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The Rural Older Adult Population and Transportation Services

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An Abstract Presented to the Faculty of the Graduate School of Lindenwood University in Partial Fufillment of the Requirement for the Degree of Master of Arts

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ABSTRACT

OATS, Incorporated provides transportation services throughout the state of Missouri. OATS initially began serving the rural population of older adults. OATS now provides transportation for non-emergency Medicaid patients, Head Start, and other organizations.

Demographics, mobility, gender differences, normal age related changes, cognitive and physical impairments and disabilities are discussed in relation with driving and mobility needs. Transportation affects all aspects of the older adult's life.

The White House Conference on Aging and the Older Americans Act were influential in legislation which began funding transportation services for older adults. Federal, state and local governments, and private agencies are responsible for funding transportation services.

An in depth literature review and evaluation of OATS is compared with a few other transportation systems and used to determine the adequacy of service delivery to the rural, older adult population in Missouri.

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DEDICATION

To my parents, husband and sons
for their understanding, support and encouragement

To Lori Shelton
for her support and friendship

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CHAPTER 1

INTRODUCTION

Over the past century the population of older adults in the United States (U. S.) has grown significantly. Advances in sanitation, technology and medicine have resulted in lower mortality rates and in increased life expectancy (Atchley, 1994). In 1900 four percent of the population was age 65 years of age or older. In 1986 this figure reached 11 percent (Rosenbloom, 1988). In 1995 12.8 percent of the total population was age 65 and older. Projections estimate that 13 percent of the total population will be age 65 and older by the year 2000, with an increase by 2030 to 20 percent (Fowles & Duncker, 1996). By the year 2050 projections estimate that 22.9 percent of the population will be 65 and older (Harris, 1990). Those in the oldest age group, age 85 and older, are the most rapidly growing portion of the older adult population, making up over three and one-half million of the estimated 33.5 million older adults (Fowles & Duncker, 1996). As the population continues aging at this rapid rate, all aspects of society will be challenged to prepare for these changes.

One of the greatest challenges facing society is to provide transportation services for older adults. The importance of transportation is foremost, because without transportation accessing other services is impossible (U. S. Department of Transportation, 1997). The ability to access community based services helps older adults to continue living independently in the community. Transportation is readily available to older adults living in cities. However, in sparsely populated rural areas, older adults often rely on family or friends for their transportation needs. Therefore it is important to consider the needs, opportunities and solutions regarding available transportation services for older adults in rural areas (Bell & Revis, 1984). An examination of existing transportation services is used as a tool to determine the criteria for a good transportation service. Specifically, the adequacy of service delivery to the rural older adult population living in Missouri counties. The author feels there is a greater need for transportation services than those which already exist. The general public is unaware that transportation services are a problem for older adults; only minimal funding is available for existing transportation services.

Many younger families are in-migrating to small towns hoping to escape problems of major cities. Older adults are in-migrating to Missouri counties, many of which are considered retirement counties. If these individuals continue to in-migrate, regardless of age, transportation is a necessary resource demanding immediate attention; and future attention. People must prepare for the point in time when they will no longer drive. As society continues aging, transportation poses a very real concern.

CHAPTER 2

LITERATURE REVIEW

Demographics

After World War II the demand for housing in suburban areas increased due to lower housing costs, rapidly changing city neighborhoods, greater availability of housing, beliefs of lower crime rates in suburban areas, and decreased traffic (Mangum, 1982). This decentralization pattern increased the distance between services, and increased the dependence on the automobile (Falcocchio & Cantilli, 1974; Retchin and Anapolle, 1993). The demand for automobiles increased from seventy thousand in 1945 to three and one-half million in 1947. This increase continued at a rate of approximately six percent each year thereafter (Weiner, 1992). By 1990 more than 22 million of the approximately 165 million licensed drivers were age 65 and older (Retchin & Anapolle, 1993). It is estimated that older adult drivers will comprise 25 percent of all drivers by the year 2000 (Underwood, 1992). The demand for automobiles decreased the demand for mass transit, and shifted the focus to developing the nation's highways (Weiner, 1992).

Older adults who raised families in communities continue to reside in these areas. If residential patterns do change, it is frequently within the same community, however older adults are less likely to move than any other age group. More than 90 percent of retirees remain in the same residence (Harris, 1990; Coughlin & Lacombe, 1997; Rosenbloom, 1993; U. S. Department of Transportation, 1997). In 1991 there were approximately 15.7 million homeowners over age 65. The result of a 1992 survey by the American Association of Retired Persons found that 62 percent of homeowners wanted to remain in their homes and never move (Stanfield, 1996). Of those age 65 and older in 1994 six percent had moved within the past year (Fowles & Duncker, 1996). Approximately 75 percent of older adults live in suburban or rural areas (Rosenbloom, 1993; Coughlin & Lacombe, 1997; Stanfield, 1996).

Less than 30 percent of older adults residing in urban areas use mass transportation (Retchin & Anapolle, 1993). More than 91 percent of men and over 89 percent of women age 65 and older

residing in suburban areas relied on the automobile for transportation (Stanfield, 1996).

Some of the reasoning cited for older adults continuing to own an automobile include, but are not limited to; age, race, ethnicity, education, gender, marital status, living arrangements, and former or present occupational status (U. S. Department of Transportation, 1997). Older adults are less likely to have a driver's license, or own an automobile compared to younger persons. However, older adults with higher levels of education and greater income are more likely to own an automobile (Logue, 1987; Jette & Branch, 1992). Those age 65-74 with higher incomes are able to maintain and insure an automobile, while lower income decreases the probability of possessing an automobile. These older adults tend to rely on available public transportation systems (Falcocchio & Cantilli, 1974; Coughlin & Lacombe, 1997). Many times automobile ownership, maintenance and insurance are continued after driving cessation, creating the need to rely on family or friends for transportation in their own vehicles (Coughlin & Lacombe, 1997). The older adult driver is also more likely to own a larger automobile

than younger counterparts (U. S. Department of Transportation, 1994).

Older adults without transportation rely on others, or walk (Rosenbloom, 1993; Rittner & Kirk, 1995). Many older adults living in communities where services are within walking distance regard walking as the preferred mode of transportation. However, traffic signals are not timed for the older adult to safely cross an intersection (Coughlin & Lacombe, 1997). In 1986, 21 percent of pedestrian fatalities were adults age 64 years and older. Approximately 90 percent of these occurred in urban areas, with automobiles traveling at low speeds (Mackay, 1988).

Increasingly high costs of housing, housing maintenance, utilities, the inflated cost of health care and medications, and inflationary trends continue to consume retirement dollars (King, 1987). The age to meet the eligibility criteria for Social Security benefits is increasing. As this pattern continues, there will be a greater number of older adults in the work force and an increased need for transportation services (U. S. Department of Transportation, 1997). Current transportation systems fail to consider how heterogeneous

older adults are, as well as demographic and socioeconomic differences (Logue, 1987).

Compared with other age groups adults age 65 and older are less likely to reside in metropolitan areas. In 1995 approximately 30 percent of older adults resided in cities, compared to 46 percent residing in the suburbs. Three-fourths of older adults residing in central cities are African American, compared to only one-third of older whites. The older adults residing in cities have greater access to public transportation (Fowles & Duncker, 1996).

In 1985 36.4 percent of older adults lived in small towns (Coughlin & Lacombe, 1997; Butler, Lewis & Sunderland, 1991; Stanfield, 1996). In 1992 older adults existing below the poverty level comprised about 13 percent of the total population. The principal source of income for 14 percent of this population was Social Security (U. S. Department of Transportation, 1997). An estimated four million older adults will exist below the poverty level by the year 2000 (Rittner & Kirk, 1995). A lack of access to mass transit is common for older adults residing in suburban and rural communities, so many continue to drive (Coughlin & Lacombe,

1997; Butler, Lewis & Sunderland, 1991; Stanfield, 1996). Many communities subsidize taxi fares for lower income older adults (Stanfield, 1996).

In 1995 approximately 52 percent of those age 65 and older lived in nine states. These states were: California, Florida, New York, Pennsylvania, Texas, Ohio, Illinois, Michigan and New Jersey.

The states with the highest poverty rates of 20 percent or more were in the South and included: Mississippi, Louisiana, Alabama, Arkansas, Tennessee, Kentucky, South Carolina, and Georgia (Fowles & Duncker, 1996).

Living Arrangements

About 45 percent of older adults live in households with their spouses, while about 45 percent live alone or with non-relatives (Mangum, 1982). Those who live in family settings comprise 68 percent of older adults. Single person house holds account for 30 percent of the older adult population, and 40 percent of these are women (Fowles & Duncker, 1996). Of those age 65-84, two-thirds live in a family setting with at least one relative (National Aging

Information Center, 1996). This is about 81 percent of older men, and 58 percent of older women (Fowles & Duncker, 1996). Many older adults live in retirement communities and similar dwellings. Some older adults living in these facilities continue to maintain an automobile. However most of these facilities maintain a van for their residents (Gelfand, 1993).

The older adult drives fewer miles after retirement, but this does not necessarily indicate that mobility needs change with retirement patterns (Coughlin & Lacombe, 1997).

Mobility

The older adult population is heterogeneous, which makes age a poor predictor of the normal aging process, ability and performance. The automobile is associated with independence, freedom and mobility, which are critical elements in the quality of life for older adults (Atchley, 1994). Restricting or revoking the older adults driver's license due to age is an injustice, and robs them of their independence. Age should not be the sole criteria for withholding or restricting the driver's license; this could be construed as a discriminatory practice (U. S. Department of Transportation, 1994).

In 1993 12 states required medical, road, or vision tests for the older adult for licensing renewal. Approximately three-fourths of those age 65-84 have no mobility or self-care limitations that would restrict driving (National Aging Information Center, 1996; Bailey & Sheedy, 1988).

The freedom and independence of personal transportation empowers older adults to pursue activities that allow discretionary travel, meet the social, psychological, recreational, medical, and physical needs associated with healthy aging, autonomy, choice and control in life. Continued mobility can aid in the psychological well being of the older adult, self-perceived well being, and reduced feelings of isolation and depression. Mobility can increase feelings of usefulness, happiness, and self-esteem (Hooyman & Kiyak, 1996; Carp, 1988). The ability to maintain an automobile is related to self-reliance, especially for males with self-perceived good health status and no mobility problems (Jette & Branch, 1992).

Gender Differences

On average women outlive men three to one (Harris, 1990). In 1994 nearly one-half of older women were widows. Older men are

twice as likely to be married compared to older women (Fowles & Duncker, 1996). Married men under age 85 have fewer disabling conditions compared to their female counterparts. Compared to their male counterparts older adult women are at greater risk of disabling conditions with advanced age. The degree of disability increases for both sexes with advanced age (Logue, 1987; Jette & Branch, 1992). Among the 26.4 million disabled in 1970 approximately seven million were older adults (Transportation Research Board, 1976).

Between 1969 and 1990 male drivers over age 65 increased miles driven by slightly over two percent annually, and female drivers increased miles driven by just over one percent. Although the older driver makes fewer trips, the distances traveled have increased (Rosenbloom, 1993). Male drivers with higher levels of education and income are those most likely to continue driving (Jette & Branch, 1992).

In 1992 the Transportation Department estimated that of those over age 70, 90 percent of men, and 55 percent of women had driver's licenses (Stanfield, 1996). Among the older adult population, many women never learned to drive, and few become

licensed after the death of a spouse. As age increases, women become increasingly dependent on others for transportation (Logue, 1987; Bell & Revis, 1984; Coughlin & Lacombe, 1997). Social Security benefits decrease after the death of a spouse. Indeed, Social Security is frequently the sole source of income for older women (Rittner & Kirk, 1995). An adequate income is necessary to pay for the maintenance and insurance premiums associated with owning an automobile. Also, as age increases women make fewer outings, especially at night, due to fear of crime (Coughlin & Lacombe, 1997; Retchin & Anapolle, 1993; Rittner & Kirk, 1995; King, 1987).

Social Isolation

Literature indicates social activity can promote physical and psychological well being and aid in recovery from illness. An increased access to medical care is beneficial in compliance with medication regimens. Without transportation the older adult living alone is at risk of isolation due to greater distances between housing and services. Thus it is extremely important to maintain social ties in daily life (Olds, Schwartz & Webster, 1996; Rittner & Kirk, 1995).

Social isolation has been decreased for many older adults by the availability of senior citizens centers. Transportation is provided to senior centers for social activities, recreation, exercise, and nutrition programs (Gelfand, 1993; Rittner & Kirk, 1995).

Age Related Changes

Age related changes occur to virtually every aspect of the normal aging process (U. S. Department of Transportation, 1997). Older adults age 65-74 have few chronic or disabling health conditions. This age group has higher levels of education, income, and increased access to medical care. Mobility and transportation needs are infrequent among the healthier older adult population (Atchley, 1994).

Health problems frequently impacting mobility and transportation needs in advanced age are disability and chronic disease. Some disabilities common in advanced age and frailty are part of the normal aging process. Approximately 20 percent of older adults have a slight disability while only four percent are considered severely disabled (Hooyman & Kiyak, 1996). As the level of education increases the incidence of disability declines, with little

difference between genders. However, disability increases sharply with advanced age regardless of education or income. Transportation associated disabilities occur frequently in older adults aged 90 and older. (Logue, 1987).

In those 75 and older limited, functioning may be prevalent due to chronic disease (Hooyman & Kiyak, 1996). Literature indicates that those under age 80 continue to drive with disabling conditions. Among those age 80 and older there is a strong association between disability and driving reported (Rosenbloom, 1993).

As age increases there are biological, physiological, psychological, and social changes. The activities of daily living are utilized to measure functional health and the ability to perform personal care tasks. A decrease in the ability to perform the activities of daily living can adversely impact both mobility and the quality of life. Chronic disease and disability are predominant in the frail population, those age 85 and older, although these problems occur in the younger age groups also (Hooyman & Kiyak, 1996). The ability to measure the performance of personal care tasks may also aid in driving cessation or adaptation (Rosenbloom, 1988).

Sensory function may cause changes, including sensitivity to light, difficulty adjusting to light changes, and possibly impaired night vision. In advanced age, more frequent occurrences include: cataracts, macular degeneration, glaucoma, and diabetic retinopathy. A reduction in visual acuity inhibits the ability to read smaller street signs, signs at a distance, and signs with poor illumination. A glare from objects also creates problems for older drivers. Changes in the eye compounded by a decreased reaction time may create difficulty in judging the speed of other automobiles. These problems compounded with the disadvantage of making decisions quickly could prove problematic in avoiding a collision (Hooyman & Kiyak, 1996; Bailey & Sheedy, 1988; Deacon, 1988; Mace, 1988; McKnight, 1988).

Changes in psychomotor and physical functioning include reduced reaction time, reduced strength and work capacity, changes in body conformation and composition, changes in tissues and organ systems, respiratory and cardiovascular systems (McKnight, 1988; Deacon, 1988; U. S. Department of Transportation, 1997).

Some diseases commonly associated with advanced age include: cardiovascular conditions, cerebrovascular conditions, and diabetes mellitus (U. S. Department of Transportation, 1997). A loss of density makes bones more prone to fractures. There are also changes in the musculo-skeletal system, kidney and bladder function, gastrointestinal system, nervous system, and sleep patterns (Hooyman & Kiyak, 1996).

Some cardiovascular diseases have symptoms that may impair the ability to operate an automobile, as well as the possible occurrence of death and injury to others (Hooyman & Kiyak, 1996; U. S. Department of Transportation, 1997).

Non-Insulin Dependent Diabetes Mellitus, or Type II diabetes, affects one in ten older adults. It is estimated that one-half of all cases remain undiagnosed. Complications of diabetes include: diabetic retinopathy, kidney disease, cardiovascular disease, and neuropathy (Le & Tuck, 1994). Drivers with complications due to diabetes put themselves and others in danger in cases of fatigue, poor vision, and slowed response time (U. S. Department of Transportation, 1997). Insulin dependent diabetic drivers have a two

and six-tenths percent higher incidence of injury than non-diabetics (Koepsell, Wolf, McCloskey, Buchner, Louis, Wagner & Thompson, 1994).

Arthritis is a common chronic condition which limits the activities of approximately five million older adults (U. S. Department of Transportation, 1997). Symptoms depend on the form of arthritis and may include: can cause inflammation, degeneration, pain, fatigue, fever, decreased mobility, limited range of motion, and problems in safely operating an automobile (Hooyman & Kiyak, 1996; U. S. Department of Transportation, 1997).

With increased age and medical conditions there is an increase in the use of prescription and non-prescription medications. It has been estimated that three-quarters of those on Medicare take an average of ten drugs per day, which is commonly referred to as polypharmacy. As the use of medications increase so does the likelihood of adverse drug interactions, which can impair driving ability (Coughlin & Lacombe, 1997). Many physicians and older adults are unaware that they require smaller doses of medications. They do not excrete

medications at the same capacity as younger people, due to the decline in renal and hepatic functioning (U. S. Department of Transportation, 1997).

Cognitive Function

Reductions in cognitive function include changes in perception, which slow the retrieval and processing of information. There are declines in attention and intelligence, and an increased problem in the ability to divide attention (U. S. Department of Transportation, 1997; Deacon, 1988; McKnight, 1988).

Other impairing conditions include forms of dementia. It is estimated between two and three-fifths and 15.4 percent of people over 65 years of age suffer from mild to moderate dementia. Alzheimers' disease appears to be prevalent in ten percent of those over age 65 and 50 percent of those over age 85 (U. S. Department of Transportation, 1997). There are many forms and degrees of dementia (Butler, Lewis & Sunderland, 1991). Driving an automobile with early onset dementia is rarely problematic. The difficulty of performing driving tasks increases in later stages of dementia (U. S. Department of Transportation, 1997; Coughlin &

Lacombe, 1997). There are higher incidences of motor vehicle crashes among those with cognitive impairment. This is especially true when cognitive impairment is caused by dementing illness (Retchin and Anapolle, 1993).

Physicians treating older adults with physical or mental impairments face ethical dilemmas. The patient should have the freedom associated with driving. However the physician must consider the safety of the patient and other drivers. The physician should consider the difficulty faced by the loss of freedom and the lack of available transportation services. Physicians could develop standards to measure the risk factors of certain medical conditions and medications, thereby decreasing the high incidence of older adult automobile fatalities (Underwood, 1992; Coughlin & Lacombe, 1997).

Importance Of Transportation

Transportation gives people feelings of independence, self-sufficiency and engagement in societal participation, which influences morale and life satisfaction (Logue, 1987; Rosenbloom, 1993). The availability of transportation can aid the older adult to

meet basic social and physical needs. It is necessary to shop for groceries, access medical care and prescription medicine, get to the bank, and shop for clothing. Attending social gatherings or meeting spiritual needs are just as important, as they fulfill needs of social and psychological well being (Underwood, 1992; Rosenbloom, 1993). It is important for all older adults to meet their own transportation needs for as long as they are able, and not rule out those with disabilities.

Programs exist to aid the older adult in retraining after a physical disability. Automobiles can be adapted with special equipment to meet the requirements of an individual disability. Occupational therapists have access to these programs which were developed to evaluate those with disabilities, and assist them in compensating for specific limitations (Hunt, 1993).

Programs have been developed for the older adult driver to learn the licensure requirements for road and safety regulations. Reduced insurance rates are offered following completion of some of these programs. A few of these training programs include: the American Association of Retired Persons mature driving program 55 Alive, the

National Safety Council sponsors the Defensive Driving Course Program called Coaching Mature Drivers, and the American Automobile Association sponsors the Safe Driving for Mature Operators Program (Hunt, 1993; Malfetti & Winter, 1994; Stanfield, 1996; Underwood, 1992). The American Occupational Therapy Association also sponsors and teaches many programs (Hunt, 1993). Training or retraining of older adult drivers could prove beneficial to all drivers. Adaptation is required with many aspects of the normal aging process and these programs would benefit these drivers. However these programs are only effective with awareness of their existence, and outreach has emerged as one of the greatest obstacles. Literature indicates exposure of the programs by the mass media could improve public awareness (McKnight, 1988; Kanouse, 1988). The General Motors Corporation has published a manual of several driving programs for older adults. General Motors recognizes and advocates the need to take personal responsibility in driving safety, leading General Motors to report on several unique and alternative pilot programs. One such program has older adults teaching others their age of the availability

of alternate transportation. This type of information sharing may help ease the transition, and encourage alternate forms of transportation (Heckmann, 1997).

Many devices exist to promote automobile safety for the older adult driver. These include: dual outside mirrors on the automobile, safety belts, air bags, lumbar support in seat designs, and instrument panels that are easily read. It would also aid the older driver to be aware that they are at decreased risk from serious injury, or death, when driving larger automobiles (Kanouse, 1988; Mackay, 1988).

Literature on travel patterns of the older adult population suggests there are some voluntary reductions in travel (Rosenbloom, 1993; Jette & Branch, 1992; Stanfield, 1996). Driving is avoided during peak travel periods, poor weather conditions, and at night. Older drivers tend to drive at decreased speed, travel in larger automobiles, and carry fewer passengers. Some literature states these habits explain the lower accident rate among older drivers compared with younger drivers (Rosenbloom, 1993). However a ten year longitudinal study by Jette and Branch (1992) suggests drivers over age 75 have more automobile accidents per 1,000 miles

driven than other age groups, except for those age 20 and under (Jette & Branch, 1992). Other literature supports the latter findings (McKnight, 1988; Bailey & Sheedy, 1988; Koepsell et al, 1994; Mackay, 1988; Underwood, 1992).

Nationwide many different types of transportation services exist for older adults. Many of these services are operated by the private sector but receive public funding. Some medical centers provide transportation services to their facilities. These services are limited in the days and hours they operate, and often require advance reservations. It is estimated that one of every five trips taken by taxi are older adults. A lack of available suburban and urban transportation is cited as a reason for not accessing medical care (Rittner & Kirk, 1995; Jones, 1993). Forms of transportation also include school buses, vans, buses, private automobiles, and non-profit specific vehicles (Gelfand, 1993; Coughlin & Lacombe, 1997; King, 1987; Rittner & Kirk, 1995; Stanfield, 1996).

Nationally 670 Area Agencies on Aging provide transportation services information to local communities. Title VI of the Older Americans Act promotes supportive services in the community,

including transportation services. The National Transit Hotline provides the names of available transit providers receiving federal funding for older adults and the disabled. Programs requiring advance reservations, providing door-to-door response, or demand response, exist in many communities. An example of this is called Dial-A-Ride. Many communities have a ridesharing program staffed by volunteers who drive their own automobiles. Other transportation modes include: fixed routes and variable routes, and both have fixed or variable scheduling. Fixed routes and fixed scheduling are comparable to mass transportation services. federal, state, city and county levels of government manage and administer public transportation systems which are funded by tax dollars. Private non-profit transportation services are broad and vary widely. Many non-profit transportation systems are funded with voluntary contributions as well as funding from governmental programs. Effective transportation programs would provide coordinated and consolidated services (Noel & Chadda, 1987). Transportation services for the older adult are not compatible with services intended to serve the employed. Scheduling and service hours often do not meet the needs

of the older adult. The funding sources determine the eligibility criteria and set fares. As fares increase to meet the needs of the funding source, ridership decreases which may create a paradox (Gelfand, 1993). Registration is required with many of the available transportation services. Studies indicate approximately ten percent to 18 percent of those eligible actually participate in transportation programs. Existing transportation services leave large numbers of older adults unserved or underserved, and in many the poor and minimally disabled are excluded. Available routes and services in suburban areas take almost twice as long to access by public transportation, when compared with the same destination in a private automobile. Inaccessibility, route limitations and eligibility criteria become an unnecessary dilemma in accessing transportation services for the older adult in urban areas. This problems is exacerbated in rural areas. Only a small portion of older adults that are aware of the services actually use public or specialty transportation (Rosenbloom, 1993).

Most mass transportation is limited to cities and even there many bus routes run along main thoroughfares, making walking distance

problematic for the older adult. There may also be physical barriers for the older adult to overcome when using mass transportation systems (Harris, 1990). In many instances shelters are unavailable or inadequate. A high step on a city bus may be difficult to negotiate in order to board, and the handrail is too far to reach for assistance. The length of the stop may be too short to accomodate the difficulty of transferring in and out of seats. A lack of seating could require the older adult to stand, and increase the possibility that they might lose their balance thus increasing the risk of injury. The inability to see landmarks or signs may become problematic, due to poor eyesight, dirty windows, or both. In some cases drivers or operators of available transportation are unsympathetic to the needs of the older adult. These problems are also common for the older adult using rail transportation. These factors foster an unwillingness for the older adult to use public modes of transportation (Harris, 1990; Rittner & Kirk, 1995; U. S. Department of Transportation, 1997).

Studies were conducted which attempted to address the transportation problems of the elderly, handicapped, and economically disadvantaged in many countries. These countries

included: the United Kingdom, Belgium, France, Canada, Sweden, Germany, West Germany, and the Netherlands (Golant, 1972).

Legislation

The first federal program designed to meet transportation needs for the older adult, visually challenged, and disabled was an amendment to the 1944 Social Security Act (Poister, 1982). The first White House Conference on Aging in 1961 led to Congress passing the Older Americans Act in 1965 (Gelfand, 1993). The first White House Conference on Aging identified transportation as one of three major areas of need for older adults (Rosenbloom, 1988). The Older Americans Act has been amended three times regarding transportation needs. In many instances older adult transportation is now coupled with services for the disabled (Gelfand, 1993). The Department of Health and Human Services provides funding for many older adult transportation services including the Older Americans Act Title III-B, Medicaid, and the Community Services Block Grants. These programs received one billion dollars in funding in 1993. The Older Americans Act funds 20 percent of older adult transportation services, and in 1994 was estimated at 64

million. In 1993 Medicaid reimbursement for transportation services was approximately 650 million dollars (Coughlin & Lacombe, 1997).

Incentive programs were developed in the 1960s and 1970s for the elderly to use existing mass transportation systems. Some of these incentive programs offered reduced fares during off-peak hours (Gelfand, 1993; Noel & Chadda, 1987; U. S. Department of Health and Human Services, 1980).

In May of 1970 the first national workshop was planned by the U. S. Department of Health, Education and Welfare. The workshop was held for multi-professionals who were interested in addressing the needs of older adult transportation (Falcocchio & Cantilli, 1974; U. S. Department of Health and Human Services, 1980). This was the first systematic effort to gather information on the mobility and transportation needs for people over the age of 65. The focus on special problems included design, economics and operations concepts. Existing information was evaluated to identify gaps in services, enabling members to discover areas for research, demonstration projects, and to provide new or revised policies

(Gelfand, 1993; U. S. Department of Health and Human Services, 1980).

In November of 1971 the second White House Conference on Aging made recommendations to improve transportation problems and included: increased funding for the development and improvement of transportation services; improved coordination among existing or planned transportation systems; and set consistent drivers licensing standards so older adults were not discriminated against on the basis of age. Transportation systems were intended to serve all older adults, with an emphasis on the rural elderly and those in greatest economic need (U. S. Department of Health and Human Services, 1980). These recommendations amended the Older Americans Act, Title III, and allotted a grant for group transportation programs, with emphasis on medical priority. This grant provided funding for OATS (Gelfand, 1993).

The Federal Aid to Highways Act of 1973 focused on highway planning and transportation needs for the handicapped and elderly in rural areas, in an attempt to address and improve their mobility

needs (Gelfand, 1993; Noel & Chadda, 1987; U. S. Department of Health and Human Services, 1980).

In 1974 under the National Mass Transit Assistance Act, the Urban Mass Transportation Administration allotted funding for capital and operating costs of mass transit systems. Qualifications for funding required providing reduced fare urban transportation for the elderly during off-peak hours. The fares were not to exceed one-half of peak-hour fares. The program had already been implemented in many cities by 1974, with 145 cities providing the services (Urban Mass Transportation Administration, 1985; Gelfand, 1993; Poister, 1982).

In 1975 the Institute of Public Administration received a grant from the Administration on Aging to conduct a study on the transportation serving the elderly. The final report disclosed older adults were not being well served by available transportation systems due to: low income, poorly served rural areas, and the physical design of existing systems, which discouraged or prevented older adults from traveling. All problem areas identified were due to a lack of funding. Recommendations were made to fund a further

study to determine the amount of funding necessary to adequately develop transportation for older adults over the next five to ten years. In 1977 pilot projects began in five states, which had already begun to coordinate services in their geographical areas (U. S. Department of Health and Human Services, 1980; Burkhardt, 1982).

The 1975 Urban Mass Transportation Administration regulations stipulated that the elderly and disabled had equal rights to use mass transportation. New funding was designated for wheelchair accessibility and elimination of barriers to mass transit for the elderly and handicapped. This act included elevator installation in all new subway stations (Urban Mass Transportation Administration, 1985; Gelfand, 1993). In 1976 Section 16(6)(2) (now Section 5310) of the Urban Mass Transportation Administration created grants for non-profit organization transportation services to the elderly and handicapped, where mass transit was not an option, and included all urban and rural areas (Gelfand, 1993). This act approved coordination of services with other federally assisted programs, and was administered by the State Unit on Aging or Area Agency on Aging. The appointed state agency is responsible for outreach,

development, and eligibility, and must follow federal guidelines. Section 16 of the Intermodal Surface Transportation Efficiency Act provides funding for older adults and those with disabilities. Funding is allocated to public and private nonprofit organizations. Funding amounts are based on the number of qualifying residents. Section 16 funding comprised 55 million dollars of the Federal Transit Administration's budget for 1997, serving approximately 3,700 transportation providers (Lacombe & Coughlin, 1997).

A report to the Institute of Public Administration in 1976 included reports from each State Unit on Aging. The State Units on Aging received transportation funding under Titles III and VII of the Older Americans Act, and many problem areas emerged in this report. Problem areas reported included: poor coordination or fragmentation of services, funding difficulties, and misinterpretation of guidelines. A study was conducted and examined 20 existing programs. This study was an attempt to address the problem of coordination, duplication or fragmentation of transportation services. This Institute of Public Administration study led to another study by the U. S. Department of Transportation, sponsored by Ecosometrics,

Inc. on coordinating elderly and disabled transportation services. This study found regulations which could create barriers to coordination of services. Consequently recommendations were made to change: administration problems, accounting, billing, funding sources, fiscal management, planning and delivery of services, eligibility criteria, fees, service restrictions, and much more. This study indicated problems extending across federal, state and local governments, and many aspects of management (U. S. Department of Health and Human Services, 1980).

Title III of the Older Americans Act was amended in 1978 to appropriate funding to access services for the elderly, including transportation, information and referral (Gelfand, 1993).

In 1985 a conference was held to coordinate services between the Administration on Aging and the Urban Mass Transportation Administration. Seven problem areas with older adult transportation services were identified. Workshops were held and recommendations were made in all of these seven issues. These issues included: coordination of state and local government funding sources; coordination of fragmented transportation services for the elderly and

disabled; increased training of technical assistance for system operators; increased information sharing about transportation issues; increased funding at the state levels; increased information on contracting procedures for private operating agencies; and standardized definition of agency responsibility for those receiving Department of Transportation funding. The Administration on Aging and the Urban Mass Transportation Administration agreed to make an effort to work closely together by holding future conferences and workshops (Urban Mass Transportation Administration, 1985).

In an attempt to rectify fragmentation of services, in 1986 the Department of Transportation and the Department of Health and Human Services began proactive measures to coordinate transportation services. In order to meet transportation needs, the Joint Department of Transportation and the Department of Health and Human Services, Coordinating Council on Human Services Transportation was formed. The council established ten regional working groups to develop plans to meet local transportation needs. In 1990 the council signed a memorandum of understanding to

improve transportation services for older Americans, with the Federal Transit Administration and the Administration on Aging. The importance of this coordination of services became clear when, in one community, the cost of an average passenger trip decreased by about 79 percent. Simultaneously, the average number of monthly trips increased by 3,500 (Coughlin & Lacombe, 1997).

In 1987 the Older Americans Act, Title III-B, was amended to increase funding for older adults to increase accessibility to transportation, outreach, and referral services. Title III-B funding was changed again with the Americans with Disabilities Act of 1990, which required that new buses be accessible to people with disabilities (Gelfand, 1993). This was in compliance with the 1990 Federal Transit Administration requiring the elderly and people with disabilities to have equal rights accessing transportation. Section 16(b)(1) authorized grants to states to provide necessary services. Many older adults, who previously met the eligibility standards to use transportation systems, did not meet Americans with Disabilities Act criteria and were no longer served (Rosenbloom, 1994). Older adults excluded by the Americans with Disabilities Act include:

those who have voluntarily discontinued driving, those unable to maintain an automobile, and those who are unable to travel by themselves (Rosenbloom, 1993; Noel & Chadda, 1987). Some older adults were eligible for multiple funding assistance, including Americans with Disabilities Act benefits. Confusion arose concerning which agency was required to pay for services first (U. S. Department of Health and Human Services, 1994).

In November of 1991 the Department of Health and Human Services awarded funding of approximately three million dollars to fund the National Eldercare Institutes. These institutes were begun to aid older adults who were frail and vulnerable. The National Eldercare Institute on Transportation is operated by the Community Transportation Association of America, in cooperation with the National Association of Area Agencies on Aging.

In an attempt to balance the federal budget deficit in 1993, one of the programs targeted for funding cuts was Title III-B of the Older Americans Act, which included transportation services (Cannon, 1993).

The Federal Transit Administration, through the Intermodal Surface Transportation Efficiency Act provides grant funding for three programs for older adult transportation, budgeted at four billion dollars for 1997. Section nine of the Intermodal Surface Transportation Efficiency Act provides public transportation funding for both small and large urbanized areas. The Federal Transit Administration requested two billion dollars in funding for 1997 (Lacombe & Coughlin, 1997).

The U. S. Department of Transportation finances many small transportation programs. These small and multiple transportation services often operate with few riders. Frequently services for the older adult are combined with programs for the disabled, making it difficult to estimate the amount of funding spent for these transportation services (Stanfield, 1996). It is estimated that federal funding provides approximately 55 percent of older adult transportation services, and the majority of funding is provided by the Department of Health and Human Services (Coughlin & Lacombe, 1997). The Department of Health and Human Services estimates spending for older adult transportation services at one and

one-half billion dollars yearly (Stanfield, 1996). Section 18 (now Section 5311) of the Intermodal Surface Transportation Efficiency Act provided 115 million dollars in funding for transportation services in 1997 to rural areas with populations under 50,000. Public agencies receive 58 percent of this funding. The remainder supports small transportation services operating ten or fewer vehicles (Coughlin & Lacombe, 1997). Most of the Section 18 vehicles are vans and small buses. About one-quarter of the vans, and two-thirds of buses are wheelchair accessible (Community Transportation Association of America, 1998).

Rural Population

Approximately 75 percent of older adults live in suburban or rural areas (Rosenbloom, 1993; Coughlin & Lacombe, 1997; Stanfield, 1996). More than 90 percent of older adults retiring in rural areas continue to reside in the same residence (Harris, 1990; Coughlin & Lacombe, 1997; Rosenbloom, 1993; U. S. Department of Transportation. 1997). As the frail older adult population continues to increase in rural areas, there will be a need for increased rural transportation systems.

Rural Automobile Ownership

Older adults living in rural areas have a higher level of automobile ownership than those living in urban areas. Men are more likely than women to have a driver's license and own an automobile. Rural transportation systems are used more often by women than men (Logue, 1987; Jette & Branch, 1992). Urban areas often lack taxi services, mass transit or city buses (McGhee, 1983). McGhee (1983) researched a rural older adult sample and found the majority to be over age 70, female and married. Approximately one-half of these older adults owned and drove their own automobiles. The remainder of these older adults relied primarily on their children for transportation services. Older adults found to be in greatest need of transportation services had a lower educational status than the mean (ten years) (McGhee, 1983; Bell & Revis, 1984). They lived alone, had low incomes, poor physical health, and inadequate social support systems (McGhee, 1983). Older adults living in rural areas have fewer family members in close proximity when compared to the urban or metropolitan population.

Therefore, transportation services are in greater demand in rural areas.

Rural Transportation Systems

Approximately 55 percent of counties in the U. S. are rural and have public transportation systems available. These transportation systems are better than in previous years, yet still do not meet the needs of the rural older adult population. There are approximately 3,500 specialized transportation services, with only 1,200 serving the rural population (Jon Burkhardt, President, Ecosometrics, Inc, personal communication, March 25, 1997). One of these programs is the Independent Transportation Network.

The Independent Transportation Network was a pilot project that served older adults who lived within a 15 mile radius of Portland, Maine. Services are available 24 hours a day, seven days a week. The Independent Transportation Network received funding from a research grant which will soon end, and must become economically self-sufficient in order to remain solvent. The rider pays a small fee for advanced reservations, and a slightly larger fee for same day transportation. The Independent Transportation Network offers a

creative transportation alternative for older adults, but is still in early stages of research and development (Phase I). The Transportation Research Board granted 65,000 dollars to pilot test innovative payment plans. Currently Phase two of the project is focused on testing innovative payment plans, arranging a rural satellite location, and planning to replicate the system nationally. Phase III will evaluate all the plans tested by Phase two (Brown, 1997).

The rural older adult population using transportation services comprises 36 percent of ridership. An estimated 38 percent of the rural population has no available transportation services, and 28 percent receive such low levels of transportation that are inadequately served (Community Transportation Association of America, 1998).

Many midwestern states have high concentrations of older adult rural populations, with the highest concentrations in the agricultural areas. These states are: South Dakota, Iowa, Nebraska, Missouri and Arkansas. In 1985 two and three-fifths percent of older adults lived on farms. These rural areas had poor road conditions or unpaved roads. The majority of older adults living in rural

communities do not have alternative forms of transportation, and therefore, they must continue driving (Coughlin & Lacombe, 1997; Butler, Lewis & Sunderland, 1991; Stanfield, 1996).

In many parts of rural America appropriate medical services can be hundreds of miles away. Accessing available transportation for health care is critical to maintaining good health (Jones, 1993).

Traditionally, transit services are utilized by those who are employed. These routes or schedules, or both, do not meet the needs of many older adults, especially those living in rural areas. Many destinations remain inaccessible due to route limitations and eligibility criteria (Rosenbloom, 1993; Bell & Revis, 1984).

Missouri has transportation systems available in almost every city and county in the state. Some systems serve entire counties, others provide services within a certain square mile area of the county. Specialty transportation service providers are available in most counties. The majority of specialty transportation providers receive funding from Section 5310, or the Missouri Elderly and Handicapped Transportation Assistance Program (Missouri Department of Transportation, 1996). The Community

Transportation Association of America, Rural Transit Assistance Program, serves all 114 counties in Missouri. The Community Transportation Association of America has state and federal programs, and is administered by the Federal Transit Administration. The program provides training and other information, to rural transit providers with the goal of improving and standardizing rural service delivery (Community Transportation Association of America, 1998).

Rural Older Adult Women

Many women never learned to drive, and few become licensed after the death of a spouse. With increased age women also experience an increased dependence on others for transportation. Widows are most likely to depend on available transportation services in rural areas (Logue, 1987; Bell & Revis, 1984; Coughlin & Lacombe, 1997).

Rural Isolation

The older adult living alone in rural areas is at increased risk of isolation due to greater distances between housing and services. Isolation has been found to accelerate the pace of deteriorating

health, and increases the risk of premature nursing home placement for older adults in rural areas. The extremely isolated, rural dwelling, older adult may enter a nursing home prematurely for peer companionship. Available transportation could alleviate problems associated with isolation (Olds, Schwartz & Webster, 1996).

Changes In Population

During the 1980s the population of Missouri decreased dramatically due to out-migration. Between 1990 and 1995 the growth of the older adult population in the U. S. age 65-84 increased 11.3 percent, compared to the same age group in Missouri which increased by 12.2 percent. During these same years the U. S. population age 85 and older grew by one and two-fifths percent, compared with the same age group in Missouri which increased just under two percent. This demonstrates that Missouri has a larger percent increase in the number of older adults than the national average. During the period between 1990 and 1995 the Missouri population grew by 207,000. Approximately 187,000 were age 55 and younger; the older adult population increased by over 20,000. This increase can be attributed to the in-migration of retirees from

other parts of the country. Among the population age 55-64 there was a decline by 4,711; and this can be attributed to the lower birth rate during the depression era of the 1930s. The population of those aged 65-84 increased by 13,388, while those age 85 and older increased by 11,604 (Growth of Missouri's Older Population, 1990-1995).

The rural areas of southwest Missouri had a population increase of 3,513 in those 55-64. The counties of Taney and Stone had the greatest increase in this age group, reflecting a combined population growth of approximately one-half of the southwest region. Rural southwest Missouri had an increase of 1,241 in those 65-84, with the greatest growth in the Lake of the Ozarks, Springfield, and Branson areas. The population 85 and older increased 20 percent or more in seventeen Missouri counties. Some reasons for population increases include low property costs, a lower cost of living, and a better quality of life (Growth of Missouri's Older Population, 1990-1995).

Most of the northern sections of the state have experienced extensive declines in the older adult population. The population declined in rural north Missouri about 5,487 for those 55-84. Ten

counties had population declines of ten percent or more. The 65-84 age group had the most significant decline in population, which was 21 percent in Schuyler county (Growth of Missouri's Older Population, 1990-1995).

In 1995 approximately 24 percent of the older adult population in Missouri age 65 and older did not drive (Missouri Department of Transportation, 1996). As the older adult population of the state continues to grow and age, the need for available transportation services will increase.

CHAPTER 3

METHOD

Transportation systematically links older adults with community based services. Flexibility in delivering transportation services to older adults helps them meet basic needs, social and medical needs, helps people to remain living independently in the community, decreases isolation, and aids in improving the quality of life. This is especially true of frail, isolated older adults in rural communities.

There was no specifically designed instrumentation developed for this study, nor were any pre-existing statistical instruments used. This study consisted of: archival research, journal articles, books, on-line references, research studies and brochures. After an exhaustive examination of printed, microfiche, microfilm, and computer based archival data, 60 of these research articles were found to be relevant to the current study. In addition to these articles there were four electronic mail communications and six personal

communications via telephone. Of these communications, only one was of use to the current study.

While the Independent Transportation Network appeared to be a good program on the surface, insufficient data existed to use this study since it is a pilot program, and research conclusions have not been reported.

Based on an in depth review of literature, a list of recommendations was developed to evaluate an adequate older adult transportation system. This list might be used to compare, contrast, review and evaluate services provided by OATS, Incorporated of Missouri (Appendix), as delivered to the older adult population in the rural community.

A limitation of this study was the inability to participate in travel on an OATS vehicle, or travel into the rural areas served by OATS, due to physical illness.

Another limitation to the study was separating population statistics by county, and eliminating the major metropolitan areas. The majority of those areas with larger populations, in major

metropolitan areas near OATS service offices are served to the utmost. Difficulty arose separating the metropolitan areas from urban and rural service areas. This is the reason the east and west OATS areas are not included. The intent was not to ignore the rural populations that exist outside of metropolitan and urban areas, nor was it meant to ignore the very real difficulty these individuals have in accessing transportation services.

As a final limitation to the study information requested by telephone failed to arrive in a timely fashion resulting in the southeast Missouri region being deleted from consideration in this study.

CHAPTER 4

PROJECT RESULTS

Based on a review of literature, the following criteria from the sources indicated was used to evaluate to OATS, Inc. system, and to assist in determining the adequacy of delivering rural transportation to older adults.

- Access to medical care, social services, and community based services, and include: medical, shopping, banking, nutrition, spiritual and social needs (Bell & Revis, 1984; Carp, 1988; Gelfand, 1993; Harris, 1990; Heckmann, 1997; Jones, 1993; King, 1987; Logue, 1987; McGhee, 1983; Noel & Chadda, 1987; Olds, Schwartz & Webster, 1996; Retchin & Anapolle, 1993; Rittner & Kirk, 1995; Rosenbloom, 1988; Rosenbloom, 1993; Rosenbloom, 1994; Stanfield, 1996; Transportation Research Board, 1976; Urban Mass Transportation Administration, 1985; Underwood, 1992; U. S. Department of Health and Human Services, 1980).

- Destinations extensive enough to meet the above needs, including: scheduling, quantity of services provided, availability for discretionary travel and weekend services (Bell & Revis, 1984; Carp, 1988; Coughlin & Lacombe, 1997; Gelfand, 1993; Harris, 1990; Heckmann, 1997; Jones, 1993; King, 1987; Logue, 1987; Noel & Chadda, 1987; Olds, Schwartz & Webster, 1996; Rittner & Kirk, 1995; Rosenbloom, 1988; Rosenbloom, 1993; Rosenbloom, 1994; Transportation Research Board, 1976; U. S. Department of Transportation, 1980; U. S. Department of Transportation, 1997).

- Consistent testing, evaluation and assessment of needs, costs and services (Coughlin & Lacombe, 1997; Gelfand, 1993; King, 1987; Logue, 1987; Noel & Chadda, 1987; Poister, 1982; Rittner & Kirk, 1995; Saltzman, 1984; Stanfield, 1996; U. S. Department of Health and Human Services, 1980; U. S. Department of Transportation, 1997).

- Adequate delivery of information regarding available transportation services (Coughlin & Lacombe, 1997; Harris, 1990; Heckmann, 1997; King, 1987; Noel & Chadda, 1987;

Rosenbloom, 1988; Rosenbloom, 1994; Saltzman, 1984; Stanfield, 1996; U. S. Department of Health and Human Services, 1980; U. S. Department of Health and Human Services, 1994; U. S. Department of Transportation, 1997).

- Coordination of services between local, state and federal governments and human service agencies, including the Department of Health and Human Services (Bell & Revis, 1984; King, 1987; Logue, 1987; Noel & Chadda, 1987; Poister, 1982; Rosenbloom, 1988; Rosenbloom, 1994; Saltzman, 1984; Stanfield, 1996; Urban Mass Transportation Administration, 1985; U. S. Department of Health and Human Services, 1980; U. S. Department of Health and Human Services, 1994; U. S. Department of Transportation, 1997).
- Fair pricing (Carp, 1988; Harris, 1990; Heckmann, 1997; King, 1987; Noel & Chadda, 1987; Poister, 1982; Rosenbloom, 1988; Rosenbloom, 1994; Saltzman, 1984; Transportation Research Board, 1976; U. S. Department of Health and Human

Services, 1980; U. S. Department of Health and Human Services, 1994).

- Flexible eligibility criteria (Heckmann, 1997; King, 1987; Logue, 1987; Noel & Chadda, 1987; Poister, 1982; Rosenbloom, 1988; Rosenbloom, 1994; U. S. Department of Health and Human Services, 1980).
- Trained drivers with license, and valid insurance (McKnight & Pagano, 1984; Noel & Chadda, 1987; Rosenbloom, 1994; Transportation Research Board, 1976; Urban Mass Transportation Administration, 1985; Transportation Research Board, 1976; U. S. Department of Health and Human Services, 1980).
- Reliable vehicles with regular maintenance services (Harris, 1990; King, 1987; McKnight & Pagano, 1984; Noel & Chadda, 1987; Transportation Research Board, 1976; U. S. Department of Health and Human Services, 1980).

- Trained labor pool, including: board of directors, advisory board, manager and staff (U. S. Department of Health and Human Services, 1980; Balog & Pawlak, 1984).

- Consistent management review of courses, literature, and review of other transportation services (Jones, 1993; Noel & Chadda, 1987; Rosenbloom, 1988; Urban Mass Transportation Administration, 1985; U. S. Department of Health and Human Services, 1980).

OATS Beginning

The OATS was originally called the Cooperative Transportation Service. In 1971 the program was funded with thirty thousand dollars from Title III of the Older Americans Act to serve people age 60 and older with transportation needs. In 1973 the OATS, Inc. pilot project covered eight Missouri counties, serving the general public and persons in rural areas. Technical assistance was provided by the University of Missouri Extension Division. In 1973 more funding was awarded to the Cooperative Transportation Service by the Missouri Office on Aging. In 1980 OATS began providing

transportation services to people other than older adults (OATS, 1996). By 1976 OATS served adults age 55 and older and the disabled. OATS also served St. Joseph, Springfield, and Columbia, rural areas, and a total of 84 counties. OATS was a demand-response service, and medical trips were a priority. Trips had to be scheduled a week or more in advance. Volunteers scheduled trips for the week and worked directly with the drivers. OATS was available for trips into town, as well as special charter trips. Each trip had a set price per miles traveled. Initially OATS had no formal method for the purpose of needs assessments or evaluations. A method to gather pertinent data was implemented in February of 1974 and aided in identification of routes. OATS then began to re-evaluate needs, and began scheduling routes. The OATS system emerged as one of the first rural transit programs (Transportation Research Board, 1976).

OATS, Inc. Mission Statement

The 1997 OATS annual report stated: "The mission of OATS, Inc. is to provide reliable transportation for transportation

disadvantaged Missourians so they can live independently in their own communities" (OATS, 1996).

OATS Drivers and Fleet

In 1996 OATS had a fleet of over 297 vehicles; in 1997 this increased to 353 vehicles. In 1996 153 of the 330 paid employees were drivers. By 1997, 276 of the 400 paid employees were drivers, 77 were relief drivers, and 51 were management and clerical staff. Beginning in 1997 OATS implemented a benefit package for employees for the first time (Yeager, 1998). OATS drivers are instructed in safety programs, the main purpose to decrease, or eliminate the possibility of accidents. Drivers receive training in: defensive driving, backing techniques, passenger assistance techniques, acquired immune deficiency syndrome (AIDS) awareness, bloodborne pathogens, substance abuse, first aid and cardiopulmonary resuscitation (CPR). Passengers on OATS are expected to follow the Rules of Conduct, and drivers have expectations that must be met as well. Drivers are expected to follow road safety rules, be well mannered, provide assistance boarding and exiting the bus, when necessary assist with seat belts, and carrying

packages. The driver is also responsible for bus scheduling, which includes notifying passengers of canceled trips. Drivers are also expected to assist in scheduling long distance medical trips, provide price quotes for special group travel, and notify passengers of time limits set for each trip (Yeager, 1998). "Riders who feel their driver has not followed these guidelines should report the infraction to their area manager including date, time and place" (Yeager, 1998, p. 7).

During 1996 the 153 OATS drivers earned safety awards for 1,071 accident-free years. During 1997 safety awards were received by 158 drivers for 1,062 accident-free years. OATS reported there was one preventable accident for every 157,607 miles driven. During 1997 the number of drivers increased by five, and there was an increase of nine accident-free years reported between 1996 and 1997. Between 1996 and 1997 the mileage OATS traveled increased by 1,058,407 miles, and one-way trips increased 104,892 miles (OATS, 1996; OATS, 1997).

A fleet of vehicles must receive regular maintenance to continue operating efficiently. This is an important factor in the safety and reliability of all vehicles. OATS provides a fleet plan designed to

replace older, or worn vehicles prior to the vehicle becoming too expensive to maintain. In 1996 OATS replaced 12 maxi-vans with thirty inch raised roof and lift, three straight 15 passenger vans and two minibuses with lift. It cost over 437,211 dollars to replace these seventeen vehicles. During 1997 a total of 44 vehicles replaced older vehicles in the OATS fleet (OATS, 1996; OATS, 1997).

OATS Governing Operations

OATS is governed by a 16 member Board of Directors, who are selected by volunteers. The Board of Directors represents constituents, develops and amends corporate policy, and receives guidance and authority from those who use OATS services. Members of the board serve four year terms. The board meets six times each year at the OATS home office in Columbia, MO. The Board of Directors is responsible for hiring the Executive Director. The Executive Director is a paid employee, commissioned by and accountable to the Board of Directors. In 1996 and 1997 OATS' Executive Director was elected to serve on the Board of Directors for the Community Transportation Association of America, and as the Vice President of the Missouri Public Transit Association (Yeager,

1998). Sections of the state have been divided into specific regions or areas. These areas are governed by members of the Board of Directors in that specific region. These regions include; East Area, West Area, two Midwest Areas, Southwest Area, two Northeast Areas, two Northwest Areas, and Region X (near Joplin and surrounding areas) (OATS, 1996; OATS, 1997).

OATS Volunteers

Volunteers are an important component of the OATS program. Each county organizes volunteers into County Committees, with the main priority of raising funds to match the Missouri Department of Transportation for new vehicles. In 1996 and 1997 volunteers raised 134,814 dollars in funds to match Missouri Department of Transportation funding. Volunteers also work as schedulers, dispatchers, and committee members. In 1996 and 1997 OATS estimated over 1,000 volunteers donated about 163,090 hours of work. The value of the time donated by OATS volunteers during 1996 and 1997 was estimated to be over 1,348,800 dollars. In 1997 volunteers attended a conference in the fall designed to provide contacts, as well as the opportunity to attend training workshops

(OATS, 1996; OATS, 1997). Volunteers were joined by State Senators, Representatives, Missouri Department of Transportation, Area Agency on Aging managers and a Board President of an Area Agency on Aging (Yeager, 1998).

OATS Forms of Transportation

OATS provides different forms of transportation, dependent upon the location. These forms of transportation include: demand response, advanced reservation, and subscription service. Demand response provides transportation door-to-door, or point-to-point on demand with flexible routes and schedules. Subscription services are specifically oriented for transportation to/from, or both, a specific program and may include: social service programs, activities or senior centers. It is also possible that an individual may need to be at the same place daily (Missouri Department of Transportation, 1996).

OATS Funding

All public and private transportation systems must remain solvent in order to remain in operation. Funding pays for employees/staff

salaries and benefits, business expenses, maintenance and repair of vehicles, fuel, insurance, and other expenses (OATS, 1996; OATS, 1997).

OATS receives funding from both the federal and state governments. A few of these funding sources include: Title XX of the Social Security Act administered through the Social Services Block Grant (SSBG), Title III-B of the Older Americans Act, Federal Transit Administration Sections 5309, 5310 and 5311, Missouri Elderly and Handicapped Assistance Program, and voluntary rider contributions (OATS, 1996; OATS, 1997).

To receive funding OATS contracts with other agencies. Some of these agencies include the following: Missouri Department of Transportation, Missouri State Mental Health and Social Services, Missouri State Area Agencies on Aging, Southwest Missouri Office on Aging, and the Mid-America Regional Council. In 1996 OATS offered transportation services in 87 of the 114 counties in Missouri for older adults, persons with disabilities, persons in rural areas, and Medicaid eligible persons with non-emergency medical appointments. The Weekly Express was implemented in 1996 for

transportation services necessary to medical priorities, and serves parts of the northern and middle sections of the state (OATS, 1996; OATS ,1997).

OATS primary funding source is Title III-B of the Older Americans Act with funds allocated through the Area Agencies on Aging. Funding from the Area Agencies on Aging increased 11.8 percent between 1995 and 1996, and 12.5 percent between 1996 and 1997, seven-tenths of a percent funding increase. The Federal Transit Administration Section 5311 funds transit for areas with a less than 50,000 population, and is administered by Missouri Department of Transportation. Funding from Section 5311 increased one and seven-tenths percent between 1995 and 1996, and four and one-half percent between 1996 and 1997, a two and four-fifths percent increase. Special billings are considered contracts with individuals or institutions that do not fall under other agency contracts. Examples of this would be a child needing bus transportation to a special school, a church outing for recreational events, or a dialysis patient needing transportation. During 1995 and 1996 special billings increased 12.2 percent, and rose to 15.6

percent between 1996 and 1997 for a three and two-fifths percent increase. Rider contributions increased four percent between 1995 and 1996, and declined two percent between 1996 and 1997 for a two percent decrease. During 1995 and 1996 funding from Title XX from the Department of Mental Health decreased eight percent, but rose to nine and three-tenths percent during 1996 and 1997 for a one and three-tenths percent increase. Between 1995 and 1996 there was an 11 percent decrease in non-subsidized operations. Other funding comes from contributions from riders who do not fit into the category of Area Agency on Aging contracts, fund raising, and other contracts. Between 1995 and 1996 funding increased ten and three-tenths percent, between 1996 and 1997 this figure increased 232 percent, an increase of about 222 percent. The reason for this dramatic increase in 1996 may be attributed to approval of Missouri House Bill 1004. This bill was passed in an attempt to compensate for some of the loss in federal funding; the state bill provided over seven million dollars for transportation. In 1997 two million dollars of revenue was attributed to community groups and businesses, rider contributions, and fund raising efforts. During 1996 and 1997

Missouri Elderly and Handicapped Assistance Program has contributed three million dollars in funding (OATS, 1996; OATS, 1997).

OATS Passengers

OATS passengers are expected to follow certain standards of conduct. These are basic rules of respect, courtesy to other passengers, and safety rules. Respecting other passengers requires speaking softly so as not to annoy others. Courtesy requires no eating, drinking, smoking or chewing tobacco on the vehicle. Safety issues require remaining seated and wearing safety belts while the vehicle is in motion. Unless giving specific directions, passengers are not allowed to speak to the driver while the vehicle is moving. Infractions of these rules may result in the driver filing an incident report with the area manager, who then determines the proper course of action. The area manager reserves the right to refuse any further services. These rules, scheduling information, and other information pertinent to OATS are published quarterly in The Wheel. This publication is available to everyone in the OATS, Inc. service area (Yeager, 1998).

OATS Service Area

OATS provides transportation services to 87 Missouri counties. Many counties have large city populations that are served by OATS, and other forms of city transportation systems. These larger metropolitan cities include; St. Louis City and of St. Louis County, St. Charles City and County, Jefferson and Franklin County; the cities of Springfield and Columbia; the corporate limits of the City of St. Joseph; Kansas City including the counties of Jackson, Clay and Platte in Missouri and Wyandotte in Kansas (Missouri Department of Transportation, 1996).

OATS provides transportation service to 50,640 square miles, serviced by 294 vehicles, and has a service area population of 4,172,278 square miles. Counties served by OATS have at least one vehicle, and in some cases two counties share one vehicle (Missouri Department of Transportation, 1996).

County Growth

Between 1990 and 1995, 17 counties in the OATS service areas showed population growth of up to five percent in those ages 65 and

older. Two of these counties have major metropolitan areas. There were 18 counties with growth of greater than five percent in the same age groups. Six of these counties have major metropolitan areas (Growth of Missouri's Older Population, 1990-1995; Missouri Department of Transportation, 1996). The following counties had significant changes in the population between 1990 and 1995.

In the Northwest OATS region DeKalb county is serviced by one vehicle and covers 424 square miles. The population of DeKalb increased by four-tenths of one percent in those ages 65-84, and 13.2 percent in those age 85 and older (Growth of Missouri's Older Population, 1990-1995; Missouri Department of Transportation, 1996).

In the Northeast region Lincoln county is serviced by six vehicles and covers 631 square miles. The population ages 65-84 increased by nine and one-half percent, and 23.7 percent in those age 85 and older. Warren county is serviced by three vehicles and covers 432 square miles. The population aged 65-84 increased by almost six percent, and 19.5 percent in those age 85 and older. Both counties experienced population growth of greater than 26 percent in those

aged 65 and older (Growth of Missouri's Older Population, 1990-1995; Missouri Department of Transportation, 1996).

The eight Mid-Missouri counties that showed significant growth were: Camden, Cole, Laclede, Maries, Miller, Moniteau, Morgan and Pulaski. One of the two counties with the greatest population gain was Camden county, serviced by four vehicles and covering 655 square miles. The population aged 65 and older increased by 50.2 percent between 1990 and 1995. Pulaski county had the greatest growth rate in these same years. with a 63 percent increase in those age 65 and older (Growth of Missouri's Older Population, 1990-1995; Missouri Department of Transportation, 1996).

The Midwest region showed growth in three counties. St. Clair county is serviced by three vehicles and covers 677 square miles. The population aged 65-84 increased by five-tenths of one percent, and 14.1 percent in those age 85 and older. Benton county is serviced by three vehicles and covers 706 square miles. The population aged 65-84 increased by slightly under five percent, and 17.9 percent in those age 85 and older. Hickory county is serviced by four vehicles and covers 399 square miles, and showed the

greatest population increase in this area. The population aged 65-84 increased by six percent, and 19.1 percent in those age 85 and older (Growth of Missouri's Older Population, 1990-1995; Missouri Department of Transportation, 1996).

The Southwest region had the largest percent population growth in the state among the population aged 65 and older. These counties include: Barry, Christian, Dade, Dallas, Jasper, Newton, Ozark, Polk, Stone, Taney, Webster and Wright. The least growth was in Dallas which is serviced by one vehicle and covers 542 square miles. The population aged 65-84 increased by two-tenths of one percent, and 12.9 percent in those age 85 and older. The most growth was in Christian county which is serviced by two vehicles and covers 563 square miles. The population aged 65-84 increased by 29.4 percent, and 45.8 percent in those age 85 and older. Stone county shares one vehicle with Greene county, and covers 463 square miles. The population of Stone county aged 65-84 increased by nine and three-tenths percent, and 23.6 percent in those age 85 and older (Growth of Missouri's Older Population, 1990-1995; Missouri Department of Transportation, 1996). It is important to note that the quantity of

people aging will decrease, due to lower birth rates during the depression era.

CHAPTER 5

CONCLUSION

OATS provides access to medical care with some restrictions. Medical appointments must be made between ten a.m. and 12:30 p.m.; two p.m. is the expected time for return trips (Yeager, 1998). This may pose severe restrictions for scheduling medical appointments. In some cases doctors are delayed by emergencies, leaving patients waiting for their appointment. Such a delay would require finding an alternate form of transportation to return home, or possibly rescheduling the medical appointment, delaying the appointment for a prolonged period.

OATS has a regular schedule that provides transportation to senior centers during the week. These senior centers provide the older adult with a balanced meal, social and recreation programs, and some provide exercise programs. Several times a week on the return trip from the senior center OATS may provide transportation to the local grocery. Other regularly scheduled trips are posted in the OATS newsletter, which also provides a contact person, vehicle number, destination, and driver name (The Wheel, 1998).

Therefore OATS provides transportation services for medical, shopping, nutrition, and some social needs.

Scheduling and quantity of service requirements for OATS are dependent upon the type of response available in differing areas (advanced reservation, demand response, subscription service) (The Theel, 1998). Transportation for medical service is a priority. The medical services may be a great distance to travel, and may not be compatible with the needs of other riders. OATS provides no weekend service, and other than the senior center and the scheduled events of the senior center, no discretionary travel.

The testing, evaluation and assessment of needs becomes apparent in several ways. OATS began as the Cooperative Transportation System in 1971, and by 1973 had become a not-for-profit corporation. OATS provided rural transportation for older adults for many years, then began extending services to others in need. Most recently OATS has expanded the service area to include several other counties, includes Medicaid participants, and has added an employee benefit package. By expanding service OATS gains funding from new sources. The addition of the employee benefit

package serves to make people value their jobs more (OATS, 1996; OATS, 1997).

When OATS began receiving funding from the Missouri Department of Transportation, specific guidelines and criteria were set. Guidelines and criteria are set by funding sources, and OATS must meet these standards in order to continue to receive funding. During 1996 OATS developed a Strategic Plan for the next five years. This strategy helps create a clear picture for future direction, make immediate and necessary decisions, as well as meet the standards set forth by the agencies they are accountable to as a funding source. The plan proposed to address and solve major issues from within, improve performance efficiently, adapt to change or alterations, and apply improvements for the corporation. Strategic planning is necessary for the organization, and requires exhaustive planning by the board. Therefore strong board leadership and proper program development is of critical importance to the development of strategic planning.

The evaluation and assessment of costs and services is reflected in the OATS annual reports (OATS, 1996; OATS, 1997). Increased

funding from the state provided approximately 70 new vehicles for OATS. OATS management has established set criteria to evaluate the system, as well as meeting state and federal standards. Basic goals are clearly established and primarily based on the mission statement. Managers select criteria to balance conflicting goals, i.e., quantifiable measures versus the human factor. Data must be gathered and analyzed across all spectrums of the organization. Statistics provide valuable data analysis and aid in measuring the performance of the system. The most basic, and ultimately the bottom line, in all corporations is being accountable to the funding sources. However it is important not to overlook the human factor when interpreting results: the needs of one individual may differ from the needs of the next. OATS has set criteria for their evaluation process. One of their area managers is a networker with the Community Transportation Association of America, and provides assistance and information to help other transportation systems evaluate performance. OATS meets requirements regarding consistent testing, evaluation and assessment of needs, costs and services.

In 1971 volunteers founded OATS, and over one thousand volunteers continue to be an integral part of the corporation. OATS appreciates and recognizes the efforts of their volunteers. This is evident in the selection and awards for the volunteer of the year, selected by the county committees. Volunteers are active in fund raising, scheduling, dispatching, involvement with the staff, the management and community involvement (OATS, 1996; Yeager, 1998).

A 1997 meeting focused on outreach training. Outreach is a difficult obstacle to overcome, and has been addressed by the Older Americans Act and Area Agencies on Aging on numerous occasions. In order for any transportation system to be fully effective, it is necessary for rural older adults to be aware of the service in order to participate. Outreach is an important issue to address and continues to be problematic (Yeager, 1998). OATS attempts to provide adequate service delivery, and continues working on outreach, which can be more difficult in rural versus urban or metropolitan areas.

Coordination of services between governments and agencies emerged as a recurring theme throughtout the literature search.

Specialty transportation providers may cross boundaries with OATS services, and the Community Transportation Association of America provides service to all counties in the state under the rural and community transportation assistance programs. OATS Executive Director serves on the board of the national Community Transportation Association of America, is the President of the Missouri Public Transit Association, and is aware of duplication of serivces and other state wide transportation services. OATS is accountable to many funding sources for support, each with their own boundaries, limitations, and means of support. These sources include the federal, state, and local governments, community, rider and volunteer support. It would be difficult to coordinate OATS routes and schedules with specialty transit providers, which have their own criteria to meet. The need for transportation services in rural areas is so much greater than availability, coordination of services does not emerge as an issue (OATS, 1996; OATS, 1997; Yeager, 1998).

OATS receives contributions from some passengers, however these contributions are strictly voluntary. The contract with the

Administration on Aging does not allow any mandatory rider contributions. In 1997 just under six percent of funding came from rider contributions. Fares and contributions are a minimal portion of funding for OATS (OATS, 1996; OATS, 1997).

To be eligible to ride OATS, the following criteria must be met: being at least age 60, have a disability, live in a rural area, or being Medicaid eligible, and have an appointment for a non-emergency medical appointment. OATS has grown with time to meet the needs of those other than older adults. As examples of this growth, OATS now serves Medicaid recipients and children in the Head Start program. This growth had added to OATS funding availability and shows OATS growth and change over time (OATS, 1996, OATS, 1997, Yeager, 1998).

Drivers of OATS vehicles must comply with standards set by the Missouri Department of Transportation and standards set by each funding source. The first requirementis a valid license; the driver is insured by OATS and is trained in safety and other training. The majority of these standards are criteria set forth by the Missouri Department of Transportation. Other OATS members are well

trained and training is given to everyone from volunteers to managers. The members of the board of directors have diverse backgrounds and appear fully able to set a long term (five year) strategic goal for OATS. OATS managers are well trained and constantly strive to keep current with other innovative programs as they become available in other states. OATS maintains a trained labor pool which strives to remain current (Yeager, 1998; Missouri Department of Transportation, 1996).

A reliable fleet is critically important for OATS passengers to reach their destinations. Vehicles are maintained according to Missouri Department of Transportation standards, making the fleet a reliable form of transportation. Older vehicles are replaced with newer vehicles according to OATS fleet plan. The fleet plan eliminates the need for excessive and expensive maintenance on older vehicles by this replacement policy. The fleet increased from 297 in 1996 to over 350 in 1997. Increasing the size of the fleet is necessary to meet the demands for transportation as the population ages (OATS, 1996; OATS, 1997).

OATS has begun to meet changing needs in transportation services by expanding service to meet the need of those other than older adults. Among the older adult population the need for transportation will continue to increase. It may decrease for a few years, then begin to show a "snowball effect". In an age of decreased government funding for services, older adult transportation services may be vying for services with those who have the same needs, yet do not meet older adult criteria for services. There has been discord between younger and older Americans regarding reduced rates for services by older adults (Torres-Gil, 1992). Both groups could benefit by coordinating efforts, including the issues and needs of rural transportation services.

By and large it would appear that OATS does a good job serving rural transportation needs. However OATS does need to be aware of increasing numbers of the older adult population into the south and southwest service areas, as well as the declining population in the Northern regions. If this trend continues OATS would benefit by increasing services to the midwest, Mid-Missouri, and southwest areas due to the higher concentrations of older adults.

The Northwest OATS region has a small concentration of older adults and an adequate number of vehicles servicing this area. The Northeast region appears to have an adequate number of vehicles servicing this area, although there are large concentrations of older adults in Lincoln and Warren counties. These counties have extensive rural areas, and much of these counties have winding and treacherous unpaved roads.

Columbia, in Boone county, is the headquarters for OATS, Inc. In the Mid-Missouri service area, five counties showed a growth rate of 20 percent and greater in the 85 and older age bracket. Camden County showed an increase of 50.2 percent in those age 65 and older. At least four OATS vehicles service this area, with about two overlapping transportation services. Camden county is a large resort and retirement area near the Lake of the Ozarks. Between 1990 and 1995 Pulaski county showed a growth of 63 percent in those aged 65 and older. This area is serviced by at least one OATS vehicle, with overlapping transportation services available. The population of these counties has very high concentrations of adults in the 85 and

older age bracket (Growth of Missouri's Older Population, 1990-1995: Missouri Department of Transportation, 1996).

The Midwest OATS area serves 13 counties, most of which showed minimal growth in the older adult population between 1990 and 1995. Benton county had a growth rate of 22.6 percent in the population age 65 and older, and is serviced by at least two OATS vehicles, and at least one additional available transportation service. Hickory county had a growth rate of 25.1 percent in the population age 65 and older. Hickory is served by at least three OATS vehicles, as well as several OATS vehicles that overlap with connecting counties (Hickory, Benton and Pettis counties) (Growth of Missouri's Older Population, 1990-1995: Missouri Department of Transportation, 1996).

The Southwest OATS region has many counties with growth in the older adult population between 13.2 percent and 34.2 percent. Several counties, such as Barton, McDonald, Douglas and Lawrence had minimal population growth, and some counties actually had great declines in the 65-84 age group. Two counties within this region with larger growth rates were Newton and Greene. Newton

and Jasper have several larger cities, with the city of Joplin bordering both counties. The City of Springfield is in Greene county and is considered a major metropolitan area. Both Joplin and Springfield are served by the Missouri Department of Transportation and considered a major metropolitan area. Greene county is 675 square miles, with a population of 223,800 and showed 34.2 percent growth in the 65 and older age range (Growth of Missouri's Older Population, 1990-1995: Missouri Department of Transportation, 1996).

Ozark county has 747 square miles, with a total population of approximately 9,700. About 20 percent of Ozark county is in Mark Twain National Forest, approximately ten percent is Bull Shoals and Norfork Lakes. The older adult population increase between 1990 and 1995 was 23.6 percent in Ozark county, and is serviced by two OATS vehicles (Growth of Missouri's Older Population, 1990-1995: Missouri Department of Transportation, 1996).

Nearby Christian county has 563 square miles, and a total county population of about 46,200 people. Approximately 35 percent of Christian county is in Mark Twain National Forest. Between 1990

and 1995 the population aged 65 and older increased by 75.4 percent. The largest town in Christian county, Nixa, has a population of about 4,893. This area is serviced by two OATS vehicles (Growth of Missouri's Older Population, 1990-1995; Missouri Department of Transportation, 1996).

Stone county has 463 square miles, and a total population of about 27,900 people. About 35 percent of this county is in Mark Twain National Forest, and is also covered by Table Rock Lake. The population age 65 and older, between 1990 and 1995, increased by 32.9 percent, and has one OATS vehicle servicing this area.

It is clear the Mid-Missouri and Southwest OATS regions have a staggering growth rate in those age 65 and older. It is possible that many of the counties with high percentages of older adults have either retirement communities, assisted living facilities, or possibly residential care facilities. If this is the case, these facilities qualify for transportation services under Federal Transit Sections 5310 and 5311. OATS needs to examine the shift in the older adult population, and be aware of the changing needs in services.

Upon examination OATS, Inc. appears to serve rural Missouri counties to the best of their ability in an organized manner. It seems there is a lack of awareness about transportation services in rural areas. However outreach has been and continues to be a focus of concern for OATS. Additonal emphasis is needed to ensure that full knowledge is available to all of the older adult population in rural areas. The greatest force working against OATS meeting the needs of all older adults in rural areas is the lack of funding.

The 1980s experienced an out-migration from rural areas. During the 1990s two million Americans moved back to smaller towns from urban areas to raise families. This out-migration of younger people is an attempt to flee cities and urban areas plagued with violence, crime and drugs (Pooley, 1997). If younger people continue this out-migration and aging in place continues, transportation will continue to be a high priority. The author feels that it is the duty of this younger population to acknowledge that transportation will become a problem for them, and take measures to help meet this need now. Indeed few people want to consider the possibility that they may not drive someday. It would be best to alert

society to this increasing problem of lacking transportation services now, rather than when it becomes a societal problem. More extensive research is necessary as the rural older adult population continues to grow and have a need for services like the OATS, Inc.

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APPENDIX

Permission was granted to examine OATS, Incorporated of Missouri by OATS Executive Director, Linda Yaeger.