Analysis of MnCHOICES

Minnesota Waiver Reimagine Project
Study 2, Task 2.4

Prepared for:

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About the Human Services Research Institute

The Human Services Research Institute (www.hsri.org) is a nonprofit, mission-driven organization that works with government agencies and others to improve health and human services and systems, enhance the quality of data to guide policy, and engage stakeholders to effect meaningful systems change.

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INTRODUCTION

Background

HSRI is under contract with the Minnesota Department of Human Services (DHS), Disability Services Division (DSD) to complete two studies. The first will determine potential options for reconfiguring four Medicaid Home and Community Based Services (HCBS) waivers associated with people with disabilities. The second will determine a unified individual budgeting model for the proposed reconfiguration, both for individuals utilizing regular waiver services and those self-directing services through the Consumer-Directed Community Supports (CDCS) service.

Regarding Study 2, in advance of deciding on an individual budget methodology, the project team is undertaking a series of research and analysis tasks to gain knowledge of efforts elsewhere to establish individual budgets. The team is also undertaking an analysis of the MnCHOICES assessment tool and data collected to date, historical service use and costs, and the current CDCS methodology.

This paper pertains in particular to Study 2, Task 2.4 and includes the results of our analysis of MnCHOICES data. What follows are findings from this analysis, considerations, and a description of the methods we used to complete this work.

FINDINGS

DHS seeks to use the MnCHOICES assessment to inform a budget methodology for individuals who receive services in Minnesota. (See Background and Approach for more information). For this reason, we must first understand the support needs of individuals served and how support needs are likely to impact the resulting budget methodology. The findings below show the results of descriptive analyses of the MnCHOICES data, including a look at demographics and measures of support need. Then, using groups that range from "low support need" to "high support need," we compare summary support need information across waiver participants.

Demographics

This section provides demographic information describing the population for whom we plan to develop a budget methodology.

In total, we explored MnCHOICES data from 27,808 individuals across the four waivers (see the section on Methods for inclusion criteria). The vast majority are served on the CADI waiver (n=17,359) and DD waiver (n=9,170).

Figure 1

Most of the individuals represented in MnCHOICES are served on either the CADI waiver or DD waiver, though relatively small percentages of these are using CDCS

	BI	CAC	CADI	DD	Total
Non-CDCS	835	201	15,794	7,834	24,664
CDCS	55	188	1,565	1,336	3,144
Total	890	389	17,359	9,170	27,808

In contrast, nearly half of CAC waiver recipients use CDCS (48%). Overall, 11% of the waiver recipients are using CDCS.

Figure 2

Nearly half of CAC waiver recipients use CDCS

BI	94% Non-CDCS	6% CDCS
CAC	52%	48%
CADI	91%	9%
DD	85%	15%
Total	89%	11%
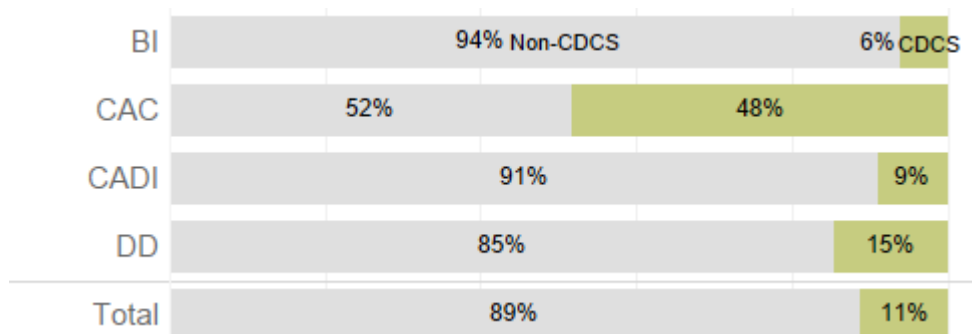
n = 27,808

Across all waivers, 2,951 service recipients are children under age 18 (Figure 3). Adults ages 50 to 64 years old compose the largest group of recipients, due mainly to the high number of individuals in this age group on the CADI waiver.

Children ages 0-17 account for approximately 3,000 (or 11%) of the waiver recipients

		BI	CAC	CADI	DD	Total
Children	0 - 6	2	62	225	156	445
	7 - 17	22	133	1,353	998	2,506
	Total	24	195	1,578	1,154	2,951
Adults	18 - 21	13	36	660	751	1,460
	22 - 34	163	88	2,620	2,713	5,584
	35 - 49	242	38	3,151	2,099	5,530
	50 - 64	373	23	7,893	1,729	10,018
	65+	75	9	1,457	724	2,265
	Total	866	194	15,781	8,016	24,857
Total		890	389	17,359	9,170	27,808

n = 27,808

As displayed below, the proportion of waiver recipients in the 0-17 age group ranges from a low of 3% (BI) to a high of 50% (CAC).

Children comprise half of the CAC waiver group

	Children	Adults
BI	3% Children	97% Adults
CAC	50%	50%
CADI	9%	91%
DD	13%	87%
Total	11%	89%
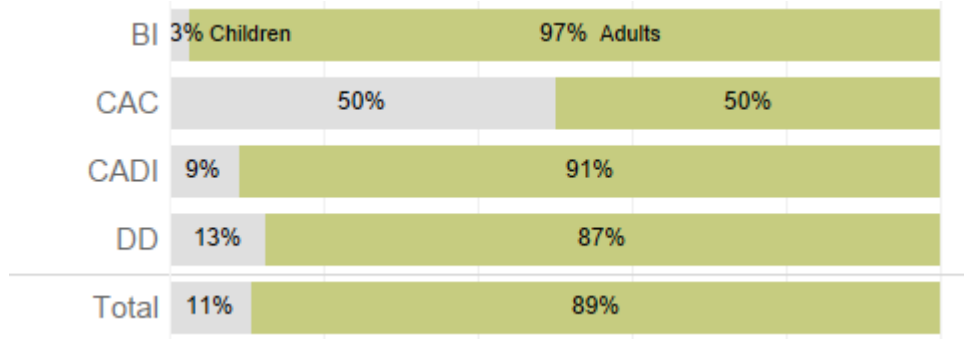
n = 27,808.

While 11% of all service recipients use CDCS, this percentage differs drastically between children and adults (Figure 5). Across all children, 60% use CDCS while 6% of adults use CDCS.

Figure 5

Children and young adults are significantly more likely to be using CDCS than are older adults

		non-CDCS	CDCS
Children	0 - 6	35% non-CDCS	65% CDCS
	7 - 17	41%	59%
Adults	18 - 21	71%	29%
	22 - 34	92%	8%
	35 - 49	97%	3%
	50 - 64	97%	3%
	65+	98%	2%
Total		89%	11%

n = 27,808.

Residence—like age—is typically a significant factor in determining individual budgets. The MnCHOICES data do not currently capture residential setting. For the figure below, we used the residential setting data from the Long-Term Care (LTC) screening document. Further analyses including residence will be considered in Task 2.5.

Figure 6

Across the four waivers, waiver recipients are most likely to live in their own home

|	BI	CAC	CADI	DD	Total
Homeless	5		123	6	134
Institution/boarding care	32	2	484	73	591
Board and lodge	47	2	935	28	1,012
Foster care	448	48	3,291	3,877	7,664
Own home	358	337	12,526	3,816	17,037
Total	890	389	17,359	7,800	26,438

n = 26,438
Note: 1,370 had residence that was unknown, so the totals for residence are less than the overall population.

Across the waiver population, there are slightly more male than female waiver recipients, 52% versus 48%, respectively (Figure 7). Though we did not include CDCS in Figure 7, a slightly higher proportion of males (14%) use CDCS than females (9%) across all waivers.

Figure 7

Females account for one-third of the BI waiver group but slightly over half of the CADI waiver group

	Female	Male
BI	32% Female	68% Male
CAC	42%	58%
CADI	52%	48%
DD	43%	57%
Total	48%	52%
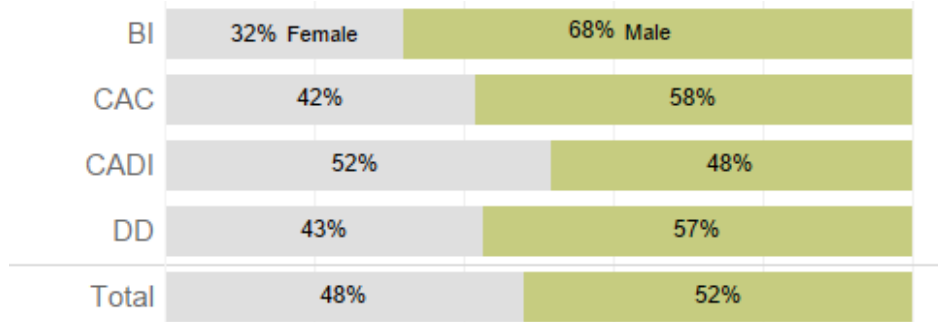
n = 27,808.

The waiver population is predominantly white, as displayed below. Though not included in the figure below, 2% of the waiver population identified as Spanish/Hispanic/Latino.

Figure 8

Across the four waiver groups, most recipients are white

	BI	CAC	CADI	DD	Total
Asian	7	11	511	165	694
Black	109	24	2,701	408	3,242
Native American	45	7	442	169	663
Pacific Islander			13	1	14
White	708	298	12,979	8,059	22,044
Multiracial	6	10	187	74	277
Total	875	350	16,833	8,876	26,934

N=26,934
Note: 874 people had race/ethnicity that was unknown, so the totals for race/ethnicity are less the overall population.

Figure 9

A substantially higher proportion of individuals who identify as multiracial use CDCS (32%) compared to the other race groups

	Non-CDCS	CDCS
Asian	86% Non-CDCS	14% CDCS
Black	93%	7%
Native American	93%	7%
Pacific Islander	93%	7%
White	89%	11%
Multiracial	68%	32%
Total	89%	11%
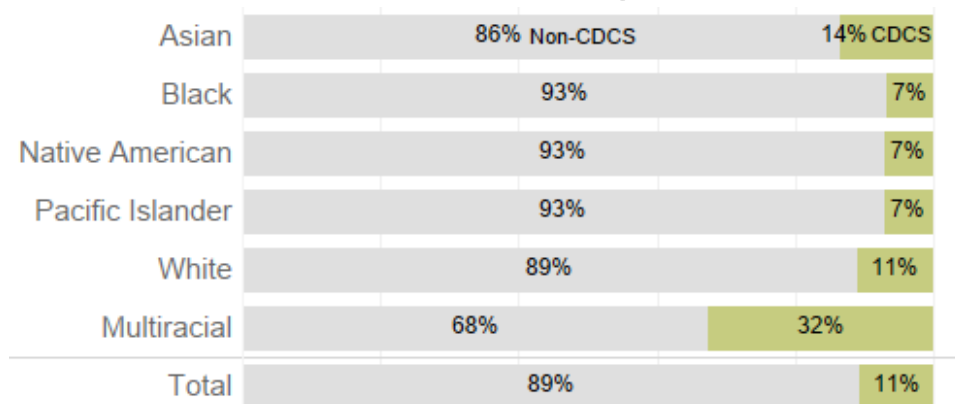
n = 26,934
Note: Multiracial is described as two or more races

Support Need

DHS is interested in pursuing a budget methodology that considers individual support need. Here, we describe the support needs of service recipients across all waivers for adults only (since there are differences in how MnCHOICES handles adults and children). We considered four domains of MnCHOICES for the analysis: Activities of Daily Living (ADLs), Instrumental Activities of Daily Living (IADLs), Health, and Psychosocial since these domains measure support needs that are most likely to impact the budget methodology.

ADLs are defined as the basic tasks carried out throughout the day such as bathing, maintaining personal hygiene and dressing. IADLs are the additional set of life functions necessary for maintaining a person's immediate environment, such as meal preparation, transportation, and housework. The Health domain measures medical support needs such as G-tube feeding and ostomy care, while the Psychosocial domain measures behavioral and emotional support needs (See the Appendix for more information about these domains).

ADLs

MnCHOICES measures the support needed for eight ADLs:

Eating	Bathing	Dressing	Hygiene
Toilet use	Mobility	Positioning	Transfers

We focus our analysis on three consistent items used in MnCHOICES to ask about support need for ADLs: (a) whether the person has difficulty or needs assistance with the task, (b) what type of cueing or supervision is needed, and (c) what type of physical assistance is needed (See the Methods section for details).

Difficulty with or Needs Assistance with ADLs

First, we explored whether the person has difficulty with or needs assistance with each of the eight ADLs.

Figure 10 displays the number of adults who require assistance for each of the ADLs and the percent out of all adults. Of all ADLs, most adults require support for bathing and hygiene (69% and 68%, respectively), while relatively few require support for positioning and transfers (18% and 28%, respectively).

Figure 10

Most adult waiver recipients require assistance with bathing, hygiene, and dressing

ADL	Requires assistance n	Requires assistance % out of all adults
Eating	10,996	44%
Bathing	17,184	69%
Dressing	15,227	61%
Hygiene	16,982	68%
Toilet use	10,221	41%
Mobility	12,335	50%
Positioning	4,393	18%
Transfers	6,874	28%

n = 24,857

Cueing or Supervision and Physical Assistance with ADLs

MnCHOICES asks about "cueing/supervision" and "physical assistance" in two separate questions that illustrate the type of support that people need. Figures 11 through 13 display crosstabulations[1] of these two types of support in three areas: eating, bathing, and dressing, respectively.

Figure 11

Most adults who need any assistance eating need intermittent or constant cueing/supervision and setup/prep or limited physical assistance

Eating - physical assist	Eating - cueing/supervision				
	None	To initiate	Intermittent	Constant	Total
Null			1		1
None	342	689	611	140	1,782
Setup/prep	1,252	1,191	1,412	605	4,460
Limited	453	275	1,483	825	3,036
Extensive	129	30	118	1,440	1,717
Total	2,176	2,185	3,625	3,010	10,996

n = 10,996

Note: 1 individual requires intermittent cueing and supervision but did not respond to the type of physical assistance needed, so that individual is in the "null" row.

While the types of physical and cueing/supervision assistance needed for bathing (Figure 12) are mostly similar, some individuals require limited physical assistance and no cueing or supervision. Others require cueing/supervision assistance to initiate the task but no physical assistance to complete the task.

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[1] A crosstab, or crosstabulation, is a means to combine and summarize data from one or more sources for analysis or reporting. They display the joint distribution of two or more variables in table or matrix

Figure 12

Most adults who need any assistance bathing need constant cueing/supervision and limited or extensive physical assistance

Bathing - Physical assist	Bathing - cueing/supervision				Total
	None	To initiate	Intermittent	Constant	
None	239	2,852	478	171	3,740
Setup/prep	216	1,025	512	194	1,947
Limited	1,097	687	3,143	1,610	6,537
Extensive	401	102	371	4,086	4,960
Grand Total	1,953	4,666	4,504	6,061	17,184

n=17,184

The same pattern described above remains true for dressing (Figure 13).

Figure 13

Most adults who need any assistance dressing need intermittent cueing/supervision and limited physical assistance

Dressing - physical assist	Dressing - cueing/supervision				Total
	None	To initiate	Intermittent	Constant	
None	365	2,137	588	69	3,159
Setup/prep	271	995	587	101	1,954
Limited	1,646	756	3,253	861	6,516
Extensive	415	59	364	2,759	3,597
Grand Total	2,697	3,947	4,792	3,790	15,226

n=15,226
Note: 1 individual's assessment indicated that they required assistance for dressing, but the assessment had nulls for both the cueing and physical assistance items. Therefore, the figure excludes that individual.

While the support needs of individuals vary by ADL, a pattern emerges from the crosstabulations of cueing/supervision and physical assistance across ADLs. Rather than explore these types of support on different dimensions, we sought to meaningfully combine the types of assistance onto one scale that may reduce complexity and allow for greater understanding of support needed across ADLs. We considered the type of assistance needed in relation to its possible impact on an individual budget. While various caveats may exist, we assumed that as physical assistance or cueing/supervision increases, staff time/budget would increase. Therefore, regardless of the nature of the support (cueing/supervision or physical assistance), if the support is physically extensive or requires constant cueing/supervision the support need is higher than limited physical/intermittent cueing which is higher than the support needed for setup/prep or cueing to initiate a task. That is, the amount of attentive staff time necessary to support the person is more important to building a budget methodology than the types of support the staff may provide with a given task.

With this assumption, we measured support need for each ADL—counting the highest amount of attentive staff time between the cueing/supervision item and physical assistance item. Figure 14 displays the decision criteria to combine these two items to create a single support need score for each ADL.

Decision criteria for creating a support need score for further analyses of ADL support needs.

Highest support need type response between **physical assistance** and **cueing/supervision** for each ADL in MnCHOICES	ADL Support Need	
	Score	Value
None and none	0	None
Setup/prep physical assistance or initiate task cueing and supervision	1	Setup/prep
Limited physical assistance or intermittent cueing and supervision	2	Limited/ intermittent
Extensive physical assistance or constant cueing and supervision	3	Extensive/ constant

Figure 15 displays the ADL support need scores for each of the ADLs for all adults.

Support need scores by ADL

ADL	None	Setup/prep	Limited/ intermittent	Extensive/ constant
Eating	14,203 (57%)	3,132 (13%)	4,235 (17%)	3,287 (13%)
Bathing	7,912 (32%)	4,093 (17%)	5,917 (24%)	6,935 (28%)
Dressing	9,996 (40%)	3,403 (14%)	6,830 (27%)	4,628 (19%)
Hygiene	8,027 (32%)	4,457 (18%)	7,514 (30%)	4,859 (20%)
Toilet use	15,218 (62%)	1,085 (4%)	4,607 (19%)	3,947 (16%)
Mobility	14,585 (59%)	1,100 (4%)	5,362 (22%)	3,810 (15%)
Positioning	20,603 (83%)	299 (1%)	1,812 (7%)	2,143 (9%)
Transferring	18,173 (73%)	386 (2%)	2,983 (12%)	3,315 (13%)

n=24,857

ADL Total Support Score

Once we determined a simplified scoring system consistent across each of the eight ADLs, we calculated a sum score by adding individual scores across each of the eight ADL support needs to create an ADL total support score. Prior to calculating this sum score, we examined a correlation matrix for the cueing and supervision items, the physical assistance items, and the ADL support need items to determine whether any items were problematic for inclusion in the sum score. All items were significantly and positively correlated to one another. The magnitude of the correlations range from .24 up to .86, suggesting that further work to refine this measure should occur prior to creating a sum score or using these items for the budget methodology. Given

the direction and significance of all the items, however, we created a sum score of all ADL support need scores—the ADL total support score.

Since the ADL support need scores range from 0 (None) to 3 (Extensive/Constant) and there are eight ADL items, the range of possible ADL total support scores is 0 to 24.

Below is the distribution of ADL total support scores across all adults displayed as a histogram. The biggest group of individuals scored a 0—twice as many as the next biggest group of individuals who scored a 2. Even without including "None," the distribution is non-normal, meaning it does not follow a bell-curve shape. This is not uncommon when considering support need—many individuals have very little or very high support need, and there is not an easily definable "average" support need.

Figure 16

ADL total support need scores from low (0) to high (24)
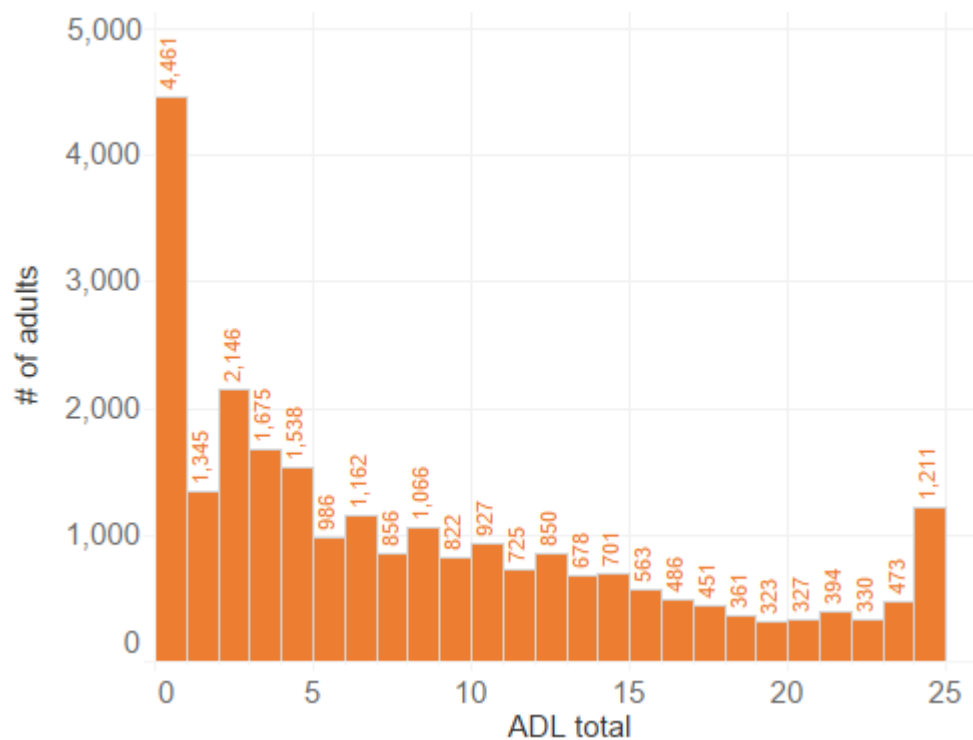
n = 24,857

We discuss further exploration of ADLs across the population in the "Exploring Waiver Participants by Support Need Groups" section.

IADLs

In this section we focus on the IADL support needs in MnCHOICES data. We review six IADLs in MnCHOICES:

Meal prep	Transportation	Housework
Telephone use	Shopping	Finances

We use two consistent items from each of the IADLs: (a) whether the person has difficulty or needs assistance with the task, and (b) the frequency or amount of assistance needed when performing the task. We first examine these items across all IADLs using descriptive statistics. Then, we determine a preliminary solution for examining IADLs holistically.

Needs Assistance with IADLs

First, we explored whether the person has difficulty or needs assistance with each of the six IADLs. The figure below displays the number of adults who require assistance for each of the IADLs and the percent out of all adults.

Figure 17

Almost all adults require support for housework, shopping and meal prep (93%, 91%, and 90%, respectively); less than half require support for telephone use (44%)

IADL	Requires assistance n	Requires assistance % out of all adults
Meal prep	22,268	90%
Transportation	20,629	83%
Housework	23,121	93%
Telephone use	11.054	44%
Shopping	22,665	91%
Finances	20,572	83%

n = 24,857

Amount of Assistance Needed with IADLs

MnCHOICES asks about the intensity of assistance required to perform IADL tasks, with response options that range from "Needs no help or supervision" to "Always or nearly always needs assistance." We coded the responses options from 0 "None" to 3 "Always." Figure 18 displays the IADL support need for each of the IADLs. Since housework has three items and telephone use has two items, there are frequencies for each of these items.

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Figure 18

Support needs by IADL

IADL	None	Sometimes	Often	Always
Meal prep	2,723 (11%)	4,746 (19%)	7,293 (29%)	10,095 (41%)
Transportation	4,584 (18%)	3,601 (15%)	4,148 (17%)	12,524 (50%)
Housework – heavy	1,932 (8%)	3,424 (14%)	6,038 (24%)	13,463 (54%)
Housework – light	2,515 (10%)	6,180 (25%)	7,480 (30%)	8,682 (35%)
Laundry	3,582 (14%)	4,612 (19%)	5,832 (24%)	10,831 (44%)
Phone – Call	13,130 (57%)	3,590 (14%)	2,474 (10%)	4,663 (19%)
Phone – Answer	16,031 (65%)	2,772 (11%)	1,810 (7%)	4,244 (17%)
Shopping	2,255 (9%)	4,176 (17%)	7,257 (29%)	11,169 (45%)
Finances	4,319 (17%)	2,664 (11%)	5,625 (23%)	12,249 (49%)

n = 24,857

IADL Total Support Score

Once we determined a simplified scoring system consistent across each of the IADLs, we calculated a sum score by adding the scores of each of the eight IADL support needs to calculate the IADL total support score.

We examined a correlation matrix for the IADL support need items to determine whether any items were problematic for inclusion in the sum score. The correlations indicated strong positive correlations among most of the items, though finances correlates less than .14 with each housework item. All correlations are statistically significant. Most items have significant, strong, and positive correlations to one another which justifies summing the scores for a preliminary examination of support need for IADLs. Since the multiple housework and telephone items show strong positive correlations with the other items in the same IADL section (housework item correlations range from .76 to .79 and the telephone items correlation is .91), we selected one question for housework and one question for telephone use so that the score would not be skewed by including all of these items (see the Methods section for more detail).

Since the IADL support need scores range from 0 (None) to 3 (Always) and there are six ADL items, the range of possible IADL total support scores is 0 to 18. Below is the distribution of IADL total scores across all adults displayed as a histogram. The mode is 18, which is the highest possible score. As with the ADLs, this distribution is non-normal but approaches normality besides the highest score.

Figure 19

Distribution of IADL total support needs
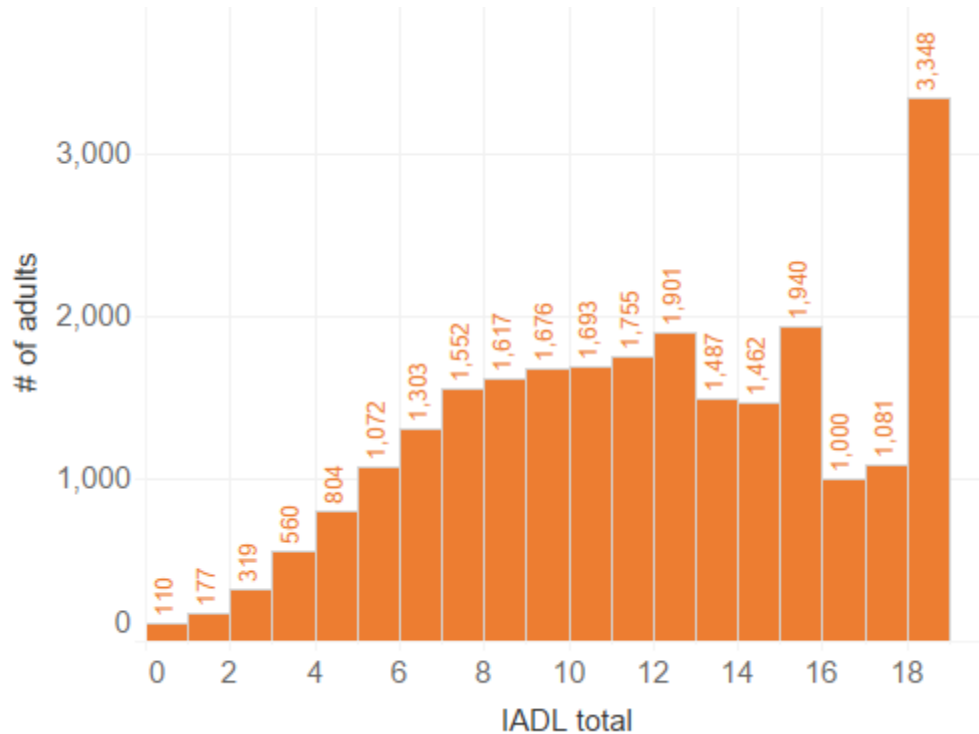
n = 24,857

We discuss further exploration of IADLs across the population in the "Exploring Waiver Participants by Support Need Groups" section.

Health Support Needs

MnCHOICES asks about the supports needed for maintaining health. Typically, health needs are considered in addition to ADLs and IADLs as they likely impact the budget since support needed for medical conditions often require intensive support and may be administered by caregivers with specialized training. While much of the Health section in MnCHOICES may be useful for planning purposes, we focus on support needed rather than diagnoses or types of medical or health issues for this analysis.

Needs Assistance with Treatments, Monitoring, and Therapies

The assessment collects detailed information about medical treatments, whether the person needs assistance, and who provides the assistance (See the Appendix for more information about MnCHOICES). Specifically, the section on treatment, monitoring, and therapies was used for our analyses on health support needs.

Figure 20 below contains all treatments, monitoring, and therapies listed in MnCHOICES and the number of adults who require them. The last column contains the percent of adults who require that support daily. No single treatment, monitoring, or therapy is required by more than 6% of adults on a daily basis, and most are required by less than 2%.

Figure 20

No single treatment, monitoring, or therapy is required by more than 6% of adults on a daily basis, and most are required by less than 2%

Treatments and Monitoring		Performed daily by support person	
		n	% of all adults
Cardiac	Blood Pressure	602	2%
	Cardioverter-defibrillator	12	<1%
	Pacemaker	17	<1%
	Vital signs	380	2%
	Weight	192	1%
Elimination	Bladder	138	1%
	Bowel program	0	0%
	Enemas	47	<1%
	Sterile catheter change	0	0%
	Clean self-catheter	154	1%
	Intermittent catheter	70	<1%
	Colostomy	104	<1%
	Ileostomy	52	<1%
	Scheduled toileting program	215	1%
Feeding and nutrition	GJtube	242	1%
	Gastrostomy	267	1%
	Jejunostomy	28	<1%
	Nasogastric	2	<1%
	Oral stimulation program	36	<1%
	Other swallowing disorders	306	1%
	Special diet management	371	2%
Neurological	Seizure Assist	715	3%
	Apnea	59	<1%
	CPAP	450	2%
	Nebulizer	329	1%
	Oxygen therapy	475	2%
	Pulse Oximeter	196	1%
Bronchial Drainage	Postural drainage	63	<1%
	Respiratory vest	159	1%
	Bi-Level	167	1%
Suctioning	Nasopharyngeal	14	<1%
	Oral	138	1%
	Trach care	117	1%
	Trach change	9	<1%
Ventilator	Ventilator	107	<1%
Vascular	Blood Glucose	625	3%
	Protime/INR	0	0%
	Other blood draw	26	<1%
	Dialysis	16	<1%
IV Therapy	Blood transfusions	0	0%
	Chemotherapy	0	0%
	Medications	0	0%
	Total parenteral nutrition	15	<1%
Wounds	Burn	12	<1%

Treatments and Monitoring		Performed daily by support person	
		n	% of all adults
	Dressing changes	406	2%
	Lesions	297	1%
	Open surgical site	38	<1%
	Ulcer	102	<1%
	Wound vac	39	<1%
Skin Care	Application ointment	1,595	6%
	Dry bandage change	179	1%
	Pressure relieving device	293	1%
	Turning/repositioning program	626	3%
Other	Dialectical behavior therapy	10	<1%
	Electroconvulsive therapy	0	0%
	Input/output measurements	103	<1%
	Isolation precautions	22	<1%
	Telemedicine	4	<1%
	Other therapy	129	1%
Therapies	Alternative therapies	22	<1%
	Occupational therapy	206	1%
	Pain management	86	<1%
	Physical therapy	471	2%
	Range of motion	786	3%
	Respiratory therapy	118	1%
	Speech therapy	88	<1%

Health total support score

To approximate a measure of medical support need for the purposes of this analysis we tallied the number of daily support needs performed by someone other than the individual. If a person has a medical need, they are assigned a "1" for the need, then the 1's are summed for a health total support score. The figure below displays the criteria for scoring the health section items for analysis to generate the health total support score.

Figure 21

Decision criteria for creating a support need score for further analyses of health support needs

Treatment, monitoring, or therapy frequency:	Treatment, monitoring, or therapy performed by:	Health Support Need	
		score	value
Never	n/a	0	None
any	self	0	None
less than daily	someone other than self	0	None
daily	someone other than self	1	Daily support needed

A health total support score is possible in the range of 0 (No daily support needed from someone other than the individual) to 66 (all types of daily support needed from someone other than the individual) though no adult has a health total support score higher than 22. The figure below displays the distribution of the health total support

score across adults. The majority have a 0, or no daily health support need (78%). Thirteen percent have at least one daily extraordinary health need that is performed by someone other than them self.

Most adults do not have extraordinary health support needs.
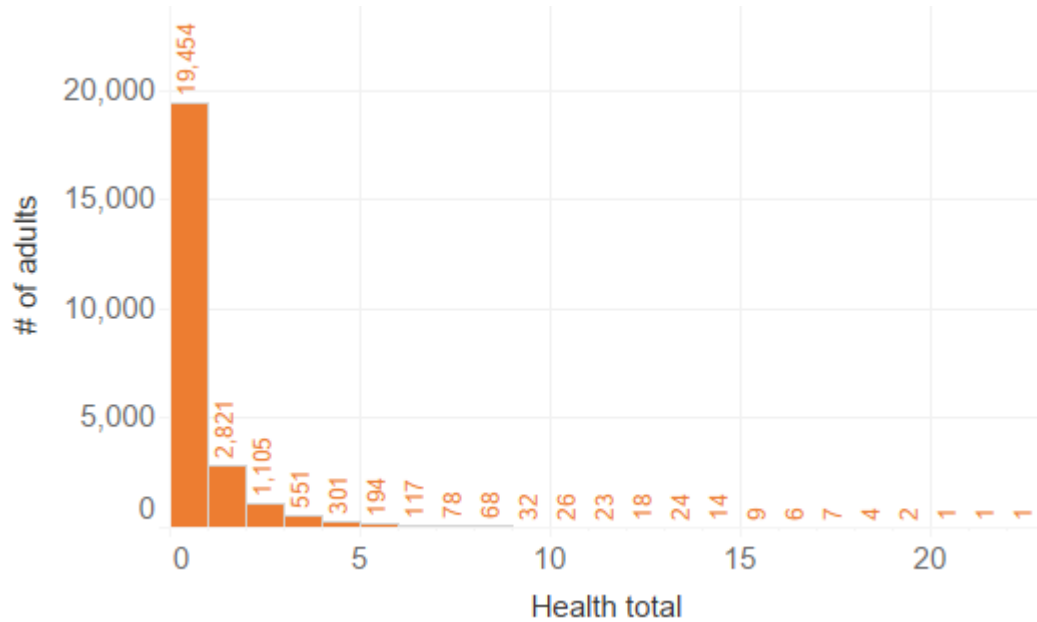
n = 24,857

We discuss further exploration of Health support needs across the population and compared to ADL and IADL support needs in the "Exploring Waiver Participants by Support Need Groups" section.

Psychosocial Support Needs

As with support needs for health and medical conditions, psychosocial behaviors often increase support need in ways that contribute to the need for higher individual budgets, since supporting these needs may require intensive staffing patterns or staff availability and supervision. Therefore, we considered psychosocial behaviors separate from ADLs, IADLs, and health supports.

Support needed for psychosocial behaviors

MnCHOICES asks about 18 challenging behaviors. We focused our analysis on two items: (a) frequency of needed support and (b) type of support needed.

Figure 23 displays the number and percent of adults who fall into the three intensities of psychosocial behavior in each area measured. Note that the majority of adults have no or less than weekly interventions for all the psychosocial behaviors.

Figure 23

Most adults do not have weekly challenging behaviors

Challenging behavior	None or less than weekly	Weekly+, responds to intervention	Weekly+, resists intervention
Injurious to self	21,283 (85%)	1,924 (8%)	1,750 (7%)
Physically aggressive	22,114 (89%)	1,162 (5%)	1,581 (6%)
Verbally aggressive	17,177 (69%)	4,133 (17%)	3,547 (14%)
Socially unacceptable behavior	20,400 (82%)	2,564 (10%)	1,893 (8%)
Property destruction	23,075 (93%)	776 (3%)	1,006 (4%)
Wandering	22,933 (92%)	1,031 (4%)	893 (4%)
Legal involvement	24,369 (98%)	222 (1%)	266 (1%)
Pica	24,293 (98%)	314 (1%)	250 (1%)
Difficulties regulation emotion	15,790 (64%)	5,582 (23%)	3,485 (14%)
Susceptibility to victimization	14,546 (59%)	7,589 (31%)	2,722 (11%)
Withdrawal	16,119 (65%)	6,040 (24%)	2698 (11%)
Agitation	16,539 (67%)	5,023 (20%)	3,295 (13%)
Impulsivity	18,597 (75%)	3,77 (15%)	2,483 (10%)
Intrusiveness	21,437 (86%)	2,148 (9%)	1,272 (5%)
Injury to others	23,680 (95%)	484 (2%)	693 (3%)
Anxiety	12,901 (52%)	8,468 (34%)	3,488 (14%)
Psychotic behaviors	21,422 (86%)	1,905 (8%)	1,530 (6%)
Manic behaviors	23,523 (95%)	724 (3%)	610 (3%)

n = 24,857

Psychosocial total support score

As with the health scores, the measure for psychosocial behaviors do not measure the intensity of the support needed, but instead list different challenging behaviors. To determine a range from low to high challenging behaviors, we computed a sum score—the psychosocial total support score. Since there is a meaningful differentiation between whether the person resists an intervention or not, we consider this in the sum score. That is, we treat responding to intervention differently than resisting intervention. We calculate a score using the criteria displayed in the figure below. Each adult gets a score of 0, 1, or 2 for each item depending on their responses.

Figure 24

Decision criteria for creating a support need score for further analyses of psychosocial support needs

Challenging behavior frequency	Intervention response	Psychosocial Support Need score	value
Never or less than weekly	n/a	0	None
weekly or more frequently	responds to intervention	1	weekly+, responds to intervention
weekly or more frequently	resists intervention	2	weekly+, resists intervention

Since MnCHOICES asks about 18 psychosocial behaviors and each has a response from 0 to 2, the summed psychosocial scores may range from 0 to 36. The highest psychosocial score across all adults is 34. Figure 25 displays the distribution of psychosocial total support scores in adults. While the most frequent score was 0 (no weekly challenging behaviors), the majority of adults have at least a score of 1, indicating that most adults have at least one weekly challenging behavior that requires intervention.

Figure 25

Most adults have at least one challenging behavior, requiring intervention at least weekly.
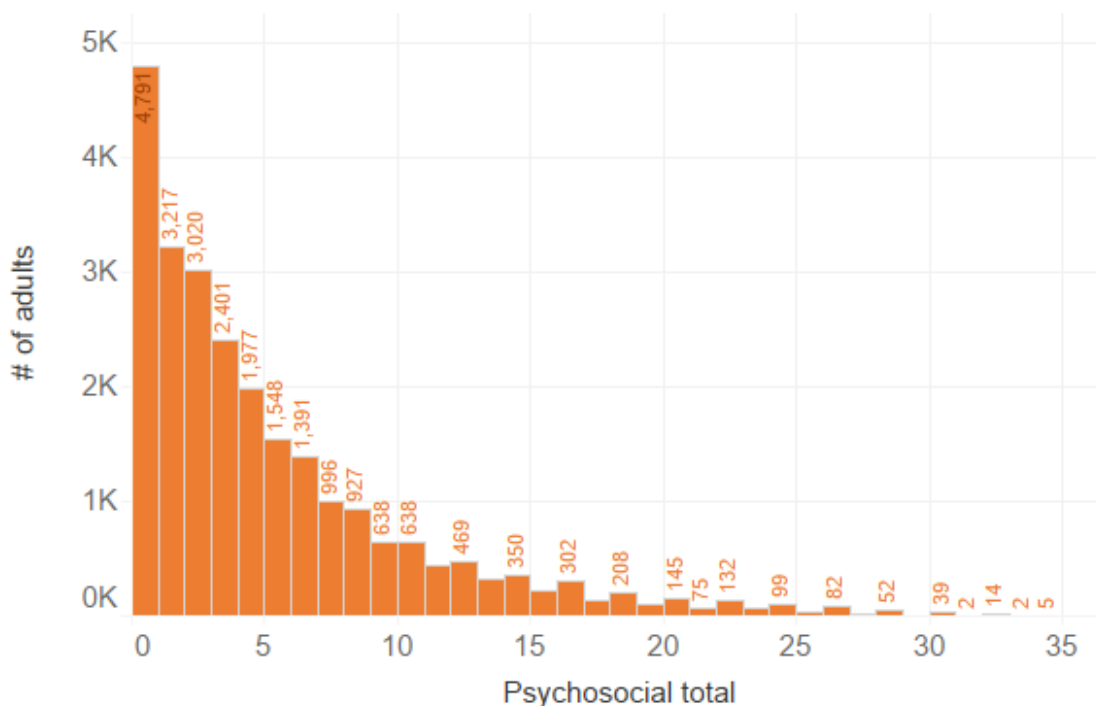
n = 24,857

We discuss further exploration of Psychosocial support needs across the population and compared to ADL and IADL support needs in the "Exploring Waiver Participants by Support Need Groups" section.

Exploring Waiver Participants by Support Need Groups

In this section we begin to explore grouping individuals by support needs. This exploration provides insight into the support needs of the population and differences among subgroups of the population. These groupings may be illustrative when considering the differences in how services are used or how service recipients access CDCS.

Determining Support Need Groups

Our review of research into methodologies used in other states as part of Task 2.2 for this project showed that level methodologies are common. Level methodologies are those budget methodologies that result in groups of individuals sharing the same budget amount, and are developed by first sorting individuals into groups. These groups often range from low to high, with corresponding budgets from low to high. For the purpose of this analysis we created rudimentary groups to explore variances in support need across the waiver population.

Although there are limitations in this approach (see the "Limitations" section), these groups allow for a comprehensive view of MnCHOICES data and offer an anchor point for later comparisons between groups. Since these are preliminary, we caution against drawing firm conclusions as additional analyses are necessary to test their fit for use. The following analyses provide a high-level view of the waiver population that will later be refined once an approach and methodology are selected.

General support need groups

To form preliminary groups of support need, we first considered the sum scores created across the four domains. Since we created the ADL and IADL total support scores by summing the items with scales from 0 to 3, the total score is a rough approximation of none, low, moderate, and high scores for ADLs and IADLs. We took all the ADL and IADL total support scores (excluding none) and divided them into thirds. Figure 26 below displays these groupings for ADL total scores into none, low, moderate, and high. When grouped in this way, most adults are in the low ADL support need group (43%).

Figure 26

Most adults (43%) fall into the "Low" ADL group.

ADL support needs	ADL total	
None	0	4,461 (18%)
	Total	4,461 (18%)
Low	1	1,345 (5%)
	2	2,146 (9%)
	3	1,675 (7%)
	4	1,538 (6%)
	5	986 (4%)
	6	1,162 (5%)
	7	856 (3%)
	8	1,066 (4%)
	Total	10,774 (43%)
Moderate	9	822 (3%)
	10	927 (4%)
	11	725 (3%)
	12	850 (3%)
	13	678 (3%)
	14	701 (3%)
	15	563 (2%)
	16	486 (2%)
	Total	5,752 (23%)
High	17	451 (2%)
	18	361 (1%)
	19	323 (1%)
	20	327 (1%)
	21	394 (2%)
	22	330 (1%)
	23	473 (2%)
	24	1,211 (5%)
	Total	3,870 (16%)
Total		24,857 (100%)

n = 24,857

We then applied these same groupings to IADLs—taking all of the IADL total support scores, excluding none, and dividing the remainder into thirds to create none, low, moderate, and high support groups. The figure below displays these IADL groups. Nearly half of adults are in the high support need group (42%). This contrasts with the ADL scores, where most adults were in the low group.

Figure 27

In contrast to ADL scores, most adults (42%) fall into the "High" IADL group.

IADL support needs	IADL total	
None	0	110 (0%)
	Total	110 (0%)
Low	1	177 (1%)
	2	319 (1%)
	3	560 (2%)
	4	804 (3%)
	5	1,072 (4%)
	6	1,303 (5%)
	Total	4,235 (17%)
Moderate	7	1,552 (6%)
	8	1,617 (7%)
	9	1,676 (7%)
	10	1,693 (7%)
	11	1,755 (7%)
	12	1,901 (8%)
	Total	10,194 (41%)
High	13	1,487 (6%)
	14	1,462 (6%)
	15	1,940 (8%)
	16	1,000 (4%)
	17	1,081 (4%)
	18	3,348 (13%)
	Total	10,318 (42%)
Total		24,857 (100%)

n = 24,857

Next we explored how the ADL and IADL groupings related to one another in effort to form a general support need group assignment for everyone. We did this by reviewing a crosstab of the ADLs and IADLs. Figure 28 displays this crosstabulation of the ADL support need groups by the IADL support need groups. Most individuals fall into the low ADL and moderate IADL cell.

Figure 28

When cross-tabulated, most adults fall into the "Low" ADL/" Moderate" IADL group

ADL support needs	IADL support needs				
	None	Low	Moderate	High	Total
None	84	2,142	1,954	281	4,461
Low	20	1,854	5,607	3,293	10,774
Moderate	3	209	1,957	3,583	5,752
High	3	30	676	3,161	3,870
Total	110	4,235	10,194	10,318	24,857

n = 24,857

Note: The darkness of the color indicates the frequency within the cell, with smaller numbers lighter and larger numbers darker.

In many established measures of support need (i.e., Supports Intensity Scale, Inventory for Client and Agency Planning), scales of ADL and IADL support needs are combined into one general measure—if they are even distinguished in the measure at all. For this analysis, however, we consider support need across various populations in which need may manifest differently. For example, individuals with support need due to challenges related to mental health may have little to no support need for ADLs but substantial need for support for IADLs. If we simply summed ADL and IADL total support need scores, the total may not accurately reflect actual support needs.

Instead, we decided to move an individual into the group that matches the higher of the two ADL and IADL groups for which they scored. For example, a person with low ADLs and high IADLs would be placed in the high group, and a person with moderate ADLs and low IADLs would be placed in the moderate group. We called this the general support need group. Since IADL totals were, for the most part, higher than ADL scores, this decision essentially groups individuals from low to high based on their IADLs except when ADLs are higher. Figure 29 demonstrates the same crosstab of ADLs and IADLs with the addition of the general support need grouping to illustrate these placements.

Figure 29

When general support need is factored into the cross-tabulation, most adults fall into the "High" support need group (11,027).

General Support Need	ADL support needs	IADL support needs None	Low	Moderate	High	Total
None	None	84				84
	Total	84				84
Low	None		2,142			2,142
	Low	20	1,854			1,874
	Total	20	3,996			4,016
Moderate	None			1,954		1,954
	Low			5,607		5,607
	Moderate	3	209	1,957		2,169
	Total	3	209	9,518		9,730
High	None				281	281
	Low				3,293	3,293
	Moderate				3,583	3,583
	High	3	30	676	3,161	3,870
	Total	3	30	676	10,318	11,027
Total		110	4,235	10,194	10,318	24,857

n=24,857

Note: The darkness of the color indicates the frequency within the cell, with smaller numbers lighter and larger numbers darker.

After applying these decisions, the biggest group of adults are assigned to the high general support needs group.

Extraordinary health support need

Extraordinary medical needs may contribute substantially to support cost. Therefore, states that implement level budget methodologies often place individuals with extraordinary medical support need in a separate group to account for the different types of support they require. For purposes of this report, we elected to similarly assign individuals with extraordinary support need to their own group.

The health total support score tallies the number of treatments, monitoring, and therapies an individual requires assistance with on a daily basis. Considering how such a tally impacts budget, we may consider a score of 2 (at least 2 daily medical support needs that require support) to merit extraordinary health support need. Figure 30 displays how this cut-off creates a group designated "extraordinary health support need"; 10% of adults are assigned to this group.

Figure 30

10% of adults have extraordinary health support needs

Health groups	Health total	
No extraordinary health support	0	19,454 (78%)
	1	2,821 (11%)
	Total	22,275 (90%)
Extraordinary health support need	2	1,105 (4%)
	3	551 (2%)
	4	301 (1%)
	5	194 (1%)
	6	117 (0%)
	7	78 (0%)
	8	68 (0%)
	9	32 (0%)
	10	26 (0%)
	11	23 (0%)
	12	18 (0%)
	13	24 (0%)
	14	14 (0%)
	15	9 (0%)
	16	6 (0%)
	17	7 (0%)
	18	4 (0%)
	19	2 (0%)
	20	1 (0%)
	21	1 (0%)
	22	1 (0%)
	Total	2,582 (10%)
Total		24,857 (100%)

n = 24,857

Extraordinary psychosocial support need

As with health, psychosocial behaviors often impact an individual budget and are sometimes separated from general support need since they may impose significant costs. We chose to distinguish support needs in the same way as extraordinary health needs by creating a distinct group for individuals with extraordinary psychosocial needs.

For determining extraordinary health support need, we consider any daily support performed by someone other than the participant themself. The psychosocial total support score, however, considers challenging behaviors that occur on a weekly basis. If just one challenging behavior occurred weekly, it may not merit extraordinary support. Therefore, we determined that the cut-off for extraordinary psychosocial need must be higher than 2, which may indicate just one weekly behavioral challenge. We finally decided to use the cutoff score of 8 or above to indicate that an individual has extraordinary support need since it would mean that the individual had four weekly challenging behaviors that they resisted or that they responded to intervention

for up eight challenging behaviors per week. Figure 31 displays how the cut-off is used to designate the "extraordinary psychosocial support need" group; 22% of adults are placed in the extraordinary psychosocial support need group.

Figure 31

Nearly a quarter of adults have extraordinary psychosocial support needs

Psychosocial groups	Psychosocial total	
No/low psychosocial support	0	4,791 (19%)
	1	3,217 (13%)
	2	3,020 (12%)
	3	2,401 (10%)
	4	1,977 (8%)
	5	1,548 (6%)
	6	1,391 (6%)
	7	996 (4%)
	Total	19,341 (78%)
Extraordinary psychosocial support need	8	927 (4%)
	9	638 (3%)
	10	638 (3%)
	11	444 (2%)
	12	469 (2%)
	13	318 (1%)
	14	350 (1%)
	15	217 (1%)
	16	302 (1%)
	17	140 (1%)
	18	208 (1%)
	19	97 (0%)
	20	145 (1%)
	21	75 (0%)
	22	132 (1%)
	23	61 (0%)
	24	99 (0%)
	25	34 (0%)
	26	82 (0%)
	27	20 (0%)
	28	52 (0%)
	29	6 (0%)
	30	39 (0%)
	31	2 (0%)
	32	14 (0%)
	33	2 (0%)
	34	5 (0%)
	Total	5,516 (22%)
Grand Total		24,857 (100%)

n = 24,857

Next, we examine all dimensions of support need together to view the final groups to which individuals are assigned for the purposes of this analysis. We assigned each individual to one support need group.

Analysis support need groups

To complete the following analyses, we assigned individuals into 1 of 5 support need groups.

1. **Low** General Support Need
2. **Moderate** General Support Need
3. **High** General Support Need
4. **Extraordinary Health** Support Need
5. **Extraordinary Psychosocial** Support Need

As reiterated throughout this report, the groups offered here are for preliminary analysis only. We have not used these methods to create finalized support levels in the past, and do not recommend implementing these support levels without extensive analysis confirming them. With this caveat, we offer a preliminary glimpse into the support needs of the individuals in the BI, CAC, CADI, and DD waivers in Minnesota.

Figure 32 displays a grouping framework that considers individuals to be in one of three general support need groups: low, moderate, and high. If an individual is flagged as having extraordinary health or psychosocial needs, they are placed in one of those two groups. If a person has both extraordinary health and extraordinary psychosocial support needs, they are placed in the extraordinary psychosocial support need group, the support for which is likely to result in a higher budget due to greater staffing needs than the extraordinary health group. Only 530 adults with MnCHOICES data (2%) flag for both extraordinary health and extraordinary psychosocial.

The total number of adults assigned to a group is reduced due to scores too low to be included. Seventy-six adults (less than 1%) could not be assigned to a group because their ADL and IADL totals were both 0 and they did not flag for extraordinary health or psychosocial groups. This may be a result of the items included in this preliminary analysis framework, the result of assessment error, or an unknown issue with the data. Since the source of the issue is unknown, we excluded these 76 individuals from the groups and remaining analyses that include the groups. Of these 76 individuals, one is on the DD waiver and 75 are on the CADI waiver.

Figure 32

According to preliminary analysis, most adults (30%) fall into the "Moderate Support Need" group

Support Need Group	n	%
Low	3,531	14%
Moderate	7,529	30%
High	6,153	25%
Extraordinary Health	2,052	8%
Extraordinary Psychosocial	5,516	22%
Total	24,781	100%

n = 24,781

Support Need Groups Across Waivers

Since the BI, CAC, CADI, and DD waivers serve different populations, support need manifests differently across the waivers. Figure 33 displays the number of individuals in each of the preliminary support need groups by waiver; Figure 34 shows the percent of each group by waiver.

Figure 33

Support need groups by waiver

Support Need Group	BI	CAC	CADI	DD	Total
Low	75	1	2,860	595	3,531
Moderate	181		5,659	1,689	7,529
High	181	6	3,211	2,755	6,153
Extraordinary Health	74	170	1,226	582	2,052
Extraordinary Psychosocial	355	17	2,750	2,394	5,516
Total	866	194	15,706	8,015	24,781

n = 24,781

Figure 34

Individuals served on the CAC waiver are overwhelmingly in the extraordinary health support need group, which is consistent with the population needs
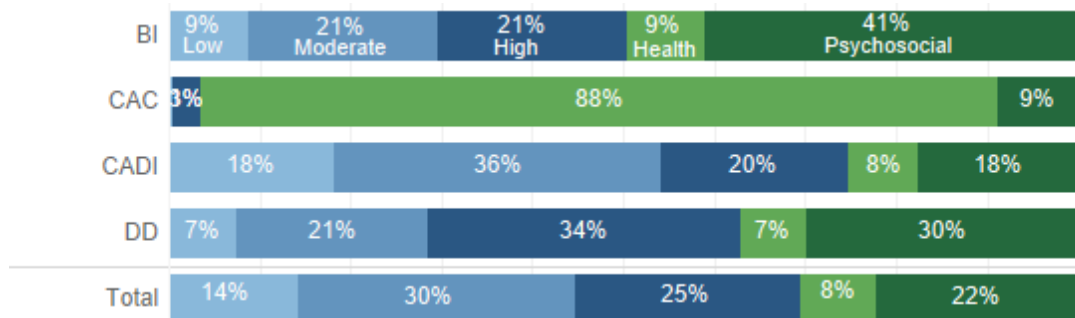
	Low	Moderate	High	Health	Psychosocial
BI	9%	21%	21%	9%	41%
CAC	3%		88%		9%
CADI	18%	36%	20%	8%	18%
DD	7%	21%	34%	7%	30%
Total	14%	30%	25%	8%	22%

n = 24,781

Note: "Health" indicates extraordinary health support need group and "Psychosocial" indicates extraordinary psychosocial support need group.

For more information on how ADL and IADL totals differ by waiver, Figure 35 presents box and whisker plots[2] of median scores by waiver. This figure shows how the IADL scores are pulling up the ADL scores, as well as the difference in the scores by waiver.

IADL scores are often higher than ADLs pushing indivdiuals into higher general support need groups.
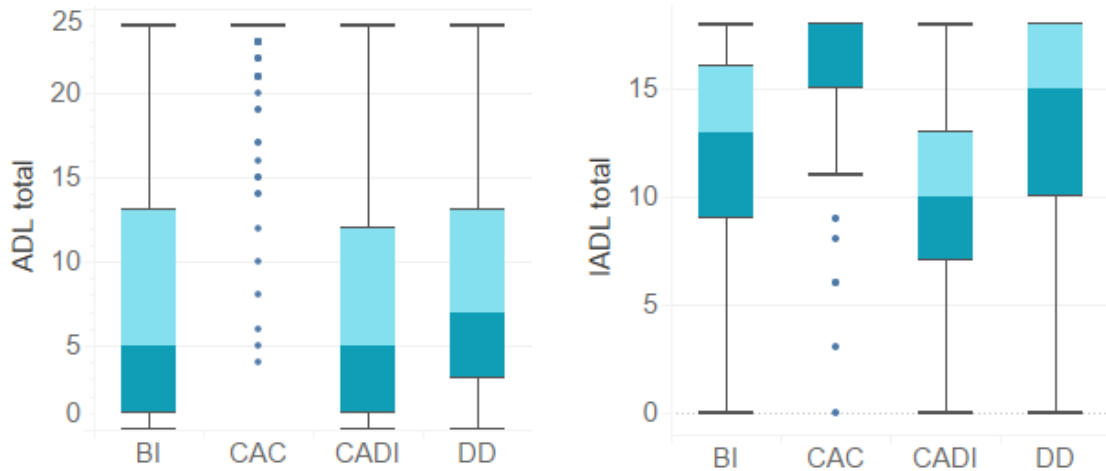
Support Need Groups using CDCS

Figure 36 shows a comparison of support need between service recipients who use CDCS and those who do not. The moderate and high support need groups make up the biggest groups of non-CDCS service recipients, while the extraordinary psychosocial support need group comprises the biggest group of CDCS users.

Frequency of adults in each support need group by CDCS

| Support Need Group	Non-CDCS	CDCS	Total
Low	3,455	76	3,531
Moderate	7,298	231	7,529
High	5,821	332	6,153
Extraordinary Health	1,908	144	2,052
Extraordinary Psychosocial	4,928	588	5,516
Total	23,410	1,371	24,781

n = 24,781

Figure 37 shows the percent of service recipients by non-CDCS and CDCS. Despite only comprising 22% of the total population, individuals in the extraordinary psychosocial support need group make up 43% of individuals who use CDCS.

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[2] Box and whisker plots show quartiles with the upper and lower quartiles in the "boxes," the median marked by the intersection where they meet, and the whiskers markng the highest and lowest values.

Figure 37

The extraordinary psychosocial support need group represents the greatest proportion of CDCS users
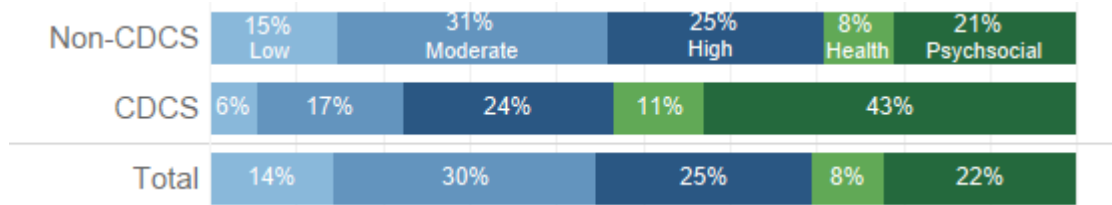
n = 24,781

Note: "Health" indicates extraordinary health support need group and "Psychosocial" indicates extraordinary psychosocial support need group.

Support Need Group and Service Recipient Demographics

Figure 38 shows the frequency of support need group by age group for adults.

Figure 38

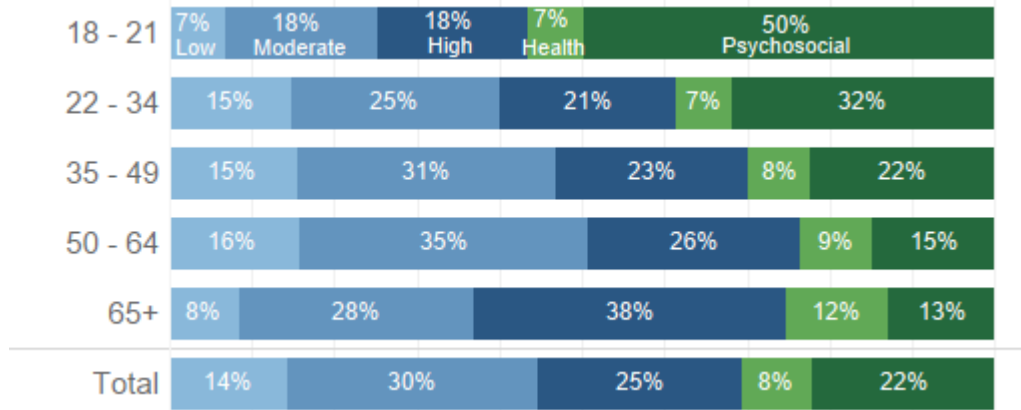### Frequency of adults in each support need group by age group

Support Need Group	18 - 21	22 - 34	35 - 49	50 - 64	65+	Total
Low	100	823	854	1,564	190	3,531
Moderate	266	1,399	1,729	3,491	644	7,529
High	267	1,190	1,278	2,560	858	6,153
Extraordinary Health	99	388	425	865	275	2,052
Extraordinary Psychosocial	726	1,767	1,232	1,496	295	5,516
Total	1,458	5,567	5,518	9,976	2,262	24,781

n = 24,781

Figure 39 shows the percentage of adults in each support need group by age group. The percent of individuals in higher support need groups other than psychosocial support need is higher as age increases, suggesting that general support need and extraordinary health support need increase with age.

Figure 39

Half of the 18-21 age group are in the extraordinary psychosocial support need group, which diminishes by age, dropping to 13% of the 65+ grouping

n = 24,781

Figure 40 below displays the frequency of adults in each support need group by residential setting.

Figure 40

Frequency of adults in each support need group by residential setting
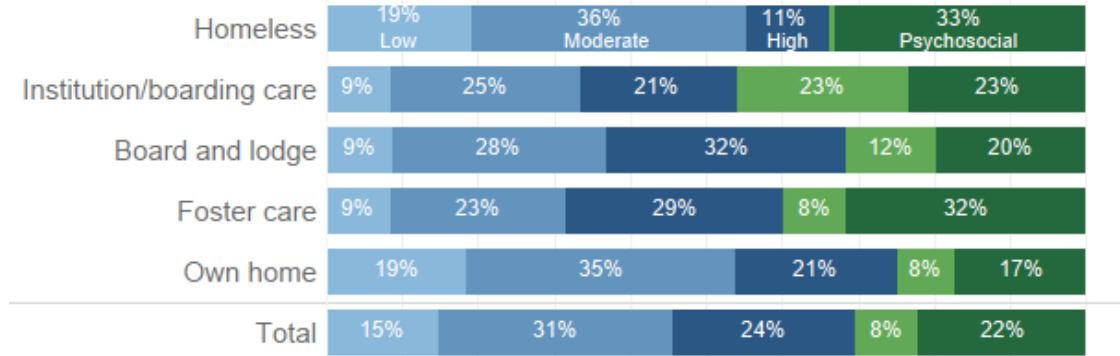
Support Need Group	Homeless	Institution/ boarding care	Board and lodge	Foster care	Own home	Total
Low	25	49	88	638	2,651	3,451
Moderate	47	142	281	1,717	5,064	7,251
High	14	118	318	2,150	3,028	5,628
Extraordinary Health	1	129	120	618	1,079	1,947
Extraordinary Psychosocial	43	134	197	2,356	2,482	5,212
Total	130	572	1,004	7,479	14,304	23,489

n = 23,489

Figure 41 displays the percentage of adults in each support need group by residential setting. As indicated in the "Limitations" section, the data on residential setting is from the LTC Screening document and may not be as accurate or up-to-date as the rest of the variables considered for analysis.

Figure 41

Most individuals living in their own home have low or moderate support needs; individuals living in foster care tend to have higher support needs

	Low	Moderate	High	Health	Psychosocial
Homeless	19%	36%	11%		33%
Institution/boarding care	9%	25%	21%	23%	23%
Board and lodge	9%	28%	32%	12%	20%
Foster care	9%	23%	29%	8%	32%
Own home	19%	35%	21%	8%	17%
Total	15%	31%	24%	8%	22%

n = 23,489

Note: The total number is reduced by 1,292 individual for whom we did not have residence. 1% of homeless individuals are in the extraordinary health support need group, but the percent was too small to label above. Extraordinary health support need group is indicated by the light green color.

Figure 42 below displays the frequency of adults in each support need group by sex.

Figure 42

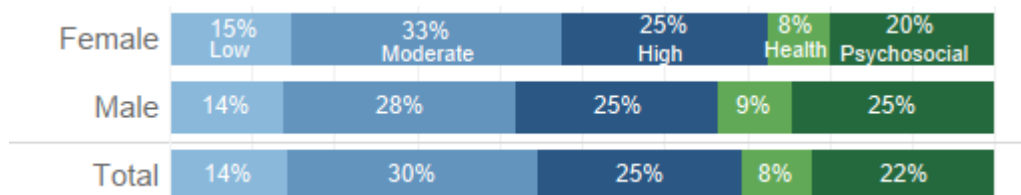**Frequency of adults in each support need group by sex**

Support Need Group	Female	Male	Total
Low	1,804	1,727	3,531
Moderate	4,023	3,506	7,529
High	3,074	3,079	6,153
Extraordinary Health	929	1,123	2,052
Extraordinary Psychosocial	2,452	3,064	5,516
Total	12,282	12,499	24,781

n = 24,781

Figure 43 displays the percentage of each support need group by sex. The percentages are generally similar between females and males, but a higher proportion of males are in the extraordinary psychosocial support need group than females. Females are more often assigned to the moderate general support needs group.

Figure 43

Males represent a slightly higher proportion of the extraordinary psychosocial support need group

	Low	Moderate	High	Health	Psychosocial
Female	15%	33%	25%	8%	20%
Male	14%	28%	25%	9%	25%
Total	14%	30%	25%	8%	22%

n = 24,781

Figure 44 displays the frequency of adults in each support need group by race/ethnicity.

Figure 44

## Frequency of adults in each support need group by race/ethnicity

Support Need Group	Asian	Black	Native American	Pacific Islander	White	Multiracial	Total
Low	46	344	88	3	2,945	34	3,460
Moderate	132	1,143	199	4	5,858	51	7,387
High	254	740	127	2	4,901	18	6,042
Extraordinary Health	38	177	62		1,722	5	2,004
Extraordinary Psychosoc..	151	542	132	4	4,522	40	5,391
Total	621	2,946	608	13	19,948	148	24,284

n = 24,781

Figure 45 portrays the percentages by race/ethnicity. While support need groups seem to differ across race/ethnicities, we note that all non-white categories of race have much smaller numbers of individuals. Therefore, the percentages for all non-white races/ethnicities may not be representative of the population if more individuals from those race/ethnicities were included in the analysis.

Figure 45

A greater percentage of Asian adults are in the high support need group; individuals who identified as multiracial or Pacific Islander tended to be in the lower support need groups
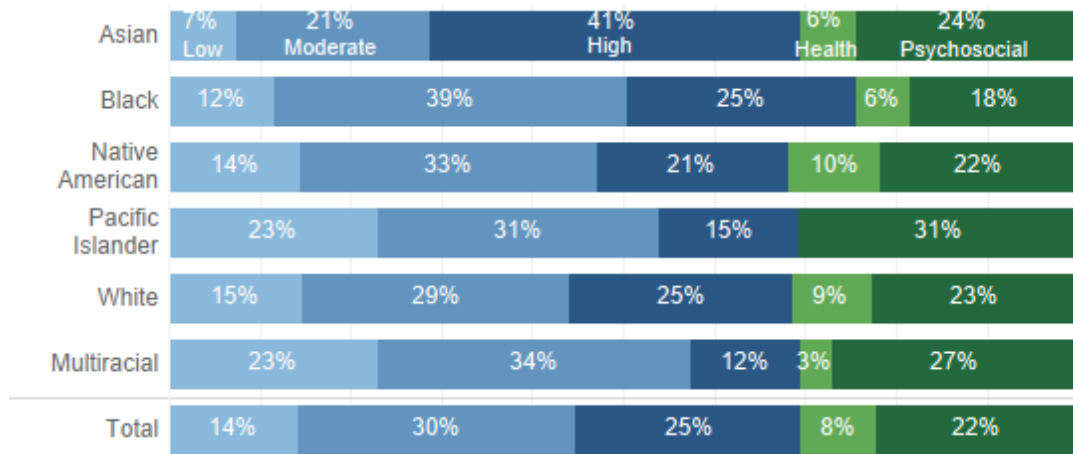
n = 24,284
Note: The total number is reduced by 497 due to indivdiuals for whom we did not have race data.

These support need groups may be used in further analysis as the budget methodology is developed to better understand the population and to understand meaningful differences that are likely to impact the budget methodology that is selected. These preliminary analyses should not be interpreted too broadly as additional testing is needed to confirm their adequacy in describing the population. We have used them here to provide a high-level overview to facilitate greater understanding of the considerations that should be made in the budget methodology.

CONSIDERATIONS

Minnesota has been on an extended journey to develop an individual budget methodology. There are many elements that DHS has put into place that are conducive to the development of these budgets. DHS has:

- Established **principles and intentions** that are consistent with person-centered principles;

- Expanded the **services available** to offer a broad range of access to individuals across the four waivers;

- Established a **rates framework** through the Disability Waiver Rate System (DWRS) for agency-provided service; and

- Is considering an **individual budget methodology** that will best meet the needs of individuals served among the four waivers.

Next Steps

With the research conducted to date, including the analysis presented here, Minnesota can begin to make decisions about the approach that will work best for Minnesotans with disabilities. The following are the necessary next steps to facilitate such a decision.

Analyze service utilization and spending across the four identified waivers. This analysis will provide key insights into current service use patterns to inform the development of a budget methodology.

This analysis will help us to understand differences across waivers and by support need to consider how to best develop the budget.

Decide on individual budget approach with the Methodology Review Team (MRT). Now that we have established an understanding of how the MnCHOICES tool is applied to individuals with disabilities and how it can be used to understand a range of support needs, we can begin to decide how to approach the task of developing an individual budget methodology. We will work in close coordination with DHS to determine which approach is best.

Perform statistical analysis and apply the model once decided. Once the MRT agrees on the approach, we will use statistical analysis to confirm the model fit and to adjust the methodology as appropriate. When the final model has been established, it will be applied to all individuals receiving services so that a record review can be used to understand how well it works for some of them, and so that an impact analysis can be completed to determine the fiscal effects of implementing the chosen model.

BACKGROUND AND APPROACH

MnCHOICES Background

MnCHOICES was developed in 2007 by HCBS Strategies.[3] It was developed to replace the Developmental Disabilities Screening, Long-Term Care Consultation, and Personal Care Assistance Assessment,[4] and to better the assessment process.[5] MnCHOICES is intended to provide greater consistency in eligibility determinations across programs, streamline support plans across programs, determine needs for support planning, and provide for the evaluation of individual outcomes. Implementation of the assessment began in 2014 and continues today. DHS uses the MnCHOICES assessment across each of these four waivers.

- **Brain Injury (BI) Waiver**: For people under the age of 65 years with a traumatic or acquired brain injury who need the level of care provided in a nursing facility or neurobehavioral hospital

- **Community Alternative Care (CAC) Waiver**: For people under the age of 65 years who are chronically ill or medically fragile and need the level of care provided at a hospital

- **Community Access for Disability Inclusion (CADI) Waiver**: For people under the age of 65 years who need the level of care provided in a nursing facility

- **Developmental Disabilities (DD) Waiver**: For people with developmental disabilities or a related condition who need the level of care provided at an intermediate care facility for people with developmental disabilities (ICF/DD)

MnCHOICES is a "comprehensive assessment and support planning web-based application." The assessment is composed of 14 domains:

- Person Information
- Quality of Life
- ADLS
- IADLs
- Health
- Psychosocial
- Memory and Cognition
- Sensory and Communication
- Safety/Self-Preservation
- Employment, Volunteering, and Training
- Housing and Environment
- Self-Direction
- Caregiver
- Assessor Conclusions

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[3] Information on MnCHOICES, if not otherwise referenced, is from personal communication via project meetings on January 25, 2018 and February 27, 2018 with staff from Minnesota DHS, MnCHOICES training, or gained from review of the MnCHOICES assessment instrument and data.

[4] https://edocs.dhs.state.mn.us/lfserver/Public/DHS-6477-ENG

[5] http://www.hcbsstrategies.com/clients_state.php?id=11

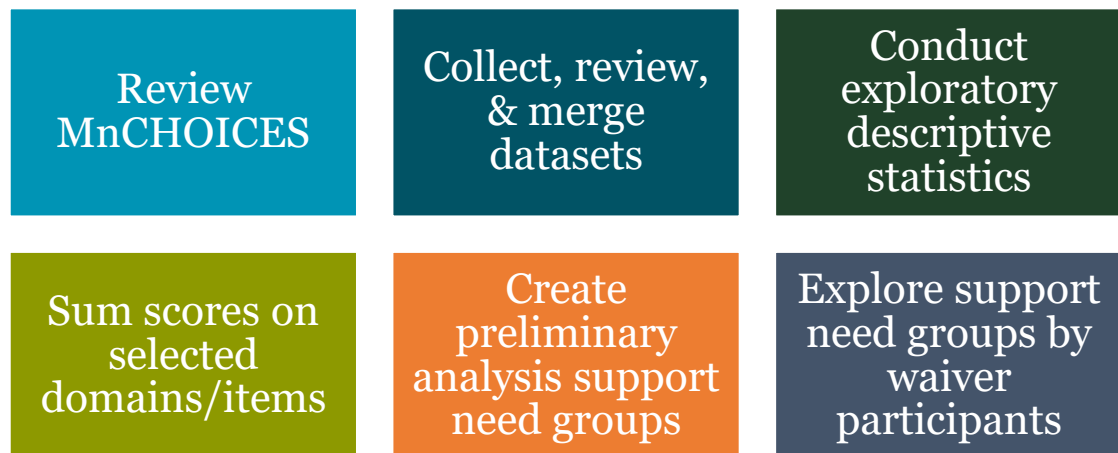We provide a brief description of each domain in the Appendix of this report.

Minnesota requires all care coordinators to be certified assessors before they can administer MnCHOICES, with training and certification having been established by statute. Some qualifications of assessors include a bachelor's degree in one of several helping professions and experience in home and community-based services.[6] Assessors must be recertified every three years.

The assessment itself is conducted in a face-to-face interview with the person being assessed, their legal representative, and other individuals that the person being assessed choses. These respondents, however, cannot be service providers or other individuals with a financial interest in services to be provided to the individual being assessed. The assessment is meant to occur in a conversational manner and is sometimes completed after assessors leave the face-to-face interview.

Eventually the assessment will be used to inform a budget methodology. We reviewed MnCHOICES data from 27,808 individuals to inform this analysis.

Methods

This section describes our analysis methodology. We included data from individuals with completed MnCHOICES assessments as of January 2018 when the data were extracted. We restricted the analysis to individuals who were in the recipient file and who were assigned to one of the four waivers. We did not include individuals who were assigned to more than one waiver in this analysis (161 individuals). We only completed analysis on individuals who had an assessment in the MnCHOICES file that we received, and we included only the most recent assessment for everyone on the recipient file. In total there were 27,808 individuals with assessments that were included in the analysis. The steps we took for producing the findings in this report are:

Review MnCHOICES	Collect, review, & merge datasets	Conduct exploratory descriptive statistics
Sum scores on selected domains/items	Create preliminary analysis support need groups	Explore support need groups by waiver participants

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[6] https://mn.gov/dhs/partners-and-providers/news-initiatives-reports-workgroups/long-term-services-and-supports/mnchoices/certified-assessor-training/

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Review MnCHOICES

First, we reviewed the MnCHOICES assessment to better understand its contents. We had two onsite meetings with the MnCHOICES team and collected the assessment and supporting materials. We also participated in Steps 1 through 3 trainings on the DHS Trainlink site.[7] We met several times to review the domains of the assessment and to discuss the questions and responses. The section above, "MnCHOICES Background," summarizes what we learned about the assessment.

Collect, Review, & Merge Datasets

Next, we collected, reviewed, and merged several datasets. DHS provided us with:

- A recipient file, containing all current recipients of the four waivers considered in this project
- MnCHOICES data from the start of implementation to when the data was extracted in January 2018.
- LTC Screening Document data from Fiscal Year (FY) 2013 to when the data was extracting in January 2018.
- DD Screening Document data from FY 2013 to when the data was extracted in January 2018.
- Claims data from FY 2013-2017

We first recoded the MnCHOICES, LTC, and DD Datasets so that we could analyze them using SPSS. We reviewed each dataset to understand its contents and then merged all the datasets.

Conduct Exploratory Descriptive Statistics

Next, we explored the frequencies of select variables. We wanted to get a better sense of the individuals who are served by the four waivers, so we chose variables that could provide a better picture of the population. We were particularly interested in:

- The waiver under which that each individual is served
- Whether the individual used Consumer Directed CDCS or not
- Demographics of the individuals served, including race, age, sex
- Responses to select items in the ADL, IADL, Health, and Psychosocial domains

We explored the datasets and conducted exploratory descriptive statistics, including frequencies, on the variables.

To review support need, we focused only on adults—since support need changes from youth to adulthood and is accounted for differently in MnCHOICES by age group. We anticipate conducting future analyses with different age cohorts once we determined

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[7] Trainings are accessed here:
http://pathlore.dhs.mn.gov/stc/dsd/psciis.dll?linkid=97714&mainmenu=DSD&top_frame=1

the best approach to exploring these cohorts within the budget methodology selected. Adults are defined as individuals age 18 and older.

Sum Scores on Selected Domains/Items

We chose items from the ADL, IADL, Health, and Psychosocial domains to represent support need. The items we chose were those that had consistent response options.

The ADL domain has sections on:

- Eating
- Bathing
- Dressing
- Personal Hygiene/Grooming
- Toilet Use/Continence Support
- Mobility—Walking and Wheeling
- Positioning
- Transfers

We selected the first three questions in each section for analysis. The first question asks whether the person has difficulty in the area covered in the section, and the response options are "No," "Yes," "Sometimes," and "Chose not to answer." The second question concerns whether the individual needs cueing or supervision in the area, and the response options include "None," "To initiate the task," "Intermittently during the task," and "Constantly throughout the task." The third question concerns the physical assistance that the individual needs in the area, and the response options are "None," "Setup/Prep," "Limited," and "Extensive/Total Dependence."

Less than 1% of each of the items had responses of "Chose not to answer" or "No." Since this analysis is preliminary, "Chose not to answer" and missing responses are counted as "no" since they do not provide sufficient information about the needs of the person. Each of the eight ADLs had responses of "Sometimes" for less than 6% of service recipients, which did not correspond meaningfully to less frequency or less intensive types of support than "Yes" responses. For these reasons, we treated sometimes as "Yes." Given these decisions, the responses to ADL items were narrowed to only "Yes" or "No" across the population.

Using decision criteria, we scored each of the items on the selected questions and ran frequency counts. We also summed the scores for all the ADLs, forming a ADL total support score. The scores were correlated, so we included all the ADLs. As the budget methodology development is underway, we will give greater attention to the final items to be included and the ways in which they will be used to ensure their utility in the methodology, such as conducting factor analysis.

The IADL Domain has sections on:
- Medication Management
- Meal Preparation
- Transportation
- Housework

- Telephone Use
- Shopping
- Finances

Each section (except Medication Management) has at least one question about whether the person needs help to complete the task, with response options of "Needs no help or supervision," "Sometimes needs assistance or occasional supervision," "Often needs assistance or constant supervision," and "Always or nearly always needs assistance." Medication Management does not ask the about the level of support needed for medication management in a manner consistent with all other IADLs. Additionally, the Health section of MnCHOICES covers support need for medication management. For this reason, we excluded medication management in this analysis of IADLs.

As with ADLs, less than 1% of each of the items had responses of "Chose not to answer" or "No." We treated "Chose not to answer" or missing responses as "No" since they do not provide sufficient information about the needs of the person. Later, we may consider more complex options for dealing with such responses, such as statistical imputation or assessor training. Each of the six IADLs had responses of "Sometimes" for less than 6% of recipients. We also found that "Sometimes" did not correspond meaningfully to less frequency of support than "Yes" responses, so we treated "Sometimes" as "Yes."

Note that Housework has three questions and Telephone Use has two questions to capture this information. We considered several options to deal with these additional questions. First, all items could be used together for the sum score. However, the sum would then consider three types of housework and two types of telephone use while only one item for the other IADLs, artificially weighing housework and telephone use higher than the rest of the IADLs. Another option was to take the highest support need of the three housework options to score for housework and the highest support need of the two telephone use options to score for telephone use. However, this option does not consider the different needs each item may be measuring which may form a greater complete picture of the overarching construct. There are more complex statistical analyses that would also determine the proper handling of individual items to measure a construct, such as using factor analysis. These may be considered when the budget methodology is developed.

Since this analysis is a preliminary look meant to show a general picture of the support needs of the waiver populations, we opted to instead simply select one of the housework items to use and one of the telephone use items to use to represent the overarching IADL. For housework, we selected "heavy housework," since it presumably is the most difficult and requires the most assistance. For telephone use, we selected "calling on the phone," since it is presumably more difficult and requires more assistance than just answering the phone. With these decisions, we moved forward with six items representing six IADLs. We scored each of the items on the selected questions and summed the scores to create an IADL total support score. We ran frequency counts.

The Health Domain has a section on Treatment and Monitoring that covers 63 unique conditions in each of the following areas:

- Cardiac
- Elimination
- Feeding and Nutrition
- Neurological
- Respiratory
- Vascular
- Wounds
- Skin Care
- Other

For each of the 63 conditions counted for each area, information is captured to determine who provides the assistance and the frequency of assistance. We considered the basis that support was needed and counted supports that were required at least once per week. We only counted items that could not be completed by the individual themself, since the requirement of support outside of an individual's own capacities is meaningfully associated with a need for a higher budget. In this section we used decision criteria to score the items and summed the scores to create a Health total support needs score. We then ran frequency counts.

Finally, the Psychosocial Domain has a section on Behavior/Emotions/Symptoms that includes the following need areas:

- Injurious to self
- Aggressive towards others, physical
- Aggressive towards others, verbal/gestural
- Socially unacceptable behavior
- Property destruction
- Wandering/Elopement
- Legal involvement
- PICA
- Difficulties regulating emotions
- Susceptibility to victimization
- Withdrawal
- Agitation
- Impulsivity
- Intrusiveness
- Injury to others
- Anxiety
- Psychotic behaviors
- Manic behaviors

Each area contains a question to capture information about the intervention needed with response options of "Requires no intervention," "Needs intervention in the form of cues—responds to cues," "Needs redirection—responds to redirection," "Needs behavior management or instruction—resists redirection/intervention," and "Needs behavior management or instruction—physically resists intervention." When considering the impact such support need may have on an individual budget, support

staff time and attention would increase by the response to the intervention by the service recipient. That is, a behavior that may be redirected or avoided with cues without resistance require less support than if the intervention is met with resistance. Therefore, we consider the levels of each challenging behavior as none, responds to intervention, and resists intervention by grouping the response options together to differential responding and resisting.

Another question is the frequency of the intervention with response options of "None," "Less than weekly," "One time per week," "Two times per week," "Three times per week," "Four or more times per week," and "Daily." Challenging behaviors may be serious and require additional support if the frequency is less than daily and perhaps even less than weekly. The assessment, however, does not specify frequency beyond weekly that may be meaningful—less than weekly may mean three times a month or once a year. Therefore, we considered challenging psychosocial behaviors those that occur at least weekly, since they would most meaningfully impact the individual budget. We group together any "none" or "less than weekly" responses.

Create Preliminary Analysis Support Need Groups

After exploring individual variables in the MnCHOICES data, we created rudimentary support groups for preliminary analysis. To develop these groups, we used the summed scores for both the ADL and IADL total support scores. We divided each total support score, that was not 0, into thirds and labeled the groups low, moderate, and high. We completed a crosstab of the intersection between low, moderate, and high ADLs and IADLs. We then selected the higher of an individual's low, moderate, or high designation and assigned each individual to the higher of the ADL/IADL group. For example, if someone was assigned to low ADL and high IADL, they would be assigned to the high group. We called these the general support need groups. The groups were labeled low, moderate, and high general support need groups.

Next, we considered the Health domain. We used the Health total support score to establish a cutoff. We chose to establish the cutoff at a score of two or more, since this score would indicate that the individual requires at least daily support for one or more medical needs that could not be completed by themselves. We called this group the Extraordinary Health Support Need Group.

We completed the same process for the Psychosocial domain, using the Psychosocial total support need score to establish a cutoff. We established the cutoff for this group at eight, since this score indicated that an individual required support for at least four challenging behaviors per week, and that they resisted that support, or that they required support for eight challenging behaviors per week and they complied with the support. We called this group the Extraordinary Psychosocial Support Need Group. We treated these groups separately from the general support need groups since individuals assigned to these groups might have support needs that require specialized or intensive staffing patterns that impact their budget. Further individuals who were assigned to either of the Extraordinary groups were not assigned to a

general support need group, since their more pressing needs related to health or psychosocial issues.

Explore Support Need Groups by Waiver Participants

Once we developed preliminary analysis support need groups, we explored how the waiver populations fell into the groups. We used descriptive statistics to explore the support need groups by waiver. Then, we explored CDCS and other demographics by support need group to get a rudimentary sense of the support needs of the population.

Limitations

The limitations of our analysis of MnCHOICES are generally related to validity and reliability of the assessment, the content/format of assessment items and sections, and the inclusion criteria of the analysis.

MnCHOICES Validity and Reliability

The MnCHOICES tool has not undergone validity or reliability testing. Such testing is imperative for assessments that are to be used to determine funding amounts. This analysis considers data from the instrument, regardless of its psychometric properties. Similarly, the assessment is meant to be conversational—not all questions are asked, and the assessment information is often entered after the interview. As a result, questions may be mis-entered for individuals to whom they apply, or errant responses entered. MnCHOICES assessors are expected to make judgements regarding several sections of the assessment, though the standard for making these determinations are not objective.

MnCHOICES 2.0, a next generation of the assessment, is currently in development and is expected to be complete this year, which may remove pressure to conduct extensive testing on the current assessment. However, if the current MnCHOICES assessment will be used to link to a budget methodology, the current assessment should undergo testing for validity and reliability to confirm its adequacy for a methodology. We recommend that MnCHOICES 2.0 is also tested for validity and reliability prior to implementation as a tool for calculating individual budgets.

In a similar vein, we chose to show support groups to provide a simplified summative look at support need rather than consider support need by individual items. However, these groups should not be considered final since they lack statistical testing. We made several assumptions about how to combine, score items, and established groups and cutoffs. The support need groups were establishing relying on specific domains and only certain questions on the assessment. We chose the items, developed the scoring system, and merged domains to create groups. Though we used logical reasoning to develop these, the groups are by no means comprehensive. These assumptions were made without confirming their statistical soundness. If any of these

decisions will later inform the budget methodology that is applied, they will need to be testested to assure their adequacy in informing the support need construct.

Given that all of the support need sections result in mostly "none" (ADLs, health, somewhat for psychosocial) or "all" (IADLs), there may be floor and ceiling effects occuring with the measurement. It appears as though people are answering in the extremes (e.g., none or always). For the extraordinary needs measures, this fits our understanding of those needs with other assessments: people tend to have extraordinary need or don't. For ADLs a floor effect may be due to the variety of populations served. Some individuals may not have needs in the specific areas questioned. A ceiling effect for IADLs, however, may be due to the instrument, assessors, or assessor process that skews answers, since we would expect everyone served to have needs in one general support area. Another area for possible consideration in MnCHOICES 2.0 may be to consider response options in MnCHOICES and the breadth of information they cover. Statistical approaches may account for these floor and ceiling effects, but a preferred and more accurate approach to dealing with these scoring issues is to ensure that the items are validly measuring support need.

Lastly, as we recoded and cleaned the dataset, we noted a very small number of inconsistencies that may be of concern regarding the validity of the data. For example, all the items we used in the ADL and IADL sections are radio options which imply one response only per item. However, some items included more than one selection per individual. The occurrence of this was exceptionally small (less than 1% of the dataset), therefore we decided to recode all such instances to the higher support need of the two or more responses. If this is inconsistent with how the MnCHOICES database should work or inconsistent with how assessors should answer items, we will explore this further.

Content and Format of MnCHOICES Items and Sections

Since we selected only specific domains and items, much of the assessment is not used. The MnCHOICES assessment is a wide-ranging assessment that can be used for a variety of purposes. To develop support groups, only a number of items are needed. As with the groups, the domains and items selected should not be considered complete. More work is needed to ensure that the appropriate domains and items are included. Any budget methodology, however, will impose restrictions on what can be used from this comprehensive assessment.

To exemplify this limitation, 76 individuals did not have any support needs for the items we included for ADLs, IADLs, Health, and Psychosocial. As these individuals receive services on the waiver, they presumably do have some sort of support need that is not captured by the included items. Further exploration of how to capture support need across all individuals is necessary.

Additionally, despite the thoroughness of many of the sections, not all dimensions of support need are measured in most of the sections. Other valid and reliable measures

of support need (e.g., SIS, ICAP) measure the frequency, duration, and type/intensity of support for each task. While the ADL and IADL sections measure the frequency of support, the duration of support is not measured. Further, ADLs measure the type of support and IADLs measure the intensity of support. For the Health domain, frequency is measured, but not duration or type of support. Lastly, for the Psychosocial domain, frequency is measured, and intensity is questioned but not measured on a scale. While you may want MnCHOICES to operationalize support need in a way, we recommend considering how MnCHOICES 2.0 may expand the consistency of items and provide a greater depth of information that may be more useful in the budget methodology.

Lastly, the available data on residential setting are from the LTC screening document, which may not have accurate/up-to-date information. Further, the categories for housing in these data do not always reflect differentiations that meaningfully impact budget. For example, "own home" does not indicate whether a person lives with family or independently. We are exploring ways of further identifying residential setting from claims data, but we recommend adding meaningful categories to this question in MnCHOICES 2.0.

Analysis Inclusion Criteria

Lastly, our inclusion criteria included only individuals with MnCHOICES data who were flagged as served by one waiver. We could only provide analysis on the assessments that were completed. Since not everyone who will eventually receive an assessment has an assessment included in the data that we analyzed, some individuals are not represented. The number of completed assessments and the range of individuals that they cover (by waiver type, living setting, CDCS, and demographics) however, offer a well-rounded sample from which to draw conclusions as the findings section in this report demonstrate.

Additionally, we only analyzed data from adults for the preliminary support groups. This is because different response patterns are used for children, making the assessment less comparable across age groups. Though work can be done to develop a comparable grouping, we chose to focus on adults only for this purpose. After we agree with DHS on the approach to pursue, we will determine how best to include children in the methodology.

Appendix: MnCHOICES Domains and Descriptions

Person Information
This domain is used at the time people first contact DHS to collect needed information about the referral. It includes information about the reasons for the call, demographics including race/ethnicity, lead agency information including county of residence, and county of financial responsibility, decision-making authority, and guardianship, information about insurance, OBRA levels for Developmental Disabilities and Mental Illness, and concludes with referrals and goals.

Quality of Life
This domain is used to determine what is important to the person. It includes information about the person's routines and preferences, strengths, relationships, traditions and rituals, future plans, and the support needed in each area. It concludes with referrals and goals.

ADLs
This domain is used to assess the persons support needs with activities of daily living and includes assessments of: ▪ Eating ▪ Bathing ▪ Dressing ▪ Personal Hygiene/Grooming ▪ Toilet Use/Continence Support ▪ Mobility—Walking and Wheeling ▪ Positioning ▪ Transfers For each area, the individual is assessed on whether they need support, the assistance that they need, challenges with providing the assistance, strengths of the individual, and preferences of the individual, support instructions, training needed, and adaptive equipment needed. The domain concludes with referrals and goals.

IADLs
This domain is used to assess the persons support needs with instrumental activities of daily living and includes assessments of: ▪ Medication Management ▪ Meal Preparation ▪ Transportation ▪ Housework ▪ Telephone Use ▪ Shopping ▪ Finances For each area, the individual is assessed on whether they need support, the assistance that they need, challenges with providing the assistance, strengths of the individual, and preferences of the individual,

support instructions, training needed, and adaptive equipment needed in some IADLs. The domain concludes with referrals and goals.

Health

This domain is used to collect information about the person's health conditions, medications, risks, treatments and therapies. It includes information pertaining to general health (e.g., allergies, weight, recent exams); has a HELPS brain injury screen; logs medications; logs diagnoses (e.g., cancer, Parkinson's disease, pregnancy); includes information about treatment and monitoring in a number of areas (e.g., suctioning, wound care, CPAP); logs recent therapies; includes assessments of feet, pain, and sleep; and includes information pertaining to referrals and goals.

Psychosocial

This domain is used to collect information about behaviors, emotions, and addictions. It includes information pertaining to:

- Injurious to self
- Aggressive towards others, physical
- Aggressive towards others, verbal/gestural
- Socially unacceptable behavior
- Property destruction
- Wandering/elopement
- Legal involvement
- PICA
- Difficulties regulating emotions
- Susceptibility to victimization
- Withdrawal
- Agitation
- Impulsivity
- Intrusiveness
- Injury to others
- Anxiety
- Psychotic Behaviors
- Manic Behaviors

For each of these areas, there is information about the specific behavior, the impact of the behavior, intervention needed, the frequency the intervention is needed, whether an intervention plan is in place, and in one area (manic behaviors) information about whether the individual is being diverted from commitment. It

This domain also includes a depression screen, a geriatric depression scale, a pediatric symptom checklist, a suicide screen, and information pertaining to alcohol or substance abuse or gambling. Finally, it concludes with information pertaining to referrals and goals.

Memory and Cognition

This domain is used to collect information about dementia, developmental disabilities, brain injury, and other conditions that affect memory and cognition. It includes information pertaining to functional memory and cognition including a Modified Rancho Los Amigos Level of Cognitive Functioning, a mental status evaluation, and concludes with referrals and goals.

Sensory and Communication

This domain is used to collect information about vision, hearing, sensory functioning, and ability to communicate. It includes information pertaining to vision, specific vision issues, and assistive devices needed to support vision; hearing, specific hearing issues, and assistive devices needed to support hearing; functional communication, sensory information, supports needed for sensory or communication issues, and concludes with referrals and goals.

Safety/Self Preservation

This domain is used to collect information about personal safety and particular vulnerabilities that impact an individual's self-preservation. It concludes with referrals and goals.

Employment, Volunteering and Training

This domain is used to collect information about work experience and interests. It includes information about employment, including current employment status and satisfaction with current status, current volunteer activities and satisfaction with current activities, current education/training and satisfaction with education/training. It also includes barriers, supports needed, and concludes with referrals and goals.

Housing and Environment

This domain is used to collect information about where the person lives, to note concerns about the living setting, and to document any referrals or goals.

Self-Direction

This domain is used to collect information about the person's ability to self-direct. It is used to provide information about different self-directing opportunities, and to document assessor conclusions about the person's ability to self-direct. It concludes with referrals and goals.

Caregiver

This domain is used to collect information about caregivers who support the person, their relationship, and the type of car that they provide. It includes a caregiver interview to gather specific details about the care provided, concerns of the caregiver, issues the caregiver is experiencing, and concludes with referrals and goals.

Assessor Conclusions

This domain is used to document conclusions drawn by the assessor including those pertaining to housing type, certain choices and service options, general impressions of the person's functioning, and program and waiver information.