

Reaching the Most Vulnerable Minnesotans:
Services under Title III of the Older Americans Act

MPP Professional Paper

In Partial Fulfillment of the Master of Public Policy Degree Requirements
The Hubert H. Humphrey School of Public Affairs
The University of Minnesota

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May 16, 2012

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Introduction

The United States is in dire need of a comprehensive system to finance long-term care for the elderly. Traditional institutional care is prohibitively expensive for most Americans. As a result, many elders “spend down” their income and assets on long-term care until they reach Medicaid eligibility levels. This is a crippling financial situation at the individual level, but its implications are farther-reaching. Medicaid spend-down shifts the burden of financing care to state and federal governments, and ultimately, the tax payers. The rapid aging of the population will soon make this pattern unsustainable.

Since passage of the Older Americans Act (OAA) in 1965, the Administration on Aging (AoA) has made it a priority to help break this pattern. While Medicaid offers waivers to states to fund home- and community-based care as an alternative to institutional care, states are only required to cover traditional nursing home care. The AoA specifically funds home- and community services to help defer nursing home placement. Home- and community-based care includes services such as home-delivered meals and transportation services. These services are not only less expensive than nursing home care, but improve quality of life by allowing elders to remain at home for as long as possible (Grabowski, 2006, Wiener, 2010).

Their home- and community-based services are funded by Title III of the OAA. The Minnesota Board on Aging (MBA) manages the Title III funds for Minnesota. Title III services are available to all adults over the age of 60, but the MBA and the AoA are committed to targeting services to the most vulnerable elderly. Targeting services to the most vulnerable is also essential for the MBA to maintain the long-term sustainability of the program. Until this year, Title III services have largely been offered free-of-charge, asking only for client donations. However, with budget cuts and a decline in tax revenue, the MBA will be forced to charge a

small fee for some of their services. Conserving scarce resources for the neediest elders will become absolutely necessary as demand increases with the aging of the population (GAO, 2010).

This study will investigate whether or not the MBA's home- and community-based services are reaching older Minnesotans who are most at-risk of nursing home placement and Medicaid spend-down. Dr. Joseph Gaugler at the University of Minnesota School of Nursing has isolated several predictors of nursing home placement, including age, having difficulty with three or more activities of daily living, living alone, identifying as non-Hispanic white, and having an annual income of less than \$5,000 (a lower income indicates that the individual is likely on Medicaid, which primarily covers traditional nursing home services). I will run a series of models to determine whether or not these risk factors predict utilization of Title III services. If these characteristics predict service usage, then the MBA's current targeting efforts have been effective.

Background

In 1965, the OAA was signed into law by President Lyndon B. Johnson. The Act was a part of the president's Great Society reforms, and followed just after the Civil Rights Act and the Economic Opportunity Act. The goal of the OAA is to provide a safety net for vulnerable older Americans (AoA, n.d.). The OAA created the AoA, whose primary role is to fund and coordinate home- and community-based long-term care services for older Americans. The AoA's mission is to help "elderly individuals maintain their health and independence in their homes and communities" (AoA, n.d.).

The services funded by the AoA fall under the umbrella of long-term care. Long-term care includes a variety of services, ranging from medical to personal care, for people who have a chronic illness or disability (Medicare.gov, March 25, 2009). Most long-term care assists people

with activities of daily living (ADLs), such as dressing, bathing, and using the bathroom. Formally, ADLs are a set of tasks that an individual would encounter in the course of a normal day. These tasks are used to assess physical and mental functioning (Encyclopedia of Nursing & Allied Health, 2002). Different medical fields use varying sets of tasks, but in the context of LTC these are personal hygiene, dressing, self-feeding, functional transfer (such as getting out of bed or into a chair), bowel and bladder management, and walking or using a wheelchair independently (McDowell and Newell, 1996). Instrumental activities of daily living (IADLs) are a functional step above ADLs. They are considered necessary for living independently, but not essential for basic functioning. These are typically housework, managing medications, managing finances, shopping for food or clothing, use of a telephone and other basic technology, and transportation within the community (Bookman, 2007).

Long-term care can be provided in a variety of settings. Institutional, or nursing home care, is the traditional option, but there has been a recent shift towards providing care in the home or in the community. These services are called home- and community-based services (Health Policy Institute of Ohio, 2012). Title III of the OAA authorizes the funding for home- and community-based services. The actual provision of services, however, is done at a local level. The AoA sends its funding to the State Units on Aging. Every state has a Unit on Aging to coordinate the disbursement of funds. The State Units on Aging, in turn, provide funding to the Area Agencies on Aging. Some Area Agencies on Aging provide OAA services directly, but most contract with local non-profit organizations to provide these services. The MBA is the State Unit on Aging in Minnesota, which in turn manages the Area Agencies on Aging. The number of Agencies varies by state. In Minnesota, there are seven Area Agencies on Aging which provide information and assistance services. For all other services, the Agencies contract with local

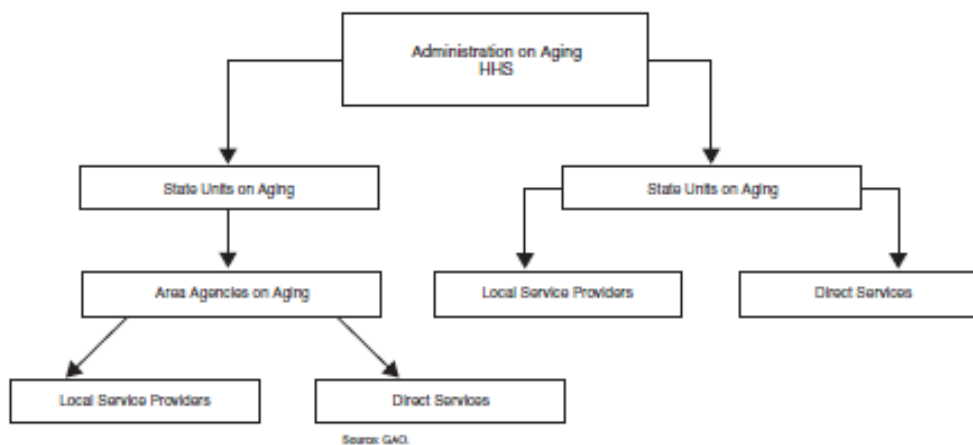
organizations. This system, from the AoA down to the Area Agencies on Aging, is known as the Aging Services Network.

Title III funding from the AoA comes to the State Units on Aging in five separate allotments:

1. Title III B for supportive services;
2. Title III C-1 for congregate nutrition services;
3. Title III C-2 for home-delivered meals;
4. Title III D for disease prevention and health promotion services.
5. Title III E for family caregiver support services.

The flow of funding in the Aging Services Network is summarized in Figure 1 below.

Figure 1: Flow of Title III Funds



The AoA requires that the State Units on Aging target their services to at-risk populations. Section 305(a)(2)(E) of the OAA requires that states:

provide assurance that preference will be given to providing services to older individuals with greatest economic need and older individuals with greatest social need (with particular attention to low-income older individuals, including low-income minority older individuals, older individuals with limited English proficiency, and older individuals residing in rural areas).

This study will explore the impact of the Administration's targeting efforts, specifically efforts in the state of Minnesota. I will first examine the benefits of home- and community-

based services to provide the motivation for government support of these services. I will then examine targeting strategies at the national and state level.

The Benefits of Home- and Community-Based Services

Title III services have a diverse group of stakeholders. The program recipients are interested in avoiding nursing home placement by choosing only the services that they require, and by receiving them at home. Maintaining a certain level of independence is an essential element of quality of life for older Americans (Wiener, 2007). Somewhat less obvious is the benefit to the public at large. The United States does not have a system in place to finance long-term care. This puts financial pressure on federal and state governments, and ultimately the taxpayers. Keeping older Americans off Medicaid and out of nursing homes is one strategy to control burgeoning long-term care costs (GAO, 2010). The following studies support the benefits of home- and community-based services. The evidence on cost-effectiveness is mixed, but I will discuss the competing theories as to why home- and community-based services appear less cost-effective at the policy level.

Improved Quality of Life

The AoA tracks satisfaction with Title III services as a part of its Performance Outcomes Measures project. Satisfaction is measured as part of a national survey of randomly-selected OAA program participants. While the Administration is now up to its Fifth National Survey (conducted in 2009), the most complete analysis of satisfaction with services was done by Mathematica Policy Research, Inc. after the Third National Survey, conducted in 2005 (Mathematica Policy Research, Inc., 2008). The survey was conducted by telephone between April 17 and June 25. The sampling for the survey was conducted in two stages. First, a random sample of Area Agencies on Aging was selected. In addition, the 40 Agencies with the largest budgets were

added to the sample, for a total of 310 Agencies participating. The response rate from Agencies was 88%. For each Agency in the sample, clients were randomly sampled by service type (home-delivered meals, transportation, and caregiver services). The number of clients selected was proportional to the number of clients served in each category by that agency. The consulting firm Westat calculated a “cooperation rate” of 82% for clients surveyed. The cooperation rate was the sum of those who completed the interview plus those who were ineligible for the survey divided by the sum of the people who refused to participate in the interview. In the end, the response rates for the surveys were quite high, and the sample was relatively large at 5,918 respondents. Clients were asked to rank how satisfied they were with Title III services on a five-point scale ranging from poor to excellent.

The researchers found that the three service categories covered by the survey (home-delivered meals, transportation, and caregiver services) were all very well-received by program participants. 94% of home-delivered meals clients, 98% of transportation services clients, and 94% of caregivers reported their satisfaction to be good, very good, or excellent. These results surpass the AoA’s performance goal of a 90% satisfaction rate.

In addition to satisfaction with services, the survey provided preliminary evidence that Title III services led to a concrete improvement in the quality of life of the clients. 93% of home-delivered meals clients reported that the meals allowed them to continue to live in their own home. 43% of transportation services recipients relied on the service for almost all of their rides, and used the rides to go to medical appointments, run errands, and attend social events. However, the survey only covers clients’ perceptions, so we cannot be sure if nursing home stays were actually postponed.

The positive results from the survey are backed up by studies of community services funded by Medicaid demonstrations. Studies conducted by Beatty et al. (1998), Carlson et al. (2007) and Wiener et al. (2007) focus on satisfaction with home- and community-based services,

especially the consumer-directed approaches favored in recent Medicaid demonstrations. The theory of consumer-directed services is that consumers are the best judge of what they need, and so a program that gives consumers the control to pick out only the services that they require increases consumer satisfaction. In each study the authors found that people receiving consumer-directed home- and community-based services scored significantly higher on an index of satisfaction with services than the control groups. The study of consumer-directed home- and community-based services is especially important to Minnesota, as the Living Well at Home Project, which promotes consumer-directed home- and community-based services is one solution for reaching the greatest number of at-risk elders. This program will be described at length in the State-Level Targeting Strategies section of this analysis.

Cost-Effectiveness

There is conflicting evidence as to whether or not home- and community-based services are more cost-effective than nursing home care (HHS, 2000, Grabowski, 2006, Mason et al., 2007). The consensus in the literature is that they are less expensive on an individual level, but not necessarily at the policy level. The “woodwork effect” has been observed in several Medicaid demonstrations. Individuals who would not have entered a nursing home right away begin to come “out of the woodwork” to request community-based services, as they are less expensive and provide a better quality of life than nursing home care. This drives the total cost of the program higher since more people are in the system. Targeting services to the most at-risk for nursing home placement has been proposed to solve this problem (Grabowski, 2006).

The Impact of Public Funding

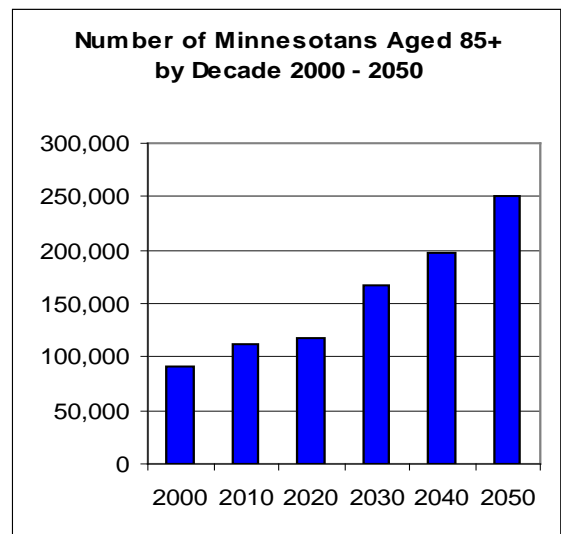
Two separate studies conducted by Muramatsu et al. (2002, 2007) provide justification for public funding of home- and community-based services. The authors found that living in a

state that invests more in home- and community-based services increases a senior's odds of using formal care. However, the use of informal care remains constant. A lack of public funding thus creates a significant gap in care for elders who do not have informal caregivers. This greatly increases the odds that an elder without an informal caregiver will spend down to Medicaid eligibility and require more intensive institutional care in the future.

Minnesota Context

The need for home- and community-based services is projected to take off in Minnesota (Continuing Care Administration, 2010). Currently, the proportion of the population over age 65 is holding at around 12.2%, putting Minnesota close to the national average of 12.6%. Migration of Minnesota elders to warmer climates has led to relatively slow growth in the elderly population over the last three decades. However, the first wave of baby-boomers is beginning to turn 65. Estimated nursing home costs were already at \$2.223 billion in 2009 (Minnesota Department of Human Services (DHS), 2010). Given the expensive nature of institutional services for the elderly, home- and community-based services have become a priority for DHS.

The Office of the Minnesota State Demographer predicts that the over-65 population

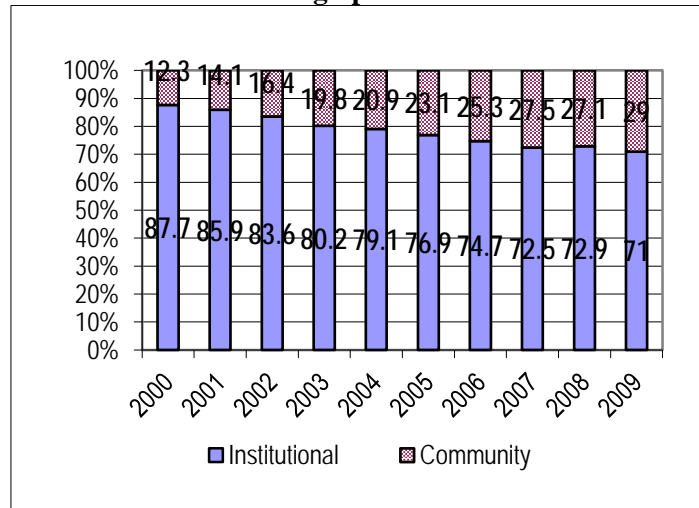


will increase by 40% between 2010 and 2020, while the under-65 population will only increase by 4% (DHS, 2010). The population of the “oldest old,” or those over age 85 is growing at a slower pace, again due to out-migration. Even so, the population over age 85 is projected to double between 2030 and 2050.

The need for long-term care in Minnesota is also a function of disability rates in the elderly population. The disability rate for 65 to 74 year-olds was 25% in 2007, 42% for 75-84 year-olds, and 68% for the population over age 85 (Center for Diseases Control, 2007). As the number of “oldest old” continues to climb relative to other age groups, more and more disabled elders will be in need of long-term care.

Given the expected growth in the over-65 population and the high rates of disability in this population, the rapid aging of the population will put stress on the current long-term care infrastructure very quickly. However, DHS already reports significant home- and community-based service gaps, especially in transportation and chore services (see Appendix A). For this reason, DHS has set shifting public long-term care dollars from institutional to community care as a priority. In 2009, spending on nursing home care in Minnesota accounted for 71% of public long-term care spending, down from 88% in 2000. While this is still above the national average, the Department remains committed to progress on this benchmark.

Figure 2: Proportion of Public LTC Funding Spent on Institutional vs. Community-Based Care



Source: Continuing Care Administration, Status of Long-Term Care in Minnesota 2010: A Report to the Minnesota Legislature, 2010.

National Evaluations of Title III Targeting

One of the AoA's long-term performance goals is efficiency in program delivery (AoA, 2009). Their efficiency metric for Title III services is to increase the number of clients per millions of dollars of AoA funding. Targeting essential services to the most vulnerable elderly is a part of this goal. The AoA performed an internal evaluation on targeting for FY 2008. By September 2009, the AoA managed to meet its performance goals of increasing the number of severely-disabled clients by 30%, increasing the number of clients served in rural areas to 10% greater than the percent of all US elders who live in rural areas, and increasing the number of states showing an increase the percentage of low-income clients served by 24 states (AoA, 2009).

More recently, the AoA partnered with Mathematica Policy Research, Inc. to evaluate whether or not the most vulnerable elderly are actually receiving Title III services (Mathematica Policy Research, Inc., 2010). The findings were based on the AoA's Fifth National Survey of OAA Program Participants. The authors observed differences in service utilization between Title III participants and a random sample of eligible, non-participating older adults to evaluate the effectiveness of targeting efforts. All subjects were assessed on the likelihood of nursing home entry. Recipients of each service provided were compared to non-participants as a separate group.

The study used the following set of risk factors for nursing home entry. The criteria were created based on the research of Gaugler et al. (2007) and Miller and Weissert (2000). Both studies compiled predictors of nursing home placement. The authors used all of the predictors that were common to the two studies, but deferred to Gaugler's analysis when discrepancies

arose because the Gaugler study used a meta-analysis – a more rigorous methodology than the synthesis of longitudinal data used by Miller and Weissert.

Table 1: Predictors of Nursing Home Placement

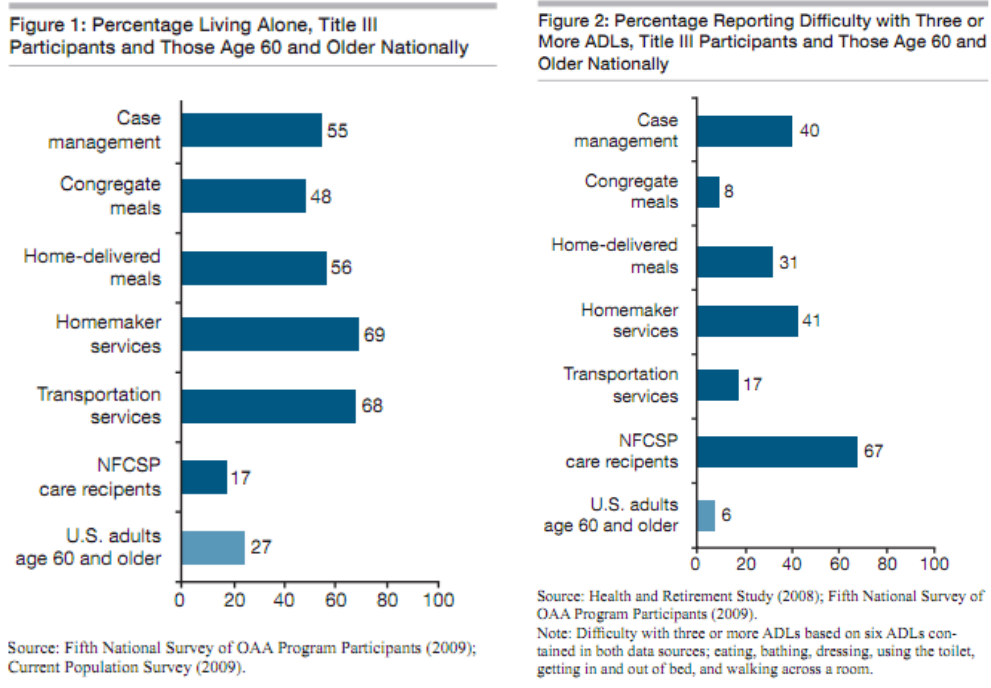
Indicator	Description
Demographic characteristics	Relatively older individuals who are non-Hispanic white.
Socio-economic status	Low-income individuals (annual income of less than \$5,000).
Health status and physical functioning	Any of the following health conditions: cognitive impairments, cancer, high blood pressure, diabetes, history of strokes or falls. Also individuals who have difficulty with three or more ADLs.
Prior health care utilization	Individuals who have previously spent time in a hospital or nursing home.
Living arrangements and family structure	Individuals who live alone, do not own their home, or have relatively fewer children.
Availability of support	Individuals who lack formal or informal caregivers.

Source: Mathematica Policy Research Inc., 2010

The comparison showed that Title III participants displayed many of the nursing home vulnerability characteristics. For each service category, at least 50% (and, in most cases, 70%) were age 75 and older, compared with 35% of the national elderly population. The racial and ethnic profile turned out to be similar across the two groups. Participants were more likely to be in poverty. While 7% of the national elderly population is below the federal poverty line, the percentage for each service category of Title III participants ranged from 14% (congregate meals) to 29% (case management). Title III participants are also more likely to be unmarried and living alone. While 27% of the national elderly population lived alone in 2009, the proportions ranged from 48% (congregate meals) to 69% (homemaker services) for participants. Title III participants had trouble with three or more ADLs more often, and had a higher average number of difficulties with ADLs. Overall, the authors conclude that Title III participants are at higher

risk of nursing home placement than others in their age group nationally, based on these indicators. Especially vulnerable were those who received homemaker services, home-delivered meals, and case management. This likely reflects the success of current targeting efforts.

Figure 3: Comparisons of Percentage Living Alone and Percentage Reporting Difficulty with Three or More ADLs



Source: Mathematica Policy Research Inc., 2010

It is important to note the specific conclusions that can be drawn from the Mathematica study. Most importantly, the design of the OAA survey used by Mathematica does not support the conclusion that Title III services helped keep participants out of nursing homes. It does show that participants believe that the services helped. Indeed, over 85% of survey respondents reported that Title III services helped them remain at home. The other downside of using the OAA survey was that it was only a report from the participants on what services were used, rather than concrete utilization data.

State-Level Targeting Strategies

In 2010, the Government Accountability Office (GAO) conducted a study entitled “Preliminary Observations on Services Requested by Seniors and Challenges in Providing Assistance” to investigate gaps in Title III service provision and how states coped with the shortfall (2010). The GAO created an online survey and randomly selected 125 Area Agencies on Aging to participate. This report is a preliminary one, and only 67 agencies had replied at the time it was published. The GAO found that demand was highest for home-delivered meals and transportation services. In order to meet the need, states utilized the flexibility provided by the OAA to transfer funds among Title III programs. 28 of the 61 local agencies who reported that they transferred funds among programs in FY 2009 said that they removed funds from congregate meals, which are less-often requested, to home-delivered meals or other services. On a national level, nearly 20 percent of OAA funding for congregate meals in FY 2008 was transferred out of the program by states and split almost evenly between home-delivered meals and support services (GAO, 2010).

Targeting at-risk seniors is another pressing issue for states, given the increase in demand for services and stagnant funding from the federal government. To reach seniors with the greatest economic or social need, local agencies reported a range of strategies. 50 of the 67 agencies who had responded so far said they advertise, conduct outreach, and coordinate with other local organizations to reach seniors who are targeted by the OAA. 47 of 67 Agencies said they use these approaches to reach seniors who speak limited English, another group targeted by the OAA. Additionally, most local agencies reported screening potential clients to assess whether seniors requesting home-delivered meals or respite care actually had physical limitations that would make these types of services especially useful.

States with unique demographic challenges must adapt their targeting strategies and allocation formulas to suit their circumstances. Minnesota has developed an innovative targeting strategy called the Living Well at Home Project. Wisconsin and Michigan have also designed targeting strategies to meet their specific needs.

Minnesota: The Living Well at Home Project

The goal of the Minnesota Live Well at Home (LWAH) project is to identify private-pay clients at risk of spend-down to Medicaid to “divert” them to community-based services. This project combines Title III funds with Alzheimer’s Disease Demonstration Grants and private funds to form a pool of flexible service dollars for older persons in Minnesota at risk of nursing home entry.

In order for the LWAH project to sort clients into community-based services, a screening tool is necessary. A study by Gaugler et al. (2011) created a uniform risk screen for nursing home entry and conducted a pilot evaluation of its screening methods. The authors created a rapid screen that took less than 12 minutes to complete. Seniors went through the screen with a case worker who could then connect them to the necessary services. The authors then conducted a phone interview three months after the screen to determine the effectiveness of the screen and the level of client satisfaction with the pilot program.

Only three out of 1,264 clients reported entering a nursing home or assisted living for long-stay or indicated a spend-down event during the time between the LWAH screen and the interview. Overall satisfaction with LWAH services was high. These results are in line with earlier evaluations of similar initiatives (Beatty et al., 1998; Wiener et al., 2007).

There were several limitations of the study which the authors discuss in detail (Gaugler et al., 2011). The most notable was the lack of a control group. There may also be a refusal bias

problem. Many participants in the LWAH program either refused to complete the follow-up interview or could not be reached. An analysis of the characteristics of those who refused would strengthen the results.

In addition to the LWAH project, the MBA has adapted its intra-state funding formulas to meet its targeting goals. Each State Unit on Aging must create an intra-state funding formula to distribute their OAA funds. These formulas take into account the targeting criteria laid out in Section 305(a)(2)(E) of the OAA. States like Minnesota, Wisconsin, and Michigan have unique needs because of large Native American and rural populations.

Minnesota's funding priorities are laid out in the "Minnesota Board on Aging State Plan":

- Particular attention should be given to the needs of Older Native Americans living on reservations;
- the distribution of direct service funds should reflect the needs and circumstances unique to providing services to and administering programs for older persons in rural and less populated areas of the state;
- the distribution of administrative funds should allow designated area agencies on aging to meet the minimum requirements of MBA standards and guidelines (MBA, 2011).

The distribution of funds for each service is as follows:

- a. population 60+ (55%);
- b. low income 65+ (20%);
- c. minority 60+ (10%);
- d. persons age 65+ in non-urbanized (rural) areas (10%); and
- e. population density of persons age 60+ in each planning and service area as a ratio compared to the statewide average population density of persons age 60+ (5%).

The MBA creates a separate allocation for Native Americans, which remains constant plus or minus a percentage amount equal to the change in the statewide total. The complete allocation formulas are listed in Appendix C.

Wisconsin:

The Wisconsin Bureau of Aging and Disability Resources has established multiple interstate funding formulas for different categories of services (Wisconsin Department of Health Services, 2009). Given the state's unique demographic mix, Wisconsin focuses much of its targeting efforts on rural and Native American clients. For certain types of services, they also set a base level of funding so that smaller agencies in rural areas will have adequate capacity to service their clients in sparsely populated areas.

The report lists the following assumptions that drive the selection of factors used in allocation formulas:

- **Low-Income:** Older people with incomes at or below the poverty level have difficulty meeting the usual costs of daily life and the high, unpredictable costs of health care and are more dependent on public services and benefits.
- **Advanced Age:** People who are over the age of 75 are increasingly likely to experience functional disabilities and require a variety of health and support services. Poverty rates, social isolation, and other problems of older women living alone are also much greater in this age group. The very old are concentrated in urban areas and remote rural areas.
- **Minority Status:** Minority older people have disproportionately experienced social and economic discrimination, which limits their opportunities and threatens their ability to remain independent. The incidence of poverty is more prevalent among minority elders.
- **Rural Status:** Older people who live in rural areas are often isolated from family, friends, community activities, and formal support services. Rural areas often lack in the range of services which older people may need (Wisconsin Department of Health Services, 2009).

The Bureau reasons that these priorities will financially favor counties or tribes with a high incidence of those who have low-incomes, are very old, live in rural areas, or are of minority status. They also use Title III funds to provide evaluation services and technical assistance to Area Agencies on Aging in rural communities in order to help them reach these goals.

Wisconsin's allocation formula differs from Minnesota's. For all services except for congregate nutrition and disease prevention, Wisconsin uses the following breakdown:

- a. population 60+ (45%);
- b. population 75+ (10%);

- c. low income 65+ (40%);
- d. minority 60+ (5%);

Wisconsin chooses to weight its low-income elderly population more heavily than Minnesota, but does not have a rural adjustment for most of its services. Wisconsin also places a smaller weight on minority elders, but does put extra emphasis on the oldest old by giving elders over 75 an additional weight. For its Title III C1 (Congregate Nutrition) and Title III D (Disease Prevention and Health Promotion Services), Wisconsin uses a different set of weights:

- a. low income 60+ (90%);
- b. minority 60+ (5%);
- c. minority 60+ (5%);

Wisconsin's Department of Health Services clearly believes that its low income elders are the neediest when it comes to nutrition and disease prevention services. For these services, they also include small minority and rural adjustments. Wisconsin defines a rural county as a county which is either are not part of a federally-designated Metropolitan Statistical Area or are part of an MSA, but have fewer than twenty people 60 years of age or older per square mile.

In addition to these broader goals, Wisconsin has specific guidelines for allocating funds to agencies that serve Native Americans. These differ slightly from Minnesota in that tribes can never have a lower allocation than the previous year, whereas in Minnesota the level changes with fluctuations in total state funding. The exact allocation formulas are contained in Appendix D.

Michigan:

Michigan's latest update to its intra-state allocation formula is included in the "State Plan for Services to Michigan's Older Adults: FYs 2011-2013" (Office of Services to the Aging, 2010). Michigan defines those in economic need as seniors with an income level at or below the poverty threshold established by the federal government each year. Michigan defines "social need" as

need caused by non-economic factors such as physical and mental disabilities, language barriers, and cultural, social or geographical isolation that restricts an individual's ability to perform normal daily tasks or threatens one's capacity to live independently.

Michigan's targeting procedures are outlined below:

- Application of weighting factors for low-income, minority and rural older adults in the distribution of funds to each of 16 Planning and Service Areas (PSAs).
- Assuring that AAAs target contracts for social services and nutrition in areas with high concentrations of older adults having the greatest economic/social need.
- Assuring that AAAs award OAA service contracts or subcontracts to minority-owned and operated organizations, at least in proportion to the number of minority persons of all ages residing within the PSA.
- Assuring AAAs target services for persons with physical and mental disabilities through earmarking state funds for in-home services and home delivered meals or the frail elderly.
- Assuring that AAAs spend at least 105% of the amount spent in FY 2000 under the OAA for services to older adults in rural areas.
- Requiring all contractors under area plans to assure that services are provided to low-income and minority older adults in proportion to their relative needs as determined by regional surveys; insure that services to these groups are not reduced. As part of the area plan development process, all AAAs are required to conduct comprehensive surveys of need within the PSA, and to utilize demographic data in targeting services.

To date, there has not been any extensive evaluation of Michigan's targeting efforts. The 2010 report provides a rough estimate of effectiveness by examining the proportion of the population with economic or social need in the entire state versus the proportion of those with economic and social need served by the program. Michigan's minority targeting efforts have been moderately successful, which slightly higher proportions in the service population than in the general population (See Table 2). However, the state is excelling in its low-income and rural targeting efforts. Michigan weights the proportion of the population over age 60 and the proportion of low-income elders equally in its allocation formula. A geographic adjustment is then added for size of the country in question, measured in square

miles. This adjusts for larger rural counties with smaller population. The state's complete allocation formula is also included below.

Table 2: Older Adults Served in Social and Economic Need in Michigan, 2010

OLDER ADULTS SERVED IN GREATEST SOCIAL & GREATEST ECONOMIC NEED				
	Michigan 60+ Population ⁴	% of Michigan 60+ Population	60+ Total Served in NAPIS 2009	% of Total NAPIS Service Population ⁵
Total Population 60+	1,596,162		120,019	
White (non-Hispanic)	1,400,703	88%	98,232	81.8%
African American	160,741	10%	19,091	15.9%
Asian/Pacific Islander	12,298	0.8%	1,034	0.9%
American Indian/Alaskan	4,658	0.3%	647	0.5%
Hispanic (of any race)	18,653	1.2%	1,634	1.4%
Low-income	96,116	8%	30,601	31.4%
Rural	427,733	27%	58,679	46.5%

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Formula Factor Importance

Factor	Weight	x	Population	=	Weighted Population	% of Funds Distributed by Factor
60+	1.00	x	1,596,162	=	1,596,162	81.49
Low-income	1.00	x	264,800	=	264,800	13.52
Minority	.50	x	195,459	=	97,730	4.99
TOTAL				=	1,958,692	100.00

Prior to applying the formula factors, 7.5% of state and federal service funds are subtracted from the service total and distributed to each PSA according to its share of the total square miles in the state.

$$\begin{array}{l}
 \text{Service Category} \\
 \text{Funds for PSA}
 \end{array}
 =
 \begin{array}{l}
 \text{PSAs State Weighted} \\
 \text{Formula Percentage}
 \end{array}
 \times
 \begin{array}{l}
 92.5\% \text{ of Service} \\
 \text{Category Funds}
 \end{array}
 +
 \begin{array}{l}
 \% \text{ of State} \\
 \text{Geog. Area} \\
 \text{(square miles)}
 \end{array}
 \times
 \begin{array}{l}
 7.5\% \text{ of Service} \\
 \text{Category Funds}
 \end{array}$$

Source: Michigan Office of Services to the Aging, 2010

Data Description

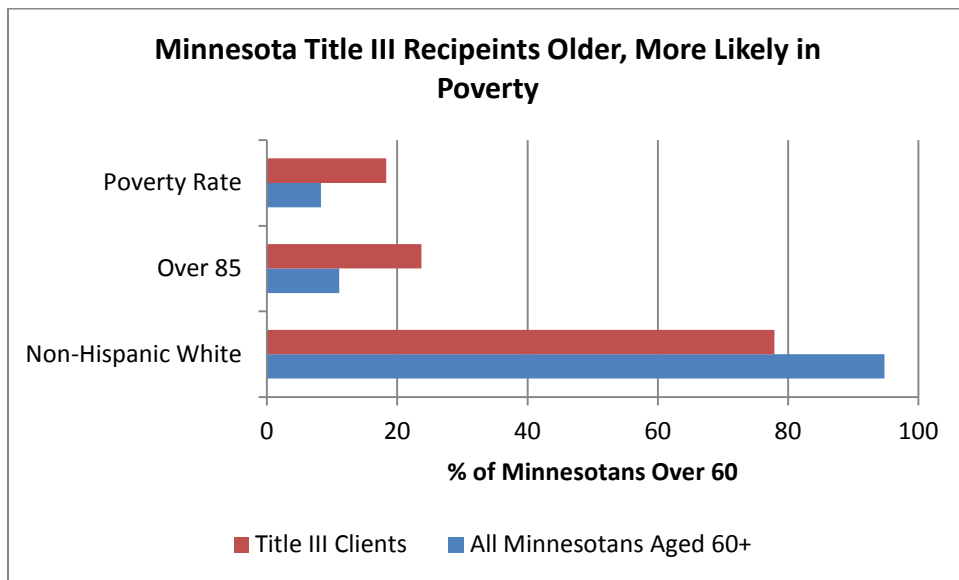
The AoA requires that the MBA collect information on the number of elderly served by their programs, as well as basic demographic characteristics of clients such as age, gender, race, ethnicity, and marital status. In order to assess targeting efforts, the AoA also requires data on whether or not the clients live alone, their poverty status, the number of ADLs and IADLs with which the clients report difficulty, and nutrition risk assessments for clients who receive home-delivered or congregate meals.

All data is collected via the registration forms clients fill out before receiving services (see Appendix B). Each service requires a different registration form. All of the forms have basic demographic and social history sections, which cover gender, race and ethnicity. All forms also include a question on whether or not clients live in a rural area. A financial information section asks clients (excluding caregiver support clients) about monthly income, and provides ranges of income from “under \$908” through “More than \$1,816” with a category for “Unknown”. The forms also ask for emergency contacts. All of the forms ask about difficulties with ADLs and IADLs, listing each task and asking the client to respond with a yes or no.

The home-delivered and congregate meal registration forms also include a nutrition risk assessment. This includes a series of questions about the quality of meals the clients consume, and whether or not the client consumes more than three alcoholic beverages per day. The form asks questions about the health of the client, including questions on tooth and mouth problems and involuntary weight loss or gain. The final category of questions relates to the client’s ability to purchase and prepare food, asking whether or not there are times when the client doesn’t have enough money to buy the food that they need, whether or not they eat alone most of the time, and whether or not the client is physically able to shop for food.

The data available for this analysis comes from registrations for the entire FY 2010 and 10 months of FY 2011. The total unduplicated count of clients served by Title III services in FY 2010 was 82,958. The number clients registered in the first 10 months of FY 2011 was 78, 558 for FY 2011, bringing the number of individual observations in the dataset to 161, 516.

A preliminary look at the data shows that several of the risk factors identified by Gaugler et al. (2007) are prevalent among Title III service recipients. 59.2% of clients were above the age of 75, and 23.7% were above the age of 85. In order to see if this is unusual, we must compare these proportions to the entire eligible population, or all Minnesotans over age 60. 34.1% of the eligible population is over 75, while 11.1% is over 85 (U.S. Census Bureau, 2010). The Title III participants tend to be older than the general eligible population. 18.3% registered clients reported incomes below the federal poverty line, compared to 8.3% of Minnesotans over the age of 60 (U.S. Census Bureau, 2010). 77.9% of clients identified as non-Hispanic white, while the proportion for all Minnesotans over age 60 was 94.8%.



10.2% of Title III clients reported having difficulty with one or more ADLs. 17.6% of clients reported difficulty with one or more IADLs. Among clients receiving Cluster 1, or the

most intensive services, the proportions are 29.3% and 50.2%, respectively. ADL and IADL for all older Minnesotans are collected by the Census Bureau, although they use a cut-off value of 65 years old. As an approximate comparison, 6.6% of Minnesotans over the age of 65 have difficulty with one or more ADLs, and 11.7% of Minnesotans over the age of 65 have difficulty with one or more IADLs (Census, 2010).

Methods

I will examine multiple models to describe the relationship between the intensity of home- and community-based service use and the risk factors for nursing home placement. If the nursing home risk factors predict a higher intensity of home- and community-based service use, then the most at-risk elders are receiving services, and the targeting has been effective.

Intensity of use includes two dimensions: the type of services used as well as the frequency of use. I will examine the type of services used in the first set of models. The most intensive services are the Cluster 1 services, or home-maker, chore services, and home-delivered meals. Cluster 2 services (assisted transportation and congregate meals) are somewhat less intense (see Table 1 below for a summary of services provided in Minnesota). I run two separate models to predict Cluster 1 and Cluster 2 service use. My theory is that elders receiving more intensive services, such as home-delivered meals, would be more at-risk of nursing home placement than an elder who can drive or who has a caregiver to bring them to congregate meals.

Table 3: Title III Services

Service Type	Provided in Minnesota
Cluster 1	
Personal care	
Homemaker	X
Chore	X
Home-delivered meals	X
Adult day care	
Case management	

Cluster 2	
Assisted transportation	X
Congregate meals	X
Nutrition counseling	

Source: AoA Reporting Requirements Provided by the Minnesota Board on Aging

Frequency of services used is also important. This is captured by the “service units” variable in the data set. For example, a person who attends congregate meals every week may be more at-risk of nursing home placement than a person who receives home-delivered meals for one week while recovering from surgery. The second set of models will use the nursing home risk factors to predict Cluster 1 and Cluster 2 service units.

I have made several adjustments to the risk factors for nursing home placement described by Dr. Gaugler. Rather than using a specific age cut-off, I’ve used the client’s actual age, as well as an additional term to capture the diminishing impact of age as elders reach the “oldest old.” For example, there may be larger variability in service use between a 69 and a 70 year-old than an 89 and a 90 year-old. At a certain point, the need for services becomes so likely that the exact age makes little difference. I have also included the number of IADL limitations as well as ADL limitations, as IADL limitations are more likely to predict less-intensive services, such as assisted transportation or congregate meals. Given the information available in the NAPIS dataset, I have also expanded the income variable. Rather than a simple dummy variable indicating whether or not a client meets the definition of poverty, I have used the monthly income categories on the registration forms to create a scale. The scale ranges from 1 to 3, or from low income to high income. Additional variables were added to account for missing data. Several clients left the age, income, and ADL limitations sections blank on the registration form. The missing data points were replaced with the average for the Title III service population. I

include the three “imputed” variables to control for the impact of missing information. Table 3 (below) provides a complete description of the variables.

Table 4: Variable Descriptions

Dependent Variables	
CLUSTER1	A dummy variable equal to 1 when a client uses any Cluster 1 service, 0 if no Cluster 1 services are used
CLUSTER2	A dummy variable equal to 1 when a client uses any Cluster 2 service, 0 if no Cluster 2 services are used
USAGE1	The number of times a client uses a Cluster 1 service
USAGE2	The number of times a client uses a Cluster 2 service
Independent variables	
AGE	The client’s age, in years
AGE2	The clients age, in years, squared
ADL	The number of ADL limitations for each client
IADL	The number of IADL limitations for each client
WHITE	A dummy variable equal to 1 if the client is white, 0 if not
INCOME	A classification of monthly income. The values range from 1 to 3. High income (\$1,805 and up) is coded as 3, Medium income (\$903 to \$1,805) is coded as 2, and low income (\$903 and lower) is coded as 1
ALONE	A dummy variable equal to 1 if the client lives alone, 0 if the client does not
RURAL	A dummy variable equal to 1 if the client lives in a rural area, 0 if the client does not
METRO	A dummy variable equal to 1 if the client lives in the Metro area, 0 if the client does not
INCIMP	A dummy variable equal to 1 if the client’s income was imputed based on the average for the sample

AGEIMP	A dummy variable equal to 1 if the client's age was imputed based on the average for the sample
ADLIMP	A dummy variable equal to 1 if the client's ADL limitations were imputed based on the average for the sample

The first two models (model A and model B) are logistic regressions which estimate whether or not a client is likely to use a category of services.

$$\text{MODEL A: } CLUSTER1_i = \beta_0 + \beta_1 AGE_i + \beta_2 AGE2_i + \beta_3 ADL_i + \beta_4 IADL_i + \beta_5 WHITE_i + \beta_6 INCOME_i + \beta_7 ALONE_i + \beta_8 RURAL_i + \beta_9 METRO_i + \beta_{10} INCIMP_i + \beta_{11} AGEIMP_i + \beta_{12} ADLIMP_i + \varepsilon_i$$

$$\text{MODEL B: } CLUSTER2_i = \beta_0 + \beta_1 AGE_i + \beta_2 AGE2_i + \beta_3 ADL_i + \beta_4 IADL_i + \beta_5 WHITE_i + \beta_6 INCOME_i + \beta_7 ALONE_i + \beta_8 RURAL_i + \beta_9 METRO_i + \beta_{10} INCIMP_i + \beta_{11} AGEIMP_i + \beta_{12} ADLIMP_i + \varepsilon_i$$

The second set of models (model C and model D) are OLS regressions which estimate service units of Cluster 1 and Cluster 2 services based on the risk factors for nursing home placement.

$$\text{MODEL C: } USAGE1_i = \beta_0 + \beta_1 AGE_i + \beta_2 AGE2_i + \beta_3 ADL_i + \beta_4 IADL_i + \beta_5 WHITE_i + \beta_6 INCOME_i + \beta_7 ALONE_i + \beta_8 RURAL_i + \beta_9 METRO_i + \beta_{10} INCIMP_i + \beta_{11} AGEIMP_i + \beta_{12} ADLIMP_i + \varepsilon_i$$

$$\text{MODEL D: } USAGE2_i = \beta_0 + \beta_1 AGE_i + \beta_2 AGE2_i + \beta_3 ADL_i + \beta_4 IADL_i + \beta_5 WHITE_i + \beta_6 INCOME_i + \beta_7 ALONE_i + \beta_8 RURAL_i + \beta_9 METRO_i + \beta_{10} INCIMP_i + \beta_{11} AGEIMP_i + \beta_{12} ADLIMP_i + \varepsilon_i$$

Results

Almost all of the independent variables in each of the models are statistically significant. This is common in analyses with large sample sizes. Instead, I will focus on the adjusted R-squared, or how well the model predicts changes in the dependent variable (in this case, the use of Cluster 1 and Cluster 2 services). In the binomial logit model, the adjusted R-squared is not the most appropriate measure to illustrate how well the model predicts changes in the independent variable. Instead, I will use the average of the percentage of ones explained

correctly and the percentage of zeros explained correctly, denoted by \bar{R}^2_p (Studenmund, 2011).

This figure represents the how accurate the model is, on average.

Cluster 1 and Cluster 2 Service Use (Odds Ratios)		
	Cluster 1	Cluster 2
Age	1.014 (18.56)**	0.991 (12.08)**
Age squared	1.000 (9.62)**	1.000 (6.37)**
ADL limitations	0.843 (12.69)**	1.294 (18.20)**
IADL limitations	2.297 (109.83)**	0.395 (111.78)**
White	0.916 (2.77)**	1.010 (0.32)
Income level	0.957 (3.66)**	1.113 (8.97)**
Lives alone	1.115 (6.43)**	0.894 (6.68)**
Rural	1.040 (2.33)*	1.046 (2.68)**
Metro area	4.034 (76.57)**	0.226 (81.93)**
Age imputed	3.460 (5.21)**	0.270 (5.45)**
Income imputed	0.667 (20.82)**	1.562 (23.03)**
ADLs imputed	0.417 (23.21)**	0.640 (25.19)**
<i>Sample Size</i>		<i>141,257</i>

t-scores in parentheses

* Statistically significant at the 5% level

** Statistically significant at the 1% level

The \bar{R}^2_p for model A (Cluster 1 Service Use) is 0.701, meaning that the risk factors for nursing home placement correctly predict the use of Cluster 1 services 70.1% of the time. This is significantly more accurate than if Cluster 1 services had been randomly administered to the sample regardless of risk.

The coefficients from the logistic regression can be interpreted as how much more likely a client is to use services when she has each characteristic. For example, each additional IADL limitation makes a client 2.3 times more likely to use Cluster 1 services. The three most important predictors of Cluster 1 service use are whether or not the client lives in the metro area, IADL limitations, and whether or not the client lives alone. Living in the metro area makes a client 4.0 times more likely to use Cluster 1 services. By contrast, living in a rural area essentially makes no difference, indicating a potential imbalance between urban and rural clients. Each additional IADL limitation makes a client 2.3 times more likely to use Cluster 1 services, and if a client lives alone she is 1.1 times more likely to use Cluster 1 services. Being white and having a higher income makes a client slightly less likely to use Cluster 1 services.

The coefficient on ADL limitations is unexpected. According to the model, each additional ADL limitation decreases the likelihood of Cluster 1 service use. This could perhaps be because clients are having difficulty accessing the services at all due to functional limitations.

The \bar{R}^2_p for model B (Cluster 2 Service Use) is 0.751, meaning that the risk factors for nursing home placement correctly predict the use of Cluster 2 services 75.1% of the time. This is significantly more accurate than if Cluster 2 services had been randomly administered to the sample regardless of risk.

In this model, living in the metro area and IADL limitations actually make the client much less likely to use Cluster 2 services. The coefficient on IADL limitations is counter-intuitive, but could mean that clients who have trouble with IADLs are not functionally impaired enough to need a nursing home or a full-time informal caregiver, but are impaired enough not to be able to get to the senior center for a congregate meal on their own. The biggest positive influences are ADL limitations and income. Each additional ADL limitation makes a client 1.3

times more likely to use Cluster 2 services. Shifting to a higher category of income makes a client slightly more likely to use Cluster 2 services. Living alone appears to decrease the likelihood of Cluster 2 service use. This could be because functionally-impaired clients would need a caregiver to help them get to the senior center to receive a congregate meal.

The results from models A and B indicate that the MBA’s targeting efforts are effective in identifying the most at-risk elders. While some of the coefficients have counter-intuitive effects, the model is accurate as a whole.

Units of Cluster 1 and Cluster 2 Services		
	Cluster 1	Cluster 2
Age	0.057 (5.55)**	0.169 (3.35)**
Age squared	0.000 (5.26)**	0.000 (3.18)**
ADL limitations	0.561 (2.22)*	2.667 (2.13)*
IADL limitations	16.663 (126.15)**	-7.174 (10.98)**
White	-4.253 (5.79)**	-14.075 (3.87)**
Income level	-6.108 (24.32)**	-4.807 (3.87)**
Lives alone	7.819 (24.17)**	17.790 (11.12)**
Rural	-0.947 (2.73)**	0.748 (0.44)
Metro area	-8.098 (19.90)**	-2.489 (1.24)
Age imputed	-7.309 (1.22)	-19.606 (0.66)
Income imputed	-7.844 (22.48)**	-9.102 (5.27)**
ADLs imputed	-7.239 (17.51)**	-8.354 (4.09)**
Constant	19.670	35.786

	(17.08)**	(6.28)**
R^2	0.238	0.003
<i>Sample Size</i>		141,257

t-scores in parentheses
* Statistically significant at the 5% level
** Statistically significant at the 1% level

The adjusted R-squared for Model C is 0.238, meaning that the risk factors for nursing home placement explain 23.8% of the changes in Cluster 1 service units. Taking a closer look at the data, we see that home-delivered meals are explaining all of the variation. The nursing home risk factors do not predict the usage of any other service accurately (see Appendix E). Overall, this indicates that the risk factors for nursing home placement do not do a good job of predicting the number of times a client uses a Cluster 1 service. The coefficients in these models can be interpreted as the change in service units for a one-unit shift in each of the risk factors. For example, a shift to a higher income level leads to a 6.1 unit decrease in Cluster 1 services used, holding all else constant. In this model, all of the coefficients have the expected signs except for the metro dummy, which indicates that living in the metro area leads to an 8.1 unit decrease in Cluster 1 services used. The most important factors in explaining the number of Cluster 1 service units are IADL limitations, living in the metro area, and living alone. Each additional IADL limitation leads to a 16.7 unit increase in the number of Cluster 1 services used, holding all else constant. Living alone leads to a 7.8 unit increase.

The adjusted R-squared for model D is 0.003, meaning that the risk factors for nursing home placement explain 0.3% of the changes in Cluster 2 service units. The risk factors for nursing home predict virtually none of the change in the number of times a client uses a Cluster 2 service. The coefficients could be interpreted here, but given that the model has so little explanatory power as a whole, it is not worth putting much stock in the each variable

individually. Taken together, the results of the last two models indicate that risk of nursing home placement has little impact on how much of a service the client uses.

Policy Recommendations

The results of models A and B indicate that the MBA has effective strategies in place to target services to the elders most at-risk of nursing home placement, according to the risk factors that I have selected. However, once the at-risk elders have been identified, the MBA does not track how many times a client uses a service. Based on these results, I recommend that the MBA take the following steps:

- **Conduct a survey of providers:** A survey of a random sample of providers, similar to the survey of AAAs conducted by the GAO, could explore what targeting strategies are the most effective. It would be useful to know if providers are making any effort to track the number of service units provided to a client across different services. The MBA could learn a great deal about what they need to do next. If the providers are not tracking the amount of services used, then new strategies will need to be brainstormed. If the providers are indeed tracking the amount of services, a different course of action will be necessary. Any effective targeting strategies could be examined and shared among providers and AAAs.
- **Redesign the cost-sharing structure:** The new cost-sharing structure could be used to curb demand. Rather than institute a small, across-the-board fee for services, the service providers could guarantee a certain number of service units free of charge, and a fee could kick in after the client reaches that threshold. The fee structure could subtly encourage clients to keep track of how many service units they are using. It would also force providers to keep track of how many service units are going to each client. Some

providers have already introduced a sliding-scale fee structure so as not to discourage new clients from seeking out services. These efforts should be supported by the MBA.

- **Continue to support the Minnesota Living Well at Home project:** A recent meta-analysis of home- and community-based service policies has identified consumer-directed services like the LWAH project as the most effective way to assure access to services while controlling costs (Doty, 2010). Continuing to pool resources from Title III, Alzheimer’s Disease Demonstration Grants and private funds in a flexible fund for at-risk elders will be a useful strategy.
- **Adjust the state’s targeting formula:** As a longer-term goal, the MBA could adjust its targeting formula to account for the amount of services provided. This would require determining an appropriate minimum or cap for each type of service. However, this is not typical and none of the states I examined account for the amount of services provided in their formulas.

The following recommendations will facilitate future evaluations of Title III service provision:

- **Data quality:** Several steps could be taken to assure better-quality data. First, providers should be required to separate out their eligibility data for different programs, rather than combining them in the NAPIS dataset. The MBA should continue its current data quality efforts to reduce the amount of missing observations in the dataset. Nothing can be done when clients decline to answer a question on the registration form, but the Agencies should continue to take what steps they can to compile a cleaner dataset.
- **Geographic analysis:** The models used in this study could be improved with an analysis that measures distance from a service location in a more concrete way. Client’s addresses

could be used to calculate actual miles traveled to the closest senior center. This would also help the MBA to identify service gaps.

- **Supplement the Standard Registration Form:** Not all of Dr. Gaugler's risk factors for nursing home placement are captured by the registration forms. More detailed health status information could be collected, such as cognitive impairments, incidence of cancer, or history of strokes or falls. Prior health care utilization, such as hospitalizations or past nursing home stays would also help identify the most at-risk elders. A specific question about whether or not the client has an informal caregiver (rather than simply living alone or not) is another important indicator. While many of these factors could be interpreted as an invasion of privacy, clients would probably answer a question about prior nursing home stays. This small piece of additional information could be a useful parameter for future targeting efforts.

The MBA could improve its targeting efforts and evaluative capabilities by implementing these recommendations. Targeting is both an important way to assure that the most vulnerable elders in Minnesota are cared for, as well as a financial necessity. Targeting will become even more essential in the coming years, as baby-boomers become eligible for services and funds are even more stretched. Title III is an important safety net for the community, and identifying the most vulnerable elders will allow limited funds to have the greatest impact.

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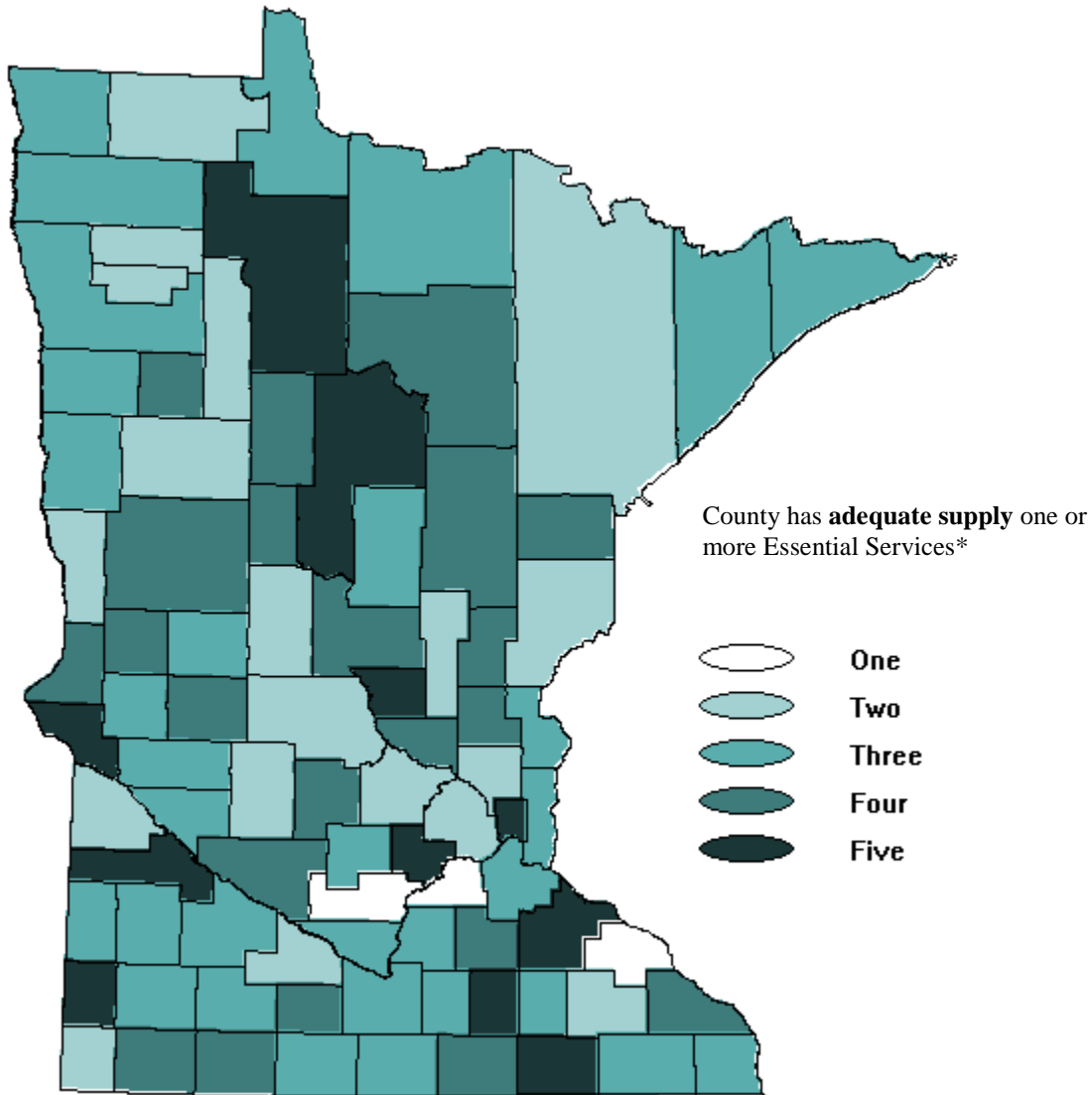
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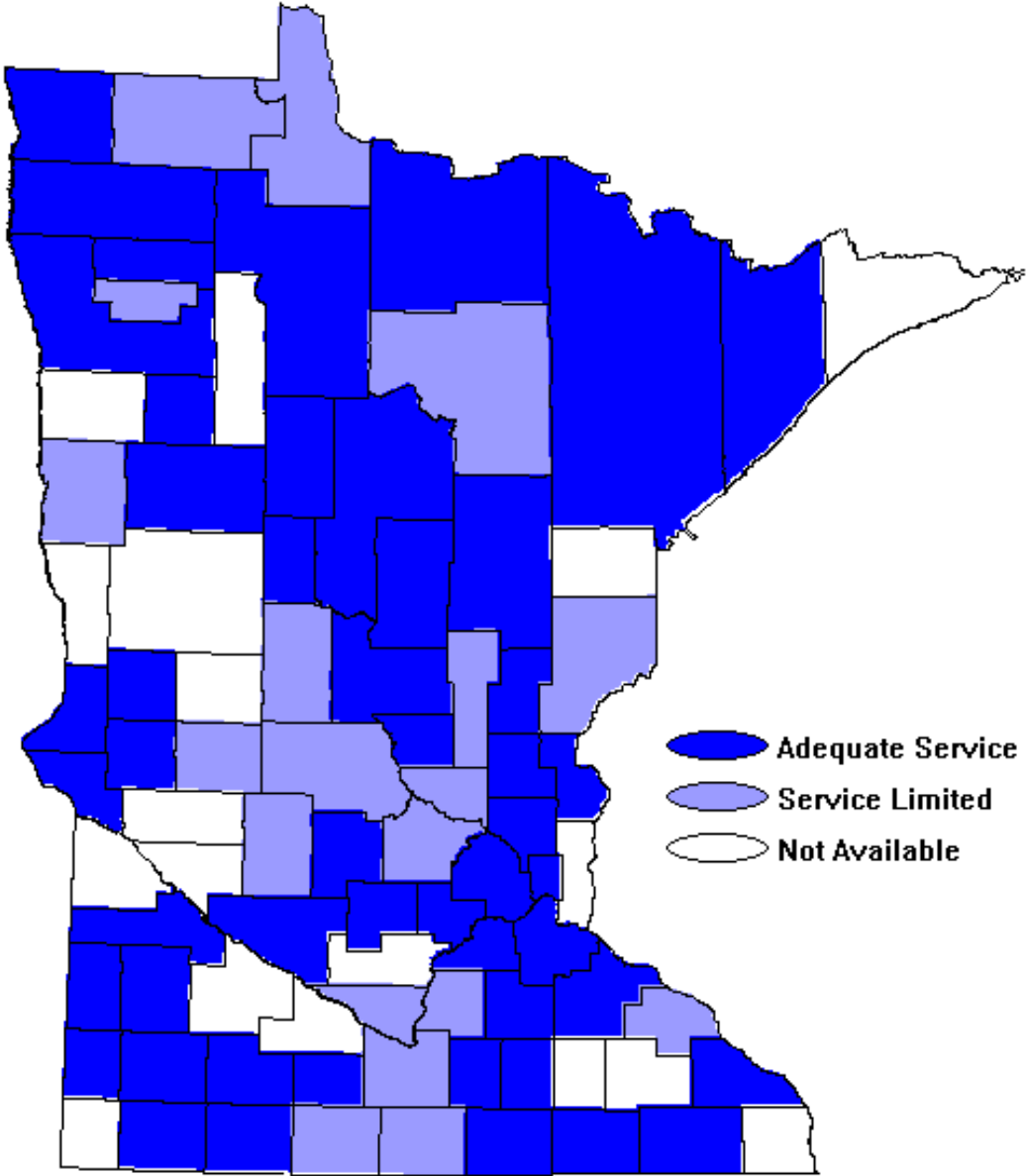
Appendix A: Availability of Home- and Community-Based Services in Minnesota (2009)

Availability of Essential* Home and Community-Based Services/Supports, 2009



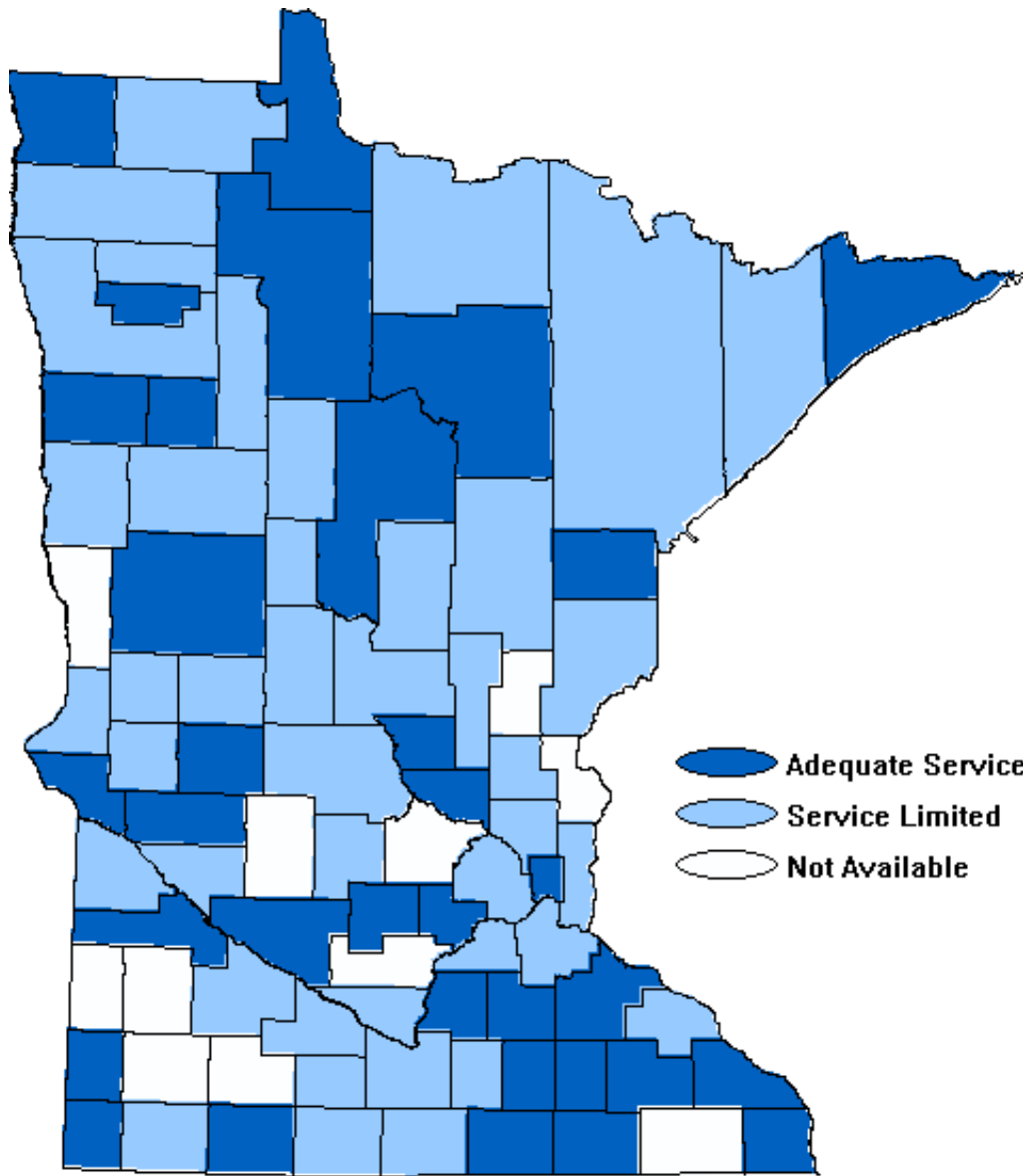
*Essential Home and Community Based Supports defined as (1) Non-County Case Management, (2) Chore Service, (3) Homemaker Service, (4) Home Delivered Meals and (5) Caregiver Training and Support

Non-County Case Management, 2009



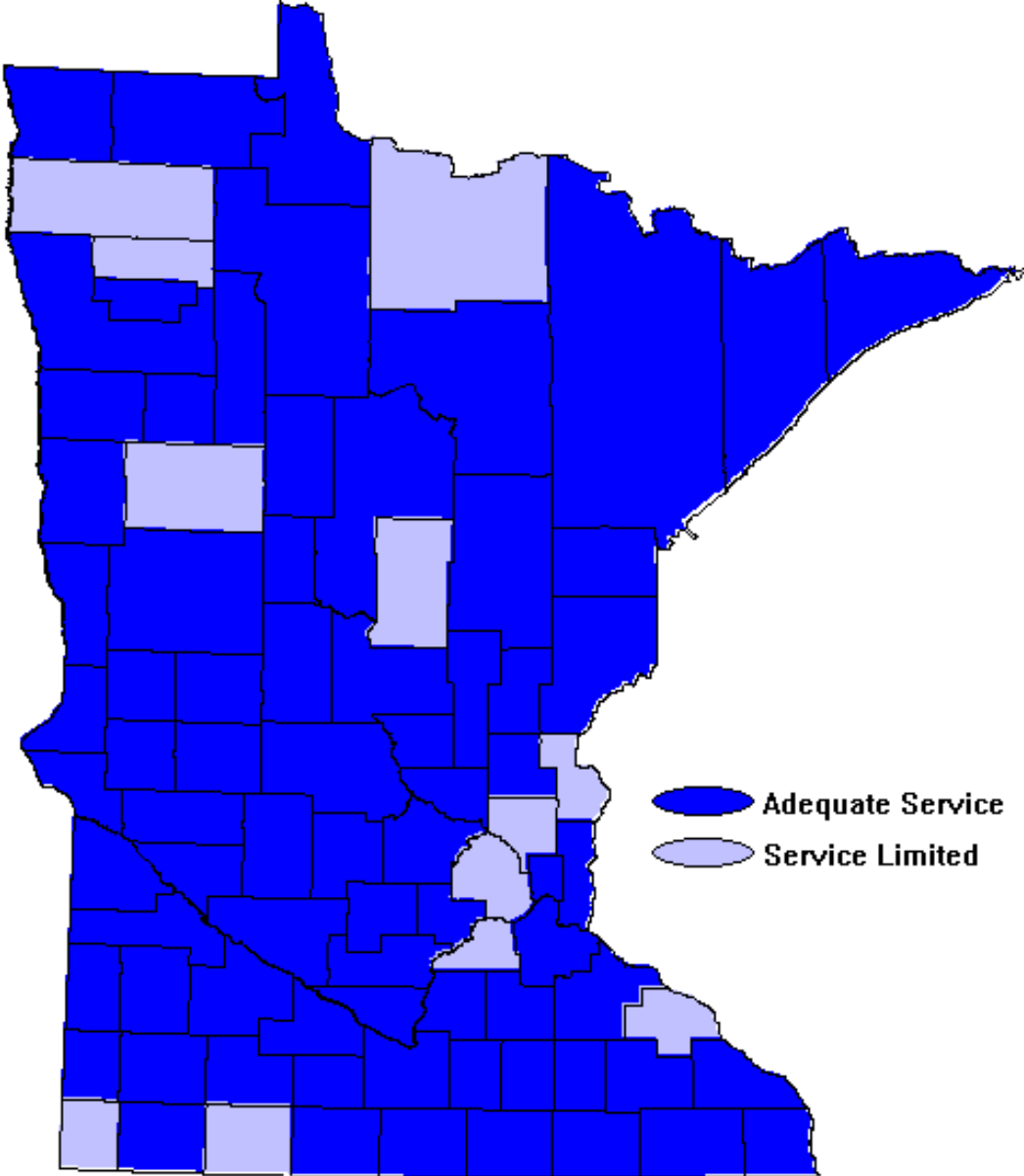
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Chore Service, 2009



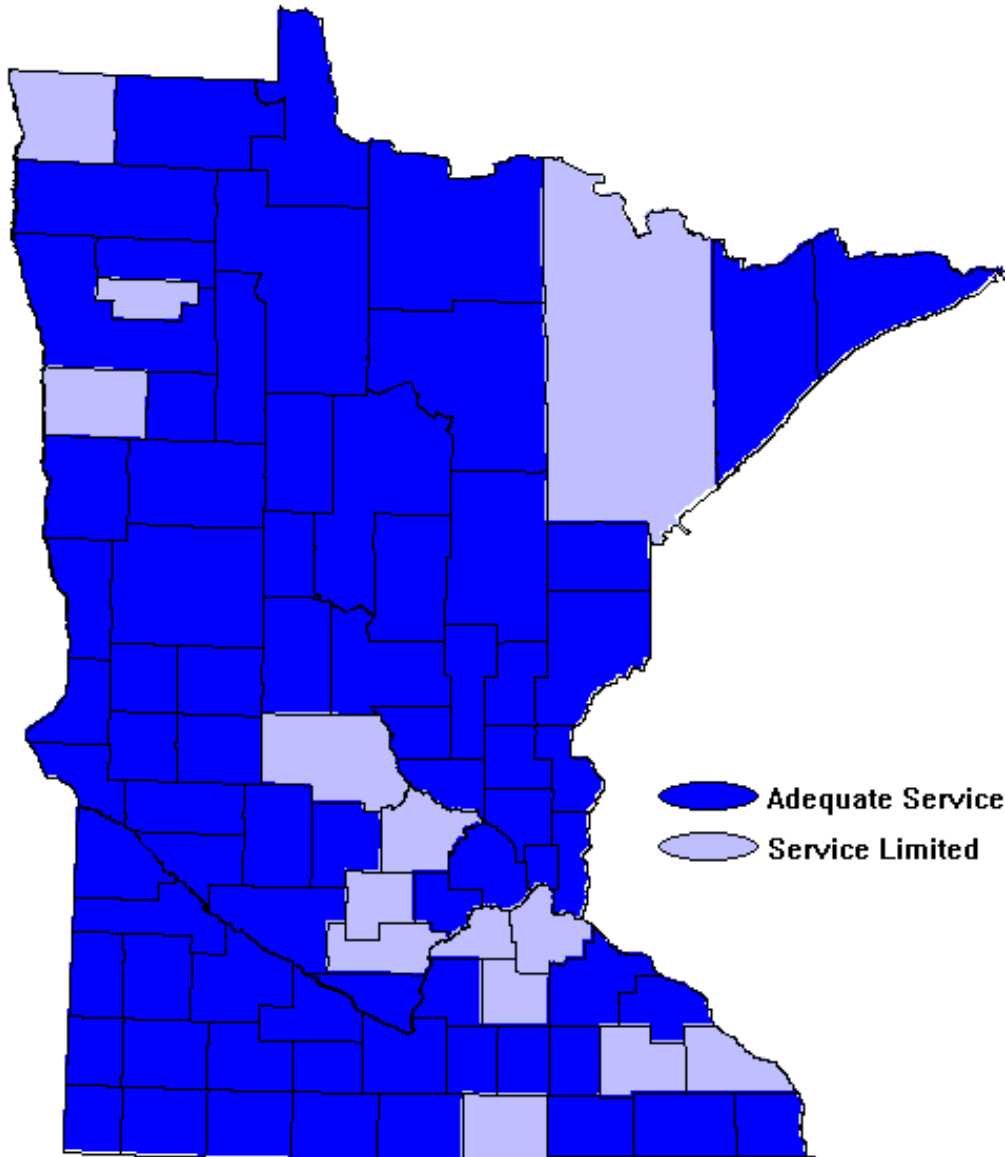
DHS Gaps Analysis 2009
6/24/2010

Homemaker Service, 2009



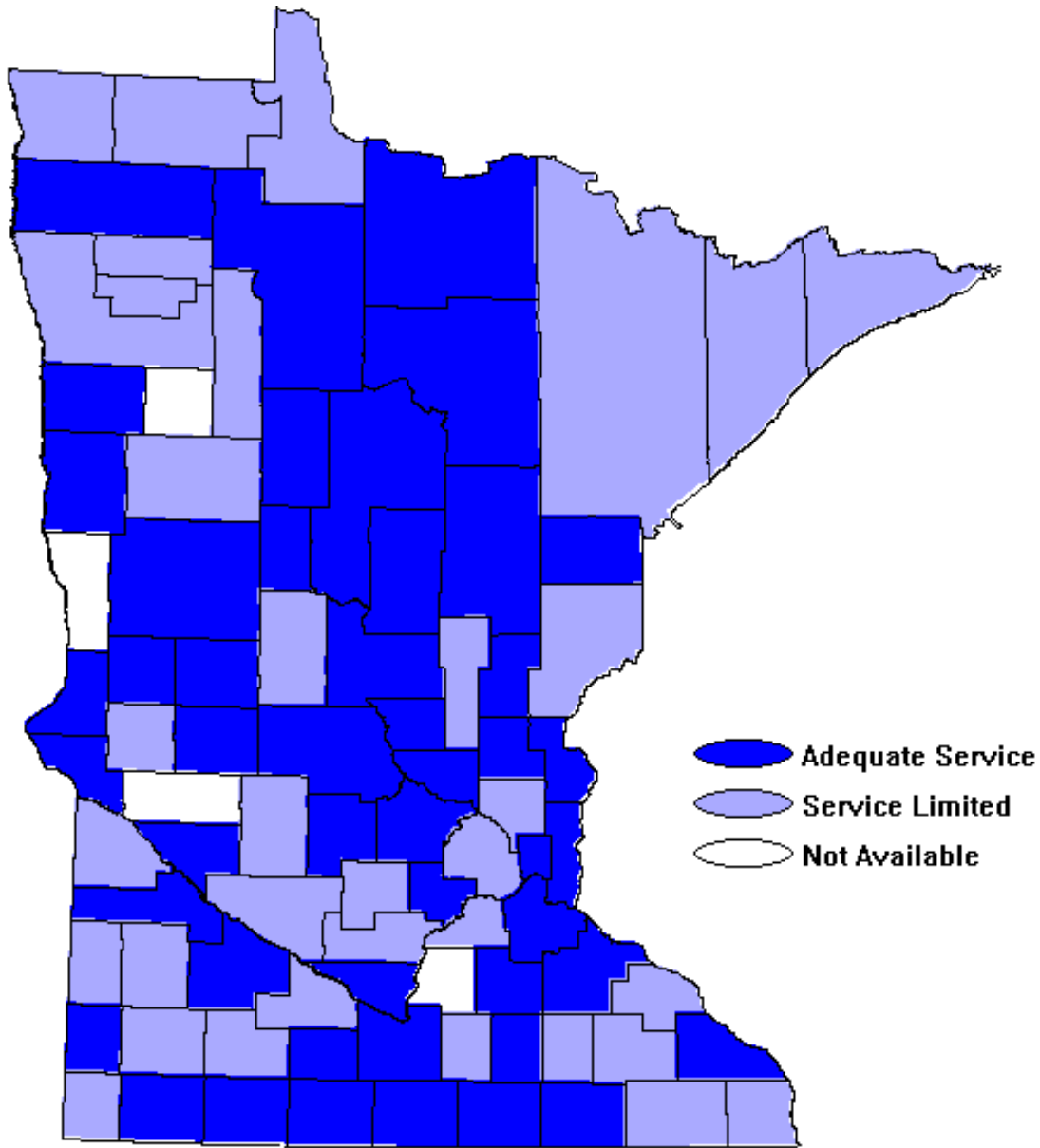
DHS Gaps Analysis 2009
6/24/2010

Home Delivered Meals, 2009



DHS Gaps Analysis 2009
6/24/2010

Caregiver Training and Support, 2009



DHS Gaps Analysis 2009
6/24/2010

Appendix B: Sample Title III Registration Form (revised March 2011)

Home Delivered Meal Program Registration				
Please complete this form to the best of your ability. Shaded areas are for office use only.				
Contact Date	Status	AAA Region	Eligibility Category (Check one): <input type="checkbox"/> Client <input type="checkbox"/> Spouse <input type="checkbox"/> Volunteer <input type="checkbox"/> Caregiver <input type="checkbox"/> Disabled under 60	NAPIS ID Number - -
Section A. Basic Demographics				
Last Name:		First Name:		Middle Initial:
Lives in Rural Area (Check One): <input type="checkbox"/> Yes <input type="checkbox"/> No		Gender: <input type="checkbox"/> Female <input type="checkbox"/> Male <input type="checkbox"/> Unspecified		Date of Birth: / /
Address:		Address #2:		
City:	State:	Zip Code:	County:	
Home Phone: ()	Mobile Phone: ()		Work Phone: ()	
Section B. Social History				
Race (Check one): <input type="checkbox"/> White <input type="checkbox"/> American Indian/Alaskan <input type="checkbox"/> Asian <input type="checkbox"/> Black/African American <input type="checkbox"/> Native Hawaiian/Pacific Islander <input type="checkbox"/> Other			Ethnicity (Check one) <input type="checkbox"/> Hispanic or Latino <input type="checkbox"/> Non-Hispanic	
Section C. Financial				
Please check one:				
<input type="checkbox"/> I live aloneand my <u>monthly</u> income is between (circle one)				
Under \$908	\$908 - \$1,362	\$1,362 – \$1,816	More than \$1,816	Unknown
<input type="checkbox"/> I live with othersand our <u>monthly</u> income is between (circle one)				
Under \$1,226	\$1,226 - \$1,839	\$1,839 – \$2,452	More than \$2,452	Unknown
Section D. Contacts				
Emergency Phone: ()	Emergency Contact Name		Emergency Contact Relationship	
Section E. Nutrition Risk Assessment				
Have you changed the way you eat due to illness or medical condition? Yes No		Are there times when you don't have enough money to buy the food you need? Yes No		
Do you eat less than 2 meals a day? Yes No		Do you eat alone most of the time? Yes No		

Do you eat few fruits or vegetables or milk products? Yes No	Do you take 3 or more prescribed or over-the-counter drugs each day? Yes No
Do you have 3 or more drinks of beer, liquor or wine almost everyday? Yes No	Have you lost or gained 10 pounds in the last 6 months without wanting to? Yes No
Do you have tooth or mouth problems that make it hard to eat? Yes No	Are there times when you are not physically able to shop, cook or feed yourself? Yes No

Section F. Activities of Daily Living

Can you walk around inside without any help? Yes No	Can you bathe or shower without any help? Yes No
Can you sit up or move around in bed without any help? Yes No	Can you use the toilet without any help? Yes No
Can you comb your hair, shave, wash your face, or brush your teeth without any help? Yes No	Can you dress without any help? Yes No
Can you get in and out of bed or chair without any help? Yes No	Can you manage eating without any help? Yes No

Section G. Independent Activities of Daily Living

Can you answer the telephone or make a phone call without help? Yes No	Can you do heavy house cleaning, like yard work and laundry, without any help? Yes No
Can you shop for food and other things you need without help? Yes No	Can you take your medications without help? Yes No
Can you prepare meals for yourself without help? Yes No	Can you handle your own money, like keeping track of bills without help? Yes No
Can you do light house keeping, like dusting or sweeping, without help? Yes No	Can you use public transportation or drive beyond walking distances without help? Yes No

Section H. Use of Information

I understand that the information I am providing on this form is for registration purposes. The information will be used by the Area Agency on Aging and the Minnesota Board on Aging to create statistical reports and may be used by other service providers to help identify other services from which I may benefit, such as follow up to the Nutrition Risk Assessment. This information will not be released to anyone other than the above mentioned parties in a way that will identify me as an individual unless I sign a separate consent for that purpose.

Signature: _____ Today's Date: _____

Appendix C: Minnesota's Intra-State Funding Formula from *Minnesota Board on Aging State Plan, Amendment for FFY 2012*

1. Area Plan Administration - Title III-3A

After application of amounts used under section 308(b) for state agency administration, the Minnesota Board on Aging shall take 10% of its combined allotments for supportive services, congregate nutrition services, home delivered meal services, disease prevention and health promotion services, and family caregiver funds for Area Plan administration. Funds shall be taken in the same proportion as each fund contributes to the total remaining, with the exception of funds for family caregivers and disease prevention and health promotion and set-aside amounts for the Indian Area Agency on Aging. Remaining funds shall be distributed according to the factors of:

- a. population 60+ (55%);
- b. low income 65+ (20%);
- c. minority 60+ (10%);
- d. persons age 65+ in non-urbanized (rural) areas (10%); and
- e. population density of persons age 60+ in each planning and service area as a ratio compared to the statewide average population density of persons age 60+ (5%).

2. Direct Service - Title III-B funds for Supportive Services

After deleting amounts for state agency administration, operation of the long term care ombudsman program, area agency administration and the Indian Area Agency on Aging, the Minnesota Board on Aging shall distribute the balance funds according to the factors of:

- a. population 60+ (55%);
- b. low income 65+ (20%);
- c. minority 60+ (10%);
- d. persons age 65+ in non-urbanized (rural) areas (10%); and
- e. population density of persons age 60+ in each planning and service area as a ratio compared to the statewide average population density of persons age 60+ (5%).

Funds available to area agencies on aging for program development and coordination activities shall be taken from the direct service allocation. Area agency on aging requests for specific amounts will be considered as part of the area plan and budget approval process.

3. Direct Service - Titles III-C1 and III-C2 and State of Minnesota funds for Nutrition Services
After deleting amounts for state agency administration, area agency administration and the Indian Area Agency on Aging, the Minnesota Board on Aging shall distribute the balance of funds according to the factors of:

- a. population 60+ (55%);
- b. low income 65+ (20%);
- c. minority 60+ (10%);
- d. persons age 65+ in non-urbanized (rural) areas (10%); and
- e. population density of persons age 60+ in each planning and service area as a ratio compared to the statewide average population density of persons age 60+ (5%).

4. Direct Service - Title III-D funds for Disease Prevention and Health Promotion Services

After deleting amounts for the Indian Area Agency on Aging, the Minnesota Board on Aging shall distribute the balance of funds according to the following factors:

- a. population 60+ (55%);
- b. low income 65+ (20%);
- c. minority 60+ (10%);
- d. persons age 65+ in non-urbanized (rural) areas (10%); and
- e. population density of persons age 60+ in each planning and service area as a ratio compared to the statewide average population density of persons age 60+ (5%).

5. Direct Service - Title III-E funds for Family Caregiver Support Services

After deleting amounts for state agency administration, area agency administration and the Indian Area Agency on Aging, the Minnesota Board on Aging shall distribute the balance of funds according to the following factors:

- a. population 60+ (55%);
- b. low income 65+ (20%);
- c. minority 60+ (10%);
- d. persons age 65+ in non-urbanized (rural) areas (10%); and
- e. population density of persons age 60+ in each planning and service area as a ratio compared to the statewide average population density of persons age 60+ (5%).

6. "Set aside amounts" for the Indian Area Agency on Aging utilize the previous year's allocation levels plus or minus a percentage amount equal to changes in statewide totals available for distribution for each fund.

7. No planning and service area shall receive a total allocation of direct service funds that is less than 95% of the previous year's allocation of direct service funds. Should additional funds be necessary to maintain the 95% funding level for any planning and service area, they shall first be taken proportionately from the State of Minnesota direct service funds allocated to other planning and service areas, and then proportionately from federal funds allocated to other planning and service areas.

8. No planning and service area shall receive an allocation of administrative funds that is less than 95% of the previous year's allocation of administrative funds. Should additional funds be necessary to maintain the 95% funding level for any planning and service area, they shall be taken proportionately from the federal administrative funds allocated to other planning and service areas.

9. Paragraphs 7 and 8 shall not apply beginning in Area Plan Year 2008.

10. The Minnesota Board on Aging shall use the data from the most recent Census for the factors of 1) population 60+, 2) low income 65+, 3) minority 60+, 4) population 65+ in non-urbanized areas and 5) density for the 60+ population.

Appendix D: Wisconsin State Bureau for Aging and Disability Service’s Allocation Formulas from *Wisconsin Plan for Older People 2010-2012*

Allocation Formulas for Title III B, III C-1, III C-2, III D and III E

Funds awarded to area agencies on aging include funds for area agency administration and funds for tribal and county aging units. These funds are distributed according to the uniform statewide funding formulas that follow below.

Area Plan Administration

From the sum available for area plan administration, each area agency shall be allocated an amount in the following manner.

1. Each area agency shall be allocated a base amount of \$75,000.
2. The remaining funds available for area plan administration shall be distributed among the area agencies according to the following factors and weights:

Fifty percent of the funds shall be distributed based on the number of county or tribal aging units served by the area agency (multi-county AAAS only).

Forty percent of the funds shall be distributed based on the proportion of the state's total low-income (at or below 100 percent of the poverty level) elderly aged 60 and over in each area served by the area agency.

Ten percent of the funds shall be distributed based on the proportion of the state's total minority elderly aged 60 and over in each area served by the area agency. [Minority shall include Hispanic, Black not of Hispanic origin, Asian/Pacific Islander and American Indian.]

A numerical representation of this formula follows.

<i>Area Plan Administration Formula Factors</i>	
StateAAA\$	The State’s AAA administrative allocation
StateBase\$	The total amount used for AAA base allocations (\$225,000)
NonBase\$	The State’s AAA administrative allocation less the amount (\$225,000) used for AAA bases
AAA\$	The AAA’s Title III administrative allocation
Base	\$75,000 per AAA.
PSA60Pov*	The PSA’s percentage of the total state population aged 60 and older living in households with incomes below the poverty line
PSAUnits	The number of aging units in the PSA
PSA60Min	The PSA’s percentage of the total state’s minority population aged 60 and older

<i>Area Plan Administration Formula</i>	
For all AAAs.	$AAA\$ = Base + (PSA60Pov * (.40 * NonBase\$)) + (PSAUnits * (.50 * NonBase\$)) + (PSA60Min) * (.10 * NonBase\$)$

PSA-Tribal Aging Unit Funds

The 11 federally recognized Indian Tribes in Wisconsin shall be allocated from available Title III funds an amount at least equal to the amount received in the previous calendar year. This allocation includes funds from Title IIIB, Title IIIC1, Title IIIC2, and Title IIID.

This allocation shall be distributed among tribes based on the number of all tribal members aged 60 and over in each tribe relative to the total tribal population aged 60 and over in all 11 tribes as reported by the tribes. There is a minimum allocation for each tribe of \$8,000 of Title IIIB funds. When there are annual increases or decreases in aging funds awarded to the State, there may be similar statewide increases or decreases in the amount to be distributed.

In the event of either an across-the-board or Title-specific federal reduction, the Bureau of Aging and Disability Resources shall have the discretion to protect the funding level of certain programs by making a proportionately greater cut in other programs. <i>PSA-Tribal Aging Unit Formula Factors</i>	
StateTribal\$	The state's tribal allocation
PSATribal\$	The total tribal allocations in each PSA
Tribal\$	The tribe's allocation
Tribe60	The tribe's percentage of the total tribal population aged 60 and older
PSAΣ	The sum of the allocations for the tribes in the PSA

<i>PSA-Tribal Title IIIB Formula</i>	
For a Tribe	$Tribal\$ = (\text{The greater of } \$8,000) \text{ or } (Tribe60 * Tribal\$)$
For a PSA	$PSATribal\$ = PSA\Sigma(Tribal\$)$

<i>PSA-Tribal Title IIIC1, C2 and D</i>	
For a Tribe	$Tribal\$ = Tribe60 * Tribal\$$
For a PSA	$PSATribal\$ = PSA\Sigma(Tribal\$)$

PSA-County Aging Unit Funds

The remaining Title III funds available for county aging units shall be distributed to each PSA in the manner that follows.

Title III B (Supportive Services), Title III C2 (Home-Delivered Meals), and Title III E (Family Caregiver Support Services) will be distributed using the factors and weights that follow.

Forty-five percent of the funds will be distributed on a county's proportion of the state's population aged 60 and over;

Forty percent of the funds will be distributed on a county's proportion of the state's population aged 60 and over with income below 125% of the poverty level;*

Ten percent of the funds will be distributed on a county's proportion of the state's population aged 75 and over; and five percent of the funds will be distributed on a county's proportion of the state's minority population aged 60 and over.

There will continue to be a base of \$8,000 in the Title III-B allocation.

There will continue to be a minimum of \$6,009 in the Title III C2 allocation.

There will continue to be a minimum of \$5,000 in the Title III E allocation.

A numerical representation of this formula follows.

<i>PSA-County Aging Unit Formula Factors for Title IIIB, C2 and E</i>	
StateB\$	The state's Title IIIB allocation
StateC2\$	The state's Title IIIC2 allocation
StateE\$	The state's Title IIIE allocation
CO60	The county's percentage of the state's population aged 60 and older
CO60POV*	The county's percentage of the state's population aged 60 and older living in households below the poverty line
CO75	The county's percentage of the state's population aged 75 and older
CO60MIN	The county's percentage of the state's population aged 60 and older who are minorities
BASEB\$	The Title IIIB base of \$8,000
MINC2\$	The Title IIIC2 minimum of \$6,009
MINE\$	The Title IIIE minimum of \$5,000
PSAΣ	The sum of the allocations for the counties in the PSA

<i>PSA-County Aging Unit Title IIIB, C2, E Formulas</i>	
Title IIIB	$PSA\Sigma = (8,000 + ((CO60 * .45) + (CO60POV * .40) + (CO75 * .10) + (CO60MIN * .05)) * StateB\$)$

Title IIIC2	$PSA\Sigma = (\text{The greater of MINC2\$}) \text{ or } ((CO60*.45) + (CO60POV*.40) + (CO75*.10) + (CO60MIN*.05)) * StateC2\$$
Title IIIE	$PSA\Sigma = (\text{The greater of MINE\$}) \text{ or } ((CO60*.45) + (CO60POV*.40) + (CO75*.10) + (CO60MIN*.05)) * StateE\$$

Title III C1 (Congregate Nutrition) and Title III D (Disease Prevention and Health Promotion Services) will be distributed using the factors and weights that follow.

Ninety percent of the funds will be distributed on a county's proportion of the state's population aged 60 and over with incomes below 125 % of the poverty level;*

Five percent of the funds will be distributed on the county's proportion of the state's minority population aged 60 and over, and five percent of the funds will be distributed on a rural factor.

The rural factor allots a certain dollar amount to counties which are determined to be rural because they either are not part of a federally-designated Metropolitan Statistical Area or are part of an MSA, but have fewer than twenty people 60 years of age or older per square mile.

A numerical representation of this formula follows.

<i>PSA-County Aging Unit Factors for Titles IIIC1 and D</i>	
StateC1\$	The state's Title IIIC1 allocation
StateD\$	The state's Title IIID allocation
CO60POV*	The county's percentage of the state's population aged 60 and older living in households below the poverty line
CO60MIN	The county's percentage of the state's population aged 60 and older who are minorities
RURAL	The rural factor allots a certain dollar amount to counties that are determined to be rural because they either are not part of a federally-designated Metropolitan Statistical Area or have fewer than 20 people aged 60 and older per square mile. 1 if a county is rural. 0 if a county is not rural.
PSAΣ	The sum of the allocations for the counties in the PSA

PSA-County Aging Unit Titles IIIC1 and D Formulas

<i>Title IIIC1</i>	$PSA\Sigma = ((RURAL*.05) + (CO60POV*.90) + (CO60MIN*.05)) * (StateC1\$)$
<i>Title IIID</i>	$PSA\Sigma = ((RURAL*.05) + (CO60POV*.90) + (CO60MIN*.05)) * (StateD\$)$

Appendix E: Additional Statistical Results

To test which Cluster 1 services the nursing home risk factors were predicting, I ran a regression of the number of service units for each service on the risk factors. The Stata outputs are included below. Home-delivered meals have an adjusted R-squared of 23.6%, meaning that the risk factors explain 23.6% of home-delivered meals service use. The rest of the services have negligible adjusted R-squared values, meaning that the risk factors do not predict the number of times a client uses the service.

```
. reg usage_home age age2 adl iadl white income_n alone rural metro incimp ageimp
> p adl imp
```

Source	SS	df	MS	
Model	128248358	12	10687363.1	Number of obs = 141257
Residual	414302441	141244	2933.23923	F(12, 141244) = 3643.54
Total	542550799	141256	3840.90445	Prob > F = 0.0000
				R-squared = 0.2364
				Adj R-squared = 0.2363
				Root MSE = 54.159

usage_home	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
age	.0771817	.0097842	7.89	0.000	.0580049 .0963584
age2	.0000113	1.50e-06	7.52	0.000	8.33e-06 .0000142
adl	2.456081	.2415702	10.17	0.000	1.982608 2.929554
iadl	15.04858	.1262911	119.16	0.000	14.80105 15.29611
white	-5.790797	.7027198	-8.24	0.000	-7.168114 -4.413479
income_n	-4.838081	.2401404	-20.15	0.000	-5.308751 -4.36741
alone	7.532505	.309329	24.35	0.000	6.926226 8.138784
rural	.8269799	.3319982	2.49	0.013	.1762698 1.47769
metro	-13.76464	.3889819	-35.39	0.000	-14.52704 -13.00224
incimp	-5.960797	.3335911	-17.87	0.000	-6.61463 -5.306965
ageimp	-7.411964	5.71216	-1.30	0.194	-18.60769 3.78376
adl imp	-8.351297	.3951731	-21.13	0.000	-9.125829 -7.576766
_cons	14.29759	1.101405	12.98	0.000	12.13885 16.45632

```
. reg usage_chore age age2 adl iadl white income_n alone rural metro incimp agei
> mp adl imp
```

Source	SS	df	MS	
Model	1301352.51	12	108446.043	Number of obs = 141257
Residual	22031522.21	141244	155.982004	F(12, 141244) = 695.25
Total	23332874.71	141256	165.181477	Prob > F = 0.0000
				R-squared = 0.0558
				Adj R-squared = 0.0557
				Root MSE = 12.489

usage_chore	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
age	.0140925	.0022562	6.25	0.000	.0096703 .0185147
age2	2.09e-06	3.46e-07	6.04	0.000	1.41e-06 2.77e-06
adl	-1.179769	.0557066	-21.18	0.000	-1.288953 -1.070585
iadl	.9340065	.029123	32.07	0.000	.876926 .9910871
white	1.605516	.1620488	9.91	0.000	1.287903 1.923128
income_n	.0694178	.0553769	1.25	0.210	-.0391199 .1779555
alone	.6201872	.071332	8.69	0.000	.4803779 .7599965
rural	-.0063726	.0765595	-0.08	0.934	-.1564278 .1436826
metro	6.563286	.0897001	73.17	0.000	6.387476 6.739097
incimp	-.8420584	.0769269	-10.95	0.000	-.9928335 -.6912832
ageimp	.4635622	1.317237	0.35	0.725	-.2.118197 3.045321
adl imp	-.1248514	.0911278	-1.37	0.171	-.3034602 .0537573
_cons	-3.124513	.2539865	-12.30	0.000	-3.622322 -2.626704

```
. reg usage_respite age age2 adl iadl white income_n alone rural metro incimp ag
> eimp adl imp
```

Source	SS	df	MS	
Model	31117.2062	12	2593.10052	Number of obs = 141257
Residual	6417187.11141244	45	4333431	F(12, 141244) = 57.07
Total	6448304.32141256	45	6497729	Prob > F = 0.0000
				R-squared = 0.0048
				Adj R-squared = 0.0047
				Root MSE = 6.7404

usage_resp-e	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
age	-.0044592	.0012177	-3.66	0.000	-.0068459 -.0020726
age2	-6.63e-07	1.87e-07	-3.55	0.000	-1.03e-06 -2.97e-07
adl	.007864	.0300647	0.26	0.794	-.0510622 .0667903
iadl	.010057	.0157176	0.64	0.522	-.0207492 .0408632
white	.2859863	.0874572	3.27	0.001	.1145718 .4574009
income_n	.142194	.0298868	4.76	0.000	.0836165 .2007715
alone	-.5006881	.0384977	-13.01	0.000	-.5761428 -.4252334
rural	.0425693	.041319	1.03	0.303	-.038415 .1235537
metro	.8249984	.0484109	17.04	0.000	.730114 .9198828
incimp	.0041306	.0415172	0.10	0.921	-.0772423 .0855036
ageimp	-.261867	.7109089	-0.37	0.713	-1.655235 1.131501
adl imp	.6701466	.0491814	13.63	0.000	.573752 .7665413
_cons	.0165119	.1370758	0.12	0.904	-.252154 .2851779