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The Impact of Volunteer Transportation on Older Adult's Engagement in Meaningful Activities

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The Impact of Volunteer Transportation on Older Adult's Engagement in Meaningful Activities

Presented in Partial Fulfillment of the

Doctor of Occupational Therapy

Eastern Kentucky University
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COLLEGE OF HEALTH SCIENCES
DEPARTMENT OF OCCUPATIONAL SCIENCE AND OCCUPATIONAL THERAPY

This project, written by Belinda D. Alexander under the direction of Dr. Casey Humphrey, Faculty Mentor, and approved by members of the project committee, has been presented and accepted in partial fulfillment of requirements for the degree of

DOCTOR OF OCCUPATIONAL THERAPY

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EASTERN KENTUCKY UNIVERSITY
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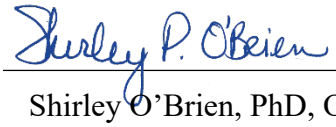
Certification

We hereby certify that this Capstone project, submitted by Belinda D. Alexander, conforms to acceptable standards and is fully adequate in scope and quality to fulfill the project requirement for the Doctor of Occupational Therapy degree.

Approved:



12-07-2021

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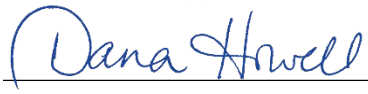

12-07-2021

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Executive Summary

Background: Without accessible transportation alternatives, many older adults experience declined activity levels, social isolation, and decreased occupational engagement resulting from their lack of community mobility and access. Volunteer transportation programs have been successfully used as an additional community mobility option for many older adults, especially those unable to access the traditional public transportation options, such as buses or taxis, found in many communities.

Purpose: While numerous transportation options, or alternatives, may exist in a community, no studies to date have examined or compared engagement levels related to a specific form of alternative transportation. Therefore, the purpose of this project was to compare engagement levels between older adults with access to volunteer transportation and those without, while also examining the impact of the Covid-19 pandemic on their community mobility.

Theoretical Framework: The Person, Environment, Occupation, and Performance Model (PEOP) supports the construct that without accessible transportation options for community mobility, older adults may experience a decline in their occupational engagement and performance, thus leading to a negative impact upon their health and quality of life.

Methods: Survey research using a convergent, mixed methods design was conducted to compare the engagement levels of two groups of older adults, one with access to volunteer transportation and one without. The Engagement in Meaningful Activities Survey (EMAS) was used to measure the subjects' engagement levels, as well as custom survey questions aimed at identifying other barriers and factors affecting their community mobility amid the Covid-19 pandemic.

Results: The Covid-19 pandemic had a negative impact on the community mobility and subsequent engagement levels of both subject groups. However, the engagement levels for the group of subjects normally with volunteer transportation access were lower compared to the subject group without such access. The decline seen in the group that was accustomed to using volunteer transportation was likely due to their loss of such transportation services caused by the pandemic shutdowns and restrictions, compared to the other subject group who had more driving members and did not experience a loss of services as significant as seen by the other subject group.

Conclusions: Community mobility is vital to the well-being of older adults and without the ability to participate or engage in meaningful activities, their levels of engagement can decline and subsequently lead to a decline in their quality of life. Community mobility must be regarded as more than just transportation to and from locations within the community and should be assessed as a means of promoting engagement in meaningful activities and occupational performance within one's community, which are vital steps in positively influencing older adults' health and well-being.

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CERTIFICATION OF AUTHORSHIP

Submitted to (Faculty Mentor's Name): Dr. Casey Humphrey, OTD, MHA, OTR/L, CBIS, CDRS
Student's Name: Belinda D. Alexander, OTR, MOT, CLT
Title of Submission: The Impact of Volunteer Transportation on Older Adults' Engagement in Meaningful Activities

Certification of Authorship: I hereby certify that I am the author of this document and that any assistance I received in its preparation is fully acknowledged and disclosed in the document. I have also cited all sources from which I obtained data, ideas, or words that are copied directly or paraphrased in the document. Sources are properly credited according to accepted standards for professional publications. I also certify that this paper was prepared by me for this purpose.

Student's Signature: Belinda Alexander

Date of Submission: 11/21/2021

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Section One: Nature of Project and Problem Identification

According to the United States Census Bureau, approximately 20% of our population will be over the age of 65 by the year 2030 (Vespa, 2019). Many older adults will eventually face the decision to give up driving due to age-related declines in health (Adler & Rottunda, 2005; Chihuri, et al., 2016). Driving cessation has been shown to have a negative impact upon one's health, activity level, and well-being (Chihuri, et al., 2016; Choi, et al, 2012; Liddle, et al., 2006), consequently, a variety of community mobility options must be available to meet the changing transportation needs of the older adult (Kim, 2011; Shergold, 2015; Stav, 2014). Traditional public transportation options, such as buses and paratransit services may not meet the needs of all members in this older adult category. Others may have to rely on family or friends for transportation. In addition, many older adults live on a fixed income and the subsequent fare for transportation may be cost-prohibitive, thus creating an access barrier to the community activities they once participated in.

Information from the American Association of Retired Persons (AARP), states that many older adults are choosing to "age in place" by remaining in their homes within their communities (Older Adults & Transportation, n.d.). Consequently, communities must have a variety of transportation resources available to meet the needs of this growing older adult population. When driving is no longer safe or feasible for older adults, a transition to other modes of transportation is essential for the continuation of their previous quality of life and activity level within their community (Chihuri, et al., 2016; Choi et al., 2012; Dickerson, et al., 2007; Kim, 2011). Without transportation, the older adult is restricted in their ability to access their community, may become socially isolated and occupationally deprived (AOTA, n.d.; AOTA, 2001). Occupational deprivation is "a state in which a person or group of people are unable to do what is necessary and meaningful in their lives due to external restrictions" (Whiteford, 2000, p. 200), such as the

lack of accessible transportation needed for one's community mobility.

Healthy People 2020 describes social determinants of health as being conditions in one's environment that can affect health and quality of life. However, by addressing social determinants of health, such as transportation, it has been shown to improve the health and well-being of older adults (AOTA, n.d.; AOTA, 2001; Bass-Haugen, 2009; Healthy People 2020, n.d.). Creating environments where individuals can access their community and promote their health has been a long-standing initiative of the World Health Organization (Healthy People 2020, n.d.). This interaction between an individual and their environment affects one's ability to function and engage within their community. The Social-Ecological Model (SEM) assumes that we are a product of our community structures, or environment, to which we are exposed (Brown, 2015). The SEM also suggests that our behaviors shape our social environment, and our social environment shapes our behaviors. Therefore, accessible community transportation is essential for creating an environment that supports all members of the community, facilitates their engagement in meaningful activities, and is favorable for supporting the health and well-being of its members.

Engagement in meaningful activities, or occupations, is a foundational construct well known to occupational therapy and has been shown to have a positive impact on one's health and quality of life (Ciro & Smith, 2015; Dombrowsky, 2017; Goldberg, et al., 2002; Yerxa, 1998). Engagement encompasses three components: motivation, commitment, and participation (Dombrowsky, 2017; Lequerica & Kortte, 2010). When one is lacking in their opportunity to engage in meaningful activities, their quality of life can be negatively affected (Goldberg, et al., 2002). For older adults, a lack of transportation can limit their opportunity to engage in such activities (Ciro & Smith, 2015). Engagement has been measured using questionnaires or surveys (Goldberg & Brintnell, 1994; Goldberg, et. al., 2002; Eakman, 2012). This study will utilize the

Engagement in Meaningful Activities Survey (EMAS), originally developed by Goldberg and Brintnell (1994). The EMAS is a valid tool designed to measure meaningful activity participation and its correlation with life satisfaction and health-related quality of life (Goldberg & Brintnell, 1994; Goldberg, et. al., 2002; Eakman, 2012).

Problem Statement

Driving cessation has been shown to cause a decline in the engagement levels amongst older adults, especially productive engagement such as volunteering and/or work (Curl, et al., 2013). When driving frequency changes or ends, older adults must find other means for their community mobility. Some may seek public forms of transportation, such as buses, paratransit services, or taxis, while others rely on family and friends for rides into the community. Regardless, these modes of transportation must be accessible for older adults so that they can go outside of their homes and engage in the community activities they find meaningful and important. After having worked in paratransit services and after further examination of current transportation options within the primary researcher's community, a gap in service was identified. For older adults, particularly those considered low-income or living on a fixed income, this gap in service prevented many of them from accessing existing transportation options within the community due to personal and/or financial constraints.

Financial constraints may prevent many older adults from having the additional funds available to pay the fare for their community's existing transportation options, including para-transit services. Medical transportation is not a benefit available to all older adults either, and when it is provided, there may be limitations to the number of trips allowed for each client. Additionally, transportation for personal matters can be even more restricted by the availability of services and scheduling limitations. Therefore, his capstone project addressed the problem of gaps in transportation services that could impact older adults' community mobility and their

engagement levels in meaningful activities.

Purpose Statement

Both public transportation and paratransit options exist in the primary researcher's community. However, many community members, especially older adults and those considered low-income, are unable to pay the required fares and are therefore left without transportation access into the community to participate, or engage, in activities meaningful to them. While community mobility options vary among communities, some communities have established volunteer transportation programs aimed at filling voids in a community's transportation options. Such programs can target their services to those community members, such as the elderly, disabled, and/or low-income community members, who may not be able to access the traditional public transportation options within their community (Kerschner & Rousseau, 2008). Volunteer transportation programs involve the use of volunteer drivers providing transportation in their personal vehicles, or a vehicle owned by the volunteer transportation group. There are several advantages, or benefits, volunteer transportation programs can offer over traditional public transportation options. One such advantage may be the driver's ability to provide an additional level of assistance for clients by providing door through door assistance, which provides the client with assistance that extends from the vehicle to their actual physical destination, rather than simply the destination's entrance. An even greater benefit for those clients experiencing financial constraints is the complimentary provision of transportation services without the financial burden or strain of paying a fare. By having access to volunteer transportation programs, many clients, especially older adults, could now access their community and engage in meaningful activities that may have previously been inaccessible. Therefore, the purpose of this project was to explore the impact volunteer transportation programs had on their older adult clients' community mobility and subsequent engagement levels compared to older adults without

access to volunteer transportation.

Research Question and Project Objectives

The research question this project aimed to answer was whether older adults with access to volunteer transportation programs had higher engagement levels, in meaningful activities, compared to those without such access, as measured by the Engagement in Meaningful Activity Survey (EMAS) (Eakman, 2012; Goldberg, B. & Brintnell, 1994; Goldberg, et al., 2002). This primary researcher believed that volunteer transportation programs could help meet the transportation needs of some older adults by helping to eliminate the community mobility barrier caused by a lack of accessible transportation (Choi, et al., 2012; Jones, et al., 2018; Stav, et al., 2011). Additionally, project objectives included: identifying whether the use of volunteer transportation helped promote active engagement levels among its users, examination of Covid-19's impact on older adults relying on transportation services for their community mobility and determining if transportation was a barrier or obstacle that affected older adults' active engagement in meaningful activities.

Theoretical Framework

The Person-Environment-Occupation-Performance Model or PEOP provided theoretical support for this project. The three components of the PEOP model include person, environment, and occupation (Law, et al, 1996). This model depicts the interaction between oneself, their occupation, and their environment (Cole & Tufano, 2020). Baum, et al. (2015), further described this significance as, "occupational performance (doing) enables participation (engagement) in everyday life that contributes to well-being (health and quality of life)" (p. 54). When the fit between person and environment is incompatible, dysfunction occurs. For example, when the older adult can no longer engage in community activities, because transportation is not available or accessible, (Chihuri, et al., 2016; Marottoli, et al., 2000) their occupational performance may

decline, and dysfunction can occur. Therefore, community mobility services should be evaluated so that gaps in service, can be identified. An alternative transportation mode that may bridge the gap in service for some community members is the use of volunteer drivers from a volunteer transportation program. Volunteer transportation programs may give some older adults greater opportunities to access their community, and subsequently, engage in activities that they find meaningful. Along with increased opportunities for engagement, comes the person's ability to positively influence their health and well-being, thus supporting the PEOP's theory that when its three components, person, environment, and occupation, are congruent, one's engagement is increased (Wong & Leland, 2018).

Project Significance

Research supports the use of alternative transportation modes so that older adults can remain active and go outside of their homes to engage in meaningful activities within their communities (Chihuri, et al., 2016 & Dickerson, et al., 2007). Volunteer transportation programs can be a valuable community mobility resource for older adults by providing convenient access not only to routine healthcare services but also by providing transportation to activities and locations they find meaningful and/or necessary (Kerschner & Rousseau, 2018). In the *Occupational Therapy Practice Guidelines for Driving and Community Mobility for Older Adults* (2015), it was suggested that future research should examine the occupational engagement levels of individuals who utilize transportation services (pp. 59). While engagement in older adults has been researched (Dombrowsky, 2017), no research was found comparing engagement scores, or levels, among older adults using specific types of transportation services. Specifically, no comparisons were found when comparing the engagement levels of older adults with access to volunteer transportation services and those without. The literature demonstrates the value of volunteer transportation services in supporting the community mobility of older adults

(Kerschner & Rousseau, 2008), however, its influence upon their engagement levels has not been examined. By examining engagement scores of those utilizing volunteer transportation programs and comparing it to other modes of transportation, the finding could highlight an additional value volunteer transportation programs have by supporting the community mobility needs of its users, providing transportation to the activities they find to be meaningful and important, and thus positively impacting their engagement levels.

Summary

Community mobility options that meet the changing needs of senior adults are imperative for their health and well-being (Kim, 2011; Shergold, 2015; Stav, 2014) and to prevent the rapid health decline often associated with driving cessation (Chihuri, et al., 2016). Active engagement is vital to the older adults' mental and physical health and positively supports their ability to impact their health and well-being through engagement in meaningful activities (Chihuri, et al., 2016; Curl, et al., 2013; Dickerson, et al., 2017; Jones, et al., 2018; Yerxa, 1998). Using the EMAS to assess the engagement scores, or levels, of two groups of older adults, one with access to volunteer transportation programs and one group without such access, may give insight into the differences in engagement scores amongst clients using different forms of alternative transportation. This capstone research study examined whether clients with access to volunteer transportation services demonstrated higher engagement scores, as measured by the Engagement in Meaningful Activities Survey (EMAS), and whether differences in engagement levels were noted amongst older adults using different modes of alternative transportation, and particularly, the impact such transportation may have on the engagement scores of its users.

Section Two: Literature Review

The Administration for Community Living (ACL) is a division of the U.S. Department of Health and Human Services (HHS). In their *2019 Profile of Older Americans,* statistics related to key areas for the older adult were presented. Data included a 35% growth rate of this population over the past 10 years, and their projected growth to reach near 21% of the U.S. population by the year 2040 (ACL, 2020). Older women continue to outnumber older men, with approximately one-third of the women being identified as widows (ACL, 2020). Many older adults are choosing to stay in their homes and age in place (AOTA, 2016; Molnar et al., 2007; Spinney et al., 2020). Roughly 30% of older adults reported living alone, with that number increasing to approximately 44% for women over the age of 75 (ACL, 2020). In addition, approximately 10% of older adults were listed as living below the poverty level, with women experiencing a higher poverty rate than men (ACL, 2020). Driving continues to be the preferred method of community mobility for most Americans; however, many older adults will outlive their ability to drive by several years (Dickerson & Davis, 2020; Kerschner & Silverstein, 2018; Silverstein, et al., 2016). Giving up driving, an important independent daily living skill (IADL), places the older adult at risk for several negative after-effects, including social isolation, depression, decreased engagement in meaningful activities, and occupational deprivation (Brown & Hollis, 2013; Chihuri, 2016; Choi & DiNitto, 2016; Curl, et al., 2014; Edwards et al., 2009; Shergold, et al., 2015).

In a 2014 article by W.B. Stav, the author stressed the importance of Occupational Therapy's involvement in community mobility programs, not solely for transportation, but more for meeting their occupational needs. Occupational needs refer to an individual's wishes or desires to participate and engage in meaningful activities and valued occupations (AOTA, 2020; Brown & Hollis, 2013), while occupations refer to the activities that individuals do regularly that have meaning to them, including activities such as health management, activities of daily living,

leisure, and social participation (AOTA, 2020). When occupational needs are not met, the individual's health, well-being, and quality of life can be negatively affected (AOTA, 2020; Brown & Hollis, 2013; O'Neill et al., 2019; Stav et al., 2016).

Community mobility is necessary for accessing meaningful activities within one's community and for enabling one to participate in various occupations outside their home (AOTA, 2016; Stav, et al., 2012; Stav & Lieberman, 2008). Community mobility is defined by the American Occupational Therapy Association (AOTA) as "moving around in the community and using public or private transportation…" (AOTA, 2020). It includes driving and/or the use of buses, taxis, or other forms of transportation. Community mobility is included in Occupational Therapy's domain and scope of practice (AOTA 2014; AOTA 2020). The OT practitioner's role is to assess the client and their ability to access available modes of transportation, as well as, to evaluate the community's transportation resources, identify gaps in service or delivery, provide community mobility education, and make transportation recommendations based on their findings (AOTA, 2016; Stav & Lieberman, 2008). An intervention approach that can be used by OT practitioners is advocacy for transportation equity (AOTA, 2016). Transportation equity refers to one's equitable, or fair, and appropriate, access to reliable and affordable transportation (Litman, 2014; O'Neill et al., 2019). Such access is necessary for ensuring one's well-being across the lifespan, especially as the transportation needs of the older adult tend to evolve and change in later years (O'Neill, et al., 2019).

Engagement in meaningful activities is a basic construct for Occupational Therapy. Engagement means participating in or being involved in something, but more importantly, engagement involves three underlying components which include: motivation, commitment, and participation in an activity (Dombrowsky, 2017; Lequerica & Kortte, 2010). Meaningful activities are those activities that are important, are valued, and add meaning to our lives. While

some meaningful activities are performed in the home, others require individuals to go out into their community. Engagement in such activities is often viewed as a goal or result of interventions provided by OT practitioners (Eakman, 2012).

The Engagement in Meaningful Activities Survey (EMAS) was first created by Goldberg and Brintnell (1994) as a measurement tool for assessing one's engagement in meaningful activities (Eakman, 2012; Eakman et al., 2010; Goldberg & Brintnell, 1994; Goldberg et al., 2002) and has been confirmed to be an efficient and valid tool for assessing one's level of meaningful activity participation (Eakman, 2012; Eakman, et al., 2010). The EMAS can be found in Table 1.

Table 1: Engagement in Meaningful Activities Scale (EMAS)

Statement	Rarely 1	Sometimes 2	Usually 3	Always 4
1. The activities I do help me take care of myself.				
2. The activities I do reflect the kind of person I am.				
3. The activities I do express my creativity.				
4. The activities I do help me achieve something which gives me a sense of accomplishment.				
5. The activities I do contribute to my feeling competent.				
6. The activities I do are valued by other people.				
7. The activities I do help other people.				
8. The activities I do give me pleasure.				
9. The activities I do give me a feeling of control.				
10. The activities I do express my personal values.				
11. The activities I do give me a sense of satisfaction.				
12. The activities I do have just the right amount of challenge.				
Column Totals				
Total Survey Score				
Scores: <29=Low 29-41=Moderate >41=High				

(Eakman, 2012)

Responses to the 12 statements originally included a five-option response scale which included a column for the response "never" (Eakman, 2012; Goldberg & Brintnell, 1994). However, in Eakman's 2012 study, he discovered that this response was "…infrequent and inefficient…" (pg. e24), so as a result, it was eliminated as an option, thus decreasing the response options to four. Each of the four responses has a numerical value ranging from 1 for "rarely" to 4 for "always" (Eakman, 2012). Scoring for the EMAS requires calculating the sum of the responses for each of the 12 statements, with a final score ranging from 12 to 48. This final score reflects the participant's perception of their level of engagement in meaningful activity as either low (<29), moderate (29-41), or high (>41) (Eakman, 2012).

When an individual stops driving, their engagement level in activities or occupations outside the home can be affected (Adler & Rottunda, 2005; Curl, et al., 2014; Chihuri et al., 2016; O'Neill et al., 2019; Spinney et al., 2020). Other factors affecting engagement can also include physical, environmental, and/or monetary limitations (Ciro & Smith, 2015; Spinney et al., 2020). Physical limitations are often considered to be a normal part of the aging process and may interfere with one's mobility. Limitations in one's environment, such as irregular or absent sidewalks, stairs or steps, and inaccessible bus stops, can make travel outside of the home difficult, or virtually impossible, for some older adults. Financial constraints can also impact older adults' ability to pay for transportation options. For older adults, engagement in activities outside of the home can be hindered by any one of these factors, especially if the older adult is considered low-income (Ciro & Smith, 2015; Dombrowsky, 2017). While communities may offer alternative modes of transportation, not all modes are accessible options for some of its community members. Those without access often find their engagement levels outside of the home, to be affected, and over time, may result in a decline in one's health and well-being (Brown & Hollis, 2013; Curl, et al., 2014; O'Neill et al., 2019).

Transportation access is essential for successful aging across the lifespan and for older adults to maintain active levels of engagement outside the home (Molnar et al., 2007; O'Neill et al., 2019; Pristavec, 2016). Studies evaluating engagement among different populations, including the older adult, and have shown its value in precipitating one's ability to impact their own health and well-being (Brown & Hollis, 2013; Ciro & Smith, 2015; Curl et al., 2013; O'Neill, et al., 2019). While modes of public transportation vary among communities, its inherent value to those reliant upon it is immeasurable. A gap in the literature was noted by the primary researcher when looking to compare the engagement levels amongst groups of older adults using different modes of transportation. In other words, could access to, or the use of a particular mode of transportation affect the engagement levels of older adults compared to the engagement levels of older adults without access to a similar mode of transportation? Specifically, would older adults with access to volunteer transportation services demonstrate higher engagement levels than older adults without volunteer transportation access?

Volunteer transportation is defined as transportation services provided by a volunteer driver and may also involve the use of a volunteer's vehicle or the use of a vehicle owned by the volunteer transportation company (NVCT, n.d.). Volunteer driver programs began in the early 1900s by offering older adults a way to travel to church and train stations (Kerschner & Silverstein, 2011; NVCT, n.d.). Additionally, volunteer transportation programs can often offer an elevated level of service by providing a companion to assist riders at their destination, promote socialization, provide assistance for riders with physical or cognitive limitations, and provide flexibility in scheduling not afforded by public transportation (Kerschner & Rousseau, 2008; Kerschner & Silverstein, 2011; NADTC, 2018; NVTC, n.d.). In addition, volunteer transportation might fill a need for the low-income older adult by providing a cost-free transportation alternative giving them the ability to access activities and destinations in their

community that were once prohibited by the cost of transportation. However, research is lacking evidence indicative of its effects on its users' engagement levels within their community. Perhaps volunteer driver programs could have the added advantage of helping promote participation in meaningful activities or occupations for older adults. Increased community access could give this at-risk, older adult population more opportunities to leave their homes to participate and stay engaged in the activities they find meaningful, thus having a positive impact on their health and well-being.

The Covid-19 pandemic challenged Americans in unprecedented ways while social distancing guidelines and closures created challenges for all ages. The CDC (Center for Disease Control) considered older adults to be in the high-risk category, which caused many older adults to shelter in place while trying to avoid exposure to the Coronavirus. Such isolation led to decreased socialization and depression while limiting or prohibiting their ability to engage in meaningful activities within their community (Banerjee & Rai, 2020; Berg-Weger & Morely, 2020).

Section Three: Methods

Project Design

The project design for this capstone project was a convergent mixed-methods design, which allowed both quantitative and qualitative data to be collected simultaneously, within the same survey, and later compared (Creswell & Creswell, 2018). The Engagement in Meaningful Activities Survey (EMAS) (Eakman, 2012) was used to identify engagement levels of two groups of older adults, one with access to volunteer transportation and one without. Specifically, the quantitative part of the study was causal-comparative, which explored the relationship between the engagement scores of the two groups of older adults, those with access to volunteer transportation and those without. The study's qualitative piece included custom, open-ended questions that inquired about any changes in the participant's community mobility caused by the Covid-19 pandemic along with their description of any barriers or obstacles that interfered with their ability to engage in meaningful activities. Convenience sampling was used to recruit participants for each group. The primary researcher submitted a Limited Review Application for Exemption Determination to the Institutional Review Board (IRB) at Eastern Kentucky University (EKU) on March 15, 2021. Approval from the IRB was received on April 26, 2021, and survey distribution for the study began shortly afterward.

Setting and Participants

Two groups of older adults, ages 60-100, were recruited for this study. Subjects for Group 1 resided in an area with access to an existing volunteer transportation program and subjects for Group 2 resided in an area where no current volunteer transportation program existed. The primary researcher used an online Google search for existing volunteer transportation programs, as well as information from identified sites such as the National Aging and Disability Transportation Center (NADTC), the National Center on Senior Transportation,

and the National Volunteer Transportation Center (NVTC). Once identified, the primary researcher then sent emails to several volunteer transportation programs in the United States, including Texas, inquiring about their willingness to discuss the study with the primary researcher with the prospect of allowing surveys to be distributed to their riders.

The most promising response was received from the program, NV Rides in Northern Virginia. After several discussions between the primary researcher, leadership at NV Rides, and their discussion with their advisory council, an agreement to allow the distribution of the study's surveys was reached and NV Rides would provide a spreadsheet, to the primary researcher, with their riders' mailing information. In addition, NV Rides supported the volunteer transportation for a group named Mount Vernon at Home, which was included in this study as part of NV Rides. For this study, 241 surveys were mailed to riders from the years 2019, 2020, and 2021. Once mailings were complete, the client spreadsheet was deleted to ensure subject anonymity. All survey mailings included an EKU IRB cover letter, a cover letter from NV Rides (see Appendix C) or Mount Vernon at Home (see Appendix D), and the study's survey. A self-addressed, stamped envelope was included with all surveys with the hopes of facilitating their return. The primary researcher obtained a secure, PO Box to be used for this study to ensure anonymity and was the only person with access to the PO Box contents for the duration of this study.

Subjects for Group 2 were recruited locally, from Lubbock, Texas, the current residence of the primary researcher, because no volunteer transportation program currently exists in this area. Surveys for Group 2 were disseminated to local senior adult housing complexes for random distribution amongst the residents. Due to privacy rules at each location, and ongoing Covid-19 precautions, envelopes containing the study's EKU IRB cover letter, survey, and self-addressed, stamped return envelope, were left in the manager's office to be offered to residents who came

into the office. Sites were randomly chosen from a list compiled by the primary researcher identified from an online search of local senior housing complexes. Random distribution to several different senior housing complexes provided an efficient way for groups of surveys to be distributed at several locations. In total, 176 surveys were distributed locally.

Completed surveys were mailed to a secure, post office box address provided on all return envelopes. The primary researcher was the only individual with access to the locked post office box. Upon receipt, all returned surveys were removed from their respective envelopes and the postmark for Virginia or Texas was noted so that the surveys could be placed into a corresponding file labeled as Group 1, those from Virginia with volunteer transportation access, or Group 2, those from Lubbock, Texas without volunteer transportation access. Once surveys were correctly filed with their respective groups, all envelopes were destroyed ensuring anonymity.

Data Collection Method

A survey design was chosen as this project's data collection method due to its ease of use and the potential for a quick turnaround for data collection (Creswell, 2018). A prior needs assessment of local older adults revealed to the primary researcher that this age group often preferred paper to electronic survey delivery due to their lack of computer usage and/or their lack of access to electronic devices where online participation could be performed. Therefore, paper surveys were utilized for this study. A cross-sectional study design allowed the primary researcher to compare each group's participants' perception of their level of engagement, represented by their scores from the Engagement in Meaningful Activities Survey (EMAS). A cover letter that included the primary researcher's contact information, the purpose of the study, and an explanation about participation being on a volunteer basis, was included with all surveys. Additionally, for this study's purpose and clarification for the participants, the definitions of

engagement and meaningful activities were provided in the survey as follows: *engagement* was defined as “being involved or taking part in something” while *meaningful activities* were defined as “activities that are important or have value to you.”

The study's survey was divided into two parts. Part one included demographic information and the EMAS (see Table 1), which was used to measure the participant’s perception of their level of engagement in meaningful activities (Ciro & Smith, 2015; Eakman, 2012; Goldberg, et al., 2002). Participant demographics included groupings for age, gender, race, and annual income. Demographic information was used for descriptive statistics only and did not contain any identifying information about the participants, thus safeguarding their privacy. Research has shown that engagement in meaningful activities has been correlated with one’s quality of life, life satisfaction, and improved mental and physical health (Ciro & Smith, 2015; Eakman, 2012; Goldberg, et al., 2002). The EMAS as seen in Table 1 was used for this study (Eakman, 2012). To assist the client’s understanding of the terms, engagement and meaningful activities, definitions were provided on the survey. Therefore, for this study’s purpose, the researcher defined *engagement* as “being involved or taking part in something” while *meaningful activities* were defined as “activities that are important or have value to you.”

Part two of the survey contained five custom questions related to the participant’s transportation needs and their perception of the impact Covid-19 had on their community mobility (see Appendix B). Two of the five questions were open-ended, which required the subject to provide a written response describing changes in their community mobility since the onset of the Covid-19 pandemic and barriers or obstacles that interfered with their ability to engage/participate in meaningful activities. The three remaining questions were closed-ended, multiple-choice questions to which the subject could choose a response from the choices provided with each question. The questions asked the participant to describe their

activity/engagement level since Covid-19, to identify factors that may have prevented them from leaving home to go out into the community, and to mark any locations in their community to which they were unable to travel to because of a lack of transportation access. Refer to Appendix B for this study's survey, including specific details regarding the five custom survey questions.

Inclusion/Exclusion Criteria

Inclusion criteria for this study's participants included: comprehension of the English language sufficient to read and complete the survey questions, adults aged 60-100, utilized an alternative mode of transportation, such as buses, paratransit, or volunteer transportation, for their community mobility, and possessed the cognitive ability to arrange for or schedule their transportation. Exclusion criteria for this study included: participants who were non-English speaking, required the use of a guardian for their decision-making, or those who did not possess the ability to give consent.

Data Analysis

A convergent mixed-methods design was used to collect and analyze the quantitative and qualitative data individually, then the data were merged so that the results could be compared and interpreted (Creswell & Creswell, 2018). Quantitative analysis for the EMAS and the supplemental questions numbered 1, 3, and 4, was conducted by running basic statistics using an Excel spreadsheet and by using Minitab™ statistical software, used in conjunction with guidance from Dr. Michelle Smith from the Department of Mathematics and Statistics at Eastern Kentucky University. Qualitative analysis for the open-ended, supplemental questions numbered 2 and 5, was transferred into electronic format for inductive coding. Codes were organized into relevant themes and were then compared with the study's quantitative data for further analysis and interpretation of noted comparisons (Creswell & Creswell, 2018).

Outcome Measures

The quantitative data which included the subject's demographic information and their responses from the EMAS portion of the survey were analyzed statistically to identify the engagement levels of the participants in both groups. Group 1 included those with access to volunteer transportation services, while Group 2, included those without access to volunteer transportation. Both demographic data and EMAS scores, reflecting each group member's respective engagement levels, were analyzed to determine if any significant differences could be detected between the two groups of subjects. The EMAS was created by Goldberg and Brintnell (1994) but was unpublished. Goldberg, et al. (2002) later confirmed the reliability and validity of the EMAS, as well as the correlation between meaningful activity engagement and life satisfaction. Eakman (2012) also confirmed the EMAS to be a valid measure for meaningful activity participation. In addition, consequent data affirmed that the EMAS reflected the relationship between engagement in meaningful activities and quality of life (Eakman, 2012; Goldberg et al., 2002). Data analysis for the questions from part 2 of the survey were also examined to identify subject responses so that the quantitative and qualitative data could be analyzed, respectively.

Ethical Considerations

This study applied for and received approval for limited review, Category 2, for exemption determination from the Institutional Review Board (IRB) at Eastern Kentucky University, due to "no greater than minimal risk level" for study participants. Participation in the study's survey was voluntary. Consequently, the primary researcher included a cover sheet containing an introductory paragraph that described the purpose of the study, the name of the principal investigator, the study's affiliation with Eastern Kentucky University, and a statement affirming that participation was indeed voluntary and without the promise of compensation (see Appendix A). Anonymity for all participants was preserved due to the omission of any

identifying information on all documents related to the study. Additionally, the primary researcher had no vested interest in any of the sites chosen for survey distribution. Finally, a signed authorship agreement was submitted and signed by the primary researcher's Capstone Chair before the start of this study.

Timeline of Project Procedures

The primary author's CITI Training was completed on September 28, 2020. Application for approval from the Institutional Review Board (IRB) at Eastern Kentucky University was submitted by the primary researcher on March 15, 2021. Approval was received from the IRB, April 26, 2021. Survey distribution to potential subjects for Groups 1 and 2, began shortly after IRB approval. Due to limitations imposed by the Covid-19 pandemic, the researcher anticipated the potential for decreased operation levels for many of the volunteer transportation programs and the possibility of limited access to older adult participants due to their elevated risk level. Surveys were collected until September 1, 2021, to allow the primary researcher sufficient time for data compilation, synthesis, and final manuscript completion.

Section Four: Results

Quantitative Results

Community Demographics

The Group 1 subjects had access to volunteer transportation services, coordinated by NV Rides in Northern Virginia. These potential subjects resided in one of seven communities in the northwest portion of Fairfax County, Virginia. The communities included Centreville, Chantilly, Clifton, Fairfax, Herndon, Reston, and South Riding. Group 2 subjects resided in Lubbock, Texas, and did not have access to volunteer transportation services. Demographic data for the two group's communities can be found in Table 2. A total of 417 surveys were distributed to potential subjects in Virginia and Texas. Two hundred forty-one surveys were mailed to Virginia and 176 were distributed in Lubbock, Texas. Overall, 84 surveys were returned for an overall return rate of 20%. For the Virginia group, 33 of the 241 surveys were returned for a rate of 14%, compared to the Lubbock, Texas group where 51 of the 176 surveys were returned for a rate of 29%. A total of 28 surveys returned from Virginia met the study's criteria while 40 of those returned from Lubbock also met the study's criteria.

The population for the seven combined communities in Virginia was 242,282 compared to the population in Lubbock, Texas, of 258,870 (Data USA, n.d.). Financially, the Virginia communities had a 5% poverty rate and a median income of $129,000, compared to a 20% poverty rate for Lubbock and a median income of $52,000 (Data USA, n.d.). The median property value for the Virginia communities was $542,000 compared to $153,000 for Lubbock. The average commute for those in Virginia was 29 minutes compared to 16 minutes for Lubbock (Data USA, n.d.). Lastly, the physical area for the collective communities in Virginia was 406 mi^2 compared to 901mi^2 for the Lubbock, Texas group (Data USA, n.d.).

Table 2: Comparison of Community Demographics

	Community Demographics					Area	
Group	Population	Poverty Rate	Median Income	Median Property Value	Average Commute	City	County
G1/VA	242,482	5%	$129,000	$542,000	29min	58 mi²	406 mi²
G2/TX	258,870	20%	$52,000	$153,000	16min	136mi²	901 mi²

Subject Demographics

Demographic characteristics of subjects in Groups 1 and 2 are presented in Table 3. Ninety-one percent of all subjects were in the 60-89 year range, while nine percent were between the ages of 90-99 years. Seventy-five percent of the subjects indicated their gender was female. The predominant race/ethnicity reported by subjects in Group 1 was White (29%), while Group 2 subjects were predominantly reported as Latino/Hispanic (32%). Economically, 43% of the subjects in Group 1 reported their annual income to be less than $25,000 while 35% reported their income to be in the $25,000-$50,000 range. Comparatively, 82% of the subjects in Group 2 reported an annual income less than $25,000, with only 12% reporting incomes in the $25,000-$50,000 range. According to the poverty guidelines released by the Office of the Assistant Secretary for Planning and Evaluation (ASPE), advisor to the Secretary of the Department of Health and Human Services, the 2021 yearly amount, for the contiguous states, is $12,880 for a household of one (ASPE, 2021). Poverty guidelines, often referred to as the Federal Poverty Level (FPL), vary by family size and are used to determine one's financial eligibility for certain assistive programs. While poverty levels for the United States are based on income relative to the number of members in the household, the determination for low-income is based on a percentage of the FPL. According to the U.S. Department of Education, low-income is considered when one's taxable income does not exceed 150% of the FPL (U.S. Department of

Education, 2021). For 2021, 150% of the FPL for a one-person household was reported at $19,320 or $26,130 for a household of two. Consequently, the majority of the subjects in this study would fall into the low-income category based on these 2021 poverty guidelines.

Table 3: Comparison of Subject Demographics

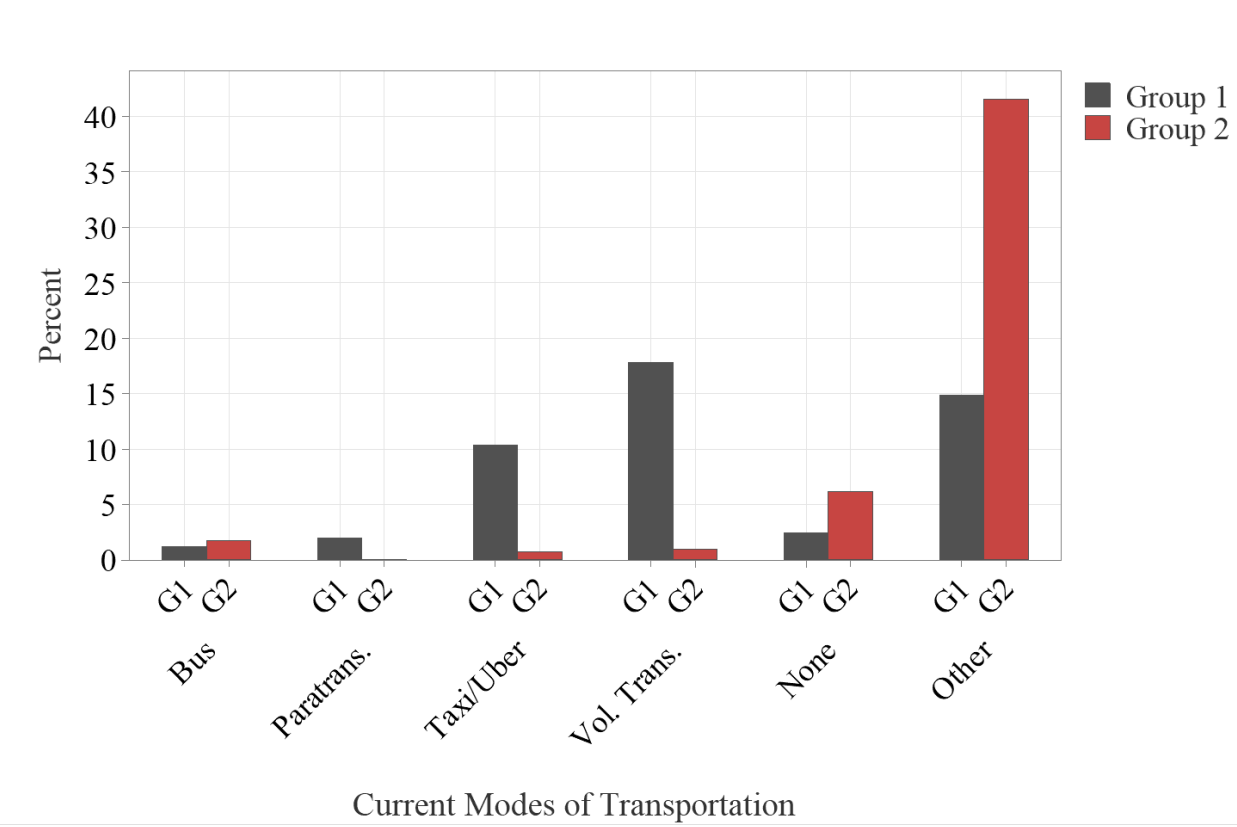
Demographic Information		Group 1/Virginia			Group 2/Texas	
		N=28			N=40	
		Count	Percentage		*Count*	Percentage
Age	60-69 yrs.	*4*	14%		*14*	35%
	70-79 yrs.	*10*	36%		*13*	32.5%
	80-89 yrs.	*9*	32%		*12*	30%
	90-99 yrs.	*5*	18%		*1*	2.5%
Gender	Male	*5*	18%		*9*	22.5%
	Female	*20*	71%		*21*	52.5%
	Did not answer	*3*	11%		*10*	15%
Race/Ethnicity	White	*20*	71%		*12*	30%
	Black	*4*	14%		*2*	5%
	Latino/Hispanic	*0*	0		*22*	55%
	Asian	*3*	11%		*1*	2.5%
	Other: American Indian	*1*	4%		*0*	0
	Did not answer	*0*	0		*3*	7.5%
Annual Income	<$25,000	*10*	36%		*28*	70%
	$25,000-$50,000	*8*	29%		*4*	10%
	$50,000-$100,000	*4*	14%		*2*	5%
	>$100,000	*1*	3.5%		*0*	0
	Did not answer	*5*	17.5%		*6*	15%

(Group 1: with vol. transportation access; Group 2: without vol. transportation access)

Current Transportation

The current modes of transportation for Groups 1 and 2 are found in Figure 1.

Figure 1: Current Modes of Transportation



The predominant modes of current transportation for Group 1 (those with access to volunteer transportation) were volunteer transportation and taxi/Uber, while Group 2 (those without access to volunteer transportation) reported the "other" category followed by taxi/Uber. Sixty-eight percent of the "other" category reported by Group 2 was identified as "driving themselves or using their own car", compared to the similar response reported as "other" by 50% of Group 1. No subjects in Group 2 reported the use of paratransit services compared to 6% in Group 1. Lastly, 7% of the subjects in Group 2 reported not having any form of transportation compared to 3% in Group 1.

EMAS Score

EMAS scores for subjects from each group were calculated by adding the responses for

each of the four columns. The sums of the four columns were totaled for a final numerical EMAS score for each subject. Possible scores for the EMAS range from 0-48. Descriptive statistics for the EMAS scores for both groups can be found in Table 4.

Table 4: Descriptive Statistics for EMAS Scores

Site	N	Mean	Min. Score	Max. Score
G1/VA	27	33.11	12	46
G2/TX	36	37.97	12	48

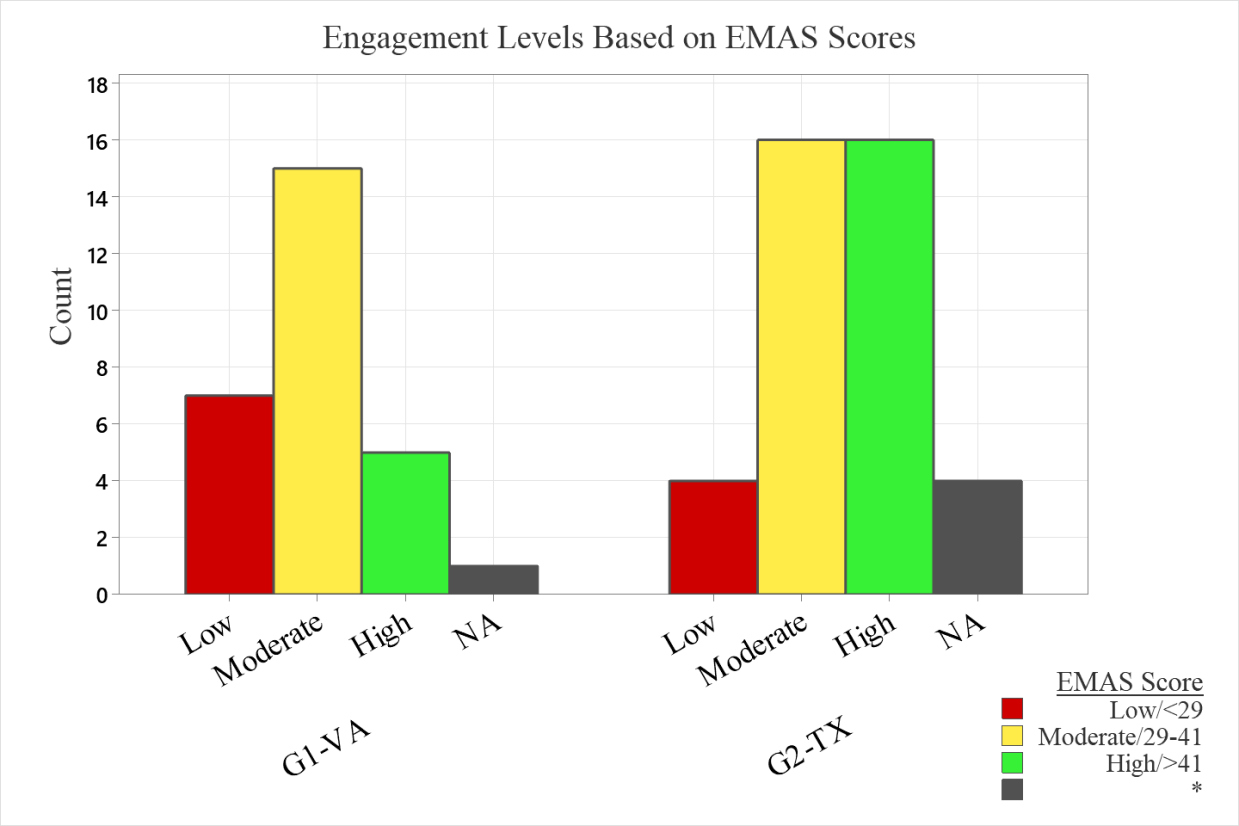
(Group 1/VA: with vol. transportation access; Group 2/TX: without vol. transportation access)

Scores for subjects from Group 1, those with volunteer transportation, ranged from 12-46, with a mean score of 33.11, while scores for subjects from Group 2 ranged from 12-48, with a mean of 37.97. The mean scores for both groups fall into the moderate engagement level, score range of 29-41, according to the EMAS. An unpaired, two-sample T-test was performed to compare the mean scores from the EMAS between the two subject groups. The resulting p-value of 0.031 indicated that the difference between the mean scores for Group 1 and 2 was significant.

EMAS Engagement Level

Numeric scores from the EMAS were converted to a corresponding engagement level rating of either low, moderate, or high, refer to Figure 2. Twenty-six percent of the subjects in Group 1 had scores that corresponded to a low engagement level (EMAS<29) compared to 11% for Group 2. For moderate engagement levels (EMAS 29-41), 56% for Group 1 compared to 44% for Group 2. Lastly, 18% of the scores from Group 1 corresponded to a high engagement level (EMAS>41) compared to 44% from Group 2.

Figure 2: Subject Groups' Engagement Scores Based on EMAS Scores

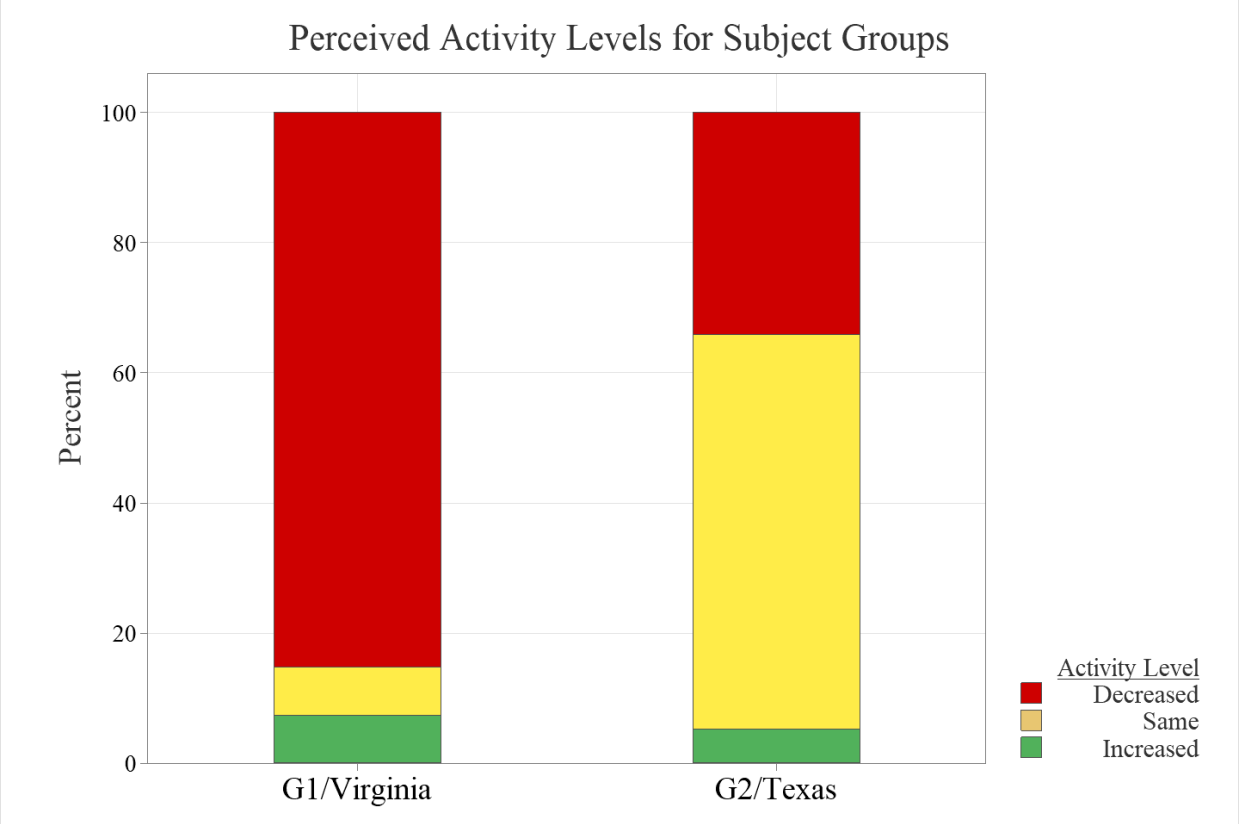


Perceived Activity/Engagement Level Since Covid-19

Three quantitative questions were included on the second page of the survey. The first question asked subjects to indicate their activity/engagement level since the Covid-19 pandemic. Choices included increased, stayed the same, decreased somewhat, decreased significantly, or decreased drastically. Results for both groups can be found in Figure 3. By converting the data into percentages, 14% of the subjects from Group 1 reported their activity level either increased (7%) or stayed the same (7%), while 85% of the subjects from Group 1 reported that their engagement/activity levels had decreased since the pandemic. Overall, 85% of the subjects in Group 1 indicated that their activity/engagement level had decreased, with 22% reporting the decrease to be somewhat, 41% reporting it to be significant, and 22% reporting it to be

drastically decreased. Comparatively, the subjects in Group 2 reported a 34% overall

Figure 3: Perceived Activity Levels for Subject Groups

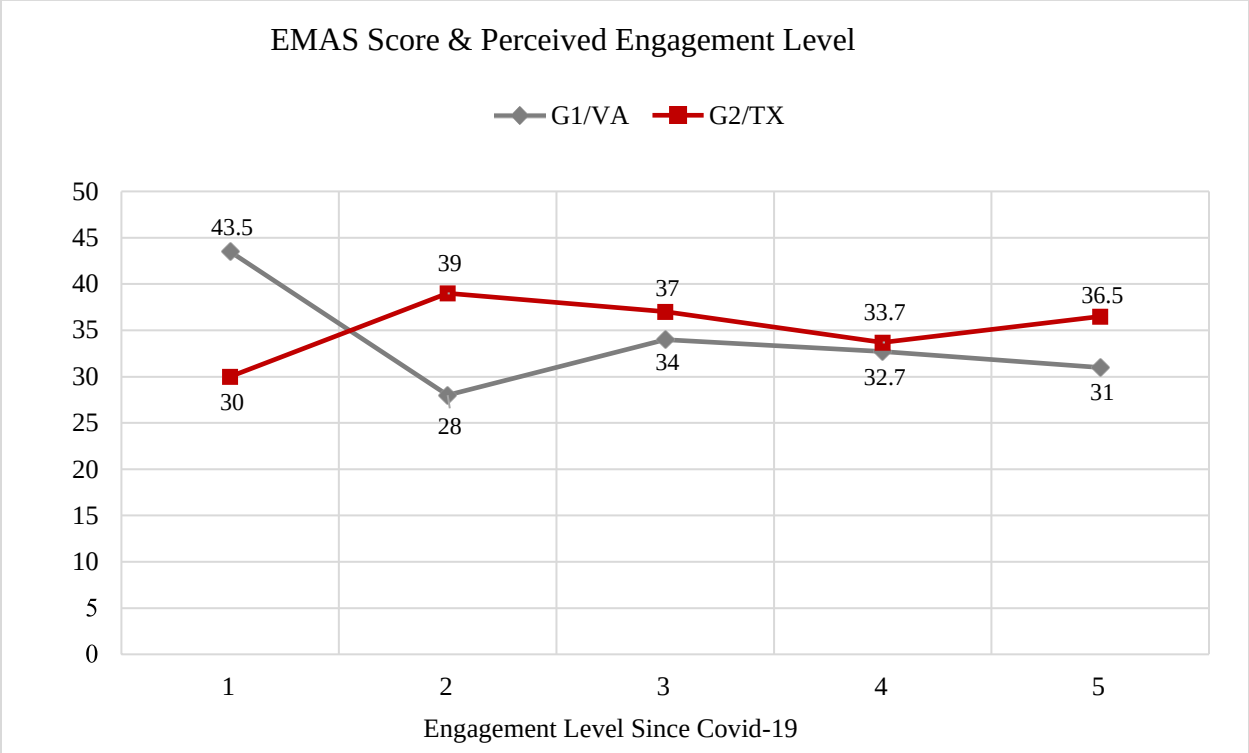


EMAS Scores and Perceived Activity/Engagement Levels Since Covid-19

The responses from Q1, the subject's perceived activity/engagement level since Covid-19, were compared to the average of their corresponding EMAS score. Results can be seen in Figure 4. The values for the activity levels were as follows: 1=increased, 2=stayed the same, 3=decreased somewhat, 4=decreased significantly, and 5=decreased drastically. Subjects in Group 1 who reported increased activity levels had an average EMAS score of 43.5 compared to a score of 30 for those reporting the same activity level in Group 2. Subjects in Group 1 who reported activity levels that stayed the same had an average EMAS score of 28, compared to 39 for subjects in Group 2. Finally, subjects from Group 1 who reported an overall decrease in their activity level (activity levels 3, 4, and 5) had an average EMAS score of 32.57 compared to an

average score of 35.73 for Group 2. Group 1 demonstrated declining EMAS scores as the subject's perceived activity levels decreased as well.

Figure 4: EMAS Scores Compared to Subject Groups' Perceived Engagement Level



(Group 1: with vol. transportation access; Group 2: without vol. transportation access)

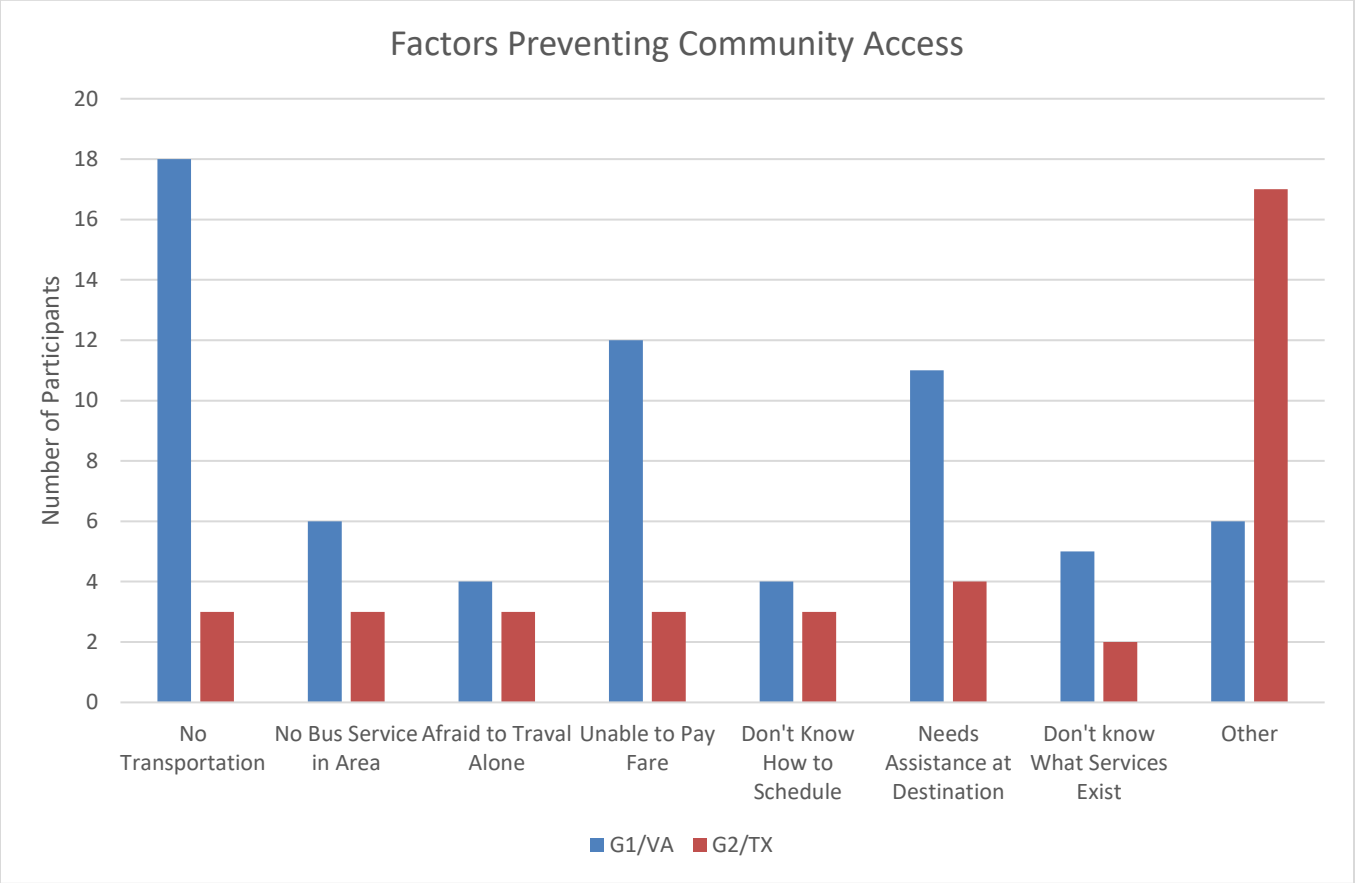
Group 2 demonstrated a slight increase in the EMAS score associated with activity level 5 (36.5), compared to the average EMAS scores associated with levels 3 (37) and 4 (33.7).

Factors Preventing Travel into Community

The second question asked the subjects if any of the listed factors had prevented them from leaving their home to go out into their community. The "other" category was provided so that subjects could write in a specific reason for not being able to access their community. The most frequently reported category for Group 1 was a lack of transportation compared to the "other" category for Group 2. Specifically, 32% of the "other" responses from Group 1 reported that they still drove themselves to locations within their community in contrast to those in Group 1 who indicated they had no transportation. The second most frequent response for Group 1 was

the inability to pay for transportation compared to Group 2's response of their needing assistance at their destination. Refer to Figure 5 for a comparison of responses from both groups.

Figure 5: Factors Preventing Community Access



(Group 1: with vol. transportation access; Group 2: without vol. transportation access)

Locations in Community Unable to Access

The last quantitative survey question asked subjects to identify locations in their community to which they were unable to travel due to a lack of transportation. Options included medical/dental appointments, shopping/grocery stores, pharmacy/bank/post office, social outings, and/or religious services. For locations not listed, subjects could mark "other" and then write in the specific location(s) to which they could not travel. Subjects were asked to mark all locations that applied. The top three locations for subjects responding from Groups 1 and 2 can

be found in Figures 6 and 7. Group 1 (those with volunteer transportation) reported social outings, religious services, and the pharmacy/bank/post office as the top three locations they were unable to travel to while Group 2's top three inaccessible locations were the "none" category, indicating no areas were inaccessible to those subjects, shopping/grocery store, and the pharmacy/bank/post office.

Figure 6: Group 1 Subjects' Inaccessible Community Locations Due to a Lack of Transportation

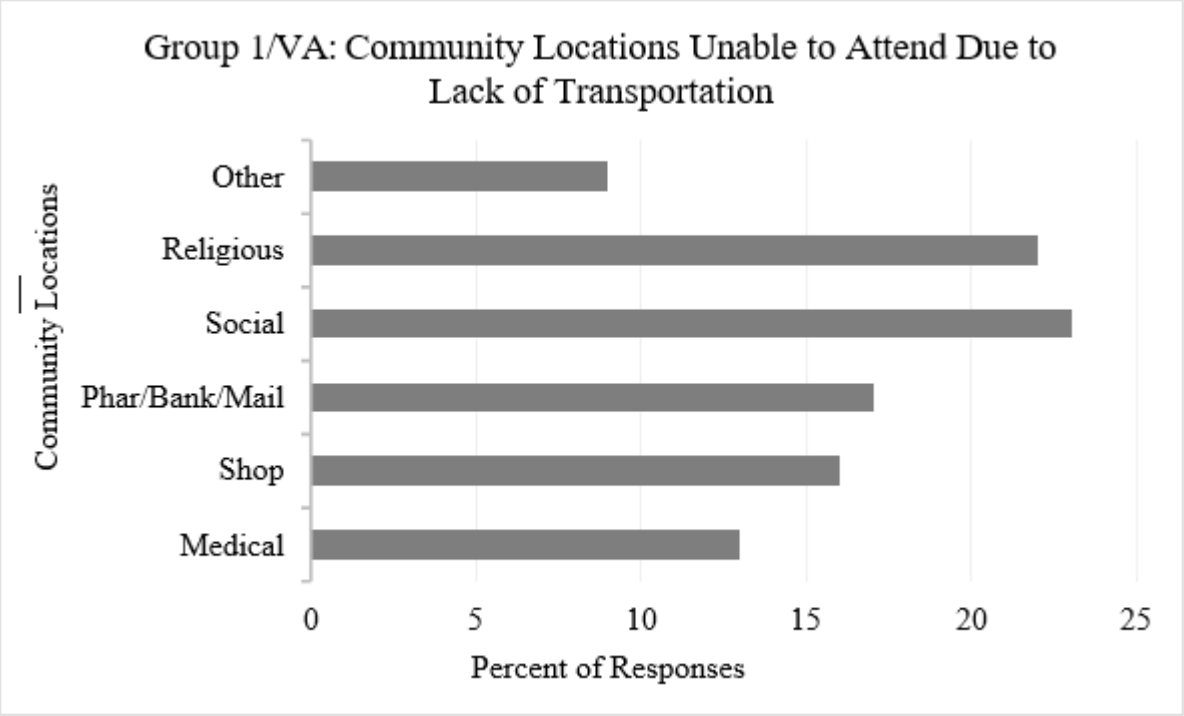
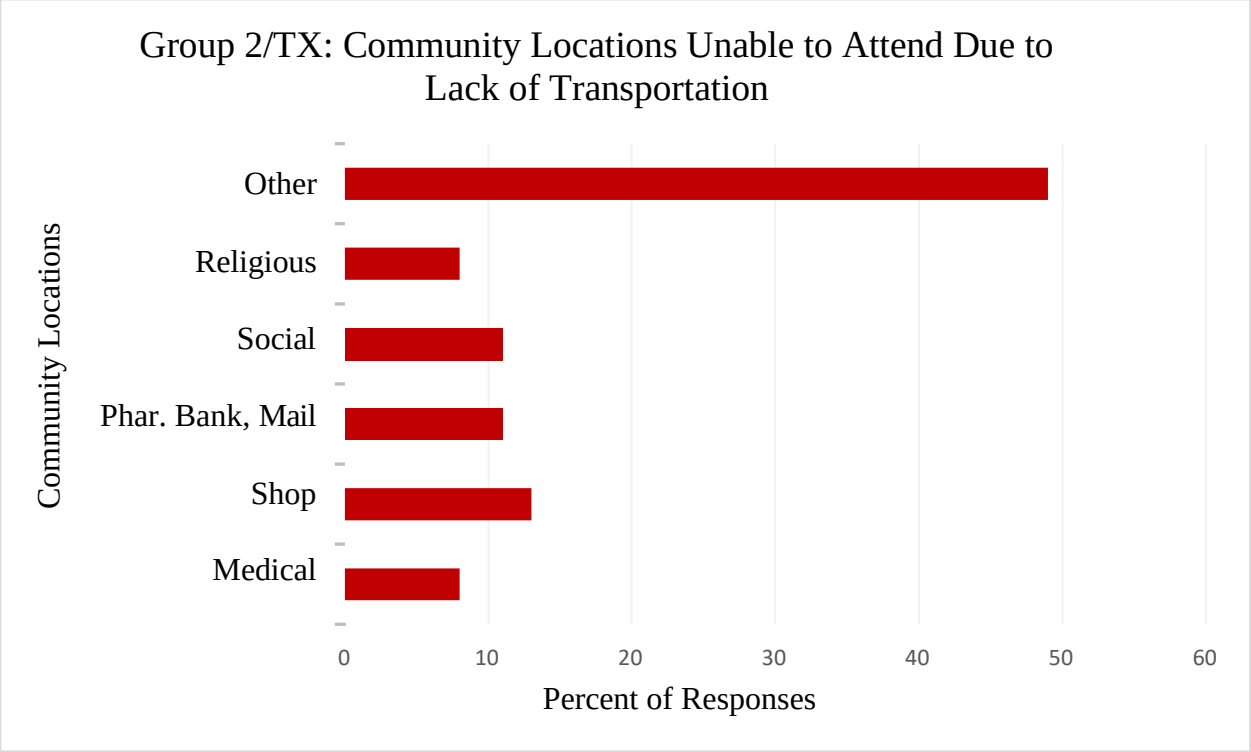


Figure 7: Group 2 Subjects' Inaccessible Community Locations Due to a Lack of Transportation



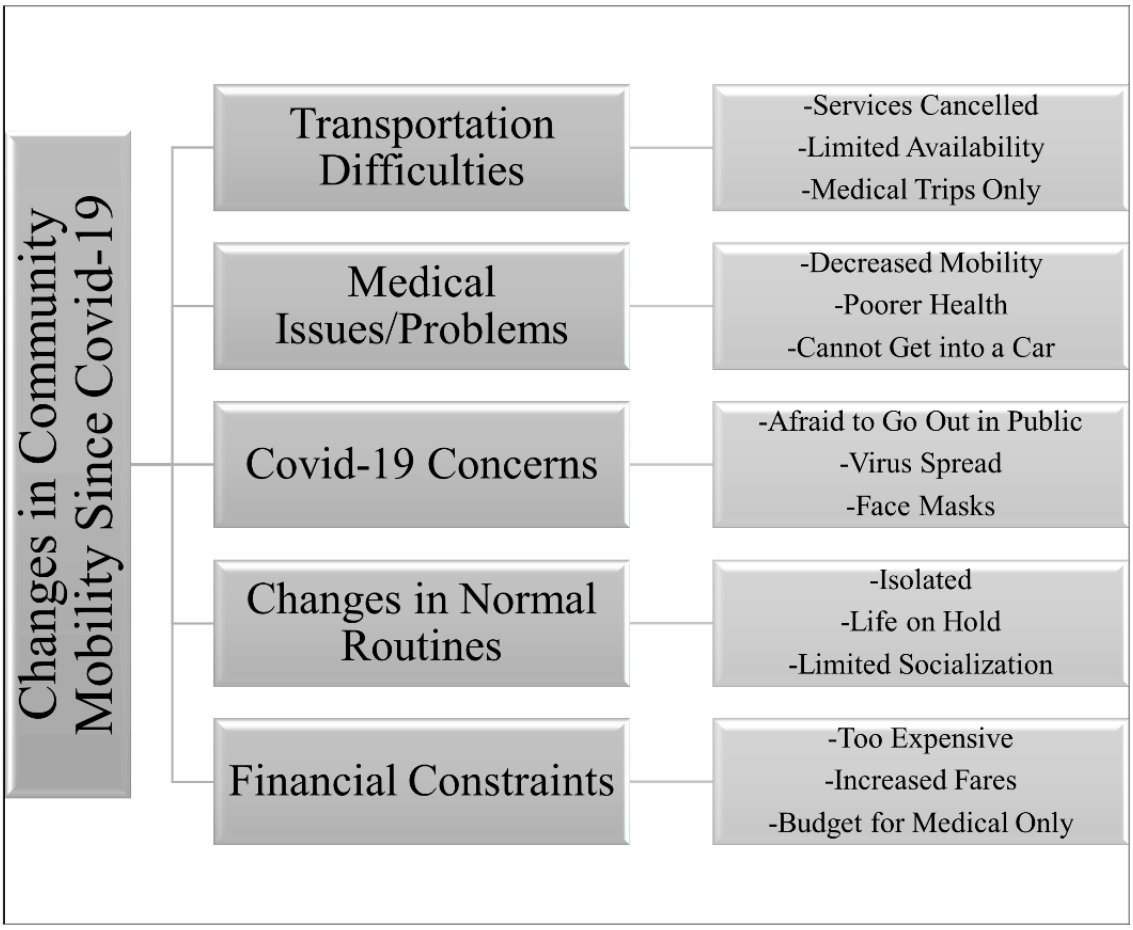
Qualitative Results

Community Mobility Changes

The first of two open-ended questions asked subjects to describe changes in their community mobility since the Covid-19 pandemic. Eighty-two percent of subjects from Group 1 responded, compared to 53% of the subjects from Group 2. Five common themes were identified after analyzing the subject's responses and can be seen in Figure 8. The five themes describing changes in community mobility included changes/problems in the subject's medical history, transportation difficulties, financial constraints, Covid-19 concerns, and changes in the subject's normal routines. Both groups reported changes that correlated to the five aforementioned themes, except for financial constraints. No subjects from Group 2 had any responses that mentioned money or financial restrictions affecting their transportation since the

Covid-19 pandemic.

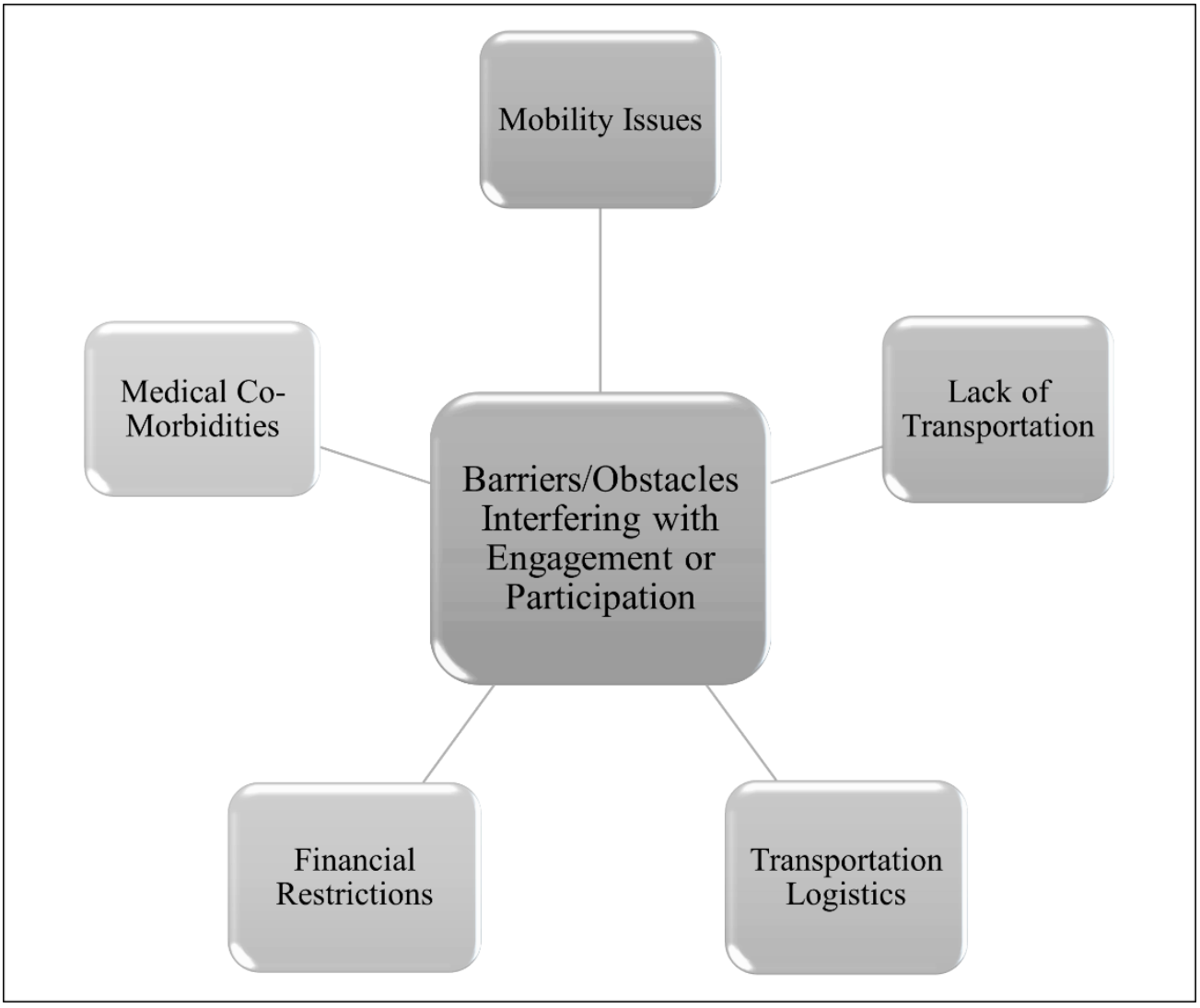
Figure 8: Five Themes Identifying Changes in the Subjects' Community Mobility Since the Covid-19 Pandemic



Barriers/Obstacles Interfering with Engagement

The last open-ended question from the survey asked the subjects to describe any barriers or obstacles that interfered with their ability to engage/participate in meaningful activities. Seventy-nine percent of the subjects from Group 1 responded compared to 55% of the subjects from Group 1. Five themes were identified from the collection of responses from subjects in both groups and can be seen in Figure 9. The five themes identified included mobility issues, lack of transportation, transportation logistics, financial restrictions, and medical co-morbidities. Additionally, it should be noted that 9% of the responses from Group 1 and 32% of the responses from Group 2 reported no barriers to their engagement or participation in meaningful activities.

Figure 9: Five Themes Identifying Barriers or Obstacles Interfering with the Subjects' Engagement in Meaningful Activities



Discussion

The results of this study showed that there was a significant difference between the EMAS scores for the subjects in Group 1, those with volunteer transportation access, and Group 2, those without. However, the mean EMAS scores were higher for Group 2, not Group 1 as previously hypothesized by this researcher. However, this researcher believes that the reasons for such are likely multi-factorial. For example, the Covid-19 pandemic caused higher and more

lengthy restrictions in the Virginia area compared to Texas, which caused widespread cancellations and shutdowns, including the volunteer transportation services that many of the Group 1 subjects relied on for their community mobility. The shutdowns and cancellations caused by Covid-19 were not as lengthy nor restrictive in Texas, and since many of the subjects from Group 2 continued to drive themselves to locations in their community, despite the pandemic, the impact upon their ability to access their community may have been less affected. This researcher also proposes that the Group 1 subjects experienced a loss in the transportation they were accustomed to using for their community mobility because of the Covid-19 pandemic restrictions, which in turn had a more significant negative impact upon their engagement levels due to their lack of ability to travel to the locations in their area frequented. The Group 2 subjects did not seem to be as negatively affected by the shutdown of public transportation services, and since no volunteer transportation service was available to them, the change to their community mobility may not have been perceived as having as profound of an effect, therefore, their EMAS scores were not as low as those in Group 1. Another significant finding from this study did appear to occur between the correlation of lower EMAS scores and the subjects' lower self-ratings of their perceived activity/engagement levels. This researcher believes that this correlation supports the use of the EMAS as a valuable occupation-based tool that can be used to measure and assess engagement levels amongst clients in a variety of settings, as previously described in the literature (Goldberg & Brintnell, 1994; Goldberg, et. al., 2002; Eakman, 2012) and in future research studies where engagement in meaningful activities is to be assessed.

Even though the subjects came from two different states, Virginia and Texas, the data for both areas could still be compared with valuable information regarding the community mobility of older adults. According to the data from Data USA (n.d.), the population difference between the sites was approximately 16,000 people, with the Texas location being the more populous of

the two. However, if you considered other communities in the Fairfax County area, Virginia easily had a higher population. While the Texas group came from a larger area based solely on square miles, the population density for Virginia would have been higher meaning that there are more people in a smaller area compared to Lubbock, Texas and that the Group 2 subjects had the opportunity to travel within the community without such a crowded or congested area. The Virginia group had a stronger financial outlook, considering both higher median income levels and lower poverty levels compared to Texas, however, the cost of living was higher in Virginia which could have an added financial impact on those with lower or fixed incomes. The average commute time for the Texas location was almost half of that for the locations in Virginia despite it being more than twice the size in square miles ($mi.^2$) compared to the Virginia site (Data USA, n.d.). Nonetheless, it was likely that the distance to travel for goods and services for those in Virginia was more difficult due to the population density and likely need for travel into the larger communities for needs not found in their immediate community, whereas those in the Texas group likely had their needs available locally, because Lubbock is the largest city in its region, thus preventing frequent travel outside the community for immediate necessities and/or medical care.

The subjects for this study were mostly female, which corresponds to previous research suggesting older adult women continue to outnumber older adult men (ACL, 2020). While subjects did not report whether they lived alone or the size of their households, the 2021 poverty guidelines define low-income to be less than $26,310 for a household of two and $19,320 for a household of one, to be considered low-income (U.S. Department of Education, 2021). Since the majority of subjects in this study reported incomes below $25,000, the majority of this study's subjects would likely be considered low-income as well, despite the higher financial statistics for the Virginia location. Additionally, with the higher cost of living, population density, and travel

distances experienced by the Group 1 subjects, this could be a significant factor as to the reason so many of the subjects from Group 1 relied upon volunteer transportation services, its success in the area, and why the subjects' travel during the pandemic was limited or halted, due in part to the high cost of alternative transportation options and the shutdown of volunteer transportation services caused by Covid-19 pandemic. Otherwise, the access to volunteer transportation services for Group 1 played an essential role in the facilitation of community mobility for its riders.

Another factor that may have led to the continuation of driving for the subjects in Texas, was the fact that the Covid-19 shut down was less strict and widespread in Texas, compared to the Virginia area. On the other hand, the subjects from Virginia reported the use of a taxi/Uber as the second most frequently used form of alternative transportation compared to the Texas subjects who reported a lack of transportation as their second most reported response. Ironically, no subjects from Group 2 reported the use of paratransit services as a mode of transportation for their travel into the community, despite it being a potential resource for medical transportation for some subjects, like mentioned in Group 1. One cannot exclude how the pandemic affected each group, such as the increased number of closings and cancellations of programming and facilities, which was higher and more restrictive in Virginia, than the closings and cancellations in Texas. Additionally, a higher percentage of the subjects from Texas continued to drive themselves, even during the pandemic, compared to the subjects from Virginia. Studies have reported that older adult drivers with limited access to public transportation and/or alternative transportation, such as in a rural setting, may be more likely to continue driving than those with access to such services or those living in urban areas (Payyanadan, et al., 2018; Strogatz, et al., 2020). Perhaps the size and population density of the two areas yielded itself to the fact that more subjects in Lubbock, Texas, although not considered rural by definition, continued to drive

themselves due to a perceived lack of other available transportation options. Nonetheless, the pandemic impacted this older adult population in numerous ways, but its impact upon their community mobility was severe, especially for those whose source of transportation was restricted or canceled, and its effects have lingered in the year following the shutdowns.

Older adults are already at risk of becoming occupationally deprived and socially isolated when they cannot access their community and surroundings outside of the home (AOTA, n.d.; AOTA, 2001). Additionally, research has already shown how the health and well-being of older adults declined when engagement in occupations is limited and/or lacking (Ciro & Smith, 2015; Goldberg, et al., 2002). The subjects from both groups in this study reported the occurrence of personal health declines during that year when many parts of our country and communities were shut down due to the Covid-19 pandemic. During the nation's shutdown, many found their activity levels and subsequent health levels declined due to the closings and cancellations of services and programming within communities. The results of this study support previously published research emphasizing that without access to activities for engagement, older adults often find their engagement levels outside of the home, to be affected, and over time, may result in a decline in one's health and well-being (Brown & Hollis, 2013; Curl, et al., 2014; O'Neill et al., 2019). Not only does this demonstrate the magnitude of problems caused by the pandemic, but it also supports the importance and need for a variety of accessible transportation services in communities so that when one mode is shut down, other accessible options are available to meet the needs of those left without their usual transportation source. While no one could have planned for all of the issues caused by the pandemic, the knowledge gained from this study, regarding community mobility for older adults, must be applied to current community mobility options, to avoid future limitations on community travel and the subsequent decline in the older adults' engagement in meaningful activities. Volunteer transportation programs are one such

program that has previously shown their effectiveness in meeting the transportation needs of many older adults (Kerschner & Rousseau, 2008). For areas without such services, as in the Lubbock, Texas area where the subjects from Group 2 resided, this researcher believes that a volunteer transportation service could fill a previously identified gap in transportation services, especially for low-income older adults who have not found their community's current transportation options to be accessible.

Subjects from both Groups 1 and 2 had EMAS scores that corresponded to low engagement levels, but the subjects in Group 1 had more than twice the number of low levels compared to Group 2. Additionally, while both groups had scores that corresponded to high engagement levels, Group 2 had more than twice the number of high levels of engagement compared to those in Group 1. It is possible that while both groups felt the impact of the Covid-19 pandemic, those subjects from Group 1 in Virginia, may have felt more of an impact on their engagement levels caused by the loss of their volunteer transportation services. A loss of transportation that had helped support their community mobility and thus may have facilitated their engagement in meaningful activities through access into their community. Meanwhile, the subjects in Group 2 resided where no current volunteer transportation program existed and therefore did not experience the impact felt from the loss of their transportation services due in part to the fact that many of the Group 2 subjects continued to drive themselves. Both groups of subjects stated that a significant impact of not having transportation prevented their attendance at social outings. Other areas the subjects were unable to access included religious services, shopping/grocery stores, pharmacies, banks, and the post office. While these locations might not seem to be important for everyone, a lack of transportation to desired locations, such as these, can negatively impact the older adult's ability to engage in meaningful activities within their community. The significance of these results supports previous findings by Marottoli et al (2000)

in their study regarding the correlation between out-of-home activities and the positive impact on older adults' well-being.

The qualitative piece of this study allowed for the comparison of responses from both groups of subjects regarding changes to their community mobility since the Covid-19 pandemic. The subjects' community mobility was affected by environmental factors and both internal and external personal factors as well. Internal personal factors included a declined health status, reported by subjects from both groups, precipitated by their lack of mobility and diminished activity levels caused by being stuck at home during the pandemic. Another negative impact several subjects reported was impaired functional mobility which also resulted from decreased activity levels during the pandemic. An external factor affecting subjects from both groups was the continued virus concerns, which included both exposure risks and further spread of the virus amongst older adults, who were identified by the Center for Disease Control (CDC) as being in the high-risk category. Environmental factors facing the subjects included the closure and cancellation of locations and services within their communities, which consequently altered their daily and/or weekly routines. Alterations in routines, as caused by the pandemic mandates, promoted physical inactivity and social isolation amongst those forced to stay at home. As a result, many of the subjects were unable to access their community, to engage in meaningful activities, which likely contributed to lower EMAS scores and lower levels of perceived engagement levels.

Lastly, subjects identified barriers or obstacles that they felt interfered with their engagement in meaningful activities or occupations. The responses from both groups were again consolidated into common themes that included environmental-related factors, such as the lack of transportation and/or difficulty with transportation logistics, which included scheduling and wait times. Personal barriers or obstacles were grouped into personal mobility issues, medical

co-morbidities, and personal financial constraints, which included a lack of funds or the inability to pay the required fare. The subjects in Group 1 experienced the cancellation or shut down of their previously used volunteer transportation services which forced them to seek other available transportation options, as well as created a burden of payment for fares, a problem many had not experienced since using the available volunteer transportation services in their area.

Data gathered from the subjects' responses to the open-ended questions was consistent with data gathered from aforementioned quantitative data, such as barriers to transportation faced by the older adult, especially those retired from driving and no longer able to drive themselves to locations of choice for engagement in meaningful activities or routine daily tasks. Without accessible transportation options, older adults are either left isolated from their community or may try to continue to drive themselves, past their ability to safely do so. Data from this study also supported previous research stating that a variety of transportation alternatives must be available in communities so that the unique transportation needs of this ever-growing older adult population can be adequately served (Kim, 2011; Shergold, 2015; Stav, 2014). Without access to meaningful activities or occupations, older adults may experience declined mental and physical health, resulting in a decreased quality of life (Brown & Hollis, 2013; Curl, et al., 2014; O'Neill et al., 2019).

Strengths and Limitations of Project

Strengths of this capstone project included the survey design of the study, which allowed for a relatively easy and efficient means to collect data from potential subject groups residing in different states and locations, and its mixed methods design, which allowed for the simultaneous collection of both quantitative and qualitative data. An additional strength for this research study was the use of the Engagement in Meaningful Activities Survey (EMAS), which had previously been shown to be a valid and reliable tool for evaluating a person's engagement in

meaningful activities (Eakman, 2012; Goldberg, B. & Brintnell, 1994).

Several limitations of this must be considered and one significant limitation that impacted all participants was the Covid-19 pandemic. The manner in which Virginia and Texas handled the mandatory shutdowns and re-openings was based on the unique circumstances for each state. The only commonalities would be that the targeted subjects for this study included the older adult population, which has been considered in a higher risk category across all states, and that the pandemic affected all individuals, in some manner, regardless of their demographics or geographical locations. Another obvious limitation was this researcher's limited access to volunteer transportation clients, resulting in Group 1 subjects only coming from select communities in the Fairfax County, Virginia area. Additionally, subjects for Group 2, those without volunteer transportation options, were only recruited from the primary researcher's hometown. Additional limitations for this study included a limited number of surveys distributed to potential subjects, the inclusion of subjects who continued to drive themselves within their community, a lack of an interview component for the qualitative questions of the survey, and a reduced timeframe for survey distribution and data analysis, to allow the primary researcher ample time to complete their research in time for pending graduation requirements.

Implications for Practice

Results from this study provided several key highlights that can be useful for the occupational therapy practitioner. For example, this study provided important information regarding the engagement levels of older adults and the accessibility of the transportation options within their community, including the impact transportation, or a lack of transportation, had on their levels of engagement in meaningful activities within their communities. As clinicians, we must be aware of the community mobility options available to the clients we serve, as previously suggested (Stav, 2014). Useful information was gained about the benefits volunteer

transportation services can provide and could be useful for the future program development in communities where gaps in transportation services may exist causing some residents to have transportation needs that are being unmet by their community's existing transportation alternatives. The use of occupation-based assessment tools has been identified by our profession as a method for best practice to evaluate and promote engagement in occupation (AOTA, 2020). The use of the EMAS, as used in this study, proved to be an effective tool for measuring the subjects' engagement in meaningful activities. Finally, considering the occupational and engagement aspect of community mobility, as described by Stav, 2014.

Future Research

This study is one of the first studies, known to the researcher, that examined the occupational engagement levels of older adults with regard to transportation, particularly those with access to volunteer transportation programs. Forms of transportation and community mobility in the older adult have previously been studied (Stav, 2014), but not for identifying its effect on its consumer's engagement levels, nor has a comparison of engagement levels amongst consumers of various forms of transportation been published. Future research should continue to look at engagement levels of older adults, especially after driving cessation and into driving retirement. Additionally, using an occupation-based assessment tool, such as the EMAS, can provide valid and reliable data related to occupation and engagement, as it applies to the important IADL, community mobility. Such data is needed as this older adult population continues to grow in number and aims to successfully age in place.

As the population of older adults continues to grow and the number of older adults outliving their driving capabilities increases, communities must have a variety of transportation alternatives in place to meet the rising needs of this older adult population. With a strong knowledge in occupation and occupational engagement across the lifespan, occupational therapy

practitioners possess the skills needed to identify and address the changing needs of older adults as they transition from safe driving to driver cessation and finally, driving retirement without a negative impact upon their occupational engagement and participation in their community.

Conclusion

This study aimed to assess whether older adults with access to volunteer transportation programs had higher engagement levels, as measured by the Engagement in Meaningful Activities Scale (EMAS), compared to those without access to volunteer transportation. This study was a first of its kind in which engagement levels were compared amongst older adults utilizing different modes of transportation. While this study's results did not reveal higher engagement levels amongst those with access to volunteer transportation, it did highlight important benefits that volunteer transportation programs can offer older adult clients, therefore promoting its value as part of a comprehensive community mobility program. Additionally, since this study was conducted after most of the Covid-19 restrictions were lifted, in the United States, it aimed to identify specific transportation difficulties brought on by the pandemic's restrictions. With the insight gained from this study, this researcher hopes that OT practitioners will recognize the need for communities to have a variety of alternative transportation modes available to meet the unique community mobility needs of its members, especially the low-income older adult. Community mobility is an important IADL whose purpose extends beyond mere transportation from place to place. Community mobility for older adults should be promoted by occupational therapy practitioners, as an essential means for promoting, facilitating, and supporting the occupational needs of this ever-growing, older adult population.

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Appendices

Appendix A: EKU IRB Informed Consent-Survey Cover Letter

Eastern Kentucky University Institutional Review Board
Informed Consent Cover Text for Exempt Studies

Study Title: The Impact of Volunteer Transportation on Older Adults' Engagement in Meaningful Activities

You are being invited to take part in a research study investigating the effects Volunteer Driver Programs/Volunteer Transportation may have on older adults' participation in community activities.

This study is being conducted by an Occupational Therapist, residing in Lubbock, TX, as part of the requirements for completion of a Doctorate in Occupational Therapy from Eastern Kentucky University. **The primary researcher is Belinda Alexander, OTR.**

If you decide to participate in the study, you will be asked to: **complete & return a 1 page, double-sided, paper survey**. Your participation is expected to take no more than **20 minutes**.

This study is **anonymous**. You will not be asked to provide your name or other identifying information as part of the study. No one, not even members of the research team, will know that the information you give came specifically from you. Your information will be combined with information from other people taking part in the study as well and will be written up as the results of this study. If you decide to take part in the study, it should be because you really want to volunteer. You will not lose any benefits or rights you would normally have if you choose not to volunteer. You will not be compensated for your participation, nor will a penalty be associated with your refusal. You can stop at any time during the study and still keep the benefits and rights you had before volunteering.

This study has been reviewed and approved for exemption by the Institutional Review Board at Eastern Kentucky University as research protocol number # 3873.
If you have any questions about the study, please contact:

Belinda Alexander, OTR
Email: Belinda_alexander31@mymail.eku.edu
Phone: 806-743-7509
Mail: P.O. Box 94473, Lubbock, Texas 79493

If you have questions about your rights as a research volunteer, please contact the Division of Sponsored Programs at Eastern Kentucky University by calling 859-622-3636.

By completing the survey, you agree that you (1) are at least 60 years of age, (2) have read and understand the information above, and (3) voluntarily agree to participate in this study.

Thank you,

Belinda Alexander, OTR
Occupational Therapist
Primary Researcher

Appendix B: Study Survey

Please mark the correct answer: *Answers are for demographic purposes only*

Age:____<49 ___50-59 ___60-69 ___70-79 ___80-89 ___90-99 ___100+
Gender:____Male___Female___Prefer not to answer
Race:____White_____Black/African American ___Latino or Hispanic ___Asian
___Prefer not to answer_____Other (*specify*)_____
Annual Income:____Less than $25,000 ___$25,000-$50,000 ___$50,000-$100,000
___>$100,000 ___Prefer not to answer
Current Transportation *(mark all that apply)*:____Bus____Paratransit Services___Taxi/Uber
___Volunteer Driver/Transportation Program ___None ___Other: _____

The following definitions are utilized for this survey:

- **Engagement**=being involved or participating in something
- **Meaningful activities**=activities that are important or have value to you (e.g. cooking, shopping, going to church, visiting with friends, etc.)

Engagement in Meaningful Activities Survey

Below is a list of statements about your day-to-day activities. Choose the answer that **BEST** describes **to what extent** each statement is **true** for you. *(Mark only 1 answer per statement)*

Statement:	Rarely 1	Sometimes 2	Usually 3	Always 4
1. The activities I do help me take care of myself.				
2. The activities I do reflect the kind of person I am.				
3. The activities I do express my creativity.				
4. The activities I do help me achieve something which gives me a sense of accomplishment.				
5. The activities I do contribute to my feeling competent.				
6. The activities I do are valued by other people.				
7. The activities I do help other people.				
8. The activities I do give me pleasure.				
9. The activities I do give me a feeling of control.				
10. The activities I do help me express my personal values.				
11.The activities I do give me a sense of satisfaction.				
12. The activities I do have just the right amount of challenge.				
Column Totals				
Total Survey Score				

Please answer the following questions regarding your activity and Covid-19:

1. Since Covid-19, my activity/engagement level has:____Increased_____Stayed the same
___Decreased Somewhat ___Decreased Significantly ___Decreased Drastically

2. Describe any changes in your community mobility since the Covid-19 pandemic:

_____

_____

_____

Please answer the following questions without regard to Covid-19:

3. Have any of the following factors prevented you from leaving your home to go out into your community? *(Mark all that apply)*

___I do not have transportation ___I cannot afford to pay for transportation

___There is no bus service in my area ___I do not know how to arrange for transportation

___I am afraid to travel by myself ___I need assistance once I get to my destination

___I do not know what public transportation options exist in my community

___Other (specify)_____

4. Are there any locations in your community you have been unable to travel to because you did not have access to transportation? *(Mark all that apply)*

___Medical/Dental/Therapy Appointments

___Shopping/Grocery Store

___Pharmacy/Bank/Post Office

___Social Outing (friend/family's house, restaurant, movies)

___Religious Services

___Other (specify)_____

5. Describe any barriers or obstacles that interfere with your ability to engage/participate in meaningful activities? _____

Appendix C: NV Rides Cover Letter

(Cover letter included with mailed surveys to clients from NV Rides)

Cover Letter for survey with Belinda Alexander, Eastern Kentucky University

Dear Riders,

NV Rides is the coordinating arm for your local volunteer driving program. We are participating in a national survey to help determine if volunteer driving services help to improve the quality of life for riders. Your responses will be compared with results from older adults who do not have access to these types of transportation support programs.

The survey is 100% voluntary and is anonymous. We appreciate your willingness to participate. The goal is to encourage more communities to start volunteer driving programs similar to what we have here in Northern Virginia.

Many Thanks,

The NV Rides Team

Info@nvrides.org

703-537-3071

NV RIDES
A Network for Volunteer Transportation

Appendix D: Mount Vernon at Home Cover Letter

(Cover letter included with surveys mailed to clients from NV Rides who were overseen by *Mount Vernon at Home*)

Cover Letter for survey with Belinda Alexander, Occupational Therapist, and Eastern Kentucky University

Dear Riders,

Mount Vernon at Home is participating in a research survey with Belinda Alexander, Occupational Therapist and doctoral student at Eastern Kentucky University, to help determine if volunteer driving services help improve the quality of life for riders. Your responses will be compared with results from older adults who do not have access to these types of transportation support programs.
The survey is 100% voluntary and is anonymous. We appreciate your willingness to participate. The goal is to encourage more communities to start volunteer driving programs similar to what we have here in Virginia. Please return the completed study in the return envelope provided.

Many Thanks,

Dave Prescott

703-780-1154
ddpresc@cox.net