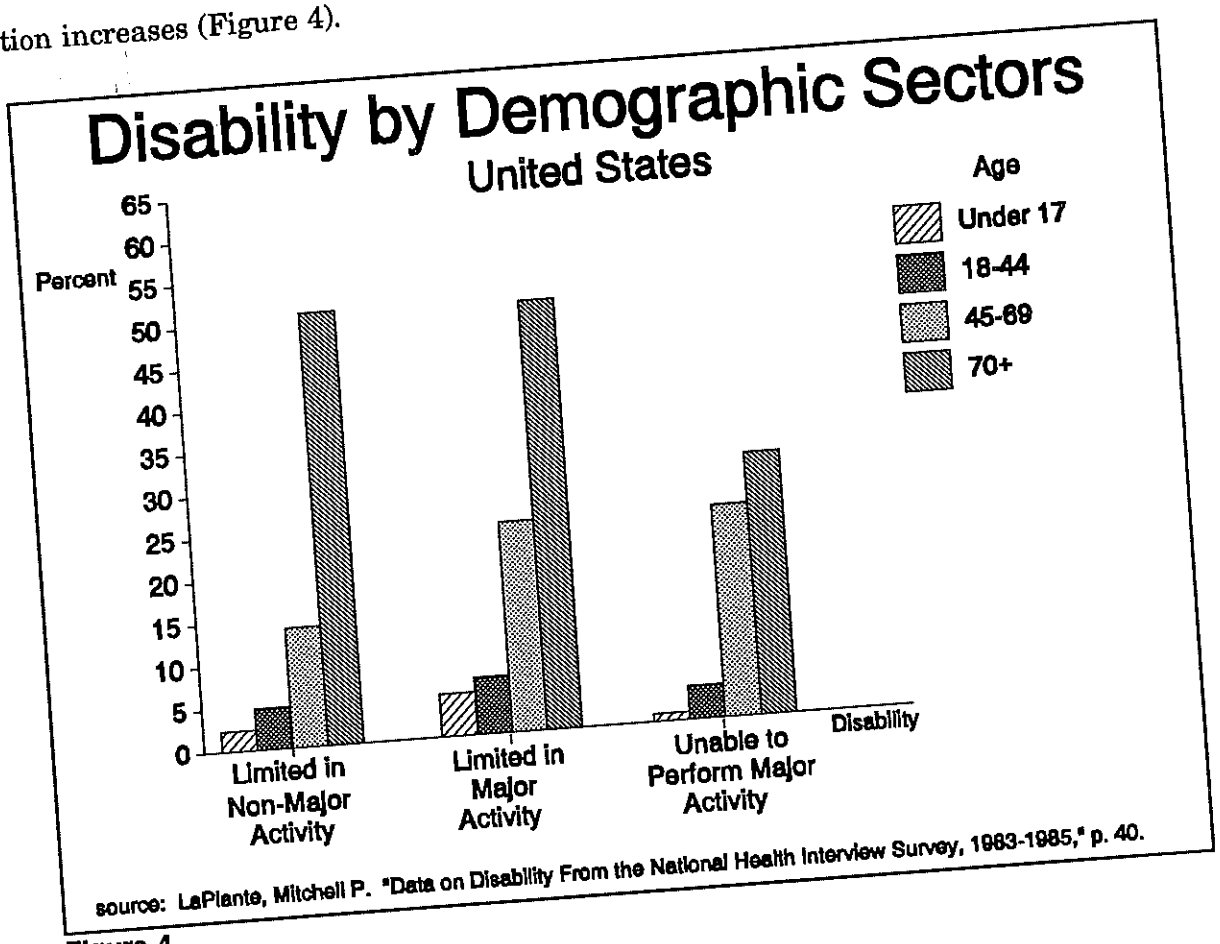

Figure 4

[6]Logue, Barbara. "Public Transportation Disability and the Elderly: An Assessment Based on 1980 Census Data," *Population Research and Policy and Review.* Martinus Nijhoff Publishers, Netherlands. Vol. 6, pp. 177-193.

OUTMIGRATION OF YOUNG RURAL RESIDENTS

A second related trend that will influence the future of rural transit is migration. Part of the reason the rural population has been aging is the outmigration of young residents from rural areas. Due to decreased job opportunities and the erosion of the family farm, young rural residents have been migrating and continue to migrate to urban areas. Figure 5 shows that non-metropolitan population declined from 33 to 23 percent of the nation's total population between 1960 and 1990.

Outmigration, primarily of the younger population, affects rural mobility in two ways. First, outmigration decreases population density in rural areas, reducing the tax base. This declining tax base will lead to increasingly limited funding for transit in rural areas. Another implication of this outmigration is that fewer younger family members will be available to provide transportation for aging family members. Thus, the importance of rural transit efficiency will increase significantly in the future as a result of this outmigration.

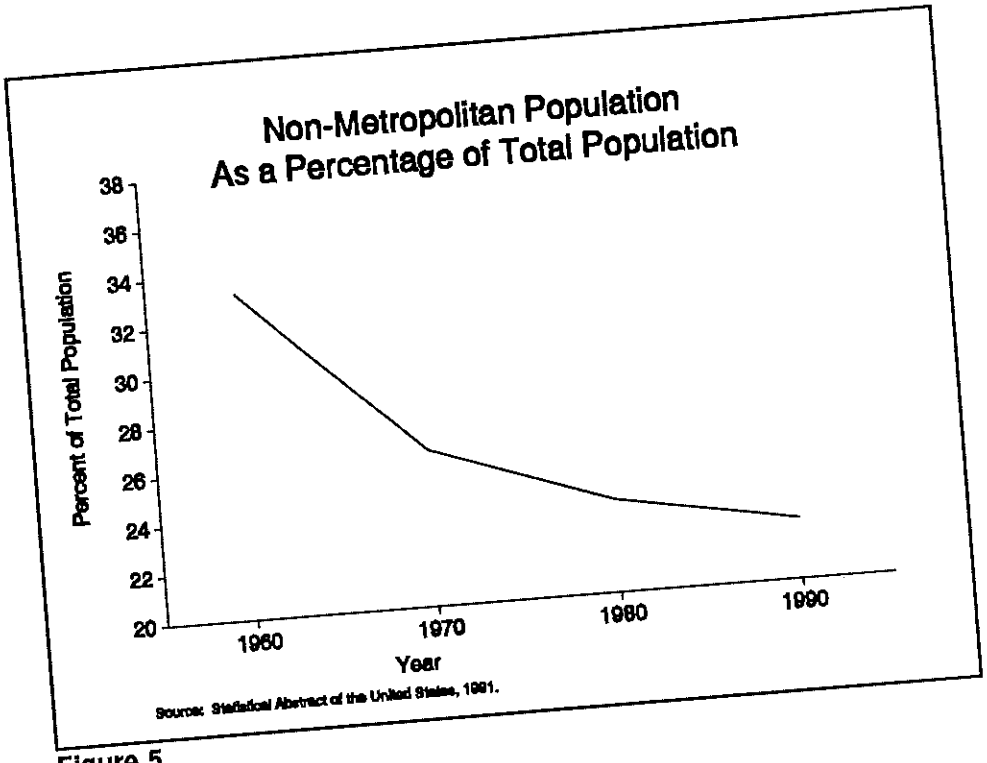

Figure 5

CONTINUED ROAD DETERIORATION

The continued deterioration of rural roads will also be a factor challenging rural transit operations in the future. Roads in rural areas are steadily deteriorating. In an interview of county highway officials in the spring of 1986 and fall of 1987, Walzer and Chicoine found that an average of 25 percent of county road mileage was reported as barely adequate. A study of township roads had similar results. These findings suggest that rural transit may experience greater funding problems (as some local funds are shifted to rural road repair), and more costly service in the future.

CHANGE IN FEDERAL GOVERNMENT PHILOSOPHY

Finally, a change in federal government focus will present challenges for the future of rural transit. The new national transportation policy mentions several points of emphasis which differ greatly from past policy and provide the potential for radical change in the future. These points of emphasis include: (1) A reduction in transit's dependence on the Federal General Fund, and an increased focus on user-based financing; (2) Increased attention to the efficiency of transit systems, and application of cost-effectiveness standards to transit that receives federal assistance; (3) Increased reliance on the states in the funding of transit; (4) Increased concentration on enhancing mobility in rural areas; (5) Increased flexibility in the use of federal funds; (6) Coordination of transit programs between agencies (to eliminate duplication) and with other modes such as airports, highways, and intercity rail service (to improve intermodal connections); (7) Encouragement of private participation in transit and coordinated efforts with private business and community groups. In order to meet these policy objectives, rural transit systems will have to provide more services with less resources in the future.

IMPORTANCE TO THE MPC REGION

All of the forementioned trends are especially important to the MPC region. As Figure 6 shows, over 35 percent of the MPC region's population reside in non-metropolitan areas (Figure 6). Over 70 percent of Montana, South Dakota, and Wyoming residents live in non-metropolitan areas. Furthermore, 60 percent of North Dakota's residents live outside of metropolitan areas.

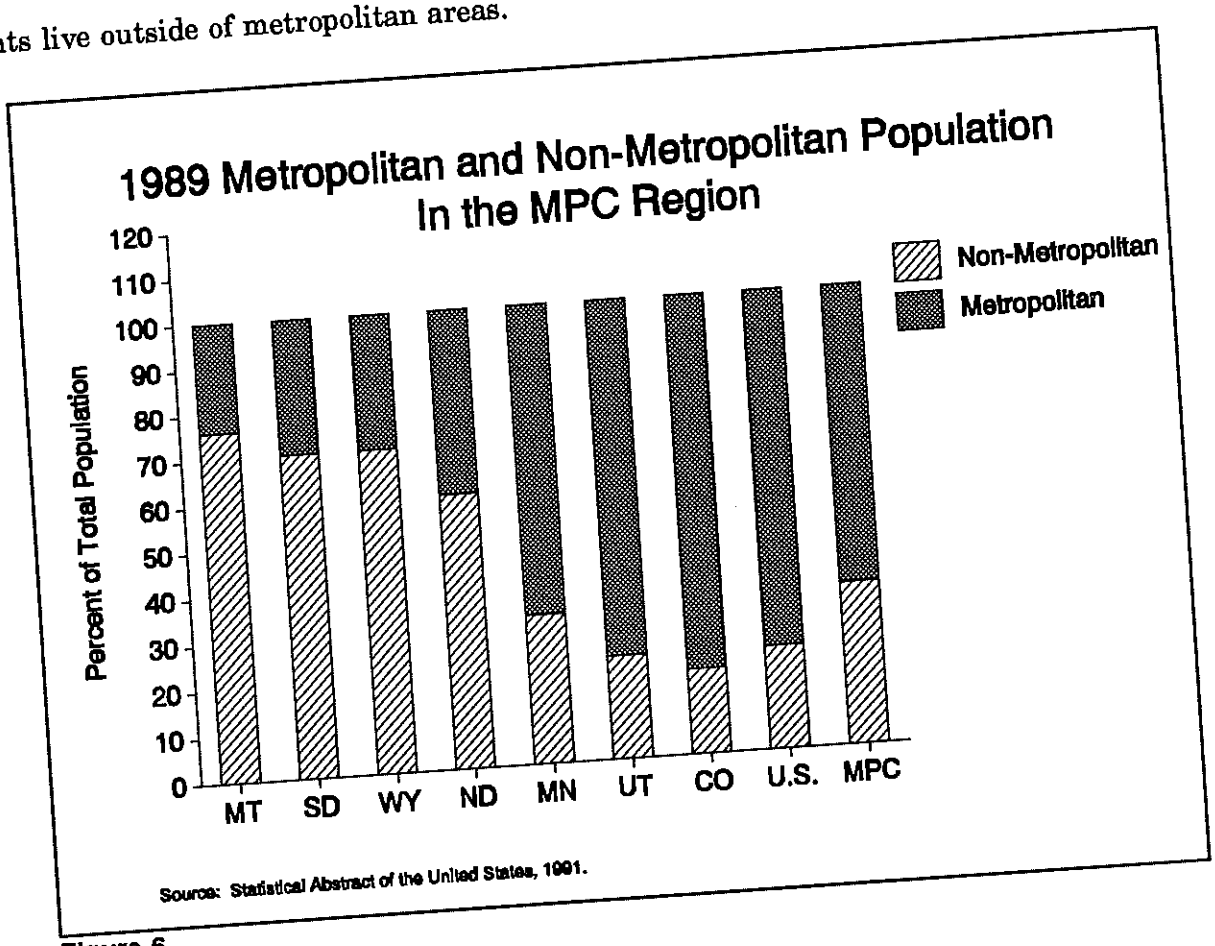

Figure 6

While lack of efficient rural transit forces many transit-dependent residents to migrate to urban areas, it eventually decreases the quality of life for non-transit-dependent rural residents. As rural residents who are dependent on transit move to urban areas, the rural tax base declines and rural economic and social activity decline.

Thus, Figure 6 suggests that the quality of life for more than one-third of the region's residents may depend on future efficient rural transit.

Many of the social and economic characteristics that cause rural transit to differ from urban transit are typified by the MPC region. An increasing transit-dependent population, increasing outmigration of rural residents, and increasing road deterioration are all present in the region.

First, the transit-dependent population appears to be large in the MPC region. While the trends in the aging of the population are roughly the same as for the nation, income per capita in the region is far below the national average. Figure 7 shows disposable personal income per capita for the region and the nation.[7]

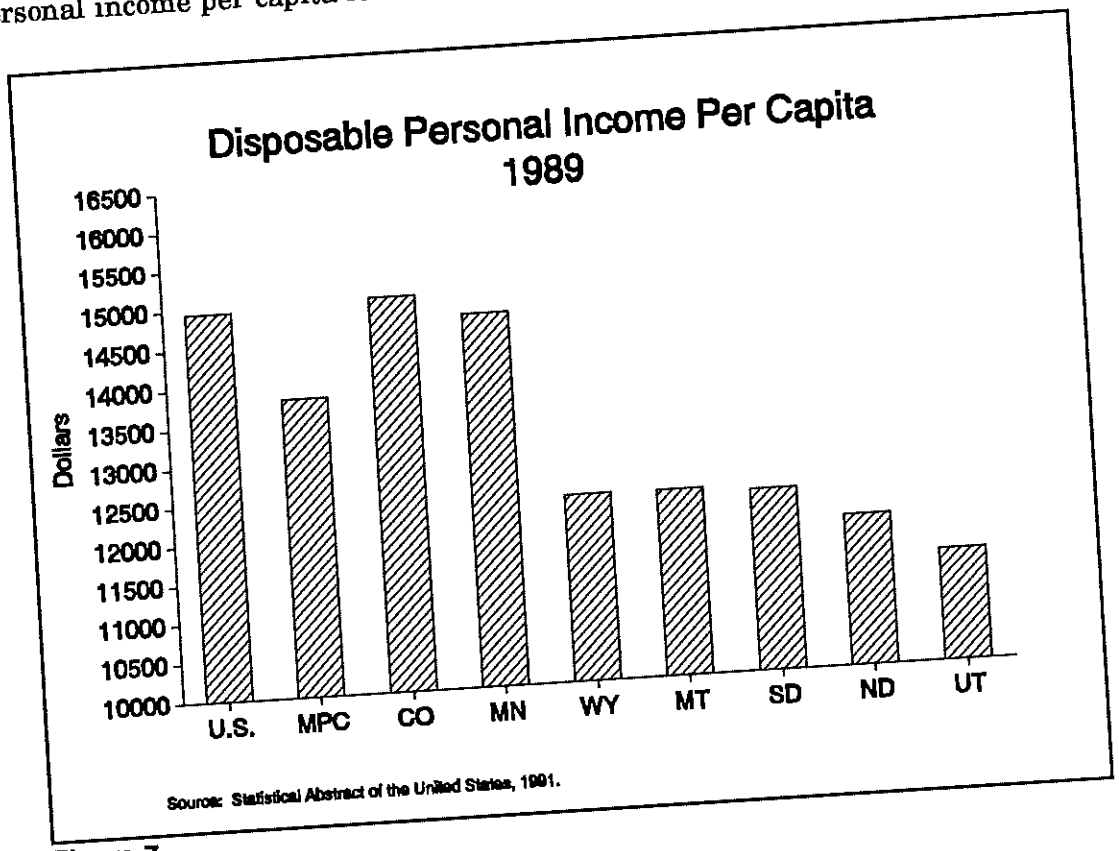

Figure 7

[7]However, there are two reasons why this may not show a greater transit dependent population. First, the cost of living is also likely to be lower in this region. Second a lower disposable personal income per capita may simply represent a lower percentage of very wealthy residents.

Furthermore, the gap between the national average disposable personal income per capita and that for the MPC region has widened in recent years (Figure 8).

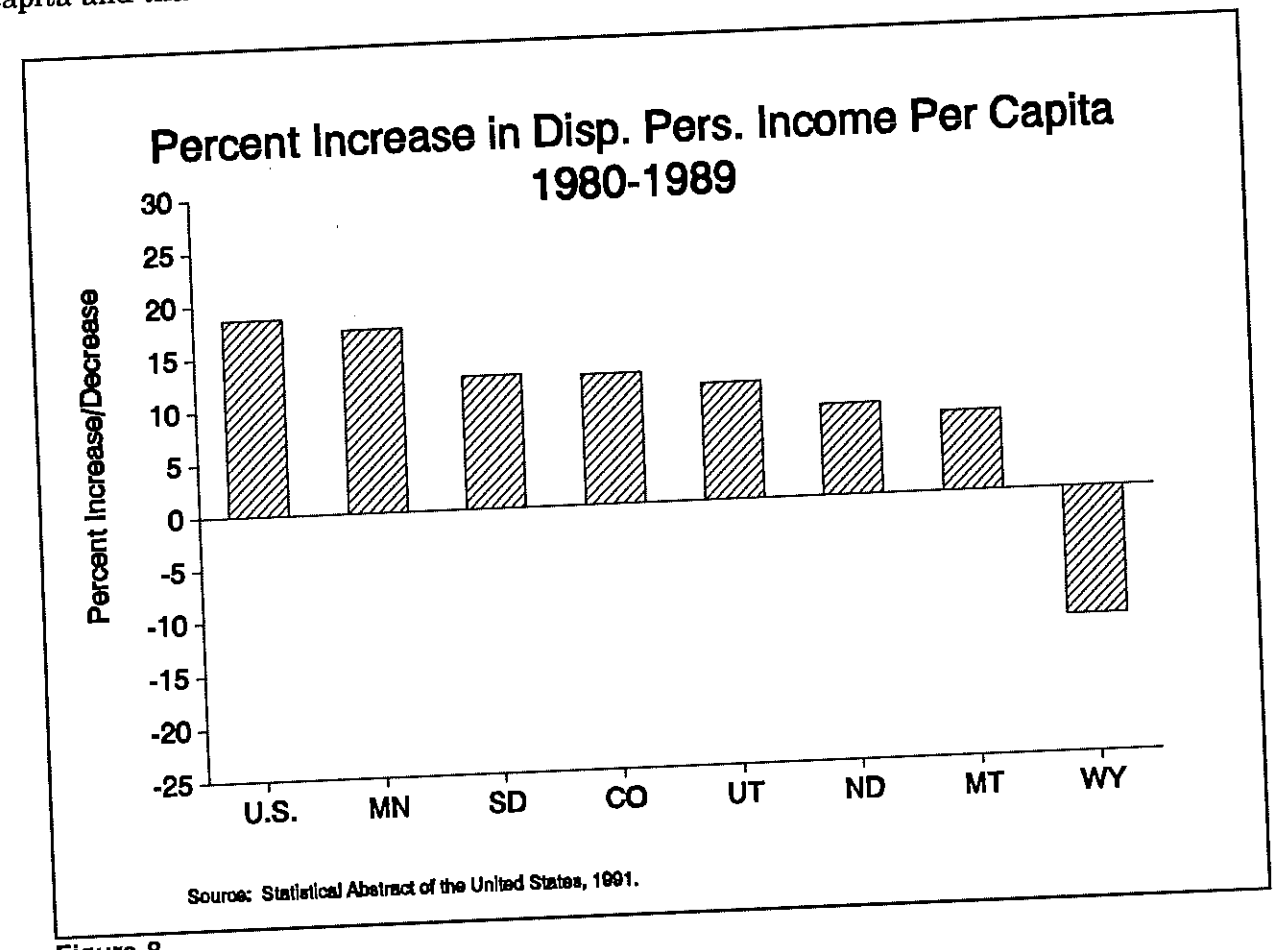

Figure 8

The second trend shows that the outmigration from rural areas occurring nationwide is also occurring in the MPC region (Figure 9). In fact the decrease in the region's non-metropolitan population as a percentage of the total from 54 percent in 1960 to 35.1 percent in 1990 is a much more dramatic change than that occurring nationwide. Several farm failures and a lack of economic opportunity in rural areas have resulted in young rural residents migrating to urban areas. An efficient rural transit system may be one way to avoid increasing outmigration from rural areas.

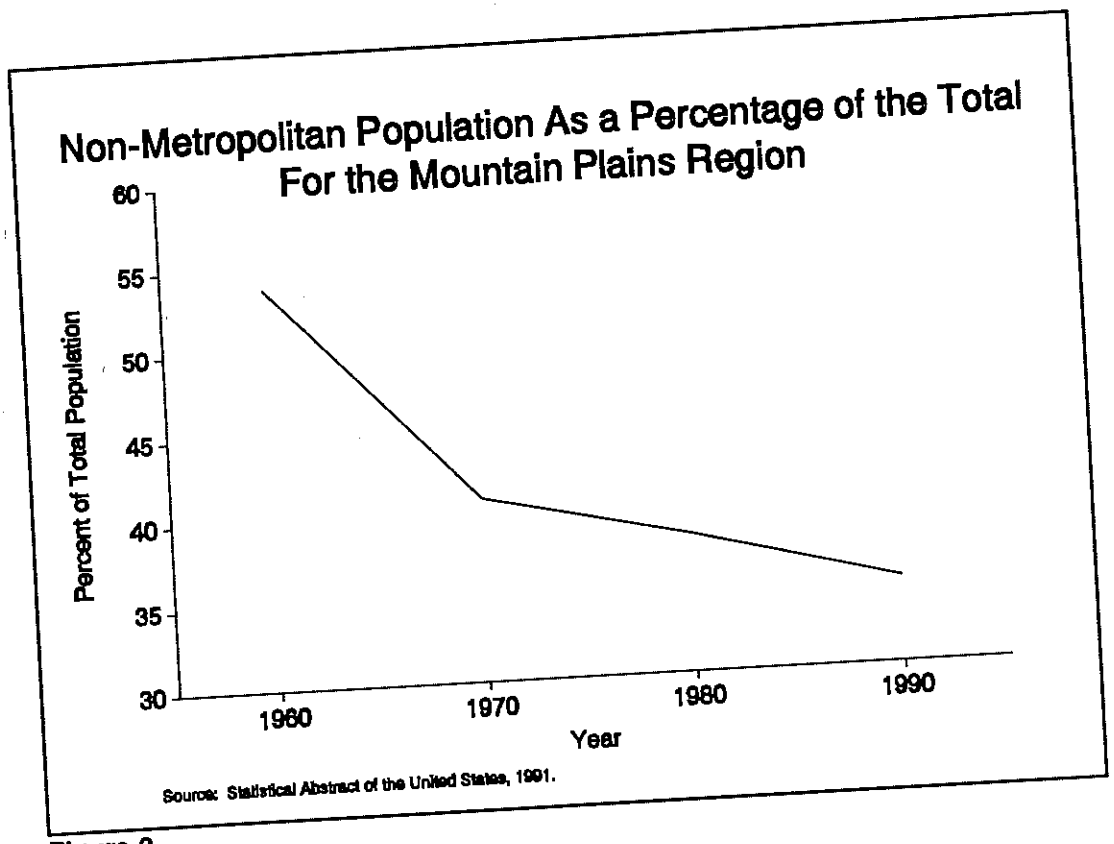

Figure 9

Finally, while rural road conditions have been deteriorating nationwide, they have also been deteriorating in the MPC region. Because many of the states in the region have low income taxes, a large portion of road funding comes from local sources. In the rural areas of the MPC region, where outmigration has been occurring rapidly, the tax base to support local roads has diminished considerably. Furthermore, agricultural activity in this region has lead to an increase in heavy truck traffic over rural roads because of the formation of subterminal grain elevators and the abandonment of light-density rail lines in the region.

All of these trends suggest that a rural transit research program tailored to address issues specific to the MPC region would be beneficial. The maintenance of a

healthy rural community in the MPC region depends on continued and improved efficient transit.

CHAPTER 4

RESEARCH TOPICS

The rural transit industry is currently at a critical point in its development. Transit managers and the rural transit industry are making decisions to adjust to the changing environment. Changes may be implemented more effectively if increased knowledge of the issues facing this industry and the implications of alternative decisions are made available through research. An extensive program of research in the area of rural transit in the MPC will supply needed information to enhance the viability rural transit in the region.

The purpose of this chapter is to highlight some of the principal issues in rural transit research. A compendium of research topics and problem areas is compiled from existing literature. Research issues are related to five major categories that define the scope of an MPC rural transit research program. These categories include transit safety, evaluation, efficiency, policy, and technology (Figure 10).

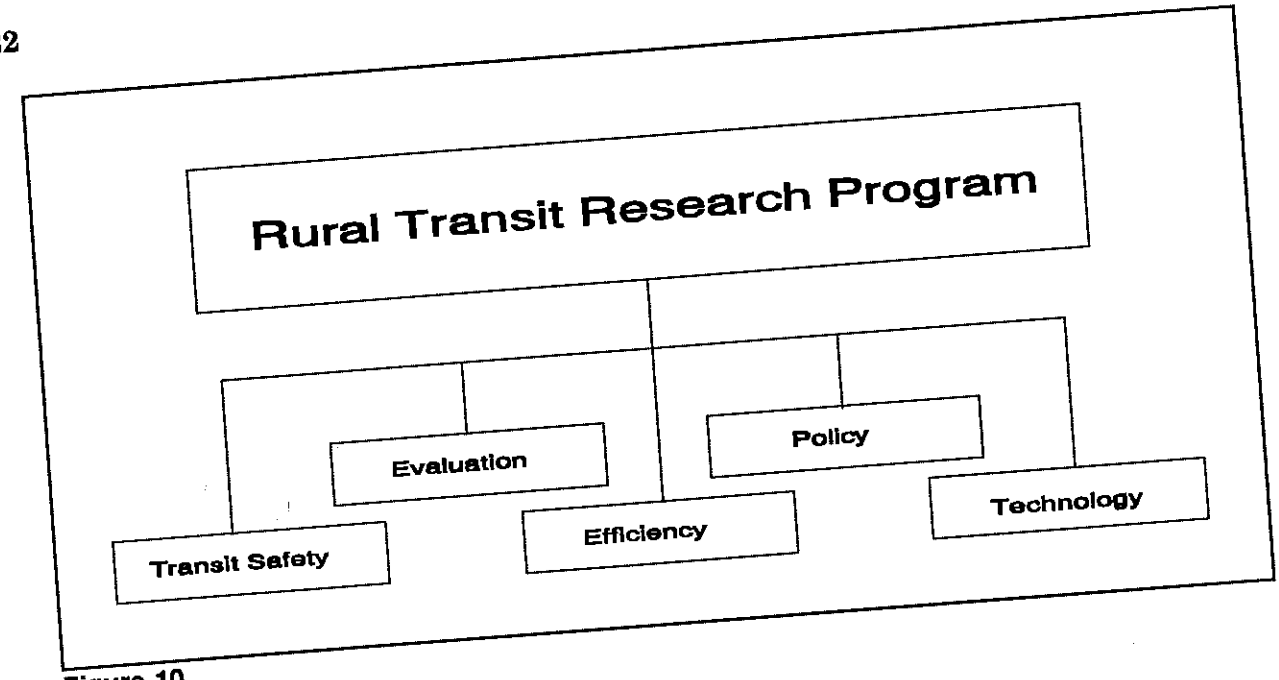

Figure 10

SAFETY

The federal government has stated that its top priority in transportation is safety.[8] With the changing environment in rural transit and the introduction of new technologies, safety research must represent a significant portion of future rural transit research.

One safety research issue stems from the federal government's commitment to using alternative fuels. New fuels must be tested to ensure they will not endanger humans, in the case of a possible fuel leak or in the case of regular emissions. Also, the new vehicles which use these fuels must be tested for their safety and reliability. Safety considerations must be the foremost factors in the decisions regarding the use of alternative fuels.

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[8]U.S. Department of Transportation. *Moving America - New Directions, New Opportunities: A Statement of National Transportation Policy Strategies for Action.* U.S. Department of Transportation, Washington, D.C. February, 1990, p. 81.

Another research topic in this area is the training of rural transit operators in the use of handicapped accessibility devices.[9] Because of the Americans with Disabilities Act (ADA) and the growing number of elderly and handicapped persons, there will be an increase in the elderly and handicapped ridership base. Consequently, there will be more rural transit operators using handicapped accessibility devices. If transit operators are not properly trained in the use and maintenance of these devices, transit safety will decline.

In addition, a safety reporting system would be beneficial for rural transit. Currently, the Federal Transit Administration (FTA), researchers, and others have little knowledge of the safety problems encountered by rural transit providers, as no safety problems need to be reported. In order to improve rural transit safety, an awareness of these problems should be obtained. Research into the formulation of a reporting system which includes data on accidents and safety concerns would be beneficial.

There are also many other safety issues in rural transit. The *Transportation and Traffic Engineering Handbook* identifies three types of accidents that occur on transit systems. These three types are: (1) Vehicle collision accidents, (2) On-board passenger accidents, and (3) Non-vehicle station accidents. Possible research in vehicle collision accidents might focus on the implications of driver drug testing, vehicle safety design, or the length of hours that drivers are operating vehicles. Research in on-board passenger accidents might focus on aspects of the vehicle design such as entry ramps, door operation mechanisms, and seating. Finally, research on non-vehicle station safety might focus on aspects of the waiting station such as traffic at the location and size of the waiting area.

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[9]While some training programs in this area have been created by RTAP, a further need exists as more accessibility devices are being developed, and many more will have to be developed as a result of the ADA.

EVALUATION

Because of increased federal budget problems, and increased operating costs of transit systems, the federal government has become interested in efficiency and effectiveness evaluation in recent years. As the use of efficiency and effectiveness measures are expanded, more research will be needed in improving evaluation measures and in increasing the uses of evaluation.

One possible research topic emanates from the need for evaluation data for rural transit systems. Section 15 of the Urban Mass Transportation Act of 1964 requires transit systems requesting urban formula grants (Section 9) to comply with a data reporting system. The data requirements for this system are fairly comprehensive, and all data are compiled in an annual report. The data obtained under this system provide an effective means for government evaluation, or in-house evaluation. However, no such system exists for rural transit systems. In fact, a previous study suggests that many rural transit systems do not even collect the data needed for in-house evaluation.[10] Data needs for evaluating rural transit systems may be quite different from those for evaluating urban transit systems. Thus, one possible area of research might include the data needs of rural transit systems and the formulation of a standardized reporting system (including safety data).

Another justification for research in this area is that most of the evaluation methodologies are geared toward urban transit. While some performance measures are available for rural transit evaluation, the development of additional measures that take into account the size and scope of rural transit is necessary. Using urban performance

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[10]Bitzan, John D. and Denver D. Tolliver. *An Analysis of the Efficiency and Effectiveness of Selected Rural Transit Systems in the State of North Dakota.* UGPTI Publication No. 84. Upper Great Plains Transportation Institute, North Dakota State University, Fargo, 1990.

measures to evaluate rural transit systems may be meaningless. In addition, more evaluation studies in rural transit must be performed to set a baseline for performance of various sized rural transit systems. Evaluation of a specific rural transit system is relatively meaningless without a baseline or standards for comparison.

Research that aims at educating rural transit operators in evaluation methodology and in tailoring evaluation to their specific system is also necessary. All those involved in rural transit must gain an increased understanding of performance evaluation. In order for transit managers, government, and outside observers to use performance evaluation to its fullest extent, the performance measures, comparison methodologies, and implications of these comparisons must be understood by all.

EFFICIENCY

The quality of transit service and the efficiency with which it is provided will always be important aspects of public transit. The efficiency category aims at finding ways to improve the service of public transit, and to minimize the costs of providing such services. The following paragraphs outline some possible research topics aimed at improving the efficiency and effectiveness of rural transit.

One area of research in the efficiency category is the result of recent demographic trends. The Transit 2000 Task Force has pointed out some demographic trends which suggest that the demand for rural transit services will grow in the near future. They point out expected increases in the elderly and handicapped populations. The elderly population (65 and over) was 25.7 million in 1980, and is expected to grow to a level of 35.1 million by the year 2000, when it will equal 13.1 percent of the overall population. If present trends continue, the elderly population is expected to grow to nearly 65 million by 2030, when it will equal 21 percent of the population. Further, the very elderly

population (75 and over) is expected grow by 50 percent between 1985 and 2000. According to the Transit 2000 Task Force, the disabled population is also expected to grow faster than the population as a whole. Their fast growth is attributed to improved medical care, increases in auto accidents, and increased longevity. As a result, research is needed in improving transit service efficiency and effectiveness for the elderly and handicapped.

Another research topic deals with the costs associated with transporting rural residents to schools. The costs of transporting students to schools is high in rural areas, and a larger percentage of the education budget is typically spent on transportation in rural areas than in urban areas.[11] The higher costs of transporting rural students mean that less money is spent on facilities and teachers, thereby affecting the quality of education in rural areas. Alternatives for reducing the costs of rural school transportation are needed. A possibility includes using school buses for public or specialized transportation when they are not in use for transporting students. Rural school buses are typically idle for long periods of time, as students are only transported to and from school. Research is needed in finding ways to reduce the costs of transportation for education in rural areas.

A third area of research in the efficiency area is in the area of coordinating transportation services between various agencies. In many rural areas, several different human service agencies, elderly homes, and other interests provide somewhat duplicative services. Many researchers believe that there are substantial potential cost savings from coordinating these services. More research is needed to quantify the benefits from such

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[11]Parks, Gail A., Peggy J. Ross, and Anne E. Just. "Education," *Rural Society in the U.S.: Issues for the 1980s*, ed. by Don A. Dillman and Daryl J. Hobbs, Boulder, CO: Westview Press. 1982, p. 191.

coordination, and to identify and eliminate the barriers to it. While a great deal of research has focussed on coordination between agencies, and FTA and Health and Human Services (HHS) have formed a coordinating council, the continued existence of a problem in this area suggests further research is necessary.

A fourth research area stems from psychological barriers to rural transit. Ira Kaye (1977)[12] suggests that psychological barriers to public transit exist in many rural areas. When an attempt to introduce public transit in these areas is made, resistance is often encountered. This resistance is seen in the form of a reluctance of the elderly to ride with the young, a reluctance of the well to ride with the ill, and a reluctance of the affluent to ride with the poor, or vice versa in any case. This hypothesized resistance may account for the limited success in generating ridership in many rural communities. Research in identifying and overcoming possible attitudinal barriers to rural people using public transit is needed.

Another research area is a result of the need for rural connections. Prior to deregulation, intercity passenger carriers were required to continue service to rural areas, where costs often exceeded revenues. However, these carriers had protection from competition for profitable routes. Thus, intercity carriers used profitable routes to subsidize unprofitable rural routes. The Bus Regulatory Reform Act (BRRA) of 1982 was an attempt to promote competition in the transit industry. Intercity carriers were no longer required to serve unprofitable routes, and were no longer protected from competition on profitable routes. Intercity carriers dropped service to several rural communities following the passage of this act, leaving many rural residents with no

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[12]Kaye, Ira. "Transportation," *Rural Society in the U.S.: Issues for the 1980s*, ed. Don A. Dillman and Daryl J. Hobbs, Boulder, CO: Westview Press. 1982, p. 156.

alternatives to the automobile for intercity travel.[13] Many rural residents who did not have access to an automobile, did not have a driver's license, or were unable to drive because of some physical or mental limitation could no longer travel to distant cities.

Greyhound's rural connection program is one program aimed at improving the intercity mobility of rural residents. However, the success of this program has been very limited to date. Thus, more research in intramodal and intermodal coordination is needed to enhance the mobility of rural residents. The long distances between rural cities and major metropolitan areas in many states necessitate greater coordination between rural transit and other travel modes (including air, rail, and intercity bus services). Lack of coordination often causes travelers from rural communities to incur excess costs in time and money. Research aimed at a feasible coordination of rural transit with these other modes and within the transit mode, and at estimating the demand for such coordination is needed.

Labor productivity is also an important topic in both rural and urban transit. There are several transit operating policies that affect the productivity and attitude of its workers. Rural transit research is needed in this area to examine what kinds of factors influence the job satisfaction of transit operators, and how this satisfaction affects performance. In addition, research is needed in alternate driver scheduling to minimize excess capacity while maximizing reliable service. Since alternate driver wages comprise such a large portion of rural transit costs, they are especially important in rural transit.

Research in reducing operating deficits will be very important for the future of rural transit. In recent years, rural transit costs have increased greatly, while passenger

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[13]Fravel, Frederic D., Elisabeth R. Hayes, and Kenneth I. Hosen. *Intercity Bus Feeder Project Program Analysis*, prepared for Community Transportation Association of America and funded by Urban Mass Transportation Administration, U.S. Department of Transportation, Washington, DC, 1990.

revenues have not.[14] Because of the federal government's goals of reducing transit's dependence on the Federal General Fund and increasing the funding responsibility of the states, future survival of many rural transit systems will depend on cost reductions and/or increased passenger funding. Strategies such as user-side subsidies, which pay transit providers a subsidy amount for each trip provided to the transit dependent rather than paying a lump sum subsidy to a provider for maintaining a specified fare and service level, have been shown to reduce operating assistance supplied by government. This has occurred because only those who are most in need are subsidized, rather than all transit users. New strategies such as this should be researched and tested on rural transit systems. Furthermore, research estimating the price elasticities of demand for transit of different groups, as well as research in distance-based pricing is needed. Knowledge of price elasticities of different groups will allow rural operators to maximize passenger revenues through differential pricing, and distance-based pricing may also increase revenues. Because the elderly and handicapped form a large segment of the rural population, a specific focus on how price changes would affect them is needed. New financing methods for rural transit, such as these, will become necessary in the near future, to assure the viability of many systems. Research aimed at cost reduction for rural transit systems is also needed. This research should focus on internal and external factors that could be altered to reduce costs.

Finally, research in reducing the insurance costs of rural transit will be important for the future viability of rural transit. The rising costs of liability insurance for rural transit operators have become a great concern in recent years. Between 1983 and 1986

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[14] *Transit Planning for Small and Medium Sized Areas*. Education Extension Course, Georgia Institute of Technology, Atlanta, Georgia, May 9-10, 1991.

the cost of liability insurance for commercial vehicles rose 121 percent in the United States. This occurred as the cost of liability insurance for private vehicles rose only 40 percent.[15] Mazaheri (1988) attributes the increase in liability insurance rates to two factors: (1) an increasing number of claims, and (2) declining interest rates. Many rural and specialized transit systems are finding it more difficult to pay for increased liability insurance costs, because financial resources are limited. Further, many of these systems incur higher rates than other systems, and several have difficulty obtaining liability insurance since these systems are perceived by insurance providers to carry higher risks. These systems have more medical claims, greater frailty of passengers, and less training and safety programs. Several states have attempted to reduce liability insurance costs of transit systems by forming pooled insurance programs. However, the results of such programs have been mixed. More alternatives to the rising costs of conventional liability insurance are needed.

POLICY

Several research topics are also present in the policy category of rural transit. These topics examine present policy and discuss possible revisions to present policy, the consequences of proposed policy changes, and policies which may improve rural transit efficiency, effectiveness, and safety. The following examples represent some possible research topics in this area.

One recent policy proposal which would have a significant effect on rural transportation places restrictions on elderly drivers. Although a larger percentage of the elderly are expected to own driver's licenses in the future, somewhat offsetting the

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[15]Mazaheri, Mort L. *Transit Insurance Options and Alternatives for North Dakota.* College of Engineering and Architecture, North Dakota State University, Fargo, 1988.

increased need for transit due to demographic trends, recent discussions have focussed on the possibility of placing restrictions on elderly drivers. These discussions have resulted from increased accident incidence involving the elderly. However, the costs of such a decision must be weighed against the benefits. The costs associated with increasing the transit dependence of the elderly may outweigh the benefits associated with increased safety.

Another policy affecting rural public transit is the recently passed Americans with Disabilities Act (ADA). The Americans with Disabilities Act imposes several rules on transit systems in order to make them more sensitive to the transportation needs of the disabled. It does not allow discrimination against an individual with a disability in connection with the provision of transportation service for the general public. Several provisions are made to assure this, including: (1) a rule prohibiting extra charges for providing services for the handicapped such as wheelchair lifts, (2) a rule making training of employees in operating handicapped-accessible equipment and in dealing with the handicapped mandatory, (3) a rule stating that all transportation vehicles purchased for fixed route services must be handicapped accessible in the future, (4) a rule stating that demand responsive services may purchase non-accessible vehicles only if the system in its entirety provides equal service to the disabled, (5) a rule stating that a public agency may not diminish its percentage of handicapped-accessible vehicles used in transportation service when adding an extra route through contract with a private agency, (6) a rule stating that private agencies contracting with public agencies are bound by the same rules, (7) a rule imposing the same vehicle acquirement regulations on private agencies acting without contract to the public with the exception that if the system viewed in its entirety provides equivalent service for handicapped riders as it does for other riders, (8) a

rule stating that alterations or additions to transportation facilities must (with some exceptions) include making the facilities handicapped accessible, and (9) a rule stating that paratransit must be provided as a complement to fixed route service for those unable to use the fixed route service, even when the fixed route service has handicapped accessible vehicles.

These regulations are not likely to have the great impact on rural transit that they will on urban transit for two main reasons. First, most rural transit systems are demand responsive systems. Fixed route systems are not feasible in rural areas in most cases. This fact reduces the impact of this act, since these systems will not have to make all future bus purchases handicapped accessible. Second, the main customers served by many rural transit systems are currently the elderly and handicapped. Thus, most rural transit systems already have several handicapped-accessible vehicles in place, and most have a program for serving this population which is comparable to the service provided to non-handicapped population. Also, most of these systems have trained personnel who are well versed in operating the handicapped-accessible equipment and in dealing with the handicapped.

However, the ADA will effect rural transit, especially in communities where the transit system does not have handicapped-accessible vehicles. This act will assure equal access to rural transit by the handicapped in these areas. Thus, the mobility and access of these groups will be enhanced. In addition, this act defines access for the disabled to include vehicles with special features for the hearing impaired, the blind, and the mentally ill. These features will improve access in rural areas for these groups which have traditionally been neglected in vehicle accessibility design (i.e. most handicapped accessible vehicles only provide access for wheelchairs).

In addition to the improvements in mobility realized by the rural handicapped population as a result of this act, transit costs are likely to increase for many rural systems. Thus, the federal government must take this into account when evaluating the efficiency of systems. The introduction of the ADA at the same time that the federal government is taking a renewed interest in cost efficiency suggests that the federal government's goals for rural transit should be stated more clearly. Efficiency evaluation measures used by the federal government should reflect the goals that the Federal Transit Administration (FTA) sets for rural transit. More research on the impacts of the ADA, and appropriate evaluation by the federal government is needed.

A third policy issue involves the federal government's interest in the involvement of the private sector in transit. Past trends have suggested that private sector involvement in transit may be most feasible in rural areas. More research is needed to find an environment where private sector involvement in transit is most likely to succeed, and to determine to what degree the private sector should be involved in rural transit.

The federal government has also shown an interest in using efficiency measures in order to determine the amount of federal assistance to give to transit. In the event that a data reporting schedule is formulated for rural transit systems, the consequences of using this data in deciding funding should be studied. Research is needed to examine how this policy would affect transit, and to formulate an evaluation system that is consistent with the goals of rural transit.

Another important policy issue relates to the federal government's disadvantaged business enterprise program (DBE). This program, as amended in 1987, requires transit projects and transit vehicle manufacturers who meet certain threshold requirements to designate that a minimum of 10 percent of appropriations will be spent with

disadvantaged business enterprises. DBEs are defined as minority, women-owned, and other disadvantaged firms. The government's goal with this program is to allow disadvantaged firms to develop into strong economic entities in the transportation marketplace. However, this program may conflict with the federal government's goal of maximizing transit efficiency in some cases. It is possible that a strong efficiency evaluation effort and the provision of funding levels based on efficiency by the federal government could achieve both goals. This is because transit firms would lose funding by discriminating under such a system (i.e., if the lowest cost supplier is a minority owned firm, and the transit firm chooses to discriminate, his efficiency level will suffer, and, therefore, he will lose federal government funding). Thus, disadvantaged suppliers may no longer be at a disadvantage in supplying the transit industry, and the efficiency of the transit industry may improve under such a system. More research in this area is needed in order to determine the best policy for achieving the goals of allowing disadvantaged firms to compete and to maximize transit efficiency in doing so.

Criteria for distributing the costs of regional transit systems among the towns within the region is another important research area. Collura et al.[16] suggest that the variety of procedures used can be evaluated with respect to two criteria: 1) the ease and cost of use, and 2) the equity of the results. More study on the effects of the allocation of regional transit costs among towns may prove beneficial.

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[16]Collura, John, James W. Male, and Ayodele Mobolurin. "Examination of Regional Transit Cost Allocation Among Towns: Five Case Studies." *Transportation Research Record*, No. 813, Transportation Research Board, National Research Council, Washington, D.C., 1981.

Another important issue in public transportation involves the criteria used at the state or federal level in distributing transit assistance. Forkenbrock[17] lists five criteria which may be used by states in allocating the funding between transit projects: 1) efficiency maximization, 2) uniform service quality, 3) equal funding for similar sized areas, 4) meeting the needs of the transportation disadvantaged, and 5) responsiveness to local preferences. Forkenbrock suggests that the best method of allocation involves a mix of efficiency maximization and responsiveness to local preferences. More research into the methods of allocation of funding at the federal and state level could benefit rural transit.

With increasing reliance on funding from state and local sources in the future, the issue arises of how different funding sources would affect different income groups, that is who bears the burden of the tax? Rock[18] uses U.S. Labor Statistics data to analyze the incidence of several types of taxes at the local level. He finds household taxes, cigarette taxes, and increased transit fares to be regressive, while finding income taxes, parking taxes, and stock transfer taxes to be progressive. He suggests that decreased federal funding will lead to more regressive taxes for the continuation of transit services. However, more research is needed in this area, as Rock only looked at the incidence of the tax (ability to pay approach) and not the benefits in relation to the costs (the benefit principle). Also, he only looked at consumer taxes, while ignoring taxes on industry.

Other questions related to the increased reliance on funding from state and local sources are as follows: Should transit subsidies come from non-transportation users?

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[17]Forkenbrock, David J. "Transit Performance Measures and Local Objectives: State-Level Policy Considerations (Abridgement)." *Transportation Research Record*, No. 813, Transportation Research Board, National Research Council, Washington, D.C., 1981.

[18]Rock, Steven M. "New Funding Sources For Public Transit: Who Pays?" *Transportation Research Record*, No. 900, Transportation Research Board, National Research Council, Washington, D.C., 1983.

Should transit funding take into account social considerations (e.g. taxes on cigarettes and alcohol)? Is the distribution of funding between roads and transit an equitable distribution? Are rural areas and cities being treated equally as far as transit benefits and costs are concerned? What funding sources are politically acceptable and substantial enough to offer short-term or long-term assistance? Answers to these questions are important to the future of rural transit funding.

Finally, the effect of transit investment on rural economic development is another important policy question. Watterson[19] argues that, while the economic development impacts of a transit project are most often not the primary concern when evaluating transit investment, they still should be clear and known. Watterson attempts to improve the methodology for measuring the economic impacts of a transit investment. The economic and development impacts of transit investment should be included in transit investment decisions. More research on the effects of transit investment on economic development is needed.

TECHNOLOGY

There are several problems facing rural transit that can only be solved through technological solutions. Technology research will increase as the demands placed on rural transit grow. The following are some possible research topics in the technology category of research.

Several rural transit systems have provided wheelchair-accessible vehicles on their routes in the past. However, few (if any) have provided special services for the hearing

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[19]Watterson, W.T. "Estimating Economic and Development Impacts of Transit Investments." *Transportation Research Record*, No. 1046, Transportation Research Board, National Research Council, Washington, D.C., 1985.

impaired and sight impaired. The hearing impaired and sight impaired miss connections, experience long delays, and encounter increased risk in emergencies due to the lack of special services to accommodate them. Furthermore, the ADA will require specialized services for these groups. Thus, technology research is needed to find ways to accommodate these groups in rural transit. This research might consist of merely adapting the several current technologies which exist in serving the hearing impaired and sight impaired to rural transit, or it may involve developing new technologies. However, this technology research must aim at providing these services at costs that are feasible for small rural transit systems.

Another research topic stems from the passage of Clean Air Act Amendments in 1990 and the proposed National Energy Strategy (NES) by the President. The goal of these policies is to reduce vehicle exhaust emissions and reduce the U.S. dependence on foreign oil. The Clean Air Act Amendments impose tighter emission standards, while the NES requires the conversion of buses to alternative fuels in urban areas. While these standards currently apply to urban transit only, it is likely that the standards may be imposed in rural areas in the future. Research in finding new alternative fuels, as well as feasible ways to use these fuels is necessary. FTA's Clean Air Program (CAP) provides for research in estimating the capital and operating impacts of such a conversion, and provides some technical assistance for this transition. However, research which finds alternative fuels is not provided for in this program. The benefits of such research are likely to be great.

Other research issues in the technology area include adapting Intelligent Vehicle Highway Systems (IVHS) technology to rural transit, developing computerized maintenance and routing systems, and adapting vehicle diagnostic equipment for use on

transit vehicles. These developments could improve the efficiency of routing, fare collection, and maintenance.

Finally, while many new technologies may prove beneficial to rural transit, research aimed at reducing the costs of existing technologies is also greatly needed. The most prevalent problem with adapting technologies to rural transit is the costs. While efficiencies may justify the costs of technologies for large transit systems, most rural transit systems are small enough that use of these technologies could not be justified without a reduction in costs.

CHAPTER 5

SURVEY RESULTS

Based on the research issues highlighted in the previous section of the report, surveys were formulated for state Section 18 administrators[20], transit managers, and passengers.[21] In order to formulate a program of research that reflects the needs in rural and small urban transit, the opinions of these groups of people must be taken into account.

SECTION 18 ADMINISTRATOR SURVEY

Section 18 administrators in Colorado, Minnesota, Montana, North Dakota, South Dakota, Utah, and Wyoming were surveyed in order to identify the rural transit issues that were important to them. Six of the seven administrators responded to the survey.[22] Issues were rated on a scale of 1 to 4, with 1 being of greatest importance. Table 1 shows the mean importance ratings for the issues listed in the survey, and ranks them according to the importance placed on them by transit administrators.

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[20]Section 18 of the Urban Mass Transportation Assistance Act of 1978 established federal funding and assistance for transit systems operating in rural and small urban areas. Each state has an agency that is responsible for administering the program and distributing federal funds to transit systems in that state.

[21]Appendix B contains copies of all three surveys.

[22]The Wyoming Section 18 administrator did not respond to the survey.

TABLE 1: IMPORTANCE OF RURAL TRANSIT ISSUES AS SEEN BY SECTION 18 ADMINISTRATORS (1=VERY IMPORTANT, 4=NOT IMPORTANT)

ISSUE	MEAN IMPORTANCE	RANK
Implications of the Americans with Disabilities Act	1.0000	1
Improving efficiency and effectiveness of service to elderly and handicapped	1.1667	2
Issues related to increased reliance on state and local funding of transit	1.1667	2
Operating policies	1.5000	4
Training operators in handicapped accessibility services	1.5000	4
Assessing demand for rural connections to intercity passenger service	1.5000	4
Assessing demand for coordination of rural transit with other modes, and examining the feasibility of such coordination	1.5000	4
Coordination of Section 18 and human service agencies	1.6667	9
Use of evaluations (e.g. should they be used to decide funding?)	1.6667	9
Using efficiency measures to decide funding of transit systems	1.6667	9
Assessing rural travel demand	1.8333	12
Vehicle safety design	1.8333	12
Training operators in areas besides handicapped accessibility services	1.8333	12
Data needs of rural transit systems	1.8333	12
Evaluation criteria	1.8333	12
Reducing insurance costs for rural transit	1.8333	12
The effect of federal government policies on efficiency	2.0000	18
Finding alternative fuels and providing for the feasibility of their use	2.1667	19
The formulation of a standardized data reporting system	2.1667	19
Distance based pricing	2.1667	19
Innovative financing methods	2.1667	19
Criteria used for distributing transit assistance		

TABLE 1: IMPORTANCE OF RURAL TRANSIT ISSUES AS SEEN BY SECTION 18 ADMINISTRATORS (1=VERY IMPORTANT, 4=NOT IMPORTANT)

ISSUE	MEAN IMPORTANCE	RANK
Adapting technology to serve hearing and sight impaired in rural transit	2.1667	19
Driver drug testing	2.3333	24
Training operators in other areas	2.3333	24
Reducing the transportation costs for education in rural areas	2.3333	24
Estimating the price elasticity of rural transit demand	2.3333	24
User-side subsidies and other new strategies	2.3333	24
The tax incidence of different funding sources	2.3333	24
The effect of transit investment on economic development	2.3333	24
Using computerized information systems for maintenance	2.5000	32
Identifying and overcoming possible attitudinal barriers to rural people using public transit	2.5000	32
Measuring the costs and benefits of elderly driver restrictions	2.6667	34
Passenger security at pick up sights and on vehicles	2.6667	34
Labor productivity	2.6667	34
Identifying factors influencing the job satisfaction of transit employees	2.6667	34
Using efficiency measures to decide funding of transit systems	2.8000	38
Allocation of regional transit costs between towns	2.8333	39
Vehicle security	3.0000	40
Private sector involvement in rural transit	3.0000	40
Adapting vehicle diagnostic equipment for use on transit vehicles	3.1667	42
Implications of the federal governments disadvantaged business enterprise (DBE) program	3.1667	42
Adapting IVHS technology to rural transit	3.3333	44
Waiting station design	3.4000	45
Traffic at waiting stations		

Table 1 shows that Section 18 administrators in the six states believe there are many important issues in rural transit. The mean importance level for the top 18 issues is between 1 and 2. These ratings represent very and somewhat important respectively. Furthermore, the top 41 issues all have a mean rating of at least slightly important.

Section 18 administrators found issues related to the service of the elderly and handicapped, transit efficiency, policies affecting transit, coordination (intramodal and intermodal), evaluation and data methods, and vehicle safety to be the most important. Clearly, the Section 18 administrators believe the Americans with Disabilities Act will have a significant impact on the rural transit industry. The implications of this act were rated as a very important issue by all Section 18 administrators. Specifically, administrators expressed concern over the cost increases resulting from the ADA, and the need for a widespread explanation of the act and what it means to transit providers.

When asked to list issues they thought were important, Section 18 administrators suggested car-ownership costs vs. transit costs, costs and benefits of drug testing, productivity of volunteer drivers vs. paid drivers, costs and benefits of elderly driver restrictions, economic development impacts of rural transit, the ability to pay of users, federal policies inhibiting efficiency, vehicle insurance costs, state highway priorities vs. transit priorities, rural vs. urban transit funding, and intercity connections with rural transit.

All of these issues can be grouped into the five categories of safety, evaluation, efficiency, policy, and technology. Table 2 shows how state administrators rated the importance of these five areas of research.

TABLE 2: RANKING OF THE FIVE AREAS OF RESEARCH BY SECTION 18 ADMINISTRATORS

Research Area	Ranking
Safety	1
Policy	1
Efficiency	3
Evaluation	4
Technology	5

Table 2 shows that safety and policy are the most important research areas as seen by transit administrators. However, the high importance placed on all issues by the transit administrators suggests that all of these research areas are important.

TRANSIT MANAGER SURVEY

After surveying Section 18 administrators, a survey of transit managers in the region was performed. A list of Section 18 transit operations was obtained from each state administrator, and a comprehensive mailing list of all Section 18 transit operations in the Mountain Plains region was formed (Appendix A). Forty-three of the one-hundred and sixty-two rural and small urban transit operations in the region responded to the survey, for a response rate of 26.5 percent. Furthermore, responses were received from transit managers in every state. Table 3 shows the mean importance and the ranks of the issues, as rated by the transit managers in the region.

TABLE 3: IMPORTANCE OF RURAL TRANSIT ISSUES AS SEEN BY TRANSIT MANAGERS (1=VERY IMPORTANT, 4=NOT IMPORTANT)

ISSUE	MEAN IMPORTANCE	RANK
Vehicle safety design	1.1628	1
Operating policies	1.2791	2
Training operators in handicapped accessibility services	1.3256	3
Issues related to increased reliance on state and local funding of transit	1.3500	4
Criteria used for distributing transit assistance	1.3902	5
Improving efficiency and effectiveness of service to elderly and handicapped	1.4000	6
Coordination of Section 18 and human service agencies	1.4286	7
Reducing insurance costs for rural transit	1.4762	8
Training operators in areas besides handicapped accessibility services	1.4878	9
Innovative financing methods	1.5366	10
Improving rural connections	1.5610	11
The effect of federal government policies on efficiency	1.5854	12
Identifying and overcoming possible attitudinal barriers to rural people using public transit	1.7073	13
Implications of the Americans with Disabilities Act	1.7317	14
The effect of transit investment on economic development	1.7317	14
User-side subsidies and other new strategies	1.7561	16
Assessing rural travel demand	1.7805	17
Allocation of regional transit costs between towns	1.8049	18
Data needs of rural transit systems	1.8293	19
Assessing demand for coordination of rural transit with other modes, and examining the feasibility of such coordination	1.8333	20
The tax incidence of different funding sources	1.8781	21
Labor productivity in rural transit	1.8781	21
Measuring the costs and benefits of elderly driver restrictions	1.9500	23
Reducing the transportation costs for education in rural areas	1.9756	24

TABLE 3: IMPORTANCE OF RURAL TRANSIT ISSUES AS SEEN BY TRANSIT MANAGERS (1=VERY IMPORTANT, 4=NOT IMPORTANT)

ISSUE	MEAN IMPORTANCE	RANK
Using efficiency measures to decide funding of transit systems	1.9756	24
Identifying the factors influencing the job satisfaction of transit employees	1.9762	26
Assessing the demand for rural connections to intercity passenger service	2.0000	27
Driver drug testing	2.0233	28
Passenger security at pick up sights and on vehicles	2.1191	29
Evaluation criteria	2.1220	30
Distance based pricing	2.1463	31
Vehicle security	2.1463	31
Estimating the price elasticity of rural transit demand	2.1707	33
Adapting technology to serve hearing and sight impaired in rural transit	2.1750	34
Finding alternative fuels and providing for the feasibility of their use	2.2500	35
The formulation of a standardized data reporting system for rural transit	2.2619	36
Using computerized information systems for maintenance	2.2821	37
Private sector involvement in rural transit	2.2927	38
Implications of the federal government's disadvantaged business enterprise (DBE) program	2.4103	39
Adapting vehicle diagnostic equipment for use on transit vehicles	2.4615	40
Use of evaluations (e.g. should they be used to decide funding?)	2.4762	41
Safety of alternative fuels	2.5750	42
Adapting IVHS technology to rural transit	2.7097	43
Traffic at transit waiting stations	2.9474	44
Transit waiting station design	2.9487	45

Table 3 shows that transit managers placed a high importance on most issues. The top 27 issues all are rated as at least somewhat important by the transit managers. Transit managers rated safety, training, policy issues, efficiency issues, and the service of the elderly and handicapped as the most important issues. When asked what specific issues they deemed important, transit managers listed the mental and physical demands on drivers, fringe benefit cost containment, dealing with stress for managers, recruiting qualified drivers, effects of federal government policies on efficiency, vehicle design, appropriate performance measures, ADA impacts, promotion for rural systems, funding equity between urban and rural areas, insurance costs, costs and benefits of maintaining the independence of the elderly and handicapped, the impact of transit on the rural environment, transit pricing, maintenance strategies, innovative financing, estimating the need for rural transit, costs and benefits of drug testing, and transit and the quality of life in rural areas. Table 4 shows transit managers' rankings of the five research areas.

TABLE 4: RANKING OF THE FIVE AREAS OF RESEARCH BY SECTION 18 MANAGERS

Research Area	Ranking
Safety	1
Efficiency	2
Policy	3
Evaluation	4
Technology	5

Table 4 shows that the rankings of the five research categories by transit managers is similar to the rankings by Section 18 administrators. The high ranking of all research issues by transit managers suggests that all of these research areas are important.

Several other important findings resulted from these surveys. First, nearly 80 percent of the system managers responding believe that a performance evaluation guidebook could be beneficial if it differentiates between the various types of systems. The need for an evaluation guidebook is exacerbated by the fact that less than half of the systems responding to the survey use performance evaluation, and many that use performance evaluation do little more than a ridership survey. Second, nearly 70 percent of the managers responding to the survey reported that they believe there is a stigma attached to the use of public transit in rural areas. These systems reported that many people believe that these transit systems are for the elderly only, despite marketing efforts by the systems to erase this belief. Finally, nearly 70 percent of the transit managers responding believe that rural transit systems could benefit from further coordination.

COMPARISON BETWEEN ADMINISTRATOR AND MANAGER RESPONSES

Tables 1 and 3 show that there are differences in the importance placed on issues by Section 18 administrators and transit managers. Table 5 compares the rankings of the various issues by each of these two groups.

TABLE 5: RANKINGS OF RURAL TRANSIT ISSUES AS SEEN BY SECTION 18 ADMINISTRATORS AND TRANSIT MANAGERS

ISSUE	ADMIN. RANK	MANAGER RANK
Implications of the Americans with Disabilities Act	1	14
Improving efficiency and effectiveness of service to elderly and handicapped	2	6
Issues related to increased reliance on state and local funding of transit	2	4
Operating policies	4	2
Training operators in handicapped accessibility services	4	3
Assessing demand for rural connections to inter-city passenger service	4	27
Assessing demand for coordination of rural transit with other modes, and examining the feasibility of such coordination	4	20
Coordination of Section 18 and human service agencies	4	7
Use of evaluations (e.g. should they be used to decide funding?)	9	41
Using efficiency measures to decide funding of transit systems	9	11
Assessing rural travel demand	9	17
Vehicle safety design	12	1
Training operators in areas besides handicapped accessibility services	12	9
Data needs of rural transit systems	12	19
Evaluation criteria	12	30
Reducing insurance costs for rural transit	12	8
The effect of federal government policies on efficiency	12	12
Finding alternative fuels and providing for the feasibility of their use	18	35
The formulation of a standardized data reporting system	19	36
Distance based pricing	19	31
Innovative financing methods	19	10
Criteria used for distributing transit assistance	19	5

TABLE 5: RANKINGS OF RURAL TRANSIT ISSUES AS SEEN BY SECTION 18 ADMINISTRATORS AND TRANSIT MANAGERS

ISSUE	ADMIN. RANK	MANAGER RANK
Adapting technology to serve hearing and sight impaired in rural transit	19	34
Driver drug testing	24	28
Training operators in other areas	24	42
Reducing the transportation costs for education in rural areas	24	24
Estimating the price elasticity of rural transit demand	24	33
User-side subsidies and other new strategies	24	16
The tax incidence of different funding sources	24	21
The effect of transit investment on economic development	24	14
Using computerized information systems for maintenance	24	37
Identifying and overcoming possible attitudinal barriers to rural people using public transit	32	13
Measuring the costs and benefits of elderly driver restrictions	32	23
Passenger security at pick up sights and on vehicles	34	29
Labor productivity	34	21
Identifying factors influencing the job satisfaction of transit employees	34	26
Using efficiency measures to decide funding of transit systems	34	24
Allocation of regional transit costs between towns	38	18
Vehicle security	39	31
Private sector involvement in rural transit	40	38
Adapting vehicle diagnostic equipment for use on transit vehicles	40	40
Implications of the federal governments disadvantaged business enterprise (DBE) program	42	39
Adapting IVHS technology to rural transit	42	43
Waiting station design	44	45
Traffic at waiting stations	45	44

Table 5 shows that there are some important differences in the research priorities of administrators and managers. One major difference is in the ranking of the implications of the ADA. Section 18 administrators ranked this issue as the most important, while managers ranked it as the 14th most important issue. This inconsistency may suggest that the impacts of this act on operators are not as great as perceived by administrators. It could also be explained by the heavy emphasis on elderly and handicapped transportation in rural areas prior to this act. Because rural transit often serves a need based ridership, many of the ADA requirements are already in place.

Other large disparities in rankings are present in the ranking of intermodal and intramodal coordination. Section 18 administrators rank these issues much higher than transit managers. Since state administrators are more likely to take a multimodal view of transportation than transit managers (whose greatest concern is with the day to day operations of their own system), this is not surprising. Another large disparity exists in the ranking of the use of evaluations (should they be used to decide funding?). It was ranked much higher by transit administrators. However, Section 18 administrators and transit managers tend to agree on the ranking of using efficiency measures to decide funding of transit systems. Since these two issues are closely related, the disparity in the first issue is difficult to explain.

Evaluation criteria, alternative fuels, adapting technology to serve hearing and sight impaired, a standardized data reporting system, and distance based pricing also had large disparities in the rankings, with all issues being ranked higher by the transit administrators. Some issues that were ranked much higher by transit managers were vehicle safety design, innovative financing, criteria used for distributing transit assistance, transit investment and economic development, identifying and overcoming possible

attitudinal barriers to rural people using public transit, and the allocation of regional transit costs between towns.

Despite the discrepancies in rankings, the mean importance shown in Tables 1 and 3 suggest that these issues are important to both groups. Furthermore, several issues have similar high priority rankings by both groups. These research topics include improving the efficiency and effectiveness of service to the elderly and handicapped, issues related to increased reliance on state and local funding of transit, operating policies of transit systems, training operators in handicapped-accessibility services, coordination of Section 18 and human service agencies, using efficiency measures to decide funding of transit systems, training operators in areas besides handicapped-accessibility services, reducing insurance costs for rural transit, and the effect of federal government policies on efficiency.

PASSENGER SURVEY

After surveying transit administrators and transit managers, a survey of passengers in the region was performed. Transit managers in Minnesota, Montana, North Dakota, and Wyoming agreed to administer an on board survey. The typical rural transit passenger, who participated in our survey, was between the 55 and 65 years of age, had one vehicle in the household, and used the transit service for 3.2 trips per week. The most common purpose for trips was to socialize. About one-third of the survey participants were handicapped. The rating of rural transit issues by the 81 passengers responding is shown in Table 6.

TABLE 6: IMPORTANCE OF RURAL TRANSIT ISSUES AS SEEN BY TRANSIT PASSENGERS

ISSUE	MEAN IMPORTANCE	RANK
Vehicle safety design	1.3088	1
Passenger security at pick up sights and on vehicles	1.6032	2
Improving the efficiency and effectiveness of service to elderly and handicapped	1.6923	3
The effect of federal government policies on passenger transportation efficiency	1.7193	4
Car ownership costs vs. rural bus transportation costs	1.7705	
Adapting technology to serve hearing and sight impaired in rural passenger transportation	1.7759	6
Training operators in handicapped accessibility services	1.8361	7
Increasing passenger transportation route possibilities	1.8750	8
The effect of investment in passenger transportation on economic development	1.9153	9
How fair are various taxes used to fund passenger transportation?	1.9455	10
Reducing the transportation costs for education in rural areas	2.0328	11
Eliminating duplication of passenger transportation services	2.0943	12
Waiting station design	2.1321	13
Measuring the costs and benefits of elderly driver restrictions	2.1754	14
Traffic at waiting stations	2.1964	15
Improving connections with AMTRAK, Greyhound, and airline services	2.4909	16

Table 6 shows that transit passengers also believe that rural transit issues are important. The top 10 issues rated by passengers all had mean importance values between very important and somewhat important. Passengers found issues related to safety, service to the elderly and handicapped, policy, efficiency, and technology to be most

important. The next section of the report highlights the research priorities for a program of rural transit research.

CHAPTER 6

RESEARCH PRIORITIES

Based on the opinions of transit administrators, managers, and passengers it is clear that safety, efficiency, and policy should be the top priorities for research in rural transit. While evaluation and technology are also important areas of research, they were consistently ranked below the other areas by the three groups of people surveyed.

Safety will always be an important factor in rural transportation. Many research topics that can also be placed into the areas of efficiency, policy, evaluation, or technology affect safety. These topics include operating policies, vehicle safety design, training of operators, implications of ADA, and elderly driver restrictions. Thus, the high importance placed on safety by the three groups doesn't necessarily suggest that research dedicated solely to safety should be the top priority; it suggests that safety should always be an important consideration in rural transit research.

Many current policies do affect rural transit, and many future policies or proposed policies will impact rural transit operations. Future policy research in rural transit should be aimed at detecting any inefficiencies the current policies impose on rural and small urban transit systems. Focus should also be concentrated on the most likely effects of proposed policy on rural and small urban transit systems, and identifying policies that create solutions to current rural and small urban transit problems. Furthermore, safety and efficiency should always be considerations in future policy research.

Efficiency allows rural transit systems to continue operations under conditions of increasingly limited funding. In order to adapt to changes in the future, rural transit systems must continually strive for ways to improve efficiency. Even where efficiency is not the primary focus of a research effort, it must always be taken into account in future

research. Efficiency research should focus on improving efficiency, identifying hindrances on efficiency, and estimating the effects of future changes on efficiency.

While evaluation was not listed as one of the top three priorities by transit managers or transit administrators, it nonetheless remains an important research area. In order to gauge efficiency or safety improvements, accurate evaluation methods must be in place. The fact that less than half of the transit operations responding to the survey had evaluation systems in place suggests that a great deal of work in researching and informing transit systems of evaluation methods will be necessary in order to assure that accurate evaluation methods are in place.

Finally, while technology was rated last among the research areas by transit managers and administrators, it still is an important research area. Research into safer vehicles, safer fuels, and adapting technology to serve the hearing and sight impaired were all considered important issues by managers, administrators, and passengers. Because of the high cost of original technology research, future technology research in rural transit should focus on adapting existing technologies.

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Appendix A

Colorado

Blue Peaks Developmental Services
703 4th Street
Alamosa, CO 81101

Special Transit
4880 E. Pearl St.
Boulder, CO 80301

Upper Arkansas Area COG
831 Royal Gorge Bldv.
Canon City, CO 81212

Town of Crested Butte/Mountain Express
P.O. Box 39
Crested Butte, CO 81224

The Durango Lift
949 E. Second Ave.
Durango, CO 81301

Care-A-Van, Inc.
6570 Portner Road
Fort Collins, CO 80525

City of La Junta/Transportation
114 East Second St.
La Junta, CO 81050

Southeastern Developmental Services
1111 South 4th
P.O. Box 328
Lamar, CO 81052

Leadville Transit Dept.
P.O. Box 1400
Leadville, CO 80461

Steamboat Springs Transit
P.O. Box 775088
Steamboat Springs, CO 80477

NE Colorado Transportation Authority
1619 S. 6th Ave.; P.O. Box 72
Sterling, CO 80751

East Central Council of Governments
P.O. Box 28
Stratton, CO 80836

North Metro Mobility
602 E. 64th Ave.
Thorton, CO 80229

Huerfano - Las Animas A A A
County Courthouse
Room 201
Trinidad, CO 81082

Seniors' Resource Center
3227 Chase St., P.O. Box 1389
Wheat Ridge, CO 80034

Teller County Senior Services
P.O. Box 6007
Woodland Park, CO 80866

Weld County Human Resources
P.O. Box 1805
Greeley, CO 80623

Minnesota

City of Albert Lea
221 E. Clark Street
Albert Lea, MN 56007

Viking Heartland Express
Courthouse
305 8th Ave. W.
Alexandria, MN 56308

Annandale Heartland Express
Route 4, Box 57
Annandale, MN 55302

Anoka County Transportation Coordination Program
Anoka County Courthouse
Anoka, MN 55303

City of Appleton Transit Program
323 W. Schlieman Ave.
Appleton, MN 56208

Clearwater Transit DHS
Box X
Bagley, MN 56621

Lake of the Woods Heartland Express
Box G-0200
Baudette, MN 56623

Sherburne Heartland Express
1613 First St., S.W.
Becker, MN 55308

Beltrami County Heartland Express
Beltrami County Service Center
522 Beltrami Ave.
Bemidji, MN 56601-6008

Bemidji Heartland Express
401 Minnesota Ave., NW
Bemidji, MN 56601

City of Benson Transit System
1410 Kansas Ave.
Benson, MN 56215

Brainerd City Bus
Brainerd City Hall
Brainerd, MN 56401

Chisago Heartland Express
313 N. Main, Govt. Ctr. Rm 139
Center City, MN 55012-9663

Senior Transportation Program
12450 Gettysburg Ave.
Champlin, MN 55316

Carver Area Rural Transportation
Box 7, Courthouse
Chaska, MN 55318

City of Cloquet
508 Cloquet Ave.
Cloquet, MN 55720

Columbia Heights Shared Ride
590 40th Ave., N.E.
Columbia Heights, MN 55421

Tri-Valley Heartland Express
102 N. Broadway, P.O. Box 607
Crookston, MN 56716

Dawson Heartland Express
675 Chestnut Street
Dawson, MN 56232

Delano Area Transportation Program
205 Bridge Ave. E.
Delano, MN 55328

Mahube Transit
P.O. Box 747
Detroit Lakes, MN 56051

Minnesota (continued)

City of Fairmont
114 E. First Street
Fairmont, MN 56031

City of Faribault
208 NW First Ave.
Faribault, MN 55021

Fosston Community Transit Service
220 E. 1st St.
Fosston, MN 56542

Granite Falls Heartland Express
885 Prentice
Granite Falls, MN 56241

City of Hastings
100 Sibley St.
Hastings, MN 55033

City of Hibbing
City Hall
Hibbing, MN 55746

Hopkins Hop-A-Ride
1010 1st Street S.
Hopkins, MN 55343

City of Hutchinson
37 Washington Ave. W.
Hutchinson, MN 55350

Lincoln County Transp. Program
Courthouse
Ivanhoe, MN 56142

Le Sueur Paratransit
203 S. Second Street
Le Sueur, MN 56058

Mahnomen County Heartland Express
P.O. Box 460
Mahnomen, MN 56557

Mankato Urban System of Transportation
224 Lamm St.
Mankato, MN 56001

City of Marshall
344 W. Main
Marshall, MN 56258

City of Montevideo
103 Canton Avenue
Montevideo, MN 56265

Monticello Heartland Express
250 E. Broadway
Monticello, MN 55362

City of Morris
609 Oregon Ave.
Morris, MN 56267

Westonka Rides
5600 Lynwood Blvd.
Mound, MN 55364

Northfield Transit Service
801 Washington
Northfield, MN 55057

Human Services Inc.
7066 Stillwater Blvd. N.
Oakdale, MN 55119

Ortonville Area Transit
315 Madison Ave.
Ortonville, MN 56278

Hubbard County Heartland Express
Courthouse
Park Rapids, MN 56470

Pelican Rapids Transit
P.O. Box 350
Pelican Rapids, MN 56572

Minnesota (continued)

Pine River Community Van
Box 87
Pine River, MN 56474

Pipestone Public Taxi
119 Second Ave., S.W.
Pipestone, MN 56164

Plymouth Metrolink
City Center
3400 Plymouth Blvd.
Plymouth, MN 55447

Red Wing Transit Service
City Hall
Box 34
Red Wing, MN 55066

SEMCAC Heartland Express
Tew Memorial Bldg.
Box 549
Rushford, MN 55971

City of Saint Peter Transit System
301 S. Washington Ave.
Saint Peter, MN 56082-2070

Tri-Cap
P.O. Box 117
Sauk Rapids, MN 56379

Scott County Human Services
Courthouse 300, 428 S. Holmes
Shakopee, MN 55379

Shakopee Area Transit
129 E. 1st Ave.
Shakopee, MN 55379

St. Louis Park Emergency Program
41st & Vernon Ave. S.
St. Louis Park, MN 55416

Roseville Area Circulator
Regional Transit Board
230 E. 5th St.
St. Paul, MN 55101

Upsala Over Fifty Club
Upsala Community Center
Upsala, MN 56384

Arrowhead Economic Opportunity Agency
702 Third Ave. S.
Virginia, MN 55792-2797

City of Virginia
City Hall, 327 S. First St.
Virginia, MN 55792

Dakota Area Referral & Transp. Service
60 East Marie
W. St. Paul, MN 55118

Dakota Volunteer Transportation Services
33 East Wentworth Ave., Suite 315
W. St. Paul, MN 55118

Northeast Suburban Transit
2561 Crestline Dr.
White Bear Lake, MN 55110

Northeast Suburban Transit (NEST)
2561 Crestline Dr.
White Bear Lake, MN 55110

White Bear Area Transit
2561 Crestline Dr.
White Bear Lake, MN 55110

City of Willmar
333 S.W. 6th St.
Willmar, MN 56201

Cottonwood County
Courthouse
Windom, MN 56101

Minnesota (continued)

Winona Transit Service
P.O. Box 378
Winona, MN 55987

Nobles County Heartland Express
Nobles Co.
Box 757
Worthington, MN 56187

Montana

Powder River County
P.O. Box J
Broadus, MT 59317

Blackfeet Health
P.O. Box 866, Tribal Health Board
Browning, MT 59417

Butte-Silver Bow Transit System
155 W. Granite
Butte, MT 59701

McCone County Hospital Assoc.
Courthouse, Box 199
Circle, MT 59215

Helena Bus, City of Helena
316 N. Park Ave.
Helena, MT 59623

Eagle Transit
725 Fifth Ave. E.
Kalispell, MT 59901

Ft. Peck Transportation System
Box 1027
Poplar, MT 59255

North Dakota

Golden Valley County Council on Aging
P.O. Box 434
Beach, ND 58621

West River Transportation Council
919 7th St., Suite 306
Bismarck, ND 58504-5881

Southwest Senior Services
Rt. #1, Box 4
Bowman, ND 58623

Emmons County Council on Aging
Rt. 1, Box 65
Braddock, ND 58524

Pembina County Council on Aging
P.O. Box 552
Cavalier, ND 58220

North Central Planning Council
P.O. Box 651
Devils Lake, ND 58301

Senior Meals and Services
P.O. Box 713
Devils Lake, ND 58301

Elder Care
Park Square
40 1st Ave. West
Dickinson, ND 58601

North Dakota (continued)

Dickey County Senior Citizens
P.O. Box 213
Ellendale, ND 58436

Sargent Seniors Council
Box 234
Forman, ND 58032

The O'Tonka Club
P.O. Box 89
Fort Totten, ND 58335

Standing Rock College
HC #1, Box 4
Fort Yates, ND 58538

Helping Hands Agency
P.O. Box 264
Grafton, ND 58237

Wells/Sheridan County Aging Council, Inc.
905 Lincoln Ave.
Harvey, ND 58341

Cass County Council on Aging
Box 172
Hunter, ND 58048

City of Jamestown
P.O. Box 578
Jamestown, ND 58401

James River Senior Citizens Center
P.O. Box 1092
Jamestown, ND 58402-1092

Dunn Co. Council on Aging
P.O. Box 43
Killdeer, ND 58640

Cavalier County Senior Meals & Services
P.O. Box 547
Langdon, ND 58249

Ransom County Council on Aging
606 Maple Street
Lisbon, ND 58054

Benson County Transportation
P.O. Box 369
Maddock, ND 58348

Nelson County Council on Aging
P.O. Box 613
McVille, ND 58254

Mercy Medical Center
1301 3rd Ave. S.W.
Minot, ND 58801

Minot City Bus
1025 31st S.E.
Minot, ND 58701

Minot Comm. on Aging
21 First Ave. SE
Minot, ND 58701

Souris Basin Transportation Board
P.O. Box 2211
Minot, ND 58702

Three Affiliated Tribes
P.O. Box 579
Newtown, ND 58763

Walsh County Transportation
P.O. Box 620
Park River, ND 58270

Nutrition United, Inc.
P.O. Box 274
Rolla, ND 58367

Steel County COA
Sharon, ND 58277

North Dakota (continued)

Kidder County Council on Aging
P.O. Box 13
Steele, ND 58482

South Central Senior Services
P.O. Box 298
Valley City, ND 58072

South Dakota

Aberdeen Area Senior Center Inc.
1303 7th Ave. SE
Aberdeen, SD 57401-4935

Bridgewater Transportation Services
P.O. Box 126
Bridgewater, SD 57319-0126

Inter Lakes Community Action
P.O. Box 270
Brookings, SD 57006-0270

Dakota Transit Association
290 7th SW
Huron, SD 57350-2759

ROCS Transit
P.O. Box 70
Lake Andes, SD 57356-0070

Arrow Transit
407 W 2nd Ave.
Lemmon, SD 57638-1405

Lennox Life Enrichment for the Elderly
P.O. Box 574
Lennox, SD 57039-0574

Lower Brule Sioux Tribe
P.O. Box 187
Lower Brule, SD 57548-0187

Inter Lakes Community Action
P.O. Box 268
Madison, SD 57042-0268

Lions Bus Service
902 E. Milbank Ave.
Milbank, SD 57252-2115

Mitchell Retired Senior Vol. Prog.
203 W. 1st St.
Mitchell, SD 57301-2512

Spink Co. Public Transit
728 S. Main St.
Redfield, SD 57469-1128

Rosebud Sioux Tribe Transportation
P.O. Box 277
Rosebud, SD 57570-0277

Area IV Sr Citizens Planning Council
420 2nd Ave. E.
Sisseton, SD 57262-1404

Sanborn County Rural Bus
P.O. Box 471
Woonsocket, SD 57385-0471

Utah

Ute Indian Tribe
P.O. Box 129
Ft. Duchesne, UT 84026

Logan City
Mayor Russell Fjeldsted
255 N. Main Street
Logan, UT 84321

Utah State University
65 25th Street
Logan, UT 84322

Trail
P.O. Box 80
Nephi, UT 84648

Wyoming

Star Valley Senior Citizens, Inc.
P.O. Box 883
Afton, WY 83110

Cody C O A
Park Co. Transp. Coalition
613 Sixteenth St.
Cody, WY 82414

Douglas Senior Citizens
P.O. Box 192
Douglas, WY 82633

Uinta Co. Senior Citizens
P.O. Box 728
Evanston, WY 82930

S.A.N.T.A.
P.O. Box 368
Fort Washakie, WY 82514

Cambell County Seniors
701 Stocktrail
Gillette, WY 82716

Southern Teton Area Rapid Transit
(START)
P.O. Box 1687
Jackson, WY 83001

Kemmerer Seniors
Box 669
Kemmerer, WY 83101

Univ. of WY - Albany Co. Transp. Coalition
P.O. Box 3261
University Station
Laramie, WY 82071

Niobrara
P.O. Box 926
Lusk, WY 82225

Albin Burns & Pine Bluff Transp.
P.O. Box 68
Pine Bluffs, WY 82082

Sublette Hi Country Sr. Citizens Center
P.O. Box 804
Pinedale, WY 82941

Carbon County Senior Services
P.O. Box 111
Rawlins, WY 82301

Fremont Co. Transp.
P.O. Box 848
Riverton, WY 82501

Sweetwater County Transit Authority
1616 W. Second St.
Rock Springs, WY 82901

Sheridan Senior Citizens
211 Smith St.
Sheridan, WY 82801

Wyoming (continued)

Sundance Seniors
Box 648
Sundance, WY 82729-0648

Big Horn Enterprises
641 Warren
Thermapolis, WY 82443

Goshen Co. Senior Friendship Center
P.O. Box 517
Torrington, WY 82240

Services for Seniors
P.O. Box 283
Wheatland, WY 82201

Washakie County Seniors-B.H.W.C.T.C.
Box 317
Worland, WY 82401

APPENDIX B

SURVEYS

State Administrator Survey

As a state administrator for section 18 funding, you are well aware of the many important issues and problems which must be addressed in the near future in order to assure continued and improved success for rural public transportation. This survey is an attempt to gain your opinions on what issues and problems need to be researched, and which are most important. In order to obtain an accurate reading of which issues are most important, your careful thought is needed.

STATE _____ YOUR NAME _____

TELEPHONE # _____ YOUR TITLE _____

1. The federal government has indicated that it will increase its focus on user based financing in the future. Briefly list some important issues that may arise because of this.

_____

_____

_____

_____

2. Increased attention to efficiency in transit is another stated goal of the federal government. What kinds of research could help achieve this goal, and what issues may arise because of this policy?

_____

_____

_____

_____

3. The burden on the states is likely to increase in the future, as the federal government has stated a goal of increasing reliance on the states for funding. What kinds of research could help relieve the burden on the states, and what issues may arise in your state because of this policy?

_____

_____

_____

_____

4. The federal government has also indicated that the use of federal funds will be more flexible in the future. What kind of impact might this have on rural transit, and what kinds of issues might this raise?

_____

_____

_____

_____

5. Coordination between agencies and between modes is another area of increased focus by the federal government. What kinds of research could aid in achieving greater coordination, and what kinds of problems and issues will coordination bring about?

6. Private participation in transit will increasingly be encouraged by the federal government. How do you think this will impact rural transit, and what issues will be important in regards to this?

7. With the passage of the Americans with Disabilities Act (ADA) of 1990, increased responsibilities will be placed on transit providers in serving the disabled. What research issues might arise because of this new law, and what kinds of research might help further improve service to the elderly and disabled.

8. Safety issues have always been important in the area of passenger transportation. Please rate the following safety issues according to their importance.

	Importance			
Driver drug testing	*Very*	*Somewhat*	*Slightly*	*Not*
Vehicle safety design	*Very*	*Somewhat*	*Slightly*	*Not*
Operating policies	*Very*	*Somewhat*	*Slightly*	*Not*
Traffic at waiting stations	*Very*	*Somewhat*	*Slightly*	*Not*
Waiting station design	*Very*	*Somewhat*	*Slightly*	*Not*
Safety of alternative fuels	*Very*	*Somewhat*	*Slightly*	*Not*
Training operators in handicapped accessibility services	*Very*	*Somewhat*	*Slightly*	*Not*
Training operators in other areas	*Very*	*Somewhat*	*Slightly*	*Not*
Passenger security at pick up sights and on vehicles	*Very*	*Somewhat*	*Slightly*	*Not*
Vehicle security	*Very*	*Somewhat*	*Slightly*	*Not*

9. Because of the increased focus on efficiency in rural transit, evaluation will increase in importance in the future. Please rate the following evaluation issues according to their importance.

	Importance			
Data needs of rural transit systems	*Very*	*Somewhat*	*Slightly*	*Not*
The formulation of a standardized data reporting system	*Very*	*Somewhat*	*Slightly*	*Not*
Evaluation criteria	*Very*	*Somewhat*	*Slightly*	*Not*
Use of evaluations (e.g. should they be used to decide funding)	*Very*	*Somewhat*	*Slightly*	*Not*

10. Efficiency and effectiveness have always been important to the rural transit industry. Recent trends suggest that these will be even more important in the future. Please rate the following efficiency and effectiveness issues according to their importance.

	Importance			
Improving efficiency and effectiveness of service to elderly and handicapped	*Very*	*Somewhat*	*Slightly*	*Not*
Reducing the transportation costs for education in rural areas	*Very*	*Somewhat*	*Slightly*	*Not*
Identifying and overcoming possible attitudinal barriers of rural people using public transit	*Very*	*Somewhat*	*Slightly*	*Not*
Improving rural connections	*Very*	*Somewhat*	*Slightly*	*Not*
Assessing demand for rural connections to intercity passenger service	*Very*	*Somewhat*	*Slightly*	*Not*
Estimating the price elasticity of rural transit demand	*Very*	*Somewhat*	*Slightly*	*Not*
Distance based pricing	*Very*	*Somewhat*	*Slightly*	*Not*
Labor productivity	*Very*	*Somewhat*	*Slightly*	*Not*
Identifying the factors influencing the job satisfaction of transit employees	*Very*	*Somewhat*	*Slightly*	*Not*
Assessing demand for coordination of rural transit with other modes, and examining the feasibility of such coordination	*Very*	*Somewhat*	*Slightly*	*Not*
Assessing rural travel demand	*Very*	*Somewhat*	*Slightly*	*Not*
Innovative financing methods	*Very*	*Somewhat*	*Slightly*	*Not*
User-side subsidies and other new strategies	*Very*	*Somewhat*	*Slightly*	*Not*
Reducing insurance costs for rural transit	*Very*	*Somewhat*	*Slightly*	*Not*
Coordination of Section 18 and human service agencies	*Very*	*Somewhat*	*Slightly*	*Not*

11. The federal government's new stated transportation policy has raised many policy issues. Please rate the following policy issues by their importance.

	Importance			
Measuring the costs and benefits of elderly driver restrictions	*Very*	*Somewhat*	*Slightly*	*Not*
Implications of the Americans With Disabilities Act	*Very*	*Somewhat*	*Slightly*	*Not*
Private sector involvement in rural transit	*Very*	*Somewhat*	*Slightly*	*Not*
Using efficiency measures to decide funding of transit systems	*Very*	*Somewhat*	*Slightly*	*Not*
Implications of the federal governments disadvantaged business enterprise (DBE) program	*Very*	*Somewhat*	*Slightly*	*Not*
Allocation of regional transit costs between towns	*Very*	*Somewhat*	*Slightly*	*Not*
Criteria used for distributing transit assistance	*Very*	*Somewhat*	*Slightly*	*Not*
The tax incidence of different funding sources	*Very*	*Somewhat*	*Slightly*	*Not*
Issues related to increased reliance on state and local funding of transit (e.g. are rural areas and cities being treated equally in terms of transit benefits and costs, and is the distribution of funding between roads and transit equitable)	*Very*	*Somewhat*	*Slightly*	*Not*
The effect of transit investment on economic development	*Very*	*Somewhat*	*Slightly*	*Not*
The effect of federal government policies on efficiency	*Very*	*Somewhat*	*Slightly*	*Not*

12. The invention and adaptation of new technologies could improve the efficiency, effectiveness, and safety of rural transit. Please rate the following technology applications in relation to their importance.

	Importance			
Adapting IVHS technology to rural transit	*Very*	*Somewhat*	*Slightly*	*Not*
Adapting vehicle diagnostic equipment for use on transit vehicles	*Very*	*Somewhat*	*Slightly*	*Not*
Using computerized information systems for maintenance	*Very*	*Somewhat*	*Slightly*	*Not*
Adapting technology to serve hearing and sight impaired in rural transit	*Very*	*Somewhat*	*Slightly*	*Not*
Finding alternative fuels and providing for the feasibility of their use	*Very*	*Somewhat*	*Slightly*	*Not*

13. Please rank the five areas of research in rural transit according to which is most important. (1 = most important, 5 = least important; you should only use each number **once**)

	Importance
Safety	_____
Evaluation	_____
Efficiency	_____
Policy	_____
Technology	_____

14. In your opinion, what are the ten most important research issues in rural transit at this time (these issues may include those already listed, but not necessarily).

_____
_____
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15. Please list some important research issues in rural transit that weren't listed in this survey.

_____
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Transit Manager Survey

As a transit manager in the rural midwest, you are aware of the unique problems faced by managers this area. Rural transit operations typically provide service to vast areas with low population densities where traffic densities are low, and costs are high. The median age of this rural population base has been increasing in recent years. This trend suggests that the need for efficient transit services is growing in rural areas. Important issues must be addressed to assure continued and improved success for rural transportation services. This survey is an attempt to gain your opinions on what issues and problems need to be researched, and which are most important. In order to obtain an accurate measure of which issues are most important, your careful thought is needed.

NAME OF AGENCY _____

CITY _____ **STATE** _____

NUMBER OF EMPLOYEES _____ **ANNUAL RIDERSHIP** _____

YOUR NAME _____ **PHONE** _____

YOUR TITLE _____

1. Coordination is one option for increasing efficiency.

   A. Please describe any coordination efforts that your agency is involved in (e.g. with human service agencies, private operators, etc.).

   _____
   _____
   _____
   _____
   _____

   B. What research might facilitate greater coordination between agencies or modes?

   _____
   _____
   _____
   _____
   _____

2. Research has suggested a stigma is attached to the use of public transit in rural areas.

   A. Has your agency experienced this in your efforts to promote its services?

   _____
   _____
   _____
   _____
   _____

B. What research might aid in erasing or overcoming this stigma?

3. The Americans with Disabilities Act (ADA) of 1990 increased responsibilities of transit providers.

A. How will this impact your operation?

B. What research would help to minimize the possible negative impacts on your operation from this policy, and what research would help you serve the elderly and handicapped more effectively?

4. Demand estimation is one problem in planning rural transit services.

A. How does your agency estimate demand, and what problems do you encounter in doing so?

B. How could research improve rural transit planning?

5. Efficiency and effectiveness of transit services continue to increase in importance.

   A. What kinds of performance evaluation does your agency use (if any), and how do you gauge improvements?

   B. Do you think a performance evaluation guidebook, which gives standard evaluation methods for rural systems along with goals to shoot for and methods for improvement would be beneficial? If so, what else would you include in this guidebook?

   C. What research would facilitate efficiency and effectiveness improvements in rural transit?

6. Intramodal and intermodal coordination are suggested by many as cost control activities.

   A. Do you believe rural transit operators could realize cost savings from further coordination? Please describe how these cost savings could be realized.

   B. What issues does this raise?

7. Transit pricing strategies can have a great effect on the efficiency and effectiveness of rural transit operations.

A. How does your agency set its prices?

_____

_____

_____

_____

_____

B. What research might improve rural transit pricing efficiency?

_____

_____

_____

_____

_____

8. Safety issues have always been important in the area of passenger transportation. Please rate the following safety issues according to their importance.

	Importance			
Driver drug testing	*Very*	*Somewhat*	*Slightly*	*Not*
Vehicle safety design	*Very*	*Somewhat*	*Slightly*	*Not*
Operating policies	*Very*	*Somewhat*	*Slightly*	*Not*
Traffic at waiting stations	*Very*	*Somewhat*	*Slightly*	*Not*
Waiting station design	*Very*	*Somewhat*	*Slightly*	*Not*
Safety of alternative fuels	*Very*	*Somewhat*	*Slightly*	*Not*
Training operators in handicapped accessibility services	*Very*	*Somewhat*	*Slightly*	*Not*
Training operators in other areas	*Very*	*Somewhat*	*Slightly*	*Not*
Passenger security at pick up sights and on vehicles	*Very*	*Somewhat*	*Slightly*	*Not*
Vehicle security	*Very*	*Somewhat*	*Slightly*	*Not*

9. Because of the increased focus on efficiency in rural transit, evaluation will increase in importance in the future. Please rate the following evaluation issues according to their importance.

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Evaluation criteria	*Very*	*Somewhat*	*Slightly*	*Not*
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10. Efficiency and effectiveness have always been important to the rural transit industry. Recent trends suggest that these will be even more important in the future. Please rate the following efficiency and effectiveness issues according to their importance.

	Importance			
Improving efficiency and effectiveness of service to elderly and handicapped .	*Very*	*Somewhat*	*Slightly*	*Not*
Reducing the transportation costs for education in rural areas	*Very*	*Somewhat*	*Slightly*	*Not*
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13. Please rank the five areas of research in rural transit according to which is most important. (1 = most important, 5 = least important; you should only use each number **once**)

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Evaluation	_____
Efficiency	_____
Policy	_____
Technology	_____

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15. Please list some important research issues in rural transit that weren't listed in this survey.

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PASSENGER SURVEY

1. **Sex:** (1) ____ Male . . . . . (2) ____ Female

2. **Age:** (1) ____ 18 or under (2) ____ 19-24 (3) ____ 25-54
(4) ____ 55-59 (5) ____ 60-64 (6) ____ over 65

3. **Are you handicapped?** (1) ____ Yes (2) ____ No

4. **How many people are in your household?** ____

5. **How many cars, vans, or light trucks are in your household?** ____

6. **How many one-way trips a week do you usually make by this service?** ____

7. **Do you use more than one transit service?** _____

8. **What is the primary purpose of your typical transit trip?**
(1) ____ work (2) ____ school (3) ____ medical/dental (4) ____ shopping
(5) ____ recreation (6) ____ senior center/workshop (7) ____ visit friends/relatives
(8) ____ other

9. **Please rate the following issues according to their importance.**

	Importance			
Vehicle safety design	*Very*	*Somewhat*	*Slightly*	*Not*
Traffic at waiting stations	*Very*	*Somewhat*	*Slightly*	*Not*
Waiting station design	*Very*	*Somewhat*	*Slightly*	*Not*
Training operators in handicapped accessibility services	*Very*	*Somewhat*	*Slightly*	*Not*
Passenger security at pick up sights and on vehicles	*Very*	*Somewhat*	*Slightly*	*Not*
Improving efficiency and effectiveness of service to elderly and handicapped	*Very*	*Somewhat*	*Slightly*	*Not*
Reducing the transportation costs for education in rural areas	*Very*	*Somewhat*	*Slightly*	*Not*
Eliminating duplication of passenger transportation services	*Very*	*Somewhat*	*Slightly*	*Not*
Increasing passenger transportation route possibilities	*Very*	*Somewhat*	*Slightly*	*Not*
Improving connections with AMTRAK, Greyhound, and airline services	*Very*	*Somewhat*	*Slightly*	*Not*
Measuring the costs and benefits of elderly driver restrictions	*Very*	*Somewhat*	*Slightly*	*Not*
How fair are various taxes used to fund passenger transportation	*Very*	*Somewhat*	*Slightly*	*Not*
The effect of investment in passenger transportation on economic development	*Very*	*Somewhat*	*Slightly*	*Not*
The effect of federal government policies on passenger transportation efficiency	*Very*	*Somewhat*	*Slightly*	*Not*
Adapting technology to serve hearing and sight impaired in rural passenger transportation	*Very*	*Somewhat*	*Slightly*	*Not*
Car ownership costs vs. rural bus transportation costs	*Very*	*Somewhat*	*Slightly*	*Not*