Understanding Self-Directed Care in Wisconsin: A Comparison of IRIS and Family Care Programs

Prepared for
Division of Long Term Care
Wisconsin Department of Health Services

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May 2010

Public Affairs 869
Workshop in Public Affairs

ROBERT M. LA FOLLETTE
SCHOOL OF PUBLIC AFFAIRS
University of Wisconsin-Madison

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Foreword

This report is the result of collaboration between the Robert M. La Follette School of Public Affairs at the University of Wisconsin–Madison and the Division of Long Term Care of the Wisconsin Department of Health Services. Our objective is to provide graduate students at La Follette the opportunity to improve their policy analysis skills while contributing to the analytic capacity of the Department of Health Services.

The La Follette School offers a two-year graduate program leading to a master's degree in public affairs. Students study policy analysis and public management, and they pursue a concentration in a policy focus area of their choice. They spend the first year and a half of the program taking courses in which they develop the expertise needed to analyze public policies.

The authors of this report are all in their last semester of their degree program and are enrolled in Public Affairs 869, Workshop in Public Affairs. Although acquiring a set of policy analysis skills is important, there is no substitute for doing policy analysis as a means of learning policy analysis. Public Affairs 869 gives graduate students that opportunity.

This year the students in the workshop were divided into six teams, three under my supervision and three supervised by my La Follette School colleague Professor Susan Yackee. The authors of this report were assigned to work for the Wisconsin Department of Health Services, Division of Long Term Care, on the evaluation of a new community-based Medicaid program for elders and adults with disabilities.

The Department of Health Services recently initiated a program called IRIS that allows Medicaid-eligible elderly and adults with disabilities to self-direct their long-term care needs by choosing their own providers and services. The IRIS program operates in Wisconsin counties that have implemented Family Care, the department's managed long-term-care program. The authors of this report analyzed IRIS by exploring the differences in demographics, service expenditures, and budget amounts between participants in IRIS and in Family Care. Based on their analysis, they make some recommendations related to the management of the IRIS program.

The topic for this project was proposed by Fredi-Ellen Bove, Deputy Administrator of the Division of Long Term Care. Ms. Bove, along with Day-Vene Gilliam, provided the authors of the report with advice and guidance throughout the semester. The report would not have been possible without their support and encouragement. A number of other people also contributed to the success of the report. Their names are listed in the acknowledgments section of the report.

The report also benefited greatly from the support of the staff of the La Follette School. Mary Mead contributed logistic support. Alice Honeywell, senior editor emerita, and Karen Faster, La Follette publications director, edited the report. Karen managed production of the final bound document.

By involving La Follette students in one of many important issues facing government, I hope that they not only have learned a great deal about doing policy analysis but have gained an appreciation of the complexities and challenges facing governments and policy makers. I also hope that this report will contribute to the work of the Division of Long Term Care and to their ongoing efforts to improve the delivery of long-term care services.

Andrew Reschovsky
May 2010
Madison, Wisconsin

Acknowledgments

This report was made possible with the support of many people. The authors would like to thank the following members of the Division of Long Term Care, Wisconsin Department of Health Services, for providing guidance on the project and for assisting in gathering the appropriate information:

Fredi-Ellen Bove, Deputy Administrator

Thomas Lawless, Director, Bureau of Financial Management

Beth M. Wroblewski, Director, Bureau of Long Term Support

Rebecca Hotynski, Supervisor, Bureau of Financial Management

John J. O'Keefe, IRIS Manager, Bureau of Long Term Support

Gail F. Propsom, Program and Policy Analyst, Bureau of Long Term Support

Jennifer J. France, Budget and Policy Analyst, Administrator's Office

Day-Vene Gilliam, Budget and Policy Analyst, Bureau of Financial Management

The authors thank Professor Andrew Reschovsky for providing guidance in writing this report, plus Alice Honeywell and Karen Faster for editorial and production oversight.

Executive Summary

This report examines the implementation of a new program known as IRIS (Include, Respect, I Self-Direct) developed by the Wisconsin Department of Health Services. Similar to other Self-Directed Care programs throughout the United States and abroad, individuals who choose to participate in IRIS are given considerable control in designing service plans for their long-term care. The IRIS program went into effect in July 2008. In contrast to most other self-directed care programs, Wisconsin IRIS provides services to multiple target populations: frail elderly and individuals with physical or developmental disabilities.

To understand more about self-directed care in Wisconsin, we have compared characteristics of IRIS participants with Family Care (Wisconsin's managed long-term care system) participants. Specifically, we have explored differences in demographics, service expenditures, and budget amounts between the two populations. Through our investigation we found important differences between IRIS and Family Care participants. IRIS participants on average spend more on long-term care services, are younger, and more often live with family members or a spouse than Family Care participants.

Based on our findings we have made several recommendations: adjusting the IRIS budget rate model to include new variables; improving the enrollment process via quality control; streamlining IRIS data systems; verifying demographic and sociological disparities between IRIS and Family Care participants; and tracking IRIS participant outcomes. We have concluded that for a program in the early stages of development IRIS does a remarkable job providing Self-Directed Care in Wisconsin.

Introduction

IRIS, short for Include, Respect, I Self-Direct, is a self-directed long-term support program administered by the Wisconsin Department of Health Services Division of Long Term Care as part of the state and federally funded Medicaid program. Long-term care services are provided to low-income participants who are eligible for Medicaid services. IRIS is an alternative to Wisconsin's managed long-term care program Family Care, and it allows clients at a nursing home level of care to select and manage the long-term care services they receive.[1]

The federal Centers for Medicaid and Medicare Services require that Medicaid recipients in need of long-term support be provided an option of a managed care delivery system. Individuals are given the opportunity to enroll in IRIS when they enter the state's publicly funded long-term care system. An intake questionnaire, the Wisconsin Adult Long Term Care Functional Screen–Version 3, is used to determine long-term care eligibility. Eligibility determinants incorporated into the functional screen include factors such as the ability to perform activities of daily living. If the individual chooses to enroll in IRIS, responses from the functional screen are used to determine the monthly budget Wisconsin Department of Health Services (DHS) provides the individual for self-directed services. The functional screen is re-administered to IRIS and managed care participants annually—more often if their circumstances change (Smith and Wroblewski, 2008).

The IRIS program went into effect in July 2008 and has enrolled more than 1,400 clients as of March 2010. IRIS is offered in fifty-three of Wisconsin's seventy-two counties, and Wisconsin DHS plans on expanding the program to all counties in the near future.[2]

IRIS is unique among other state Self-Directed Care programs because it is early in its development and provides services to individuals with physical or developmental disabilities and frail elders. Therefore, to understand more about Self-Directed Services in Wisconsin we explore the following questions: How do IRIS participants differ from Wisconsin Family Care participants? And do these differences including demographics, service expenditures, and budget amounts warrant any changes to Self-Directed Care in Wisconsin?

[1] Wisconsin Family Care is described in detail in the Background section of this report.
[2] Information provided by Fredi-Ellen Bove, Division of Long Term Care, Wisconsin DHS.

Background

Medicaid is a jointly funded federal-state insurance program for low-income and needy people. Categories of need include children, the blind and/or people with disabilities, and other people who are eligible to receive federally assisted income-maintenance payments. Under Medicaid rules, states are permitted to use Medicaid funds for community supports and services for people who could otherwise seek institutional care with oversight by the federal Centers for Medicare and Medicaid Services. This flexibility allows states to design long-term-care programs and to select services to meet the needs of participants. State long-term-care programs are for Medicaid-eligible individuals who meet the level of care standards for nursing home admission. Those who do not meet nursing home level-of-care standards may be provided Medicaid long-term care card services (medical-related care) and some level of interdisciplinary care management but are not allowed waivers for individual care.

Managed Care Organizations

During the 1980s, in response to rapid increases in nursing home expenditures and concerns about the sustainability of institutional care, Congress created home- and community-based services, which allowed states to create flexible, community-based services that must follow the same financial and clinical eligibility rules as nursing homes. Despite these efforts, nursing home expenditures continued to increase, limiting the effectiveness of home- and community-based services waivers. In 1996, Wisconsin implemented a managed long-term care program covering all Medicaid and Medicare services available in certain counties to frail elders and adults with physical disabilities. In 2000 Wisconsin piloted the Family Care Program. Family Care allowed counties to serve as the managed care contractor accepting the financial risk for individuals requiring long-term care (Wisconsin Department of Health Services, 2009).

Wisconsin Family Care

During the 1990s, in response to concerns about the costs and intricacy of the long-term care system, the state of Wisconsin sought to redesign long-term care services. In January 1998, Family Care, a program that serves frail elders and adults with physical and developmental disabilities, became law. Its goals are: giving people better choices about where they live and what kinds of services and supports they get to meet their needs; improving access to services; improving quality of life by focusing on health and social outcomes; and creating a cost-effective system. Family Care is available in fifty-three out of the seventy-two counties in Wisconsin as of April 2010.[3]

[3] Information provided the authors by Fredi-Ellen Bove, Division of Long Term Care, Wisconsin DHS.

Several counties (ten out of the fifty-three) with Family Care services have access to Family Care Partnership, a program similar to Family Care, but with full integration of Medicaid and Medicare acute and long-term care services (Smith and Wroblewski, 2008). This particular partnership program is beyond the scope of this study and is not included in our analysis.

To facilitate Wisconsin's long-term care goals, Family Care has two major organizational components: Aging and Disability Resource Centers (ADRC) and Managed Care Organizations. ADRCs are designed to be a first point of contact where older individuals and people with physical or developmental disabilities can locate information and advice about a broad range of services available to them. At each ADRC, individuals receive long-term care enrollment counseling, which offers consultation and advice about the options available to meet their specific long-term care needs. Individuals also receive information on private and public benefits and programs such as Medicaid, Medicare, and Social Security, (Smith and Wroblewski, 2008).

Managed Care Organizations, through a comprehensive network of long-term care services and contracts with providers, deliver services tailored to an individual's needs. These services include long-term care such as personal care, therapy, and assisted living services. Managed Care Organizations receive a monthly per-person payment to manage and purchase care for their members. Medical care and treatments are handled through Medicaid card services, allowing participants to choose their own physicians and receive medications under Medicaid part D (Wisconsin Department of Health Services, 2010).

Self-Directed Care Programs

Over at least the past decade, Self-Directed Care programs have gained popularity throughout the United States, the United Kingdom, and Europe. In the United Kingdom, the Health and Community Care Act of 1990 was one of the first landmarks in self-directed individual care; and as early as 1996 all individuals receiving social services could opt for direct payments (Social Care Institute for Excellence, 2009).

In the late 1990s, in accordance with the U.S. Social Security Act section 1915(c) Home and Community Based Services waiver and by directive from the Office of the Secretary for the U.S. Department of Health and Human Services (DHHS), more than nineteen states participated in the Self-Determination Project to develop Self-Directed Care pilot programs for delivering long-term care services (O'Keeffe et al., 2007).

Also as part of the Self-Determination Project and under the Social Security Act section 1115, three states—Arkansas (1998), New Jersey (1999), and Florida (2000)—began establishing "Cash and Counseling" pilot programs (Schore, Foster, and Phillips, 2007). Because of the project's overall success, on May 6,

2002, Secretary Tommy Thompson of the U.S. DHHS unveiled the Independence Plus initiative promising "to provide states with simplified model waiver and demonstration application templates that would promote person-centered planning and self-directed service options." As of 2005, eleven Independence Plus waivers had been approved for twelve states (O'Keeffe et al., 2007). In most of these states Self-Directed Care programs are for elders and/or individuals with developmental disabilities.

In a February 2010 presentation to DHS staff, Jon Fortune, Senior Policy Specialist for the Human Services Research Institute, explained that Wisconsin Self-Directed Care (IRIS) is unique among U.S. states because of its inclusion of elderly participants and individuals with physical and developmental disabilities.[4]

Wisconsin Self-Directed Care: IRIS

In 2008, Wisconsin DHS in conjunction with PricewaterhouseCoopers developed a budget allocation methodology for the new IRIS program. Individuals in IRIS self-manage their publicly funded long-term care supports, goods, and services. The program allows individuals to choose and allocate services they use. IRIS provides individual budget allocations that are commensurate with participants' needs. Individuals have the choice of enrolling in the Family Care managed long-term care program or participating in IRIS (Smith and Wroblewski, 2008).

IRIS is administered through regional ADRCs and two statewide contract organizations: the Independent Consultant Agency and the Financial Services Agency. The centers provide enrollment and benefits counseling on all long-term-care programs, including IRIS and Family Care. For IRIS, the centers conduct the screening process to determine individual budget allocations (Smith and Wroblewski, 2008).

Individual budgets are based on results of the Wisconsin Adult Long-Term Care Functional Screen, a questionnaire used to collect information about an individual's functional status, health, and need for assistance. Administered by ADRCs, the screen was created to provide an objective way to determine the needs of frail elders and people with developmental and physical disabilities. The screen gathers information about "activities of daily living" to determine if individuals need help bathing, eating, or dressing, for example. The budget determined through the functional screen process is the monetary "allocation" the individual is eligible to receive for long-term care services such as paid caregivers or transportation. All medical services are covered under Medicaid card services similar to Family Care (Smith and Wroblewski, 2008).

[4] The Human Services Research Institute is a nonprofit organization in Portland, OR. See http://www.hsri.org/index.asp?id=about

The Independent Consultant Agency helps participants determine the types of long-term care services they need within the confines of their budget allocations (Smith and Wroblewski, 2008).

The Financial Services Agency tracks all spending by participants and provides reports to the Independent Consultant Agency and Wisconsin DHS. At the individual level, the Financial Services Agency primarily provides all payroll services and pays all authorized claims for supports and services (Smith and Wroblewski, 2008).

Wisconsin Long-Term Care Overview

Table 1 provides an overview of the programs available in Wisconsin, including the number of counties in which each program is available; participants eligible for each program; and the way in which services are provided (Smith and Wroblewski, 2008).

Table 1: Wisconsin DHS and Medicaid Long-Term-Care Programs

Long-Term Care Program	Number of Counties Available	Participants Eligible	Service Provision	Services Available (unique to program)	Budget Allocation
IRIS	53	All*	Self-Directed	~housing counseling ~daily living skills training ~supportive home care ~adaptive aids ~personal emergency response system	~functional assessment determines the budget allocation amount ~independent consultant helps the participant decides the services
Family Care	53	All*	Managed	~aging and disability resource centers: provide long-term care and benefit counseling ~Managed Care Organization: people receive interdisciplinary case management, help achieve employment objectives	~functional screen ~face-to-face comprehensive assessment with a team ~ Managed Care Organization makes a resources allocation decision
Family Care Partnership	10	All*	Managed	~hospice ~home care ~home-delivered meals	~functional assessment determines budget allocation amount
PACE	23	All*	Managed	~prescription medications ~vision	~functional assessment determines budget allocation amount

Source: Wisconsin DHS
*All includes elderly and individuals with developmental or physical disabilities

Methodology and Data Sample

A primary goal of our analyses is to gain a better understanding of Self-Directed Care in Wisconsin by examing the population of IRIS participants. Our first step is to describe the IRIS participants based on their characteristics such as age, gender, race, and living situation. Next, we describe how the participants are utilizing the program based on service use and expenditures. For both analyses, we contrast IRIS participants against particpants in the larger Family Care program. In the third step, we explain the budget and allocation issues that pertain exclusively to the IRIS program. The fourth step compares predictive models for spending in the IRIS and Family Care programs. Our final analysis constructs a model showing participant characteristics associated with an increased likelihood of enrollment in IRIS.

For the Family Care program, the functional screen data contain the 30,879 participants enrolled at the beginning of 2009 and are used to analyze the diagnoses, living situations, and level of assistance needed for these participants. The sample used for analyzing the spending patterns of Family Care participants includes the 26,361 indivduals who had screens and spending data that we could match for 2009. Wisconsin DHS provided all Family Care data.

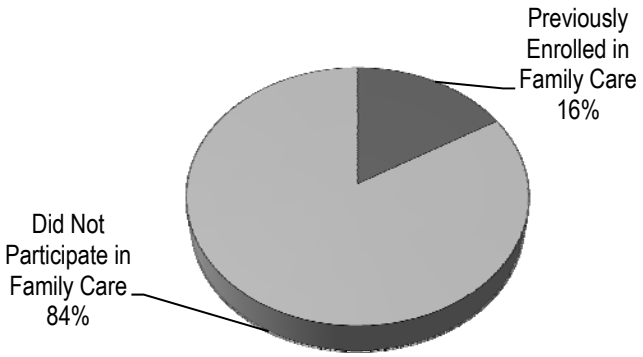
When examining the characteristics of IRIS participants' demographics, housing situations, and support needs, we are relying on a sample of the last available functional screen from 2009 for each individual participant. Because enrollment in this new program is constantly changing, the sample provided by Wisconsin DHS includes 1,002 individuals with completed screens for 2009, even though the number of active participants as of April 2010 was more than 1,400.

When examining the spending on IRIS long-term care services for these individuals, we use a smaller sample of 688 because some individuals with screens did not have any expenditure records in the data files provided by Wisconsin DHS. Comparing the IRIS participant budgets set at the Independent Consultant Agency with their allocations, which are their predicted spending amounts based on functional screen responses, we draw on data from a sample of 659 IRIS participants provided by Wisconsin DHS. These are all IRIS participants at the end of October 2009 for whom allocation and budget data were provided.

What Are the Demographic Differences Between IRIS and Family Care Participants?

Those who participate in IRIS are not necessarily first-time participants in a long-term-care program offered by Wisconsin DHS. Family Care offers participants freedom to choose their own living situation, but the long-term care service delivery is managed by a team experienced in coordinating with providers. Because the IRIS program offers individuals greater freedom to determine how services are delivered, we expect Family Care participants who value self-direction to switch to IRIS. Based on data provided by Wisconsin DHS, less than 20 percent of current IRIS participants were previously enrolled in Family Care (see Figure 1).

Figure 1: IRIS Participants Formerly in Family Care



Source: Authors' calculations based on data provided by Wisconsin Department of Health Services

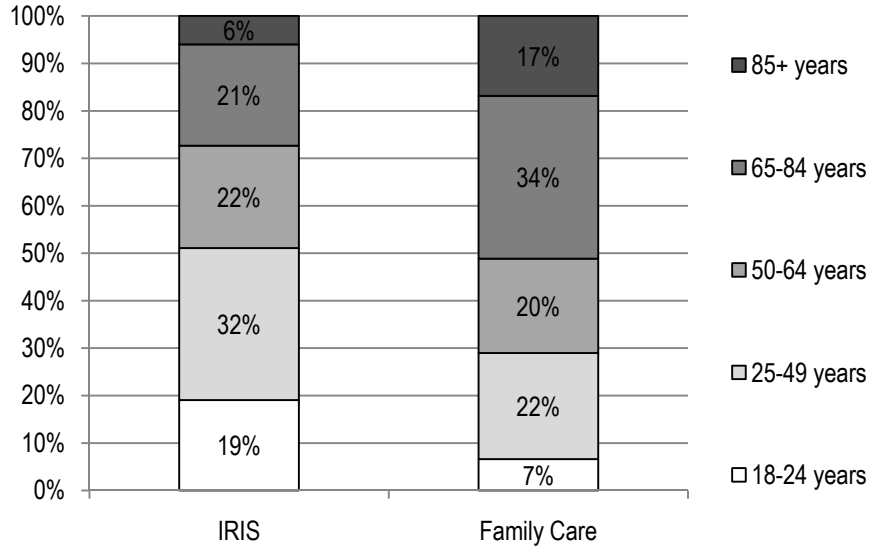
IRIS and Family Care Demographics and Conditions

To identify demographics, characteristics, and conditions of IRIS and Family Care participants, we utilized data from the last functional screen from the year 2009 for the participants of both programs. The following two paragraphs contain figures and statistical descriptions that compare the results of analyses performed on these data. For more detailed results, the reader may also examine tables and figures in appendices A and B.

By October 31, 2009, IRIS had 1,002 participants, whereas the more established Family Care program had 30,773 participants.[5] The average IRIS participant (49.6 years old) was younger than the average Family Care participant (62.6 years old). More than 50 percent of IRIS participants were younger than 50, while more than half of the Family Care participants were older than 50 (see Figure 2).

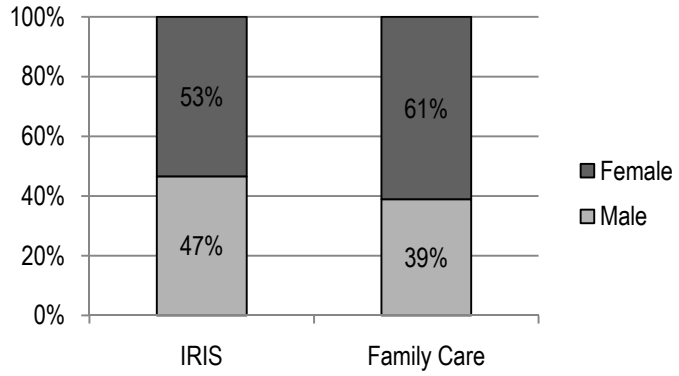
[5] Participant information provided by Division of Long Term Care, Wisconsin DHS.

Figure 2: IRIS and Family Care Age Groups



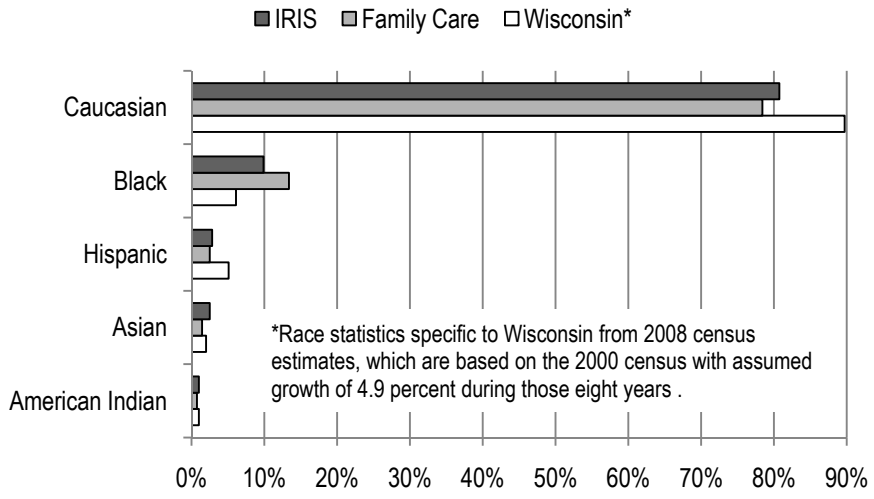
Family Care had a higher proportion of female participants than IRIS. While females made up the majority in both programs, gender balance was 8 percent closer to parity under the IRIS program (see Figure 3).

Figure 3: IRIS and Family Care Gender



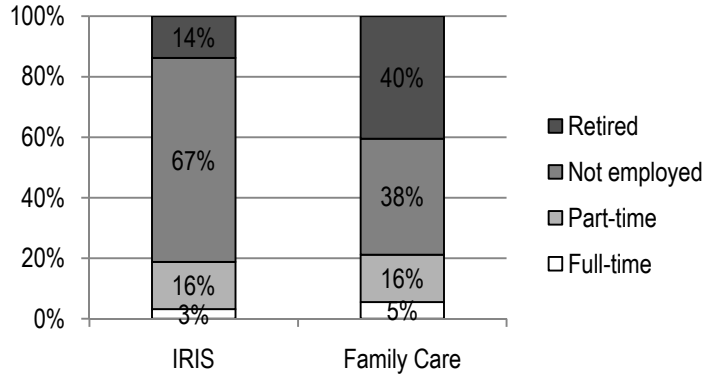
Both programs had similar proportions of participants who identified their race. Additionally, when compared to the state of Wisconsin, IRIS and Family Care had slightly higher proportions of participants who self-identified as “Black” and slightly lower proportions of participants that self-identified as “Caucasian” or “Hispanic” (see Figure 4).

Figure 4: IRIS and Family Care Race



In 2009, IRIS and Family Care had similar proportions of participants who were employed full- or part-time. However, among populations without employment, Family Care had an almost equal number of participants who were fully retired or not retired, whereas most participants without employment in IRIS were not retired. Of the entire IRIS population, 67 percent is not retired and/or not employed (see Figure 5).

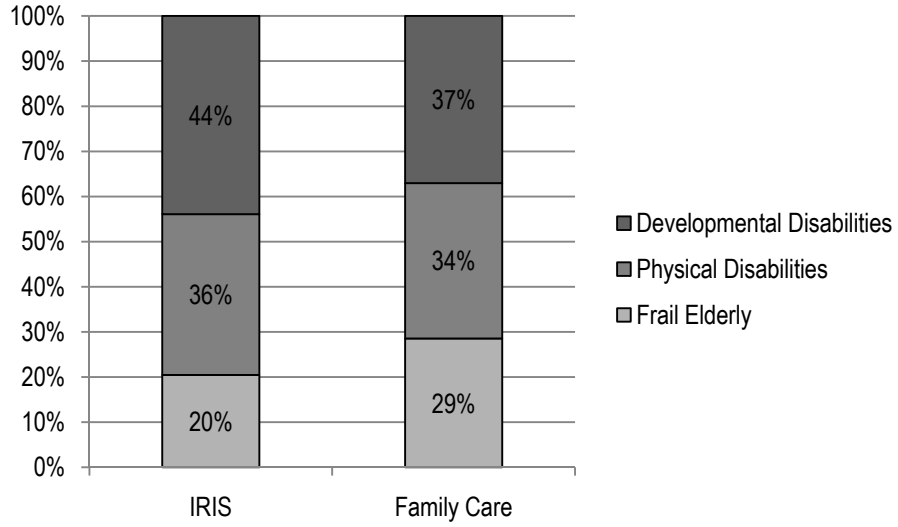
Figure 5: IRIS and Family Care Employment Status



To provide services and develop budgets that efficiently meet participant service needs, Wisconsin DHS has developed three actuarial target groups that categorize participants: developmentally disabled; physically disabled; and frail elderly. While both programs experienced a similar proportion of participants with physical disabilities, IRIS had a slightly higher proportion of participants with developmental disabilities, and Family Care had a higher proportion of frail elderly participants (see Figure 6).[6]

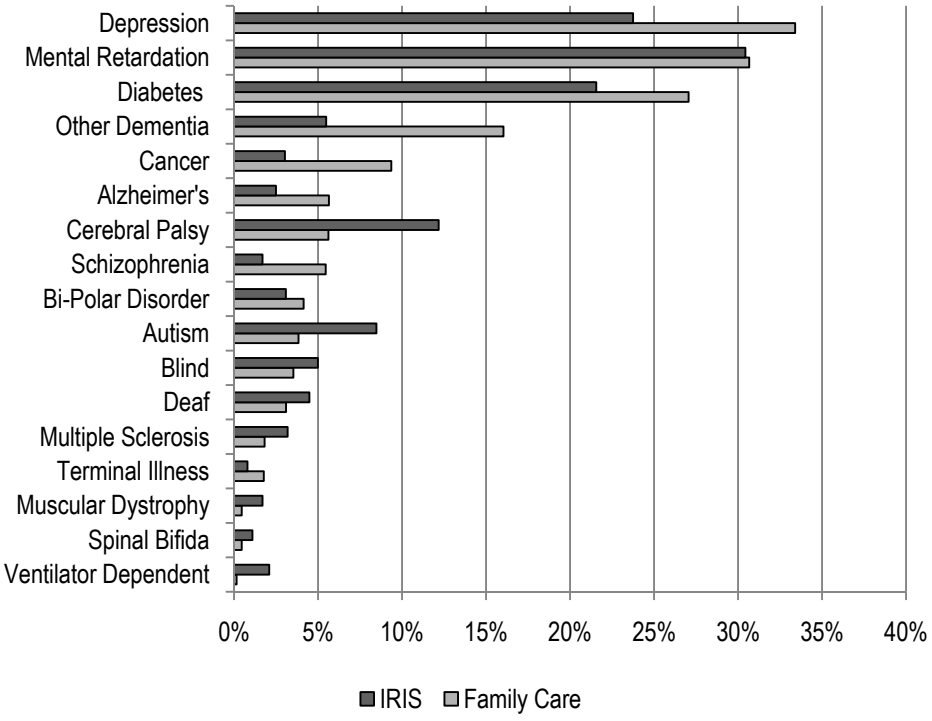
[6] See Appendix A, Table A1 for a list of IRIS and Family Care demographic statistics.

Figure 6: IRIS and Family Care Target Groups



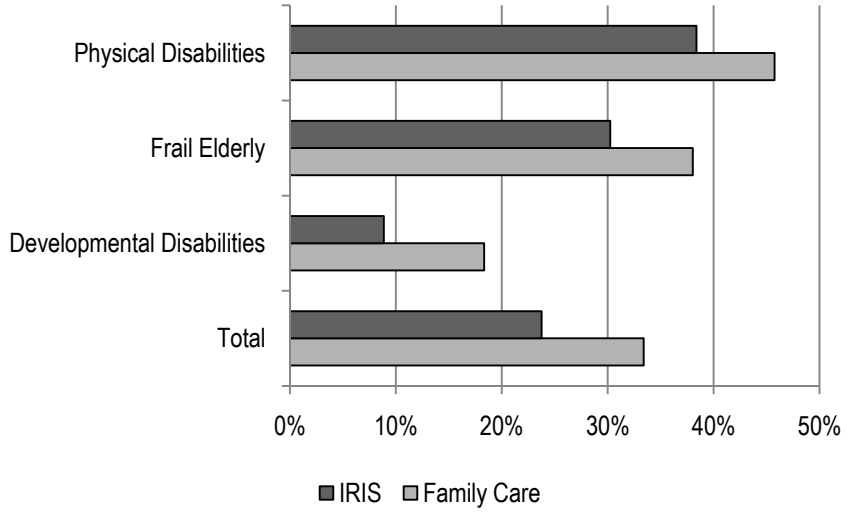
Almost one-quarter of all IRIS participants were diagnosed with depression, compared with one-third of Family Care participants. About 30 percent of participants in each program were diagnosed with mental retardation. Family Care had higher proportions of participants with diabetes, cancer, schizophrenia, Alzheimer's, and other dementia, and IRIS had higher proportions of participants with cerebral palsy, autism, multiple sclerosis, muscular dystrophy, ventilator dependence, blindness, and deafness (see Figure 7).

Figure 7: IRIS and Family Care Participants with Conditions



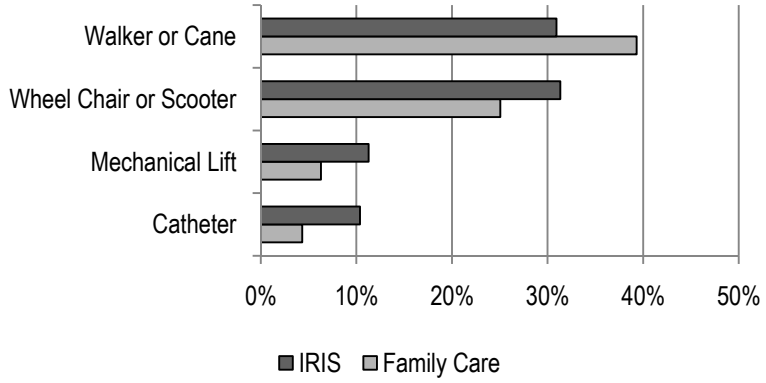
Since the diagnosis of depression appeared high for both Family Care and IRIS participant populations, cross tabulations were calculated for actuarial target groups for each program as well. Figure 8 reveals that participants with physical disabilities were the most commonly diagnosed with depression for both programs (46 percent for Family Care and 38 percent for IRIS), followed by the frail elderly population (38 percent for Family Care and 30 percent for IRIS). Participants with developmental disabilities experienced the lowest rate of diagnosed depression of the three groups (18 percent for Family Care and 9 percent for IRIS).[7]

Figure 8: IRIS and Family Care Participants with Depression by Target Group



Higher proportions of participants in IRIS need a mechanical lift, catheter, or wheel chair or scooter. In contrast, a higher proportion of participants who needed a walker or cane were in Family Care (see Figure 9).[8]

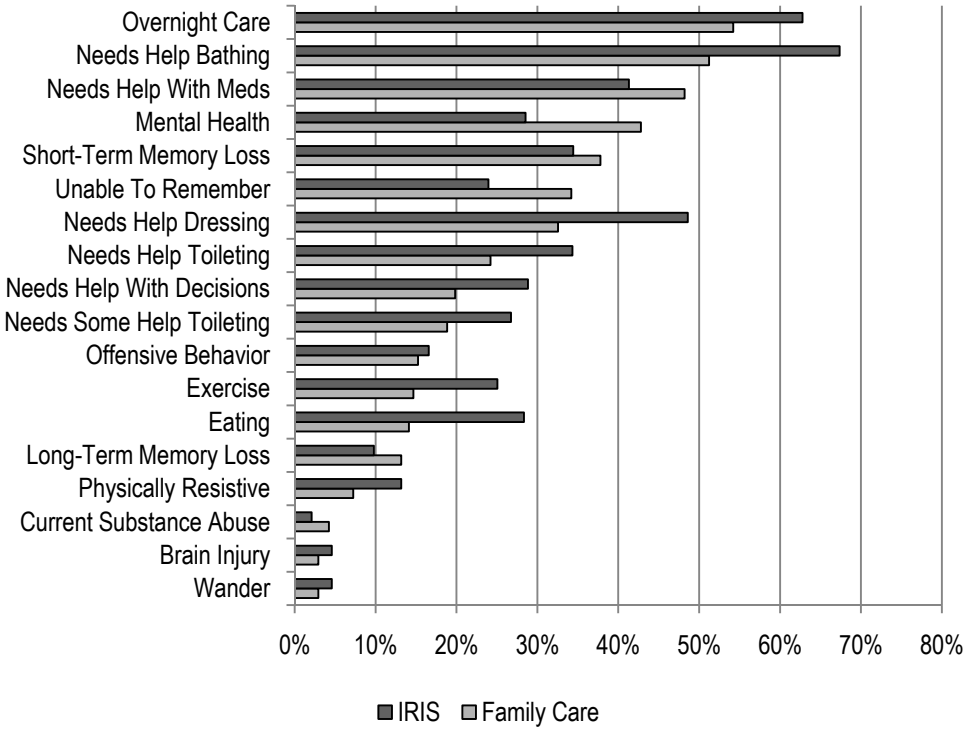
Figure 9: IRIS and Family Care Participants with Special Equipment



[7] See Appendix A, Table A2 for statistics on IRIS and Family Care depression rates by target group.
[8] See Appendix A, Table A3 for a list of IRIS and Family Care condition statistics.

Other participant characteristics are also important in determining the level of care and related budget allocations for long-term services. More than 60 percent of IRIS participants needed help bathing or with overnight care, whereas just more than 50 percent of Family Care participants needed these services. More than one-third of participants in both programs needed help with dressing, medication, or could be characterized as having short-term memory loss (see Figure 10).[9]

Figure 10: IRIS and Family Care Participant Characteristics



Family Care and IRIS Living Situations

One of the biggest differences between IRIS and Family Care, in terms of living situation, is the proportion of participants living with a spouse, partner, or family. Two-thirds of IRIS participants were living in this situation in 2009, which is much higher than the approximately 30 percent for those in Family Care. The following two figures show these proportions along with all living situations of participants in IRIS and Family Care (see Figures 11 and 12).[10]

[9] See Appendix A, Table A4 for a list of IRIS and Family Care characteristics statistics, and Appendix A, Table A5 to read further descriptions of how these characteristics are defined.
[10] See Appendix B, Tables B1 and B2 for a list of Family Care and IRIS living situation statistics.

Figure 11: IRIS and Family Care Living with Spouse, Partner, or Family

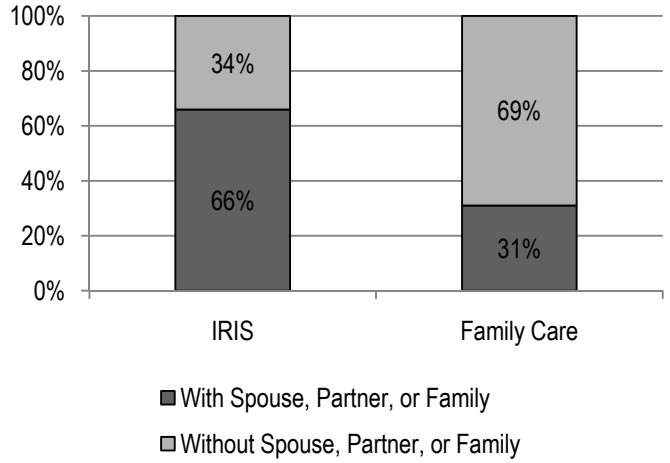
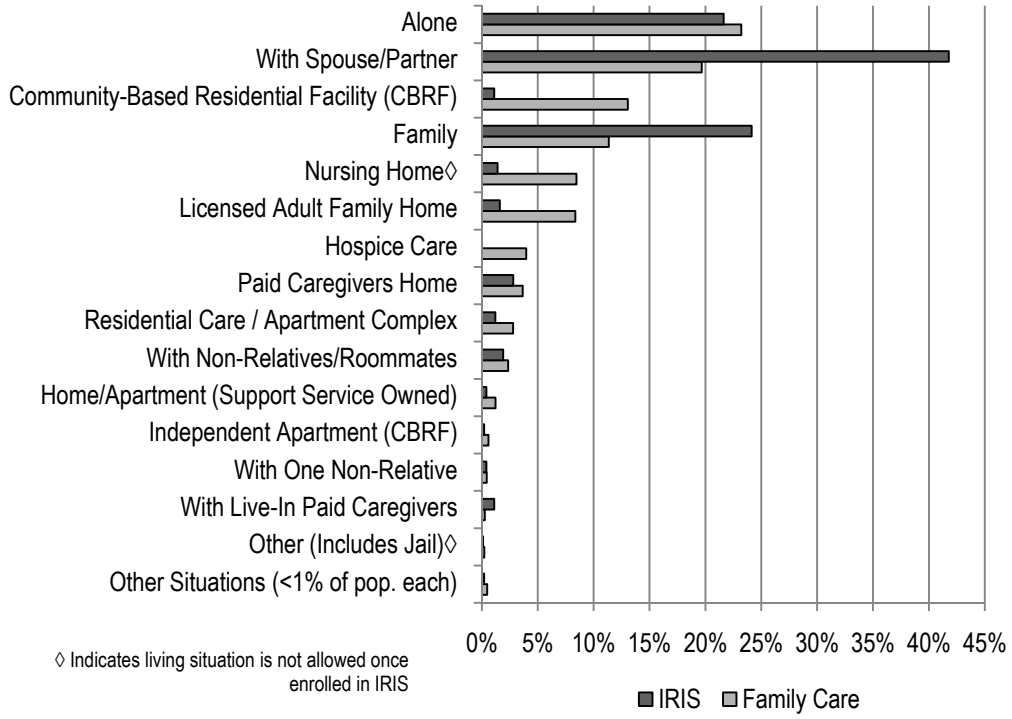


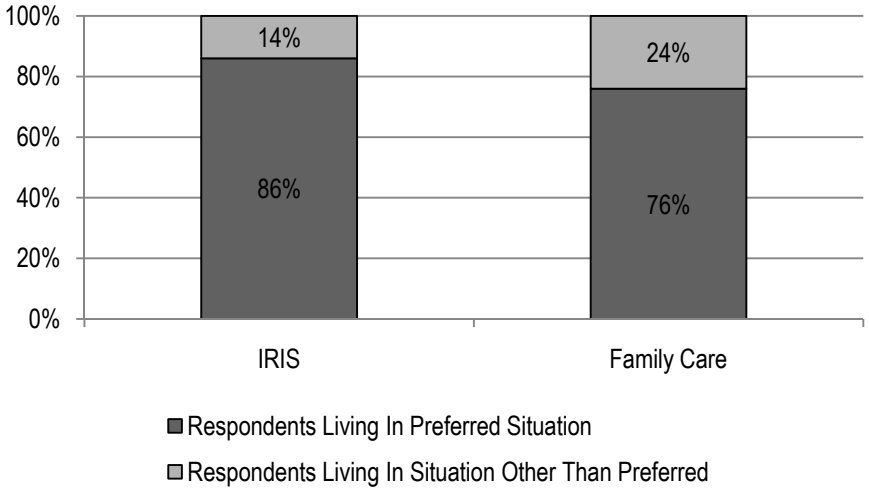
Figure 12: IRIS and Family Care Living Situation Comparison



Cross tabulating current and preferred living situation responses allows us to determine percentages of participants living where they prefer. A higher proportion of IRIS participants, 86 percent, were living where they preferred than Family Care participants, at 76 percent (see Figure 13).[11]

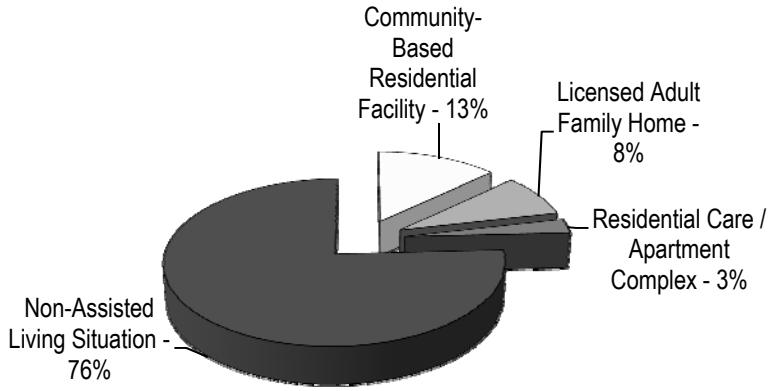
[11] See Appendix B, Tables B3-B5 for IRIS living situation lists by target group.

Figure 13: IRIS and Family Care Participants Living in Situation of Preference



Finally, a much smaller proportion of IRIS participants (4 percent) were living in assisted living situations than were those in Family Care (24 percent) (see Figures 14 and 15). [12]

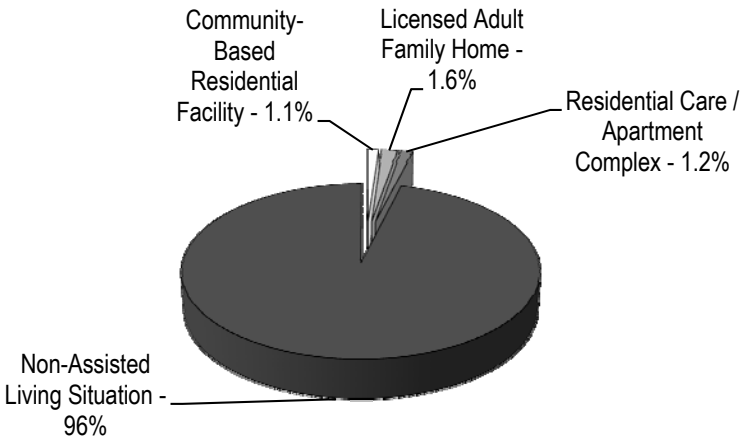
Figure 14: Family Care Participants in Assisted Living Situations



Note: Some participant living situations were recorded before enrollment in program

[12] See Appendix B, Figures B1-B3 for IRIS assisted living situations by target group.

Figure 15: IRIS Participants in Assisted Living Situations



Note: Some participant living situations were recorded before enrollment in program

Do IRIS Participants Spend Differently Than Family Care Participants?

The above section shows that the IRIS population differs demographically from Family Care, but can we also discern differences in expenditures? The scope of services differ between IRIS and Family Care; therefore, we explore the differences in total Medicaid expenditures between the programs.

The differences in spending between these two programs is largely a product of the composition of each program's enrollment. IRIS has a greater proportion of developmental disability participants than does Family Care, and this participant group tends to have higher monthly spending (see Table 2). The typical IRIS participant, as measured by median expenditures, spends less per month than the typical Family Care participant in both the physical and frail elderly groups.[13] The median expenditures for the developmental disability target group in IRIS exceed the median expenditures in Family Care by more than $400 (see Table 2).The median of total monthly spending in the Family Care was $2,347 versus $2,503 in IRIS. The quintiles by target group reveal that the median monthly expenditures for the developmental disability group in IRIS exceed expenditures for the developmental disability group in Family Care in each quintile. In the physical disability and frail elderly groups, there was no consistent pattern in which one program had consistently higher or lower monthly expenditure medians than the other by quintile (see Table 3).

Table 2: Percentage of IRIS and Family Care Participants and IRIS and Family Care Median Average Monthly Expenditures for Program and Medicaid Card Services by Target Group

Target Group	Percentage of IRIS Participants	Percentage of Family Care Participants	IRIS Median Monthly Expenditure	Family Care Median Monthly Expenditure	Difference Between IRIS and Family Care Expenditures
Developmental Disability	45	36	$3,467	$3,030	$437
Physical Disability	33	29	$1,959	$2,097	-$138
Frail Elderly	22	35	$2,067	$2,195	-$128
Total	100	100	$2,503	$2,347	$156

Source: Authors' calculations based on IRIS data provided by the Wisconsin DHS

[13] Median of total monthly spending calculated by first finding the average monthly spending for each participant and then finding the median by ordering these averages.

Table 3: Target Group Median Monthly Expenditures by Ascending Monthly Expenditure Quintiles for 2009 IRIS and Family Care Participants

Target Group	Quintile	IRIS Expenditures	Family Care Expenditures
Developmental Disability	1	$769	$731
	2	$1,982	$1,640
	3	$3,482	$3,032
	4	$6,156	$5,049
	5	$10,612	$8,340
Physical Disability	1	$506	$631
	2	$1,004	$1,305
	3	$1,986	$2,097
	4	$3,376	$3,111
	5	$6,811	$5,243
Frail Elderly	1	$598	$678
	2	$1,368	$1,452
	3	$2,087	$2,194
	4	$2,839	$2,874
	5	$3,916	$4,164

Source: Authors' calculations based on IRIS data provided by the Wisconsin DHS

Services Used by IRIS Participants

We explored the most common services used by IRIS participants based on the number of participants in 2009. First, we looked at services based within the IRIS program broken down into the three target groups served by the program and the median monthly expenditures for these services (see Table 4). The most commonly used service across target groups is supportive home care supervision. Non-medical transportation is also commonly used across target groups. Supported employment and daily living skills services show up only in the top ten services for the developmental disability target group. Home modifications, a category with a relatively high median expenditure, are among the top ten services for the frail elderly category despite being billed for only four participants.

Table 4: Most Utilized IRIS Service Categories by Number of Participants and Median Monthly Expenditures by Target Group for IRIS Program in 2009

Target Group	Service Category	Number of IRIS Participants	Median Monthly Expenditure
Developmental Disability	Shc* – Supervision Services – Hours	188	$1,400.00
	Other Allowable MCO** Services	181	$340.17
	Respite Care – Other	137	$520.00
	Specialized Transportation and Escort – Nonmedical	134	$161.04
	Day Center Services Treatment	71	$785.28
	Counseling and Therapeutic Resources – Alternative	50	$265.00
	Prevocational Services	40	$684.43
	Shc* – Supervision Services – Days	32	$2,634.00
	Supported Employment	28	$682.50
	Daily Living Skills Training	27	$757.39
Physical Disability	Shc* – Supervision Services – Hours	144	$797.58
	Other Allowable MCO** Services	83	$120.00
	Specialized Transportation and Escort – Nonmedical	53	$78.75
	Shc* – Chore Services – Hours	35	$270.00
	Personal Emergency Response Systems	24	$31.00
	Adaptive Aids – Other	23	$1,002.20
	Communication Aids	17	$108.00
	Shc* – Supervision Services – Days	17	$550.00
	Shc* – Routine Home Care Services	17	$237.90
	Counseling and Therapeutic Resources – Alternative	14	$218.60
Frail Elderly	Shc* – Supervision Services – Hours	94	$762.00
	Shc* – Routine Home Care Services	32	$234.00
	Other Allowable MCO** Services	28	$149.46
	Specialized Transportation And Escort – Nonmedical	26	$102.36
	Shc* – Chore Services – Hours	16	$742.00
	Personal Emergency Response Systems	11	$32.00
	Shc* – Supervision Services – Days	10	$366.18
	Respite Care – Other	9	$350.00
	Communication Aids	4	$99.69
	Home Modifications	4	$2,260.00

*Shc: Supportive home care **MCO: Managed Care Organization Note: Based on 695 IRIS participants

Source: Authors' calculations based on data provided by the Wisconsin DHS

We also examined Medicaid Fee-for-Service expenditures, which are services for medical needs the participant attains outside of IRIS. Table 5 summarizes the most common services by number of participants broken down by target group. We again see some similarities across target groups. Drugs, Medicare Part B crossovers for outpatient services, and personal care are among the top five services for all three target groups. School-based services are among the top ten for only the developmental disability target group. This reflects the younger

participants in the IRIS program who fall within the developmental disability category and whose services are likely being managed by parents or guardians.

Table 5: Ten Most Utilized Medicaid Service Categories and Median Monthly Expenditures by Target Group for 2009 IRIS Participants

Target Group	Service Category	Number of IRIS Participants	Median Monthly Expenditure
Developmental Disability	Drugs	296	$91.05
	Clinic Services	196	$51.12
	DME/DMS*	171	$132.55
	Medicare Crossovers – Part B	156	$66.50
	Personal Care	149	$2,375.80
	Outpatient Hospital	134	$384.70
	Lab and X-Ray Services	128	$35.89
	Dental	123	$62.35
	Physician Services	93	$41.82
	School Based Services	67	$130.23
Physical Disability	Drugs	246	$28.61
	Medicare Crossovers - Part B	229	$75.30
	DME/DMS*	187	$115.14
	Personal Care	141	$2,327.96
	Clinic Services	134	$63.83
	Outpatient Hospital	109	$507.41
	Lab and X-Ray Services	107	$61.22
	Physician Services	106	$54.55
	Dental	85	$74.56
	Non-MD Vision Care	81	$46.23
Frail Elderly	Medicare Crossovers - Part B	149	$52.24
	Drugs	145	$11.25
	Personal Care	110	$1,921.30
	DME/DMS*	99	$86.00
	SMV** Transportation	87	$57.37
	Dental	48	$82.26
	Non-MD Vision Care	43	$35.02
	Physician Services	43	$7.97
	Medicare Crossovers - Part A	37	$1,068.00
	Clinic Services	20	$35.44

*DME/DMS: Durable medical equipment/durable medical supplies. **Specialized medical vehicle
Note: Based on 947 IRIS participants
Source: Authors' calculations based on data provided by Wisconsin DHS

IRIS-Specific Budget and Expenditure Characteristics

Participants in IRIS develop a plan to meet their needs along with a corresponding budget, which we have labeled the Independent Consultant Agency (ICA) budget because it is developed primarily by the participant with guidance from the consultant. The "allocation," on the other hand, is a predictive dollar value of expenditures that is generated by the ADRC using a formula that includes participant characteristics found on the functional screen. The individual's allocation, which

is known by the participant and the ICA, is generally considered the ceiling for the ICA budget. Exceptions may be made in certain cases. The ICA monthly budgets are, on average, less than the allocation. Participants understand that bills submitted by service providers to the Financial Services Agency that exceed the allocation in a given month will not be paid. Participants can arrange to overspend in advance if they have a plan for cutting back expenditures in future months to make up for the overage. In addition, spending below the budget amount will not lead to a balance being carried forward into the next month unless it is part of a formal plan to pay for a special item the consumer identifies. The limit to this carry-forward in this scenario is twelve months (John O'Keefe, IRIS Manager, in an e-mail message to Jacob Schindler, March 28, 2010).

To understand the distribution of these budgets and allocations, we first arranged IRIS participants by ascending ICA monthly budget amounts, and then divided them into deciles (see Table 6). The difference between the allocation and budget can be thought of as the unspent allocation. For the first two deciles, this difference is about as large as the budget itself (see last column, Table 6).

Table 6: Average Monthly ICA Budget, Allocation, Difference Between Allocation and Budget, and Difference Between Allocation and Budget as a Percentage of Both Allocation and Budget by Ascending Monthly Budget Deciles

Decile	Monthly ICA Budget	Monthly Allocation*	Difference Between Allocation and Budget	Difference Between Allocation and Budget as Percentage of Allocation	Difference Between Allocation and Budget as Percentage of Budget
1	$289	$559	$270	48.2	93.2
2	$632	$1,452	$820	56.5	129.7
3	$1,009	$1,146	$137	11.9	13.6
4	$1,237	$1,396	$159	11.4	12.8
5	$1,476	$1,647	$171	10.4	11.6
6	$1,888	$2,242	$354	15.8	18.7
7	$2,620	$3,208	$588	18.3	22.4
8	$3,680	$4,276	$596	13.9	16.2
9	$5,940	$7,587	$1,646	21.7	27.7
10	$9,110	$9,709	$599	6.2	6.6
Median:	$1,643	$1,906	$47		

*Monthly allocation is projection of participant spending by Wisconsin DHS based on functional screen characteristics. Monthly ICA budget is based on a plan formulated at the Independent Consultant Agency for needed care within the limits of the allocated amount.

Each decile has 66 participants except decile 1, which has 65.

Source: Authors' calculations based on IRIS data dated October 31, 2009, provided by Wisconsin DHS

We found that half of participants had budgets of less than $1,500 per month. The distribution of the spending is skewed toward the higher end. The range of average ICA budgets from the first to the eighth decile is less than the range

of average allocations from the eighth to the tenth, and the overall average allocation is larger than the median allocation (see Table 7). We also found that the difference between allocations and budgets (a measure of how closely allocations reflect client needs expressed by their ICA budgets) varies by decile. Comparing the difference between budgets and allocations as a percentage of the allocation, we see that those in the bottom two deciles have budgets that are significantly lower than the predicted expenses indicated by the allocation. The ninth decile also stands out—the difference between budget and allocation is larger than that of the surrounding deciles.

Table 7: Summary Statistics for IRIS Participant ICA Monthly Budgets versus Allocations, 2009

Average Monthly ICA Budget	$2,780
Median	$1,643
Range	$11 to $12,718
Standard Deviation	$2,679
Total Monthly ICA Budgets	$1,832,035
Average Monthly Allocation*	$3,314
Median	$1,906
Range	$0 to $13,062
Standard Deviation	$3,169
Total Monthly Allocations	$2,183,746
Average Difference Between Allocation and Budget	$534
Median	$47
Range	-$6,284 to $9,613
Standard Deviation	$1,337
Total Difference Between Allocations and Budgets	$351,711

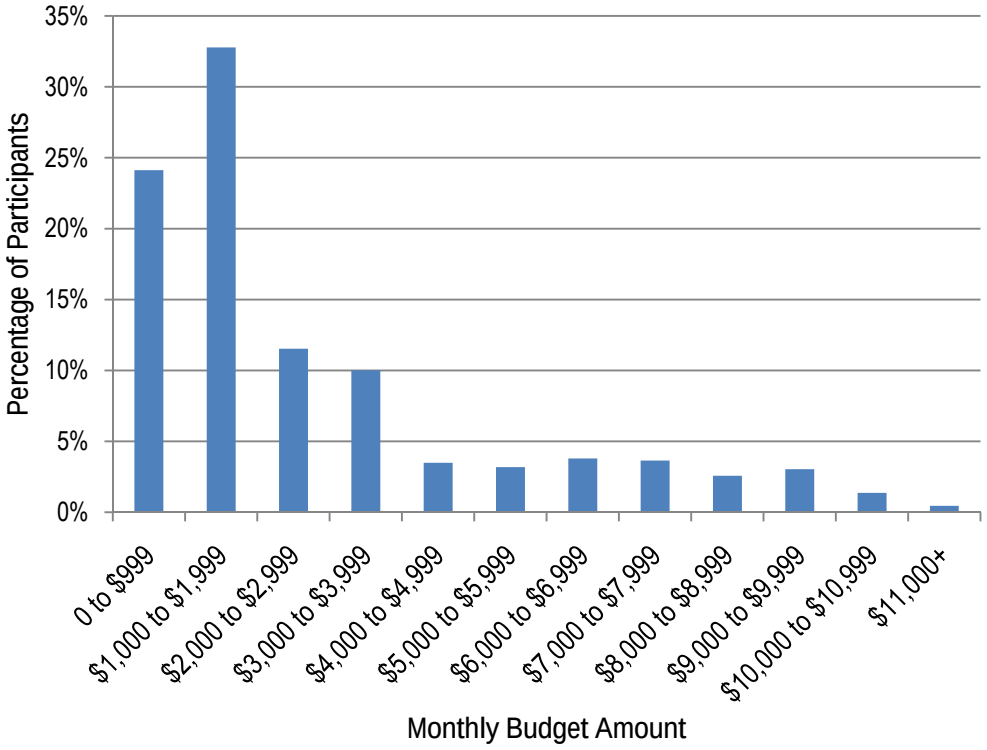
* Allocation refers to the anticipated budget allocation determined by formula from functional screen responses.
Source: Authors' calculations based on IRIS data dated October 31, 2009, provided by Wisconsin DHS.

Dividing the IRIS participants into budget ranges also provides a picture of how the population is distributed by planned expenditure amounts. Most of the participants are clustered in the ranges under $4,000, and the most common ICA budget range is between $1,000 and $2,000. About 57 percent of IRIS participants have budgets under $2,000, and 21 percent have budgets in excess of $4,000 (see Figure 16). The distribution of average allocations also shows a similar pattern. The percentage of those who fall under $2,000 is 53 percent, and about 25 percent of participants are in the ranges above $4,000 (see Figure 17).

We also grouped the IRIS participants according to the amount of the difference between the allocation and the ICA budget; negative amounts mean that the ICA budget exceeded the allocation. The positive unplanned allocations outweighed the negative, meaning that on average the ICA budget was less than the allocation. Most participants' budgets were not far off from their budgeted amount; about 67 percent of participants' ICA budget was within a range of $250 above or below their allocation, and less than 2 percent of participants

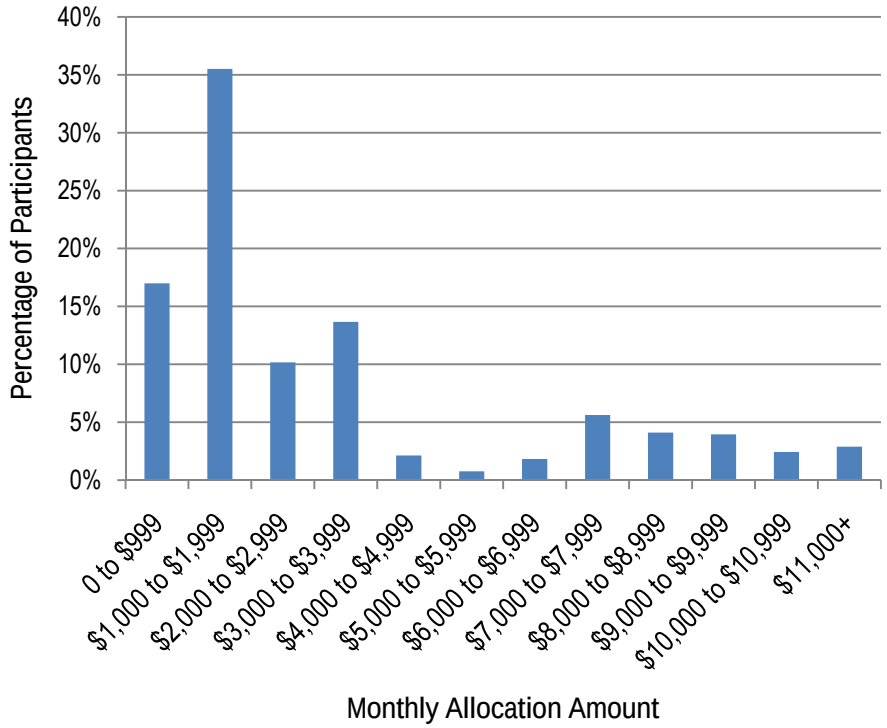
were exceeding their budgets by $500 or more (see Figure 18). The fact that budgets tend to be under the allocation amount, on average, could reflect a more conservative budgeting model that allows for some leeway in spending. With this cushion between the budget and the allocation, participants can go over their budgets by a modest amount without exceeding the ceiling on their allotted spending. This would reduce the need for participants to request an adjustment to their allocation amounts.

Figure 16: Percentage of IRIS Participants by Monthly ICA Budget Amounts



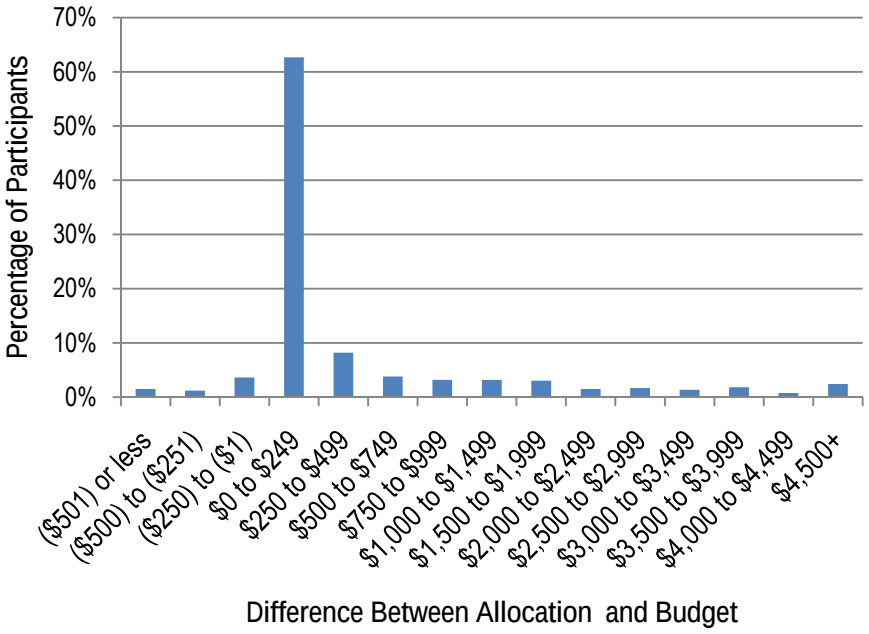
Source: Authors' calculations based on data provided by Wisconsin DHS

Figure 17: Percentage of IRIS Participants by Monthly Allocation Amounts



Source: Authors' calculations based on data provided by Wisconsin DHS

Figure 18: Percentage of IRIS Participants
by Amount of Difference Between Monthly Allocations and ICA Budget



Source: Authors' calculations based on data provided by Wisconsin DHS

The expenditure tables were created from a smaller dataset of 762 IRIS participants. This dataset was smaller than the 1,002 IRIS participants based on our ability to match participants' spending data to screen data. Some expenditure records did not have a corresponding functional screen.

A comparison of actuarial target groups shows that the largest target group in IRIS is the developmental disability group, followed by the physical disability group and the frail elderly group. The developmental disability group has the largest average monthly expenditures at approximately $3,000 and the largest median expenditure at approximately $2,300. The physical disability and frail elderly groups have average monthly spending of approximately $1,000 and $737, respectively. The median monthly spending is $808 for those in the developmental disability category and $661 for those in the frail elderly category. Participants in the developmental disability group also have a much larger range of expenditures than the other two groups (see Table 8).

Table 8: Frequencies and Average Monthly Expenditures for IRIS Participants by Actuarial Target Group in 2009

Target Group	Number of Participants	Percentage of Participants	Monthly Expenditure	Standard Deviation	Minimum	Maximum
Developmental Disability	346	45%	$3,025	$2,515	$38	$14,211
Physical Disability	252	33%	$1,007	$992	$42	$10,126
Frail Elderly	164	22%	$737	$595	$27	$5,131
Total	762	100%				

Source: Authors' calculations based on IRIS data provided by Wisconsin DHS

What Conditions Best Predict Spending and Enrollment in the IRIS and Family Care Programs?

To draw conclusions about the effect that particular diagnoses and characteristics have on IRIS enrollment and expenditures requires examining each diagnosis and characteristic separately. We explored these relationships using regression analysis. Our expectation was that IRIS participants' conditions, as indicated by their functional screens, would predict their levels of expenditures. We also hypothesized that participants' conditions would affect their likelihood of enrolling in IRIS. We created two models based on these assumptions. The first is a standard ordinary least squares regression model in which each participant's average monthly expenditures is the dependent variable and the independent variables are identifiers for the participant's target group, their age, and categorical variables for the level of care and assistance they need for specific services. The second model is a log-likelihood regression model that uses the same independent variables, with a participant's enrollment or non-enrollment as the dependent variable.

Table 9 shows some of the statistically significant variables and their coefficients for the expenditures regression. Because Family Care datasets are much larger than the IRIS datasets, we used a random sample of 1,000 Family Care participants to compare to the 688 IRIS participants. To generate this table, we used service expenditure data to calculate the average monthly expenditures for each participant in each program separately. Then we linked these average monthly expenditures to each participant's last functional screen in 2009 for each program. When necessary we created categorical and indicator variables based on the data for the purposes of this analysis. Table C1 and Table C2 in Appendix C show common summary statistics for the variables used in the models.

As evident in Table 9, large disparities often occur among the impacts each of the characteristics is predicted to have on average monthly expenditures based on which program we are examining. [14] Standing out as particularly different effects in the two programs are whether participants are physically resistive, meet federal developmental disability requirements, are unable to communicate, and need ostomy services.

In Family Care, the model predicts that participants who resist care will spend $339 less on average. By contrast, the IRIS model predicts increased spending of $1,448 for physically resistive participants. Likewise, the predicted increase in spending for Family Care participants meeting the federal developmental disability requirements is $834 less than the predicted increase in IRIS spending. The inability to communicate predicts increased spending of $301 in Family Care and $839 in IRIS. Predicted spending for each of these services has been larger in

[14] In Appendix C: See Table C3 for target group regressions. Table C4 shows IRIS participation likelihood by target group. Table C5 shows the same predictive model applied to total IRIS plus Medicaid spending of IRIS participants. Table C6 applies the same model to IRIS participants' ICA budget amounts. Both tables compare these results to the IRIS results in Table C7.

IRIS than in Family Care. Although some of these services are predicted to have a larger effect for increasing spending for IRIS participants, we also want to keep in mind that the average IRIS budget is less than a Family Care budget. The model constant is a larger negative for IRIS, in a way reflecting this lower baseline for average IRIS spending. When trying to understand the positive and significant predicted effect for the age coefficient in IRIS, we believe that the wider age distribution might play a role in allowing us to observe how increasing age is associated with increasing costs in general. The population of Family Care, by contrast, is clustered around an older average age (see Appendix A, Table A1).

Table 9: Predictor Variables of Spending in IRIS and Family Care

Category	Variable	IRIS Coefficient	Family Care Coefficient
	Average Monthly Expenditures	*Dependent*	*Dependent*
Demographics	Age	45.95****	3.38
	Age Squared	-0.39****	-0.06
	Male	47.93	180.78
Target Group	Frail Elderly	-1029.92****	-1057.28****
	Physical Disability	-1088.13****	-820.28****
	Nursing Home Level of Care	-124.49	294.97***
Activities of Daily Living	Bathing	74.35	72.16
	Dressing	63.80	126.53
	Eating	87.69	182.56*
	Mobility within Living Environment	-8.17	-228.97*
	Toileting	336.79****	271.15***
	Transfer Bed to Wheelchair/Walker/Standing	-7.95	172.41
Instrumental Activities of Daily Living	Meal Preparation	9.30	370.53****
	Medication Management	17.02	18.38
	Money Management	-91.89	-180.77**
	Laundry and Household Chores	-88.90	-83.88
Diagnoses Health-Related Services Needed	Ventilator Dependence	-263.78	622.10
	Behaviors Requiring Intervention	96.82	-148.15
	Nursing Assessments or Intervention	-78.51	15.12
	Exercises	48.64	66.14
	Ostomy Related Skilled Services	-310.25***	-57.53
	IV Medication	47.86	-270.55****
	Medication Administration	69.74*	116.57***
	Medication Management (Monitoring)	34.15	49.02
	Oxygen or Respiratory Treatment	-43.29	-62.63
	Dialysis	136.62***	-318.61***
	Total Parenteral Nutrition	-171.87	51.52

Category	Variable	IRIS Coefficient	Family Care Coefficient
	Average Monthly Expenditures	*Dependent*	*Dependent*
	Transfusions	-136.43	(omitted)
	Tracheostomy Care	-21.90	403.42
	Tube Feedings	53.88	-137.23
	Ulcer Stage 2	-64.14	-10.25
	Ulcer Stage 3 or 4	127.40*	-75.13
	Urinary Catheter	69.62	-154.90
	Wound Care	74.12	-76.65
	Skilled Therapies 5+ Days/Week	-320.84	-350.06
	Skilled Therapies 1-4 Times/Week	80.41	475.03
Communication and Cognition	Communicate Effectively with Device	-79.53	-247.76
	Communicate Basic Needs Only	311.37	-44.90
	No Effective Communication	883.84***	301.36
	Cognition for Daily Decision Making	146.94***	59.96
	Physically Resistive to Care	1452.91****	-338.98
Behaviors and Mental Health	Wanders	-158.01	472.46
	Self-Injurious Behaviors	256.57	1112.90****
	Offensive or Violent Behavior	711.73****	986.98****
	Mental Health Needs	111.75**	226.55****
	Constant	-113.92	684.05
Sample Size		688	1000
R Squared		0.61	0.48

Notes: Model uses robust standard errors.
Significant at 0.01 level = ****; significant at 0.05 level = ***; significant at 0.10 level = **; significant at 0.15 level = *
Source: Authors' calculations based on IRIS data provided by the Wisconsin DHS

We also explored the idea that characteristics of long-term care participants, such as type of assistance needed, might be related to participation in IRIS rather than the Family Care program. Using a logistic regression model that included the data from the last functional screen available from 2009 for the Family Care and IRIS participants, we explored which factors make it more or less likely that a participant would enroll in IRIS. We summarize the significant predictors of enrollment in Table 10 (see Appendix C, Table C4 for results by target group). Positive percentages indicate that the characteristic is associated with an increased likelihood of enrollment. Requiring services related to transfusions and tracheostomy care and needing assistance with bathing, dressing, and eating are all associated with an increased likelihood of participation. Each increase of a year in age is associated with a decreased likelihood of enrolling in IRIS of about 2 percent.

Table 10: Selected Variables Predicting Enrollment in IRIS

Category	Variable	Change in Likelihood of IRIS Participation
	Enrolled in IRIS	*Dependent*
Demographics	Age	-2.30%***
	Age Squared	-0.02%****
	Male	3.25%
Target Group	Frail Elderly	360.58%****
	Physical Disability	70.81%****
	Nursing Home Level of Care	-3.74%
Activities of Daily Living	Bathing	51.66%****
	Dressing	26.72%****
	Eating	45.54%****
	Mobility within Living Environment	4.85%
	Toileting	-16.13%***
	Transfer Bed to Wheelchair/Walker/Standing	7.21%
Instrumental Activities of Daily Living	Meal Preparation	22.21%****
	Medication Management	-9.52%**
	Money Management	-26.05%***
	Laundry and Household Chores	12.22%*
Health Related Services Needed	Behaviors Requiring Intervention	-11.68%****
	Nursing Assessments or Intervention	-18.99%****
	Exercises	2.36%
	Ostomy Related Skilled Services	3.83%
	IV Medication	-5.36%
	Medication Administration	-1.38%
	Medication Management (monitoring)	8.70%****
	Oxygen or Respiratory Treatment	0.75%
	Dialysis	-4.38%
	Total Parenteral Nutrition	-25.20%
	Transfusions	146.94%***
	Tracheostomy Care	48.24%****
	Tube Feedings	6.00%**
	Ulcer Stage 2	13.67%***
	Ulcer Stage 3 or 4	5.57%
	Urinary Catheter	3.34%
	Wound Care	4.45%
	Skilled Therapies 5+ days/week	-11.95%
	Skilled Therapies 1-4 times/week	25.49%**
Communication and Cognition	Communicate Effectively with Device	32.57%*
	Communicate Basic Needs Only	-16.84%*
	No Effective Communication	-45.39%****
	Cognition for Daily Decision Making	-8.68%**
	Physically Resistive to Care	90.00%****

Category	Variable	Change in Likelihood of IRIS Participation
Behaviors and Mental Health	Wanders	44.78%****
	Self-Injurious Behaviors	29.59%****
	Offensive or Violent Behavior	-9.08%
	Mental Health Needs	-20.07%****
Sample Size		31548
Pseudo R Squared		0.13

Notes: Model uses robust standard errors. Significant at 0.01 level = ****; significant at 0.05 level = ***; significant at 0.10 level = **; significant at 0.15 level = *

Source: Authors' calculations based on IRIS data provided by the Wisconsin DHS

The frail elderly target group is much more likely to enroll in IRIS, relative to the developmental disability target group that serves as the baseline, when controlling for age. Interpreting this finding is complicated because age is a key component of the target group definition. However, as outlined on the Wisconsin DHS functional screen, those who are classified as frail elderly also have either irreversible dementia or some physical disability that limits their independence or ability to accomplish daily living tasks. When controlling for age, this finding could reflect that the frail elderly population has characteristics more conducive to self-managed care than the developmental disability target group population. Some of the enrollment predictions lead to more questions that might be investigated through qualitative methods, such as the increased likelihood that those who resist care are more likely to enroll in IRIS while those with mental health needs are less likely to enroll.

Care must be taken in interpreting the results of the regression. The model may have value in helping to predict trends of enrollees if the present enrolled population represents those likely to join in the future, but this is not necessarily the case. In general, the diagnoses associated with more severe conditions may indicate the need for more support, and this would be reflected in a reduced propensity to enroll in IRIS. There may be factors that we cannot observe, such as perceptions among long-term care participants regarding participant eligibility that also influence enrollment. The enrollment may also change as IRIS becomes more familiar to current Family Care participants and ADRC employees.

As a test of this hypothesis, we developed an expanded logistic model that included all of the medical diagnoses in the functional screen. Using this expanded model we predicted a probability of enrolling in IRIS for every IRIS and Family Care participant. When we examined the predicted probabilities of the IRIS participants, we found that, according to the model, many of the actual participants had a very low predicted probability of enrolling in IRIS. Even though this model fits the data well, it was not a good model for forecasting enrollment in IRIS. This suggests that as Wisconsin DHS plans for expansions of IRIS it should not rely solely on results from the functional screen to predict enrollment. As mentioned above, many factors can drive enrollment in IRIS, and many of these do not appear to be captured by the functional screen. The expanded logistic regression is shown in Table C7 of Appendix C.

How Do Other Self-Directed Care Programs Operate?

Through the course of the following literature review we discuss some of the differences in program implementation and outcomes for similar Self-Directed Care programs in other U.S. states and in the United Kingdom.

Description of other U.S. State and United Kingdom Programs

Self-Directed Care programs in other states contrast widely in how they are implemented. For instance, several U.S. states use the Supports Intensity Scale as a functional screen for developing budget allocations. This scale focuses on developmental disabilities; therefore, in many states using Supports Intensity Scale, the Self-Directed Care programs are mainly for those with developmental disabilities. The scale is one of the most widely used functional screen applications; it is used in fourteen U.S. states, four Canadian provinces, and fourteen other countries. The appeal of using SIS stems from its utility in service planning and its consistency across populations of individuals with developmental disabilities (Kimmich et al., 2009).

The strength of using the Supports Intensity Scale is its emphasis in measuring support needs and capturing behavioral and medical needs. For some states the combination of the Support Intensity Scale combined with a budget assessment service offers a scheme of providing Self-Directed Care similar to IRIS. In a program analysis of Oregon Self-Directed Care, SIS, combined with two other cost calculations, was used to develop Individual Budget Allocations (Kimmich et al., 2009).

A study of the Oregon Self-Directed Care program surveyed a sample population of participants to analyze the cost of personal care services ("service waiver expenditures") correlated with individual living situations. Within the sample population the highest percentage of participants lived in congregate settings including adult foster care homes, group homes, and licensed alternative living facilities. Cross-tabulations of average service waiver expenditures and living settings indicated that those with highest average expenditures lived in group homes and in sponsored family homes. Participants with the lowest expenditures were those living with parents or relatives. With such a small sample size and such high standard deviations, the authors could not unequivocally conclude that the drastic differences in expenditures were due to specific living settings. However, their findings emphasized the potential importance of living arrangements on individual expenditures (Kimmich et al. 2009).

In the United Kingdom, Self-Directed Care is provided to long-term care participants through the provision of "Individual Budgets." A 2009 study by the Social Care Institute for Excellence in London found that the allocations of Individual Budgets were given more often to those with physical disabilities. The functional screens used in the United Kingdom account for both means (monetary assets of the individual) and needs in contrast with U.S. programs that primarily focus on needs-based budget allocations. The United Kingdom funds Individual Budgets through the use of national taxation as opposed to a combination of local and national resources utilized by other European countries and the United States. According to the study, the differences in program funding and budget allocations, as well as bias by local authorities against the use of Individual Budgets, affect the options available to long-term care participants in the United Kingdom (Social Care Institute for Excellence, 2009).

In the same study, a survey of Individual Budget participants found that quality of care improved with community (Individual Budget) care versus traditional (managed) care. Surveys of care providers, however, expressed concern over the indeterminate nature of legitimate care and financial risk for program participants. Recommendations from the authors suggest that navigation through the self-care systems would be improved through the use of an independent brokerage service (Social Care Institute for Excellence, 2009).[15]

In a pilot comparison of U.K. community (Individual Budget) care with traditional (managed) care, researchers examined the nature of the residential circumstances of participants and attempted to measure the costs and quality of the inputs for care services. Essentially, community (Individual Budget) services cost twice as much as the traditional (managed) care services. According to the study, the traditional service relied on larger institutions with lower staff-to-resident ratios than community housing, although the percentage of qualified staff members was higher in the traditional setting (Felce et al., 2000).

With regard to expenses, the researchers concentrated on the costs closely associated with the residential setting itself and excluded the costs of professional treatments and day services that they believe were not closely related to the relationship between setting and outcomes. Using stepwise regression analysis, the researchers found that service model and not size of setting had the most influence on costs. In measuring individual outcomes, the researchers found that community care was associated with greater patient autonomy, increased participation in domestic life and within the community, and more engagement in activities. Overall the study found that expenditures for services were not closely linked to the quality of outputs, whereas the community model could be linked to more positive outcomes than the larger institutional model (Felce et al., 2000).

[15] A service similar to the ICA used with IRIS described earlier in the report.

A directive from Secretary Tommy Thompson of the U.S. Department of Health and Human Services established a three-state pilot program for Self-Directed Care: the Cash and Counseling pilot programs in Arkansas, New Jersey, and Florida (O'Keeffe et al., 2007). The programs were set up as controlled experiments in which eligible individuals volunteered for Self-Directed Care and a randomly selected subset of volunteers was given the option to enroll in the program. A 2007 report evaluated several key program and participant characteristics including: demographics; time between enrollment in CC and actual receipt of funds; personal care services purchased; and satisfaction with the Cash and Counseling program (Schore et al., 2007).

According to the authors, most consumers lived with someone and an unpaid caregiver. Many also had a paid caregiver. The authors point out that Florida diverged in a number of ways from the findings in Arkansas and New Jersey. For example, Florida allowed individuals with developmental disabilities in its program. Consequently those consumers had a higher rate of consumer representatives who were comparatively more educated than consumers who made their own decisions (Schore et al., 2007).

Consumers could only receive their allowance after completing an acceptable budget plan. Arkansas had a higher allowance receipt rate than Florida or New Jersey because it required its counselors to create a budget plan within 45 days of enrollment. Meanwhile, New Jersey had a complicated enrollment and budget process; and Florida's program was available only to those already receiving agency services, i.e., through a Managed Care Organization (Schore et al., 2007).

The vast majority of consumers hired workers within their allowance, and most of these workers lived with the consumer. At least one-fifth of consumers or their representatives said that they found hiring difficult. According to consumer surveys, more than half of the participants said that Cash and Counseling had "improved their lives a great deal." However, between 16 and 38 percent voluntarily withdrew from the program during the year after enrollment. The most common reasons given for leaving were as follows:

- The belief that the allowance was not enough to cover care needs;
- Difficulty managing employer responsibilities (such as hiring and firing workers);
- Deciding they were satisfied with traditional agency care after all.

There was little evidence of abuse, fraud, or neglect inflicted by either the consumers or their hired workers (Schore et al., 2007).

Another article discussing Cash and Counseling pilot programs in Arkansas, New Jersey, and Florida focuses on the effects the programs had on the costs of Medicaid and waiver services. Authors Stacy Dale and Randall Brown (2007) found that CC did increase average costs between the control and treatment groups.

To find these differences, they used an ordinary least squares regression to predict expenditures of those in Cash and Counseling. Using their model, they found the program had a number of impacts on costs. First, more Cash and Counseling participants received the services they were supposed to obtain than those in the control group. Participants also had higher long-term care expenditures than the control group. Second, non-personal care/non-waiver care costs were lower among Cash and Counseling participants than the control group, but overall Medicaid costs were higher (Dale and Brown, 2007).

The authors emphasized that differences among the groups could have been affected by external conditions within each state. For instance, a shortage of personal care workers in Arkansas for the Managed Care Organization combined with a rural population resulted in fewer services contrasted with Cash and Counseling consumers who could hire friends and family. Two other conditions affecting cost recognized by the authors include individuals drawn to waiver services to be a part of Cash and Counseling and program consumers consistently receiving more funds. For instance, a number of people who did not receive the opportunity to enroll in Cash and Counseling simply chose not to receive any managed care services. And staff confusion in all three states led to some misappropriation of funds to Cash and Counseling participants (Dale and Brown, 2007).

One last exploration by our group is the budget reallocation rate of other U.S. states. According to our understanding of budget reallocation, in some cases after an initial functional screen is used to determine an individual's budget, a participant will ask for a budget adjustment or reallocation. This happens if a participant's circumstances changes or if he or she feels his or her current budget is not enough to cover desired long-term care services. In an interview with Jon Fortune (telephone conversation with Patric Hernandez, March 13, 2010, Madison, WI), we asked what his experience has been with these outlier rates of reallocation. He stated that for a well-established Self-Directed Care program such New Jersey's, the rate is approximately 7 percent, whereas in other states with more fledgling programs, such as Wisconsin's IRIS program, he expects that this rate would vary more and possibly be much higher. For instance, Florida's program, which has undergone several major changes over the years, has a budget reallocation rate of about 25 percent.

Policy Recommendations

Based on our findings in comparing IRIS and Family Care, we have four policy recommendations for IRIS that we also believe have some application to Self-Directed Care programs in general.

First, we recommend that Wisconsin DHS consider including certain specific variables in its IRIS rate model. These variables are shown in gray under Alternative Rate Model I in Table 11. We find that the existing rate model predicts approximately 57 percent of the variation in the average monthly expenditures of IRIS participants. Adding five variables: the participant's age, age squared, frequency of ostomy assistance, level of mental health needs, and whether the participant meets the federal definition of developmental disability can increase the predictive ability of the rate model to 62 percent of the variation in monthly expenditures. This model is shown as Alternate Rate Model I in Table 11. Alternative Rate Model II in Table 11 shows that additional adjustments can increase the model's predictive capacity to 63 percent. The increase in predictive ability is small compared to the work involved in altering the model. We recommend Alternative Rate Model I as a simple and significant alternative to the current rate model.

Table 11: Alternative Rate Model I & II

Variable	Existing Rate Model	Alternative Rate Model I	Alternative Rate Model II
Dependent Variable		*Average Monthly Expenditures*	
Ventilator Dependence	-405.26	-15.87	-100.89
DDº Level of Care 1a	958.72 ****	(omitted)	
DDº Level of Care 1b	2702.69 ****	(omitted)	
DDº Level of Care 2	(omitted)	(omitted)	
Skilled Nursing Facility	-149.43	17.17	-105.94
Assistance with 3 IADL	-271.72 ***	-295.12 ***	-331.23 ****
Assistance with 4 IADLs	-115.15	-265.25	-305.85 *
Assistance with 5 IADLs	322.94	-36.07	-102.77
Assistance with 6 IADLs	(omitted)	(omitted)	
Bathing, Assistance Throughout Task	-193.79 *	99.31	95.62
Dressing, Assistance Throughout Task	106.65	173.95	164.72
Eating, Assistance Throughout Task	55.04	-110.84	-149.98
Toileting, Some Assistance	237.08 ***	298.27 ****	
Toileting, Assistance Throughout Task	460.21 ***	504.26 ***	
Transferring, Assistance Throughout Task	-85.64	36.81	44.28
Equipment for Bathing & Asst. Dressing	-220.33 **	98.41	102.10

Variable	Existing Rate Model	Alternative Rate Model I	Alternative Rate Model II
Dependent Variable		*Average Monthly Expenditures*	
Equipment for Mobility & Asst. Mobility	441.80 **	477.33 ***	467.15 ***
Equipment for Bathing & Asst. Eating	379.60 ****	167.59	169.96
No Effective Communication	888.09 ***	700.95 ***	630.54 **
Needs Help with Decision Making Always	557.02 ****	459.45 ****	486.70 ****
Physically Resistive to Care	1510.12 ****	1501.21 ****	1435.65 ****
Self-Injurious Behaviors	349.10	201.30	201.72
Offensive Behaviors Occasionally or Regularly	1286.24 ****	1086.16 ****	944.31 ****
Offensive Behaviors Daily	3405.52 ****	3059.47 ****	2604.81 ****
Help with Medications Regularly	218.76 **	353.05 ***	207.42
Help with Medications Daily	330.06 **	415.83 ***	231.23
Age		48.49 ****	45.11 ****
Age Squared		-0.41 ****	-0.38 ****
Ostomy Frequency of Assistance		-296.08 ***	-297.57 ***
Mental Health Needs		85.27	83.35
Meets only Federal DD Definition		1283.6 ****	1153.65 ****
Toileting			258.58 ****
Behavior Related Interventions			100.75 *
Medication Administration Asst			56.22
Dialysis Assistance Frequency			156.86 **
Wound Care			73.09
Skilled Therapies 5+ days/week			-283.37
Transfusions			-17.15
Frail Elderly Actuary TG			-156.26
Physical Disability Actuary TG			-137.37
Constant	777.84 ****	-1267.88 ****	-1065.41 ***
Sample Size	762	688	615
R Squared	0.55	0.62	0.63

Notes: Model uses robust standard errors. ºDD = developmental disability
Significant at 0.01 level = ****; significant at 0.05 level = ***; significant at 0.10 level = **; significant at 0.15 level = *

Source: Authors' calculations based on IRIS data provided by Wisconsin DHS

Second, we recommend that Wisconsin DHS follow emerging trends by tracking IRIS enrollment by target group and required services. Our predictive model indicates that those who are younger and who require assistance with activities of daily living such as bathing, preparing meals, and eating are more likely to enroll in IRIS. Although this model may help to predict who might be more likely to enroll in the program in the future, it may also indicate perceptions that people may have about who can or should participate in IRIS. If this is the case, helping potential participants understand the potential of the program is important. A better understanding of participants' motivations for enrolling in IRIS and the perceptions of the IRIS program at the ADRCs could be better assessed through qualitative methods, including observing the screening process and surveying potential participants and ADRC employees. It would also be useful to track enrollment trends as they relate to demographic trends. For instance, as the large baby boomer generation ages, a greater proportion of people who fit the frail elderly category may be interested in managing their own care.

Third, we recommend that Wisconsin DHS do what it can to streamline the IRIS data systems. Wisconsin DHS was very helpful in providing data for our analysis. However, a number of data systems are clearly being used to collect and manage IRIS data. To the extent possible, it would help future evaluation efforts if a uniform data system for IRIS and/or a set protocol for the creation of datasets of relevant information were created. We hope that our analysis and the department's experience in helping us organize this report have highlighted some areas that the department can streamline.

Fourth, we recommend Wisconsin DHS initiate efforts to track systematically the outcomes of the IRIS program. Our understanding is that Wisconsin DHS intends to begin interviews and surveys of ADRC staff as part of a larger evaluation of the ADRCs' functions. This would be a strong first step. We recommend that Wisconsin DHS expand on these efforts by administering an outcome and performance survey with their functional screen. This survey may include the participants' self-assessment of well-being, their sense of independence, and how they believe their quality of care has changed over the previous year. IRIS participants re-take the functional screen every year, and collecting this information would allow Wisconsin DHS to track the well-being of IRIS participants over time. Wisconsin DHS may also want to request monthly service and participant complaint updates from the ADRCs and the Financial Services Agency. If properly documented by the ADRCs and the Financial Services Agency, participant complaints may be a very effective means of determining what changes need to be made to the program.

Conclusion

The goal of our analysis was to better understand Wisconsin Self-Directed Care by comparing IRIS and Family Care participants. The results of our analysis indicate important differences between Family Care and IRIS participants including demographics (such as age, race, and medical diagnosis), service expenditures, and budget amounts. These differences illustrate characteristics of IRIS participants who at a program level are more expensive to assist, often unemployed, younger, and more likely to live with a spouse, partner, or family member. In contrast to other U.S. states and the United Kingdom, we find that Wisconsin IRIS holds a special position among Self-Directed Care programs, providing care to three target populations: adults with developmental and physical disabilities and frail elders. Overall our findings indicate that for a program in the early stages of development, IRIS does an exceptional job of providing Self-Directed Care in Wisconsin.

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Appendix A: Demographics

Table A1: Demographics of Family Care and IRIS Participants

Characteristic	FC 2009 (n=30,773) Participants	FC 2009 (n=30,773) Percentage of Total	IRIS 2009 (n=1,002) Participants	IRIS 2009 (n=1,002) Percentage of Total
Gender				
Female	18,795	61.1	535	53.4
Male	11,965	38.9	467	46.6
Age in years				
18-24	2,038	6.6	191	19.1
25-49	6,876	22.3	321	32.0
50-64	6,119	19.9	216	21.6
65-84	10,556	34.3	214	21.4
85+	5,184	16.8	60	6.0
Self-Identified Race				
Caucasian	24,129	78.4	809	80.7
Black	4,116	13.4	99	9.9
Hispanic	769	2.5	27	2.8
Asian	448	1.5	25	2.5
American Indian	227	0.7	10	1.0
Other Race	77	0.3	2	0.2
Employment Status				
Retired	12,454	40.5	138	13.8
Not Employed	11,803	38.4	676	67.5
Part-Time	4,827	15.7	156	15.6
Full-Time	1,689	5.5	32	3.2
Target Group◊				
Developmental Disabilities	11,399	37.0	440	43.9
Physical Disabilities	10,585	34.4	357	35.6
Frail Elderly	8,789	28.6	205	20.5

Source: Authors' calculation of data from 2009 functional screen

◊ Indicates target groups are based on actuarial definitions and are mutually exclusive

Table A2: Family Care and IRIS Participants Diagnosed with Depression by Actuarial Target Group

Family Care	Total Participants	Participants with Depression	Percentage with Depression
Physical Disability	10,585	4,843	45.8
Frail Elderly	8,789	3,343	38.0
Developmental Disability	11,399	2,090	18.3
Total	30,773	10,276	33.4

IRIS	Total Participants	Participants with Depression	Percentage with Depression
Physical Disability	357	137	38.4
Frail Elderly	205	62	30.2
Developmental Disability	440	39	8.9
Total	1,002	238	23.8

Source: Authors' calculation of data from 2009 functional screen

Table A3: Conditions of Family Care and IRIS Participants

	FC 2009 (n=30,773)		IRIS 2009 (n=1,002)	
	Participants	Percentage of Total	Participants	Percentage of Total
Condition◊				
Depression	10,276	33	238	24
Mental Retardation	9,435	31	305	30
Diabetes	8,325	27	216	22
Other Dementia	4,937	16	55	5
Cancer	2,881	9	70	7
Alzheimer's	1,739	6	25	2
Cerebral Palsy	1,729	6	122	12
Schizophrenia	1,679	5	17	2
Bi-Polar Disorder	1,276	4	31	3
Autism	1,183	4	85	8
Blind	1,089	4	50	5
Deaf	955	3	45	4
Multiple Sclerosis	560	2	32	3
Terminal Illness	547	2	8	1
Muscular Dystrophy	143	0	17	2
Spinal Bifida	141	0	11	1
Ventilator Dependent	47	0	21	2
Special Equipment				
Walker or Cane	12,098	39	310	31
Wheel Chair or Scooter	7,708	25	314	31
Catheter	1,332	4	104	10
Mechanical Lift	1,936	6	113	11

Source: Authors' calculation of data from Family Care and IRIS 2009 functional screen

◊ Participants may have one, multiple, or no conditions listed herein.

Table A4: Characteristics of Family Care and IRIS Participants

	FC 2009 (n=30,773)		IRIS 2009 (n=1,002)	
	Participants	Percentage of Total	Participants	Percentage of Total
Other Characteristic◊				
Overnight Care	16,686	54	629	63
Needs Help Bathing	15,764	51	675	67
Needs Help with Medicine	14,830	48	414	41
Mental Health	13,172	43	286	29
Short-Term Memory Loss	11,630	38	345	34
Unable to Remember	10,523	34	240	24
Needs Help Dressing	10,021	33	487	49
Needs Help Toileting	7,451	24	344	34
Needs Help with Decisions	6,102	20	289	29
Needs Some Help Toileting	5,800	19	268	27
Offensive Behavior	4,695	15	166	17
Exercise	4,518	15	251	25
Eating	4,348	14	284	28
Long-Term Memory Loss	4,051	13	98	10
Physically Resistive	2,228	7	132	13
Current Substance Abuse	1,301	4	21	2
Brain Injury	1,239	4	71	7
Wander	898	3	46	5

Source: Authors' calculation of data from Family Care and IRIS 2009 functional screen

◊ Participants may have one, multiple, or no characteristics listed herein

Table A5: Descriptions of Participant Characteristics

Characteristic	Description	Functional Screen Value(s)
Overnight Care	Member requires overnight care or supervision	Any other than 0
Needs Help Bathing	Help is needed and helper must be present	2
Needs Help With Meds	Member needs help at least three to seven days per week and cannot direct task	6
Mental Health	Member has stable or unstable mental health	2 or 3
Short-Term Memory Loss	Member has short-term memory loss	Any other than 0
Unable To Remember	Member is unable to remember things over several days or weeks	Any other than 0
Needs Help Dressing	Help is needed and helper must be present	2
Needs Help Toileting	Help is needed and helper must be present	2
Needs Help With Decisions	Member needs help most or all of the time	3
Needs Some Help Toileting	Help is needed but helper does not need to be present	1
Offensive Behavior	Offensive behavior requires interventions weekly, or up to twice a day	1 or 2
Exercise	Member needs help exercising two hours per week or more	3,4,5, or 6
Eating	Help is needed and helper must be present	2
Long-Term Memory Loss	Member has long-term memory loss	Any other than 0
Physically Resistive	Member is physically resistive to care	1 or 2
Current Substance Abuse	Member has a substance abuse problem	Any other than 0
Wander	Member wanders at night, or day and night	2
Brain Injury	Member experienced a brain injury at any age	Any other than 0

Source: Data from Family Care and IRIS 2009 functional screen

Appendix B: Living Situations

Table B1: Family Care Actual Versus Preferred Living Situation (All Participants)

Living Situation	Participants in Living Situation	Percentage of Total	Percent Living in Preferred Situation
Alone	7,141	23.2	95.7
With Spouse/Partner/Family	6,054	19.7	89.7
Community-Based Residential Facility	4,020	13.1	69.8
Family	3,496	11.4	82.6
Nursing Home	2,604	8.5	30.4
Licensed Adult Family Home	2,573	8.4	68.6
Hospice Care	1,220	4.0	0.0
Paid Caregivers Home	1,123	3.6	79.3
Residential Care Apartment Complex	859	2.8	90.1
With Non-Relatives/Roommates	723	2.3	85.1
Home/Apartment (Support Service Owned)	377	1.2	71.1
Independent Apartment	183	0.6	71.0
Non-Relative	134	0.4	69.4
With Live-In Paid Caregivers	82	0.3	78.0
Other (Includes Jail)	67	0.2	0.0
Mental Health/Psychiatric Institution	36	0.1	0.0
Intermediate Care Facility	34	0.1	14.7
No Permanent Residence	24	0.1	0.0
Children's Group Home	7	0.0	28.6
Developmental Disabilities Center/State Institution	7	0.0	0.0
Other Institution for Mental Disease	7	0.0	0.0
Child Caring Institution	2	0.0	0.0
Total	30,773	100.0	75.9*

Source: Authors' calculation of data from 2009 functional screen

* Average for all participants

Table B2: IRIS Actual Versus Preferred Living Situation (All Participants)

Living Situation	Participants in Living Situation	Percentage of Total	Percentage Living in Preferred Situation
With Spouse/Partner	417	41.8	89.0
Family	241	24.1	82.6
Alone	216	21.6	96.3
Paid Caregivers Home	28	2.8	75.0
With Non-relatives/Roommates	19	1.9	84.2
Licensed Adult Family Home	16	1.6	62.5
Nursing Home◊	14	1.4	14.3
Residential Care/Apartment Complex	12	1.2	75.0
Community-Based Residential Facility	11	1.1	54.5
With Live-In Paid Caregivers	11	1.1	72.7
Home/Apartment (Support Service Owned)	4	0.4	75.0
With One Non-Relative	4	0.4	0.0
Independent Apartment	2	0.2	100.0
Intermediate Care Facility◊	1	0.1	0.0
No Permanent Residence	1	0.1	0.0
Other (Includes Jail)◊	1	0.1	0.0
Total	998	100.0	85.7*

Source: Authors' calculation of data from 2009 functional screen

* Average for all participants

◊ Indicates living situation is not allowed once enrolled in IRIS

Table B3: IRIS Actual Versus Preferred Living Situation (Developmental Disabilities)

Living Situation	Participants in Living Situation	Percentage of Total	Percentage Living in Preferred Situation
Family	187	42.7	81.3
With Spouse/Partner	151	34.5	80.1
Paid Caregivers Home	28	6.4	75.0
Alone	26	5.9	88.5
Licensed Adult Family Home	15	3.4	60.0
With Non-Relatives/Roommates	8	1.8	62.5
Community-Based Residential Facility	7	1.6	57.1
With Live-In Paid Caregivers	5	1.1	80.0
Home/Apartment (Support Service Owned)	4	0.9	75.0
Residential Care/Apartment Complex	3	0.7	33.3
Intermediate Care Facility◊	1	0.2	0.0
Independent Apartment	1	0.2	100.0
With One Non-Relative	1	0.2	0.0
Nursing Home◊	1	0.2	0.0
Other (Includes Jail)◊	0	0.0	0.0
Total	438	100.0	78.5*

Source: Authors' calculation of data from 2009 functional screen

* Average for all participants with developmental disabilities

◊ Indicates living situation is not allowed once enrolled in IRIS

Table B4: IRIS Actual Versus Preferred Living Situation (Frail Elderly)

Living Situation	Participants in Living Situation	Percentage of Total	Percentage Living in Preferred Situation
With Spouse/Partner	96	47.3	96.9
Alone	80	39.4	96.3
Nursing Home◊	9	4.4	22.2
Family	7	3.4	100.0
Residential Care/Apartment Complex	7	3.4	85.7
Community-Based Residential Facility	2	1.0	100.0
Independent Apartment	1	0.5	100.0
With Live-In Paid Caregivers	1	0.5	100.0
Licensed Adult Family Home	0	0.0	0.0
With Non-Relatives/Roommates	0	0.0	0.0
Total	203	100.0	93.1*

Source: Authors' calculation of data from 2009 functional screen

* Average for all participants described as frail or elderly

◊ Indicates living situation is not allowed once enrolled in IRIS

Table B5: IRIS Actual Versus Preferred Living Situation (Physical Disabilities)

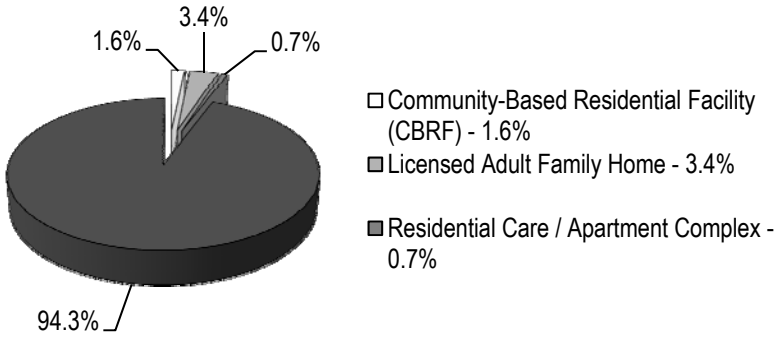
Living Situation	Participants in Living Situation	Percentage of Total	Percentage Living in Preferred Situation
With Spouse/Partner	170	47.6	92.4
Alone	110	30.8	98.2
Family	47	13.2	85.1
With Non-Relatives/Roommates	11	3.1	100.0
With Live-In Paid Caregivers	5	1.4	60.0
Nursing Home◊	4	1.1	0.0
With One Non-Relative	3	0.8	0.0
Community-Based Residential Facility	2	0.6	0.0
Residential Care/Apartment Complex	2	0.6	100.0
Licensed Adult Family Home	1	0.3	100.0
No Permanent Residence	1	0.3	0.0
Other (Includes Jail)◊	1	0.3	0.0
Total	357	100.0	90.2*

Source: Authors' calculation of data from 2009 functional screen

* Average for all participants with physical disabilities

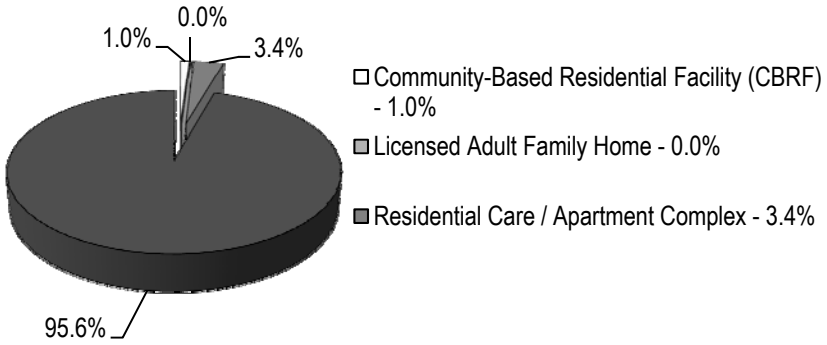
◊ Indicates living situation is not allowed once enrolled in IRIS

Figure B1: Developmentally Disabled IRIS Participants in Assisted Living Situations



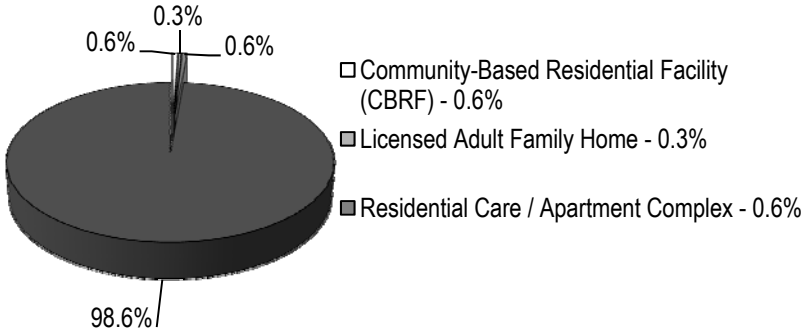
Note: Some participant living situations were recorded before enrollment in program.

Figure B2: Frail Elderly IRIS Participants in Assisted Living Situations



Note: Some participant living situations were recorded before enrollment in program.

Figure B3: Physically Disabled IRIS Participants in Assisted Living Situations



Note: Some participant living situations were recorded before enrollment in program.

Appendix C: Regression Models

Table C1: List of Regression Variables Family Care

Variables by Category	Mean	Standard Deviation	Minimum	Maximum
Dependent Variable				
Family Care Expenditures	2636	2381	-1414	34967
Demographics				
Age	63	21	18	108
Age Squared	4409	2537	289	11449
Male	0.38	0.49	0	1
Target Groups				
Developmental Disability	0.36	0.48	0	1
Frail Elderly	0.29	0.45	0	1
Physical Disability	0.35	0.48	0	1
Meets only Federal Developmental Disability Definition	0.35	0.48	0	1
Meets State but Not Federal Developmentally Disabled Definition	0.01	0.11	0	1
Meets State and Federal Developmentally Disabled Definition	0	0	0	0
Nursing Home Level of Care	1.22	0.61	0	2
Activities of Daily Living				
Bathing	1.31	0.8	0	2
Dressing	0.97	0.83	0	2
Eating	0.49	0.73	0	2
Mobility within Living Environment	0.54	0.78	0	2
Toileting	0.69	0.84	0	2
Transfer Bed to Wheelchair/Walker/Standing	0.55	0.83	0	2
Instrumental Activities of Daily Living				
Meal Preparation	2.45	0.82	0	3
Medication Management	2.69	1.59	0	4
Money Management	1.33	0.74	0	2
Laundry and Household Chores	1.65	0.57	0	2
Diagnosis				
Ventilator Dependence	0	0.04	0	1
Health Related Services Needed				
Behaviors Requiring Intervention	0.63	1.52	0	6
Nursing Assessments or Intervention	0.61	1.35	0	6
Exercises	0.61	1.41	0	6
Ostomy Related Skilled Services	0.04	0.4	0	6
IV Medication	0.04	0.44	0	6
Medication Administration	3.04	2.16	0	6
Medication Management (Monitoring)	2.27	1.86	0	6

Variables by Category	Mean	Standard Deviation	Minimum	Maximum
Oxygen or Respiratory Treatment	0.33	1.19	0	6
Dialysis	0.05	0.39	0	5
Total Parenteral Nutrition	0	0.13	0	6
Transfusions	0	0.03	0	3
Tracheostomy Care	0.01	0.25	0	6
Tube Feedings	0.09	0.68	0	6
Ulcer Stage 2	0.05	0.43	0	6
Ulcer Stage 3 or 4	0.03	0.36	0	6
Urinary Catheter	0.08	0.53	0	6
Wound Care	0.11	0.65	0	6
Skilled Therapies 5+ Days/Week	0.03	0.17	0	1
Skilled Therapies 1-4 Times/Week	0.05	0.21	0	1
Communication and Cognition				
Communicate Effectively with Device	0.02	0.14	0	1
Communicate Basic Needs Only	0.14	0.34	0	1
No Effective Communication	0.06	0.24	0	1
Cognition for Daily Decision Making	1.44	1.01	0	3
Physically Resistive to Care	0.07	0.25	0	1
Behaviors and Mental Health				
Wanders	0.08	0.36	0	2
Self-Injurious Behaviors	0.12	0.46	0	3
Offensive or Violent Behavior	0.26	0.64	0	3
Mental Health Needs	1	1.01	0	3

Note: Based on 26,361 Family Care participants

Source: Authors' calculations based on data provided by Wisconsin DHS

Table C2: List of Regression Variables for IRIS

Variables by Category	Obs.	Mean	Std. Dev.	Min.	Max.
Dependent: Monthly Average Expenditure	762	1865.21	2097.06	26.69	14210.73
Demographics					
Age	688	49.24	22.52	17	97
Age Squared	688	2930.89	2340.6	289	9409
Male	762	0.41	0.49	0	1
Target Group					
Developmental Disability	762	0.45	0.5	0	1
Frail Elderly	762	0.22	0.41	0	1
Physical Disability	762	0.33	0.47	0	1
Meets only Federal Developmental Disability Definition	762	0.4	0.49	0	1
Meets State but Not Federal Developmental Disability Definition	762	0.01	0.1	0	1
Meets State and Federal Developmental Disability Definition	762	0	0	0	0
Nursing Home Level of Care	762	1.25	0.59	0	2
Activities of Daily Living					
Bathing	762	1.48	0.76	0	2
Dressing	762	1.24	0.8	0	2
Eating	762	0.78	0.84	0	2
Mobility within Living Environment	762	0.62	0.81	0	2
Toileting	762	0.9	0.86	0	2
Transfer Bed to Wheelchair/Walker/Standing	762	0.75	0.88	0	2
Instrumental Activities of Daily Living					
Meal Preparation	762	2.4	0.96	0	3
Medication Management	762	2.46	1.64	0	4
Money Management	762	1.17	0.87	0	2
Laundry and Household Chores	762	1.61	0.67	0	2
Diagnoses					
Ventilator Dependence	762	0.02	0.13	0	1
Health Related Services Needed					
Behaviors Requiring Intervention	762	0.67	1.55	0	6
Nursing Assessments or Intervention	762	0.35	1.07	0	6
Exercises	762	1.01	1.79	0	6

Variables by Category	Obs.	Mean	Std. Dev.	Min.	Max.
Ostomy Related Skilled Services	762	0.09	0.58	0	6
IV Medication	762	0.06	0.51	0	5
Medication Administration	762	2.89	2.19	0	6
Medication Management (monitoring)	762	2.18	1.95	0	6
Oxygen or Respiratory Treatment	762	0.48	1.44	0	6
Dialysis	762	0.02	0.24	0	3
Total Parenteral Nutrition	762	0.01	0.14	0	4
Transfusions	762	0	0.05	0	1
Tracheostomy Care	762	0.12	0.74	0	6
Tube Feedings	762	0.32	1.27	0	6
Ulcer Stage 2	762	0.1	0.59	0	4
Ulcer Stage 3 or 4	762	0.03	0.36	0	5
Urinary Catheter	762	0.21	0.95	0	6
Wound Care	762	0.14	0.74	0	6
Skilled Therapies 5+ Days/Week	762	0.03	0.16	0	1
Skilled Therapies 1-4 Times/Week	762	0.08	0.28	0	1
Communication and Cognition					
Communicate Effectively with Device	762	0.03	0.18	0	1
Communicate Basic Needs Only	762	0.17	0.37	0	1
No Effective Communication	762	0.09	0.29	0	1
Cognition for Daily Decision Making	762	1.34	1.24	0	3
Physically Resistive to Care	762	0.12	0.32	0	1
Behaviors and Mental Health					
Wanders	762	0.14	0.46	0	2
Self-Injurious Behaviors	762	0.06	0.43	0	3
Offensive or Violent Behavior	762	0.25	0.61	0	3
Mental Health Needs	762	0.64	0.92	0	3

Source: Authors' calculations based on IRIS data provided by Wisconsin DHS

Table C3: Prediction of IRIS Expenditures by Target Group

Variables by Category	Developmentally Disabled Coefficient	Frail Elderly Coefficient	Physically Disabled Coefficient
Dependent Variable: Average Monthly Expenditures			
Demographics			
Age	135.79****	-24.12	-24.41
Age Squared	-1.47****	0.16	0.16
Male	-41.69	102.5	166.61
Target Group			
Nursing Home Level of Care	-412.2**	50	-350.7
Activities of Daily Living			
Bathing	27.29	178.32*	-45.29
Dressing	-139.9	51.29	198.49***
Eating	274.16	-152.95**	-14.83
Mobility within Living Environment	0.23	-2.36	-28.24
Toileting	305.68	137.92**	230.17***
Transfer Bed to Wheelchair/Walker	-36.19	109.77	115.53
Instrumental Activities of Daily Living			
Meal Preparation	282.53*	-26.95	-85.96
Medication Management	11.26	-37.82	-66.61
Money Management	3.91	87.23	-26.57
Laundry and Household Chores	-196.6	55.06	-238.23*
Diagnoses			
Ventilator Dependence	830.29*	(omitted)	-1702.85
Health Related Service Needed			
Behaviors Requiring Intervention	128.95*	-6.91	79.64
Nursing Assessments or Intervention	-231.84***	48.22	130.85
Exercises	100.85	-7.43	3.27
Ostomy Related Skilled Services	-596.18****	99.28	1.69
IV Medication	135.35	128.19**	-214.39*
Medication Administration	127.33	67.61*	127.56****
Medication Management (monitoring)	93.77*	30.62	25.86
Oxygen or Respiratory Treatment	-129.17	31.08	-29.87
Dialysis	(omitted)	57.33	112.45
Total Parenteral Nutrition	(omitted)	(omitted)	-212.81
Transfusions	(omitted)	-512.28	-934.11**

Variables by Category	Developmentally Disabled Coefficient	Frail Elderly Coefficient	Physically Disabled Coefficient
Dependent Variable: Average Monthly Expenditures			
Tracheostomy Care	-52.6	(omitted)	119.53
Tube Feedings	89.67	-202.51 ****	27.38
Ulcer Stage 2	-226.27	-78.43	-37.46
Ulcer Stage 3 or 4	(omitted)	217.57 ****	96.68
Urinary Catheter	-6.47	1164.98 **	69.06
Wound Care	159.31	-271.97 **	35.4
Skilled Therapies 5+ Days/Week	-539.58	555.52 **	-10.03
Skilled Therapies 1-4 Times/Week	-19.13	278.57	202.38
Communication and Cognition			
Communicate Effectively with Device	559.15	-140.68	186.08
Communicate Basic Needs Only	212.51	671.25 *	393.62
No Effective Communication	707.41	1498.01 ****	-170.33
Cognition for Daily Decision Making	447.23 ****	-58.58	54.6
Physically Resistive to Care	1639.04 ****	1065.25 **	266.7
Behaviors and Mental Health			
Wanders	-301.28	-99.15	892.28 *
Self-Injurious Behaviors	185.77	(omitted)	(omitted)
Offensive or Violent Behavior	714.44 ****	371.26 **	27.38
Mental Health Needs	259.85 **	1.1	108.47 **
Constant	-2864.1 ****	799.5	1751.98 **
Sample Size	312	150	226
R Squared	0.56	0.64	0.49

Notes: Model uses robust standard errors.
Significant at 0.01 level = ****; significant at 0.05 level = ***; significant at 0.10 level = **; significant at 0.15 level = *;

Source: Authors' calculations based on data provided by Wisconsin DHS

Table C4: IRIS Participation Likelihood Model by Target Group (Percent Change)

Variables by Category	Change in Developmentally Disabled Likelihood of IRIS Participation	Change in Frail Elderly Likelihood of IRIS Participation	Change in Physically Disabled Likelihood of IRIS Participation
Enrolled in IRIS: Dependent Variable			
Demographics			
Age	-8.36****	39.70**	10.32***
Age Squared	0.05***	-0.25***	-0.13****
Male	0.43	7.69	8.44
Target Group			
Nursing Home Level of Care	-3.82	30.20	-9.50
Activities of Daily Living			
Bathing	-6.48	210.57****	34.36***
Dressing	3.34	47.49****	26.50**
Eating	22.50**	100.83****	64.47****
Mobility within Living Environment	6.45	-11.83	4.25
Toileting	15.10	-25.19**	-16.89*
Transfer Bed to Wheelchair/Walker	5.12	14.06	24.74**
Instrumental Activities of Daily Living			
Meal Preparation	41.34****	21.48**	12.97
Medication Management	-11.03	-25.28***	8.83
Money Management	-19.39*	-38.74****	-12.65
Laundry and Household Chores	39.67***	-42.24****	15.73
Health Related Services Needed			
Behaviors Requiring Intervention	-9.75**	-20.12	-14.12
Nursing Assessments or Intervention	-10.06***	-24.69****	-24.70****
Exercises	0.48	-3.21	5.09
Ostomy Related Skilled Services	-24.77**	19.58	19.21***
IV Medication	-6.07	-0.20	-10.32
Medication Administration	4.09	1.2	-8.29**
Medication Management (Monitoring)	12.32****	4.75	1.53
Oxygen or Respiratory Treatment	7.09	-5.68	0.37
Dialysis		-29.36	3.22

Variables by Category	Change in Developmentally Disabled Likelihood of IRIS Participation	Change in Frail Elderly Likelihood of IRIS Participation	Change in Physically Disabled Likelihood of IRIS Participation
Enrolled in IRIS: Dependent Variable			
Total Parenteral Nutrition			-2.7
Transfusions		181.72	169.94 **
Tracheostomy Care	54.02 ****		45.35 ****
Tube Feedings	1.99	-9.28	5.09
Ulcer Stage 2	7.12	43.96 ****	3.61
Ulcer Stage 3 or 4	-16.86	8.86	12.80
Urinary Catheter	20.87 ****	-49.28 *	-5.76
Wound Care	9.15	-20.08 *	12.24 **
Skilled Therapies 5+ Days/Week	102.93 ***	-57.48 *	-34.58
Skilled Therapies 1-4 Times/Week	66.26 ****	-12.18	-1.25
Communication and Cognition			
Communicate Effectively with Device	101.32 ****	76.85	-7.36
Communicate Basic Needs Only	-21.21 *	-39.20	3.16
No Effective Communication	-49.31 ****	-63.26 *	-91.59 ***
Cognition for Daily Decision Making	13.70	-8.42	-17.34 ***
Physically Resistive to Care	114.53 ****	13.57	23.50
Behaviors and Mental Health			
Wanders	39.68 ****	19.25	134.21 ****
Self-Injurious Behaviors	23.94 ***	13.38	5.58
Offensive or Violent Behavior	-12.52 *	-16.83	0.14
Mental Health Needs	-22.95 ****	-19.59 ****	-17.26 ****
Sample Size	11703	8957	10849
Pseudo R Squared	0.15	0.16	0.17

Notes: Model uses robust standard errors. significant at 0.01 level = ****; significant at 0.05 level = ***; significant at 0.10 level = **; significant at 0.15 level = *

Source: Authors' calculations based on data provided by the Wisconsin DHS

Table C5: Expenditure Regression Model for IRIS and Medicaid Expenditures

Category	Variable	Medicaid and IRIS Coefficient	IRIS Coefficient
	Enrolled in IRIS	Dep.	Dep.
Demographics	Age	62.85***	45.95****
	Age Squared	-0.60***	-0.39****
	Male	547.29***	47.93
Target Group	Frail Elderly	-632.25	-1029.92****
	Physical Disability	-1325.39****	-1088.13****
	Nursing Home Level of Care	-73.87	-124.49
Activities of Daily Living, Degree of Assistance	Bathing	332.02*	74.35
	Dressing	444.81***	63.80
	Eating	461.56***	87.69
	Mobility within Living Environment	148.01	-8.17
	Toileting	270.09	336.79****
	Transfer Bed to Wheelchair/Walker/Standing	313.77	-7.95
Instrumental Activities of Daily Living, Degree of Assistance	Meal Preparation	137.59	9.30
	Medication Management	-69.32	17.02
	Money Management	-224.32	-91.89
	Laundry and Household Chores	-251.74	-88.90
Diagnoses	Ventilator Dependence	132.01	-263.78
Health Related Services Needed by Frequency	Behaviors Requiring Intervention	377.81**	96.82
	Nursing Assessments or Intervention	261.70	-78.51
	Exercises	-34.51	48.64
	Ostomy Related Skilled Services	239.64	-310.25***
	IV Medication	68.21	47.86
	Medication Administration	203.12**	69.74*
	Medication Management (Monitoring)	57.92	34.15
	Oxygen or Respiratory Treatment	-71.84	-43.29
	Dialysis	372.70**	136.62***
	Total Parenteral Nutrition	-1357.15**	-171.87
	Transfusions	-1598.48	-136.43
	Tracheostomy Care	2209.52****	-21.90
	Tube Feedings	288.77*	53.88
	Ulcer Stage 2	-145.87	-64.14
	Ulcer Stage 3 or 4	-107.23	127.40*
	Urinary Catheter	522.71***	69.62

Category	Variable	Medicaid and IRIS Coefficient	IRIS Coefficient
	Enrolled in IRIS	Dep.	Dep.
	Wound Care	-23.51	74.12
	Skilled Therapies 5+ Days/Week	-700.08	-320.84
	Skilled Therapies 1-4 Times/Week	292.09	80.41
Communication and Cognition	Communicate Effectively with Device	-555.54	-79.53
	Communicate Basic Needs Only	830.37 ***	311.37
	No Effective Communication	1167.55 **	883.84 ***
	Cognition for Daily Decision Making	-397.20 ***	146.94 ***
	Physically Resistive to Care	1128.26 ***	1452.91 ****
	Behaviors and Mental Health	-109.18	-158.01
	Self-Injurious Behaviors	82.37	256.57
	Offensive or Violent Behavior	534.37 *	711.73 ****
	Mental Health Needs	105.27	111.75 **
	Constant	-175.45	-113.92
Sample Size		664	688
R Squared		0.60	0.61

Notes: Model uses robust standard errors. Dep. stands for dependent variable. Significant at 0.01 level = ****; significant at 0.05 level = ***; significant at 0.10 level = **; significant at 0.15 level = *

Source: Authors' calculations based on IRIS data provided by the Wisconsin DHS

Table C6: Independent Consultant Agency Budget Prediction Model

Category	Variable	IRIS Independent Consultant Agency Budget Coefficient	IRIS Expenditure Coefficient
Demographics	Age	52.10****	45.95****
	Age Squared	-0.46****	-0.39****
	Male	172.48	47.93
Target Group	Frail Elderly	-1678.68****	-1029.92****
	Physical Disability	-1671.59****	-1088.13****
	Nursing Home Level of Care	-35.94	-124.49
Activities of Daily Living	Bathing	185.77*	74.35
	Dressing	124.66	63.80
	Eating	157.22	87.69
	Mobility within Living Environment	-115.50	-8.17
	Toileting	353.02****	336.79****
	Transfer Bed to Wheelchair/Walker/Standing	-179.79	-7.95
Instrumental Activities of Daily Living	Meal Preparation	159.67*	9.30
	Medication Management	6.87	17.02
	Money Management	-130.23	-91.89
	Laundry & Household Chores	-15.16	-88.90
Diagnoses	Ventilator Dependence	-325.91	-263.78
Health Related Services Needed	Behaviors Requiring Intervention	163.54**	96.82
	Nursing Assessments or Intervention	-98.79	-78.51
	Exercises	59.06	48.64
	Ostomy Related Skilled Services	-329.93***	-310.25***
	IV Medication	14.90	47.86
	Medication Administration	118.95***	69.74*
	Medication Management (monitoring)	40.60	34.15
	Oxygen or Respiratory Treatment	-20.48	-43.29
	Dialysis	196.18****	136.62***
	Total Parenteral Nutrition	-174.17	-171.87
	Transfusions	438.58	-136.43
	Tracheostomy Care	4.11	-21.90
	Tube Feedings	-53.15	53.88

Category	Variable	IRIS Independent Consultant Agency Budget Coefficient	IRIS Expenditure Coefficient
	Ulcer Stage 2	-109.50	-64.14
	Ulcer Stage 3 or 4	59.87	127.40 *
	Urinary Catheter	34.85	69.62
	Wound Care	60.66	74.12
	Skilled Therapies 5+ Days/Week	222.24	-320.84
	Skilled Therapies 1-4 Times/Week	92.99	80.41
Communication and Cognition	Communicate Effectively with Device	-141.45	-79.53
	Communicate Basic Needs Only	505.33 ***	311.37
	No Effective Communication	992.65 ***	883.84 ***
	Cognition for Daily Decision Making	157.96 ***	146.94 ***
	Physically Resistive to Care	2032.21 ****	1452.91 ****
Behaviors and Mental Health	Wanders	-124.90	-158.01
	Self-Injurious Behaviors	-2.37	256.57
	Offensive or Violent Behavior	713.80 ****	711.73 ****
	Mental Health Needs	149.62 ***	111.75 **
	Constant	-153.50	-113.92
Sample Size		615	688
R Squared		0.71	0.61

Notes: Model uses robust standard errors. Significant at 0.01 level = ****; significant at 0.05 level = ***; significant at 0.10 level = **; significant at 0.15 level = *

Source: Authors' calculations based on IRIS data provided by the Wisconsin DHS

Table C7: Expanded IRIS Participation Likelihood Model by Target Group (Percent Change)

Category	Variable	Change in Likelihood of Participation Developmentally Disabled	Change in Likelihood of Participation Frail Elderly	Change in Likelihood of Participation Physically Disabled
	Enrolled in IRIS	Dependent Variable	Dependent Variable	Dependent Variable
Demographics	Age	-6	147****	17****
	Age Squared	0	-1****	0****
	Male	43	-39**	-29**
Target Group	Nursing Home Level of Care	14	140***	68****
Activities of Daily Living	Bathing	-12	211****	52***
	Dressing	-18	81****	36**
	Eating	37	119****	20
	Mobility within Living Environment	51	42*	-7
	Toileting	120****	-42***	-6
	Transfer Bed to Wheelchair/Walker/ Standing	-18	-13	36**
Instrumental Activities of Daily Living	Meal Preparation	36	5	-4
	Medication Management	36*	-1	13
	Money Management	122****	-34***	-13
	Laundry and Household Chores	43	-31*	25
Health Related Services Needed	Behaviors Requiring Intervention	-21***	-27*	-28
	Nursing Assessments or Intervention	21*	1	-16*
	Exercises	18*	-4	19****
	Ostomy Related Skilled Services	96***	-18	13
	IV Medication	-16	1	-11
	Medication Administration	-10	-17	-9
	Medication Management (Monitoring)	7	25***	10*
	Oxygen or Respiratory Treatment	38**	3	0
	Dialysis		-32	-1
	Total Parenteral Nutrition			-23
	Transfusions		2423****	97
	Tracheostomy Care	885****		403****

Category	Variable	Change in Likelihood of Participation Developmentally Disabled	Change in Likelihood of Participation Frail Elderly	Change in Likelihood of Participation Physically Disabled
	Enrolled in IRIS	Dependent Variable	Dependent Variable	Dependent Variable
	Tube Feedings	38****	-28	18
	Ulcer Stage 2	-30	91****	19
	Ulcer Stage 3 or 4	-10	-17	36*
	Urinary Catheter	38*	-75	-15***
	Wound Care	38**	11	8
	Skilled Therapies 5+ Days/Week	12	-49	-10
	Skilled Therapies 1-4 Times/Week	-67***	114	50
Communication and Cognition	Communicate Effectively with Device	-10	130	30
	Communicate Basic Needs Only	-19	-38	39
	No Effective Communication	-2	-90***	-96***
	Cognition for Daily Decision Making	1	5	7
	Physically Resistive to Care	113***	-50	-43
Behaviors and Mental Health	Wanders	177****	-28	202***
	Self-Injurious Behaviors	107****	217*	-4
	Offensive or Violent Behavior	-7	17	-1
	Mental Health Needs	186****	170****	216****
Diagnoses	Ventilator Dependence			
	Mental Retardation	-99****		
	Autism	-98****		
	Brain Injury with Onset Before Age 22	-97****		-70****
	Cerebral Palsy	-97****		-78****
	Prader-Willi Syndrome	-98****		
	Seizure Disorder with Onset Before Age 22	-91****	-28	-14
	Otherwise Meets State or Federal Definitions of Developmental Disability	-98****		-34
	Diabetes Mellitus	-59****	-37****	-36****
	Hypothyroidism/ Hyperthyroidism	-71****	-58****	-37****

Category	Variable	Change in Likelihood of Participation Developmentally Disabled	Change in Likelihood of Participation Frail Elderly	Change in Likelihood of Participation Physically Disabled
	Enrolled in IRIS	Dependent Variable	Dependent Variable	Dependent Variable
	Dehydration/Fluid & Electrolyte Imbalances	-29	-43 **	-5
	Liver Disease (Hepatic Failure, Cirrhosis)	33	-51 ***	-5
	Other Disorders of Digestive System	-37 ****	-27 ****	-27 ****
	Nutritional Imbalances	-29	-28 ****	-12 **
	Other Disorders of Hormonal or Metabolic System	14	4	2
	Anemia/Coagulation Defects/Other blood Diseases	-86	-2	-15
	Angina/Coronary Artery Disease/Myocardial Infarction		-6	-6
	Disorders of Heart Rate or Rhythm	50	-12	-27 ***
	Congestive Heart Failure	38	-44 ****	-26 *
	Disorders of Blood Vessels or Lymphatic System	-62 ***	-45 ****	-40 ****
	Hypertension (High Blood Pressure)	-46 ***	-63 ****	-46 ****
	Hypotension (Low Blood Pressure)	272 ****	143 ****	-19
	Other Heart Conditions (including Valve Disorders)	-19	-39 ***	-20 *
	Amputation		-61 ***	-40 ****
	Arthritis	-13	-44 ****	-42 ****
	Hip Fracture/Replacement	-74 ****	-55 ***	-25
	Other Fracture/ Joint Disorders/ Scoliosis/Kyphosis	-38 ***	-21 *	-18 **
	Osteoporosis/Other Bone Disease	18	-42 ****	-25 ***
	Contractures/ Connective Tissue Disorders	2	131 ***	4
	Multiple Sclerosis/ALS	788 ***		-90 ****

Category	Variable	Change in Likelihood of Participation Developmentally Disabled	Change in Likelihood of Participation Frail Elderly	Change in Likelihood of Participation Physically Disabled
	Enrolled in IRIS	Dependent Variable	Dependent Variable	Dependent Variable
	Muscular Dystrophy	-93****	536****	-84****
	Spinal Cord Injury	13	64	-84****
	Paralysis Other than Spinal Cord Injury	-47***	-60****	-65****
	Spinal Bifida	112		-54****
	Other Chronic Pain or Fatigue	21	-24***	-34****
	Other Musculoskeletal Neuromuscular or Peripheral Nerve Disorder	-66****	-55****	-51****
	Other Brain Disorders	-90****	-70****	-55****
	Alzheimer's Disease		-79****	-73****
	Other Irreversible Dementia	-42	-77****	-74****
	Cerebral Vascular Accident	-87****	-56****	-61****
	Traumatic Brain Injury After Age 22	-100****		-76****
	Seizure Disorder with Onset After Age 22	-33	-65***	-11
	Asthma/ Chronic Obstructive Pulmonary Disease/ Emphysema/ Chronic Bronchitis	-11	-61****	-38****
	Tracheostomy	-99****		-96****
	Other Respiratory Condition	-33	-28	-18**
	Renal Failure or Other Kidney Disease	-18	-11	-17
	Urinary Tract Infection	-20	-26	-14
	Other Disorders of GU System (Bladder, Urethra)	-47*	-22**	-17**
	Disorders of Reproductive System	-10	22	37*
	Anxiety Disorder	-66****	-58****	-42****
	Bipolar/Manic Depressive	-78****	-83****	-58****
	Depression	-73****	-71****	-72****
	Schizophrenia	-81****	-85****	-78****
	Other Mental Illness	-77****	-87****	-56****

Category	Variable	Change in Likelihood of Participation Developmentally Disabled	Change in Likelihood of Participation Frail Elderly	Change in Likelihood of Participation Physically Disabled
	Enrolled in IRIS	Dependent Variable	Dependent Variable	Dependent Variable
	Diagnosis			
	Blind	-46 ***	22	-55 ****
	Visual Impairment	-33 ***	-27 ****	-25 ****
	Other Sensory Disorders	-5	-34 ***	-3
	Deaf	24	-25	-42 ***
	Allergies	-48 ****	1	1
	Cancer in Past Five Years	-64 **	-34 ****	-62 ****
	Diseases of skin	-42 **	-34 **	3
	HIV Positive			-22
	AIDS (Diagnosed)			0
	Other Infectious Disease	-25	51 **	18
	Auto-Immune Disease (Other Than Rheumatism)	117	-58 ***	-57 ***
	Alcohol or Drug Abuse	-60	-11	-41 ****
	Behavioral diagnoses	-57 ****		91 ****
	Terminal Illness	-100 ****	-87 ***	-76 ****
	Wound, Burn, Bedsore, Pressure Ulcer	244 ****	-68 ***	-41 ****
	Other	-63 ****	-48 ****	-48 ****
Sample Size		11305	8796	10845
Pseudo R Squared		0.84	0.69	0.67

Notes: Model uses robust standard errors. significant at 0.01 level = ****; significant at 0.05 level = ***; significant at 0.10 level = **; significant at 0.15 level = *.

Source: Author's calculations based on IRIS data provided by Wisconsin DHS