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Assessing Transportation Management Associations (TMAs) In Rural Maine As An Approach To Increase Transportation Options

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ASSESSING TRANSPORTATION MANAGEMENT ASSOCIATIONS (TMAs) IN RURAL MAINE AS AN APPROACH TO INCREASE TRANSPORTATION OPTIONS

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Abstract

Maine has the distinction of being a beautiful state defined by natural forests, crystal-clear lakes, and a landscape unblemished by the usual marks of the densely populated regions of the U.S. The downside to this rural beauty is the remoteness of the sparsely populated communities which present challenges to residents who are unable to drive themselves to procure basic services because of physical, legal, or economic conditions.

Many rural residents are unable to rely on personally-owned, single driver vehicles. According to the Maine Department of Transportation Bureau of Planning (2013), the Eastern Maine region has an estimated unmet need (number of trips needed compared to available services) of 75% (Penobscot County) and 84% (Piscataquis County). The recent reduction in the cost of gasoline has made travel more affordable, but the reality is that many can't afford the purchase price tag, insurance, and/or maintenance costs to keep their vehicle on the road. The funding trends at the state and local levels will not support an expansion of public transportation to bring rural residents to hub centers for social services, healthcare, school, employment or other destination points. As noted in the Maine Department of Transportation Final Strategic Plan 2025 (2015, p. 13), federal funding in rural regions has remained at 2012 levels, and there is little local funding support for rural transit systems operating outside the more urban cities of Bangor and Ellsworth.

A review of the literature on transportation challenges and barriers, particularly in respect to the sparsely populated region of Eastern Maine, provided the basis for this grounded theory qualitative study. A series of thirteen interviews were performed with study participants living in Eastern Maine who were characterized by one or more of the following traits: Low-income; elderly; medically restricted; student; and commuting worker. The results of the study provide insight into factors contributing to the gap, and whether a transportation management association (TMA) and rideshare boards represent reasonable solutions. The study also suggests methods to encourage use of alternative solutions to get Eastern Maine residents to their destinations.

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CHAPTER 1

INTRODUCTION

Maine has long been recognized as one of the most beautiful states in America, with nearly 83% of the state comprised of pristine forests, hundreds of lakes, and an unblemished landscape. The commitment to sustain Maine's natural legacy is evidenced by the banishment of billboard signs along interstate and other highway systems that could mar the untarnished image. This beauty has earned Maine several monikers including "Vacationland" and "Maine – The Way Life Should Be", and demonstrates the state's reliance on the tourism industry that supports thousands of vacationers each year. Unfortunately, the very aspects that make Maine a desirable destination spot for vacationers characterize another facet of Maine. The state is extremely rural and sparsely populated, with the total population recorded with the 2010 census at 1,328,361, and the average density of its population recorded at 43 persons per square mile (2010 US Census). Maine's largest city of Portland proper has a population well below 100,000 residents.

Maine, like many other rural states, is populated by residents that are dependent on personally owned vehicles to travel independently to work, obtain an education, and for socialization, recreation, healthcare, and social service visits. There were 1,019,738 licensed drivers in the state in October 2012; 14.5 billion vehicle miles were traveled in 2010, with this number projected to increase another 15% by 2030 (TRIP, 2012). Based on population and other lifestyle trends, TRIP estimates that travel on Maine's roads and highways will increase another 15 percent by 2030.

It has become clear in recent years that this individualized approach to transportation will not be sustainable in the coming years (Simmons, 2013). While historically this approach to rural transportation may have allowed residents to access services, the increase in the cost of fuel

and declining presence of local jobs and services may necessitate a shift in transportation patterns and behaviors.

Many factors impinge upon rural residents' ability to transport themselves. According to Sharpiro, Pearlmutter & Schwartz, 2012, the high cost of fuel typically puts a strain on rural residents' household budgets and most economists predict that this trend will continue despite brief and temporary drops in the per gallon price (p. 93). The impact of burgeoning fuel needs in foreign countries like China and India was having a direct, negative impact on U.S. pockets, with the most vulnerable populations being those that must travel distances to get where they need to go (Shapiro, Pearlmutter & Schwartz, 2012, p. 92). A shift in the pricing of crude oil and related reduction in the average cost of gasoline during 2015 has reduced the financial strain on the average driver (U.S. Energy Information Administration, 2016). However, the fluctuating cost of fuel and its negative impact on household budgets is one factor that warrants investigation into alternate modes of affordable travel.

Another characteristic of Maine is the increasing proportion of Maine's senior population that is either independently choosing to remain in their homes and "thrive in place", or those who because of financial hardship are forced to remain in their historical homes (Colgan, 2006). Boober (2015) notes that Maine's current infrastructure of providing services and care to the elderly who are thriving in place is becoming unwieldy due to the expanding older population, and new strategies are needed to meet basic needs including transportation. As their ability to transport themselves decreases, the need for increased transportation options will continue to grow for the elderly to connect to healthcare services, social activities, shopping, and other services. Shifts in behaviors are also needed in a culture where many, in particular seniors, are reluctant to share hardships and prefer to compartmentalize transportation problems by hiding

them from others; there is a prevalent perception that sharing difficulties could put them at risk of losing their independence entirely (Hiskey, 2013). Hiskey notes that many seniors feel that admitting any type of hardship would bring unwanted notice.

The migration of workers from small communities to larger towns and cities has exploded over the last decade. The paper mill and manufacturing industries that once dominated the region have left the state taking well-paying jobs with them and leaving many communities without an industrial base. In early 2011, the *Bangor Daily News* reported that "a conservative think tank says Maine businesses have been losing more jobs on the average from closures than they created through startups between 1993 and 2007" and "on average, created 29,755 jobs per year from startups, but lost 30,359 jobs from closures." This industry shift has created displaced workers needing to drive longer distances to find employment. In 2014, this factor grew exponentially with the closure of additional paper mills resulting in the loss of more than 1,000 full-time jobs (BDN, 2014).

The migration of workers has not resulted in the relocation of these workers to more urban towns. Many rural residents are financially limited and are forced to remain in historical family homes; although the housing stock in rural communities continues to degrade, the cost to relocate (mortgage, taxes, insurance) is prohibitive (Maine State Housing Authority, 2008). These demographic and economic changes, combined with the limited funding available to expand traditional transportation modes, are driving the need for Maine to find more creative, affordable, and reliable solutions (Maine Statewide Strategic Transit Plan 2025, 2013).

Problem Statement

Because of the lack of public transit systems (bus, rail) beyond the borders of Maine's most populated communities, it is not surprising that one of the major challenges faced by rural

residents is access to reliable and affordable transportation (Maine Department of Transportation, 2010). The 2014 TIGER2 Planning Grant Report detailed that people living in rural areas, particularly low-income, elderly and the disabled, are more likely to lack reliable vehicles and live many miles from their work, health care, and social service providers (p. 3). This report also noted that Maine residents often face barriers to accessing higher education, social services, livable wage jobs, adequate housing, and other community supports (p. 4).

A rural-based Transportation Management Association (TMA), supported by the active participation of traditional and non-traditional community and regional partners, is seen as an effective model to close these gaps by connecting residents in need with viable transportation solutions.

Purpose of the Study

The purpose of this grounded theory qualitative study is to explore the perceptions of selected rural residents of Eastern Maine regarding their need for transportation and their willingness to utilize a TMA model to meet their needs.

The sample population was selected from five demographic populations, and the study focused on determining the study participants' perceptions, beliefs, and biases toward the use of a TMA in a rural setting to support connections with rides to healthcare-related services. Study participants included the elderly, disabled, students, commuters, and low-income persons who reside in rural communities now or in the past.

The findings of this study will contribute to the knowledge regarding rural residents' perceptions relating to the use of TMAs, in particular rideshare boards, and may be useful to those looking at the viability of implementing TMAs in Maine. These findings will be shared with transportation experts (local, regional, statewide and nationally),

service providers and community officials to help guide planning strategies for the coming decade.

Research Questions

Given the abundance of data as related in the Literature Review that indicates a need for increased transportation options for rural residents of Maine, in particular those living in Eastern Maine, four questions were identified to guide this research study:

1. What were the perceptions of the study participants in rural Eastern Maine about the alternatives presented through the Transportation Management Association (TMA) including the rideshare board and volunteer systems?

2. Do study participants in rural Eastern Maine needing transportation consider TMA's a realistic solution for meeting their transportation demands?

3. Do study participants in rural Eastern Maine perceive that TMA options will increase their ability to keep medical appointments?

4. Do the participants indicate that they will be likely to access TMA options to keep medical appointments?

Conceptual Framework

The utility of TMAs in rural regions, and their impact on closing transportation gaps particularly for those who are elderly, disabled, or middle to lower income underserved populations, has been gaining momentum in rural states across the United States including Texas, Iowa, Vermont and New Hampshire to name just a few. Ferguson (2007) notes that TMAs have been used by a variety of stakeholders including employers, local government, childcare providers, social services, and others who have identified a need to connect people with rides. The comparative cost-effectiveness of TMAs, many of which are funded through

membership dues, has made them a viable alternative to federal and state-sanctioned services. The Vermont Agency of Transportation-supported Go!Vermont has embraced the concept of TMAs by offering carpool and vanpool services and access to other resources for people looking to reduce transportation costs and the environmental impact of driving.

TMA's may function through an established service-based organization, or as a stand alone umbrella transportation planning organization which would plan and partner with other organizations. A TMA also tracks specific goals, metrics, and desired community outcomes - for instance, the reduction of commute times, congestion and pollution or increased number of transit riders, parking available to visitors, and bike parking spaces.

A recent survey performed by the Penquis community action program in the Penobscot County region of Maine showed that 51% of respondents listed the lack of transportation as a major barrier to accessing healthcare services (Penquis, 2014). The interviews employed for this grounded theory qualitative research study focused on perceptions of the reliability of rides found through the TMA community rideshare board, identifying perceived barriers and methods for marketing the TMA by potential ride board users, and the utility for accessing healthcare-related appointments and services. Study participants recruited for the interviews represented the broader needs identified in this study for employment, education, and other commute-related needs. The interviews will also serve as the venue to discuss the issue of missed healthcare appointments and the impact to the individual's overall health and well-being. Questions were crafted to investigate the value of a TMA for rural residents needing rides to connect to healthcare appointments and disease management services.

There are numerous organizations and national groups addressing transportation gaps that served as excellent resources for this research study. For example, the Association of State

Highway and Transportation Officials (AASHTO) created a tool for states to perform a self-assessment of transportation systems, and future socioeconomic and transportation drivers. This assessment and similar tools and resources were reported in the Literature Review and provide specific data about rural transportation challenges across the United States, and shaped the conceptual framework of this study.

Findings from this study will help deepen the understanding of the transportation needs of rural residents. The study will be shared with multiple audiences representing community leaders, service providers, educators, employers, state government representatives, and transportation professionals who are charged with finding real-world options for those in need of transportation solutions. Enhancing this study's Literature Review was the integration of findings into real world dialogs (referenced in the Literature Review) through collaborations with the State of Maine Department of Transportation, particularly through participation on the steering committee for Maine's Statewide Strategic Transit Plan 2025 and the federal MAP 21 funding plan to create Regional Transportation Planning Organizations to address transportation issues at the local level (U.S. Department of Transportation, 2014).

The conceptual framework for this study is based upon a platform of three primary constructs:

1. Identify the sociological factors that influence residents' health and well-being.
2. Explore the theory that individualized transportation via a self-owned automobile is unsustainable.
3. Build an alignment and collaboration between social agencies and resources to overcome barriers for rural transportation.

Understanding what influences the wide gaps of service in rural regions will be critical to guiding the evolution of TMAs as one solution to close gaps.

Definitions

The following concepts will be referenced throughout this research study:

Community-Based Collaboration is the partnership of public and private, traditional and non-traditional stakeholders who work together to address an identified problem and find solutions that benefit the communities where they live and work.

Eastern Maine refers to the region of Maine that encompasses Hancock, Penobscot, Piscataquis, Waldo, and Washington counties. This area of Maine is also referred to as Downeast Maine (Hancock, Washington, and Waldo counties) and portions of the Katahdin region (Penobscot and Pistacaquis counties).

Ehealth is an emerging field in healthcare that comprises principles from healthcare, technology, public health, and business. It presents as a model that promotes a state-of-mind and investment of a broad partnership to improve healthcare locally through communication and information technology (Eysenbach, 2001). It is particularly useful when managing chronic health conditions.

Rideshare Board refers to a repository posted on-line for connecting with volunteer and private or non-profit transportation options. Rides offered are posted as well as listings for persons needing rides. Users can access rideshare boards to connect for offering or seeking transportation.

Ridesharing is a description of riders who carpool to work, school and other destinations. Typically, expenses are shared and opportunities for sharing a ride are posted in a public site such as an on-line ride bulletin board.

Rural is described by the United States Department of Transportation (USDOT) as dispersed, isolated counties or regions with few or no major population centers of 5,000 residents or more. The regions are characterized by agriculture and natural resource-based economies, stabilized or declining populations, and facing challenges as a result of the dearth of public transportation.

Telecommuting is the use of the internet as an alternative to traditional transportation via an automobile. Using high speed connectivity, the user can work from home (home office), take long-distance on-line education courses, shop, bank, connect with healthcare providers, and perform other tasks without the need of a vehicle.

Telemedicine is a methodology employed using either the telephone, internet or shared networks for the purpose of providing consultation, chronic disease management, and education. The communication can occur between two health providers, a provider and chronic care manager, or the health professional and patient.

Transportation Gaps can be described as the recognition that people living in rural regions experience an inherent lack of options for getting where they need to go when they need to go. Current solutions only provide minimal relief.

Transportation Management Association (TMA) is described by the TDM Encyclopedia (2011) as a non-profit organization that provides advocacy, education, outreach, and links to transportation services in a particular area. The TMAs are often member-driven organizations that manage a wide range of services including ridesharing, carpooling and other options for non-car owning individuals.

Transportation Solutions can best be described as a roadmap developed as a result of a strategic planning process resulting in multiple and often innovative remedies and services.

Thriving in Place is a term describing retired seniors who want to retain their independence and remain in their homes and communities (also referred to as Aging in Place) (Partners for Livable Communities).

Volunteer Ridesharing is the term used to describe the provision of rides by volunteer drivers who receive no monetary compensation for the use of their private vehicle or the cost of gasoline. Rides are offered by volunteers for those who lack personal vehicles or have a disabling condition that prevents them from driving themselves (i.e., elderly, handicapped).

Assumptions

According to the 2009 National Household Travel Survey (NHTS), rural travelers tend to drive more often, are less likely to ride public transportation vehicles (primarily because of the lack of services), and drive vehicles that tend to be older and less fuel-efficient than their urban counterparts (NHTS, 2009). This holds true for drivers in Maine who historically prefer to travel alone in their private vehicles, even if those vehicles are less reliable or cost-effective. As noted in the TIGER2 feasibility study completed in February 2014, driver preference was linked to sole occupancy (Appendix A, p. 57). However, the TIGER2 study results reported an even greater number of respondents indicating that a lack of options often prohibited any travel for work, school, services, and social and recreation purposes (p. 22).

The TIGER2 feasibility study noted that there is the expectation that independent-thinking Maine residents will be resistant, at least initially, to the options proposed by the TMA (e.g., rideshare, park & ride, cell phone networks, etc.) (p. 9). The six-month time frame from start-up to evaluation may be narrow to assess the true potential for change. This research will assess rural residents' assumptions about the benefits and risks of non-traditional transportation

options in an effort to determine the viability of a TMA.

The decision to assess the impact of gaps in transportation on healthcare management in this study was influenced by the observation that the lack of systemic and reliable transportation was a barrier for low-income, elderly, and handicapped persons. Accessing timely and ongoing chronic disease management support as well as preventive healthcare is critical for patients to maintain their health status while reducing costly emergency department visits and hospitalizations (Community Transportation Association of America 2014). Evaluating the impact of the TMA on healthcare management is the focus of this research, and was dependent on the study participants' willingness to participate in a survey that asked questions about their healthcare management and status. My role was to adequately promote and explain the importance of the research study to increase participation.

Based upon preliminary research performed in Eastern Maine through the TIGER2 feasibility trial, it is believed that engagement and commitment by community partners will continue as the TMA increases visibility. This commitment will be critical as the TMA is integrated into the lexicon of rural residents; confirmation of the TMA's usefulness and referrals to the TMA system will serve to encourage residents to use the agency as a resource.

Significance

The recent TIGER2 Planning Grant Report noted that many rural residents of Maine are challenged on a daily basis to connect with viable transportation to work, school, healthcare appointments, and other services -- even traveling to the grocery store (p. 4). With the current structure of national and state funding mechanisms for transportation-related needs, the TIGER2 report states that the identification of new funds to expand public transportation venues seems remote (p. 9). It is critical that Maine transportation agency leaders think outside the box to find

realistic solutions to close the current gaps (Maine Statewide Strategic Transit Plan 2025, 2013). Finally, findings summarized in the TIGER2 Planning Grant, 2014 conclude that these solutions will need to be found locally to assure that options identified are realistic for the region (p. 4).

Finding those answers will require that local stakeholders take the lead. To that end, this study explored the perceptions of selected rural residents of Eastern Maine regarding their insights about their need for transportation and their willingness to utilize a TMA model to meet their needs.

The transformational leader (or possibly the leader among a team of leaders comprising the team) can provide the necessary support to guide the collaborative partners in identifying and implementing new options. Solutions will need to be realistic and framed by the findings of this and other research that takes the biases and preferences of users into consideration; the transformative leader can direct efforts by identifying compatible programs in other regions and assure that the final plan has been sufficiently researched to warrant implementation. Finally, the transformative leader will be the voice to remind partners of equitable and fair consideration for all rural residents in need.

Conclusion

Chapter 1 identifies the problem of transportation gaps in the remote rural regions of Eastern Maine that is exacerbated by barriers that have widened these gaps. In recent years, service providers have experienced a shift by state and federal administrations that historically intervened to identify resolutions and provide sufficient funding to minimize transportation gaps (Maine Statewide Strategic Transit Plan 2025, 2013). Instead, the onus is now falling to community-based, non-profit, and grassroots-driven organizations and stakeholders. In addition to the statement of problem, chapter 1 identified the purpose of the study, the research questions

to be answered, the conceptual framework, the assumptions that impacted the completion of the study, and the veracity of the findings.

Chapter 2 provides an in-depth literature review to describe the current gaps, examples of solutions, and an introduction of the TMA. Chapter 3 provides a review of the methodology utilized in the study. Chapter 4 presents data and Chapter 5 presents conclusions and recommendations.

CHAPTER 2

LITERATURE REVIEW

The literature review describes and assesses the components unique to rural transportation barriers and areas of concern:

Transportation in Rural America– identification of socioeconomic status, and transportation characteristics and impacts

Demographics of Rural Maine – review of barriers and characteristics which impact rural mobility in Maine

Alternatives to Traditional Transportation – introduction to multimodal options beyond public transportation

Transportation Management Associations (TMAs) and Community Collaborations – definition of one emerging solution to rural gaps and compelling characteristics that shape TMAs

Characteristics of the Successful TMA – recommendations from the literature and the critical components of interest

Behavioral Modification – review of factors that support changes to behavior that influence increased usage of TMAs.

Chapter 2 reviews rural development concerns contributing to or influenced by the lack of transportation alternatives for rural residents, and reviews options that have been identified as potential solutions to close the gaps and increase opportunities for residents to get where they need to go. This chapter describes the characteristics of transportation in rural America and rural Maine, most notably the historical prevalence and unsustainability of single-driver vehicles and land use patterns that discourage shared ride alternatives. The results of these prohibitive qualities along with Maine's climate and periods of harsh weather have a direct impact on access

to education, socialization and cultural inclusion. An overview of the lack of transportation's impact on access to healthcare and the hidden health costs of this gap will be presented. Following a demographic portrait of Eastern Maine, the chapter will shift to a discussion of alternatives to traditional modes of transport, the value of TMAs and community collaborations, and the impact of addressing behavioral patterns to enhance the acceptance of alternative solutions to close transportation gaps for those in need. Finally, a review of the organizational characteristics inherent to TMAs will also be identified. The literature review provides the basis for this research study and quantifies why this research is needed particularly in rural Eastern Maine.

Transportation in Rural America

Accessible and affordable transportation has a critical role in determining the livability in communities and quality of life for those living in rural regions of the county. Travel behaviors and barriers to travel for even basic needs vary greatly between urban residents and those residing in remote rural communities where public services are sparse (Rural Transit Fact Book, 2014). As noted in this section, the demographic backdrop of rural Maine residents, the costs associated with single-driver transportation, land use patterns, and other barriers all negatively impact rural residents' transportation capabilities. These barriers directly influence residents' ability to access education, work, healthcare and other basic needs for emotional, physical and socio-economic well-being.

Cost of Single-Driver Transportation.

Maine's historical reliance on and prevalence of single-driver transportation is unsustainable. Brown & Stommes (2004) note that disadvantaged, low income rural households are three times more likely to lack a working vehicle than higher income homes. This

disadvantage extends to preventing livable wage employment; the lack of a vehicle and growing need to travel greater distances to employment is often an insurmountable barrier to securing employment and relegates some rural residents to a life of continued generational poverty. According to a report from the USDA (Cromartie, 2014), rural populations as a whole are declining with most rural counties across the United States beginning to experience losses since 2010. The recent trend of declining population in rural communities means that increased public transportation will not be an option.

The high cost of gasoline in recent years served as a catalyst for more rural residents experiencing difficulty getting where they need to go. Johnson (2011) further states that rising fuel costs will ultimately change how the average citizen travels and will emphasize their need to access public transportation and other similar options. Despite current national gasoline prices averaging a low $2.05 a gallon, many experts predict that gasoline prices will begin to hike in late 2015 and 2016, and could reach $5 a gallon by the end of this decade (Loveless 2015). This prediction reaffirms the need to identify alternative solutions in the long-term for one-driver vehicles.

Land Use Patterns.

Litman (2005, 2006) contends that historical land use patterns and current transportation systems limit improvements supporting an expansion of options for disadvantaged travelers as they demonstrate a preference for single-driver automobile travel rather than alternative modes. He notes that current funding practices are skewed to favor increased automobile dependency by demonstrating a preference for parking and roadway facilities over more cost-effective alternatives. Smart growth development is successful when solutions identified can provide benefits that support more diverse and efficient alternatives (VTPI 2014). Land use planning

includes locating common destinations close together to increase accessibility and transport diversity, but common usage is devoted to more urban, heavier populated locales rather than to support efficiency for longer distance commuters. Litman (2014) suggests that planning should include distribution of the management of demand to increase capacity equally with focus ascribed to distinguishing the economic, social and environmental benefits.

Inclement Weather.

A factor that merits consideration is the inclement weather in Maine. On an average of 6 months each year, Maine is characterized by unpredictable and often severe weather patterns. For the rural resident, this often means that traveling distances is out of the question. Frigid weather and snow can present difficulties for travel as roads are often closed and transportation agencies (including healthcare transporters) discontinue services until the weather clears (Goins, Williams, Carter, Spencer & Solovieva, 2005).

Access to Education.

The absence of a reliable vehicle restricts many from attending higher education institutions. Fletcher et al. (2010) note that the lack of reliable transportation is a barrier and is evident at numerous points of need including higher education and employment. The lack of post-high school education is a factor that can inhibit one's ability to obtain work in a higher pay range. Higher wages lead to an improved quality of life, with benefits noted for both the individual and society as a whole. These benefits include the ability to negotiate higher incomes, greater job choices, satisfaction, and security (Hill 2015). Barriers to higher education have resulted in many rural Maine residents lacking higher degrees beyond high school; for example, 16.2% of residents aged 25 and older in Piscataquis County attained a bachelor's degree or higher compared to 28.5% in the U.S (U.S. Census, 2010). Even the advent of on-line, distance

learning is does not always address rural education access because of the lack of high-speed internet connectivity. Many rural communities still rely on dial-up services which do not support the capacity needs for on-line education platforms. This "digital divide" represents yet another barrier to rural students that puts them at an educational and economic disadvantage (Speedmatters, 2008).

Access to Work.

In Eastern Maine (and similarly in other rural areas across the country), closure of historical manufacturing companies and factories are forcing rural residents to travel further for employment. In Eastern Maine, the closure of the paper mills has resulted in the loss of more than 2,000 livable wage jobs. For the first time in over 120 years, there are no active paper mills in Eastern Maine. Because these companies were often the heart of small rural Maine communities, displaced workers needing to search for new employment have had to look further away to larger hub centers for jobs. Often these jobs are at a reduced pay level with fewer employee benefits, resulting in a reduction in the overall household budget (Camoin 2015). For those without vehicles, securing transportation to employment is challenging.

Social Integration and Cultural Inclusion

Community activity and socialization has a significant impact on the quality of life of seniors aging in place (Shergold, Parkhurst & Musselwhite, 2011). Access to cultural venues serves to increase one's sense of community, and for older citizens can be an important socialization channel. Isolation often results in a withdrawal from family, friends, and community. A recent Gallup-Healthways Solutions poll found that people of all ages but in particular seniors, showed great benefit to their health and well-being (i.e., reduction in stress, loneliness, depression impacting basic vital signs) by even a few hours of socialization with

family and friends on a routine basis (Gallup-Healthways, 2011). In rural areas, this often entails travel to central hub locations for social interactions.

Access to Healthcare.

Mitton, Dionne, Masucci, Wong & Law (2010) report that, although Canada requires that all citizens have reasonable access to healthcare, the reality is that many in remote rural regions of northern Canada are at an extreme disadvantage. This lack of access has resulted in a diminished overall health status of these residents as they lack the ability to manage chronic illness and receive timely care for acute episodes. Their research concludes that a multi-approach solution is warranted and includes the use of telemedicine and e-health (public health education and outreach) platforms.

The delivery of healthcare via the internet is growing in acceptance, particularly for patients who must manage chronic conditions such as diabetes, cardiac disease and more. The results of their research suggested that the reduction in the number of medical evacuations was substantial. This type of "intelligent" transportation is combined with more traditional methods of delivery to enhance the overall quality of care and increase access to health care.

In a study performed in six West Virginia rural communities by Goins, William, Carter, Spencer & Solovieva (2005), it was concluded that inadequate transportation was a contributing factor to poor health management. Contributing barriers included extended travel for specialty care, limited medical transportation programs, limited public transportation, and inclement weather.

Hidden Health Costs of Transportation

Benmar (2010) looks at another side of transportation and health impacts – those caused by a continued reliance on fossil fuels and high volume automobile usage. She notes that the

negative outcomes from our obsession with vehicle usage has led to an increase in the exposure to air pollution, bodily harm resulting from traffic crashes, and decreased opportunities or desire for physical activity (i.e., walking to destination rather than driving). Benmar points out that these factors have resulted in increased costs associated with obesity, pulmonary illnesses, cardiac issues, and injuries from crashes. Benmar also notes that "health impacts and costs have typically not been considered in the transportation policy, planning and the funding decision-making process." Integration of public health professionals as a non-traditional partner to transportation planning is critical to reduce the negative impacts.

The recent report on hidden costs of transportation published jointly by the Urban Design 4 Health, Inc. and the American Public Health Association (2012) confirms Benmar's conclusion and reports that the added annual costs to obesity (approximately $395 per year per person), air pollution ($50-$80 billion), and traffic crashes ($180 billion) justify a shift in transportation planning to consider health impacts and costs. They recommend that future strategies should also include a national set of health-related policy objectives to help drive funding to projects supporting healthy communities and active alternative to traditional transportation (i.e., walking and biking).

The Urban Design 4 Health, Inc., the American Public Health Association, and Benmar support a relationship between creative solutions to close gaps, and recommendations that include safe and logical routes that promote mobility through physical activity (Ferguson, 2007). While the attainment of safe transportation and mobility are critical, the reality remains that most rural communities have limited opportunities for walking or biking as viable travel solutions because of the great distances that must be covered to reach destinations.

Vrabec discusses the various issues that exemplify seniors living in rural communities. These include: 1) more individuals are living at the poverty level or at lower incomes; and 2) lack of ready access to healthcare results in higher incidences of unmanaged chronic illnesses (e.g., hypertension, cerebral vascular disease, cardiovascular disease, pulmonary disease, obesity, etc.). The trends of declining rurally-based health centers (primarily due to financial constraints and inadequate reimbursement for patient visits), a lack of awareness about existing services, decreased availability of healthcare providers, and the geographic dispersion of rural residents (Vrabec, 1995) all lead to the conclusion that increased reliable transportation is needed for this and other segments of the rural population.

The author points out that the lack of rural services and transportation often forces elders to move to urban settings and institutionalized housing. Among Vrabec's proposed solutions are a restructuring of the healthcare reimbursement system to possibly use a "resource-based relative value scale" (increased payments and provider incentives to practice in rural settings), increase the range and number of healthcare providers by modifying the state licensure laws, and increased provision of supportive services. Increased transportation options have a role in this list of solutions and could provide a more cost-effective alternative.

For the disabled person living in rural towns, an increased reliance on automobiles rather than public transportation or transportation services has been reported (Deka, 2014). For those lacking family members or friends to provide this service, options are limited. Deka also notes that barriers for the disabled will continue to increase due in part to the increasing number of seniors (extended longevity because of medical advances), the growing number of single households, and the increasing demand for scarce and often expensive transit services.

The barriers to adequate transportation and subsequent outcomes noted including decreased access to education, livable wage employment, healthcare services and socialization directly relate to the socio-economic conditions identified in Eastern Maine. Although the average cost of gasoline fluctuates, the reality is that the cost per gallon will rise in the coming years. This expense, coupled with historical planning and land use transportation patterns favoring the single-driver model, and Maine's harsh and often unpredictable climate continues to influence access to essential services and the Eastern Maine residents' quality of life. This discussion provides the foundation for the importance of this research study – identifying viable solutions to gaps in transportation.

Demographics of Rural Maine

Because of inherent geographic, psychological, financial, and social barriers, people living in rural areas of Maine are more likely to lack transportation, live many miles from their work, health care and social service providers, and are less likely to easily access higher education, social services, livable wage jobs, adequate housing and other community supports (Kolodinsky, 2013).

Many rural residents are "trapped" in place because of the unaffordability of housing in more urban locations; although the housing stock in rural communities continues to degrade, the cost to relocate (i.e., mortgage, taxes, insurance) is prohibitive (Maine State Housing Authority, 2008).

The Healthy Maine 2010 study reported that rural counties in Maine also tend to have older populations (anywhere from 13-14% of population in Penobscot, and 17% in Piscataquis) as well as higher rates of poverty and lower median incomes. These and other rural-specific factors contribute to the barriers and circumstances that result in gaps in transportation and

diminished access to services and employment. As described in the 2010 Healthy Maine report, the issues and characteristics related to the barriers have a negative impact on all aspects of life. The incidence of acute and chronic medical conditions and restricted access to healthcare are high and some rural residents are burdened by the inability to travel distances for healthcare. This leads to poorer management of chronic illnesses and missed appointments.

Fletcher, Garasky, Jensen & Nielsen (2010) note that reliable and affordable transportation is a key mechanism to enhancing economic outcomes for low-income families, most significantly for those struggling to manage employment and daily needs. Relevant variables include a lack of driving skills, high costs of insurance, maintenance, and repairs of vehicles, lack of access to consumer credit, and inability to obtain a driver's license – all leading to an overall sense of stress and reduced decision-making abilities.

A Maine State Plan on Aging (2012) notes that Maine is the oldest state in the nation as well as the most rural, reporting 15.9% of Mainers are age 65 and older. The 2010 Census Bureau projects that by 2030, Mainers age 65 and over will constitute 26.5% of the state's population representing a 12.1% increase. The median age has already been increasing, with a median age reported in 2013 at 43.9 (Bangor Daily News, 2014). The inability to drive is an obvious problem experienced by the aging. Accompanying this growth in the elderly is the expected reduction of those 18 and younger (projected reduction from 23.6% to 18.1%).

Finally, workers living in rural regions consistently travel longer distances when compared to those living in more urban areas such as Bangor, Augusta or Portland Maine. On average, the rural commuter drives for a mean travel time of 25 minutes or more one way compared to more urban-based travelers (20 minutes or less one way) (American Community Survey Reports, 2009).

Prior studies have been performed in Maine to accurately assess barriers to transportation and needs such as the Eastern Maine Transportation Collaborative (United Way of Eastern Maine, 2004). This study investigated the challenges and barriers seniors face when accessing chronic care medical services. A complementary study performed by the University of Maine Center on Aging (2005) expanded the research to determine current gaps and services. Both concluded that the lack of viable transportation was a critical barrier to effective disease management and overall health. These studies and others confirm that barriers are related to advanced age, lower income levels, lower attainment of education beyond high school, and a lack of public transit options.

Along with these barriers, the concerns related to personal safety are also important factors influencing the utilization of alternatives to traditional transportation. Beecroft and Pangbourne (2014) note that ingrained negative perceptions related to public and non-traditional transportation often deter individuals from its use. They define personal security as factors related to security, safety, and confidence (e.g., confidence in the mode of transportation selected).

These studies and others confirm that barriers are related to advanced age, lower income levels, lower attainment of education beyond high school, and lack of public transit options. For Maine, the additional obstacles of longer driving times for employment and behavioral biases add another layer of difficulty. The demographics described contribute to the systemic adversities experienced by rural residents lacking reliable transportation.

Alternatives to Traditional Transportation

Maine residents, like those in many other states, are dependent on personally owned vehicles to travel for work, health, education, social and all other necessary trips. Corless (2011)

argues that the continued increase of gasoline prices will be accepted by Americans as long as a direct correlation between transportation and improving their lot in life (more secure, convenient and affordable) is clear. Therefore, he contends that the federal government must participate in planning to invest in an array of new options so that the high costs of gas do not adversely affect the average citizen's budget. Although the cost of gasoline has declined in 2015, it is generally accepted that prices will spike closer to $5.00 per gallon by 2020 (Loveless 2015).

Over the last few decades, efforts by transportation and service providers have begun to generate new creative alternatives to traditional modes of transportation. Public transit such as public buses and service-oriented buses will still be needed, but the cost to provide these services prohibits an expansion to meet growing needs (Corless, 2011). Some of these alternatives are described; some are applicable to rural settings while other options are limited to more heavily populated cities.

Car-Sharing.

The use of Zipcars has been gaining popularity as an alternative for those without a personal vehicle. Zhou (2012) discusses the value of university employee car-sharers in Los Angeles. He notes that this alternative transportation mode not only serves as a viable and cost-effective solution but also has a positive impact on greenhouse emissions (reduced rider volume on campus) and increases the mobility of the carless employee. Although this is an option worth considering in more populated communities, its value diminishes for rural communities. Many residents not only face financial barriers to Zipcar program membership, but the practicality of access presents another roadblock – many live in homes so rural that they would need rides to pick up and drop off the Zipcar. The University of Maine terminated the Zipcar program after

determining that poor usage, lack of availability, and poor acceptance resulted in under-utilization of the program to meet operating needs (The Maine Campus, 2008).

Zhou noted that the median income of participants of the Zipcar program was $30,000-$40,000; Maine median income is lower than the national average and even lower for those counties more rural in nature. The median household income for residents of Piscataquis County (total population 17,535) is $36,606 compared to the state average of $48,219, and more than 17.7% live below the poverty level (U.S. Census 2010).

Telecommuting.

As noted earlier, the use of telecommuting is also viewed as an effective model to eliminating barriers in rural transportation. The Portland Plan (Oregon) is a collaborative project promoted by the City of Portland and comprised of a partnership of various public and private partners. The goals of this plan focus on four priority areas – prosperity, education, health, and equity. Transportation has been a priority of this partnership, and their plan's identification of technology as a way to improve transportation for education, business (particularly home offices), socialization, and other services (for example, on-line banking) supports the TIGER2 determination that increased high-speed connectivity will open new doors for home-bound or low income residents. Their end-goals include reducing the number of miles traveled for care, increasing affordability of high speed internet access, promoting telecommuting, and increasing internet use for government services (Portland Plan, 2014).

Although seemingly a viable alternative, in rural regions of Maine broadband connectivity is poor with some areas still reliant on dial-up services as their only means of telecommuting. Until broadband connectivity is upgraded, travel through telecommunication portals is limited in Eastern Maine (Speedmatters, 2008).

Mobile Unit Healthcare Delivery.

Mobile units for healthcare delivery have been tried in rural communities as an alternative to permanently structured clinics that require the patient to travel for care. Services have ranged from annual and well-patient physical examinations, oral health examinations (including x-rays, fluoride treatments, and fillings), and mental health services. Most agree that the benefits of bringing healthcare to the community are great and ultimately reduce the need for emergency care while increasing the well-being of patients. The downside of mobile units as a venue for healthcare is the extreme cost of services – purchase of the specially equipped van, insurance, maintenance, staffing and associated per diem costs, and gas can be prohibitive and unsustainable. These costs often inhibit program longevity; on average, mobile clinics cost anywhere from $300,000-$375,000 annually. Most rely on donations and grants to sustain operations, and often face discontinuation when these cash streams end (Srinivasan, 2015).

Rideshare/Cell Phone Networks.

Sharing rides is another alternative that has gained popularity in recent years. The Upper Valley Rideshare (www.uppervalleyrideshare.com) in New Hampshire and Vermont is an example of a grassroots program that helps commuters connect with drivers for recurring commutes (i.e., work, school), one-time appointments, and rides to special events. A defining characteristic of ridesharing is that typically the driver and passenger are unacquainted and are meeting solely for the purpose of sharing transportation to a specific destination.

A methodology employed on a limited basis in Maine is the cell phone network – a small group of neighbors are connected through cell phones, with calls circulated to the phone list when trips are being made to service centers, grocery stores, the mall, and other destinations. The network provides advance notification when trips are scheduled for ridesharing or, in the

case of a grocery store trip, shopping lists can be shared allowing the driver to pick up goods and deliver to the consumer (particularly useful for house-bound and elderly citizens) (TIGER2 Planning Grant Report, 2012).

Despite the existence of alternatives to traditional transportation, evaluating their applicability to Eastern Maine has resulted in the elimination of car-sharing such as Zipcars and mobile unit services delivery as viable options to replace the single-car model. Telecommuting is complicated by the lack of the needed infrastructure; dial-up services are still prevalent in many corners of rural Eastern Maine. Mobile units, although attractive as a service provider vehicle, is cost-prohibitive. Finally, Uber and Lyft merit a mention, although their usefulness in rural settings (similar to taxicabs) is not likely. A majority of small rural communities already lack taxi services due to low ridership, and the import of Uber would likely not be cost-effective because of low ridership, long drives between fares, and overall trip revenue too small to cover gas and vehicle upkeep (Hawkins, 2015).

One notable exception is the application of rideshare opportunities, notably through TMAs, as a potential alternative in rural Eastern Maine.

TMAs and Community Collaborations

A final option identified as a viable solution to reduce transportation barriers is the use of TMAs. Often, the mission and operations of these TMAs are community-based partnerships comprised of traditional and non-traditional partners. The value of this repurposed model as a solution to rural transportation gaps is gaining momentum as a viable solution that is demand-driven.

Initially launched in the 1970's, their popularity waned until the last decade when the benefit of a locally-managed organization was noted to be advantageous for efforts to control or

reduce emissions and traffic congestion in metropolitan settings. However, it wasn't until the last few years that the value of a TMA in rural settings was recognized. Ferguson (2007) reports that between 1990 and 2002, a total of 249 TMAs were in operation, with 231 situated in large urban centers and the remaining serving rural and small urban areas. Of the 18 rural TMAs, he noted that 13 were still in operation, a fact that demonstrated that smaller TMAs were more likely to succeed when compared to the large counterparts (Ferguson, p. 6). TMAs have also shifted focus to providing direct services to commuters, with less emphasis on advocacy (Ferguson, p. 24).

Ferguson, Ross & Meyer (1992) discussed the critical components of a TMA including their organizational structure (public-private partnerships were a key component to early TMAs), implementation including investment from communities, funding needs, staffing needs, and responsibilities, and the need for an evaluation of the early phases to determine if program modifications were needed. Ferguson (2007) updated his original paper to include case studies and a review of eight national TMA surveys performed between 1989 and 2003. Following the lull in TMA's use in the 1990's, they have again emerged in popularity in the 2000's by offering a wider variety of products and services, more financial security, and as viable organizational models to address changes in transportation due to increasing fuel prices. His review of survey results confirmed the decline of TMAs in the late 1980's and 1990's, with results showing that many were disbanded. Of interest is the identification of TMA dues as one of the more significant fiscal drivers to long-term success. It was also interesting to note that many TMA's did not include performance evaluation, thereby decreasing their ability to implement change or fixes to maintain their effectiveness (Ferguson, 2007).

The on-line TDM Encyclopedia on Transportation Management Associations (2014) provides an overview of the many elements and considerations when forming a TMA. Among

the components reviewed including implementation, benefits and costs, impacts to travel, equity impacts and regional application, TMAs were noted to have potential benefit for communities (including rural regions). This resource also provides an identification of the many solutions that TMAs can address such as ridesharing, telework, access management, shuttle services and more. There are many TMAs currently in operation that serve as resources for developing similar models in Maine. These include the New England models of Upper Valley TMA (Vermont and New Hampshire collaboration), Go Addison County (Vermont), and CATMA (Burlington VT).

The Upper Valley TMA has a membership base of private employers, transit providers, and town and regional planners. This model supports various service providers, workplace and employer connections, advocating on behalf of transit providers, and outreach to potential commuters (http://www.uppervalleyrideshare.com/). The Go Addison County model in Vermont works with a variety of partners to advocate for increased transportation efficiencies and support collaborations with businesses, public agencies, employee transportation networks, rideshare resources, transit and shuttle operations, and other partners in the region to increase travel options. The Campus Area Transportation Management Association (CATMA) is another example of a New England TMA model that, in addition to traditional roles, works actively to improve air quality and address parking demand (CATMA 2013).

Collaborative Partnerships for Transportation Planning

Rangarajan, Ziemer, and Long (2009) conducted a research study looking at the value of public and private partnerships to foster economic development activities and address infrastructure deficiencies. Specifically, their research focused on a presentation of two case studies that involved public-private partnerships. The first case study reviewed a transportation project that would connect rural towns via the implementation of a ferry service. The case was

made that although increased value was not prevalent for development projects, there was clear value in engaging partners for engineering projects such as public transit, improvement of roads and bridges, and evaluation of opportunities for innovative and technology-based systems management. The synergies recognized by the partnering of community groups and agencies with private enterprise aligned well with the goal of producing creative solutions and rapid engagement of same.

Deloitte Development LLC confirms these conclusions by stating that public-private partnerships (PPP) are invaluable to addressing numerous infrastructure needs including transportation, education, housing, waste and water, defense, and prisons. Because of the complexities and cost associated with governmental intervention, PPPs can play a critical role in closing the gap to identify infrastructure solutions (Deloitte, 2007).

In Eastern Maine, the formation of public-private partnerships has been gaining momentum as alternatives to historical intervention resulting from solutions by State or federal entities. The Eastern Maine TMA, launched in 2013, is one example of a successful partnership of community collaborations (www.emdc.org/GettingThereMaine). These grassroots organizations are a viable answer to the problem of providing alternative transportation that is accessible and affordable.

Characteristics of the Successful Transportation Management Association (TMA)

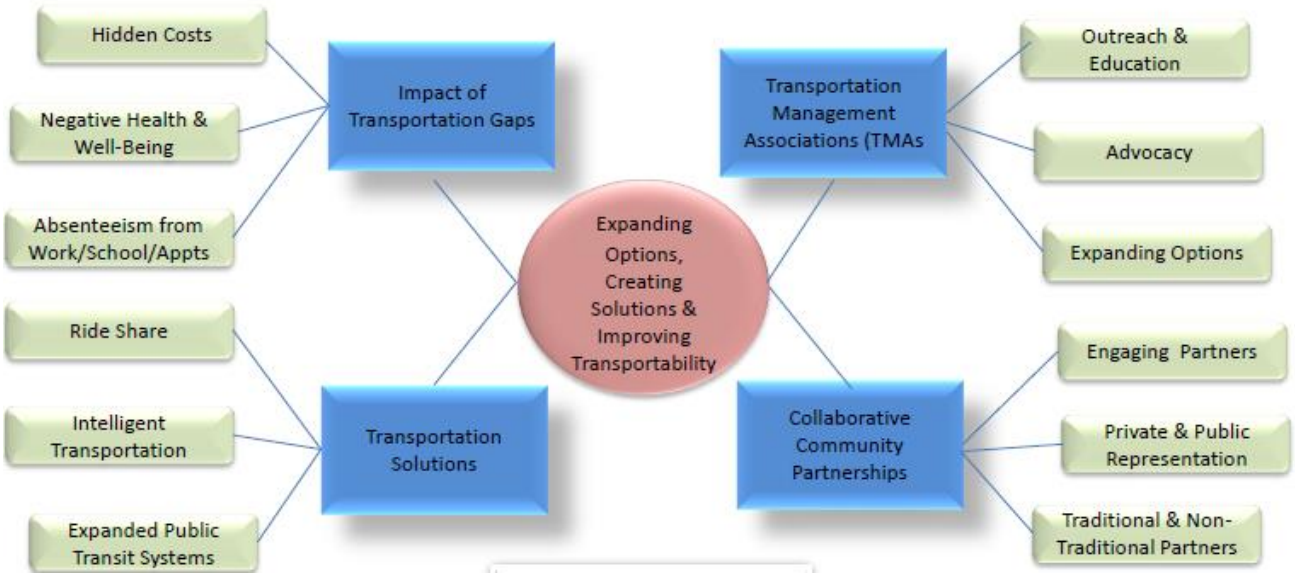
An evaluation of existing models proved useful as the Eastern Maine TMA was implemented to assure that all applicable components were addressed and subsequently evaluated for impact. Morris (2006) discusses the steps needed to adopt new or modified transportation systems management models that address the more complex issues of growth, congestion, safety, and other transit considerations. At the heart of his recommendations is a well-thought out and clear marketing plan to increase awareness and community recognition. Morris purports that

communication portfolios, strategies, and the "push versus pull" process is useful as the new TMA is created and the research is conducted to assess its utility.

Instructional "tools" that assist with the creation of new TMAs and identifies the critical component leading to a successful enterprise are available. The TDM Encyclopedia is one such guide that identifies those pieces to be considered when forming the new community-based organization including access management, marketing and promotion, rideshare matching, and telecommunication support to name a few (TDM, 2011). A visual representation of the rural TMA is provided in Figure 1.

Figure 1

Rural TMA Characteristics



In Eastern Maine, the characteristics were assessed and tools were applied to support the development of the Eastern Maine TMA and subsequent rideshare board a focus on marketing the resource and managing the assets are critical pieces to assure its success.

Behavioral Changes

Providing options for transportation will have limited value unless those needing rides are willing to use TMAs and local rideshare boards, and forego the preference to drive independently. For those unwilling to share their lack of transportation or access less conventional options, rideshare boards and volunteer rideshares may be a hard sell. Acceptance of this alternative will require a change in attitude that needs to be based in education and exposure to dispel misunderstandings or fear. Harvard Women's Health Watch (2012) notes that change is a process that requires multiple stages including pre-contemplation, contemplation, preparation, action, and maintenance.

Changes in behavior can also be influenced by life events or external pressures (Littell, 2002). In the case of utilization of TMAs, this could be the loss of vehicle ownership, aging, incapacitating medical conditions, or prohibitive cost. To this point, Schwarzbach (2013) reported that increasing fuel costs can be a catalyst to behavior modification. She notes that, for those lacking sufficient disposable income to absorb rising fuel prices, finding affordable alternatives to single occupant vehicles becomes more palatable but still requires education and a degree of persuasion to shift from thinking to doing.

One approach to modify rural residents' transportation behaviors is to identify the pros and cons, examining the barriers that inhibit utilization of rideshare boards and methods to bypass them (Harvard Women's Health Watch, 2012). This approach has been applied to modification of health behaviors, but is applicable to ride seekers.

Assessing the needs of a rural region, assets and resources available to enhance options, building the collaborative partnerships, and creating plans to impact behavior patterns of potential users are critical to the success of the alternative to traditional transportation.

Conceptual Framework

The literature review has clarified the characteristics of the Maine rural driver and rider, describing a population dominated by the preponderance of older, less educated, lower to middle income people who lack options to travel to meet their needs. Compounding these factors are the inherent barriers that characterize living in rural communities – the lack of public transportation, high costs associated with maintaining personal vehicles, and the lack of readily accessible support systems. In a regional transportation survey, it was noted that preferences and behavior were directly influenced by the need for reliable, stress-free, and productive transport (Popuri, Proussaloglou, Ayvalik, Koppelman & Lee, 2011). Clarifying attitudes and biases will be key constructs to the implementation of a viable alternative to single-driver vehicles and public transportation.

The TMA builds on a framework of community collaboration and encourages ownership of the solution at the local level by invested stakeholders. This study assessed these components to consider the TMA as one possible solution for remote and rural areas of Maine.

Conclusion

The literature review articulated the problems and demographics that contribute to barriers associated with the lack of transportation in rural America, described the demographics of rural Maine residents and communities that negatively impact mobility, and presented alternatives to traditional modes of travel. The chapter also introduced TMAs and the need for effective community stakeholder collaboration to sustain the successful TMA; the characteristics of a successful TMA were described. Finally, the literature addressed the need to consider behavioral patterns that will determine whether a TMA s considered to be viable.

As a result, this literature review effectively created the framework to guide this study's research. Assessing the value of the TMA and the likelihood of utilizing its alternatives by "Mainers" was the core of this research study.

CHAPTER 3

METHODOLOGY

This research study focused on one option to address transportation gaps in rural Maine – the rural Transportation Management Association (TMA). Central to this study was the documentation of the beliefs and preferences of rural residents living in a representative subset of Eastern Maine communities. Interview questions were posed to participants for the purpose of assessing perceived barriers to use of a rural community rideshare board. Resident input was gathered regarding the residents' perceptions of the TMA as a solution to gaps in transportation. The purpose of this grounded theory qualitative study was to explore the perceptions and biases of persons living in rural Eastern Maine about the need for alternatives to traditional public transportation and their willingness to use these options.

The research used a grounded theory qualitative approach to seek and analyze input from a diverse cohort of study participants who have a shared common experience (Creswell 2013, p. 83). For this research, the shared common experience was the lack of transportation options. Participant input was the basis for proposing an action or theory of a process that would incorporate study participants' perceptions and preferences (Bloomberg, 2012, p. 137). Because this methodology was grounded in the experiences and input from study participants, the end result provided data that will be a framework for further study and application (Bloomberg, 2012, p. 33).

The study participants were recruited from a varied sampling of service provider agencies including social services, elder, healthcare, and education for a theoretical sampling. As noted by Glaser and Strauss (1967), theoretical sampling is the process of qualitative data collection where i jointly collect codes and analyze data to support the emergence of a theoretical idea(s).

For this study, a theory was researched to determine if one could predict and explain behavior on whether rideshare boards and TMAs would be viable alternatives to single-passenger vehicles. Considering the emerging theory as the interviews progressed and channeling observations from prior interviews helped to provide a clearer picture to subsequent interviews and helped frame the conclusions reached.

Thus, the interview questions were designed to discover participant preferences, biases, beliefs, and experiences that personally influenced their access to transportation. Bloomberg indicates that the selection of individuals who can contribute to the evolving theory constitute the theoretical sampling to build the case for the research (p. 102). The selection of a diverse group of study participants representing the elderly, physically and/or mentally handicapped, commuters needing rides to work, low-income persons needing rides to a variety of destinations, and students ensured representation of those identified in the initial TIGER2 study as most in need of transportation options (2013 TIGER2 Report).

Differentiating grounded theory from other qualitative methodologies is the focus on collecting data to build a theory (Merriam, 2009). Merriam stresses that grounded theory supports research that is based upon real-world, everyday conversations with and opinions from study participants.

Data collected from interviews, observations, and other resource documents (p. 30) serves as the basis to formulate theories that can interpret or predict expected outcomes. One-on-one interviews can uncover biases, historical beliefs, preferences, and specific examples leading to formed opinions. The interviews can also reveal possible actions that can influence change. The use of personal observations can inform the research, showing acceptance, avoidance, disagreement or displeasure with questions or proposed solutions. Resource documents can add

an additional layer of insight; for example, a State of Maine transportation assessment in other regions of the state provided crucial validation during the formation of the theory.

The grounded theory research requires an immersion of myself into the requirements of the data analysis as the interviews are performed and data is collected. My local knowledge and familiarity with the subject will encourage an inherent sensitivity and appropriate response to each interviewee, enabling the consideration of appropriate follow-up questions as the interview progresses and the interpretation of data collected. This strategy enables an ongoing reframing of specific questions as each interview progressed (Merriam, 2014, p. 30).

Setting

The grounded theory study participants were based in Eastern Maine, the location of a TMA that is managed through a regional economic development organization, Eastern Maine Development Corporation. The TMA was formally launched on February 11, 2014 through a public event in Bangor, Maine. Since that date, activity has focused on establishing the TMA and promoting services in Hancock, Penobscot, Piscataquis, Washington, and Waldo counties affecting 133 communities.

One focus of this research study was to query potential rural rideshare board users to determine their awareness of and willingness to use the TMA. A total of thirteen (13) persons representative of the population of focus were interviewed, for example the elderly, disabled, low income, student, and commuting employee; a minimum of two study participants were recruited from each demographic category. A series of interview questions were posed to each rural resident in an effort to ascertain whether the rideshare board is a valid solution to gaps in transportation services. Study participants were identified via conversations with town managers, healthcare providers, senior groups, religious leaders and groups, school

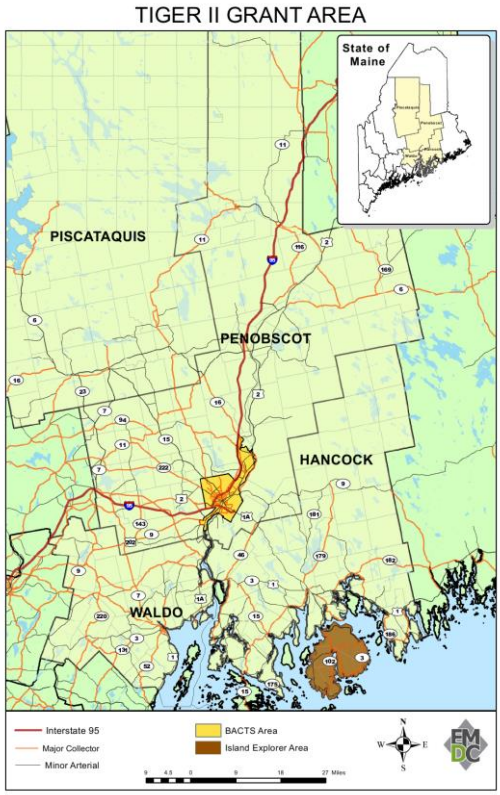
administrative officials and educators, social groups, and other service providers in order to select interviewees that were representative of the targeted population. A clear description of the purpose of this study with the end goal of identifying reliable, stress-free, and safe transportation for underserved populations served as a motivator for cooperation by community partners. This value-added aspect for their clients enhanced their active engagement in identifying study participants.

The application of a grounded theory qualitative research model was used. The grounded theory research design is described by Creswell (2013) as a qualitative research approach that benefits from the input of a cohort of participants or interviewees (p. 83). This approach generates the "grounded" data from the study participants who directly experience the issue of study, and can help explain what happens in the real world while potentially providing the framework for additional study (p. 83). The qualitative input can lead to a definitive description of a process, action or interaction needed to reach the desired conclusions; in this case, an identification of the perceptions and biases against shared or volunteer ride programs and how to reduce barriers to reduce the transportation gaps in Eastern Maine.

The purpose of this qualitative grounded theory study was to explore the perceptions of selected rural residents of Eastern Maine regarding their need for transportation and their willingness to utilize a TMA model to meet their needs and to generate a general explanation (theory) of the process for choosing transportation resources. This research study emanated from preliminary research performed in a four-county region of Eastern Maine over a three-year period (TIGER2 feasibility study, Figure 1). Eastern Maine Development Corporation (EMDC) in partnership with multiple community agencies worked collaboratively to investigate transportation barriers in rural Maine. This feasibility planning study called "Linking the Rural

Regions of Four Counties in Maine to Enhance Transportation Opportunities and Improve Quality of Life," was a federal Department of Transportation, Federal Transit Administration-funded project looking to identify solutions to close the gaps and provide options for those looking to connect to employment, services, education, socialization, and more. Figure 2 provides a map of the region impacted by the feasibility study.

Figure 2



The project research included a multi-question survey that was circulated to a broad population (approximately 6,500 households in the four-county region of Hancock, Penobscot, Piscataquis, Washington, and Waldo counties) asking questions about transportation gaps and needs; more than 1,800 individual surveys were completed and returned (approximately 27%). Focus groups and one-on-one interviews were also conducted to provide specific examples and

more detailed descriptions of the findings presented in the quantitative data. An engaged and committed Advisory Group, in collaboration with the University of Maine Margaret Chase Smith Policy Center, evaluated the data and began to review options that have been employed nationally to determine their adaptability to rural settings. As a result, the project identified an array of 13 potential options spanning a diverse spectrum of solutions, from ridesharing to expanding public transit routes to creating a formal TMA formed to promote current services and identify new options (2013 TIGER2 Report).

The final report offered multiple solutions, any of which were felt to have the potential to begin closing the transportation gaps. Some of those solutions need to be implemented at the community level, some require an influx of new funding, and some could be performed by an identified entity capable of assuming a leadership role. Based on these parameters, the Advisory Group decided to move forward with the formation of a TMA as a viable approach to systemically oversee transportation activities. It should be noted that the TMA would incorporate many of the other recommendations noted.

The new rural TMA was launched in 2014. During the initial year of operation, attention was paid to adequately market the TMA (now called the Eastern Maine Transportation Management Association or EMTMA) to educate community members about its value and how to access the new resource. At the one-year mark, the interviews were conducted.

Participants

Care was taken to select 13 representative participants from the demographic populations that were identified through the initial project (TIGER2 feasibility study). The survey tool and personal communications depicted areas within the region as having a high number of clients lacking transportation; this focus allowed access to a subset of individuals needing rides and

therefore positioned to experience higher benefit from the TMA services. Study participants were drawn from communities that range in population from a few hundred to no more than 1,500 residents.

In order to identify individuals representative of the population groups of interest (i.e., seniors, disabled, students, commuters, and low-income persons), a variety of stakeholders were contacted to request recommendations for clients to contact for interviews. These stakeholders included service providers, town officials, healthcare agencies, social and senior groups, educators, and secular leaders. The queries assured that each of the targeted population groups were represented in the interview phase of the research.

Qualitative Data

A series of interview questions were developed to support the collection of comprehensive qualitative data. The questions posed are provided:

1. Do you have a working vehicle?
2. Do you drive yourself?
3. Where do you currently live? Did you need to move to a larger community to be closer to services?
4. Have you been hampered by the lack of transportation?
5. Have you experienced difficulty getting a ride to a healthcare appointment in the last 60 days?
6. Have you missed a healthcare appointment because you couldn't find a ride in the last 60 days?
7. Who has been available to give you rides in the past?

8. Do you feel that the lack of public or other transportation options in Eastern Maine is an important issue that needs to be addressed?

9. Are you familiar with the Eastern Maine TMA?

10. Are you familiar with community rideshare boards?

11. Would you consider using a rideshare board to access a ride in the future? If no, why?

12. What would your primary concerns be for using a community rideshare board?

13. Do you have access to the internet?

14. Have you visited the GettingThereMaine.com web site?

15. Are you familiar with agencies and groups in your community that offer rides to those in need?

A total of 13 interviews were scheduled to be performed at central public locations within each community to make it easier for participants to participate. All interviews were taped and transcribed by an independent transcriber to collect complete and accurate responses to each question.

Enhancing the literature review was a second level of interviews performed with healthcare-providers, healthcare offices and community centers, other service providers, and transportation professionals to learn about agency preferences, perceptions, perceptions of barriers, and acceptance of the proposed TMA model. Interview questions were prepared in advance, and each interview was taped and transcribed to assure the accurate description of each subject's responses.

Although a detailed analysis of the methods required to integrate TMAs into state-level short- and long-range planning efforts was not performed, a series of interviews were executed to

assess biases and perceptions to the potential solutions provided through application of rural TMAs. Interviews were planned through direct telephone communications with the Maine Department of Transportation Commissioner David Bernhardt, Sue Moreau (Transit Policy Specialist, MDOT), Penobscot Community Health Care (federally qualified health center) Director of Patient Services, City of Bangor Health & Community Services Director, Healthy Maine Partnerships Regional Coordinator, Eastern Maine Agency on Aging Executive Director, and Eastern Maine Healthcare Systems Vice President of Business Development.

Analysis

An analysis of the interview data was performed to identify the preponderance of observations and values. The analysis of the qualitative data was representative of the information collected and transcribed, and included a subsequent assessment of common threads and conclusions. Bloomberg (2012, p. 137) notes that the analysis of grounded theory data requires that categories for comparison are formed (called a process of open coding) and are analyzed in relation to the projected theory, following which the stories (interviews) are weaved to build an interconnection between the interviews. Each of the thirteen interviews was labeled as Study Participant 1, Study Participant 2, etc. to assure anonymity. Within each interview, categories were identified to isolate thoughts and comments related to primary topics of consideration including vehicle ownership, factors contributing to the lack of transportation, transportation resources, missed healthcare appointments, familiarity with rideshare boards, familiarity with TMAs, and biases and preferences for rideshare options. A further segregation of the data was performed to identify key responses (performed by building a spreadsheet and populating each question posed with responses and trends).

Complementing the data collection process, the application of the constant comparative method of data analysis was employed. This process consists of the comparison of segments of data with the other segments of data collected to determine parallels and differences. As a result of these comparisons, categories of evaluation were formed to facilitate the identification of patterns in the data. The observations and conclusions support the development of a new theory that addresses questions about process, in this case the changing dynamics of rural transportation opportunities (Creswell, 2013, p. 86).

Participant Rights/Confidentiality

All consideration was made to assure the confidentiality of study participants. If provided, names were omitted from the data reporting summaries. Interview study participants were transcribed as Participant #1, Participant #2, and so forth. Each respondent was informed of the purpose of the research, value of their participation, and what will happen with the data collected. Participants were informed that they could stop the interview at any time, and could withdraw their participation if they no longer wish to participate.

Potential Limitations of Study and Conflict of Interest

Extreme care was taken to limit researcher biases and address perceived conflicts of interest. The interviews were performed using an extensive script; the script was provided to independent reviewers for input prior to the interviews. Any perception of bias or preference might be evident in the pattern of questions, but that data itself was objectively transcribed. Although no problems were anticipated in recruiting professionals for one-on-one interviews, there was the risk that residents would be hesitant to participate. This risk was felt to be low as residents were queried to participate in the original planning study to assess transportation gaps and potential solutions, and no lack of volunteers was noted.

Pilot Study

The interview questions were prepared and tested in a sample group to assure that the data collected addressed the questions of concern; this sample group was planned for 5 individuals, and included clients and staff at Eastern Maine Development Corporation as well as other community members. Care was taken to assure that pilot study participants were not located at one of the communities or agencies selected for this research study.

A total of five participants were recruited for the pilot study. Of the five, three were Eastern Maine Development Corporation employees and two were actual study participants recruited by the referring agencies. The outcomes of the interviews for the two non-employees were included in the final evaluation. The pilot interviews were conducted similar to those planned for the research study; interviews were held in a private room, a tape recorder was placed in clear view of the participant when the conversation was recorded, the questions were posed following the script, and the descriptions for GettingThereMaine and the rideshare board were identical.

Through the course of the pilot study, it became clear that a description of the EMTMA and rideshare board would be an important piece to inform the interviewee and prepare them for the interview questions. These descriptions were fine-tuned with input from the initial pilot participants, and were finalized for presentation to the final two pilot participants. An additional clarifying question was added to the script to ask about relocation from the rural home to a service hub.

CHAPTER 4

RESEARCH FINDINGS

The purpose of this grounded theory qualitative study was to explore the perceptions of selected rural residents of Eastern Maine regarding their need for transportation, and their willingness to utilize a Transportation Management Association (TMA) model and alternative transportation options to get where they need to go. This study centered on rural residents' perceptions of a TMA, introducing the purpose of rideshare boards, and gaining insight on whether usage of this resource is a feasible solution for people living in Eastern Maine.

Because of the extreme rural geography of Eastern Maine, alternative solutions to the traditional public transit model are needed to bridge the transportation gap and assist those needing access to rides to a wide range of destinations including healthcare, social services, employment, school, shopping, childcare, and socialization activities. The gap in services is amplified by the need to travel to access services at centrally located "hubs" such as Bangor or Ellsworth, the socio-economic characteristics of rural Maine residents (aging, low-income), and the shift of employment opportunities from rural communities to larger cities particularly in the face of numerous paper mill and manufacturing closures in the last 5-10 years.

This study addressed four research questions: 1. What were the perceptions of the study participants in rural Eastern Maine about the alternatives presented through the TMA including the rideshare board and volunteer systems? 2. Do study participants in rural Eastern Maine needing transportation consider TMA's a realistic solution for meeting their transportation demands? 3. Do study participants in rural Eastern Maine perceive that TMA options will increase their ability to keep medical appointments? 4. Do the

participants indicate that they will be likely to access TMA options to keep medical appointments?

Central to this study was the identification of factors that limit access to services in an effort to understand the barriers, availability of supportive structures/services, and analysis of ingrained perceptions that could negatively or positively influence usage of the TMA model. The six factors identified to guide the interviews and frame subsequent analysis included:

1. The identification of socioeconomic status, and transportation characteristics and impacts;

2. The elements impacting rural transportation including identified barriers to mobility and characteristics that influence these barriers;

3. A review of multimodal options beyond public transportation;

4. The formation of TMAs that are driven by community partnerships and collaboration, and the review of critical components that comprise the successful TMA;

5. A review of recommendations from the literature and the critical components of interest;

6. A review of psychological factors that can influence behavioral change.

The research focused on study participants who live in rural communities in a four-county region of Eastern Maine including Hancock, Penobscot, Piscataquis, and Waldo counties. Thirteen persons were recruited and interviewed by asking a series of 14 questions. Care was made to not interject any interviewer biases or perceptions during the interviews. Clarification as to the definition of a TMA, rideshare boards, and the GettingthereMaine.com web site was provided in an effort to inform the study participant only. Each interview was recorded and

transcribed for accuracy and to attain a true representation of interviewee responses to each question.

This chapter summarizes the study participant responses and reviews the results of the data collection, with particular attention given to how the responses correlate and answer the research questions. Key themes will be identified, and chapter 5 will include the impacts of the data and recommendations.

Study Participant Interviews

The interviews were performed to gain insight about study participants' knowledge about current transportation options through the TMA and the rideshare board posted on the GettingThereMaine.com website. The interviews also served to query study participants about their familiarity with other options available in the region to get those in need to their destinations.

The original research design included scheduled interviews in a neutral location where the study participant would feel comfortable and safe. To some extent that protocol was useful: 7 interviews were performed in open and public locations such as the City of Bangor Health & Community Services offices, Beal College, and the Hammond Street Senior Center, all located in Bangor, Maine, a hub service center in Eastern Maine. However, six of the interviews were performed at the residences of the study participants per their request as this proved to be the most convenient location since none had readily available transportation.

The study was designed to interview participants who currently live in small remote and rural communities in Eastern Maine. This proved challenging since many residents most in need of transportation had already relocated to the Bangor community. As such, of the thirteen (13) study participants interviewed, eight (8) resided in Bangor and the remaining five (5) were from

surrounding rural communities. Of importance, two of the eight Bangor residents were native to the service center; the remaining six had relocated to Bangor within the last 15 years to be closer to services, family, school or work. The geographic relocations to the larger town(s) were all directly related to the lack of transportation.

Another variation from the proposed research was the plan to recruit patients directly from the Bangor-based federally qualified health center Penobscot Community Health Care (PCHC). As a health care center dedicated to providing healthcare services to low-income and underserved clientele, their participation was viewed as critical in order to assess the difficulties associated with keeping medical appointments. Unfortunately, PCHC did not participate as originally planned and they did not refer participants to the study. Because of PCHC's lack of participation, I adjusted my discussions with local service providers to emphasize the goal of talking about missed healthcare appointments. This proved effective as many providers serve as case managers and have a deep understanding of the barriers and needs of their individual clients. I was, therefore, able to gather information related to missed healthcare appointments for the research study as originally planned.

An assessment of the impact of a lack of transportation on missed medical appointments was performed as four of the 13 study participants were challenged by on-going, chronic health issues including one individual who has been hampered with life-long polio and has been wheelchair bound since an early age.

In order to identify individuals with the selected characteristics, contact was made with professional colleagues who assisted in the process. Service organizations that provided study participant referrals included:

- The *City of Bangor Health & Community Services*, the regional social services office that provides traditional welfare services to low-income individuals including Shelter Plus Care (Section 8 housing and counseling services), the Women, Infants and Children program (WIC), and social services counseling to residents of 21 rural communities surrounding Bangor Maine.

- *Penquis*, a Bangor-based community action program that provides a wide range of services including LiHEAP fuel assistance, housing, daycare and early childhood education services, and transportation services (LYNX) for Medicaid and Medicare recipients.

- *Beal College*, a private, small technical school that provides training and education for in-demand careers for about 500 students annually. The school provides accredited one-year and two-year programs for careers including health information management, accounting, medical assisting, criminal justice/law enforcement, and substance abuse counseling to name a few.

- *Eastern Area Agency on Aging (EAAA)* – an agency providing a range of services to seniors, adults with disabilities and caregivers for over 40 years. Services include caregiver case management, dementia programs, aging and disability resources, nutrition, wellness programs such as falls risk assessment, balance, and Tai Chi, Meals on Wheels, and a variety of programs for socialization.

- *Hammond Street Senior Center (HSSC)*, a Bangor-based meeting place for active, independent seniors including those living in Bangor as well as 21 surrounding rural communities. HSSC provides programs that are unduplicated in the region and focuses on enabling seniors to age in place. A sampling of activities includes the Senior University with classes such as physical fitness and balance, arts and crafts, computers, dance, and continued learning, field trips, social events, and access to affordable home services.

Despite these challenges and modifications to the original research study, I was able to conduct the research with representation from the primary population groups of focus:

1. Low-income participants – 8
2. Physically disabled – 3
3. Students – 2
4. Commuters – 1
5. Senior Citizens – 4

Participant Profiles

Thirteen study participants were interviewed for this research study as the result of referrals from local service providers. Brief participant profiles are provided in Table 1. Each participant was assigned a number in order to assure confidentiality and anonymity.

At the start of this research project, I contacted local and regional social and healthcare service leadership to introduce my research plan and methodology. The goal was to familiarize my colleagues and to engage their assistance with the referral of rural residents. Follow-up was either by telephone calls or visits to each service provider to share an outline of my research to fully inform them of the process and goals. This proved to be a useful approach and resulted in the referral of an adequate number of participants; the service providers were able to assist with the recruitment process by explaining their participation as well as introducing me to the participant. Although the initial referral was made by the local service provider, direct contact was made with the study participant to schedule a day, time and location most convenient to them. In all cases, I traveled to the participant to assure convenience as well as actual participation in the study.

Table 1

Participant Profiles

Study Participant	**Gender**	**Age**	**Population Group**	**Transportation Challenges**
#1	Male	40	Unemployed, Low-income	No vehicle, no license
#2	Female	46	Unemployed, Disabled	Unable to drive
#3	Female	20	Unemployed, Low Income	No vehicle
#4	Female	48	Unemployed, Low Income, Disabled	No vehicle
#5	Male	74	Retired, Senior Citizen	No vehicle
#6	Female	71	Retired, Senior Citizen	No vehicle
#7	Female	92	Retired, Senior Citizen	Unable to drive, no vehicle
#8	Male	69	Low-income, Disabled	No vehicle
#9	Female	70	Retired, Senior Citizen	No vehicle, unable to drive
#10	Female	45	Student, Low-Income	No vehicle
#11	Female	25	Student, Low-Income	No vehicle
#12	Female	31	Low-Income	No vehicle
#13	Female	72	Low-income, Retired, Senior Citizen, Disabled	Unable to drive

Analysis Methodology

Each interview was prefaced by a brief overview of the purpose of the research, why that individual was selected to participate, an explanation of voluntary participation, and steps that

would be taken so complete confidentiality would be maintained. Audiences that might view the outcomes were discussed. A tape recorder was placed directly between myself and the study participant to assure that their words were recorded as stated and their comments would be shared as they intended. Interviews ranged in length from 15 minutes to 45 minutes. As part of a pilot phase, the initial two interviews were performed and then evaluated and coded to assure that the questions asked led to relevant responses needed to support the development of conclusions. The questions as asked were found to be inclusive and clear, and the responses would support conclusions to answer the research questions posed.

Immediately following each interview, the tape was transcribed by an independent transcriber contracted to provide this service. The completed transcription was read and compared to the audiotaped version to assure that the interview was accurately transcribed. During this review, care was taken to notice my preferences and bias and to eliminate redundancies. Additionally, each transcribed interview was coded to reveal trends and shared responses that would help with the characterization of the analysis. At the completion of the transcription and coding of the thirteenth interview, the interview responses and codes were reviewed and tabulated to identify trends and patterns similar across all study populations.

Segmenting responses to the research questions allowed for the coding of the interview data. Creswell (2013) suggests that separating the data into small categories of information enhances the analysis process. Saldana (2013) also notes that coding can be a method of discovery and can serve to organize and classify the data into emerging categories for further analysis.

Using this approach, the responses to interview questions were reviewed with key words and phrases highlighted. For example, responses to Question #12 (What would your primary

concerns be for using a community rideshare board?) resulted in the following phrases being highlighted as common threads of thought: Safety; fear; stranger; reliable for returning home; cost for ride; references; background check; alone; female rider; and, safe car. Each question was similarly reviewed and coded to discover emerging themes.

Common Themes

As the interviews were analyzed, common themes threaded through the conversations. Regardless of their socio- or economic circumstances, these themes were consistent among the interviewees. Briefly, these included:

Table 2 *Common Themes*

Theme	Observation	Impacted Participants
1	Participants had already relocated to urban hubs (such as they are in Eastern Maine) or service centers due to a lack of transportation and ready access to jobs, education, services, shopping, social integration and cultural inclusion.	#1, #2, #8, #9, #10, #12
2	A fear of the unknown and personal safety are prohibitive factors to seeking or accepting rides.	All Participants
3	The lack of awareness of available transportation resources is a barrier to using the TMAs rideshare board.	All Participants
4	Creation of an environment to promote usage is an important approach to encourage increased use of the TMAs rideshare board.	All Participants
5	The lack of reliable transportation has resulted in missed healthcare appointments.	#2, #3, #4, #6, #7, #10, #11

6	Substance abuse issues or situations resulting from substance abuse can be prohibitive to owning a vehicle and driving, factors contributing to the lack of transportation.	#1, #2, #4, #8

Theme #1: Relocation to Service Centers was Common

One finding from the study was that, for many of those interviewed, the decision to relocate from a remote and rural community to be close to a wide array of services including healthcare, jobs and job search assistance, housing, education, and counseling had already been made. Because of the need for proximity to structured "help" and the difficulties arising from a lack of transportation, many rural residents in the study had already made the difficult decision to leave their historical homes and communities to be closer to needed services. Of the 13 study participants, six had already relocated to Bangor (6 of 13). One study participant noted that his relocation was not by choice: "I've always lived in the country, but I've always had trouble… mainly all my trouble's been driving. I don't have a driver's license, so I am forced to live in town just to be close to anything or anything with work" (Study Participant #1). This individual also pointed out that, even relocating into a city with public transportation, his difficulties associated with rides to work have not been resolved as many jobs that he has pursued require evening shifts when public transportation is not available.

Another participant relocated to Bangor in order to be closer to family (Study Participant #8). His sister has become his mode of transportation for shopping, health appointments, social services, and other needs. It became too difficult for his sister to travel the miles from Bangor to his rural community to pick him up, bring him to Bangor for an appointment, and then transport him back home. Because of the lack of public transportation, his only other option was taxi

service which proved too cost-prohibitive for him to use as a reliable and affordable backup. Therefore, he relocated to Bangor for convenience, both for him and his sister. His relocation hasn't totally eliminated his need for taxi service, and he is forced to pay out of pocket for cab fares when his sister is unable to transport him to destinations.

Yet another participant shared that she recently moved to Bangor due to health issues prohibiting her from driving a personal car (Study Participant #2). As she had been commuting an average of 22 miles per trip to drive from her home to Bangor for social services/counseling and healthcare, she decided that it made sense for her to uproot and relocate to reduce some of the stress related to mobility. The public transportation system in Bangor allows her to get to her multiple appointments with some ease without worrying about rides to and from different locations across town.

These factors limiting transportation options were common to other study participants who echoed the need to move to reduce the stress of finding rides, saving money previously used for expensive taxi fares, and assuring that appointments could be kept.

Of the study participants interviewed, two had lived their entire lives in Bangor (Study Participants #4 and #10). Although they were not driving from far distances to acquire services, school, or employment, they experienced a high level of inconvenience by not owning a personal vehicle and having to rely on public transportation with limited service hours and/or taxi service. Both of these solutions proved to be challenging both in terms of cost and convenience.

As a result of the lack of transportation, relocation from rural communities to larger service hub communities was viewed as the best option for some participants to resolve the lack the transportation and enhance access to needed services.

Theme #2: Fear of the Unknown and Personal Safety were Prohibitive Factors

Although the fears associated with traveling in a car with a stranger were more pronounced with women and seniors, every study participant introduced to the concept of sharing rides indicated they had concerns with the basic principles of a rideshare board.

Study participants were skeptical when first introduced to the concept of rideshare boards as a solution to closing the transportation gap. Much of this reluctance was due to a fear of the unknown – getting into a vehicle with someone they didn't know. One participant noted that she would be hesitant to use the rideshare board "because I'm a woman who lives alone and I'd want them screened." This individual also noted that while needing transportation to work, "even people with a criminal past can work and own a car" (Study Participant #6).

Another participant shared "Honestly, I probably wouldn't, I'm stubborn, it would be a last resort if I did just because of the thought of I don't know who I'm riding with" (Study Participant #1). Similar concerns were voiced by all study participants.

The option of screening the drivers was mentioned by four study participants, either by suggesting that agencies use background checks or a similar vetting process. There was one concern related to social anxiety, while another voiced fears because of a past with domestic violence. She noted that assuaging those fears would be difficult because, as she stated, "It's one of those things that never completely goes away, you just try not to be hyper-vigilant about it. You just kind go…I'm going to use my common sense and if something doesn't seem right, I am going to listen to that instinct and just say you know what, thanks anyway, I'm good" (Study Participant #2).

Only one participant noted that there would be a concern about the safety of the vehicle itself as opposed to the driver of the vehicle (Study Participant #12).

Fears and doubts related to personal safety were primary issues presented by all study participants.

Theme #3: Lack of Awareness of Available Resources is a Barrier

To a person, none of those interviewed were aware that a local rideshare board was available to them as an option to close the gap for rides. Although two participants thought they might have heard about the EMTMA and/or GettingThereMaine.com web site, none were familiar with the transportation services provided or with the concept of rideshare boards.

There were two study participants who had heard of or used the Lynx program, which is a free ride service for individuals in Eastern Maine who are enrolled in the state-supported Medicaid program called MaineCare or the Medicare program. Unlike the GettingThereMaine rideshare board, drivers are recruited, screened, extensively trained, and paid by Lynx program resources. Of the 13 study participants, two had accessed transportation through the Lynx services. The Lynx service is not without problems according to Study Participant #2. Although this individual did not directly experience the problem, a friend had shared that her father had scheduled a ride for blood work and when the driver never appeared for the ride back home, a call was made and the response was that Lynx was not aware that a ride home was needed. This resulted in the friend's father needing to make alternative arrangements to get home.

The executive director of the Eastern Area Agency on Aging (Executive Director, Eastern Area Agency on Aging) pointed out concerns with reliability with the Lynx system that have been shared with her in the past. Senior clients have consistently reported that rides have been cancelled by the agency because of low ridership that day.

Because of the lack of other options available to close the transportation gap, all study participants have continued to look at other alternatives including cab service, rides with family or

friends, or more often rearranging of schedules to match ride availability. The prohibitive cost of cab service and the complications associated with rearranging appointments were viewed as poor alternatives. Turning to relatives and friends was also difficult; interviewees were concerned that they would be viewed as burdens.

The lack of familiarity of options in Eastern Maine contributed to the difficulty in finding reliable solutions for rides, indicating that improved outreach and education is needed to fully inform the public of available options.

Theme #4: Creation of an Environment to Promote Usage is Important

Another common theme that surfaced during the study interviews was the need to build a positive atmosphere that is supportive of the alternative transportation methodologies. It should be noted that only one of the study participants addressed the issue of having friends and neighbors aware that they were in need of help. Specifically, this individual (Study Participant #9) was concerned others would think poorly of them if they knew they were dependent on others to get to their desired destinations. In spite of the fact that only one study participant specifically pointed out this issue, care and service providers in this region consistently discuss the barrier of getting services to impacted persons because of the negative stigma associated with having needs. The perception of most is that participants would rather go without services, including transportation, than let others become aware of their problems. The executive director at the regional agency on aging (Eastern Area Agency on Aging) shared that many of her clients are willing to go without healthcare services, social services, or healthy food choices rather than give friends and family a sense that they need help (interview). She also noted that even those who are approached and offered help refuse the offer because they don't want to seem helpless or in need.

Study participants were uniform in stating that an approach that promotes the benefits of using the rideshare board and EMTMA services, including testimonials that others have used the services, would be very influential. Approaches to change attitudes specifically those with concerns about safety and reliability of the ride are necessary if usage is to increase. When speaking with the interviewees, all agreed that sharing rides was a good solution to reduce car emissions and the overall carbon footprint in the environment. Describing rideshare boards as beneficial for the environment was viewed as a more palatable reason to explain their use as opposed to the financial or assistance needs of the user.

Theme #5: Lack of Reliable Transportation has Caused Missed Healthcare Appointments

One of the questions posed by this research study was whether the lack of transportation contributed to individuals missing healthcare appointments. Of the 13 individuals interviewed, seven had experienced missed appointments due to the lack of a ride. Study Participant #2 shared that, although the Lynx system offered by the Bangor-based community action program is helpful, "Nothing is perfect and sometimes there is a breakdown of communication, maybe you got your ride set up, then your ride doesn't get there on time or does a no-show."

Another participant shared that she has psychiatric appointments that are hard to schedule, and it often takes months of waiting to finally get an appointment only to have to cancel or do a no-show because she couldn't find a ride or didn't have gas money (Study Participant #3).

The risk of multiple missed or last minute rescheduling of appointments is critical as some medical providers can take action and dismiss the person as a patient. An alternative action could be a delay in renewing prescriptions that results in a lapse of medical treatment. One study

participant said that although a healthcare appointment hadn't been missed, the fear of not making an appointment is an additional stressor to a life that is already worrisome (Study Participant #6).

Missing a healthcare appointment can have many negative impacts for the rural resident including an interruption in the quality and timing of their care, diminished success in the management of chronic diseases due to lapses in therapy, missed medication doses due to expired prescriptions, and an increased risk of dismissal of the provider due to multiple no shows.

Theme #6: Substance Abuse Issues can be a Prohibitive Factor

Prevalent with many study participants is that past and/or present problems with substance abuse have had a negative impact on their transportation independence and mobility. One 20-year-old participant noted that, although she was trying to get on her feet again and do better including looking at going to the regional community college and looking for a job, her past substance abuse has led to her eviction from one location and she is now couch-surfing with friends (Study Participant #3). Her recovery is hampered by her difficulty getting to counseling, including psychiatric intervention.

Another study participant no longer had a valid driver's license as it was suspended due to drunk driving infractions and driving under the influence of other substances (Study Participant #1). As a hub center for social services and counseling in this region, residents often need to travel to Bangor or the adjacent community of Brewer to get preventive and supportive intervention counseling. The gap in transportation services is a significant barrier preventing access to services needed to assist these individuals and support their re-integration as a productive member of the community.

Six common findings from the data include: the relocation of interviewees to service hubs, a fear of the unknown and need for assurance of personal safety, a lack of awareness of available

resources, the need for an accepting environment that influences behavior, a lack of rides resulting in missed healthcare appointments, and the impact of substance abuse were prevalent throughout the course of the research study. Each study participant willingly shared their past and current barriers as well as the lack of viable options in the hopes that their participation in the study would result in more alternatives to close the transportation gaps they face each day. The representative population of Eastern Maine's rural residents confirmed that the identification of viable options must address or at least consider these themes when building an effective TMA.

CHAPTER 5

CONCLUSIONS

One study participant made an astute observation during the course of her interview. Due to her physical handicap, she took the time to describe the lengths that she must take to assure that she has rides to medical appointments, social service appointments, the grocery store, and even social interaction. She equated planning for transportation needs similar to planning for one's own funeral: No one wants to think about the day when having to plan for transportation or your own funeral comes, but at some point it's unavoidable. This difficult decision signals that that the independence of driving oneself where he/she needs to go is gone. Having that independence is often unrealistic for many residents in Eastern Maine. Also unrealistic is the idea that the State will be able to address these types of transportation challenges through an expansion of funding for increased public transportation.

The preferred mode of transportation would be ownership of a personal vehicle with resources to cover all the expenses that are required with vehicle ownership and the ability to drive oneself to points of destination: car insurance; funds for gasoline; and, funds for car maintenance. The reality is that, for many, these barriers to personal transportation are insurmountable. Although all participants acknowledged that owning a vehicle and driving independently was not likely, it was hard to face the alternative of asking for help and relinquishing that independence once and for all.

The goal of this research study was to determine whether the Transportation Management Association (TMA) platform could serve as the conduit to connect people needing rides to those able to provide assistance. The conclusions presented reflect the interviewee responses and trends

or commonalities, and magnify the overwhelming need for new solutions in rural communities to narrow the transportation gap in Maine.

Four research questions were developed to guide this research study:

Research Question 1: What were the perceptions of the study participants in rural Eastern Maine about the alternatives presented through the Transportation Management Association (TMA) including the rideshare board and volunteer systems?

This question would assess whether study participants were aware of the existence of rideshare boards, and in particular were informed about the Eastern Maine TMA rideshare board or the GettingThereMaine.com web site. If there was a lack of awareness, would participants be open to the concept and trigger their personal use?

Research Question 2: Do study participants in rural Eastern Maine needing transportation consider TMA's a realistic solution for meeting their transportation demands?

This question would discern whether acceptance, skepticism, or refusal to consider this option by study participants would be observed, and would identify factors influencing their acceptance or dismissal of this alternative as an option for future use.

Research Question 3: Do study participants in rural Eastern Maine perceive that TMA options will increase their ability to keep medical appointments?

If a consensus of study participants' voice their experiences with missed healthcare appointments, would TMA's be viewed as an acceptable solution to quell their concerns and increase their ability to keep appointments?

Research Question 4: Do the participants indicate that they will be likely to access TMA options to keep medical appointments?

Regardless of their initial concerns, this question would identify acceptance of the rideshare board and the TMA as an option to address their future needs. Should the response be negative, reasons for their lack of acceptance would be discussed.

Participants stated several areas of concern that need to be addressed for a TMA to successfully connect those needing a ride to resources that can fill that need. An increase in the visibility of resources, both those provided through a TMA and resources available through other agencies is needed. The fears and concerns about personal safety are at the forefront in most residents' minds, and a realistic and compassionate response is needed to convince users that their concerns have been addressed. Challenges inherent to technology, including on-line access to services, are a real barrier for all ages and incomes of users. Providing digital literacy and adequate support to train users on the methodology is needed.

Missed healthcare appointments and the resulting impacts (e.g., loss of the medical home, interruption of healthcare interventions, and suboptimal chronic disease management) is a serious problem for those without reliable transportation. For those with physical handicaps, the additional transportation needs can be prohibitive to accessing the needed care. Mental health and substance abuse services can be particularly challenging as the prescribed intervention often consists of multiple appointments per week for optimal management.

Implementing measures to begin adjusting behaviors and perceptions is a necessary component to building confidence in the TMA. Often these measures include adequate outreach and education to increase awareness and convince potential users of the benefits to accessing transportation via alternative modes. The methodology employed to accomplish the outreach and education should be based on building trust and confidence, and should be multi-modal in nature (i.e., reading materials such as pamphlets and brochures, media outlets/stories, and public service

announcements). While sharing the benefits of using a rideshare board is important, building confidence and a sense of security will likely drive the decision to use or not use this option.

Through the course of this research, several salient points were noted that characterize the nature of transportation in Eastern Maine, and what transportation in the future will look like for people living in rural Eastern Maine. Making the connections necessary to get people to their destinations will be supported by a change in attitude, a change in behavior, and an identification of alternate resources to reduce many if not all of the barriers noted. One solution is the implementation of a TMA or a rideshare board; developing a plan that can serve to ultimately modify behaviors, particularly behaviors that are born out of historical biases and preferences will be required.

Increased Visibility of TMA

Although the GettingThereMaine web site and rideshare board have been active for over a year, the response from study participants indicates that the message is not reaching the appropriate audience. Of interest, those organizations referring clients for participation in this study have all been actively engaged in the EMTMA and rideshare effort; yet a disconnect between the agency and clients is occurring and information regarding the availability of transportation options is not reaching those in need.

Following the conclusion of the interviews, the referring agencies were contacted to inquire if additional measures were needed to get the word out. Tools such as brochures and posters were viewed as positive, but were not serving to adequately inform the public. Their recommendations included: finding a strategic location for viewing of materials; linking the social service agency web site to the TMA GettingThereMaine web site; scheduling of on-site meetings to share information about the TMA/rideshare board including availability to answer questions and

demonstrations for using the rideshare board on-line; and, use of marketing tools such as GettingThereMaine buttons to hand out to clients during agency visits.

It was also recommended that the TMA staff increase their participation at local and regional venues such as healthcare fairs, job fairs, and special community events such as the local Chamber's annual Business Expo, the Senior Expo, and other socialization opportunities.

Increased marketing with local media outlets was encouraged including preparing information for advertisements and articles in the weekly free newspaper, and public service announcements on radio and television. These are all venues that are easily accessible and free to the consumer.

Increased Confidence With Safety Issues

The biggest barrier to overcome is one of safety. Although prevalent with women, elderly men have shared the concern that they may not be safe when entering a vehicle with a stranger. Those fears include physical safety but also expand into concerns with abandonment and financial scams. There is a tangible fear about getting dropped at the destination and not getting picked up to return home. In rural communities where taxi cabs are not always available, the idea of being stranded without options to get home is a real concern. Similar to abandonment, there was concern about accepting the ride and then being forced to pay when the ride is concluded, particularly in order to assure that the driver will return for the ride home. Although the premise of the rideshare board is often based on free transportation, eliminating that fear is important to increase confidence with this transportation option.

Overcoming those fears will be challenging. One example employed to reduce fears is demonstrated with the recently implemented employer portal site on the EMTMA which connects employees needing rides to those offering rides. As a safety feature, employees are encouraged to

contact supervisors within the organizations to confirm employment and to obtain a character reference. For these riders, getting into the vehicle with a fellow employee adds a layer of safety to the partnership.

For others accessing rides, instructional videos can be used to instruct users on the best methods to connect with rides. As an example, getting a ride with someone from the same or nearby community tends to reduce apprehensions as rural Eastern Maine is considered a small community where everyone knows everyone, either directly or indirectly through family or friends. Encouraging users to ask for references from employers, churches or other social clubs is another way to allay fears.

In discussions with interviewees, I asked their opinion on what would reduce their fears of getting into vehicles with a stranger through the rideshare board. Suggestions included the performance of background checks on drivers and riders if requested, offering a venue to meet prior to the ride, and marketing the safety of rideshare boards through published testimonials. As one female interviewee noted, having an opportunity to meet the driver, look into his/her eyes, shake their hand, and talk for a few moments would increase her confidence in getting into the vehicle on the day of the ride. Another suggested that she would take a friend along for the first ride to increase their sense of well-being.

Concerns with safety can't be ignored and, if effectively addressed, will likely support increased use of the rideshare board.

Technology Challenges

For seniors and many low-income people, having access to or understanding how to use the GettingThereMaine web site to meet their transportation needs is challenging. Digital connectivity and literacy is a barrier in Eastern Maine (Re-Engineering the Region Final Report, 2015), and

many residents are not connecting, either because they do not have a computer, do not have connectivity infrastructure in their rural community, can't afford the internet service, or don't know how to use the internet.

Eliminating this barrier will be key to increasing access to the GettingThereMaine web site and services. Training needs to be available at the service agencies as well as the local public library. Toward that end, developing a user guide that provides step-by-step instructions will be useful. In addition, teaching the resource providers at service agencies (e.g., case manager, healthcare provider, educator, library staff and others) about using the GettingThereMaine rideshare board, employer portal, and other resources will broaden the expertise beyond the TMA staff.

Missed Healthcare Appointments

Successful management of one's health is predicated by the ability to maintain a care management plan that can be followed. The lack of transportation often minimizes that success because of missed appointments resulting in ineffective management, particularly for those with chronic diseases or those undergoing counseling for substance abuse or mental health issues. For those requiring ongoing intervention (for example, a patient on weekly dialysis), keeping scheduled healthcare appointments can mean the difference between a healthy outcome and future hospitalizations. Partnerships between healthcare providers and TMAs can be one solution to reduce barriers to assure that each patient is receiving the best possible care.

Educating patients will need to occur at the provider's office, with the healthcare professional trained to describe and instruct the patient on how to access the rideshare board for future appointments. In Eastern Maine, efforts are underway to connect case managers with the

TMA to share the outreach tools and provide basis instruction on use of the web site which can be shared with the patient.

Behavior Modification

There has been considerable conversation around the idea that Mainers are independent, don't like to be told what to do, and are reluctant to share their difficulties and need for help with others – even family. As for transportation, the goal is to own a private vehicle and have the independence to come and go as you need. This is unrealistic for many Eastern Mainers, particularly seniors and the disabled who are physically unable to drive and the low-income individuals lacking financial resources to purchase a vehicle and the ancillary costs of gas, car maintenance and car insurance. Moving beyond these self-imposed barriers will involve a re-education process to convince people that admitting they need a ride is not a sign of weakness or shameful. More effective will be the use of a "neighbor helping neighbor" attitude. For seniors and the disabled, the idea of sharing a ride as a socialization opportunity rather than a burden was appealing to these populations when interviewed.

Increased usage will be influenced by the way the TMA transportation options are introduced and described. Testimonials by "regular" people that show positive outcomes from using the rideshare board will send a positive message – it is not painful, embarrassing, or an admission of one's inability to take care of their own needs.

Another method to break the behavior barrier would be the promotion of environmental benefits. The reduction of the fossil fuel footprint is a positive outcome of ridesharing, and promotes the quality of life enjoyed by Mainers. Stating that use of the rideshare board is helping to preserve clean air and reduce one's reliance on fossil fuels can be a positive message.

Methodology for Outreach

As noted earlier, implementation of an outreach and marketing plan will be critical to the success of the rural TMA. Using a variety of tools including brochures, posters, waiting room videos, and information cards help to get the message out to those in need, particularly if these materials are posted for viewing in locations accessible to the intended audiences.

Using testimonials from other users can be a viable approach. Sharing one's personal story about using the rideshare board, including a description of their initial fears, learning the process, screening prior to the ride, and outcomes of the ride can begin to build confidence with others that this option could work for them.

Working with the media outlets will be critical. Public service announcements can be produced in partnership with the media and the TMA to build content that is useful and relevant to potential users. Determining airtime is critical to assure that the message is getting to the appropriate audiences when they are most likely to see the announcement.

Linking web sites with community service partners' will also help drive users to the GettingThereMaine web site. While there may be apprehension by some to using the TMA web site, familiarity with the direct service provider web site could influence and drive potential users to visit the transportation site.

Concluding Observations

Through this research study, issues were uncovered which may ultimately drive whether this alternative transportation solution will be successful. Foremost of these was the clear message that information about the Eastern Maine TMA was not reaching the intended audience. There is a real disconnect between what the services providers are sharing and what the potential users are hearing. As noted by Morris (2006), a well-planned and clear marketing plan is needed to increase

awareness and community recognition. Employing a "push versus pull" strategy, also recommended by Morris, will be critical. Rather than waiting for the clients to voice their need, the service providers and TMA staff need to actively share the resources and options available through the TMA. Proactive education will assure that appropriate resources can be effectively accessed when the need arises. The approach will involve more than sharing brochures or putting up posters. Discussing the alternative options with clients as part of the service visit should be routine to assure that each individual is aware of the TMA and the GettingThereMaine web site. This strategy will be reliant on the successful partnership between public and private partners in the communities who collaboratively share the message to close the transportation gaps.

Substance abuse is another issue that can negatively impact the ability to get to desired destinations. Whether through the loss of one's drivers' license or loss of the ability to own a vehicle because of the financial realities of substance abuse, the ability to get where you need to go is severely hampered because of the long-term impacts of drug and alcohol use. This negative impact extends beyond recovery for the user; the need for continued supportive intervention services requiring multiple rides and difficulty securing and keeping a livable wage job is a common theme for this population. Understanding these barriers and increasing awareness and access for this population will be another challenge for the service providers in Eastern Maine.

Also important is the need to interact with healthcare providers to share the study participants concerns and difficulties connecting with reliable rides. Those interviewees are representative of people living in Eastern Maine who are also experiencing transportation barriers, particularly in relation to maintaining their health and well-being. The medical and service communities will need to collaborate to assure that access to healthcare continues as well as combine efforts to open doors for rides in the future. Sharing the education and resources from

many gatekeepers will increase the likelihood that the public is aware of the TMA, GettingThereMaine, and the process to find transportation when needed.

One issue that I suspected may arise but never did was the barrier of finding willing drivers to offer rides. Since all study participants noted that they were unaware of the rideshare board and TMA, I was unable to determine if there was a barrier to actually connecting to someone offering a ride when it was needed. Further investigation is warranted to assess whether a new barrier will surface – as more access the rideshare board to get rides, will the lack of available drivers continue to perpetuate transportation gaps? In anticipation of this, it will be important for service providers and TMA staff to reach out to communities to share the TMA resource and solicit volunteers to offer rides to those in need.

Identifying the issues and overcoming the barriers to access reliable transportation is a challenging but necessary process that will contribute to the formulation of a well-planned approach that begins to get more people to their destinations. The preference for single-driver cars, skewed land use patterns favoring one-driver vehicles, and fears about personal safety contribute to the barriers faced by Eastern Maine residents. The barriers identified directly impact access to education, jobs, healthcare, and socialization, all of which contribute to one's well-being.

Although current alternatives exist, the lack of awareness hampers successful access to services. The utility of the TMA as an option for those seeking rides will be measured by usage. That usage will be driven by a carefully planned education and outreach program that trains the user on the rideshare board, alleviates fears and concerns about safety, and encourages trust and faith in this reliable alternative.

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