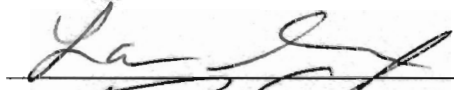
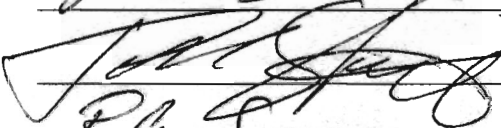

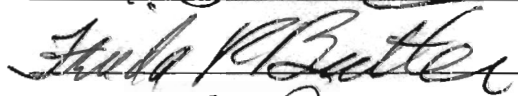
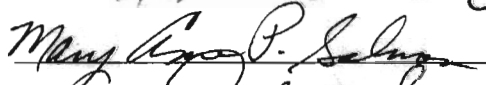
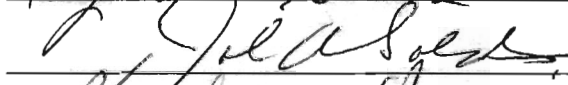
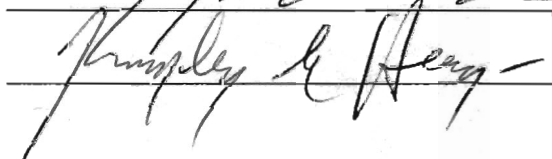


POLICY INTERSECTIONS OR POLICY CHASMS – STATE ELDER MOBILITY
POLICY, PRACTICE AND LONG-TERM CARE REFORM

by

Mary A. Leary
A Dissertation
Submitted to the
Graduate Faculty
of
George Mason University
in Partial Fulfillment of
The Requirements for the Degree
of
Doctor of Philosophy
Public Policy

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Policy Intersections or Policy Chasms – State Elder Mobility Policy, Practice and Long-Term Care Reform

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DEDICATION

This dissertation is dedicated to my family, especially, to my parents, Al and Barbara, and to my brothers and sisters: Barbara, Al, Tim, Monica, Steve, Pat, Therese, Maureen and Robert. Three people deserve special recognition, my Mother, Barbara for being our inspiration for what it really means to love and care for others; to my younger sister Maureen Rose (Leary) Morley who died of breast cancer in December of 2006 who was dedicated to God, to her family, to her friends, and to making every day special; and, finally, to my father, Al Leary, who died in December of 2007 and who taught me, by his example, that we must all try our best to contribute to making the world a better place.

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Abstract

POLICY INTERSECTIONS OR POLICY CHASMS – STATE ELDER MOBILITY POLICY, PRACTICE, AND LONG-TERM CARE REFORM

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George Mason University, 2008

Dissertation director: Dr. Laurie Schintler

This dissertation research assessed whether a relationship exists between state initiatives to increase elder mobility through transportation policy, planning and collaboration, and state long-term care reform. The policy domains of aging, long-term care and transportation are stove-piped; most federal programs and academic research delve deeply into each domain but seldom address the interrelationships between the three policy areas. Thus, this study sought to establish a baseline from which to begin cross-policy domain measurement between aging, long-term care and transportation. The study found a statistically significant relationship between state systems change in long-term care reform and state elder mobility policy, planning, and collaboration when both policy and practice are assessed: Over this 10-year period for every 10% increase in a state's level of elder mobility policy and planning, a state had a 1.5% greater shift in its level of Medicaid expenditures to home and community-based services (HCBS); when controlling for nursing home institutionalization rates. With U.S. long-term care

Medicaid spending in excess of \$93 billion in the United States in 2006 (Burwell, Sredl, & Eiken, 2007), a 1.5 percentage point change in long-term care Medicaid dollars to the more cost-efficient and consumer-preferred community-based care would equate to a shift of \$1.5 billion to HCBS.

This finding suggests that there is a relationship between state transportation coordination actions and increases in home and community based services, and that merit exists in drilling further into the relationships between elder mobility and long-term care reform. Policy domains can intersect; and in this case, evidence suggests transportation, aging, and long-term care do. Perhaps it is time to increase the level of policy focus on the essential role community transportation plays in Medicaid reform. Even as economic challenges intensify across communities, it may be important to consider investment in transportation infrastructure as an important enabler of community based care, rather than bow to short-term budget pressures.

Introduction – Policy Intersections or Policy Chasms?

This dissertation research assessed whether a relationship exists between state initiatives to increase elder mobility through transportation policy, planning and collaboration, and state long-term care reform. A premise of this research is that if a relationship can be found between these policy domains, then more effort is needed to understand their interdependencies. Key state demographic measures, risk factors for nursing home institutionalization, state Medicaid funding, and transportation coordination policy and transportation coordination actions are compared for the time period of 1995-2005. An index was derived to compare state levels of elder mobility through both transportation coordination policy and practice. Hendrick's (2003) concepts of public sector management reform in strategic planning and agency collaboration provide a contextual framework for this study since coordination is achieved through strategic planning. Chronic disease self-management is the theoretical construct for the study.

The hypotheses of the research are that a relationship exists between state systems change in furthering older adult transportation options – referred to in the study as elder mobility – and state systems change in shifting long-term care to the community. With Medicaid now the major payer of long-term care, the Centers for Medicare and Medicaid services are striving to move care away from institutions to the community for both cost efficiency and quality of life. If a relationship is found between systems change in elder mobility and long-term care reform, then ensuring access to transportation services may

be an important component of Medicaid cost reduction. Scholars have already documented the importance of continued access to transportation options for older adults' quality of life.

The unexpected growth of state Medicaid programs, mixed with the unprecedented increase in the number of persons over 65, is driving the need to reduce healthcare costs and stem the unintended consequence of Medicaid: that it is the major public payer of long-term care. The informal and formal costs of long-term care cause undue burden on families and society. Older adults can deplete life savings, and caregivers may struggle with balancing work and caregiving. Productivity in the workplace can be reduced when caregivers have to take time off to provide services such as transportation for older family members who can no longer drive or who do not have access to other forms of transportation.

Thus, the informal systems of care face challenges with the current lack of adequate community infrastructure for long-term care. Lastly and most importantly, older adults possess skills and experiences that enrich the communities and lives they touch, and their predominant choice is to stay in their communities. A number of characteristics influence this choice, including an older person's ability to adapt to chronic disease, level of functional ability, and the availability of formal and informal community services.

States are taking steps to further independent living by encouraging greater transportation options for older adults – often referred to as elder mobility. States can increase elder mobility through transportation coordination driven by legislative mandate,

state interagency collaboration, and state agency strategic planning – activities often regarded as gaining prominence as a result of public sector management reform.

With the importance of chronic disease adaptation through continued mobility and the impact of aging on state formal and informal systems, it is critical to uncover the interdependence of policy domains such as transportation, aging, and long-term care. This cross policy research is especially critical as states shift their focus to community-based approaches to long-term living. However, there are no agreed upon state level indicators that cut across formal and informal systems of care to provide a state level composite view of elder mobility.

Thus, this study sought to establish a baseline from which to begin this cross-policy domain measurement. The study found a statistically significant relationship between state systems change in long-term care reform and state elder mobility policy, planning, and collaboration when both policy and practice are assessed: Over this 10-year period for every 10% increase in a state's level of elder mobility policy and planning, a state increased its level of Medicaid expenditures for home and community-based services (HCBS) by 1.5%; when controlling for nursing home institutionalization rates. With U.S. long-term care Medicaid spending in excess of \$93 billion in the United States in 2006 (Burwell, Sredl, & Eiken, 2007), a 1.5 percentage point change in long-term care Medicaid dollars to the more cost-efficient and consumer-preferred community-based care would equate to a shift of \$1.5 billion to HCBS.

This finding suggests that there is a relationship between state transportation coordination actions and increases in home and community based services. Policy

domains can intersect; and in this case, evidence suggests transportation, aging, and long-term care do. Perhaps it is time to increase the level of policy focus on the essential role community transportation plays in Medicaid reform. As economic challenges intensify across communities, it is critical to not reduce investment in transportation infrastructure in favor of short-term budget pressures. Elder mobility may be one more essential element in reducing Medicaid costs, just as health promotion and disease prevention are now well regarded, today, as two of those essential elements. Independence cannot exist without mobility.

Research Problem and Hypotheses

Across the three policy domains of aging, long-term care and transportation, a number of trends suggest interdependencies: Vast increases in the number of older adults thus stressing demand for long-term care services; The cost-effectiveness and preference by older adults for community based long-term care; The possibility that increased transportation options increase access to community based long-term care for older adults; and The state systems change and leadership activities associated with transportation coordination and planning such as legislation and agency collaboration as an elder mobility multiplier.

To uncover whether these domains intersect, this dissertation sought to compare state actions to facilitate state elder mobility through transportation coordination policy and planning initiatives, and state success in rebalancing their long-term care systems in favor of home and community-based services. The context for this study is public sector management reform, especially strategic planning, coordination, and state agency

collaboration. Strategic planning is the underpinning of government management reform. The theoretical construct is older adult adaptation to aging health issues through chronic disease self-management facilitated by mobility.

It is hypothesized that states investing greater effort in driving state legislation for transportation coordination and furthering state agency collaboration on mobility options for older adults and their caregivers will also achieve greater success in long-term care reform though lower nursing home institutionalization rates for older adults with disabilities and greater percentages of Medicaid dollars being spent on home and community-based services, (controlling for key demographic and intervening variables associated with risk of nursing home institutionalization). It is expected that states with greater support for elder mobility will have more elders able to stay at home despite disabling conditions.

Older adults over 65 are the target population for this study for the time period of 1995 to 2005. The level of analysis is the state. The major data sources are state demographics, the myriad state infrastructure studies in transportation coordination policy and planning as well as the analyses of state long-term care systems by organizations such as AARP and the Lewin Group.

Key research questions are:

- Is there a relationship that can be established between state elder mobility policy, planning, and long-term care?

- Can the many studies profiling states across these different policy domains be synthesized to uncover related long-term care and transportation-associated factors?
- Is transportation system reform an important component of long-term care system reform?
- Is it plausible that increased transportation choices equate to lower rates of nursing home institutionalization for older adults through greater access to home and community-based services?
- Does increased elder mobility help stem the rise of Medicaid costs through greater availability of cost-efficient community-based care vs. institutional care?
- Does greater interstate agency collaboration on behalf of elder mobility result when states enact transportation coordination legislation?
- Will any hidden factors arise in this 10-year time period analysis which may herald significant changes in rebalancing systems of long-term care?

Study Limitations

One of the strengths but also one of the limitations in this effort is the integration of information from two systems, state transportation and state Medicaid long-term care systems. This limitation is due to previously noted lack of consistent state level indicators in the area of older adult transportation and mobility as well as the possible difference in terms of how transportation and long-term care data is derived, compiled and analyzed. The literature search revealed that most research to date has rested firmly in either area, and is seldom combined. This presents opportunities for contribution but also margin for specification or model error. Though attempts were made to account for this fact by using multiple indices from multiple data sources, the complexity of the topic could result in a number of unexpected findings or potentially invalid assumptions.

This study required the use of proxies that have not yet been agreed upon to measure elder mobility. The proxies are state level efforts that represent policy and practice actions that are widely believed to be effective in expanding older adult transportation services. These proxies are state transportation coordination legislation, state agency elder mobility strategic planning and state agency collaboration. The proxies were derived from other scholars' surveys and analysis and combined into a new index. This index is offered as one answer to this complex measurement issue, but it could be elaborated upon after this first step in cross-policy analysis between systems change in older adult transportation and long-term care reform.

Additionally, if a relationship is found between these two policy domains, other intervening factors could account for it such that the issue of causality really cannot be addressed in this study. At best, a positive correlation and statistically significant result will demonstrate a reason for continued analysis, research and possibly greater focus on the development of state system level measures.

The role of family caregivers in these outcomes is another area that is not well controlled in this study. There is a lack of reliable and consistent measures for the level of family caregiver involvement; especially in how that involvement affects elder mobility. Thus, future research is needed to effectively control for this effect. In addition, the time lag and issue of leading and lagging indicators relating to public transportation infrastructure development and home and community based services are difficult to address and may require future time series research and methodological refinement.

Summary

This research should contribute to the body of knowledge regarding state system level assessments of elder mobility policy and practice and their relationship to state long-term care reform. System level measures are needed to illuminate possible interdependencies between community-based long-term care and those related services that effect access to care, such as transportation. Given the economic and demographic realities facing states, it is hoped that piloting this process to develop cross policy domain system level measures will contribute to the development of a useful model. With the financial challenges facing states and the difficulty facing policy makers in choosing the right programs and allocating the right

levels of financial investment, researchers must provide better tools to help decision makers weigh their options. It is critical to find out how essential services such as transportation affect home and community based living. Knee jerk reactions based on short-term cost cutting could create even greater problems over the next twenty years as the ranks of older adults expand to unprecedented proportions. However, state and federal leaders, in the absence of good data to help them understand the intersections of these policy areas may make well intentioned blunders that will only be evident ten to twenty years down the road.

The development of a more integrative model for the efficiency and effectiveness of state elder mobility efforts that takes into consideration individual and system-level impacts in long-term care could have significant implications for state Medicaid programs and budget priorities. States are facing many fiscal challenges with costs associated with increased populations of older adults. Families are also facing challenges to ensure that mothers, fathers, grandparents, and older friends have access to a care model that provides an opportunity for continued participation in the community. Many are searching for solutions and need better answers.

Older adults with chronic diseases face greater financial challenges, greater possibilities for increased disabilities, and a need for more cost-effective long-term care. The goal of this research is to assess a possible association between the domains of transportation, aging, and long-term care. If an association exists between these domains, then ensuring transportation options exist for older adults may be

another critical element of community infrastructure to decrease state Medicaid costs while increasing capabilities for older adult independence through enhanced mobility.

Background—The Importance of Elder Mobility
to Long-Term Care Reform and Medicaid Costs

“Individuals, policy makers, and business must think beyond health and retirement to include those services and supports that are the infrastructure of daily living. Examples include communications, housing, centers of learning, community design, community service delivery, a reengineered workplace, and transportation.

To meet the needs of an aging society, most, if not all of these will have to be modified.” (Coughlin, 2001, p. 1)

A Demographic Imperative

The statistics are compelling and the reality is undeniable: Never before have so many people lived so long. By 2030, the U.S. population of adults over 65 is expected to be in excess of 70 million, over twice today’s over-65 population, and persons over 85+ will double from 5.3 million in 2006 to 8.9 million in 2030 (Administration on Aging, 2008). The number of persons 65 and older has doubled since federal programs associated with services for the elderly, such as Medicare, Medicaid, and the Older American Act, were enacted. There are significant potential effects from this demographic shift on states, the federal government, and the people they serve (Stearns et al., 2004; Coughlin, 2001; Burkhardt, 2002; Rosenbloom, 2004).

Medicaid - a joint federal and state-financed program providing acute and long-term care services to children, parents, people with disabilities, and older adults - is particularly affected by these demographic shifts, and states are struggling to react. Holahan and Weil suggest that “states probably cannot continue to support Medicaid as well as other priorities, such as infrastructure and education. Some fiscal

relief needs to be part of any serious federal Medicaid reform effort” (2007). Other state areas, such as transportation, may also be impacted by this shift of dollars to Medicaid at a time when many states do not have enough transportation services to meet the needs of older adults (General Accountability Office, 2004). However, states are making progress in needed reforms. States are increasing investments in community-based long-term care systems – systems, designed to care for individuals who have difficulty with activities of daily living and often require assistance with tasks such as bathing, dressing or preparing meals, that are available in the community. By 2005, community-based care expenditures for Medicaid accounted for 37% of Medicaid spending, almost double that of Medicaid spending in 1991 (Shirk, 2007, p. 2).

Our major federal social policies affecting services for older adults, especially Medicaid, began under different premises than exist today in terms of demand, supply, and cost. The Centers for Disease Control (CDC) suggests that:

Improved medical care and prevention efforts have contributed to dramatic increases in life expectancy in the United States. . . . They also have produced a major shift in the leading causes of death for all age groups, including older adults, from infectious diseases and acute illnesses to chronic diseases and degenerative illnesses. Currently, about 80% of older Americans are living with at least one chronic condition (Centers for Disease Control and Prevention and the Merck Company Foundation, 2007, p. iii).

Increased incidence of chronic disease and longevity will further stress Medicaid as more people require long-term care services – services outside of the

acute care covered by Medicare. Medicaid spending on long-term care services in FY 1999 totaled \$62.4B (Doty, 2000, p. 2). Just 7 years later in government fiscal year 2006, Medicaid long-term care spending rose by 59% to \$99.3 billion (Burwell, Sredl & Eiken, 2007).

Long-Term Care Reform

In 2005, the National Governors Association released a preliminary report noting the need to reform Medicaid:

Comprehensive Medicaid reform must focus both on reforming Medicaid and on slowing both the number of low-income individuals and elderly becoming eligible for Medicaid.

Medicaid will always have an important role as the health care safety net, but other forms of health care coverage must be strengthened to ensure Medicaid's financial sustainability.

Enhancing the quality of care and containing costs are also critically important. Governors believe that Medicaid reform must be driven by good public policy and not by the federal budget process (2005, p. 1).

Significant efforts are underway to reform long-term care and stimulate increased infrastructure for home and community-based care. Consumers and advocates won major victories with the 1990 Americans with Disabilities Act (ADA) and the Supreme Court's 1999 *Olmstead* decision in terms of mandating that people with disabilities of all ages had a right to services in the community. *Olmstead* interpreted the ADA in a way that affected the Medicaid institutional bias, "finding

that institutional isolation is discriminatory and illegal under the ADA” (Kaiser Commission on Medicaid and the Uninsured, 2004, p. 5). Older adults who acquire disabilities as a result of chronic disease benefit from the protections of the ADA. The ADA stimulated the growth of programs, such as President George W. Bush’s New Freedom Initiative that “promotes community living for seniors and people with disabilities by coordinating existing resources and modifying policies to create incentives for community integration” (Shirk, 2007, pp. 4-5).

Shirk (2007) suggests that movement toward “rebalancing” or achieving “a more equitable balance between the proportion of total Medicaid long-term care expenditures used for institutional services and those used for community-based supports” is being created on the heels of state innovations in long-term care reform (p. 4). Long-term care services that help older adults with disabilities or debilitating chronic disease remain in their home involve a host of different services. These services include assistance with household chores/errands, personal assistance services, meals, adult day health services for caregiver respite, financial services, case management, information and referral, and various types of transportation.

Transportation services ensure that older adults with mobility challenges can go to church, social functions, senior centers, medical appointments, grocery stores, and other activities essential for healthy aging in the community. Since transportation services for older adults encompass what is now commonly termed a family of services and is intricately linked with the concepts of elder friendly community environments, the term mobility is used in this study. A system level state analysis of transportation must actually be one of elder mobility as many different agencies and

actions affect whether people with mobility impairments can get where they need to go when they need to get there.

Elder mobility refers to the host of elements in a community that enable an older adult to remain involved and mobile. Elder mobility enhancement by a state can include public transportation; Support for specialized older adult transportation to older adult services; Medicaid nonemergency transportation; ADA complementary para-transit; Volunteer driving programs; Driver continuation programs; Walkable, scooter and wheelchair accessible communities; And the safe signage, bus stops and other elements necessary for both drivers and nondrivers to easily navigate a community where all modes of transportation are safe, coordinated and available.

However, each one of these areas and other home and community based services have distinct best practices, are extremely varied in the way states implement them, and there is a challenging interplay between formal and informal systems in terms of the delivery of such essential supports. Sometimes the varied approaches and options in the delivery of community based care can confound and confuse the best intentioned state and local leaders. Though policy makers struggle with choices, cost, legislative and regulatory approaches to community-based long-term care, action is necessary. The demographic and economic realities of today have a trajectory requiring continued effort by all levels of government to find better answers to enhance community-based long-term care.

Transportation—A Critical Home and Community-Based Service

In 2005, Congress and the president began the process of codifying changes to Medicaid to increase the ease at which states can experiment with home and community-based approaches to long-term care (Holahan & Weil, 2007). However, it is difficult to assess the results of these changes across the continuum of services considered a part of community-based long-term care. Often, the services receiving the most attention and discussion are those directly associated with healthcare. Literature reviews and searches in a number of public policy databases for this dissertation showed that services, such as affordable and accessible transportation and housing, though recognized as important, are the second tier of focus in Medicaid reform. Predominant in the literature are discussions centering upon patient assistance services, preventative care, and healthcare costs.

As care moves to the community, other major programs, such as the Older Americans Act administered in the Department of Health and Human Services by the Administration on Aging (AoA) and transportation programs for the elderly managed by the Federal Transit Administration (FTA), stand to gain prominence. The Older Americans Act “provides the foundation for most community care services in this country” (Cox, 2005, p. 60). With regard to transportation, FTA and AoA have been working to coordinate and facilitate access to transportation services for the elderly and individuals with disabilities (Cox, p. 69). Additionally, movement of care from institutions to the community increases the importance of supporting caregivers.

Currently, Medicaid pays for nonemergency transportation while Medicare pays for emergency transportation—usually ambulances to hospitals. All other state transportation services are funded by federal, state, or private sources, including

Older American's Act Title IIIB programs, FTA 5310 programs, matching funds from states, nonprofit contributions, and fee-for-service for those who can afford it. Medicaid is the major payer of nonemergency transportation services: "Medicaid non-emergency transportation represents the largest state and federal investment in human service transportation. It dwarfs social service transportation efforts. . . ."

(Koffman, Raphael, & Weiner, 2004, p. 33).

Transportation services in a community intersect across a sometime bewildering environment of regulation, planning and local ordinances. A host of movements exist today to address the community planning elements that affect the use and availability of transportation services for older adults, including safe driving continuation. There are differences in the types of challenges various communities face depending upon whether they are urban, rural, suburban or frontier. States with a higher concentration of rural counties have different challenges than states with large urban populations. Since elder mobility is linked closely with the community environment in terms of accessible bus stops, transit and elder friendly street/highway signage, a study of transportation modes must seek to understand collaboration across highway, transit, aging, motor vehicle administration and social services programs serving the needs of older adults.

Transportation Coordination Policy, Planning, and Long-Term Care Reform

Demographic realities underscore the need for more transportation services (Coughlin, 2001; Rosenbloom, 2004). If long-term care reform is to succeed, transportation services availability must increase. On July 1, 2004, the National

Governors Association announced three key state actions to promote independence for older adults, and their first suggested action suggests an increased focus on more efficient and accessible public transportation. Accessible public transportation refers to transportation services that can accommodate the diverse mobility needs of people who have visual, hearing, cognitive or ambulatory impairments. As people live longer, more demands will be placed on public transportation to be efficient and responsive to older adults' evolving needs (Burkhardt, 2002).

Some suggest that the answer to the problem of unmet need for transportation services is for the federal government to reduce barriers to state coordination of transportation programs for older adults, individuals with limited incomes, and individuals with disabilities to gain economies of scale (GAO, 2003 & 2004). In TCRP Report 91, Burkhardt says coordination can create efficiencies, leverage economies of scale, reduce operating costs, enhance mobility and “offer more visible transportation services” (Burkhardt, 2003, p. 20). Stanfield and others suggest that the increased population of older adults will require increased coordinated transportation, among other programs (Stanfield, 1996; Coughlin, 2001; Burkhardt, 2002).

One possible outcome area for exploration in transportation coordination is its relationship to facilitating community-based long-term care. With the overarching desire of older adults to age in place, and the fact that “States and federal government also view community-based services as a way to control Medicaid long-term care spending” (Shirk, 2007, p. 2), state policies that enhance elder mobility could prove to be critical choices in reducing Medicaid costs. If transportation services help older

adults to live in the community, even if they need some level of long-term care, then it is possible that transportation coordination as a transportation service multiplier may facilitate community based long-term care. Since to date there are no agreed upon indicators for state levels of older adult transportation services, one method to achieve a systems level state analysis is to study the level of state legislation and activities associated with increasing elder mobility such as transportation coordination, strategic planning and state agency older adult transportation services collaboration. Due to its possible relationship with community based long-term care, state elder mobility actions may help to reduce Medicaid costs.

Doty notes, in her extensive literature review on the cost-effectiveness of home and community-based care, that some methods to ensure budget neutrality are greater targeting to those most in need, limiting benefits and the use of managed care (Doty, 2000). The average per capita spending differences between HCBS and institutional care are striking; in 1999, Ladd found that the 1995 average per capita spending for clients receiving HCBS was \$485/month vs. \$2,426.14 average per capita cost for a Medicaid-covered nursing home resident (Doty, 2000, p. 6). Given the possibility for cost savings through a community based approach to care, any ancillary service, such as transportation, must have some enabling characteristic to community based long-term care.

Policy Importance of State Elder Mobility and Long-Term Care Reform

The policy importance of elder mobility and long-term care reform relates to how states should prepare their communities to facilitate healthy aging, and prioritize expenditures. As an example, Medicaid costs fluctuate, often in unbudgeted state

expenditures. In 2001, state Medicaid costs were 9% greater than budgeted costs, a \$1.3 billion difference (NASBO, 2002). States made progress in addressing rising Medicaid costs from a high of 12.4% in 2002 to a record low of 2.8% in 2006 (Brodt, A., Burton, A., Cohn, D., Cox, B., Folsom, A., Friedenjohn, I., Martinez-Vidal, E., & Trinity, M., 2007). Yet, challenges remain:

Like other programs that serve the elderly, Medicaid is likely to face sharp spending increases as a result of population aging. While future costs might be affected by changes in disability rates, service innovations, or other trends, growth in the sheer number of elderly people is likely to mean a steadily rising burden. And the costs will be borne by fewer working people.

(Merlis, 2004, p. 1).

Heller suggests that “time is ticking away to solve long-term fiscal challenges posed by aging societies, climate change and other problems” (Heller, 2003, p. 36). As an example, state spending changes by funding source from fiscal year 2002-2003 shows a decrease in transportation expenditures of 1.8% in 2001, while state Medicaid expenses rose by 11.4% from 2001 to 2002 (NASBO, 2003). Here the stove-piped nature of transportation and long-term care pose a possible problem: transportation is an infrastructure and investment based area where cost-cutting or lack of investment will show longer term results. Yet, Medicaid costs pose an erratic budget challenge as an entitlement highly dependent upon a host of factors. If Services such as transportation become critical components of the home and community-based supports necessary to stem rising Medicaid costs, the effect of a lack of investment may not be visible until it is too late. Rising state Medicaid

expenditures with commensurate downturns in transportation spending may eliminate opportunities for the type of possible positive impact transportation services investment may have on community based long-term care.

The informal systems of care are also bearing increased costs in long-term care. The burden of caregivers and the impact that it has on business productivity further magnify the need for states to address services such as transportation that are so reliant on caregiver assistance. A recent study notes that over 7 million caregivers are working full time and providing intensive care at an annual estimated productivity cost to employers of between \$17.1 billion and \$33.6 billion (Metlife, 2006). As more and more individuals become caregivers, a rational expectation is that businesses will only see these costs multiply given the growth in the older adult population - especially for those over 85 who are at increased risk of disabling chronic conditions.

Thus, when accounting for the impacts on both the formal and informal long-term care system, policy efforts by states to increase elder mobility are very important as one element to expand access to community-based long-term care support systems. However, the actual value of policy initiatives in this area has not been quantified. After 4 years of researching senior transportation and long-term care, it is still clear that a void exists within the realm of policy outcome assessment for state elder mobility policy and any relationships that may exist with these policy initiatives and long-term care reform. Consistent measures for older adult transportation access and mobility do not exist. Not only is there difficulty within the transportation domain in terms of indicators, there is also a gap in terms of cross-policy indicators that help to

assess any possible relationships between community based long-term care and complementary services such as transportation.

The Administration on Aging categorizes a number of useful indicators across all of their service areas; however, this is only one snapshot of the various programs focused upon increasing transportation options for older adults. On the other hand, there is great attention focused on long-term care indicators and variables. Many studies exist and measures abound, though with certain variables such as rural, poverty and disability levels, there historically was a lack of agreement thus, currently, there is a problem with availability of longitudinal data. Yet, it is very possible to find a number of useful studies with consistent system level measures for state long-term care reform going back almost thirty years, especially with levels of nursing home institutionalization and the movement of funding from institutional to community based care. These same system level measures do not exist for elder mobility, accessible transportation or human services transportation. Intuitively, many feel there must be a relationship between healthcare and access to transportation resources, yet despite Medicaid's major role in the provision of NEMT, available and consistent comparative state measures are not readily available.

Literature searches reveal that scholars in the field of elder transportation fairly consistently refer to the importance of transportation and healthy aging; However, long-term care reform literature does not often emphasize community supports outside the more traditional health and nutrition services areas. As an example, Greene and colleagues suggest that increased availability of community services reduces nursing home use (Greene, Lovely, Miller, & Ondrich, 1995);

However, the need for transportation services as part of this system is not mentioned.

Yet, when aging professionals compile their state plans through community forums and surveys, transportation services availability is always one of the top areas of concern.

Literature Review

Introduction

Many different avenues of exploration were accomplished as part of this dissertation process. One of the most challenging was finding those pertinent and discrete areas of inquiry required to combine the policy domains. The decision was made to narrow the literature review to three major areas: Long-term care reform, the relationship between elder mobility and health and how states are seeking to expand elder mobility. Other interesting areas abound such as community planning, the role of innovation diffusion and the inter-relationship between innovation in one policy area and innovation in another. As part of the inductive process of this study, over three major regression analyses were done including one that analyzed whether a relationship existed in innovation diffusion across states and regions in transportation coordination. However, in the end, it was decided that all of these areas would dilute the major goal to find a model that integrates the policy domains of aging, long-term care and elder mobility.

Therefore, the focus of this literature review is threefold: To establish the critical indicators for a system level assessment of long-term care reform; To establish a link between mobility and health since healthcare cost reduction and promoting older adult health are key areas of policy focus today in long-term care; And, finally, how states are seeking to enhance elder mobility in order to develop a set of indicators for an elder mobility systems change.

Chapter 1: State Long-Term Care Reform

“The need for Medicaid programs to coordinate with other service sectors has grown, especially with efforts to increase use of community versus institutional services, including transitioning individuals from institutional to community care.”
(Kasper, Lyons, & O’Malley, 2007, p. 2)

Introduction—Elements of Long-Term Care

In 1985, Wilner published a comprehensive study in her dissertation “Predictors of Outcomes Among Frail Elders Receiving Home Care for One Year.” Many barriers exist as states seek to shift long-term care to communities, not the least of which is felt by families:

The burden on families of caring for an infirm older relative can be enormous. The costs are high—both emotionally and financially. Medicare’s contribution to home care is negligible. Those eligible for Medicaid often find that the government will not reimburse for a sufficient number of hours or diversity of services needed for careful maintenance at home. Families caught above the Medicaid limits, but without substantial financial resources, cannot afford to purchase adequate formal at-home care. (Wilner, 1985, p. 3)

This difficulty for families in caring for infirm older loved ones discussed by Wilner illustrates one of the most difficult issues facing policy makers and families.

On the one hand the already overly financially stressed formal care system of Medicaid has little room for increased costs. Yet, families' resources are being stretched as they bare an increased cost to provide those services not available to them from the formal system. One of these areas is transportation services. There are both formal and informal systems associated with the provision of older adult transportation depending upon many factors some of which are whether someone is Medicaid eligible, whether a service is a Medicaid service, the availability of transit options in a community for older adults and whether an older person has access to an informal support system or caregiver.

Thus, in order to examine the role transportation services play in long-term care, it is important to assess the elements associated with long-term care and their relationship to transportation. There are formal and informal elements. Formal elements relate to Medicaid and other federal/state-funded programs that pay for some transportation services. Informal elements relate to caregiving and the assistance family and friends give to older loved ones with chronic illness. In both instances, formal and informal, the costs are staggering and growing. Additionally, transportation is considered a supportive service, with healthcare taking center stage, often reducing services like transportation to the sidelines - yet transportation access is essential for many aspects of community living. Lastly, formal and informal systems of care are not integrated in their provision of essential transportation services, resulting in fragmented accessibility for those with disabling conditions who want to remain independent and out of institutional settings. Any attempt at long-term care reform must address cost control and accessibility.

Medicaid Transportation

Medicaid pays for nonemergency medical transportation services (NEMT) services and:

Federal regulation 42 CFR 431.53 requires all States that receive Federal Medicaid funds to assure transportation for Medicaid beneficiaries to and from medical appointments. . . . States can elect to claim Federal reimbursement for Medicaid non-emergency transportation as either an optional medical or administrative expense. . . . States that claim non-emergency transportation services as an optional medical expense are reimbursed for transportation expenses at State's federal financial participation rate for medical expenses—50 to 83% of their medical expenses. States that claim non-emergency transportation services as an administrative expense are always reimbursed at the administrative rate of 50% of their administrative expenses. (Office of Inspector General [OIG], 1997, p. 1)

The OIG report makes several other important distinctions in the provision of Medicaid Transportation Services. If a state elects to provide transportation as an optional medical expense, it has to make direct payments to transportation services providers and give the beneficiary a right to choose his or her transportation provider. If a state utilizes an administrative expense method, it does not have to give a beneficiary a choice of providers.

Costs for these services are growing, and the OIG above-noted report estimated cost growth of 10%, with a total 1995 cost of approximately \$1 billion; or

1% of all Medicaid program costs; states are seeking ways to reduce costs and are scrutinizing NEMT claims. One OIG recommendation was that states implement Medicaid Transportation Brokerage Systems to help reduce NEMT. Through a brokerage, a beneficiary contacts the broker for medical transportation. The broker determines if the request is eligible for Medicaid NEMT. The broker determines the most cost-beneficial way to provide transportation and then contracts with a transportation provider to furnish the service. This report stated that some states such as Washington State found significant cost savings through brokers. However, until recently, states needed to obtain a waiver from Medicaid to provide brokerage services.

A 2007 dissertation by Kim assessed the impact of implementing Medicaid brokerages in Kentucky and Georgia on Medicaid beneficiaries' access to care. Lack of transportation access as a barrier to care and "that lack of appropriate transportation is more likely to increase the use of unnecessary ambulance and expensive emergency room services" (p. 4) were some of Kim's findings noted in the dissertation literature search. Specifically, she cited works by Arcury, Gesler et al. (2005); Johnson and Rimsza (2004); and Wilson and Jonathan (2000):

When transportation to clinics is not easily available, health care use for regular check-ups and chronic care is less likely to be made and the visits to an emergency department is more like to become a primary source of care (Kim, 2007, 5). One of the target populations of Kim's study was older adults with diabetes: "Transportation brokerage services were associated with changes in Medicaid expenditures and health services use. The expenditures for non-emergency medical

transportation services showed a statistically significant decrease among transportation users and adults with diabetes . . .” (Kim, 2007, p. xii).

Recent Medicaid reform initiatives have reinforced the efficacy of Medicaid transportation brokerages and made it easier for states to implement them. The most recent major Medicaid reform to date is the Deficit Reduction Act of 2005 which made a large number of changes across many areas of the program (Rudowitz & Schneider, 2006). One provision of the act announced in a Centers for Medicare and Medicaid Services (CMS) March 31, 2006, guidance document to State Medicaid Directors noted:

The law has now been changed. States are no longer required to obtain a section 1915(b) waiver in order to provide NEMT as an optional medical service through a contracted broker. Under new section 1902(a)(70), a State may now use a NEMT brokerage program when providing transportation as medical assistance under the State plan. Brokerage programs may include wheelchair vans, taxis, stretcher cars, transit passes and tickets, and other transportation methods. NEMT brokerage programs must be cost-effective in order to comply with section 1902(a)(70), and States must select NEMT brokers through a competitive procurement process (CMS, 2006, p. 1).

This change to DRA demonstrates that some regulatory barriers associated with providing states greater flexibility to develop home and community based services are being removed.

Reform Principles—Reduce Cost, Increase Access, and State Variation

The essence of Medicaid reform is reducing costs and increasing access to services, and states have been experimenting with methods to rebalance care in favor of community-based solutions. Several federal grant programs have focused on major structural or transformational changes to help this movement to community-based long-term care. Two of these programs are the Real Choice Systems Change (RCSC) and the Aging and Disability Resource Center (ADRC) grants with over \$243 million in RCSC grants dollars released to states since 2001 and averaging \$4 million per state (Shirk, 2007). Several ways these grants seek to increase access to community-based care is by streamlining eligibility and single points of entry - key features of the joint CMS and AoA ADRC program (Shirk).

Other calls for Medicaid and long-term care reform eschew the strong state variation in coverage and benefits suggesting that structural problems in Medicaid put “strains on states’ ability to cope with rising costs” (Holahan & Weil, 2007, p. 254). State variation in Medicaid and state importance as a source of access to healthcare and long-term care are pervasive in the literature. Some suggest this state variation and long-term care reform decisions are influenced by state politics (Wiener, Stevenson, 1998. Miller, Harrington, & Goldstein, 2002).

Holahan, Weil, and Wiener claim the debate regarding state variations in healthcare is rooted in our federalist system:

Financing for health and long-term care for low-income Americans

is a joint federal and state responsibility. The states assume major financial and administrative responsibilities while the federal government provides substantial funding and oversight. How to balance these responsibilities has been debated for decades. Controversy over state and national roles in health policy mirrors broader debates over federalism that trace their roots to the founding of the United States. For philosophical reasons, some view states as the appropriate locus of authority to reflect local values and priorities. Others prefer a strong national role to achieve national objectives and, as the U.S. Constitution says, “to promote the general welfare.” Theories of public choice and public finance also shape views of federalism. To some, a strong state role encourages competition to develop the best and most efficient policies. Others argue for a stronger federal role because income redistribution is best carried out at higher levels of government and because interstate competition can lead to a race to the bottom as states cut programs for the poor so they can lower taxes to attract businesses and high-income taxpayers. (Holahan & Wiener, 2003)

This duality between the role of the federal government and the role of states in the U.S. healthcare system causes inherent conflict between the autonomy of states and the regulatory role of the federal government to set appropriate standards. Because of our federalist system, State Medicaid and other social services programs greatly vary. Any

assessment of reform must take into account state elements—the political realm, the management realm, state diversity in key demographic variables—and utilize state system level outcomes. such as cost and access to community-based care.

Formal and Informal Systems of Care

Stone writes that older adults receive long-term care in their home or by living with a relative (2000). In 1995, 57% of persons needing long-term care were persons over 65 (Stone). Her article includes a chart developed by Komisar et al. regarding functional limitations: for those over 65, 12% are community residents with functional limitations, 5% were nursing home residents, and 82% were other community residents (Stone, 2000, p. 6). The need for long-term care vastly increases with age whether long-term care is provided in the community or in an institution with almost 5 times more 85+ individuals receiving long-term care at home vs. those 65-74 years old, and 18 times more 85+ individuals receiving long-term care in institutions vs. those 65-74 years old (Stone).

A major contention of Stone's above referenced article is the critical importance of informal systems of care provided by friends and family to elderly persons with disabilities. One of her key points notes: "Medicaid will continue to be the primary source of public funding for long-term care, perpetuating wide variation in long-term care options available to elders with disabilities from state to state" (2000, p. 51). One of her additional recommendations is the need for policymakers and providers to better integrate and coordinate service.

But, while the literature is extensive on the formal and informal costs associated with long-term care as well as the state variations in Medicaid, these discussions often skirt issues associated with services such as transportation. Housing and assistive technology are on the fringes of the debate, while the use of information technology to increase healthcare transparency is becoming a major area of policy focus under the leadership of Department of Health and Human Services Secretary Michael Leavitt.

At the national level, today's dialogue on cost containment and long-term care financing reform highlights the lack of public knowledge regarding actual costs of care with only approximately 20% of Americans 45 and older able to estimate the actual average cost for common long-term care services (AARP, 2006). The national dialogue has also recently centered upon the importance of long-term care insurance, which currently has many variations, some of which will cover medical transportation. Long-term care insurance is viewed as part of an important move to create better public/private partnerships. Such partnership serve to address the growing crisis of long-term care costs in the United States, especially as more boomers swell the ranks of the 65+ and as fewer caregivers are expected to be available to help them (Feder, Komisar & Friedland, 2007).

In their highly publicized report regarding policy options for the future of long-term care Feder, Komisar and Friedland share Georgetown University Health Policy Institute data that only 8% of community care in the home is formal, 76% is informal care, while 14% is both formal and informal (2007). The study discusses "Why is the Medicaid Safety Net inadequate"; Referencing that in 2005, Medicaid

paid for almost 50% of all long-term care expenditures (Feder, Komisar & Friedland, 2007, p. 35).

If movements and policy proposals field suggestions of increased public/private partnerships, transportation services will need to be an important part of these services' portfolios. Yet, transportation, like many ancillary community services, is not a major area of focus of most long-term care policies. With the lack of knowledge that most people seem to possess regarding actual long-term care costs, most purchasers of long-term care insurance may not know the right questions to ask in acquiring a long-term care policy – as in the case of whether or not the policy supports certain community-based services such as transportation. Additionally, as is true today for Medicaid, current formal transportation programs do not pay for trips to the grocery store or visits to family and friends. Programs supported by the Older Americans Act and other federal and state programs will pay for different types of transportation services; However, these funds are often quite limited given the potential demand for them.

The Importance of Caregivers

Much has been written about caregiving, and most community care for dependent relatives is provided by family members (Cox, 2005). The economics of caregivers' long-term care investment is staggering. The Congressional Budget Office (CBO) estimates that when accounting for informal care (care given by caregivers), Medicaid covers only 22% of spending while informal care contributes 36% of long-term care spending (2004, p. x). Stone estimates the cost of this care at between \$45 billion and \$94 billion (Cox, 2005, p. 110).

One randomized trial on formal and informal community care and nursing home use found that the most significant enabling predictor of nursing home admission was the gender of the primary caregiver, with the odds of entering a nursing home two times greater for subjects whose primary caregiver was male vs. female (Jette, Tennstedt, & Crawford, 1995). There was also an important association between future nursing home use and the level of personal burden felt by the primary caregiver.

States continue to experiment with ways to ease burdens on caregivers, one of which is consumer-directed care often called “Cash and Counseling.” Cash and counseling, a demonstration program begun in 1990 (Spillman, Black, Ormond, 2007) is when “consumers receive a monthly allowance with which to hire workers—including relatives” (Foster, Brown, Phillips, & Lepidus Carlson, 2005, p. 475). In another randomized trial, caregivers of care recipients who had the ability to direct their own personal care had less strain, were less likely to feel burdened, and their care recipient used one less hour of care per day (Ibid). Consumer direction in the form of what is now called *individual budget options* is a provision in the Deficit Reduction Act of 2005 to allow “for an expanded range of home and community-based services” in state Medicaid plans without a state acquiring a waiver (Spillman et al., p. 1).

As it relates to transportation services, scholars researching mobility trends document a strong reliance on driving for older adults—either driving themselves or being driven (Rosenbloom, 2004). For older adults with mobility impairments, this usually equates to a caregiver providing assistance, usually a family member or

volunteer. In one assessment of the 2002 Health and Retirement Study based on a sample of 2,748 adults over 65 living in the community with some level of disability, it was found that 6 out of 10 of these older adults received grocery shopping assistance (Johnson & Wiener, 2006).

All of these studies underscore one of the most difficult aspects of policy outcome and impact assessment for long-term care reform: the fact that long-term care functions in two distinct arenas, formal and informal, with informal care representing a significant part of this system. With most scholars suggesting that older adults utilize public transit less than 10% (Coughlin, 2001), this issue is even more significant in transportation services.

Rebalancing Toward Home and Community-Based Services

Long-term care reform is succeeding in shifting the balance of care to the community. From 1997 to 2004, spending as a percent of Medicaid home care grew by 12%, while Medicaid spending as a percent of institutional care dropped by 12% (Burwell, Sredl, Eiken, 2007). Alecxih found:

A quiet revolution in the manner in which we support our country's older adults has occurred over the past several decades. Consistent with their expressed preferences, the use rate of nursing homes on any given day for long-term custodial stays declined among older adults. While the population age 65 and over increased by 29 percent between 1985 and 2005, according to the National Nursing Home Survey, the number of older adults in nursing homes at a point in time increased only 10 percent. As a result, the use of nursing homes as a long term residence for older adults with disabilities

declined 14.1 percent—from 4.2 percent in 1985 to 3.6 percent in 2004.

(2006, p. 1)

What is most remarkable about Alecxih's data was evidence of a precipitous drop in the percent of those 85+ in nursing home, 7.2% percent from 1985-2004, which accounted for 70% of the 10.3% change in the overall percent of older adults over 65 in nursing homes from 1985-2004 (Alecxih, 2006). Reduced disability, greater resources, more alternatives to nursing homes, and increased role of private long-term care insurance are major factors associated with this change (Alecxih). Alecxih also credits active efforts by states using models such as the ARDCs to divert people away from nursing homes and to provide greater access to community-based services.

Summary

Long-term care reform seeks to move the location of care from institutions to the community. One of many differences in this approach is the importance of transportation services so care recipients and care providers can connect. Due to gaps in community based care and the provision of long-term care services – services not provided by Medicare or services that are not eligible for transportation under Medicaid – both informal and formal systems move-in the fill these gaps. Often family members, friends or volunteers assist older adults who cannot drive to get where they need to go.

This shift increases costs for transportation services both real and lost opportunity costs such as lost productivity from time off of work for caregivers. Additionally, older adults who can no longer drive find themselves dependent upon

others for this essential service. Many people do not fully comprehend the costs of long-term care and may not be planning appropriately for community based care for their older years. The good news is that there is a positive shift of resources toward community-based care. However, this shift has consequences that are beginning to be better understood such as the need for increased focus on safe mobility for older adults. In a seminal paper by leaders in the gerontology community, many of whom have advocated for and studied transportation for many years; cross-cutting themes associated with safe mobility emerged:

1. Safe transportation for older adults is important and necessary for them to stay connected and engaged in civic, social, and community life;
2. Older adults are different, each with their own unique needs, abilities and resources;
3. Research and focus on meeting the needs of older adult transportation will benefit young people with disabilities;
4. Improvements in roadway design and advanced technology may benefit everyone;
5. Finally, issues associated with safe transportation for older adults have many facets and requires an interdisciplinary approach.

(Dickerson, Molnar, Eby, Adler, Bedard, Berg-Weger, Classen, Foley, Horowitz, Kerschner, Page, Silverstein, Staplin & Stujillo, 2007)

Thus, for those who require long-term care, state long-term care reform efforts must also address system level issues associated with elder mobility.

Chapter 2: Elder Mobility and Health

“To the extent that the nature, potential, and prevalence of creativity in later life are misunderstood, then research, practice, and policies addressing the needs and potential contributions of older adults will suffer.” (Cohen, 2000, p. 21)

Effects of Aging on Mobility

Any goal to decrease healthcare costs for older adults has a higher probability of success with a holistic approach to factors associated with health promotion and disease prevention. One approach garnering much attention and positive results is the chronic disease self-management (CDSMP) model championed by Dr. Kate Lorig of Stanford University. Lorig has written many articles and participated in a number of clinical trials demonstrating the cost-benefit and increased quality of life patients experience when they use the CDSMP principles of self-efficacy; one article suggested a 1:4 cost savings ratio (Lorig, Sobel, Ritter, Laurent, Hobbs, 2001, p. 261). Scholars define chronic disease self-management as “a systematic intervention that is targeted toward patients with chronic disease.” (Chodosh, Morton, Mojica, Maglione, Suttrop, Hilton, Rhodes & Shekelle, 2005, p. 30) and is based on patient participation and self-management of their disease symptoms. By teaching self-efficacy, it “can help prevent or delay disability even in patients with arthritis, heart disease or hypertension” (AHRQ, 2002, p. 1). If a program teaches older adults to self-manage disease and is based on principles of self-efficacy, the program by definition is affirming older adult independence.

Scholarly literature across the health and transportation domains discusses the importance of older adult independence and health (Lorig & Holman, 2000; Agency for Healthcare Research and Quality (AHRQ) 2002; Coughlin, 2001; Stearns, Sussman, & Skinner, 2004). Training in CDSMP for older adults decreases health

costs and reduces disability for those persons who learn the model's principles of self-advocacy and increased self-sufficiency (AHRQ). Essentially, this model is about adaptation to chronic illness. Thus, CDSMP was selected as the theoretical context for this dissertation study - the inference being that accommodating age related changes that effect mobility can be considered chronic disease adaptations.

Older adults face aging-related issues that effect their ability to drive, especially visual, cognitive, and physical impairments (Owsley, 2004). Eyes have difficulty accommodating headlight glare, making night driving more challenging with some older drivers reporting driving cessation due to vision difficulty (Owsley). Decreased physical flexibility and strength make getting in and out of cars and twisting/turning to see in cars more difficult (Owsley). Some cognitive functioning changes related to judgment affect reaction time and speed awareness (Cobb & Coughlin, 2000). McNight (2003) suggests that aging affects: visual ability, attention ability, perceptual ability, cognitive ability, psychomotor ability, and physical ability. These physical, cognitive, and sensory changes result in special mobility needs for elders.

Interestingly, scholars find that many older persons self-regulate and adapt to their environment (Smiley, 2004). Smiley asserts, "Older drivers have a general awareness of their diminishing capabilities and make numerous appropriate strategic and tactical adaptations to compensate" (2004, p. 41). Safe driving and adaptation can be assisted by programs associated with older driver licensing which helps to stem:

. . . the top of the list of What Seniors Fear, ahead of cancer, stroke,

or loss of vision or memory was loss of ability to drive. To allay the fear, fair and effective licensing programs in the 21st Century must identify people who cannot safely continue to drive because of age related functional decline and assist them with a transition to alternative transportation. When capabilities instead of age become the criterion for licensure, the best possible outcome in the complex and often contentious area will be at hand. (Staplin & Hunt, 2002, p. 92.)

O'Neill and Dobbs feel "the interface between public health and the mobility of older people has been neglected" and that "much of the literature has concentrated on safety at the expense of mobility" (2004, p. 56). They suggest that the positive aspects of aging are underappreciated and that "the literature on aging and mobility could benefit from a greater emphasis on the beneficial aspects of aging, including wisdom, strategic thinking and less risk taking" (Ibid, p. 57). It is suggested that more attention be paid to diseases, assessment and remediation for common chronic illnesses such as neuropsychiatric, cardiovascular, vision, and metabolic disorders (Ibid, p. 63). O'Neill and Dobbs recommend specific driver remediation measures for illnesses such as depression, cardiovascular disease, and diabetes (Ibid, p. 63).

Aging changes that affect driving are significant since driving is the primary mode of transportation for elders: "Older Americans are now more dependent on the private car than at any time in U.S. history. For the last two decades, every automobile-related travel indicator for the elderly has increased, in terms of vehicle miles, licensing, daily trips, daily miles, time spent driving, and more. The use of

alternative modes has decreased” (Rosenbloom, 2004, p. 16). In Rosenbloom’s study of 1,300 older drivers, non-driving older people noted other people driving as their primary mode of transportation with forms of public transit such as buses hovering around 3% for most cohorts, except for 85 or older persons 11.5% of whom said they used buses for grocery trips (p. 18). Rosenbloom suggests that “to meet the needs of older people, a comprehensive strategy will need to be developed—one that encompasses all the substantive issues and links all the policy arenas that affect travel patterns of older people,” including driver training, driver evaluation, better-designed cars, better street signage, more user-friendly public transportation, better housing and land use design, more cost-effective delivery modes for both public and private services and “coordinated delivery of human and social services” (p. 20).

Chronic Disease and Mobility

Articles on older adults and age related mobility impairments show that many older adults are clearly adapting to changes they are experiencing due to aging and chronic disease. Additionally, there are programs that states can develop to help elders mitigate physical, visual, and metabolic changes. As states face larger populations of older adults, it is crucial to reduce costs and increase quality of life by assisting older adults to adapt to living with chronic diseases. Greater incidence of chronic disease can result in additional long-term care costs. Given the earlier noted challenges of state Medicaid budgets, increased chronic disease in older adults is very problematic: “Medicaid long-term care costs in 2002 were \$84.7B, or 34 percent of total expenditures. About half of Medicaid long-term care spending is for the elderly” (Merlis, 2004, p. 1).

Eighty percent of individuals over 65 have one chronic condition, and 50% have two (Centers for Disease Control and Prevention & the Merck Company Foundation, 2007). An earlier report noted similar findings, that 75% of older adults have at least one chronic illness with over 50% with two (AHRQ, 2002). The actual percentages of older adults with major chronic diseases are startling and vary by ethnicity:

- Leading chronic diseases for 65+ persons are high blood pressure, arthritis, coronary heart disease, cancer, diabetes and stroke;
- For whites, the top four chronic conditions are high blood pressure 50%, arthritis 49%, cancer 23% and coronary heart disease 22%;
- For non-hispanic blacks, the top four chronic conditions are high blood pressure 68%, arthritis 53%, diabetes 24% and coronary heart disease 17%;
- For Hispanics, the top four chronic conditions are high blood pressure 45%, arthritis 43%, diabetes 22%, and coronary heart disease 14%.

(Ibid, p. 4)

Additionally, there is great variation in healthy behaviors, utilization of preventative measures by older adults and chronic disease across states (Ibid).

At the national level, another major report released in 2007 based on the health and retirement study (HRS), provides an additional snapshot of older adult health. HRS is one of the most extensive and comprehensive older adult studies utilizing a national representative sample of adults over 50 who are surveyed regarding their physical health, mental health, insurance coverage, financial situations, family support systems, work status, and retirement planning (National

Institute on Aging, 2007). This report delved deeper into older adult health challenges:

- For HRS respondents 70 and over, overweight and obesity were factors in functional impairment, strength, lower body mobility and activities of daily living;
- 10% of persons 70 or over have moderate to severe cognitive impairment while 6% of those in the community had moderate to severe impairment vs. 50% of those in institutions;
- Those who live in the community report reasonably good health and studies have shown that self-reported health is a valid indicator of actual health status;
- For those 75 and older 60% of respondents had both hypertension and arthritis—the two leading chronic conditions for persons over 65. (Ibid, p. 20, 21, 23).

The report also documented a link between depression and chronic disease and referenced Blaum's work that found depression was a precursor to the development of future disease: "Participants age 70 and older who reported having several symptoms of depression were one-third more likely than others to develop a new disease within 2 years." (Ibid, 27). Additionally, the report notes Fonda, Wallace and Herzogs' 2001 finding that older adults who could no longer drive were "1.4 times more likely to experience worsening depressive symptoms." (Ibid, p. 27).

Driving Cessation and Depression

Other researchers have also found a link between driving cessation and depression. A study by Barr found that driving cessation “can be considered a disability” (Ibid., p. 9). The above noted recent HRS findings demonstrating another link between driving cessation and depression begins to mitigate what Stearns and colleagues suggest regarding the lack of empirical evidence associated with outcomes in transportation and aging, specifically driving cessation and depression and the need for:

developing objective quantitative estimates of the health and economic consequences is problematic because a person’s declining physical condition can be both a cause and a consequence of loss of mobility. (Stearns et. al., 2004, pp. 2-3)

Driving cessation must be met with transportation options for older adults, or states lacking transportation options could face increased chronic disease expenditures because:

transportation research indicates that driving cessation often spirals down into depression and is often a precursor to physical illness. This results in a high cost to individuals, families, and eventually to society in the form of additional healthcare expenditures and premature institutionalization. (Coughlin, 2001, p. 3).

Research in older adult quality of life and the relationship with driving demonstrates a linkage between adapting to chronic disease and mobility. However, it seems that most work associated with chronic disease self-management is disease specific and mobility enhancement is not yet a part of this approach to chronic disease

adaptation. Yet, researchers show a relationship between adaptation to chronic disease and perceptions of independence and dependence. One study on 286 older adults with osteoarthritis found that if older adults had to give up activities and compensate for increased disability it negatively affected their feelings of independence resulting in: “greater feelings of dependence, greater helplessness, great emotionally difficult dealing with one’s condition, and for compensation, less coping efficacy” (Gignac, Cott, Badley, 2000, p. 369). If an older adult has less activity engagement due to a lack of transportation, it is likely that these same feelings of dependence and depression will occur.

Adaptation Through Transportation - Applying Lorig’s

Chronic Disease Self-Management Concepts to Elder Mobility

In effect, reduced transportation services spending could further escalate healthcare costs, especially Medicaid, by increasing levels of disability that have been shown to be related to depression and driving cessation. Shut-in older adults who can no longer drive and who do not have access to transportation could have a faster decline in health status, and/or their caregivers will face greater burdens such as reduced earnings and declining health. A number of chronic conditions common in older adults “lead to limitations in daily activities and thus often reduce health-related quality of life for seniors.” (National Institute on Aging, 2007, p. 5). The health care system must deal more with chronic illness and less with acute illness (Lorig & Homan, 2000, p. 11). Addressing the needs of older adults with chronic illness must take into consideration more than just treating the disease, it must essential supports required to sustain quality of life.

Thus, finding a way to help older adults cope with increased chronicity is a high agenda item for the states. “Chronic conditions can lead to severe and immediate disabilities, such as hip fractures and stroke, as well as progressive disability that slowly erodes the ability of elderly people to care for themselves” (AHRQ, 2002, p. 1). Any intervention that helps reduce disability and decrease healthcare costs has great potential benefit for both state fiscal health and older adult physical/mental health.

A Washington State program utilized a systems dynamics collaboration model to reduce costs and improve the health of individuals with diabetes and heart disease. This Whatcom County project is striving to address “poor cooperation among organizations . . . , poor patient care . . . , and the fact that . . . chronically ill patients carry the burden of an inadequate health care system” (Homer, Hirsch, Minniti, & Pierson, 2004, p. 200). Implementing a systems model based upon addressing chronic disease is expected to:

. . . reduce the incidence and progression of disease and consequent complications and deaths. Reductions in the health care costs associated diseases, as well as productivity losses due to disability, ideally would offset the added costs of infrastructure and greater intensity of planned care, resulting in a net savings for the community as well as improving outcomes for patients, (Ibid., p. 203).

Perhaps the added costs of transportation services infrastructure and more resources for programs that help older adults maintain mobility could result in the type of net savings espoused by Homer et al.

Finally, a syllogistic reasoning conclusion is that if elder mobility increases older adult independence and older adult independence decreases healthcare costs, then state efforts to increase elder mobility provides a mechanism to decrease healthcare costs. Given this syllogism regarding transportation, independence, and health, the addition of a focus on elder mobility as an essential element for the type of adaptation to chronic disease espoused in the CDSMP framework, is an intriguing area for future exploration. Other researchers in the health domain have established clear linkages between neighborhood services and health (Altschuler, Somkin, & Adler, 2004).

Applying Cohen's Creative Aging Concepts—toward a Paradigm of Life Quality Self-Management

The evolving picture of escalating formal and informal long-term care costs, the importance of mitigating chronic disease as we age, the economics of reduced health status, the relationship between mobility and health, and the role of mobility as a facilitator to independence begins to form an argument for the intersection of the domains of aging, long-term care and transportation. It is proposed that a paradigm of life quality self-management shows why it is important to integrate these domains. Cohen's research in the field of aging provides an inverted pyramid for an integrative focus for long-term care.

Using Maslow's well-established and referenced hierarchy of needs,¹ we can infer that, historically, the formal long-term care system, with its reliance on institutional care, met basic biological needs of safety and security, the lower levels

¹ It seems Ebersole and Hess was the first to make this comparison in a comprehensive fashion in their excellent book that can serve as a manual for field of gerontology: *Toward healthy aging human needs and nursing response* (1998).

of Maslow's triangle. Cohen's work on creative aging and the "4's": signs, symptoms, skills and satisfactions, (2006, pp. 13-14), suggests that health and illness must be combined for a view of aging that taps the potential of aging. Thus, institutional care maps to Cohen's signs and symptoms. The potential of aging, Cohen's skills and satisfactions, primarily involves the informal systems of care; and those social services that provide access to community connection. Thus, a community based approach to long-term care and greater resources for older adult mobility address signs, symptoms, skills and satisfaction and fulfills needs associated with both the lower and the higher levels of Maslow's Hierarchy including the need to belong, self-esteem, and self-actualization. In this context, elder mobility enhances independence which, in turn, enhances the need to belong, self-esteem and may lead to self-actualization.

Cohen's work provides compelling evidence of later life accomplishments in his book *The Creative Age* (2001), and in a randomized trial he found evidence that the arts and aging: "reveal a positive impact on maintaining independence and on reducing dependency. Thus, these community-based cultural programs for older adults appear to be reducing risk factors that contribute to the need for long-term care" (2006, p. 13).

If the goal of chronic disease adaptation is reducing dependency, then there is more here than just managing disease – we are enabling older adults to continue to grow, learn and contribute as a viable part of their communities. Certainly, this may not hold true for older adults battling cognitive disabilities and illnesses such as Alzheimer's disease or other forms of dementing illness, however, many diseases that

are targets of CDSMP are those that do not necessarily affect cognitive function such as diabetes, hypertension and arthritis.

Ebersole and Hess (1998) map Maslow's Hierarchy of needs and aging when they applied this structure to their comprehensive book on all elements of aging, including biological, psychological, social, spiritual, financial, and legal elements as well as the role of gerontologic nursing. Within each level of Maslow's Hierarchy, they superimpose key elements of aging:

Table 1. *Concepts by Ebersole and Hess' Adaptation of Maslow's Hierarchy of Needs in Association with Aging Noted in Their 1998 book "Toward Healthy Aging" (with some minor changes in a few aging elements)*

Maslow's Hierarchy of Needs Level	Ebersole and Hess Application of Aging Elements
<i>Self-Actualization</i>	Cognitive functioning, gender/cohort & culture, death/dying/grieving, actualization of the self, transcendence
<i>Self-Esteem</i>	Crisis and stress management, mental health & mental health disorders, transition, and role changes
<i>Need to Belong</i>	Intimacy, relationships, isolation & loneliness
<i>Safety & Security</i>	Frailty/vulnerability/neglect, healthcare, economic and legal concerns, environmental safety, and security
<i>Basic Biological Needs</i>	Chronic disease management, nutrition, activities of daily living, pain & comfort, biologics of mobility, maximizing sensory function

There is another layer of mapping to Maslow's hierarchy when comparing transportation mobility research to the previous discussion, especially safety and security, the need to belong, and self-esteem. Programs for safe driving, that help

seniors adapt to physical and cognitive changes related to aging, assist older adults to stay safe, reduce isolation, maintain relationships, maintain economic security, provide access to healthcare, and help maximize sensory function. Programs for alternative means of transportation, when driving is no longer an option, mitigate chronic disease and reduce depression, help manage transition and role changes, reduce isolation, combat vulnerability, increase security, provide access to healthcare, and ensure access to resources to maintain activities of daily living.

Cockerham's (2005) assertion that there is a need for a health lifestyle theory echoes these new parallels to Maslow's hierarchy. Though Cockerham was not specifically referring to aging issues, his contention is that health lifestyles are: "collective patterns of health-related behavior based on choices from options available to people according to their life choices" (p. 55). These themes share common concepts with Cohen's signs, symptoms, skills and satisfactions. Cockerham's lifestyles paradigm notes an interplay between life choices and life chances based largely on Weber's lifestyle concept (pp. 55 and 57). Further, on the importance of access to the right living conditions, Cockerham says, "To date, there has been little research linking living conditions to health lifestyles but the connection is important" (p. 59). We can draw this same distinction regarding aging, elder mobility, independence and health.

Within the opportunities of aging associated with the higher levels of Maslow's Hierarchy of needs and closely linked to Cohen's creative aging concepts is volunteerism. Not only does volunteerism benefit older adults, it also benefits society. In a study that investigated whether there was an association between volunteering

and depression in later life, Li and Ferraro (2005) found that a beneficial effect resulted from formal volunteering on depression. Building upon previous research that links volunteering with social integration, and Musick and Wilson's work on the importance of volunteering to address the shrinkage of social networks and major role losses in later life, Li and Ferraro developed a model that:

provided evidence of the modest benefit effects over the eight years of the longitudinal study, suggesting that volunteering is a long-term antidote to depressive episodes. Continued engagement in formal volunteering is beneficial to older volunteers. This is an important finding for voluntary organizations and speaks more generally to the value of the development of social capital. (Li & Ferraro, 2005, p. 79).

However, to have access to volunteer opportunities, older adults must have transportation. So here again, there is a critical connection between transportation services and the opportunity of aging.

Not only is access to transportation of benefit as a mechanism to reduce long-term care costs by maintaining health and mitigating chronic disease, it is also a mechanism for continued community access to the wisdom, experience, and capabilities of older citizens. A hybrid model (see figure 1 below) can be developed by combining mobility, health, and aging with both Maslow's Theory and Cohen's concepts. The model is a pictorial display of the interplay of the formal and informal system built upon a foundation of mobility options that facilitate aging adaptation and creative aging. Above the model are some of the possible high-level outcomes or impacts for elders and society:

Life Quality Self-Management

Outcomes: Lower costs to society, greater quality of life for elders,
Impacts: Greater opportunity for society and elders to benefit from creative aging opportunities
 Self-actualization for elders, social capital for society (esp. volunteerism)

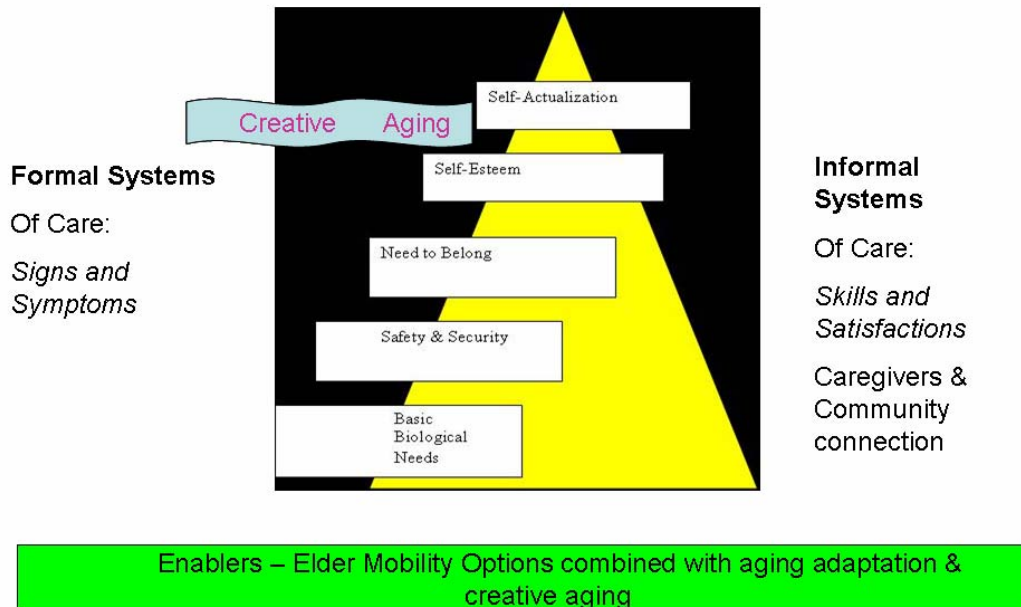


Figure 1. A Life Quality Self-Management Paradigm applying Maslow's Hierarchy of Needs with Cohen's Creative Aging's 4 S's Signs, Symptoms, Skills and Satisfactions with an integrative view of long-term care and transportation

The purpose of the above proposed model is to show how the formal and informal care systems, Cohen's signs, symptoms, skills and satisfaction, and Maslow's levels of needs relate. Maslow's needs are juxtaposed in portions of the triangle representing the various levels of intersections between the formal and informal systems of care. As one goes higher in the level of need, the importance of the informal systems of care increase and, commensurately, as one goes lower in the levels of need the formal systems of care increase in importance. Foundationally, the enablers to both aspects of the care system – formal and informal – in a community based setting are adaptation to chronic illness aided by elder mobility. The pictorial

is a way to tell the story of the integration of these domains in a way that supports a holistic approach to aging – one that affirms an older adults’ right to have choices to stay in the community - and a person-centered approach rather than a disease centered approach. The result is far more than cost savings through chronic disease adaptation; it is also increased life quality resulting from the opportunity for creative aging. The foundation for access to these opportunities is elder mobility.

Chapter 3: Role of State Initiatives to Increase Elder Mobility

“It is one of the happy accidents of the federal system that a single courageous state may, if its citizens choose, serve as a laboratory, and try novel social and economic experiments without risk to the rest of the country.” G. A. Tarr (2001)

Expanding Mobility Options for Elders Through Transportation Coordination

Despite overwhelming evidence of the need for greater elder mobility options, trends for disabled older adults do not show increased independence, and older adults who no longer drive are becoming more and more isolated (Bailey, 2004). Bailey’s report, sponsored by the Surface Transportation Project and released in April 2004, noted the following conclusions: More than 1 in 5 Americans age 65 and older do not drive; more than 50% of non-drivers age 65 and older stay home at any given day partially due to lack of transportation options; and older drivers have decreased ability to participate in the community. For people over 85, one of the fastest growing cohorts of older adults (Profile of Older Americans, 2003), lack of transportation options equate to being stranded (Bailey). An AARP study found 41% of people over 85 did not leave home the previous day and had three times greater likelihood of not leaving home at all vs. people in the 80-84 age group (APTA [American Public Transportation Association] Report, 2003).

These conclusions mirror concerns of researchers, federal officials, state officials, national advocacy organizations, and caregivers. Kerschner and Aizenberg suggest transportation changes are required to address elder preferences and special needs in five areas: availability, accessibility, acceptability, affordability, and

adaptability for older public and para-transit riders (Kerschner, Aizenberg, 2001, p. 8). With the exponential growth of the older adult population forecasted over the next 20+ years, state officials need information to help unravel the most important issues associated with healthcare costs, transportation, and older adults.

State transportation coordination through state strategic planning and the delineation of performance measures is one answer to increasing transportation options. The National Governors Association Best Practices organization outlines three key factors for success in establishing comprehensive coordinated systems for transportation planning: leadership, participation, and continuity (National Governors Association Center for Best Practices, 2002). Its report underscores the importance of establishing performance measures for transportation planning. Many states increased progress in transportation coordination by establishing formal coordination organizations through legislative mandates, executive orders, or memorandums of understanding. Coordinated transportation through formal planning systems interweaves the perspectives of key stakeholders and integrates the spectrum of policy approaches to increasing transportation access.

Often, policy initiatives such as state legislative acts or executive orders create a venue for such joint planning through coordination councils. A National Council of State Legislators (NCSL) study provides a compendium for state transportation coordination models and their associated legislative approaches. The NCSL report noted that:

the large number, diversity and dispersion of specialized transportation programs across many agencies potentially can create ineffective and

inefficient service and problems. . . . To combat these problems, government agencies, human service organizations and transportation plans have advocated improved program coordination. (Sundeen, Reed, & Savage, 2005, p. ix)

The 2005 NCSL study also notes:

It (coordination) also can increase the productivity of the system, enhance customer mobility by allowing access to jobs and recreational activities such as shopping, and create economic development. The TRB [Transportation Research Board] estimates that successful coordination programs could generate more than \$ 700M in economic benefits to human service and transit programs in the United States. A Pierce county, Washington, study estimated that a \$ 1 per trip cost savings could translate into an additional 25,000 rides each year. (Sundeen et al., 2005, p. 6).

The study suggests that transportation coordination as a strategy provides a mechanism to address “the large number, diversity and dispersion of specialized transportation programs across many agencies” (Sundeen et al., p. ix). These diverse programs create inefficiencies, underutilization of resources, inconsistent service, gaps in services and customer inconvenience (Ibid.). Research suggests that when states have an active role in coordination, local coordination results are more effective (Schlossberg, 2001); and in fact, NCSL found that all 50 states and the District of Columbia are utilizing some form of coordination to address mobility issues.

Scholars and the GAO suggest transportation coordination creates efficiencies, effectiveness, economies of scale, and the leveraging of federal dollars (Burkhardt, 2002; Cobb, R. W. & Coughlin, J. F., 2000; Coughlin, 2001). GAO, 2003 & 2004). GAO recommends institutionalizing a mandate to the states for coordinated transportation planning across the various disadvantaged populations (GAO, 2003). Over 62 different federal programs from which states derive over \$2.4 billion in grants/contracts serve the special transportation needs of low-income persons, individuals with disabilities, and older adults (GAO, 2003). The term *human services disadvantaged populations* is used to describe these diverse groups who benefit from publicly funded human services transportation (Executive Order 13330, February 2004). GAO outlined many challenges facing states as they strive to understand and utilize these different programs, with different funding cycles, different reporting requirements, and different regulations (GAO, 2003).

The \$2.4 billion noted above is spent in just 50% of these programs for human services transportation (GAO, 2003). The Dept. of Health and Human Services, Dept. of Labor, Dept. of Transportation, and Dept. of Education are the major sponsoring agencies for these programs. Experts and GAO feel leveraging these dollars could provide states with greater efficiencies, effectiveness, quality, and growth in their transportation services (Burkhardt, 2002; Coughlin, 2001; Cobb & Coughlin, 2000). At the federal level, transportation coordination is currently being championed by an initiative called United We Ride.² Three groups are targeted by

²The author of this dissertation has been involved at the federal level in the United We Ride initiative, so great pains are taken in this dissertation to avoid bias in the characterization of these efforts and to note only those facts that are publicly available and distributed by the United We Ride program office.

this federal initiative— older adults, people with limited incomes and people with disabilities—populations that often share similar needs for accessible and available public transit.

In February 2004, President George W. Bush issued an executive order creating a human services coordinating council to encourage greater synergies across federal transportation programs for older adults, people with disabilities and people of limited income. As the executive order states: “The development, implementation, and maintenance of responsive, comprehensive, coordinated community transportation systems is essential for persons with disabilities, persons with low incomes and older adults who rely on such transportation to fully participate in their communities” (Executive Order 13330, 2004).

The executive order drove the development of the cross-agency collaboration program, United We Ride. Since the executive order was released, United We Ride has been developing tools and resources to help states and local communities expand transportation options for older adults, people with disabilities, and people with limited incomes. A 2005 report, by United We Ride on the results to date in support of the executive order, discussed federal agency accomplishments in reducing barriers to coordination, including the cataloging of useful practices throughout states, communities, and providers; the compilation of a statutory and regulatory analysis across all 62 programs that provide transportation funding to states; specific federal agencies each achieved goals and created action plans to further transportation coordination; many agencies made progress in simplifying access to transportation resources; and agencies increased cost-effectiveness and made progress in reducing

duplication (United We Ride, 2005). In addition, the report provided further recommendations by the Coordinating Council on Access and Mobility:

1. The promotion of coordinated transportation planning—which is now codified in SAFETEA-LU (Safe, Accountable, Flexible, Efficient Transportation Equity Act: Legacy for Users). This Federal Transportation reauthorizing legislation passed in 2005, requires state DOT's [Department of Transportation] to develop coordinated human service transportation plans across stakeholders including nonprofit, private, state and community organizations.
2. That federal agencies review their transportation programs to allow for vehicle sharing;
3. That federal agencies find ways to address cost allocation to encourage economies of scale and resource sharing;
4. The development of a model for reporting and evaluation which is now completed with the 2007 publication of the United We Ride Logic Model for Coordinated Communities;
5. Recommendation of a consolidated access demonstration program to show how a single program could meet the needs of all transportation disadvantaged populations.

(United We Ride, 2005)

In 2007, United We Ride released an update to the 2005 report and noted that:

Since the inception of UWR, 40 States now have United We Ride State Coordinated Transportation Plans; and thousands of transportation providers, human service agencies, and consumers have participated in identifying local needs and strategies. Through United We Ride implementation grants, partners are focused on sharing vehicles, rides, and data in an effort to streamline access for consumers at the local levels (United We Ride, 2007, p. 1).

United We Ride espouses three overarching goals for coordinated communities: to increase efficiency through more rides for the same or lower cost; to increase effectiveness through easier access to transportation resources; and, to increase customer satisfaction through higher quality services (2007).

Transportation coordination benefits are espoused by transit providers associations such as the American Public Transportation Association (APTA). In testimony before Congress, APTA also espouse the efficiencies and increased resources possible through human services coordination suggesting benefits arise for taxpayers, providers, Medicaid transportation and riders (APTA, 2004). Later in the same statement, APTA noted positive results from transportation coordination as it relates to Medicaid transportation cost savings: “In 1997, the Healthcare Financing Administration estimated it was losing \$ 1.2 billion annually in non-emergency medical transportation. Subsequently states began to coordinate service with local transit systems and by 2000 twenty percent of the nation’s Medicaid rides were on public transit. (APTA, 2004).

A focus on coordination to improve human services transportation is not new; this effort began over 30 years ago. In July 1989, the U.S. Department of Transportation (DOT) and the U.S. Department of Health and Human Services (DHHS) released a report: “Best Practices in Specialized and Human Services Transportation Coordination.” This report, prepared by the Centers for Systems and Program Development, begins by noting the significant investment by DOT and DHHS to improve human services coordination over the previous 10 years.

At both the federal and state level, efforts to expand and coordinate transportation services are ongoing. However, to date, there has not been an attempt to assess if a relationship exists between older adult transportation coordination efforts and those of long-term care reform—both of which have similar goals to increase efficiency, increase effectiveness, and aid older adults to remain at home and in their communities. The literature search provides compelling evidence of a series of relationships between long-term care reform, aging and transportation.

Additionally, a holistic approach to expanding elder mobility addresses many aspects of a community and holds benefits for older adults, community-based systems of care and caregivers. Economically, a state stands to benefit as well from any program that decreases costs through either direct cost savings or cost-avoidance. One form of cost-avoidance is greater independence and mobility for older adults and the commensurate increased health status that results – increased health status reduces healthcare costs. With previously noted research demonstrating many probable connections between older adult health and mobility, it is surmised that a relationship could exist between the state activities in the policy domains of state elder mobility

expansion through transportation coordination and state long-term care reform. It is possible that there is a symbiotic and natural alliance between these two state systems.

Scholars' Policy Recommendations for the Expansion Of Older Adult Transportation

In a time of tight budgets and growth of older adult populations, the provision of older adult transportation services will be increasingly challenging, in the absence of coordination across multiple funding sources. In 2002, the Transportation Research Board (TRB) released a report: “TCRP Report 82 Improving Public Transit Options for Older Persons” by Burkhardt, McGavock, Nelson, and Mitchell, which documents the overwhelming need and types of transportation required to address the increases in older adult populations and older adults’ desire to stay in their own homes—many of whom do not live in areas with accessible public transit.

Another TRB report by Burkhardt, Koffman, and Murray , recommends that transportation providers make changes in five fundamental areas to facilitate the use of transportation alternatives by older adults: consumer orientation, agency responsibilities, customer choice, fare strategies, and advanced technologies (2003). McNight recommends five public sector areas for change: coordination, financial support, ride sharing, advanced scheduling, and eligibility. The supposition is that such changes can expand older adult transportation options and public transit use.

Some scholars recommend alternative means of community transportation (Straight, 2003; - Rosenbloom, 2003), while others see public debate, educating elders, and agenda setting as ways to stimulate solutions (Cobb & Coughlin, 2000;

Coughlin 2001). Technological innovation, auto industry research and development, and highway infrastructure improvement are other answers to improving older adult transportation (Rosenbloom; Cobb & Coughlin; Coughlin). Rosenbloom seeks institutional focus on planning for older adult mobility needs.

The Surface Transportation Project report insists upon federal, state, and local government action to:

Increase investment in public transportation to address the growth in older adult needs; work with all stakeholders and seniors in future planning initiatives on transportation infrastructure; introduce policies for making streets and communities safer for walking, bicycling and driving; preserve transportation spending for states and local governments on public transportation, pedestrian needs and bicycling requirements. (Bailey, 2004, p. 5)

Again, as with many of the solutions to the transportation challenges of older adults, coordinated planning is a recommended method to achieve change.

Transportation coordination is enhanced by the use of technology.

Technologies such as intelligent transportation systems streamline transportation operations (Burkhardt, et al., 2002). Some states are embarking on projects to use technology as an efficiency and effectiveness enabler³. From an operational efficiency perspective, intelligent transportation systems provide geographical information systems that track vehicles; smartcards provide easier access for riders

³ For more information, see the Department of Transportation Mobility Services for All Americans Project and Intelligent Transportation Website for a lot of useful information on technology and transportation as well as state efforts to utilize these information technology tools: <http://www.its.dot.gov/msaa/index.htm>

and tracking of data; routing, scheduling, and consolidating billing software decrease costs while increasing service availability (Burkhardt et al., 2003).

The Massachusetts Institute of Technology (MIT) is studying Intelligent Transportation Systems (ITS) applications that could make para-transit more affordable. A growing segment of the transit market, para-transit, is also one of the most expensive. In a study, MIT researchers found that the average cost of the service ranged from \$7 to \$50 per trip. With seniors needing transit for entertainment activities and visiting family as much as they need it for trips to the doctor's office or the grocery store, the cost of transit will determine where future older Americans can live, given that many non-urban areas lack adequate transit services (Coughlin, 2004, p. 1).

The U.S. Department of Transportation is working to create a seamless regional transportation system that services the needs of the elderly and transportation-disadvantaged people. A major component of the initiative is developing, deploying, and testing a regional para-transit program that uses selected information technologies, including automatic vehicle location, state-of-the-art vehicle communications, geographic information systems, computer-aided dispatch, and electronic fare collection.⁴ FTA's Mobility Services for All Americans Project asserts that mobility and accessibility for older Americans will improve from the use of ITS. Ongoing demonstration projects are testing numerous approaches, including: trip planning and automatic notification through global positioning satellite systems; advanced traveler information service through community transportation coordinators

⁴ For additional information, review the following Science and Technology webpage, URL <http://scitech.dot.gov/partners/accage/>.

and telecommunications technologies;⁵ automatic vehicle location through geographic information systems (GIS); automated reservation, dispatching and scheduling systems; and on-line reservations.

It was hoped that technology could be one of the variables assessed in this study. However, to date, the lack of state cross-agency information technology systems and the high degree of variability regarding the adoption of information technology at both the state and community level - whether for business systems or intelligent transportation systems - made this an inappropriate system level variable. However, it is suggested that the use of technology as a critical public management tool for states is an important enabler and one that deserves future research and further assessment at all levels, including the state, the community, and the provider of services.

State Units on Aging Strategic Plan Study of Transportation Coordination

In 1965, through passage of the Older Americans Act (OAA), Congress created an organization chartered with promoting the dignity and independence of older adults. Transportation services are one of the Title III community services funded by this Act. States provided transportation services to over 7 million older adults in 2002, with (OAA) dollars funding 40% of those costs, or \$ 84 million (this

⁵511 is such a system while 211 is a system for human services information. A potential exists to tie both of these *11 systems together for seamless integration.

includes expenditures for both transportation and assisted transportation) of the \$ 211 million in state outlays.⁶

In 2004, during the author's internship at AoA, the level of transportation coordination planning in state units on aging strategic plans and associated web resources was assessed.⁷ The purpose of the study was to understand the level of depth and pervasiveness of transportation coordination and initiative across all 52 states as evidenced in their state unit on aging plans and websites. As part of their OAA activities, each state develops and maintains a strategic plan for their activities which is usually updated every five to seven years. A review of most state units on aging strategic plans and their websites for transportation content resulted in a better understanding of the level of focus in the states on transportation services for older adults.⁸

At a summary level, eight of the 52 states and territories assessed showed evidence of activities across four categories of action associated with transportation (coordinated planning, Web information/resources, planned transportation, and needs analysis) for older adult transportation facilitation:

⁶ Statistics derived from AoA state program reports (SPR), FY2002 Profile of United States Older Americans Act Programs. SPR information is available from AoA's website to the public at: <http://www.aoa.gov/prof/agingnet/NIS/SPR/2002SPR/tables/2002tables.asp>

⁷ The author developed and implemented this study. Special thanks to Kari Benson who suggested the idea!

⁸ While interning at AoA, the author was the principal researcher and developer of this study, and the findings are in an unpublished paper, Leary 2004, circulated to key personnel both inside and outside of AoA. The findings in this study and all references to it are solely the perspectives of the author and not those of the AoA.

1. Total results for the 52 states/territories show that of the four categories, 69% of states/territories planned some level of older adult transportation, 36 of the 52 reviewed.
2. Fifty-eight percent of states showed some form of web communication associated with senior transportation.
3. Close to half of the states coordinated transportation planning across departments and stakeholders, 48%.
4. Over one third of the states, 35%, showed evidence of formal needs analysis studies.
5. Demographic trends show that three states were over 49% rural—Texas, Vermont, and South Carolina. Other political entities, such as the District of Columbia, Pennsylvania, Alabama, Montana, and Nevada, had over 63% non-rural populations.
6. The average percent of these states' over 65 population mirrored or was within 2 percentage points of the national average of 12%.

(Leary, 2004)

A graphic illustration of the results of the four major variables for this study is noted in table 2.

Table 2. State Mean Distribution by Areas of Inquiry

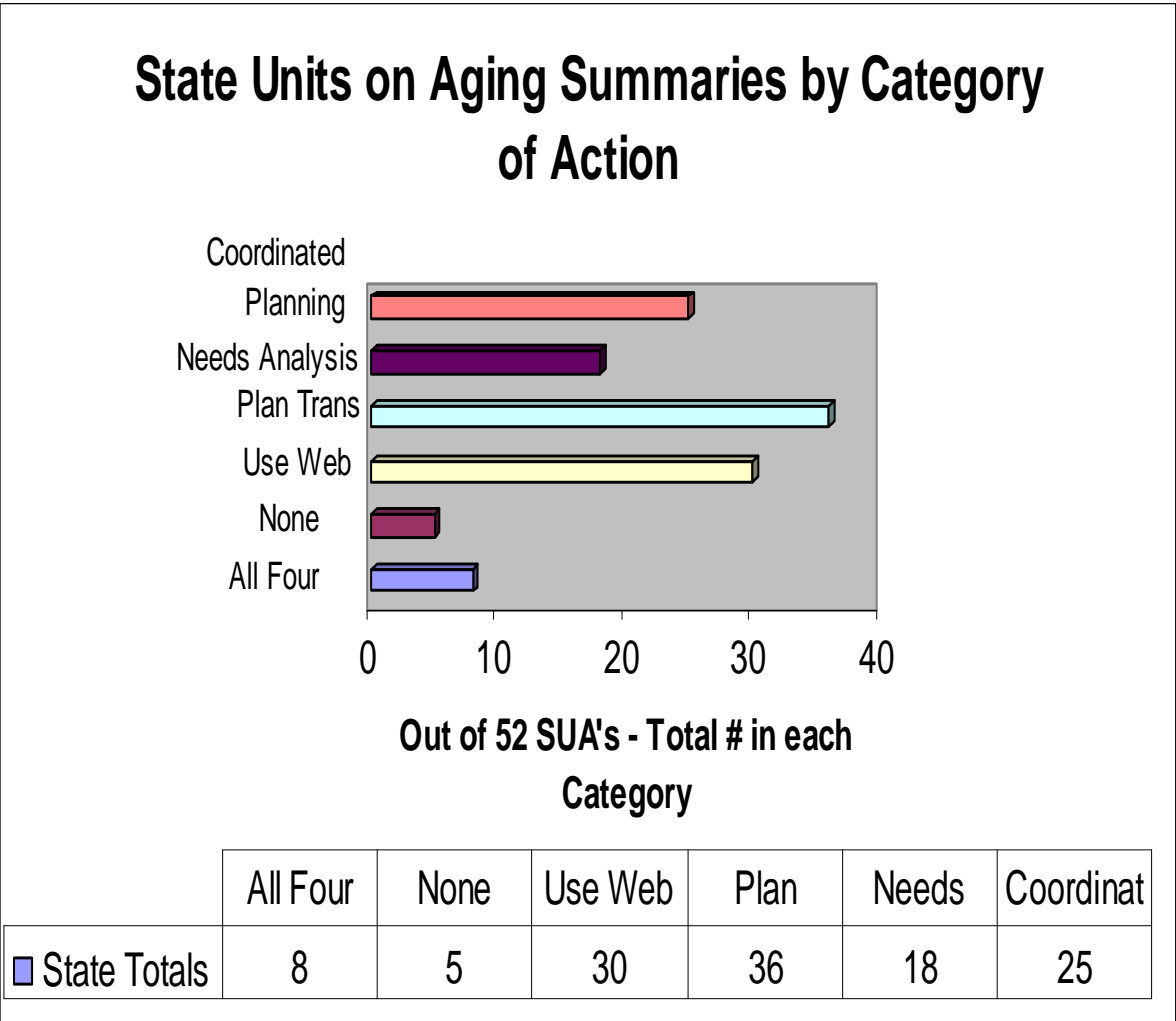
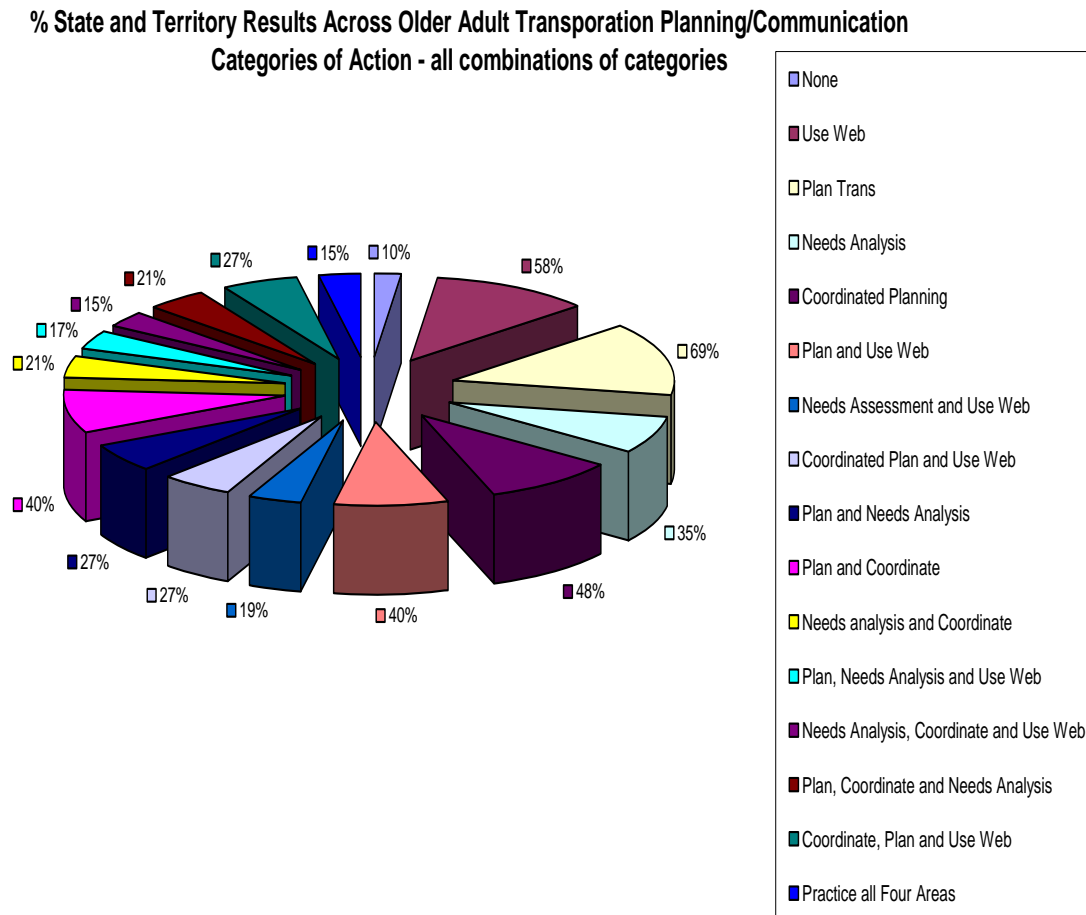


Table 3. State and Territory Results by all Categories of Inquiry



Tables 2 and 3 show the summary and detailed results of the study by major areas of inquiry and demonstrated that most states strategically planned for transportation services for older adults (69%) and 58% of the states assessed had some sort of utilization of the web to share information on transportation (30%). 48% of state units are aging were engaging in some transportation coordination efforts. 40% of state noted transportation actions in their state plans and noted coordination. Of the four major areas of inquiry, the smallest percentage of states performed needs analysis for older adult transportation, 35%. This study corroborated the importance

of strategic planning and coordination in older adult transportation services. It provided a base of information and perspective for further research and showed the efficacy of a focus on strategic planning and coordination. The first question raised by this phase of the research was whether or not this effort on the part of state units on aging had statistical significance in terms of actual change in transportation services.

For state units on aging, AoA currently collects data for transportation services and defines these indicators in the following ways:

1. Transportation service efficiency—cost per service unit
2. Transportation service effectiveness—total number of one way trips or total number of persons served
3. Total dollars expended from OAA Title IIIB vs. total state spending on older adult transportation, including percent of Title IIIB funding
4. Total number of service providers.

After regression analysis of the above indicators as dependent variables, controlling for demographic variables, with the explanatory variables as the above noted outcomes from state units on aging strategic plan study,⁹ the findings did not result in a statistically significant model associated with outcomes for transportation coordination in terms of units of transportation provided (effectiveness) or cost per

⁹ AoA maintains an extensive evaluation and performance measurement program that includes the cataloguing of state unit on aging State Program Reports that note yearly results in transportation services expenditures, numbers of rides, and numbers of service providers. States use both Title IIIB Older Americans Act funds as well as matches from other sources. This study utilized SPR data from 2002.

service unit (efficiency). In addition, no significant associations or models could be found associated with transportation coordination efforts by state units on aging in terms of numbers of transportation providers. These findings suggested that just looking at the outputs of one state agency and its coordination activities was not enough to explain transportation service outcomes. However, it did demonstrate that the management actions of strategic planning and coordination were pervasive enough to merit continued focus. The next steps suggested a further review of other state agencies and their efforts associated with elder mobility was merited in hopes of finding a more integrative model for use in assessing older adult transportation services at the state level.

The Elder Mobility Friendly Community

This type of integrative model for older adult mobility was espoused in a number of papers presented as a part of a conference held in 1999: “Transportation in an Aging Society”; and published by TRB in 2004. In addition, Rosenbloom and Stahl discuss “Automobility Among the Elderly; The Convergence of Environmental Safety, Mobility and Land Use Issues” (2002). Older adult mobility is best served by an integrated community model that includes land use, road safety, driver safety, and both public and private alternative modes of transportation (Rosenbloom & Stahl, 2002; Suen & Sen, 2004). Freund (2004) advocates a system with policies that encourage volunteerism, technology and private investment, which she has turned into a successful model being piloted in a number of communities called the Independent Transportation Network. A consumer orientation is considered a critical element of Freund’s approach which includes the use of technologies on behalf of

consumers rather than just for transportation providers. Schieber (2004) discusses the early emergence of research and development in the area of elder-friendly highway design and operations resulting from TRB's Special Report 218.

Good highway design should include freeways with better lighting, signage, better pedestrian crossings, and longer acceleration/merging lanes (Schieber, 2004; Staplin, 2004). In 1998, the Federal Highway Administration released a guide and handbook for older driver friendly highways (Schieber, 2004). A number of design approaches help mitigate age-related changes, such as nighttime visual problems (Schieber). One way to address typical older driver challenges, such as work zones, freeways, nighttime driving, urban-suburban intersections, and pedestrian crossings is with "practical countermeasures," some examples of which are static signs, changeable signing, traffic signals, pavement markings, and traffic operations (Staplin). Signage, land use, markings, and infrastructure also affect the safety of older pedestrians (Oxley & Fildes, 2004). Good highway design that takes into consideration the needs of older pedestrians, such as adequate crossing times, improved sidewalks, and reduction of traffic in high congestion areas, can also make a positive difference in older adult safety (Oxley & Fildes). Clearly, community highways, roads, intersections, and ramps can be better engineered to accommodate the needs of older adults.

One area typifying the old adage of perception versus reality concerns the safety of older drivers. A few very public tragedies do not equate to older drivers as "an excessive risk to other road users. They are more likely to be injured themselves in a crash because of their greater physical frailty and typical crash patterns"

(Hakamies-Blomqvist, 2004, p. 27.). The Hakamies-Blomqvist study of crash types and patterns showed that “older drivers have slow, conservative, and cautious driving styles, which makes them harder to hit as innocent parties than are younger, less defensive drivers” (p. 27). This same study concludes that crash patterns suggest it is not the typical changes related to aging that increase the challenge of driving for older drivers, but it is functional deficits such as cognitive issues of diseases such as dementia or possibly diabetes. Additionally, the study echoes earlier noted concerns regarding lack of mobility and health: “Lack of adequate mobility options may hamper an older person’s opportunities for an active life and negatively affect his or her health and wellness” (p. 31).

Land use planning can help solve mobility needs of older adults (Giuliano, 2004; Rosenbloom & Stahl, 2002). This includes improving accessibility in suburban areas and creating pedestrian friendly communities (Giuliano). Rosenbloom and Stahl recount an Organisation of Economic Co-operation and Development (OECD) report that older persons across developed countries have a strong dependence upon their cars (p. 94). Due to this continued importance of the car, it is also important to address ways to identify unsafe older drivers (Rosenbloom & Stahl). Rosenbloom and Stahl echo themes of earlier transportation and mobility scholars: “It is crucial that we undertake a comprehensive evaluation of the large number of issues that affect the mobility of older people in order to develop sustainable communities” (p. 106).

Thus, a review of literature on older adult mobility demonstrates the diversity of approaches for sustaining older adult independence once aging affects driving.

Many factors are associated with the feasibility of these various approaches for a particular state or local community: whether it is urban, rural, or suburban; whether land use and highway construction have taken into consideration the needs of older adults; the availability of both public and private transportation services; the need for older driver training and the health of older consumers in that jurisdiction.

Flaherty, Stalvey and Rubenstein directly associate transportation, infrastructure and health:

Transportation is an essential part of our community infrastructure, which helps people gain access to goods, services, and social contacts that support their daily activities and quality of life. . . . Absence of transportation among any population impairs quality of life by decreasing personal independence, access, choice and opportunity which can lead to social isolation. (2003, p. 826)

The complexity and variability of solutions to older adult mobility suggests a requirement for significant interagency collaboration in order to create cross-cutting policies and programs.

In recognition of the importance of such cross-cutting state policy and planning efforts, several studies sought to catalog state legislation and state interagency cooperation in the areas noted in the literature review: “Legislating Mobility Options: A Survey of State Laws Promoting Public Transit, Walking and Bicycling” (Ernst & McCann, 2005) and “Improving the Safety of Older Road Users” (Stutts, 2005). When combined with the NCSL report, these syntheses give a snapshot of state efforts to improve older adult mobility at both the political and the

managerial level, thus providing a glimpse of both policy and practice in action. It was determined that these studies would be useful sources of information for the development of an index that could serve as a proxy for the level of state policy and practice actions to enhance elder mobility.

Introduction to Methodology, Findings and Conclusion

The literature review of the three major domains: long-term care reform, aging and transportation, found:

- That there is a significant body of work associated with older adult health and the importance of both formal and informal care systems including the role of caregivers;
- Medicaid is beset by cost pressures and more efficient ways to transport older adults to covered services is an area of focus with Medicaid brokerages noted as one possible action;
- States vary in their implementation and management of the Medicaid program;
- Caregivers play an important role in transportation for older adults, often taking time off of work to do so, which has a cost to employers;
- Older adult health is greatly affected by chronic diseases, which are the leading causes of death, thus pushing the medical model of acute care to other models such as helping older adults adapt to chronic disease;
- Chronic disease self-management is one program that shows a well documented result between healthcare cost reduction and increased quality of life when older adults can learn to mitigate the symptoms of their chronic disease;

- Though as far as this literature search found, to date access to transportation services and their possible relationship to facilitating chronic disease self-management has not been studied or documented;
- Driving cessation and depression is a well documented issue as are many areas of older adult adaptation required to sustain safe driving due to both common age-related changes and to chronic disease related physical and cognitive changes;
- This relationship between age-related changes to mobility and chronic disease self-management and health status suggest a possible relationship worth further exploration between older adult mobility and health;
- In the transportation domain, states have been experimenting with strategic planning and coordination concepts for thirty years with many states passing legislation requiring some form of coordination between various transportation programs for older adults, persons of limited income and people with disabilities;
- In 2004, the Federal Transit Administration expanded a long-standing emphasis to coordinate transportation resources and programs, which resulted in institutionalizing a program called United We Ride (UWR). UWR strives to address goals from of a Presidential Executive Order for federal agencies to partner to break down barriers to coordinating their transportation programs for human services populations, including older adults;

- A number of scholars have suggested that transportation coordination policies and practices are an important component of efforts to expand older adult mobility;
- A study of state units on aging strategic plans shows that most states, 69%, have transportation services as part of their strategic plan and almost 50% of states coordinate services with other agencies;
- There is another significant body of literature that suggests the importance of a holistic approach to elder mobility, one that includes highway signage, social services, driver training, volunteer driver programs; public transit, land-use planning, pedestrian friendly communities and private transportation services;
- Finally, in 2005, three studies were released that catalogued state approaches to a number of elements found to be important to elder mobility in the literature review: one on state transportation coordination, one on how states are legislating mobility options and, finally, a synthesis of highway practice study on how states were improving the safety of older adults. Together, these studies provide a basis for analyzing state policy and practices relating to elder mobility through transportation coordination and strategic planning across state agencies.

These findings demonstrated a chasm between studies of long-term care reform efforts by states and state activities to promote elder mobility through policy and practice changes. But, does such a chasm actually exist, or, in fact, do state

leaders in older adult services and transportation have a history of collaboration and join strategic planning? Some results suggested this relationship did exist but had not yet been documented. With increased national attention focused upon reduction of costs for long-term care reform and the movement of long-term care to the community, this study attempted to use the 2005 studies to answer some of these questions to see if there is an intersection at the state level of on policy and practice between the domains of long-term care reform, aging and transportation.

The literature review showed that management practices such as strategic planning and interagency coordination were the predominant types of state level systems change activities associated with increasing elder mobility. And, three major studies were released that catalogued the existence of these types of actions at both the legislative and interagency level. Thus, public sector management reform became the major contextual frame for the study. Chronic disease self-management was chosen as the theoretical framework given the probable role of transportation as one part of a community system to enhance older adult quality of life and assist in chronic disease adaptation to mitigate age-related physical and cognitive changes – many of which affect an older adults ability to continue to drive which continues to be their primary mode of transportation. When driving cessation occurs, a lack of transportation alternatives could portend a negative trajectory in older adult health and a commensurate increase in healthcare costs. Thus, systems change activities to enhance elder mobility could have a direct effect on long-term care reform efforts to reduce costs through community based services.

Chapter 4: Methodology

“Change cannot be induced without first forming relationships.”¹⁰

Contextual Framework—Public Sector Management Reform

Given the complexity and interagency coordination required to increase older adult mobility as noted in the literature review, any attempt at a system level state comparative analysis must take into consideration a host of factors. One way to delineate these factors is to separate policy from practice: i.e. What coordination legislation have states implemented and to what end in terms of the practice of public administration? In this case, policy refers to state legislation and regulation relating to transportation coordination. State practice relates to how this legislation is implemented through interagency joint strategic planning, collaboration and coordination. For long-term care reform, it is important to find the elements of long-term care reform that may have association with the level of a state efforts to enhance older adult mobility.

Efficiency (reduced costs), effectiveness (increased service), and consumer orientation (increased consumer satisfaction) outcomes are the major impacts sought by both transportation coordination and long-term care reform. These outcomes are management practices drawn from the private sector and now mandated in the public sector through various pieces of legislation, including the Government Performance Results Act of 1993. The reinventing government movement driven by the National

¹⁰ This phrase is recounted in a series of book reviews in the September 2005, *Public Performance & Management Review*. Though the exact author of this passage is not known, three researchers—Dena Dena Brummer, Melanie Ross, and Gulmira Kalauova of the University of Delaware were noted as the reviewers of the three books discussed (p. 96).

Performance Review strove to address a more efficient and effective government (Al-Garni, 1997).

Coordination to achieve such economies of scale across disparate agencies is achieved through the process of strategic planning. Strategic planning in government is a form of public sector management reform (Hendrick, 2003). To test the effect of strategic planning, Al-Garni surveyed 77 Texas agencies. He found the most beneficial variables associated with strategic planning were: top managers' commitment to strategic planning, organizational commitment, the quality of the strategic plan, strategic plan implementation, strategic planning benefits, and organizational performance (1997, p. iv). Of these variables, Al-Garni found that the most important benefits were: clarifying missions, goals and priorities; improving external management relations through increased focus on the satisfaction of customers and stakeholders; and improving internal management by increasing employees' understanding of the organization, and internal communication and coordination (Al-Garni, p. v).

This type of collaborative strategic planning resembles the concepts of "The New Public Service" where politicians and public administrators engage public dialogue and discussion which creates "a broad-based vision for the community, the state, or the nation [that] can be established and provide a guiding set of ideas (or ideals) for the future" (Denhardt & Vinzant Denhardt, 2000, p. 554). The "most frequent mode of strategic planning is agency planning" (Moynihan, 2006, p. 80). The expected result and the performance outcomes of strategic planning activities, such as state interagency cooperation and coordination, lend themselves to

macrosystem level mixed methods analysis using both qualitative and quantitative approaches. Additionally, when combining state interagency cooperation with the comprehensiveness of legislative initiatives that seek to mandate cooperation, we can achieve a more complete understanding of a state's initiatives in any system reform efforts. Thus, studying the level of state strategic planning and collaboration should equate to a series of outcomes that can be measured.

Crossing Policy Domains

A systemic analysis of public sector management reform across policy domains is difficult, but “research at the more micro level typically gives insufficient attention to the interactions between the different parts of the broader systems and thus misses potentially important dimensions (e.g., interdependencies of various kinds, inter-organizational dynamics, coordination issues, etc.)” (Boston, 2000, p. 15). There are key problems associated with systemic policy evaluations: choosing appropriate criteria; finding the relevant evidence; interpreting available evidence and determining causation; and arriving at an overall assessment (Boston, p. 3). To combat these issue studies, a thorough literature search was done to uncover the major bodies of thought leadership in all three policy domains: aging, transportation, and long-term care as they related to aging adaptation through chronic illness, expansion of older adult transportation, and rebalancing long-term care.

Scholarly studies were selected from the transportation domain that catalogued those concepts considered critical to further mobility including comprehensive assessments of concrete efforts such as state legislative acts and efforts by state agencies to collaborate on elder mobility initiatives. Additionally,

long-term care reform measures were selected based on well-established and utilized Medicaid long-term care and demographic variables. Given the complexity of attempting to be the first researcher to merge these policy domains to assess for a possible statistical association, it was determined that utilization of previous research for the actual systems level data would be the most efficacious way to proceed. The next step after this study is a national survey based on the findings to further research any associations found and the underlying causes of any statistical association.

Henrick's (2003) public sector management reform concepts provided a valuable context for the development of a model to study these cross domain interactions. Hendrick proposed "a theoretical framework within which to study strategic planning in the public sector and a set of variables relevant to this framework" (Hendrick, p. 491). Through quantitative analysis of an extensive 62-item survey given to key strategic planning personnel in all departments for the City of Milwaukee, Wisconsin, Hendrick compiled a number of variables associated with strategic planning in the public sector. These variables include: difficulty with planning; managerial capacity; comprehensiveness of planning; extent monitoring; resource availability; commitment to planning; uncertainty/perceptions; context indices for the internal environment; change/culture strategic planning training; centralization/decentralization; and context indices for the external environment, such as goal conflict and congruence and favorableness/hostility of the environment. Through the act of strategic planning, organizations seek to order uncertainty, increase adaptation to turbulence and increase stakeholder participation (Hendrick).

Overall, Hendrick’s study shows variability and complexity in public sector strategic planning and provides a way to catalog the elements associated with state systems reform in transportation and long-term care. When combined with adaptation to aging as the underlying theoretical basis to modify and apply the key concepts of this dissertation study’s multidimensional policy and state comparative analysis, Hendrick’s study concepts provide a useful context. Overlaying many of the concepts found to be relevant to the problem of combining the three policy domains of transportation, aging, and long-term care, Hendrick’s’ four constructs of: the strategic planning process, environmental context; strategic planning impact, performance; and uncertainty, and perceptions—can be adapted as follows:

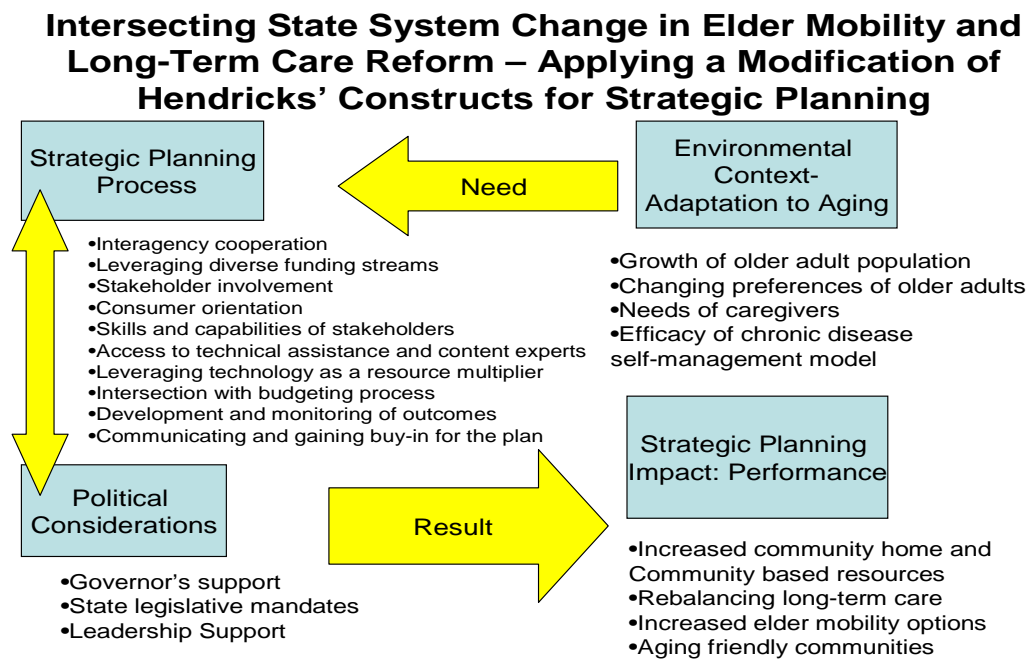


Figure 2: Modeling Public Sector Systems Change in Elder Mobility¹¹

¹¹ The above model was adapted from Hendrick’s’ constructs for strategic planning noted in Figure 3 on p. 499 of her 2003 article. Arrows for need and results are added, and many of the elements noted underneath each construct have been modified with major concepts and variables found in the literature for this study.

In Figure 2, Hendrick's' uncertainty and perceptions construct is renamed, political considerations. The arrows are added to show the interdependence of the activities and how the results tend to flow. Adaptations to aging concepts are the environmental context relevant to this cross-policy domain. Performance outcomes relate to the needs noted in the literature review to increase access to community resources that enhance mobility, to create aging friendly communities and rebalance long-term care. Political considerations relate to leadership at the policy level.

Changing Hendrick's' uncertainty and perceptions construct with political consideration recognizes the impact of what Peters terms: "the politics of co-ordination" (1998, p. 295). As Peters suggests:

A more subtle change in governance is also making co-ordination and inter-organizational politics more important (Politt 1995). The market model has become the dominant approach in the public sector, but there are competing approaches (Peters 1996a). One alternative is enhanced participation. Participation by clients is used as a means of ensuring that government "serves the customer," while maximizing involvement by government employees within their organizations increases the quality of the services being produced. (Peters, 1998, p. 296).

In the case of these changes to Hendrick's construct, politics is referring to both political leaders and bureaucratic leaders. Change management literature abounds with references to the importance of leadership support, and public sector management reform is change management in action.

An important change to Hendrick's model is the application of adaptation to aging as part of the environmental context with the utilization of the chronic disease self-management theory as a critical aspect. Homer et al. propose a modeling framework to assess chronic disease self-management program impacts to health care cost reduction and productivity losses associated with chronic illness:

Reductions in the health care costs associated with diseases, as well as productivity losses due to disability, ideally would offset the added costs of infrastructure and greater intensity of planned care, resulting in a net savings for the community as well as improving outcomes for patients, (2004, p. 203).

Increased transportation infrastructure in its role as a facilitator of continued elder mobility has merit as part of the environmental changes expected of increased community-based systems of care based on its relationship to reducing chronic disease trajectories.

Research Questions

The overarching goal of this study is to assess the relationship between state initiatives to enhance elder mobility and state system change efforts in the area of long-term care reform. The major research questions are:

- Is there a relationship that can be established between state elder mobility policy, planning, and long-term care?
- Can the many studies profiling states across these different policy domains be synthesized to uncover key long-term care and transportation associated factors?

- Is transportation system reform an important component of long-term care system reform?
- Is it plausible that increased state elder mobility efforts also equate to lower rates of nursing home institutionalization for older adults through greater access to home and community-based services?
- Does increased elder mobility help stem the rise of Medicaid costs through greater expenditures for community-based care vs. institutional care?
- Does greater interstate agency collaboration on behalf of elder mobility result when states legislate transportation coordination?
- Are there any hidden factors through the process of this assessment of a 10-year time period during which many have heralded significant changes in rebalancing systems of long-term care?

The research questions were explored through a mixed method approach combining quantitative and qualitative techniques utilizing secondary analysis of previous research. Statistical analysis through step-wise regression was applied to see which variables, if any, contributed to a statistically significant relationship between state elder mobility and state long-term care reform. Smith and Street (2005) suggest that measuring the efficiency of public services is now well entrenched in statistical analysis.

In this study, *long-term care efficiency* is defined as lower nursing home institutionalization rates for older adults and *long-term care effectiveness* is defined as the percent change in state spending for Medicaid Home and Community-Based Services, in contrast to state spending for institutional care. Also noted in Smith and

Streets' review of statistical techniques for modeling organizational efficiency is the importance of choosing the right statistical tools. One approach they advocate is a parametric approach that entails selecting the dependent variable (either an output or cost); specify explanatory variables for the output; and then interpret residuals between observed and predicted output or cost resulting from measurement error.

One of the delimiters for the choice of outputs is “the scope and nature of data availability” (Smith and Street, 2005, p. 405). In this case, the most available data for long-term care resides in state long-term care profiles compiled with similar data elements since the mid-1980s. These profiles measure nursing home utilization rates, state Medicaid spending for both nursing home and HCBS, disability percentages for persons over 65, and demographic variables (among others). A number of organizations track this information, including AARP, the Lewin Group, and MEDSTAT. For this research, long-term care variables from 1995-2005 compiled by the Lewin Group was utilized in combination with other key demographic variables from AARP—AARP has been publishing state long-term care profiles for over 15 years, utilizing data from the U.S. Census, from the Centers for Medicare and Medicaid Services, and from national surveys.

Creation of an Index for State Elder Mobility

Comprehensive coordinated elder mobility initiatives were determined through the creation of a variable that measures state elder mobility policy and planning, referred to as the *state elder mobility index*. This index is derived from state profiles developed by a number of organizations. These studies catalog various

elements across all states, five of these studies were used to create this index for the level of state policy and practice relating to expanding elder mobility:

1. A study released in January 2005 by the National Council of State Legislatures that compares and contrasts all state approaches to transportation coordination by Sundeen, Reed, and Savage, “Coordinated Human Service Transportation State Legislative Approaches.”
2. A 2004 study by the Family Caregiver Alliance that provides important information on caregiver transportation support by Feinberg, Newman, Gray, and Kolb, “The State of the States in Family Caregiver Support: A 50-State Study.”
3. A 2005 study by the Surface Transportation Policy Project on state mobility legislation by Ernst and McCann, “Legislating Mobility Options: A Survey of State Laws Promoting Public Transit, Walking, and Bicycling Research Report .”
4. A 2005 study by the Transportation Research Board on state older road efforts by Stutts, “Improving the Safety of Older Road Users: A Synthesis of Highway Practice.”
5. The author’s 204 study of state aging plans and their transportation content noted earlier in this dissertation was used to add an additional element of verification to state aging collaboration.

These studies were chosen after a period of 3 years of research and analysis of state transportation initiatives and long-term care reform. The author’s previous multivariate analysis of state older adult demographic variables, state long-term care

reform variables, and transportation elements showed that transportation coordination, state aging transportation planning and state transportation coordination legislation alone or in combination, did not have a statistically significant effect. Additionally, a deeper perusal of policy reform literature, especially Hendrick's' model, notes other factors that could possibly mediate or demonstrate a greater effect, especially the practice of state cross-agency collaboration and planning.

The most pivotal study that addressed cross-agency collaboration was that of Stutts (2005). Stutts synthesis project gathered input from various state agencies on their programs and strategies to increase older road-user safety. Surveys were given to State Department of Transportation, State Motor Vehicle Departments or Department of Motor Vehicles (DMVs), State Highway Safety Offices, and State Units on Aging. The results of these surveys provided an invaluable snapshot regarding the level of state collaboration and joint planning. The author's study on state aging plans helped to corroborate the planning element with aging state agencies. The two studies on state legislative approaches provided a way to verify and catalog state legislation in transportation coordination—a major element in state elder mobility initiatives, as was clearly demonstrated in the literature review. Lastly, the caregiver study provided a small element to the index to account for state recognition and support of caregivers; however, as the dissertation study limitations section will note, addressing the level of impact of the informal system of care is a wild card that could have a far more significant effect than this study was able to determine.

The result of combining the transportation coordination legislation and state cross-agency planning with caregiver elements of these studies was the creation of a state mobility index for both state policy and planning. The choice of these elements was those elements that are part of the public sector management reform literature and those elements shown to affect the provision of transportation at a system level as noted in the literature review. Smith and Street suggest that “the main role for analysts is to clarify the choices that are required of policy makers, to provide evidence on popular preferences and to develop measurement instruments that most faithfully reflect the chosen objectives” (2005, p. 408). In choosing these studies for the index, care was taken to identify similar elements in order to achieve reliability in those elements and balance in the scores between policy and planning, such that approximately 50% of the score is related to policy and 50% is related to planning/practice at the agency level. Additionally, reliability checks were added to critical aspects of the scores such as legislation for coordination and state interagency collaboration between state units on aging and state departments of transportation.

The elements of both policy and practice and how those elements are coded are represented in Figures 3a. and 3b, and each state was coded based on the number

of elements in policy and planning/practice the studies demonstrated:

	POLICY - legislation and laws							
	Coordination Laws noted in NCSL Study by Sundeen, Reed and Savage, 2005	Ernst/McCann 2005 study notes coordination law	Coordination Law Y/N (from previous columns to ensure reliability coordination law must be noted by both studies y=1, no=0)	Have Funding Laws (Ernst & McCann, 2005) y=1, no=0	Have Enabling Laws (Ernst & McCann, 2005) y=1, no=0	Have System Design Laws (Ernst & McCann, 2005) y=1, no=0	Have Goal-setting laws (Ernst & McCann, 2005) y=1, no=0	Total Policy Score (1-5)
State								

Figure 3a. Policy

Caregiver	PRACTICE - agency collaboration and planning								
Statewide Caregiver HCBS program includes transportation services for caregivers (Feinberg, Newman, Gay, and Kolb. 2004) y=1, no=0	State Aging Plan Noted Coordinated Planning w/State Dept. of Transportation (Leary, 2004) test for SUA and Transit collaboration	SUA (Stutts, 2005) y=1, no=0	DOT (Stutts, 2005) y=1, no=0	HWY (Stutts, 2005) y=1, no=0	DMV (Stutts, 2005) y=1, no=0	Level of State Agency Collaboration (# of agencies up to a total of 4)	Which Agencies	Level of State Agency Collaboration and Caregiver support (up to a total of 5)	Total Elder Mobility Policy and Planning /Collaboration Index (0-10)

Figure 3b. State Elder Mobility Policy and Practice Index

Figures 3a. and 3b. show how the index was compiled within the two major sections, policy and practice. For state policy focus, the maximum score was 5 and there was a verification check for whether or not a state had legislation for

transportation coordination policy – this had to be noted in two studies. Then, the comprehensiveness of coordination laws was noted from the Ernst & McCann study in terms of funding, enabling, system design and goal setting laws – as this relates to the holistic concepts noted by scholars as critical in furthering transportation options for older adults. So, a state would receive a score of 1 for whether or not it had coordination legislation and then the score would increase up to 5 (see Figure 3a.) depending upon the comprehensiveness of the laws.

For agency practice, or the level of interagency planning and collaboration, the maximum number of elements for state agency planning/practice was 4 (see Figure 3b.), plus the caregiver transportation program support for a total of 5. There were a total of four state agencies where information was available from the Stutts' study: state units on aging (SUA), state departments of transportation (DOT), state departments of motor vehicle (DMS) and state highway administrations (HWY). Given the importance of state units on aging and state department of transportation collaboration, and the fact that the Stutts study did not have all states represented, the author's study of state units on aging plans and collaboration with state department of transportation was used as well.

Additionally, since not all states answered all or, in rare cases, any of Stutts' surveys, any state that answered one or less of Stutts' survey questions and showed 1 or less collaborating agencies (which meant that the state did not show collaboration and joint planning in the state unit on aging plan), that state was dropped from the analysis in order to account for bias due to missing values. Overall, five states were dropped from the analysis due to either missing values associated with one or more

key variables: Illinois (no caregiver percent), Indiana and Arizona (long-term care data); or a lack of enough data for collaboration: Delaware, Hawaii and Indiana.

The following pages show tables with the result of each state's planning portion of the index.

Table 4. State Agency Planning and Coordination (not including caregiver

element)

State Elder Mobility Planning										
Source: Stutts, 2005 and Leary, 2004 State Aging Plan Study										
Stutts, 2005 Survey Question Responses										
State	State Aging Plan Noted Coordinated Planning w/State Dept. of Transportation (Leary, 2004)	Does state have strategic highway safety plan or long range plan that includes older road user safety and mobility including specific goals and objectives? (B, 1 & 1a and G) p.; 70, 71, 93	State DOT Collaborates with State Office on Aging on older road user issues (5.) p. 72, 73	State Highway Safety Collaborates with SUA p. 94 #4	State Unit on Aging Collaborates on older road user safety programs p. 101 #1	DMV provides information on older road user safety/mobility on their website (1) p. 84	DMVs provide assistance on accessing alternative transportation and/or coordinate with other agencies (p. 84/#3 & 85/#5)	# of Survey Question Responses	Total Number of Agencies Collaborating and Coordinating on Elder Mobility	State showed less than 1 Stutts' survey question response and had a total agency collaboration score of less than 1
Alabama	2	0	.	0	.	0	1	4 of 6	3	
Alaska	1	.	.	.	.	1	1	2 of 6	3	
Arizona	1	1	1	.	.	.	.	2 of 6	2	
Arkansas	0	0	.	0	0	0	0	5 of 6	0	
California	0	0	0	.	.	1	1	4 of 6	0	
Colorado	0	0	0	.	.	.	.	2 of 6	0	
Connecticut	.	1	1	.	.	.	.	2 of 6	2	
Delaware	0	.	.	.	1	.	.	1 of 6	1 X	
District of Columbia	0	0	.	0	.	1	1	4 of 6	1	
Florida	1	1	1	.	.	1	1	4 of 6	4	
Georgia	1	0	0	0	.	0	0	5 of 6	1	
Hawaii	0	.	.	.	.	.	.	0	0 X	
Idaho	0	0	.	0	0	0	0	5 of 6	0	
Illinois	0	0	.	1	1	1	1	5 of 6	3	
Indiana	0	.	.	.	0	.	.	1 of 6	0 X	
Iowa	0	1	1	1	.	1	1	5 of 6	4	
Kansas	0	.	.	.	1	0	0	3 of 6	1	
Kentucky	1	0	.	0	.	.	.	2 of 6	2	
Louisiana	1	.	.	.	.	.	.	0	2	
Maine	0	.	.	.	.	0	0	2 of 6	0	
Maryland	0	1	1	.	.	1	1	4 of 6	3	
Massachusetts	1	1	0	0	.	1	1	5 of 6	2	
Michigan	1	1	1	1	.	1	1	5 of 6	4	
Minnesota	0	0	0	.	.	.	.	2 of 6	0	
Mississippi	0	0	0	.	.	.	.	2 of 6	0	
Missouri	0	1	0	.	0	0	1	5 of 6	1	
Montana	1	0	0	.	.	0	1	4 of 6	2	
Nebraska	0	.	.	.	.	0	1	2 of 6	1	
Nevada	1	1	.	1	0	0	0	5 of 6	3	
New Hampshire	1	.	.	.	0	.	.	1 of 6	2	
New Jersey	0	1	1	0	.	0	1	5 of 6	2	
New Mexico	1	0	.	1	.	.	.	2 of 6	3	
New York	0	1	1	.	.	.	.	2 of 6	1	
North Carolina	1	.	.	.	.	.	.	0	2	
North Dakota	1	0	0	.	0	0	1	4 of 6	2	
Ohio	1	1	.	1	0	0	0	5 of 6	3	
Oklahoma	1	1	0	1	.	0	1	5 of 6	3	
Oregon	1	0	.	.	1	1	1	4 of 6	3	
Pennsylvania	1	1	0	.	1	1	1	5 of 6	2	
Rhode Island	1	.	.	.	1	.	.	1 of 6	2	
South Carolina	1	1	.	0	.	.	.	2 of 6	2	
South Dakota	0	1	.	0	.	0	1	4 of 6	1	
Tennessee	0	1	.	0	.	.	.	2 of 6	0	
Texas	1	0	1	0	.	0	1	5 of 6	3	
Utah	1	0	.	1	.	0	0	4 of 6	2	
Vermont	1	0	.	0	1	0	0	5 of 6	2	
Virginia	0	0	0	.	.	0	1	4 of 6	1	
Washington	0	1	.	0	0	1	1	5 of 6	1	
West Virginia	0	0	0	0	1	0	0	6 of 6	0	
Wisconsin	1	.	.	.	.	1	1	2 of 6	3	
Wyoming	1	.	.	.	1	0	1	3 of 6	2	

Table 5. State Elder Mobility Policy and Planning Index (Alabama – Minnesota)

State Elder Mobility Policy and Planning Index																		
POLICY - legislation and laws																		
Ernst, McCann, 2005																		
PLANNING - agency collaboration																		
State	Coordination Laws noted in NCSL Study by Sundeen, Reed and Savage, 2004	Ernst/McCann 2005 study notes coordination law	Coordination Law Y/N (from previous columns to ensure reliability coordination law must be noted by both studies y=1, no=0)	Have Funding Laws	Have Enabling Laws	Have System Design Laws	Have Goal-setting laws	Total Policy Score	Statewide Caregiver HCBS program includes transportation services for caregivers (Feinberg, Newman, Gay, and Kolb, 2005)	State Aging Plan Noted for Coordinated Planning w/State Dept. of Transportation (Leary, 2004)	SUA (Stutts, 2005)	DOT (Stutts, 2005)	HWY (Stutts, 2005)	DMV (Stutts, 2005)	Level of State Agency Collaboration	Which Agencies	Level of State Agency Collaboration and Caregiver support	Total Elder Mobility Policy and Planning/Collaboration Index
Alabama	y	n	0	0	1	0	0	1	12		1	1	0	1	3 sua dot dmv		4	5
Alaska	y	n	0	1	1	0	0	2	01		1	1	0	1	3 sua dot dmv		3	5
Arizona	y	y	1	1	1	0	1	4	11		1	1	0	0	2 sua dot		3	7
Arkansas	y	y	1	1	1	0	1	4	10		0	0	0	0	0		1	5
California	y	y	1	1	1	1	1	5	10		0	0	0	0	0		1	6
Colorado		n	0	1	1	0	1	3	00		0	0	0	0	0		0	3
Connecticut	y	n	0	1	1	1	1	4	1.		1	1	0	0	2 sua dot		3	7
Delaware	y	n	0	1	1	0	1	3	00		1	0	0	0	1 sua		1	4
District of Columbia	y	not noted	0	0	0	0	0	0	10		0	0	0	1	1 dmv		2	2
Florida	y	y	1	1	1	1	1	5	11		1	1	1	1	4 sua dot hwy dmv		5	10
Georgia	y	n	0	0	1	0	0	1	01		1	0	0	0	1 sua (dot response does not show collaborati on)		1	2
Hawaii		n	0	1	1	1	1	4	10		0	0	0	0	0		1	5
Idaho	y	y	1	0	1	0	1	3	10		0	0	0	0	0		1	4
Illinois	y	y	1	1	1	1	1	5	10		1	0	1	1	3 sua hwy dmv		4	9
Indiana		n	0	1	1	1	0	3	10		0	0	0	0	0	0	1	4
Iowa	y	y	1	1	1	1	1	5	10		1	1	1	1	4 sua dot hwy dmv		5	10
Kansas	y	y	1	0	1	0	0	2	10		1	0	0	0	1 sua		2	4
Kentucky	y	n	0	1	1	1	1	4	11		1	1	0	0	2 sua dot		3	7
Louisiana	y	n	0	1	1	1	0	3	01		1	1	0	0	2 sua dot		2	5
Maine	y	y	1	0	1	1	1	4	00		0	0	0	0	0		0	4
Maryland	y	y	1	1	1	1	1	5	10		1	1	0	1	3 sua dot dmv		4	9
Massachusetts	y	n	0	1	1	1	0	3	11		1	0	0	1	2 sua dmv		3	6
Michigan		y	0	1	1	1	0	3	11		1	1	1	1	4 sua dot hwy dmv		5	8
Minnesota	y	y	1	1	1	1	1	5	10		0	0	0	0	0		1	6

Table 6. State Elder Mobility Policy and Planning Index (Mississippi – Wyoming)

State Elder Mobility Policy and Planning Index																			
POLICY - legislation and laws										PLANNING - agency collaboration									
Ernst, McCann, 2005																			
State	Coordination Laws noted in NCSL Study by Sundeen, Reed and Savage, 2004	Ernst/McCann 2005 study notes coordination law	Coordination Law Y/N (from previous columns to ensure reliability law must be noted by both studies y=1, no=0)	Have Funding Laws	Have Enabling Laws	Have System Design Laws	Have Goal-setting laws	Total Policy Score	Newman, Gay, and Kolb, 2005)	Statewide Caregiver HCBS program includes transportation services for caregivers (Feinberg, Newman, Gay, and Kolb, 2005)	State Aging Plan Noted for Coordinated Planning w/State Dept. of Transportation (Leary, 2004)	SUA (Stutts, 2005)	DOT (Stutts, 2005)	HWY (Stutts, 2005)	DMV (Stutts, 2005)	Level of State Agency Collaboration	Which Agencies	Level of State Agency Collaboration and Caregiver support	Total Elder Mobility Policy and Planning/Collaboration Index
Mississippi	y	n	0	1	1	0	0	2	0.0		0	0	0	0	0		0	0	2
Missouri	y	n	0	1	1	1	1	4	1.0		0	0	0	1	1 dmv		2	6	
Montana		n	0	1	1	1	0	3	1.1		1	0	0	1	2 sua dmv		3	6	
Nebraska	y	n	0	0	1	0	0	1	1.0		0	0	0	1	1 dmv		2	3	
Nevada	y	y	1	0	1	0	0	2	0.1		1	1	1	1	4 sua dot hwy dmv		4	6	
New Hampshire		n	0	0	1	0	1	2	1.1		1	1	0	0	2 sua dot		3	5	
New Jersey	y	y	1	1	1	1	1	5	0.0		0	1	0	1	2 dot dmv		2	7	
New Mexico	y	y	1	0	1	1	0	3	1.1		1	1	1	0	3 sua dot hwy		4	7	
New York	y	y	1	1	1	1	0	4	1.0		0	1	0	0	1 dot		2	6	
North Carolina	y	y	1	1	0	1	0	3	1.1		1	1	0	0	2 sua dot		3	6	
North Dakota		n	0	1	0	0	0	1	0.1		1	0	0	1	2 sua dmv		2	3	
Ohio	y	n	0	0	1	1	1	3	1.1		1	1	1	0	3 sua dot hwy		4	7	
Oklahoma	y	y	1	1	0	0	0	2	1.1		1	0	1	1	3 sua hwy dmv		4	6	
Oregon	y	y	1	1	1	1	0	4	1.1		1	1	0	0	3 sua dot dmv		4	8	
Pennsylvania	y	y	1	1	1	1	1	5	0.1		1	0	0	1	2 sua dmv		2	7	
Rhode Island	y	y	1	0	0	1	0	2	0.1		1	1	0	0	2 sua dot		2	4	
South Carolina		n	0	1	1	1	1	4	0.1		1	1	0	0	2 sua dot		2	6	
South Dakota		n	0	1	1	0	0	2	1.0					1	1 dmv		2	4	
Tennessee	y	y	1	1	1	1	1	5	0.0		0	0	0	0	0		0	5	
Texas	y	y	1	1	1	1	1	5	1.1		1	1	0	1	3 sua dot dmv		4	9	
Utah	y	n	0	0	1	0	1	2	1.1		1	0	1		2 sua hwy		3	5	
Vermont	y	y	1	1	1	1	1	5	1.1		1	1			2 sua dot		3	8	
Virginia	y	n	0	1	1	0	1	3	1.0		0	0	0	1	1 dmv		2	5	
Washington	y	y	1	1	1	1	1	5	1.0		0	0	0	1	1 dmv		2	7	
West Virginia	y	y	1	0	1	0	0	2	0.0		0	0	0	0	0		0	2	
Wisconsin	y	y	1	1		1	1	4	1.1		1	1		1	3 sua dot dmv		4	8	
Wyoming		n	0	1	0	0	0	1	0.1		1	1	0	0	2 sua dot		2	3	

The state elder mobility index is the explanatory variable for this study, and further discussion on the actual results of the index will be discussed in the findings section. The index for each state is based on the use of matrices and dummy variables that are well documented tools in scientific research. When results of these

various studies are taken in the aggregate view enabled by the matrix, it provides a very useful quantitative score for a state's system change efforts to increase transportation for older adults through policy and planning. This variable takes into account the effects of collaboration between state departments of transportation, state agencies on aging, state department of motor vehicles, state highway administration, and policy in the area of state caregiver transportation services, and comprehensive transportation coordination legislation. Thus, this is as integrative a variable at a system level that serves as a proxy for a holistic approach to elder mobility that takes into consideration roads, driver training, social services, public transportation and caregivers.

Of all of the elements, the informal system consisting of caregiver transportation is the least accounted for in this study. As noted earlier, the issue of accurately assessing the effect of a state's formal vs. informal systems of care is not controlled for as much as would be preferred. This is certainly a future area of research that will be required. However, what this index does achieve is a first glimpse of what an integrative system view of the states might look like in this area. The effect of such transportation legislation initiatives would take time to bear results; in fact, transportation coordination legislation was enacted across the United States since the early 1970s. The first state to pass transportation legislation was Maine in 1973, according to the NCSL study, and the NCSL study assessed legislation up through 2003.

Unfortunately, to date there are no statewide systems that capture per person transportation variables, such as number of rides or number of older persons no

longer driving who are using alternative means of transportation, though recent data exists on the number of older persons without cars. As noted earlier, the U.S. AoA collects data on number of rides both for transportation and assistive transportation services for state Title IIIB programs, but these numbers alone do not assess the complete picture of older adult mobility. Thus, at a state system level, to date, utilizing elements found to be critical in elder mobility for both policy and planning seemed the best option to pursue for this study.

Long-Term Care Reform Variables

With a systems change explanatory variable formed through the elder policy and planning index, the next methodological decision related to dependent variables, timelines and control variables. Since the goal was to assess the effect state elder mobility policy and planning on state long-term care reform, the selection of well known systems change variables of nursing home institutionalization rates and the change in Medicaid dollars to home and community-based services was made. Additionally, leading and lagging indicator issues associated with nursing home institutionalization rates and state community-based long-term care systems are addressed through the use of the percent change of these two key dependent variables, nursing home institutionalization rates, and the percent change in the level of state Medicaid funding devoted to home and community-based care over the time period of 1995-2005. The author is indebted to Alexih of the Lewin Group for allowing the use of her team's Medicaid Long Term Trends Data for these variables. This data does include the overall proportion of Medicaid Spending for home and community-based services for both the elderly and individuals under age 65 with physical

disabilities. Nursing home institutionalization rates and total Medicaid per person spending rates are for individuals over 65. The data from Lewin is from a number of sources.¹²

Level of HCBS spending, as a portion of overall long-term care spending, is asserted in long-term care profiles as a key indicator for the level of state support for community-based long-term care (Ladd, R. L. Kane, R. A. Kane, & Nielsen, 1995; Nawrocki & Gregory 2000; Gibson, Gregory, Houser, & Fox-Grage, 2004). Thus, for this study, this variable was the considered the major system change dependent variable for analysis with the explanatory transportation systems change variable, the state elder mobility index.

Nursing Home Institutionalization Risk Factors

Assessing those variables that most affect whether an older adult with a disability can remain in the community or is institutionalized are well-researched issues. Disability rates from mobility or self-care limitations are long-established methods of assessing risk of nursing home institutionalization (Greene, V. L., Lovely, M. E., Miller, M. D., & Ondrich, J. I., 1995; Boaz & Muller, 1994; Liu, Manton, & Aragon, 2000; Schwab, Leung, Gelb, Meng, & Cohn, 2003). One major issue of concern is the effect of family caregivers; however, access to transportation resources is posited to also benefit family caregivers. Thus, even if an older adult

¹² As noted by the Lewin Group in its footnote for its data tables:

Proportion Medicaid HCBS based on CMS Form 64 reports compiled by Medstat and includes HCBS waivers for the aged or physically disabled and state plan personal care option counted as HBS (home health excluded because primarily post-acute) and nursing facility expenditures counted as institutional. 2005 estimates for Texas and Wisconsin adjusted to reflect managed care payments. 1995 and 2005 Medicaid nursing facility census based on Nursing Home Statistics

Yearbook compiled by Mick Cowles. Per 1,000 Medicaid nursing facility census and per capita Medicaid LTGC payments for individuals age 65 and over based on Bureau of the Census estimate for July 1995 and 2005.

with a disability is residing at home with a caregiver, access to transportation resources are still expected to account for some difference in his or her ability to stay at home vs. in a nursing home.

In Wilner's (1985) dissertation, transportation to medical appointments was considered an important service to prevent institutionalization, more so than social support (pp. 121-122). She also discussed the importance of informal support systems for transportation - which is consistent with transportation literature noted earlier in the literature review. Thus, the importance of family caregiver transportation support is the reason a caregiver element was included in the state elder mobility index. Additionally, since this author's (Leary) dissertation is focused primarily on an assertion of elder mobility assistance as a factor for Medicaid cost reduction, the fact that Medicaid is a primary payer of nonemergency medical transportation to medical appointments gives even further credence to the importance of transportation services as ways to reduce chronic illness associated costs.

Other key factors noted as determinants of nursing home institutionalization related to state systems are demographics and living arrangements, especially whether or not someone has family associated with his or her care. A recent analysis by Muramatsu, Hongjun, Campbell, & Hoyem (2007) of state system effects on nursing home institutionalization rates showed a statistically significant relationship between state HCBS commitment and lower nursing home institutionalization rates for seniors without children. Living alone was one of four major variables found to predispose older adults to nursing home placement according to a comprehensive synthesis of

nursing home institutionalization risk factors by Miller and Weissert: living alone, age, informal caregiver, greater personal control (2000, p. 287).

Miller and Weissert (2000) analyzed 78 multivariate studies abstracting 167 equations for evaluation as predictors of nursing home institutionalization, hospitalization, function and mortality (p. 267). Being nonwhite decreased the chances of an elder being institutionalized (p. 274), while advanced age “appears to be a strong and consistent predictor of institutionalization” (p. 274). The concepts of informal caregiver and greater personal control were not well defined; however, the findings seem to corroborate other researchers who suggest that older adults with spouses as caregivers play an important role in reducing institutionalization, while clients with nonrelated caregivers are more likely to be institutionalized (Wilner, 1985). Demographic factors that did not show statistical significance were income and education (Miller & Weissert, 2000).

A later assessment of the characteristics of PACE (Program of all-inclusive care for the elderly) program participants, showed that age, instrumental activities of daily living impairment, being white, and incontinence were strong predictors of future nursing home placement (Freidman, Steinwachs, Rathouz, Burton, & Mukamel, 2005). Those able to enroll in a PACE program were also at a lower risk for nursing home placement; thus, the existence of community-based approaches such as PACE help to mitigate some nursing home admission risk factors.

Miller and Weissert commented regarding the lack of research on community wide resources:

Funding sources may also wish to pay more attention to relatively neglected predictor candidates, especially community-wide enabling variables such as facility, market and policy resources. The few studies investigating the impact of these neglected variables indicate that they may, in some instances, represent important explanatory factors. (2000, p. 289)

A perspective of community care resources in combination with factors such as caregiver demographics was evaluated by Jette et al. (1995). In their multivariate analysis of 5,855 older persons in Eastern Massachusetts, they found an interplay between “buffering and supplementation” through community systems. For cognitively impaired elders, the availability of greater hours of formal systems of care reduced nursing home institutionalization (buffering), while elders utilizing greater hours of informal care (supplementation) were also at reduced risk of nursing home placement. Shapiro and Taylor (2002) showed a positive association between elders’ sense of well-being and the intervention of in-home social services. These studies demonstrate that access to community care resources contribute to the probability of older adults’ ability to avoid nursing home institutionalization. Informal as well as formal transportation services affect the ability of elders to access these supports.

Thus, in order to adequately account for the impact of state-level transportation initiatives to increase access to those services that help older persons remain at home, factors found by researchers to be most associated with nursing home institutionalization rates need to be controlled in the study. So, the regression analysis included the following control variables for state older adult populations:

Age – 65+, 75+ and 85+ (difference in % population 1995-2005)

% 65 with any disability in 2005

% White in 2005

% Living alone in 2005

% caregivers in the state in 2005

% over 65 below poverty

The data sources for these variables are the AoA and AARP. AARP's Public Policy Institute tracks many of these measures as part of its ~~their~~ long-term care profiles, and the U.S. AoA's Dr. Saadia Greenberg provided many of the poverty and aging demographics.¹³

Hypotheses

The purpose of this study is to find if the policy domains of aging, transportation, and long-term care intersect at the state systems change level. The premise is that they do, and that those states with greater activities in the area of enhancing elder mobility would also achieve greater success in both rebalancing long-term care dollars, primarily from Medicaid, toward home and community-based services and in reducing nursing home institutionalization rates for persons over 65.

Thus, the two hypotheses are:

H₁: State elder mobility planning and policy initiatives increase the percent of Medicaid dollars being used for home and community-based services controlling for nursing home institutionalization risk factors for persons over 65 in the state.

¹³ The author also especially thanks Ari Houser for his assistance in providing caregiver, living alone, and some of the poverty data. Most of these datasets are compiled by AoA and AARP from U.S. Census information. Please see Appendix B for detailed data tables annotated with data source information.

H₂: State elder mobility planning and policy initiatives reduce levels of institutionalization in a state for persons over 65, controlling for nursing home institutionalization risk factors.

Statistical analysis was done using Intercooled STATA Version 9.2. The explanatory variable is the State Elder Mobility Index converted to percentages, X₁[eldermobindexper]. The total possible index score is 10 or 100%, and the State Elder Mobility serves as a proxy for the level of state policy and planning for older adult transportation needs. The choice of elements for the elder mobility index was made based on the earlier referenced studies that assessed state legislation for transportation coordination planning and mobility and the level of state agency planning and interagency collaboration. State legislation demonstrates state political will and leadership in transportation efforts while state agency planning and interagency collaboration demonstrate the leadership of effectiveness of the bureaucracy—the elements chosen for this index are based on the concepts of the revised Hendrick model and public sector management reform.

The two dependent variables in this study are:

H₁ Dependent Variable Y₁ [diffmedhcbs] is the percent change in the level of Medicaid long-term care spending devoted to HCBS from 1995-2005. This number is a well-established proxy for state long-term care reform systems change. It is a good efficiency measure regarding the level of success a state is attaining at refocusing its Medicaid dollars, currently the major public payer of long-term care, away from expensive institutional care to more cost-effective and person-preferred home and community-based care.

H₂ Dependent Variable Y₂ [perchangenh] is the percent change in Medicaid nursing facility Census per 1,000 persons age 65 and over and is a also well-established indicator of state effectiveness in long-term care reform in terms of helping reduce the level of institutionalization of older adults.

Validity and Reliability of Data

The validity and reliability of the data were addressed in multiple ways. For the explanatory variable, multiple data sources were used, where possible, to ensure reliability of whether or not a state practiced certain modes of planning and collaboration between the target agencies. To ensure the reliability of the quantitative data used in the control variables, and in the dependent variables, these data are from previously verified datasets. In terms of data validity, the dependent variables are well researched and established measures of long-term care reform and the control variables are also documented and similarly well-researched variables. The validity of the state elder mobility policy and planning measure was that the measure is based on a balance of policy and planning concepts, are expert judgments of practices that mirror public sector management reform elements such as planning, collaboration and leadership, including the importance of the political sphere as noted by numerous transportation scholars.

Statistical Methods

Using Intercooled Stata Version 9.2, the 46 states that are surveyed are analyzed using descriptive statistics and multivariate analysis. Multivariate analysis was used to analyze the association between state elder mobility systems change initiatives of policy and planning on state long-term care reform. Tests for

multicollinearity and heteroscedasticity was used to address any issues of correlation and nonconstant variance. Regression analysis tested for statistically significant relationships, and regression coefficients are noted to show the level of a statistically significant effect.

Study Limitations

The most challenging aspect of this study was finding a valid way to measure the level of a state's efforts and success in furthering older adult mobility. There are currently no accepted national measures that are tracked to assess elder mobility at the state level. As noted earlier, the United We Ride program, by the Federal Transit Administration, has developed a series of community measures for the fully coordinated community based on three goals: to increase transportation options for older adults, to simplify access to transportation services and to increase the quality of transportation services for older adults. These are recently released goals supported by a detailed logic model that lays out specific criteria to measure the attainment of the three goals. Over time, it is hoped that these goals are widely adopted and their measures tracked. The use of the elder mobility index is one way to set a systems level baseline for state elder mobility. Once more definitive measures are tracked and reported at the state level, more detailed and specific efficiency and effectiveness measures will be available to compare to the well-established long-term care system reform measures.

Additionally, there is currently not a widely accepted or tracked manner in which to account for the divergence and effect of a state's informal care system. As the literature review shows, there is great variability in the efficacy of informal care—

whether it is provided by family, the actual characteristics of family members themselves and the characteristics of the care recipient. There is also a lack of consistency in some very key demographic and health status measures: poverty, living environment (especially rural vs. suburban) and disability status. For this study, it was desired to control for a state's percent of rural/suburban/urban older adults as well as changes in the level of disability rates for older adults. However, for the time period studied, there is no consistent measure for these variables for all the U.S. states.

Chapter 5: Research Findings

“There is an overall lack of coordination for the myriad of transportation activities and funding in each state. This causes fragmented and duplicative transportation services that fail to meet comprehensive transportation needs. In response, states are beginning to employ coordination as a highly effective tool to provide substantially improved transportation services at little or no additional cost.”
(National Governors Association Report 2002, p. 6)

Descriptive Statistics and Correlations

At the national level, demographics and system variables paint a picture of low poverty rates, high disability rates, and increases in movement of Medicaid dollars to HCBS. In 2005, these 46 states averaged 21% of Medicaid spending spent on HCBS vs. 9% in 1995. As scholars have noted, there is a substantial shift occurring in Medicaid funding: On average, from 1995-2005, states shifted 12% more Medicaid dollars to HCBS. In contrast, states did not experience as much change in their Medicaid nursing home facility census. From 1995 to 2005, on average states had a 5% reduction in their over 65 nursing home census. The informal systems of care in terms of percent of state caregivers averaged 15% and ranged between 10-21%. Poverty rates for adults over 65 in 2005 was low, 10%, ranging from 6-17% nationwide; however, the incidence of chronic disease noted earlier clearly causes increased disability levels with over 40% of adults over 65 in 2005 had some type of disability with a range between 35-54%. Many people over 65 live alone: 39% in 2005, and ranging from 31-51% in the 46 states assessed in this study. Thirteen percent of the United States was over 65 in 2005, with 6% over 75 and almost 2% over 85. Table 7 shows the study variables and their descriptive statistics.

Table 7. Study Variables and Descriptive Statistics

Study Major Variables									
Variable	STATA label	Source	Unit measure (for 46 states)	Type of Variable	Mean	Standard Deviation	Min	Max	Statistically significant in one or more regression models
% over 65 living alone 2005	perlivalo05	Compiled by AARP	%	control	39	3.33	31	51	X
% over 65 White 2005	ov65wht05	Compiled from US Census data by Dr. Greenberg of AoA	%	control	85	13.01	28	99	X
% State Caregivers 2005	percareg05	Compiled by AARP	%	control	15	2.00	10	21	
% Over 65 below poverty 2005	2005ov65belowpov	Compiled by AARP	%	control	10	2.57	6	17	
% State over 65 with any disability	2005ov65anydis	Compiled by AARP	%	control	41	4.46	35	54	
% Difference in State HCBS Medicaid \$ 1995-2005	diffmedhcms	Computed from data compiled by Lewin Group	%	dependent	12	11.94	-4	43	X
% Change in State Nursing Home Rates 1995-2005	perchangenh	Computed from data compiled by Lewin Group	%	dependent & independent	-17	11.09	-38	5	X
Elder Mobility Policy and Planning Index	eldermobindexper	Compiled from five studies, see discussion on index	%	independent	55	21.47	10	100	X
State % over 65 in 2005	_2005_65	Compiled from US Census data by Dr. Greenberg of AoA	%	control	13	1.78	7	17	
State % over 75 in 2005	_2005_75	Compiled from US Census data by Dr. Greenberg of AoA	%	control	6	1.19	3	8	
State \$ over 85 in 2005	_2005_85	Compiled from US Census data by Dr. Greenberg of AoA	%	control	1.76	0.45	0.59	2.69	
1995 % state Medicaid \$ HCBS	medicaidhcms95	Compiled by The Lewin Group	%	control	9	8.08	1	54	
2005 % state Medicaid \$ HCBS	medicaidhcmsper2005	Compiled by The Lewin Group	%	control	21	14.68	1	54	
1995 State Nursing Home Rates per 1,000 65+	medicaidnf1	Compiled by The Lewin Group	1 per 1,000	control	32	9.00	14	55	
2005 State Nursing Home Rates per 1,000 65+	mednhper10002005	Compiled by The Lewin Group	1 per 1,000	control	26	7.60	10	41	X

Correlation analysis reveals a number of relationships among these variables:

Table 8. Correlations between Major Variables

Correlation Matrix for Major Variables											
	% State Caregivers 2005	% over 65 without a car	% over 65 who are white	% over 65 living alone	% Change in state nursing home reates 1995-2005	% Difference in State HCBS Medicaid \$ 1995-2005	State Nursing Home Rates per 1,000 65+ mednhper10002005	State Elder Mobility Policy and Planning Index (%)	State % over 65 in 2005	State % over 75 in 2005	State % over 85 in 2005
	percareg05	ov65nocar	ov65wht05	perlivalo05	perchangenh	diffmedhcs		eldermobindexper	_2005_65_	_2005_75_	_2005_85_
percareg05	1										
ov65nocar	-0.1523	1									
ov65wht05	0.1095	-0.6056	1								
perlivalo05	-0.0513	0.4543	-0.0559	1							
perchangenh	0.2215	0.4810	-0.2996	0.2572	1						
diffmedhcs	-0.4418	-0.1997	-0.1145	-0.2360	-0.4349	1					
mednhper10002005	0.2952	0.2552	0.1030	0.6204	0.3642	-0.3639	1				
eldermobindexper	-0.2522	-0.1586	0.0981	-0.3253	0.0641	0.2106	-0.2005	1			
_2005_65_	0.2138	0.0154	0.3561	0.3465	0.4044	-0.3712	0.3678	0.1342	1		
_2005_75_	0.0880	0.0982	0.3970	0.3887	0.4191	-0.3296	0.4491	0.1612	0.942	1	
_2005_85_	-0.0599	0.0988	0.4346	0.4105	0.3191	-0.2429	0.4517	0.1796	0.8107	0.9452	1

In Table 8, Pearson's correlation coefficient values show very little strong association between the study variables except between aging cohorts. Moderate negative association exists between being over 65 and white and not having a car (-.60), and low negative association is demonstrated between changes in the percent of Medicaid HCBS dollars and changes in those over 65 in nursing homes (-.43); an expected result, for as more dollars are available for home and community-based services, the lower we would expect nursing home rates to be. Lastly, living alone and not having a car and nursing home rate changes were positively low/moderately associated (.45). Interestingly, demographic percentages were only low/moderately associated with the long-term care systems change variable. The state elder mobility policy and planning index correlations showed negative low/moderate associations with the percent over 65 living alone, the percent state caregivers and the difference in state % Medicaid long-term care dollars going to HCBS from 1995-2005. There was almost no association between the elder mobility planning and policy index and state changes in nursing home institutionalization rates for people over 65.

Regression Results

The analysis of the 10-year period both corroborated past research in long-term care reform and demonstrated an association between state actions to enhance elder mobility through policy and planning and state long-term care reform initiatives. First, to perform a reliability check on the control variables to ensure they were affecting nursing home institutionalization rates, a multivariate regression was done for the year 2005 to see effects of the control variables on state nursing home rates, and the result corroborated findings from previous scholars that those persons over 65 living alone, living under poverty, and who were white increased a state's nursing home institutionalization rate. The model explained 44% of the variance in state Medicaid nursing facility census per 1,000 persons age 65 and over. Table 9 contains this regression model:

Table 9. The Stata Regression Model

reg medicaidnhper10002005 perlivalo05 ov65wht05 ov65belowpov						
Source	SS	df	MS	Number of obs = 46		
Model	1242.26048	3	414.086826	F(3, 42) = 12.83		
Residual	1355.65804	42	32.2775725	Prob > F = 0.0000		
Total	2597.91852	45	57.7315227	R-squared = 0.4782		
				Adj R-squared = 0.4409		
				Root MSE = 5.6813		
med~10002005	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
perlivalo05	1.164073	.2768619	4.20	0.000	.6053435	1.722803
ov65wht05	.1856512	.0780896	2.38	0.022	.02806	.3432424
ov65belowpov	1.035892	.4237942	2.44	0.019	.1806406	1.891143
_cons	-45.37078	12.26438	-3.70	0.001	-70.1213	-20.62026

For every 1 percentage point increase of those over 65 who are living alone, the state's rate of nursing home institutionalization increased by 1.16 or one additional person per 1,000 persons over 65 in the state—statistically -significant at $p=.0001$, and controlling for percent over 65 who were white and the percent over 65

living below poverty. Additionally, there is a statistically significant effect on state 2005 nursing home rates for the two control variables. The most meaningful results relate to the effect of persons over 65 living alone and persons over 65 living below poverty—for every 1 percentage point increase in either of these demographic variables in a state, that state would be expected to have one additional person per 1,000 people over 65 in an institution. Though this sounds slight, if we look at the mean values of these variables and their standard errors, this finding is actually very compelling.

If we suppose a yearly average of \$54,750/year per person, not an unreasonable expectation given current Medicaid per diem rates (this at a rate of \$150/day); then if a state had a 10% increase in the number of persons living alone, this could equate to a Medicaid cost of \$ 547,500 for every 10 people per 1,000 people over 65 in the state. Below are the mean, standard error, confidence intervals correlation coefficients for these variables:

ci	medicaidnhper10002005	perlivalo05	ov65wht05	ov65belowpov
Variable	Obs	Mean	Std. Err.	[95% Conf. Interval]
med~10002005	46	26.50583	1.120283	24.24946 28.76219
perlivalo05	46	39.1437	.4916694	38.15342 40.13397
ov65wht05	46	85.23076	1.917644	81.36842 89.09309
ov65belowpov	46	10.12391	.3787067	9.361159 10.88667

When multivariate analysis is done on the two major hypotheses, we have the following results:

H₁ State elder mobility planning and policy initiatives increase the percent of Medicaid dollars being used for home and community-based services controlling for nursing home institutionalization risk factors for persons over 65 in the state.

Stepwise regression resulted in a model with only two statistically significant control variables once all of the non-significant variables were eliminated from the model. The original model with all of the control variables is noted below:

```
. reg diffmedhcbs eldermobindexper difffov65 difffov75 difffov85 perlivalo05
ov65wht05 percareg05 ov65nocar ov65belowpov ov65anydis perchangenh
```

Source	SS	df	MS	Number of obs =	46
Model	3104.46082	11	282.223711	F(11, 34) =	2.90
Residual	3311.43852	34	97.3952505	Prob > F =	0.0085
				R-squared =	0.4839
				Adj R-squared =	0.3169
Total	6415.89934	45	142.575541	Root MSE =	9.8689

diffmedhcbs	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]
elderbin~r	.0825258	.0818954	1.01	0.321	-.0839058 .2489573
difffov65	-.8994044	4.137712	-0.22	0.829	-9.308247 7.509438
difffov75	5.729289	8.429711	0.68	0.501	-11.40194 22.86052
difffov85	-2.05908	13.68814	-0.15	0.881	-29.87672 25.75856
perlivalo05	.2318044	.621001	0.37	0.711	-1.030221 1.49383
ov65wht05	-.4404387	.1940269	-2.27	0.030	-.8347488 -.0461287
percareg05	-1.883867	1.084873	-1.74	0.092	-4.088594 .3208594
ov65nocar	-.5624629	.5169748	-1.09	0.284	-1.613082 .4881563
ov65belowpov	-1.320359	1.083487	-1.22	0.231	-3.52227 .8815518
ov65anydis	.7603564	.5497137	1.38	0.176	-.3567963 1.877509
perchangenh	-.3856186	.1912459	-2.02	0.052	-.774277 .0030398
_cons	42.47983	34.44364	1.23	0.226	-27.51807 112.4777

As we can see from the first model with all of the variables, percent of persons over 65 living alone, all of the age change demographic variables, over 65 without a car, percent caregivers, percent of persons 65 with any disability, all needed to be taken out of the model. After each iteration of the stepwise regression, the final model contained only two control variables, the percent of persons over 65 who were white and the percent change in nursing home institutionalization rates.

The final H_1 regression model is noted below, and the difference in % of Medicaid dollars used for HCBS from 1995-2005 was significantly affected by the state's elder mobility index controlling for the percent over 65 who were white and the percent change in nursing home institutionalization rates:


```
. reg diffmedhcbs eldermobindexper ov65wht05 perchangenh
```

Source	SS	df	MS		Number of obs =	46
Model	2112.81406	3	704.271353		F(3, 42) =	6.87
Residual	4303.08528	42	102.454411		Prob > F =	0.0007
Total	6415.89934	45	142.575541		R-squared =	0.3293
					Adj R-squared =	0.2814
					Root MSE =	10.122

diffmedhcbs	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
elder.mob~r	.1531444	.0709576	2.16	0.037	.0099461	.2963426
ov65wht05	-.2794699	.1225356	-2.28	0.028	-.5267569	-.032183
perchangenh	-.5851251	.1432319	-4.09	0.000	-.8741787	-.2960716
_cons	16.86344	10.42443	1.62	0.113	-4.173912	37.90079

No correlation issues exist as we can see from the correlation analysis of these variables:

```
corr diffmedhcbs eldermobindexper ov65wht05 perchangenh
(obs=46)

      | diffme~s elderm~r ov65w~05 percha~h
-----+-----
diffmedhcbs | 1.0000
elder.mob~r | 0.2106 1.0000
      ov65wht05 | -0.1145 0.0981 1.0000
perchangenh | -0.4349 0.0641 -0.2996 1.0000
```

However, we do find an issue with nonconstant variance:

```
. hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance
Variables: fitted values of diffmedhcbs

chi2(1)      =      7.65
Prob > chi2   =     0.0057
```

Thus, it is necessary to use robust regression to account for the nonconstant variance in the change in the % of state Medicaid dollars going toward HCBS, which shows that we still have a statistically significant result in the first hypothesis:

```
. reg diffmedhcbs eldermobindexper ov65wht05 perchangenh, robust
```

Linear regression

Number of obs = 46
F(3, 42) = 7.12
Prob > F = 0.0006
R-squared = 0.3293
Root MSE = 10.122

diffmedhcbs	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf. Interval]	
eldermobin~r	.1531444	.0598231	2.56	0.014	.0324165	.2738722
ov65wht05	-.2794699	.1488086	-1.88	0.067	-.5797779	.020838
perchangenh	-.5851251	.1361723	-4.30	0.000	-.8599319	-.3103183
_cons	16.86344	12.48189	1.35	0.184	-8.326037	42.05291

The VIF test shows there are no issues with multicollinearity:

```
vif
```

Variable	VIF	1/VIF
ov65wht05	1.12	0.896395
perchangenh	1.11	0.901391
eldermobin~r	1.02	0.980754
Mean VIF	1.08	

Residuals are plotted using an rvfplot in Figure 4.:

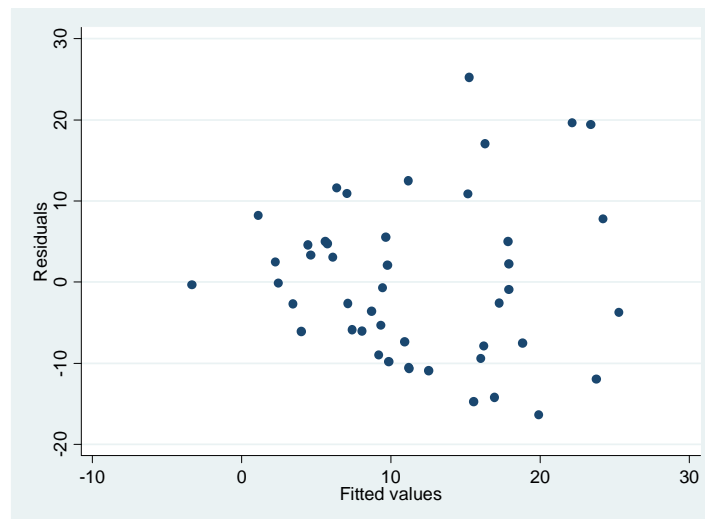


Figure 4. RVF Plot showing residuals vs. fitted values

The only statistically significant control variables for this model were the change in nursing home residents and the % of persons over 65 who were white in 2005. No problems with multicollinearity were observed; however, we do see an issue with nonconstant variance. Consequently, robust regression was used to

generate the final model, which with an r^2 of 33%, demonstrating that this model explains 33% of the variance in the change in the percent of Medicaid dollars spent on home and community-based care.

This robust regression model shows that for every 1 point increase (which is 1 percentage point) in the level of a state's elder mobility policy and planning, the state increased the percent of Medicaid dollars spent on HCBS by .15% over the ten year period; this regression coefficient is statistically significant with a p value of less than .05, controlling for the change in nursing home census and the percent of persons over 65 who are white. Thus, we can reject the null hypothesis of no effect between a state's elder mobility policy and planning initiatives and the state's success in long-term care rebalancing.

Initially, this may not sound like a large effect, but if we look at recent August 2007 CMS data, \$99 billion was spent on Medicaid long-term care in the United States in 2006, and the state of Maryland spent \$1.3 billion on Medicaid long-term care in 2006. If the state of Maryland was able to increase its elder mobility policy and planning efforts by 10%, equating to one more agency increasing collaboration, it could possibly see a 1.5% increase in its percent of Medicaid dollars used for HCBS—or \$19.5 million.

Given the per capita costs of HCBS vs. institutional care—per capita costs for institutional care are usually double that of community-based care¹⁴—this could equate to a combination of serving greater numbers of older adults and saving costs if

¹⁴ A recent mathematics presentation by Verdier showed on average a per capita cost of \$159 for nursing home services vs. \$86 for HCBS Waivers. See URL: www.mathematica-mpr.com/about%20us/powerPoint%20Presentations/2007/VerdierMgdLTC10-23-07.ppt (Retrieved November 12, 2007.)

Medicaid enrollment stays flat. These findings suggest that, statistically, there is an economic argument in support of states' focus on elder mobility initiatives as a part of their long-term care reform efforts.

However, the same does not hold true for the second hypothesis, as the analysis does not show a statistically significant relationship between state elder mobility policy and planning and reductions in the state nursing home census.

H₂: State elder mobility planning and policy initiatives reduce levels of institutionalization in a state for persons over 65, controlling for nursing home institutionalization risk factors.

The model does show what we would expect in terms of the statistically significant inverse relationship between the level of HCBS spending and nursing home census: For every 1 percentage point increase in the percent of Medicaid dollars spent on HCBS, there is a reduction of nursing facility census by approximately .48% with a p value of .001, controlling for the state's percent of persons over 65 who are white.

The STATA runs are noted below for the second hypothesis:

```
reg perchangenh eldermobindexper ov65wht05 diffmedhcbs
```

Source	SS	df	MS	Number of obs = 46		
Model	1966.424	3	655.474666	F(3, 42) = 7.70		
Residual	3573.94132	42	85.093841	Prob > F = 0.0003		
Total	5540.36532	45	123.119229	R-squared = 0.3549		
				Adj R-squared = 0.3089		
				Root MSE = 9.2246		

perchangenh	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
eldermobin~r	.1093535	.066037	1.66	0.105	-.0239146	.2426217
ov65wht05	-.3244072	.1072825	-3.02	0.004	-.540912	-.1079024
diffmedhcbs	-.4859776	.1189617	-4.09	0.000	-.726052	-.2459032
_cons	9.926165	9.671235	1.03	0.311	-9.591178	29.44351

In this model, there are no multicollinearity or nonconstant variance issues:

```
corr perchangenh eldermobindexper ov65wht05 diffmedhcbs
(obs=46)
```

	percha~h	elderm~r	ov65w~05	diffme~s
perchangenh	1.0000			
eldermobin~r	0.0641	1.0000		
ov65wht05	-0.2996	0.0981	1.0000	
diffmedhcbs	-0.4349	0.2106	-0.1145	1.0000

```
hettest
```

```
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance
Variables: fitted values of perchangenh
```

```
chi2(1)      =      0.10
Prob > chi2   =      0.7464
```

When the regression model is adjusted to retain only the statistically significant variables from the above model, we see a slight reduction of the regression coefficient for Medicaid HBCS \$ dollars: for every 1 percentage point increase in the change in the % of Medicaid HCBS dollars from 1995-2005, the percent change in the number of adults over 65 in nursing homes goes down by about .44%, controlling for the percent of older adults over 65 who are white.

```
reg perchangenh diffmedhcbs ov65wht05
```

Source	SS	df	MS	Number of obs =	46
Model	1733.0842	2	866.5421	F(2, 43) =	9.79
Residual	3807.28112	43	88.5414214	Prob > F =	0.0003
Total	5540.36532	45	123.119229	R-squared =	0.3128
				Adj R-squared =	0.2808
				Root MSE =	9.4096

perchangenh	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]
diffmedhcbs	-.4417655	.118252	-3.74	0.001	-.6802434 -.2032877
ov65wht05	-.3020421	.1085635	-2.78	0.008	-.5209813 -.0831029
_cons	13.5431	9.610316	1.41	0.166	-5.837946 32.92415

Again, this model does not have an issue with nonconstant variance:

```
hettest
```

```
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance
Variables: fitted values of perchangenh
```

```
chi2(1)      =      0.00
Prob > chi2   =      0.9602
```

Overall, the findings show that although we cannot reject the null hypothesis of no effect between the level of a state's effort in elder mobility policy and planning a reduction in state nursing home levels for persons over 65, we do see a well-documented association between increases in state Medicaid HCBS and reductions in state Medicaid census.

These finding seem to corroborate the revised Hendrick model proposed earlier in Figure 2. in Chapter 4.

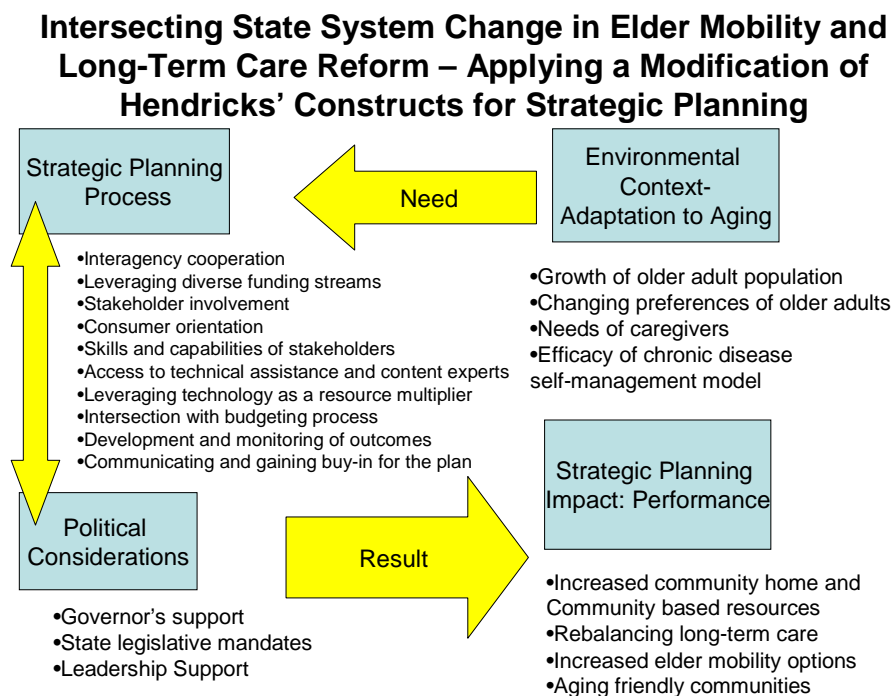


Figure 2 from Page 85 repeated

(please see page 85 for more background on this figure)

Is it possible that a major performance impact is occurring somewhat quietly across state agencies? As those states gain success in focusing attention on the infrastructure required for increased home and community-based services, these same states are succeeding in a greater shift of financial assets in that same direction. It is

possible that leadership at both the legislative and state agency level is crossing policy domains and resulting in more coordination between systems reform efforts for long-term care and those elder mobility actions that enhance community based care.

It is also not surprising that this same direct association is not found between elder mobility policy and planning and reduction of nursing home census. As more options become available for people to go back to their communities after a hospital stay and as greater pressure is exerted to stem the flow of Medicaid recipients cared for in nursing homes, it would probably be much more difficult to find a direct association, especially since the major risk factors at a state macrolevel are older adults living alone and those who are poor. Additionally, there are probably far more health related issues affecting the feasibility of community-based living for older adults versus going to a nursing home that cannot be mitigated by the presence of greater transportation options. As an example, people who are at end-stage dementia will often have to be admitted to an institution for care, even if they have a family caregiver. There will probably always be a need for effective and efficient institutional care for those with advanced stage dementia.

A comparative view of state-by-state elder mobility policy and planning shows that five states dominate in terms of furthering elder mobility: Florida, Iowa, Maryland, Oregon and Texas. Those political entities that seem more challenged in this regard are: the District of Columbia, Georgia, Mississippi and West Virginia. In the case of Georgia, Mississippi, and West Virginia, all three of these states have very large rural areas, which probably exacerbate their ability to leverage elder mobility (see Figure 5).

At a regional level, there is a shift; and elder mobility policy and planning seem fairly evenly distributed at a regional level with the Midwest and Northeast leading the South and the West (see Figure 6).

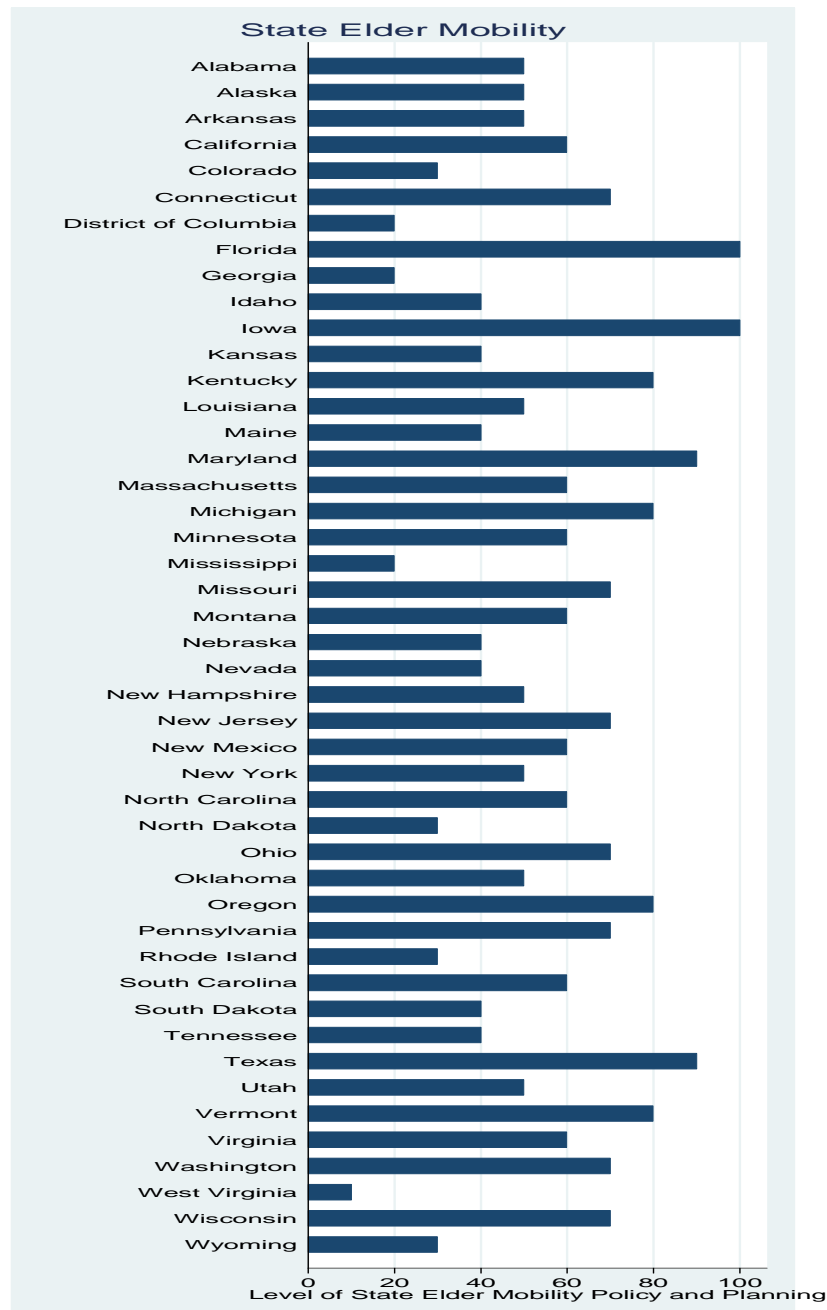


Figure 5. State Elder Mobility Policy and Planning Indices

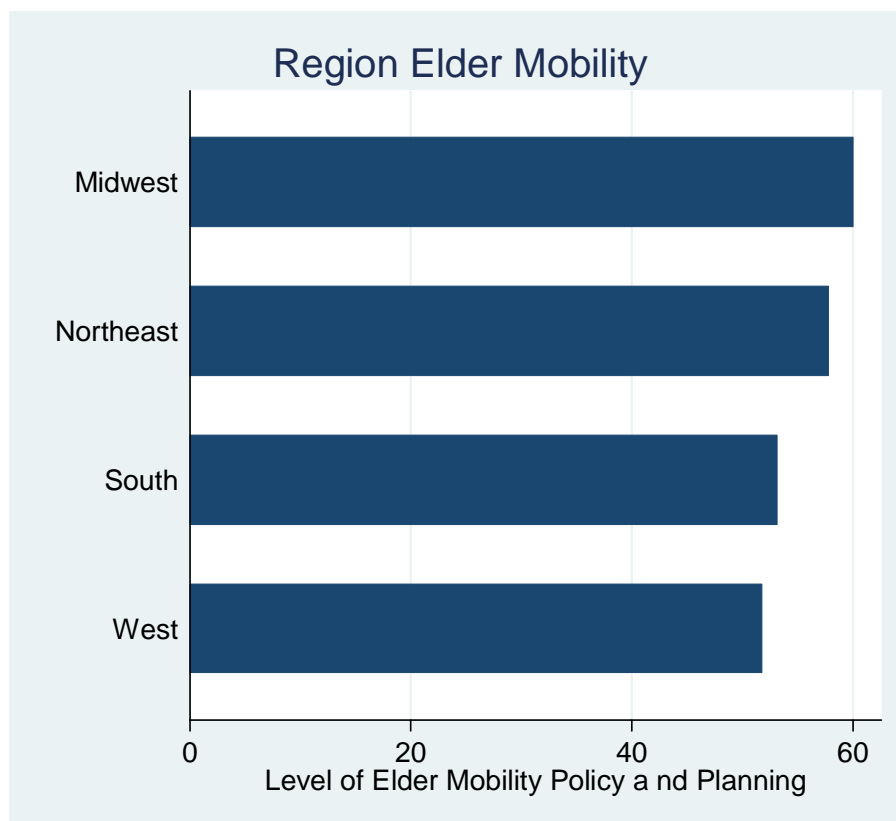


Figure 6: Regional Elder Mobility Policy and Planning

For state percent change in over 65 nursing home census, we see different areas leading and lagging, with Alaska, Maine, Oregon, and Washington State demonstrating strong success in reducing over 65 residents in nursing homes, while Alabama, the District of Columbia, Florida, Iowa, Mississippi, New Jersey, and New York showing the least change. These summary findings do not mean that states showing the most or the least change in nursing home rates are necessarily experiencing greater or lesser success than their counterparts, as there can be mitigating factors such as what is the total population of Medicaid over 65 nursing home eligible persons, how high or low are the states' current percent of older persons residing in nursing homes overall—the mean value for states in 2005 for the Medicaid Nursing Facility Census for 1,000 persons age 65 and over was 26.

However, it is interesting to see a possible Census Region effect as the West has experienced an almost 2x decrease in over 65 resident nursing home census versus the south, northeast, with midwest regions experiencing approximately a 15% decline. Western regional states experienced an almost 28% decline for the 46 states included in this analysis. However, the exclusion of Indiana and Illinois could skew the overall Midwestern region findings.

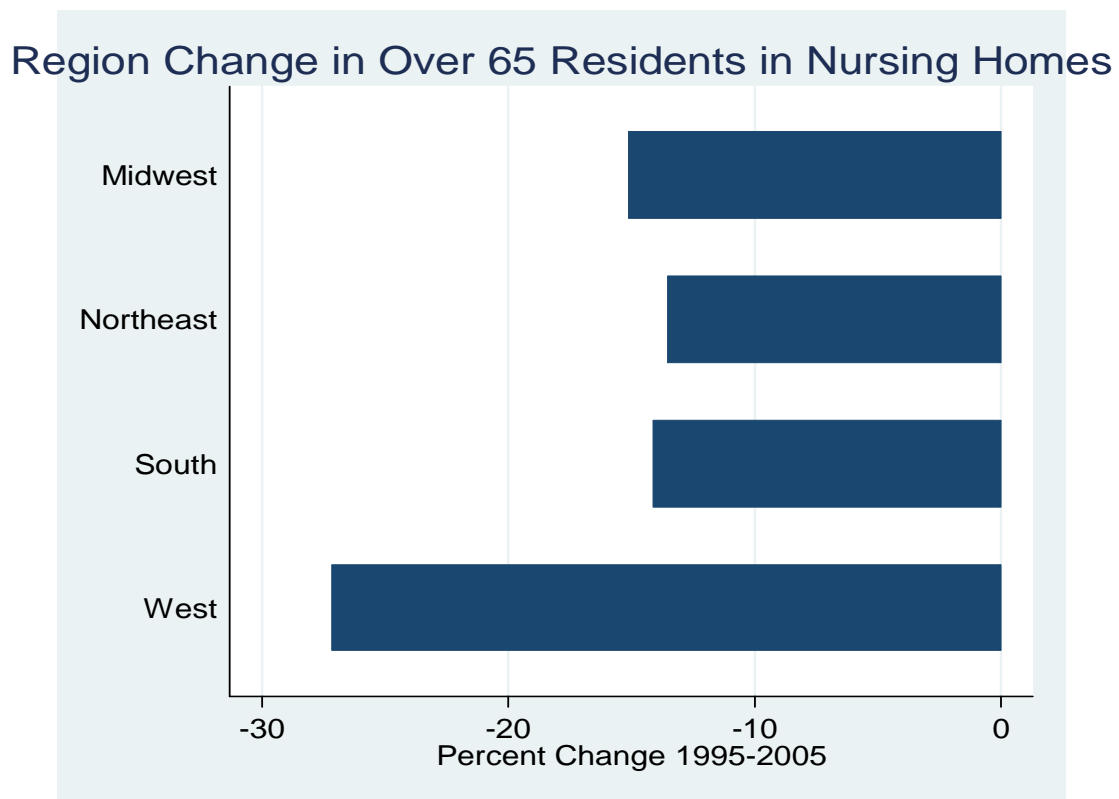


Figure 7. Regional Percent Change in Over 65 Person Nursing Home Institutionalization Rates

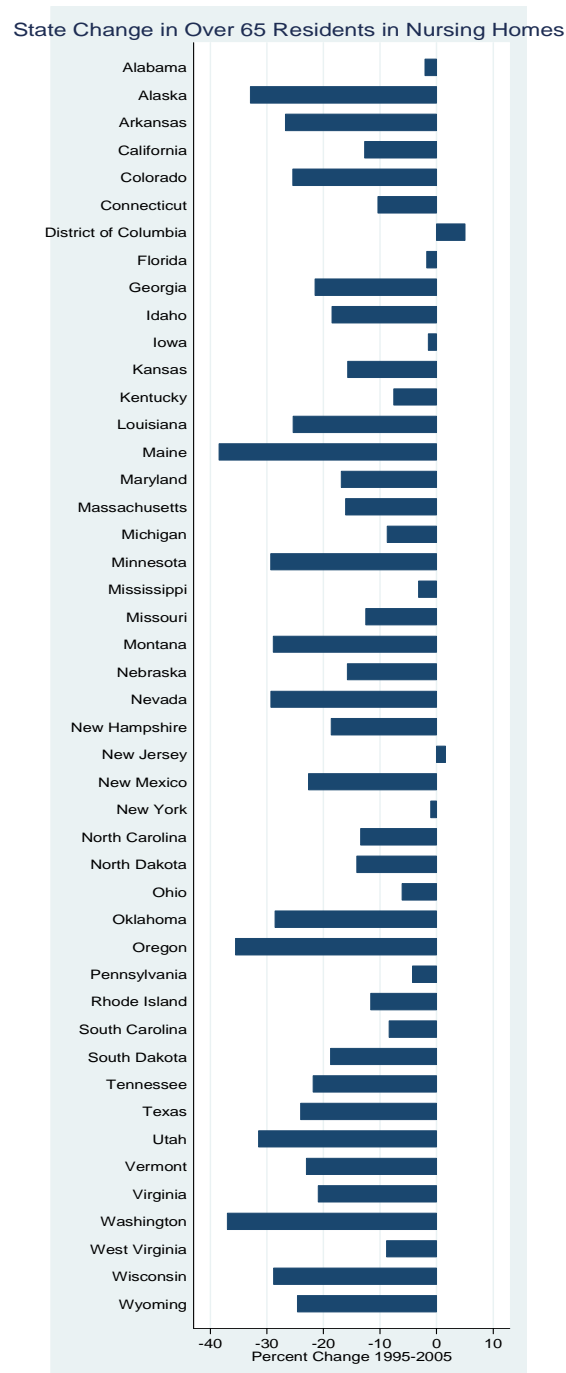


Figure 8. State Percent Change in Over 65 Person Nursing Home

Institutionalization Rates

We see a similar regional effect in long-term care home and community-based services rebalancing (see Figure 9), with the Western Region states achieving an over

20% increase in rebalancing long-term care dollars toward home and community-based services, which could help to explain their success in reducing nursing home census as the study also demonstrated a strong direct, statistically significant relationship between nursing home census and increased Medicaid expenditures provided for home and community-based services. The Midwest is next with almost a 15% change, not including Illinois and Indiana. The South seems to have the most challenge in rebalancing with approximately a 7% rebalancing of long-term care funds toward home and community-based services.

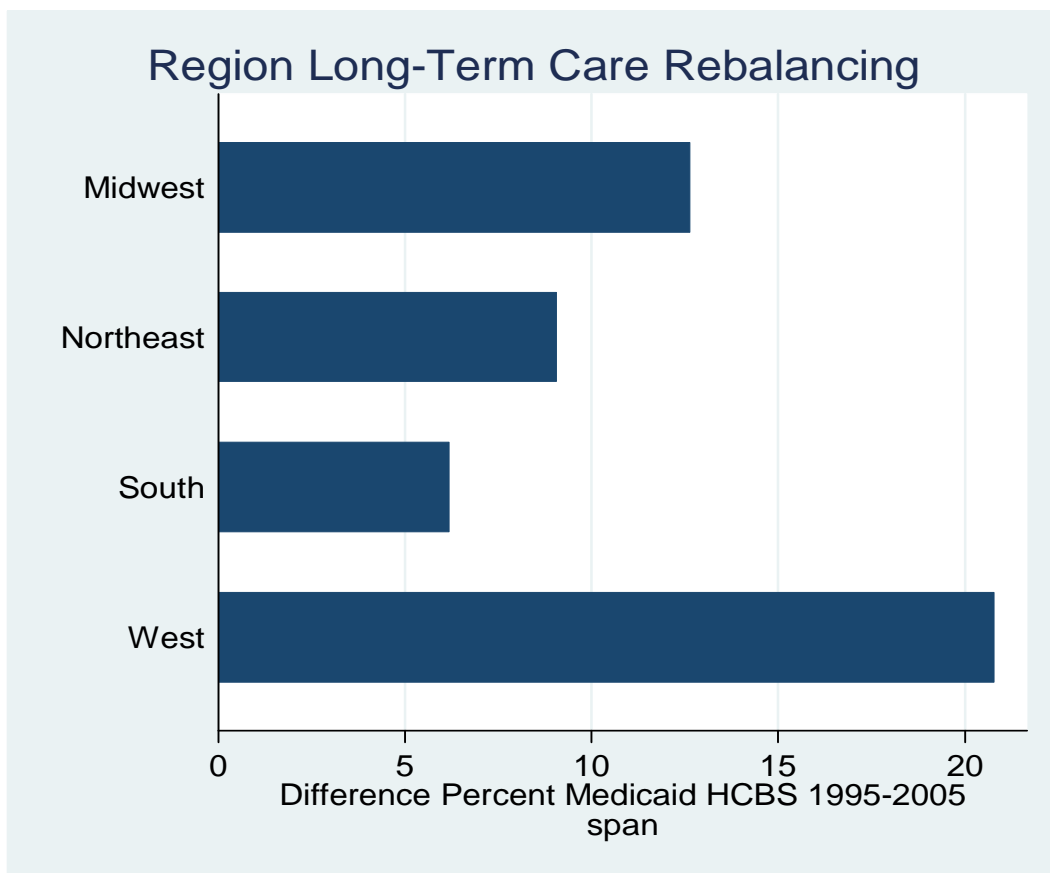


Figure 9. Regional Change in Percent Medicaid HCBS Spending

At the state level (see Figure 10), Alaska, California, Minnesota, New Mexico, and Washington State showed the greatest increase in rebalancing of

Medicaid dollars averaging between over 30-40% increases in the percent of Medicaid dollars devoted to home and community-based services.

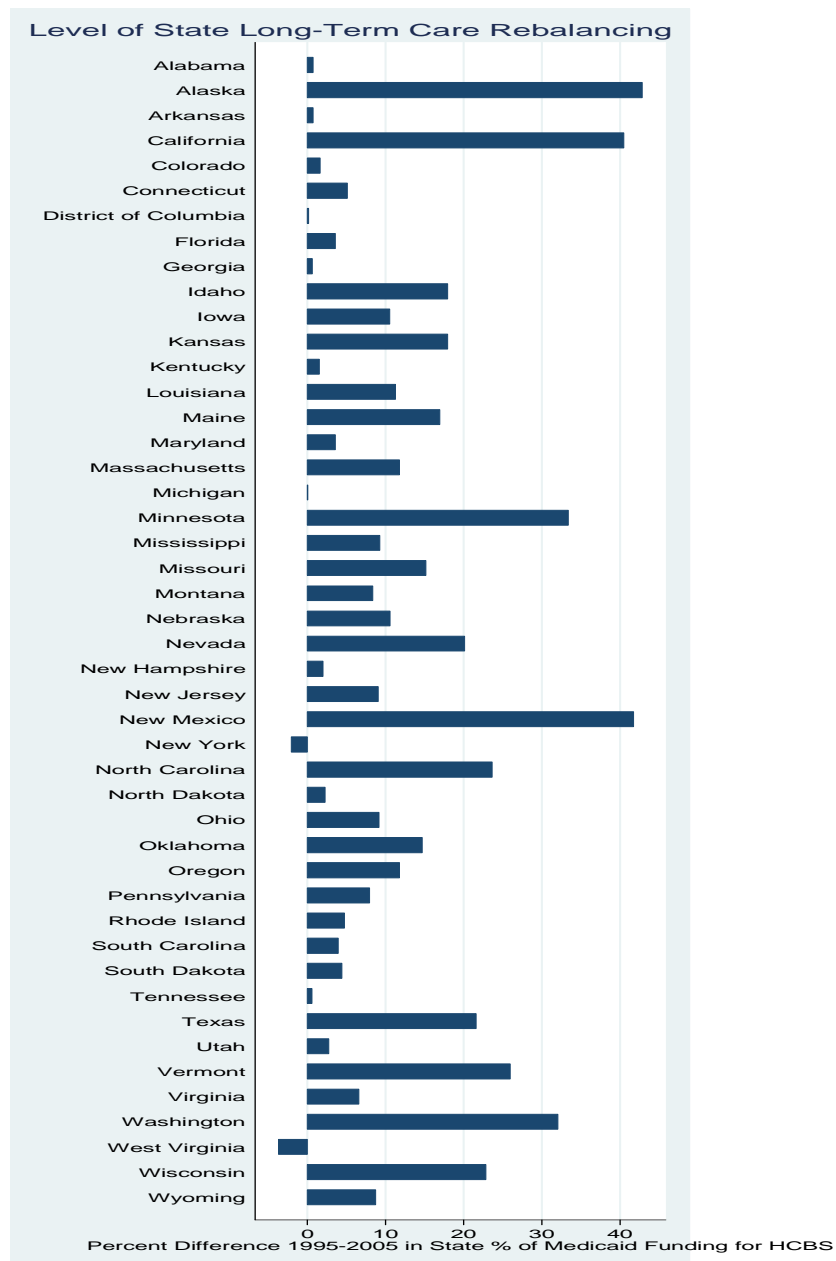


Figure 10. State Rebalancing of Medicaid HCBS Funding 1995-2005

An aggregate view of the explanatory and dependent variables for the 46 states analyzed in this dissertation is noted below in Table 10:

Table 10. Explanatory and Dependent Variables for 46 States in This Study

46 states	Elder Mobility Index	Difference in % Medicaid as HCBS 1995-2005	Nursing Home over 65 Resident Change 1995- 2005
Alabama	50	0.76	-2.07
Alaska	50	42.81	-32.92
Arkansas	50	0.78	-26.75
California	60	40.51	-12.69
Colorado	30	1.63	-25.42
Connecticut	70	5.11	-10.37
District of Columbia	20	0.21	5.01
Florida	100	3.58	-1.75
Georgia	20	0.65	-21.47
Idaho	40	17.95	-18.46
Iowa	100	10.52	-1.45
Kansas	40	17.95	-15.71
Kentucky	70	1.54	-7.56
Louisiana	50	11.30	-25.35
Maine	40	17.00	-38.44
Maryland	90	3.54	-16.86
Massachusetts	60	11.85	-16.06
Michigan	80	0.06	-8.73
Minnesota	60	33.40	-29.32
Mississippi	20	9.31	-3.19
Missouri	60	15.17	-12.53
Montana	60	8.34	-28.85
Nebraska	30	10.59	-15.76
Nevada	60	20.16	-29.30
New Hampshire	50	2.06	-18.63
New Jersey	70	9.05	1.54
New Mexico	70	41.78	-22.63
New York	60	-2.06	-1.03
North Carolina	60	23.68	-13.44
North Dakota	30	2.32	-14.10
Ohio	70	9.20	-6.10
Oklahoma	60	14.73	-28.57
Oregon	80	11.82	-35.56
Pennsylvania	70	7.96	-4.25
Rhode Island	40	4.74	-11.66
South Carolina	60	4.01	-8.36
South Dakota	40	4.48	-18.71
Tennessee	50	0.60	-21.81
Texas	90	21.56	-24.05
Utah	50	2.77	-31.46
Vermont	80	26.00	-23.03
Virginia	50	6.59	-20.93
Washington	70	32.03	-36.97
West Virginia	20	-3.68	-8.84
Wisconsin	80	22.84	-28.81
Wyoming	30	8.75	-24.57

Answers to Study Research Questions

The results of this analysis suggest the following:

1. There a relationship between state elder mobility policy, planning, and long-term care.
2. Studies that were issued over the last 10 years can provide a useful basis for cross domain policy analysis between long-term care systems change and transportation associated factors. In this research, these factors coalesced in the areas of elder mobility policy and planning through an assessment of transportation coordination legislation and the level of interagency cooperation in transportation planning and services. Hendrick's model provided a useful framework for the identification of many of these elements, such as strategic planning—elements that relate to public sector management reform.
3. Transportation system reform does seem to be an important component of long-term care system reform.
4. Increased transportation choices were not associated with lower rates of nursing home institutionalization for older adults, suggesting that perhaps, today, nursing home institutionalization may be more related to other factors, though the level of change in the percent of Medicaid dollars dedicated to home and community-based services did have a significant effect on nursing home rates.
5. Increased elder mobility may help stem the rise of Medicaid costs by increasing infrastructure critical for community-based care vs. institutional

care, and also, perhaps in keeping older adults healthier, less depressed, and therefore less likely to require nursing home care.

6. Interstate agency collaboration on behalf of elder mobility does not necessarily result from state transportation coordination legislation. The three major elements of the state index were whether or not a state had a caregiver transportation program, whether or not a state had enacted transportation coordination legislation and the level of state interagency collaboration. There was a low/moderate correlation between state policy, practice, and whether or not a state had a caregiver transportation program, but there was no association between state policy and practice suggesting that state agencies may collaborate whether or not there is a legislative mandate to do so. Sixty-seven percent of the states had a caregiver transportation program, while on average, states had at least two agencies collaborating, and over 43% had enacted some form of transportation coordination legislation.

The correlation and descriptive statistics for these three elements of the elder mobility policy and planning index are noted below:

indexcaregiv = variable for whether a state had a caregiver
transportation program;

indexpractice = variable for state interagency collaboration

indexpolicy = variable for state transportation coordination policy

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. corr indexcaregiv indexpractice indexpolicy
```



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(obs=46)
      | indexc~v indexp~e indexp~y
-----+-----
indexcaregiv |      1.0000
indexpract~e |      0.2122      1.0000
  indexpolicy |      0.3294     -0.1193      1.0000
. sum indexcaregiv indexpractice indexpolicy
  Variable |      Obs      Mean    Std. Dev.      Min
Max
-----+-----
-
1 indexcaregiv |      46      .673913    .4739596      0
4 indexpract~e |      46      1.76087    1.196008      0
1 indexpolicy |      46      .4347826    .5012063      0

```

7. The analysis did not reveal any hidden factors that heralded significant changes in rebalancing systems of long-term care, but the models corroborated past research on nursing home institutionalization variables, which helped to verify the reliability of the multivariate regression.

Chapter 6: Conclusion, Policy, and Future Research Recommendations

“Issues surrounding the maintenance of safe transportation for older adults are multifaceted and will require an interdisciplinary research approach if we are to make significant progress in the next decade as the baby boomers begin to reach age 70.”

(Dickerson et al., 2007, pp. 588-589.)

A Focus on Elder Mobility Could Help Address Medicaid Economic Challenges

These findings reinforce the importance of the earlier noted views of Flaherty et al.: “Transportation is an essential part of our community infrastructure. . . .

Absence of transportation among any population impairs quality of life by decreasing personal independence, access, choice and opportunity which can lead to social isolation” (2003, p. 826). All four U.S. Census regions demonstrated similar levels of state elder mobility policy, planning, and collaboration with an aggregated elder mobility index of between 50-60% for all regions. And, a significant relationship was found between state elder mobility policy, planning and collaboration, and state success in rebalancing Medicaid dollars toward home and community-based services. Demonstrating that for every 10% increase in a state’s elder mobility policy and planning index, there is a corresponding 1.5% increase in movement of Medicaid dollars toward HCBS from 1995-2005; is an exciting finding that reinforces the views of many scholars regarding the essential aspect of transportation services in providing a community infrastructure for independent living.

In fact, this study suggests that the impact of state elder mobility policy, planning, and collaboration is of economic value in the quest to reduce Medicaid costs by increasing access and resources associated with community-based care. Additionally, driving cessation strongly impacts depression, and depression reduces

health status, which then can lead to increased healthcare costs. Thus, at a time when major emphases are on measures to reduce Medicaid costs, it is clear that a focus on accessible transportation through policy and planning must be one of those measures. These findings show that the development of a sustainable state infrastructure for home and community-based services is complemented by increased attention toward those activities that increase independent living such as accessible transportation coordination and planning.

Policy Recommendations—The Importance of Elder Mobility Policy and Planning in Long-term Care

So, with this study's finding regarding the importance of enhancing older adult mobility, transportation policy, and planning is one way that states can help create communities where people stay independent and at home, even if they acquire or have disabilities that affect mobility as they age. Thus, states should prioritize expenditures to include those activities, such as transportation, that are critical to maintaining independence for older people with disabilities, especially for those who can no longer drive. Increased elder mobility helps both the older adults and their caregivers—thus, the value proposition for transportation far exceeds just long-term care. This value proposition for transportation goes across both public and private spheres. Thus, this study corroborates many of the policy recommendations issued from transportation scholars, advocates, and national organizations; and reinforces the efficacy of the coordinated planning process of SAFETEA-LU.

A number of scholars and national organizations have recommended coordinated community planning as a holistic approach to improving elder mobility.

It is recommended that there be a continued focus and national dialogue on transportation coordination and strategic planning—especially at the state and local level. Federal policies might provide incentives to states for these initiatives. Additionally, federal focus could reinforce a national system of measures to track and report success for transportation coordination policy and planning. Perhaps other states should follow the model of the state of New Mexico in mandating, through legislation, that state agencies cooperate and coordinate.

In a related vein, another area for policy and research is to create an information technology and program evaluation system that shows how services such as transportation directly translate to increased access to community-based living and reduced healthcare costs. We need to gain a national consensus across the states regarding how to best monitor and measure the complete picture of long-term care reform to include access services such as transportation. One critical element of measuring long-term care reform and community-based services, such as transportation, is the need to gain consensus regarding how to account for the major impact of the informal care system. We must move away from measures that simply count where a person receives care to the role the formal and informal services associated with this care affects a person's quality of life.

We also need to continue to address the impact of healthy lifestyles and preventative services—an area of effort now well entrenched in policy and programs at the Department of Health and Human Services. Perhaps there is value in including transportation travel training as a part of the chronic disease self-management model. If driving cessation increases depression and increased depression reduces health

status, then teaching older adults how to maintain mobility after driving cessation could be another essential element of health promotion, thus joining other interventions that reduce healthcare costs.

There are also many other interesting developments and models that interrelate to a focus on services such as transportation: universal design in terms of ensuring that communities are built or modified with barrier-free environments and accessibility as a major area of focus. Movements such as AARP's Livable Communities,¹⁵ MetLife Foundation's Blueprint for Action produced in collaboration with the National Association of Area Agencies on Aging (n4a) and Partners for Livable Communities Blueprint for Action,¹⁶ and "Complete the Streets"¹⁷ - all put forth integrated models for communities where everyone can live with independence, choice, safety, and mobility. This is coordination at its best—all elements of community-based living planned jointly across many agencies as well as the private sector.

Finally, perhaps it is time to examine Medicare and the provision of nonemergency transportation and transportation services as an integral part of long-term care insurance policies. Any effort to help people stay independent and living in the community must address access and mobility. Should we only have

¹⁵ For more information, see AARP's website information on evaluation guide to Livable Communities: http://www.aarp.org/research/housing-mobility/indliving/d18311_communities.html

¹⁶ For more information, see Metlife's website: www.metlife.com/WPSAssets/18199677741185547682V1FMaturingofAmericaBlueprintRelease050307.pdf

¹⁷ For more information, see <http://www.completestreets.org/>.

transportation as a covered service for Medicaid recipients? The Older Americans Act of 1965 states:

The Congress hereby finds and declares that, in keeping with the traditional American concept of the inherent dignity of the individual in our democratic society, the older people of our Nation are entitled to . . . efficient community services, including access to low-cost transportation.¹⁸ A new paradigm of community-based healthcare and social services cannot succeed without a holistic approach to all services.

Recommendations for Future Policy Research—The Need for Integrative Study Across Policy Domains

Additional research is required to substantiate these findings, such as using this same model on another 10-year period. A greater effect would be expected for the years 2000-2007 during which the United We Ride effort took root and federal agencies worked to reduce state barriers to coordinating federal transportation resources. Additionally, post-SAFETEA-LU, it is important to assess the gains of the new provisions of this transportation legislation that increased funding for human services transportation by over 40% and instituted a requirement for coordinated planning.

Just as public sector management reform has changed the way individual agencies monitor, measure, and view public services, there must also be greater effort to understand the intersection of agency efforts. Scholars who analyze systems change discuss the importance of both the political and the bureaucratic systems and

¹⁸ Title I, Declaration of Objectives; Section 101(8), P.L. 89-73, p. 1. From the AoA's unofficial compilation of the legislation found on its website at: www.aoa.gov/about/legbudg/oa/legbudg_oaa.asp

demonstrate the importance of legislation and interagency planning and collaboration, thus showing that studying process in policy is of value. This analysis suggests that the readiness and skills of state leaders in the practice of strategic planning and collaboration is a management element with parallel importance with performance measurement.

We know that just passing legislation does not create change, someone has to implement it; and the success of implementation is usually an interdependent process across various state agencies. Thus, more research should be done to assess the effect of state interagency cooperation in achieving the outcomes of specific state legislative efforts; and perhaps this same focus could be applied to federal legislation and implementation. Additionally, though difficult and time-consuming, more policy research that combines policy domains is needed to help develop a more consistent set of methodologies to uncover intersecting relationships that are difficult to associate given different vernacular, measures, and processes.

It is hoped that this dissertation's findings will aid in all of these dialogues. It is a time of change and challenge, so perhaps it is also time for policy scholars to break down stove-piped ways of analyzing outcomes to derive more holistic solutions to the pressing problems of today—problems that often cross organizational boundaries. With our demographic tsunami, time is also of the essence for concrete community-based systems change--and quality of life for everyone stands to benefit.

Appendix 1: Data and Sources

Data for this study was primarily from the below sources:

Time period is 1995-2005, demographic data generously provided by AARP (Ari Houser) and the U.S. Department of Health and Human Services Administration on Aging (Saadia Greenberg, PhD), the Lewin Group (Lisa Alexchi, PhD, all long-term care data).

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CURRICULUM VITAE

Mary A. Leary is from Fairfax County, Virginia. During her 26-year career, Ms. Leary has held professional positions as an executive in the information technology industry, as a researcher and adjunct professor in academia, as a career civil servant in the Department of Health and Human Services Administration on Aging, and most recently as the Senior Director of Project ACTION, the National Center on Senior Transportation and other Transportation Initiatives for Easter Seals, Inc. She received her Bachelor of Science in English and Sociology from James Madison University in 1982. Later, she attended a Masters Program in Business at Johns Hopkins University, graduating in 1990 with Master of Administrative Science Degree. Prior to her career transition to community service and advocacy in 2001, Ms. Leary was the Vice President of High Performance Servers for Compaq Computer, Inc. In 2004, she earned a Gerontology Masters Certificate from George Mason University's College of Nursing and Health Science and worked for 3 years in various volunteer, community service, and advocacy roles while pursuing her gerontology and doctoral studies. She was accepted into George Mason University's School of Public Policy Doctoral Program in the fall of 2002. Before joining Easter Seals in November of 2007, Ms. Leary served as the Special Assistant to the Honorable Josefina G. Carbonell, the Department of Health and Human Services Assistant Secretary for Aging. Ms. Leary's research and professional interest in the field of transportation for older adults, people with disabilities, and persons of limited income began during an internship at the Administration on Aging in early 2004. Her other research interests include the role of community systems reform in ensuring self-reliance for people with disabilities, universal healthcare, federal government enterprise business systems, change management, program evaluation, governance, federalism, and public policy analysis. In 2008, Ms. Leary was honored to receive George Mason University's Center for Transportation and Economic Development's Outstanding Student of the Year Award at the Department of Transportation's University Transportation Centers' 17th Annual Student of the Year Program. Prior published works include "Testing Cultural Barriers to Enterprise System Implementations: Change Management through Organizational Culture Assessment." This work is part of a book called Public Sector ERP: Issues in Change Management edited by Dr. Sommer and published by Edward Elgar of Cheltenham, UK in 2007. Ms. Leary is a frequent speaker on human services transportation, and she has served on national committees in the area of coordinated transportation - including as co-chair for the United We Ride interagency committee on consolidated access. Ms. Leary currently serves on a number of advisory councils in the area of accessible transportation for Easter Seals Project ACTION and the National Center on Senior Transportation.