



# The Hilltop Institute

*analysis to advance the health of vulnerable populations*

## Medicaid Long-Term Services and Supports in Maryland:

FY 2012 to FY 2016  
Volume 2

### The Brain Injury Waiver A Chart Book

October 6, 2017  
**Abridged Version**

*Prepared for the Maryland Department of Health*



**UMBC**  
AN HONORS UNIVERSITY IN MARYLAND

## TABLE OF CONTENTS

<b>Chapter 1. Maryland Medicaid Brain Injury Waiver Overview.....</b>	<b>3</b>
Chart Book Organization	
Data Sources	
Key Findings	
<b>Chapter 2. Brain Injury Waiver Participants.....</b>	<b>7</b>
Enrollment and Persons Served	
Demographics	
Waiver Length of Stay	
<b>Chapter 3. Brain Injury Waiver Medicaid Expenditures and Service Utilization .....</b>	<b>16</b>
Per Member Per Month Medicaid Expenditures for Participants	
Utilization by Dual-Eligibility Status	
Pre-Post Waiver Enrollment Expenditures	
Service Utilization	
<b>List of Figures .....</b>	<b>26</b>

# **Chapter 1. Maryland Medicaid Brain Injury Waiver Overview**

## Chapter 1. Maryland Medicaid Brain Injury Waiver Overview

The *Medicaid Long-Term Services and Supports in Maryland Chart Book, Volume 2, The Brain Injury Waiver*, is the second in a series that explores service utilization and expenditures for Medicaid-funded long-term services and supports in Maryland.

This chart book provides information about Maryland Medicaid participants who received services through the Brain Injury Waiver in fiscal years (FYs) 2012 through 2016. The Brain Injury Waiver, which became effective on July 1, 2003, provides services to individuals aged 22 through 64 years with a brain injury diagnosis who require a specialty hospital or nursing facility level of care. Individuals must have experienced the brain injury after the age of 17 years and reside in an approved inpatient setting (e.g., state-owned and -operated nursing facility or chronic hospital, or specialty hospital). Funded waiver slots are requested on an annual basis, and there is no enrollment cap for eligible individuals who meet the Money Follows the Person program criteria.

The Brain Injury Waiver is authorized under §1915(c) of the Social Security Act and approved by the federal Centers for Medicare and Medicaid Services. It is operated by the Maryland Behavioral Health Administration with oversight by Maryland's Office of Health Services, Division of Community Long Term Care (OHS/DCLTC).

Waiver services covered under the Brain Injury Waiver include residential habilitation, day habilitation, supported employment, individual support services, case management, and medical day care. Waiver participants receive full Medicaid benefits and are entitled to receive other services under the Maryland Medicaid State Plan.

# Chapter 1. Maryland Medicaid Brain Injury Waiver Overview *continued*

## Chart Book Organization

The data in this chart book are presented in two sections.

- **Waiver Participants:** This section includes data on the number of Brain Injury Waiver participants with breakdowns by age, race, gender, county of residence, dual eligibility status, average length of stay, and attrition.
- **Medicaid Expenditures and Service Utilization:** This section provides data on expenditures for waiver and non-waiver services used by participants in the Brain Injury Waiver.

## Data Sources

The information in this chart book was derived from the following data sources:

- **Medicaid Management Information System (MMIS2):** This system contains data for all individuals enrolled in Maryland Medicaid during the relevant fiscal year, including Medicaid eligibility category and fee-for-service claims. All MMIS2 data, owned by the Maryland Department of Health, are warehoused and processed monthly by The Hilltop Institute.
- **Maryland Department of Health Decision Support System (DSS):** This system, developed by The Hilltop Institute, provides the state with comprehensive information regarding Medicaid eligibility, managed care provider enrollment, acute care services and expenditures, and capitation payments.

# Chapter 1. Maryland Medicaid Brain Injury Waiver Overview *continued*

## Key Findings

### More Marylanders were served by the Brain Injury Waiver.

The number of Marylanders enrolled in the Brain Injury Waiver has increased in recent years. From FY 2012 to FY 2016, the number of participants increased 48%. The mean age of waiver participants is gradually rising, while other demographics have remained relatively stable over the past five years. In 2016, the majority of waiver participants were male (82%) and White (58%).

The average length of stay for FY 2016 participants was five years in FY 2016. Once enrolled, Brain Injury Waiver participants tend to remain in the waiver; in fact, 77% of the 62 participants enrolled in the waiver in FY 2012 were still enrolled in FY 2016.

Dual-eligible participants, who are eligible to receive both Medicare and Medicaid services, represented 60% of Brain Injury Waiver participants in FY 2016. Over the reporting period, the percentage of dual-eligible participants decreased and non-dual-eligible participants increased.

### Total Medicaid expenditures for Brain Injury Waiver participants continued to increase.

Total Medicaid expenditures, excluding administrative costs, have increased significantly (58%) from \$6.9 million in FY 2012 to \$10.9 million in FY 2016. Over \$9.9 million (or 91%) of FY 2016 expenditures were for the provision of waiver services; the remaining costs were for non-waiver services. The

average annual total Medicaid expenditures for Brain Injury Waiver participants exceeded \$105,000 per person in each of the fiscal years; FY 2016 saw the highest per person Medicaid expenditures, averaging \$118,168.

### Waiver Service Utilization

Throughout the reporting period, the number of waiver service providers remained stable at five. Similar to previous years, Mary T. Maryland served the largest number of participants (41) in FY 2016, with a total cost of \$4.7 million and the highest average annual per person cost of \$114,776.

Used by 77% of the participants and totaling \$5.6 million in FY 2016, residential habilitation level 2 was the most widely used waiver service and accounted for 57% of the waiver service expenditures. Other high expenditure waiver services included residential habilitation level 3 (\$2.3 million, or 23% of waiver expenditures) and day habilitation level 2 (\$1.2 million, or 12% of waiver expenditures).

### Non-waiver expenditures remained stable.

In each fiscal year, non-waiver expenditures were consistently less than 10% of all Brain Injury Waiver Medicaid expenditures. In FY 2016, these services totaled \$963,968. Managed care organization (MCO) capitation payments accounted for the largest proportion (45%) of FY 2016 non-waiver expenditures, followed by inpatient services (17%) and Medicare Crossover payments (15%).

# Chapter 2.

## Brain Injury Waiver Participants

## Chapter 2. Brain Injury Waiver Participants

### Maryland Long-Term Services and Supports Users

The number of Marylanders enrolled in the Brain Injury Waiver increased in each of the five fiscal years studied. Participant numbers increased 48% from FY 2012 (62) to FY 2016 (92), with yearly growth rates varying between 6% (FY 2015 to FY 2016) and 15% (FY 2014 to FY 2015). Attrition was relatively low in the Brain Injury Waiver. Of the 62 participants who were enrolled in the waiver in FY 2012, 48 (73%) were still enrolled in FY 2016. See Figure 1.

Individuals aged 23 to 50 years represented the largest percentage of participants across each fiscal year; however, the percentage decreased as the population aged. Likely due to the low attrition rate, the mean age of waiver participants gradually increased from 45.8 years in FY 2012 to 49.1 years in FY 2016. In FY 2016, 50% of the Brain Injury Waiver participants were aged 50 or younger, 58% were White (Figures 2 and 4), and 82% were male (Figure 3).

### Dual-Eligible Status and Lengths of Stay

From FY 2013 to FY 2016, there was a gradual decrease in the percentage of participants who were dually eligible. The greatest decrease in the dual-eligible population was amongst participants aged 23 to 50 (Figure 5).

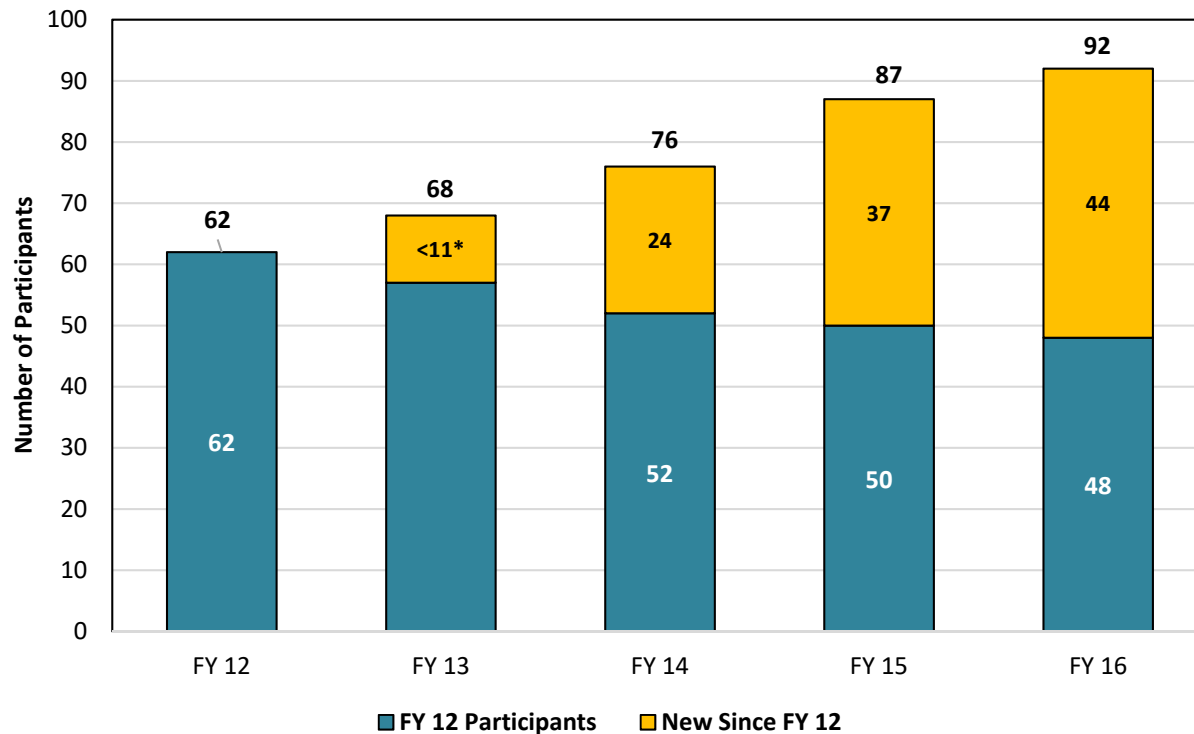
As a result of a low attrition rate, the average length of stay for persons enrolled in the Brain Injury Waiver increased over the reporting period. In FY 2016, the average length of stay for Brain Injury Waiver participants was five years—up from three and a half years in FY 2012 (Figure 6).

### Demographic Distribution

In FY 2016, nearly four-fifths of the Brain Injury Waiver participants resided in four counties: Anne Arundel, Montgomery, Prince George's, and Wicomico. Anne Arundel and Prince George's Counties had the largest number of waiver participants.



**Figure 1. Unduplicated Number of Brain Injury Waiver Participants, FY 2012 – FY 2016**



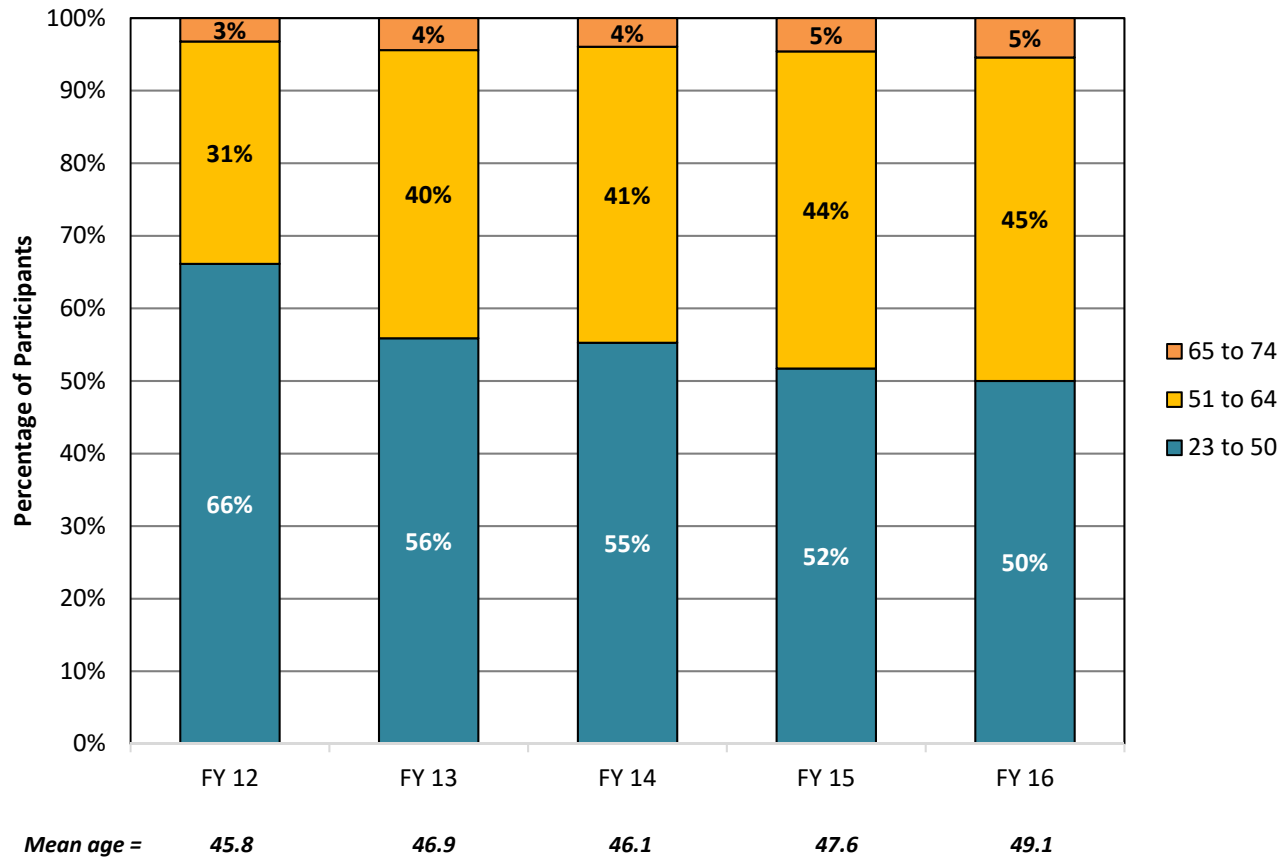
The number of participants in the Brain Injury Waiver increased 48% between FY 2012 and FY 2016. An average of 11 new participants enrolled each fiscal year.

Attrition was relatively low in the Brain Injury Waiver. Of the 62 participants who were enrolled in the waiver in FY 2012, 48 (73%) were still enrolled in FY 2016.

Source: MMIS2

\*Suppressed due to small cell sizes.

**Figure 2. Brain Injury Waiver Participants, by Age Group, FY 2012 – FY 2016**

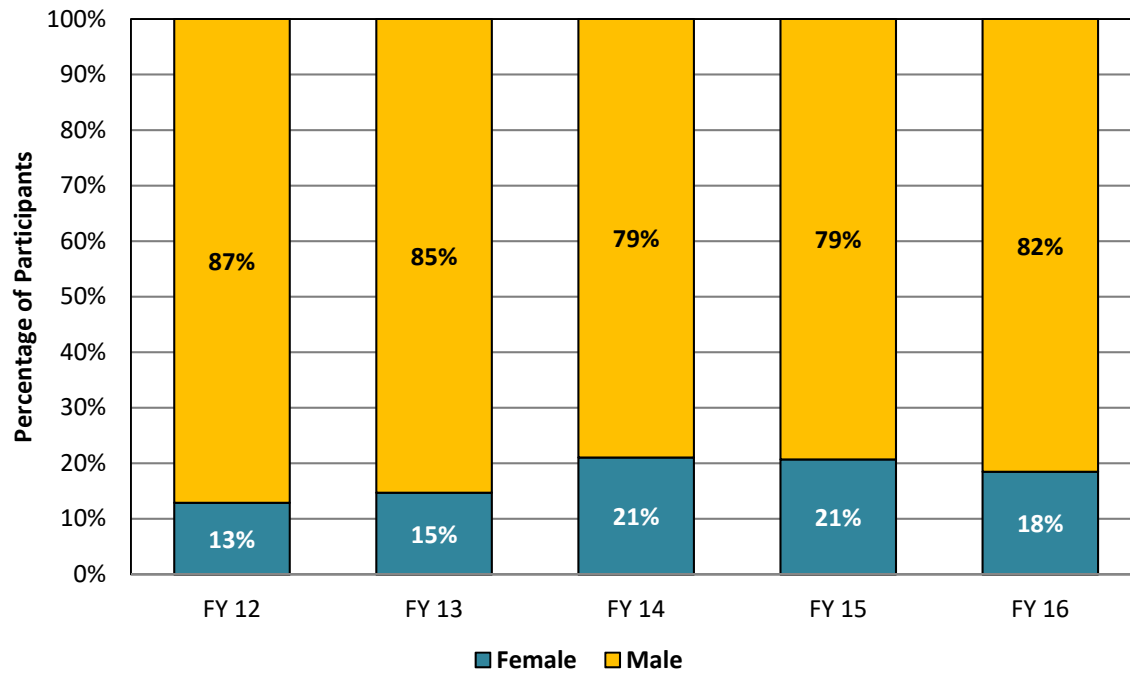


Individuals aged 23 to 50 years composed the largest percentage of waiver participants each fiscal year. However, this percentage decreased each year as the population began to age and older participants entered the waiver.

The average age of participants increased over the fiscal years, likely due to the low attrition rate and aging of participants.

Source: DSS

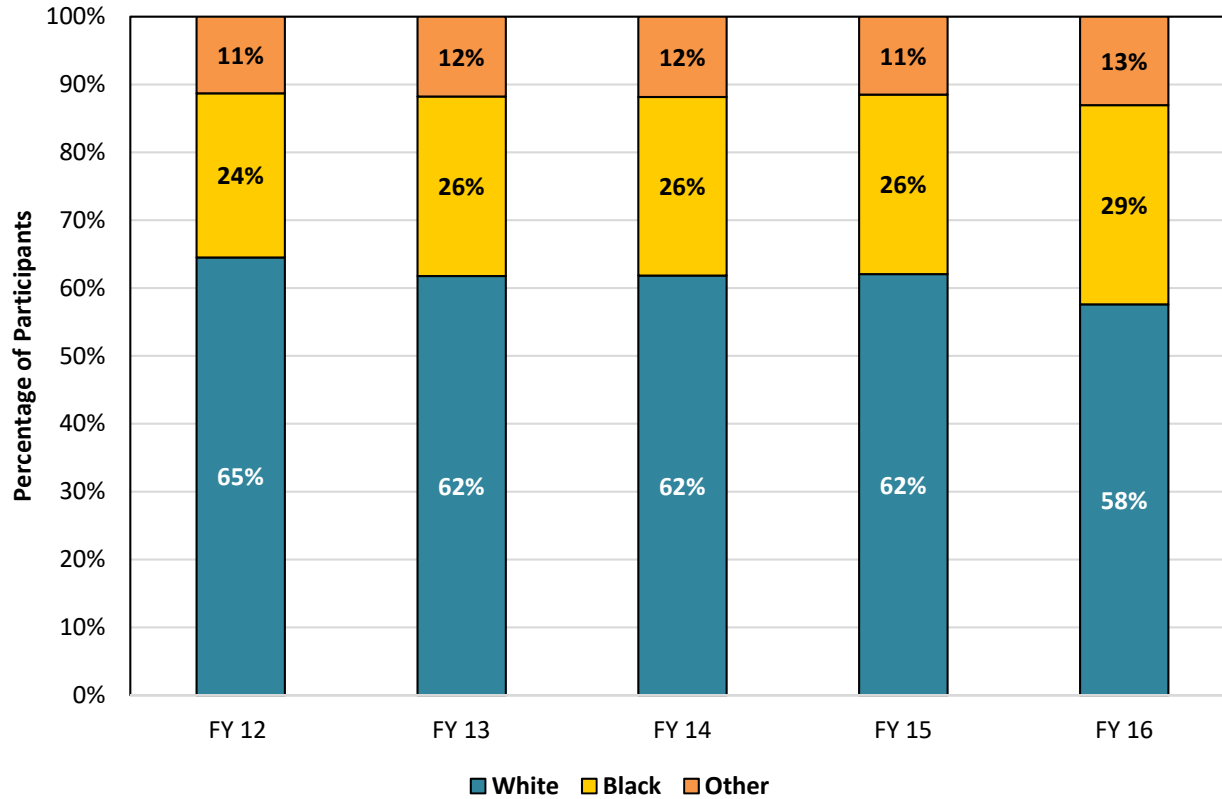
**Figure 3. Brain Injury Waiver Participants, by Gender, FY 2012 – FY 2016**



The vast majority of Brain Injury Waiver participants were male, which was consistent across all reporting periods.

Source: DSS

**Figure 4. Brain Injury Waiver Participants, by Race, FY 2012 – FY 2016**

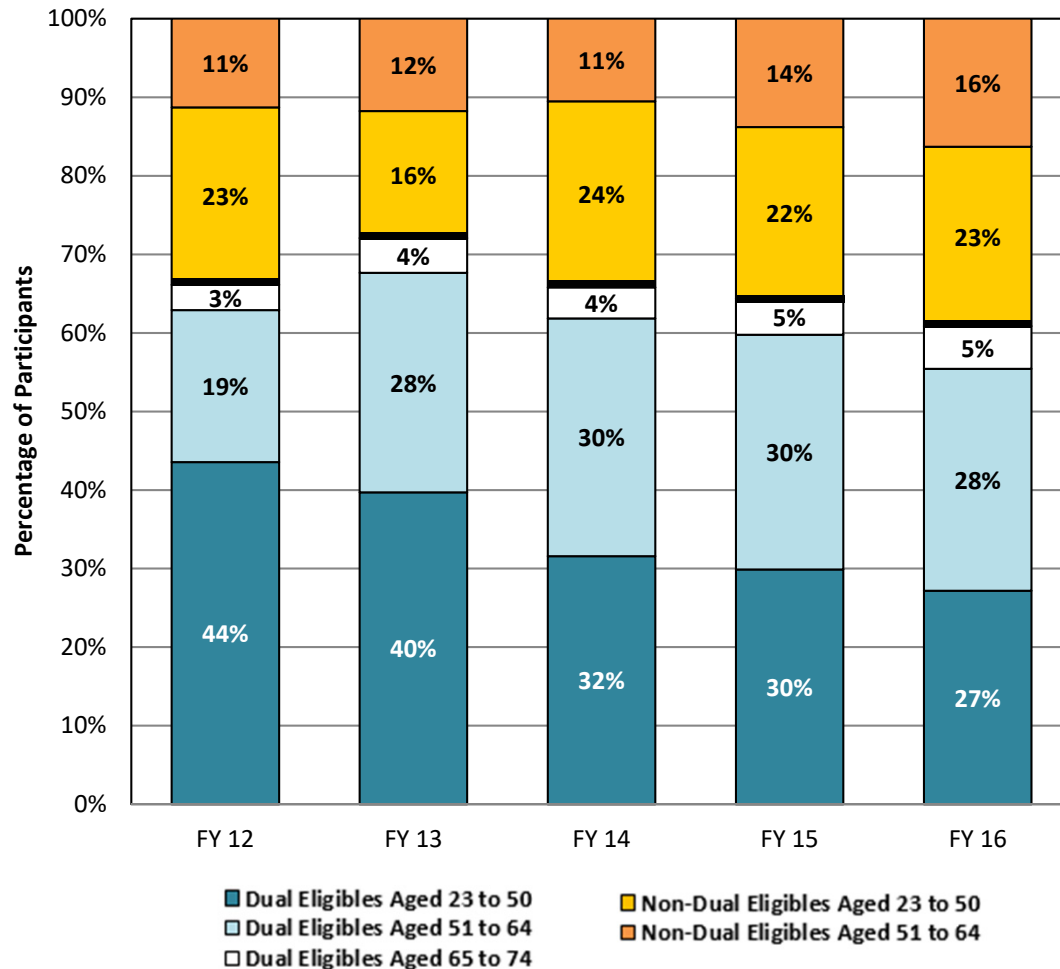


In FY 2016, over half (58%) of the Brain Injury Waiver participants were White. However, from FY 2012 to FY 2016, the percentage of White participants decreased as the percentage of participants from other races increased.

**Note:** Other includes “unknown” and “Hispanic.” Combined due to small cell sizes (i.e., 10 or fewer participants).

**Source:** DSS

**Figure 5. Percentage of Brain Injury Waiver Participants, by Dual-Eligible Status and Age, FY 2012 – FY 2016**



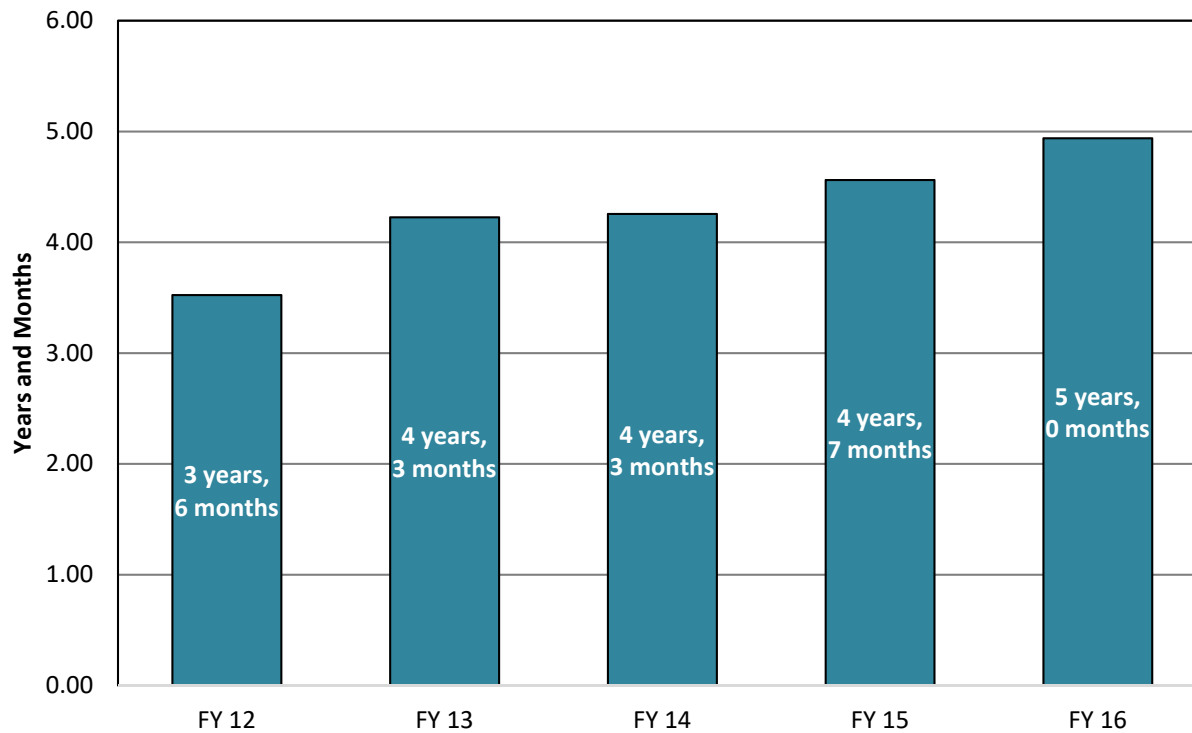
The majority (60%) of the Brain Injury Waiver participants were dually eligible for both Medicare and Medicaid. At its highest percentage in FY 2013, nearly three-fourths of the waiver participants were dually eligible. However, by FY 2016, only two-thirds of the participants were dually eligible.

In FY 2016, the greatest percentage of Brain Injury Waiver participants (28%) was dual-eligible individuals aged 51 to 64. Dual-eligible participants aged 23 to 50 represented the next largest share (27%), followed by non-dual-eligible participants aged 23 to 50 (23%).

Note: Percentages may not equal 100% due to rounding.

Source: DSS

**Figure 6. Average Length of Stay in the Brain Injury Waiver, in Years and Months, for Current Waiver Participants, FY 2012 – FY 2016**



As a result of low attrition, the average length of stay in the Brain Injury Waiver increased each fiscal year. In FY 2016, the average length of stay was five years.

**Note:** Individual participant lengths of stay were calculated from the beginning date of the participant's first eligibility span to the last day of the fiscal year of the reporting period. In each fiscal year, participant days were totaled, divided by the number of participants, divided by 365 days, and then converted to years and months.

**Source:** MMIS2

**This page not available at this time**

# **Chapter 3. Brain Injury Waiver Medicaid Expenditures and Service Utilization**



## Chapter 3. Medicaid Expenditures and Service Utilization

### Distribution of Brain Injury Waiver Total Medicaid Expenditures

Total Medicaid expenditures for Brain Injury Waiver participants continued to increase annually. FY 2016 Medicaid expenditures totaled \$10.9 million, up 9% from \$10.0 million in FY 2015, and up 58% from \$6.9 million in FY 2012 (Figure 8). Waiver expenditures were consistently 91% of the total Medicaid expenditures across the five reporting periods; in FY 2016, these expenditures totaled \$9.9 million (Figures 8 and 9).

#### Per Member Per Month Expenditures

Per member per month (PMPM) expenditures refer to the total Medicaid expenditures for Brain Injury Waiver participants divided by the total number of participant member months. PMPM total Medicaid expenditures have increased slightly (8%) since FY 2012. In FY 2016, total Medicaid PMPM expenditures were \$10,785, of which 91% (\$9,827) were for waiver services (Figure 10).

#### Dual-Eligible Participants Were More Costly than Non-Dual-Eligible Participants

In FY 2016, Medicaid expenditures for the Brain Injury Waiver's 56 dual-eligible participants totaled \$6.9 million, or 63% of the waiver's total Medicaid expenditures. The FY 2016 average annual Medicaid expenditures for dual-eligible participants—who tend to be more costly—were \$122,506 (Medicare

expenditures are not included in this calculation). Since FY 2014, average per-person expenditures for dual-eligible participants have exceeded those for non-dual-eligible participants (Figure 11).

#### Medicaid Expenditures Decreased after Waiver Enrollment

Newly enrolled Brain Injury Waiver participants had lower PMPM Medicaid expenditures post-waiver compared to pre-waiver (Figure 12). This is likely due to the high cost of inpatient services utilized in the months prior to enrollment.

#### Brain Injury Waiver Service Utilization

At nearly \$8 million in FY 2016, residential habilitation (primarily level 2 and level 3) accounted for 81% of the waiver expenditures. Residential habilitation level 2 was the most widely used waiver service in FY 2016. Composing 57% of total waiver expenditures (\$5.6 million), this service was used by 71 of the 92 Brain Injury Waiver participants (Figure 13).

Other highly used services included residential habilitation level 3, totaling \$2.3 million and serving 24 participants, and day habilitation level 2, totaling \$1.2 million and serving 66 participants. Average per person expenditures were highest for residential habilitation services: \$95,456 per person for level 3 and \$79,304 per person for level 2 (Figure 13).

continued on next page ...

## Chapter 3. Medicaid Expenditures and Service Utilization continued

Brain Injury Waiver Service Utilization continued ...

Medical day care, day habilitation (level 1), individual support services, and supported employment accounted for less than 1.5% of waiver expenditures (Figure 13).

Brain Injury Waiver participants received waiver services from five providers in FY 2016 (Figure 14). The number of participants served and the average annual per-person cost of the services rendered varied greatly by provider. Mary T. Maryland served the largest number of participants (41) and had the highest average annual per person cost (\$114,776) in FY 2016.

### **Non-Waiver Service Utilization**

Medicaid non-waiver expenditures for Brain Injury Waiver participants totaled \$963,968 in FY 2016, a 54% increase from FY 2012. MCO capitation payments accounted for almost half (45%) of all non-waiver expenditures. While the percentage of most non-waiver categories remained stable across reporting periods, inpatient services increased 138% from FY 2012 to FY 2016. Similarly, Medicare crossover has seen a significant increase (125%) in expenditures. Some non-waiver services—such as expenditures for the emergency room and nursing facility services—accounted for less than 1% of total expenditures. See Figure 1.

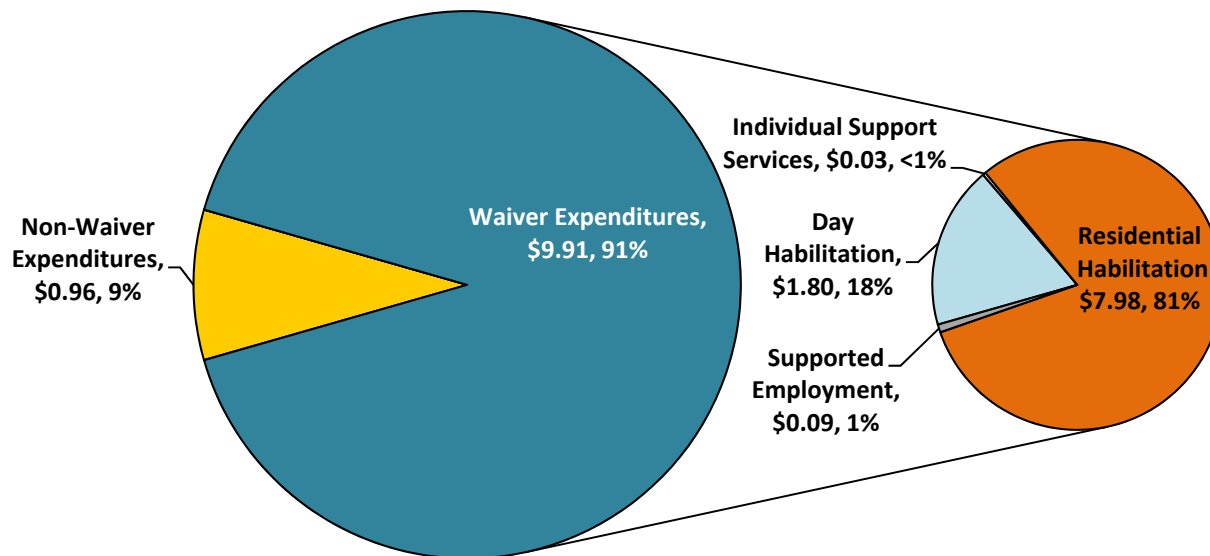
**Figure 8. Medicaid Expenditures\* for Brain Injury Waiver Participants, by Expenditure Category, FY 2012 – FY 2016**

	FY 12	FY 13	FY 14	FY 15	FY 16
<b>Waiver Costs</b>	\$6,268,438	\$6,546,090	\$7,395,718	\$9,083,460	\$9,907,497
<b>Non-Waiver Costs</b>	\$624,456	\$647,166	\$755,013	\$926,904	\$963,968
<b>Total Costs</b>	<b>\$6,892,894</b>	<b>\$7,193,256</b>	<b>\$8,150,731</b>	<b>\$10,010,364</b>	<b>\$10,871,465</b>

\* Expenditures for dual-eligible participants do not include Medicare expenditures.

Source: DSS

**Figure 9. Distribution of Total Medicaid Expenditures\* (in millions) for Brain Injury Waiver Participants, by Service Category, FY 2016**



\*Does not include administrative costs.

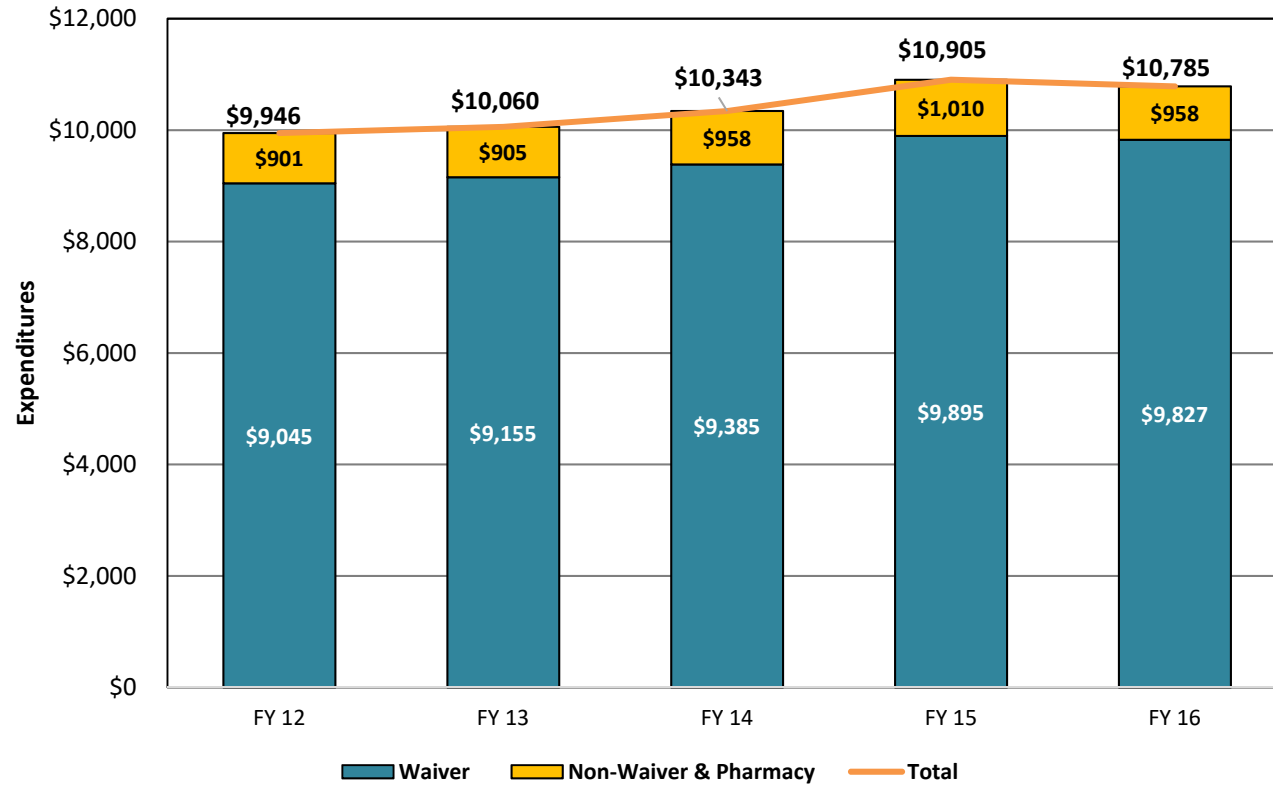
Note: Medical Day Care not shown due to minimal expenditures.

Source: DSS

Costs for waiver services far exceeded costs for non-waiver services. Across each fiscal year, waiver services accounted for approximately 90% of total expenditures for Brain Injury Waiver participants.

In FY 2016, waiver expenditures were 91% of total Medicaid expenditures. Residential habilitation was the most utilized waiver service, costing nearly \$8 million, or 81% of total waiver expenditures.

**Figure 10. PMPM Medicaid Expenditures for Brain Injury Waiver Participants, FY 2012 – FY 2016**



Waiver expenditures accounted for the vast majority of PMPM expenditures for Brain Injury Waiver participants. Overall, total PMPM expenditures increased from FY 2012, with the exception of a slight decrease from FY 2015 to FY 2016.

**Note:** Does not include administrative costs.

**Source:** DSS

**Figure 11. Distribution of Brain Injury Waiver Total Medicaid Expenditures, by Dual-Eligible Status, FY 2012 – FY 2016**

Participant Status	FY 12	FY 13	FY 14	FY 15	FY 16
Dual-Eligible	41	49	50	56	56
Total Medicaid Expenditures	\$4,274,686	\$4,998,769	\$5,516,960	\$6,546,586	\$6,860,321
Average Per-Person Medicaid Expenditures	\$104,261	\$102,016	\$110,339	\$116,903	\$122,506
Non-Dual-Eligible	21	19	26	31	36
Total Medicaid Expenditures	\$2,618,207	\$2,194,487	\$2,633,771	\$3,463,778	\$4,011,143
Average Per-Person Medicaid Expenditures	\$124,677	\$115,499	\$101,299	\$111,735	\$111,421
All	62	68	76	87	92
Total Medicaid Expenditures	\$6,892,894	\$7,193,256	\$8,150,731	\$10,010,364	\$10,871,464
Average Per-Person Medicaid Expenditures	\$111,176	\$105,783	\$107,246	\$115,062	\$118,168

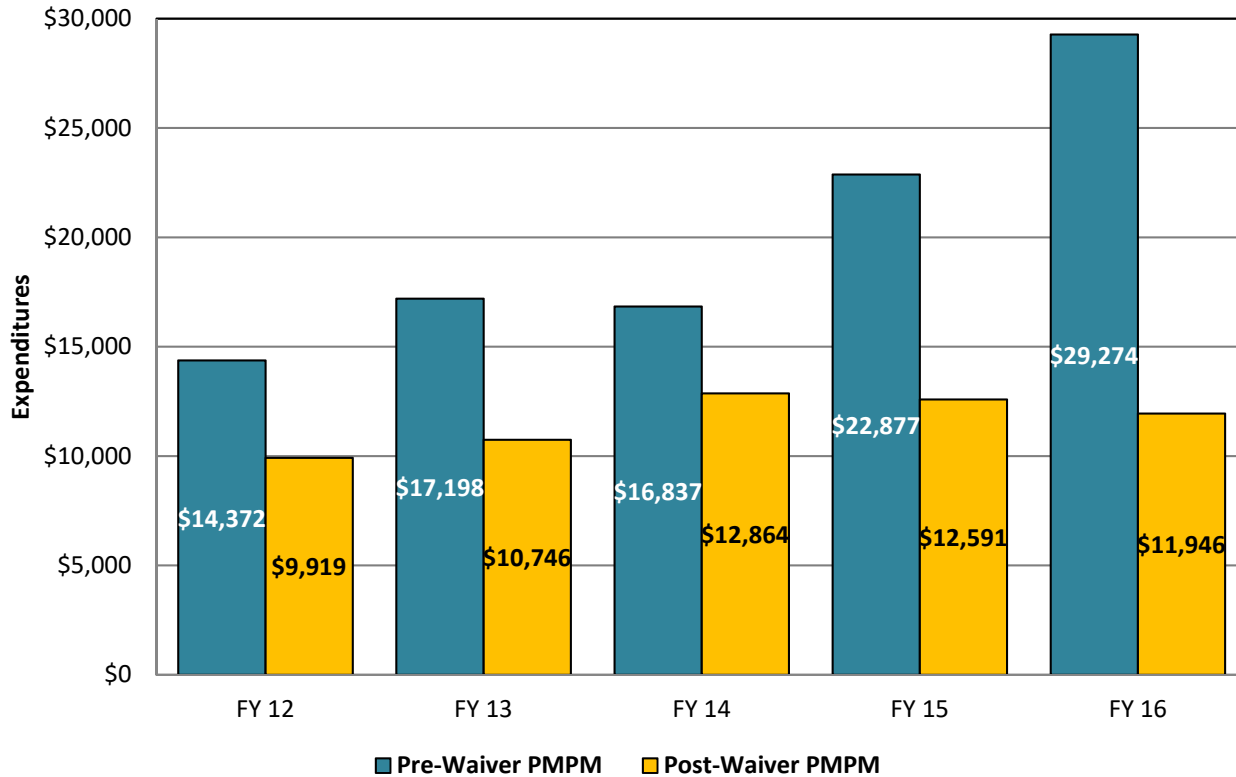
FY 2014 to FY 2016 per-person expenditures for dual-eligible participants were more costly than per-person expenditures for non-dual-eligible participants.

\* Expenditures for dual-eligible participants do not include Medicare expenditures.

Note: Total expenditures may not equal the total presented in Figure 10 due to rounding.

Source: DSS

**Figure 12. Pre- and Post-Waiver PMPM Medicaid Expenditures for Newly Enrolled Brain Injury Waiver Participants, FY 2012 – FY 2016**



Medicaid expenditures were significantly higher for participants before they joined the waiver, likely due to the high cost of inpatient services utilized in the months prior to enrollment.

In FY 2016, post-waiver PMPM expenditures were 59% lower than the corresponding pre-waiver PMPM expenditures.

**Note:** “Pre-waiver” refers to the six-month period prior to enrollment in the Brain Injury Waiver. “Post-waiver” refers to the six-month period following enrollment in the waiver.

**Source:** MMIS2

**Figure 13. Brain Injury Waiver Service Utilization, by Service, FY 2016**

Service	Participants	Expenditures	Average Expenditures Per Person	Average Units Per Person
Medical Day Care Services	*	*	\$1,416	19
Day Habilitation Level 1	*	*	\$10,101	203
Day Habilitation Level 2	66	\$1,154,130	\$17,487	201
Day Habilitation Level 3	28	\$634,394	\$22,657	185
Individual Support Services	*	*	\$8,451	350
Residential Habilitation Level 1	*	*	\$66,064	343
Residential Habilitation Level 2	71	\$5,630,566	\$79,304	311
Residential Habilitation Level 3	24	\$2,290,942	\$95,455.90	270
Supported Employment Level 1	*	*	\$964	33
Supported Employment Level 2	*	*	\$3,299	66
Supported Employment Level 3	*	*	\$8,182	67
<b>Total</b>		<b>\$9,907,497</b>		

Brain Injury Waiver expenditures totaled over \$9.9 million in FY 2016. Residential habilitation levels 1 and 2 were the most utilized and costly of the waiver services.

\* Below HIPAA-recommended cell size (10 or fewer participants).

**Note:** Individual Support Services units are billed per hour. Remaining services are billed per day.

Source: DSS

**Figure 14. Total Medicaid Waiver Expenditures for Brain Injury Waiver Participants, by Service Provider, FY 2015 – FY 2016**

Provider	FY 2015			FY 2016		
	Users	Average Annual Expenditures Per Person	Total Expenditures	Users	Average Annual Expenditures Per Person	Total Expenditures
Dove Pointe	14	\$106,212	\$1,486,965	16	\$106,564	\$1,705,019
Head Injury Rehabilitation	*	\$90,634	*	*	\$108,189	*
Humanim	*	\$89,829	*	*	\$87,983	*
Mary T. Maryland	41	\$110,788	\$4,542,321	41	\$114,776	\$4,705,827
Neuro Restorative Maryland	18	\$109,532	\$1,971,571	23	\$98,448	\$2,264,307
<b>Total</b>	<b>85</b>	<b>\$106,885</b>	<b>\$9,085,245</b>	<b>92</b>	<b>\$108,710</b>	<b>\$9,892,599</b>

Mary T. Maryland served the most Brain Injury Waiver participants in both FYs 2015 and 2016. Consequently, their total expenditures and average annual per-person expenditures were also the highest.

**Note:** Reported total expenditures vary slightly from expenditures reported elsewhere in this chart book due to the difference in data sources and when the data were run (April 3, 2017).

\* Below HIPAA-recommended cell size (10 or fewer participants).

Source: MMIS2



**Figure 15. Medicaid Non-Waiver Expenditures for Brain Injury Waiver Participants, FY 2012 – FY 2016**

	FY 12	Percentage	FY 13	Percentage	FY 14	Percentage	FY 15	Percentage	FY 16	Percentage
<b>Durable Medical Equipment/Supplies</b>	\$17,930	3%	\$28,943	4%	\$36,247	5%	\$28,075	3%	\$26,588	3%
<b>Emergency Room</b>	\$1,189	0.2%	\$2,099	0.3%	\$2,596	0.3%	\$2,249	0.2%	\$2,055	0.2%
<b>Evaluation and Management*</b>	\$5,844	0.9%	\$6,810	1%	\$13,253	2%	\$20,438	2%	\$22,050	2%
<b>Inpatient</b>	\$70,181	11%	\$81,514	13%	\$163,603	22%	\$229,292	25%	\$166,811	17%
<b>Medicare Crossover</b>	\$64,037	10%	\$87,502	14%	\$109,951	15%	\$135,083	15%	\$143,921	15%
<b>Medicine**</b>	\$15,397	2%	\$13,492	2%	\$26,360	3%	\$28,993	3%	\$29,731	3%
<b>MCO Capitation Payments***</b>	\$321,527	51%	\$290,434	45%	\$253,806	34%	\$322,013	35%	\$429,019	45%
<b>Nursing Facility Services</b>	\$0	0%	\$15,241	2%	\$17,614	2%	\$13,359	1%	\$6,569	0.7%
<b>Outpatient</b>	\$28,940	5%	\$43,122	7%	\$41,467	5%	\$22,429	2%	\$26,365	3%
<b>Other****</b>	\$7,757	1%	\$6,139	0.9%	\$8,348	1.1%	\$10,037	1%	\$13,979	1%
<b>Pharmacy</b>	\$91,656	15%	\$71,870	11%	\$81,767	11%	\$111,392	12%	\$96,879	10%
<b>Total</b>	<b>\$624,456</b>	<b>100%</b>	<b>\$647,166</b>	<b>100%</b>	<b>\$755,013</b>	<b>100%</b>	<b>\$926,904</b>	<b>100%</b>	<b>\$963,968</b>	<b>100%</b>

\* Evaluation and Management refers to the billing codes used by providers to document patient office visits, the complexity of the visit, and the plan for treatment, as required.

\*\* Medications received from a source other than a pharmacy (i.e., inpatient hospitalization, clinic).

\*\*\* “MCO (managed care organization) capitation payments” are fixed monthly amounts paid to MCOs to provide services to enrolled Medicaid participants. Capitation payments are based on actuarial projections of medical utilization. MCOs are required to provide all covered, medically necessary Medicaid services within that capitated amount.

\*\*\*\* “Other” includes Medicaid non-waiver services other than those listed above and those provided under the waiver that are paid by Medicaid on behalf of Medicaid waiver participants.

Source: DSS

Non-waiver expenditures for Brain Injury Waiver participants increased 54% from FY 2012 to FY 2016. This was mostly due to the increasing costs of MCO capitation payments each year.

## List of Figures

### Chapter 2. Brain Injury Waiver Participants

Figure 1. Unduplicated Number of Brain Injury Waiver Participants, FY 2012 – FY 2016.....	9
Figure 2. Brain Injury Waiver Participants, by Age Group, FY 2012 – FY 2016 .....	10
Figure 3. Brain Injury Waiver Participants, by Gender, FY 2012 – FY 2016.....	11
Figure 4. Brain Injury Waiver Participants, by Race, FY 2012 – 2016.....	12
Figure 5. Percentage of Brain Injury Waiver Participants, by Dual-Eligible Status and Age, FY 2012 – FY 2016 .....	13
Figure 6. Average Length of Stay in the Brain Injury Waiver, in Years and Months, for Current Waiver Participants, FY 2012 – FY 2016.....	14
Figure 7. Number of Brain Injury Waiver Participants, by County, FY 2016 .....	15

### Chapter 3. Brain Injury Waiver Medicaid Expenditures and Service Utilization

Figure 8. Medicaid Expenditures for Brain Injury Waiver Participants, by Expenditure Category, FY 2012 – FY 2016 .....	19
Figure 9. Distribution of Total Medicaid Expenditures (in millions) for Brain Injury Waiver Participants, by Service Category, FY 2016 .....	19
Figure 10. PMPM Medicaid Expenditures for Brain Injury Waiver Participants, FY 2012 – FY 2016.....	20
Figure 11. Distribution of Brain Injury Waiver Total Medicaid Expenditures, by Dual-Eligible Status, FY 2012 – FY 2016.....	21
Figure 12. Pre- and Post-Waiver PMPM Medicaid Expenditures for Newly Enrolled Brain Injury Waiver Participants, FY 2012 – FY 2016 .....	22
Figure 13. Brain Injury Waiver Service Utilization, by Service, FY 2016 .....	23
Figure 14. Total Medicaid Waiver Expenditures for Brain Injury Waiver Participants, by Service Provider, FY 2015 – FY 2016 .....	24
Figure 15. Medicaid Non-Waiver Expenditures for Brain Injury Waiver Participants, FY 2012 – FY 2016.....	25



## **The Hilltop Institute**

University of Maryland, Baltimore County  
Sondheim Hall, 3rd Floor  
1000 Hilltop Circle  
Baltimore, MD 21250

[www.hilltopinstitute.org](http://www.hilltopinstitute.org)