Service Use and Expenditures Before and After Entry into California's LTSS Programs

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CAMRI

CAMRI is a multi-campus research program of the University of California that promotes the development and dissemination of evidence to improve policy decision-making in California's Medicaid program. For more information, please visit http://camri.universityofcalifornia.edu/.

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EXECUTIVE SUMMARY

The findings contained in this report demonstrate the inter-relationship between acute, post-acute, and long-term services and support (LTSS) services for Medicare and Medicaid Enrollees (MMEs).[1] LTSS services include home and community based services (HCBS) as well as care delivered as a part of an extended stay in a nursing facility (NF). We examined the patterns of health care related events and expenditures that preceded and followed the initiation of LTSS services as well as the pattern of LTSS use following a hospitalization. We identified 474,706 adult (ages 18 years and older) fee-for-service MME beneficiaries in California who initiated at least one type of LTSS during the two-year period of January 2006 to December 2007.

The main findings are summarized below:

1. *The initiation of LTSS is often preceded by a rapid increase in the use of and costs associated with acute and post-acute services.*

    - Every MME who first entered a NF for an extended stay had either a hospitalization, an emergency department (ED) visit not associated with a hospitalization, or a short stay in a skilled nursing facility (SNF) within the month of admission.

    - Among MMEs who initiated HCBS, 58% had at least one hospital admission, an ED visit not associated with a hospitalization, or a short stay in a SNF in the prior 12 months. However, only 30% had one of these visits in the month of initiating HCBS.

    - Health care expenditures associated with hospitalizations, ED visits not associated with a hospitalization, or a SNF short stay tend to raise sharply beginning in the 6 months prior to initiating HCBS or admission into a NF for an extended stay.

2. *The initiation of LTSS services is typically associated with a reduction in the rate of increase of total health care expenditures*

    - Health events that trigger the initiation of LTSS result in the average total health care expenditures being higher in the 6 months after initiating LTSS than the 6 months prior.

    - However, the average monthly cost of HCBS is approximately $500 and its use is associated with a significant decline in the monthly rate of increase in total health care expenditures compared to the 6 months prior to program entry.

[1] The corresponding information is available in the appendix for Medi-Cal only beneficiaries.

- The average monthly cost of extended NF care is approximately $2,000 and its use is also associated with a significant decline in the rate of increase in total monthly health care expenditures observed during the prior six months.

3. *There are missed opportunities to substitute HCBS for extended NF care*

   - Approximately 60% of MMEs who are admitted to NF for extended stays do not receive any HCBS in the months immediately preceding the NF entry.

   - Among those MMEs admitted from the community to a hospital, a greater percentage who are discharged with LTSS receive it through an extended NF stay (14.2%) than through HCBS (9.5%).

   - Among MMEs who are discharged from a hospital to a SNF for post-acute care, nearly one-quarter (23.6%) remain in the nursing facility for an extended stay.

   - More than twice as many MMEs discharged from a hospital to a NF transition to HCBS (18.9%) in the 12 months following hospital discharge than transition from HCBS at hospital discharge to NF (9.3%) in the same time period.

4. *There is variation in retaining MMEs in HCBS programs, which could impact these programs' effectiveness*

   - In-Home Supportive Services (IHSS) is the predominant HCBS program in California, accounting for 83% of the first HCBS used by MME beneficiaries; more than 80% of those alive 12 months later remained in the program.

   - The attrition rate from the AIDS Waiver and Home Health programs was 70% and from the Targeted Case Management program was 85% at 1 month after initiating these services.

   - Only 50% of MMEs whose first HCBS was exclusive use of Adult Day Health Care (ADHC) remain in this program at one year. ADHC entry was not associated with reducing the rate of increase of total monthly health care expenditures.

5. *The HCBS Waiver programs are relatively small and do not consistently reduce the rate at which health care expenditures are increasing over time.*

   - During the 2-year study period, 410 adult fee-for-service MMEs initiated services through the Assisted Living Waiver (ALW), 1,264 through the AIDS waiver, 4,006 through the Multipurpose Senior Services Program (MSSP), and 61 through Other HCBS waivers.

- The AIDS and MSSP waivers, but not these others, were associated with significant reductions in the monthly rate of increase of health expenditures six months after program entry compared with the six months before.

Policy Considerations

1. California's Department of Health Care Services should consider opportunities to establish a more systematic approach for assessing the LTSS needs of its population

There is no single entry point for receiving LTSS or for tracking the health status of the Medi-Cal population. The relatively high percentage of Medi-Cal beneficiaries whose first use of LTSS is an extended NF stay is an indicator that California could improve its ability to identify individuals who could benefit from HCBS services that may potentially delay, prevent, or reverse the need for an extended NF stay.

California's Departments of Health Care Services, Social Services, and Aging are evaluating strategies to create a uniform assessment for those entering selected HCBS programs. While this could potentially eliminate some of the variation in how Medi-Cal beneficiaries are evaluated for LTSS services, the findings in this report suggest that Medi-Cal should also consider broadening the at-risk group of Medi-Cal beneficiaries who are evaluated for LTSS by systematically focusing on those with multiple hospitalizations, ED visits, and high total health care expenditures.

2. California's Department of Health Care Services should consider ways to encourage greater integration of acute, post-acute, and LTSS service delivery for Medi-Cal beneficiaries.

The increasing mean monthly health care cost in the months immediately prior to HCBS and NF service entry, and the subsequent high incidence of ED and hospital use suggest that LTSS may not be providing maximum value because it is not integrated with an optimal health care delivery model. California's plans to include LTSS within managed care programs offer an opportunity to improve the coordination and integration of acute, primary and LTSS. Beginning in 2014, California will start implementation of the Coordinated Care Initiative (CCI) in eight counties. Among the aims of this managed care initiative are to achieve better integrated and coordinated health, behavioral health, and LTSS for individuals who are eligible for both Medicare and Medi-Cal and seniors and persons with disabilities with Medi-Cal only eligibility (SPDs). Capitation payment over the full continuum of care may prove to be an effective incentive for achieving this. However, there is much infrastructure to be developed. Innovative approaches, including data sharing systems, will be needed to bring together primary care providers, care managers/social workers, and LTSS providers to plan and deliver more cost-effective coordinated care to Medi-Cal beneficiaries. For example, Medi-Cal might explore ways for bringing primary care and care management to HCBS recipients who are homebound, who have difficulty making regular office visits, or are otherwise considered at risk for the on-going management of their conditions. Such efforts, if coordinated with HCBS

delivery, may enhance the opportunity to use HCBS as a means to reduce health care spending and reliance upon extended stays in NFs.

3. **California's Department of Health Care Services should consider being more strategic in how it organizes the delivery of HCBS.**

   The current HCBS program is a smorgasbord of service options, which are sometimes used alone or in combinations. For most Medi-Cal beneficiaries, IHSS is the only HCBS program being used, and for others it is the foundation upon which to add case management, skilled nursing, and potentially other higher levels of HCBS. The high level of attrition from targeted case management and adult day health center (now called Community-Based Adult Services) programs raises questions about whether this is an effective way to deliver HCBS. Integrating these programs into managed care may make these services more attractive to beneficiaries and more effective as a means to reduce total health care expenditures.

4. **California Department of Health Care Services should consider ways of targeting individuals in post-acute care for HCBS to prevent the need for extended NF services.**

   MMEs who receive post-acute care at a skilled nursing facility following a hospitalization are at an especially high risk of an extended nursing facility stay. Although some individuals need extended NF care depending on the medical and physical conditions and their lack of caregiver support in the home, others could possibly be discharged back to the community if they were offered the appropriate mix of HCBS.

   California has a "Money Follows the Person" (MFP) program that is intended to help identify NF residents that could be discharged back to the community. This program may need to be strengthened and better connected with the health plans and HCBS as part of the CCI. It might also benefit from an early focus on beneficiaries seen as being at risk for avoidable extended stays.

5. **California's Department of Health Care Services should consider opportunities for combining its separate HCBS waiver programs and for broadening the target population eligible for these services**

   Maintaining separate waivers may add administrative costs because of the use of separate eligibility rules, benefits, and screening procedures. CMS rules now allow states to combine HCBS coverage for multiple populations into one waiver. This offers the potential to streamline administrative processes. California's Department of Health Care Services should consider a single combined HCBS waiver as a means to reduce program fragmentation and administrative costs. California might consider opportunities to pursue this approach through its Coordinated Care Initiative in which managed care plans will assume greater financial responsibility for LTSS services. Such an approach could improve the ability to align the level of service with the level of need. This may reduce

the administrative burden of managing multiple waivers and help facilitate more timely and sustained integration of benefits.

BACKGROUND

Medicare and Medicaid spending on health and long-term services and supports are imposing significant strains on federal and state budgets. The aging of the population and the growing number of people living with disabilities will likely increase demand for LTSS. Concern over this projected spending growth is driving policymakers to explore solutions for cost containment. Policymakers hope cost containment can be achieved by improving beneficiary experience and health outcomes for LTSS recipients.

Medicaid, financed by both federal and state governments, pays for acute, post-acute, and LTSS (e.g., Medicaid-funded adult day health care (ADHC), personal care services, home and community-based services (HCBS), and extended nursing facility (NF) stays[2]) for the low-income elderly and certain individuals with disabilities, among others.[3] Medicare, financed by the federal government and private-pay premiums, covers the acute and post-acute health care services for beneficiaries enrolled in this program. Beneficiaries eligible for both Medicare and Medicaid, often referred to as Medicare-Medicaid Enrollees (MMEs), would generally have most of the acute and post-acute care covered by Medicare, with Medicaid responsible for premiums, co-payments, and LTSS.[4]

Federal spending on Medicaid and Medicare constituted 5.5% of gross domestic product (GDP) in federal fiscal year (FFY) 2011. Without changes to current law, federal spending on these programs is expected to reach 7.2% of GDP by 2022.[5] Spending on Medicaid represents a significant share of state budgets. For example, California spent $11.1 billion on its Medicaid program (known as Medi-Cal) in 2010. This amount accounted for 18.9% of the state's total General Fund expenditures, just second behind its expenditures on elementary and secondary

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[2] Extended NF stays were identified through an examination of Medi-Cal and Medicare claims as well as the NF Minimum Data Set (MDS) resident assessment files for 2005 through 2008. This composite view established admission and discharge dates, payer sources, and helped designate the purpose of the admission as either rehabilitation or extended stay. For our analysis we considered NF admissions as extended stays if they met any of the following criteria: a NF admission with a length of stay equal to or greater than 21 consecutive days; a NF admission for 20 days or less during which time the individual was enrolled in Medicare, but Medicare did not pay during the first 21 days of the stay; or a NF stay for 20 days or less that was paid by a source other than Medicare and during which time the individual died.

[3] Medi-Cal (California's Medicaid program), like all state Medicaid programs, is means-tested with eligibility limited to individuals with income and assets that meet certain thresholds established by the state within federal guidelines. These thresholds specify the maximum amount of countable income and resources a person may have to qualify; income and resources above these amounts generally make an individual ineligible or require a monthly share of cost for Medi-Cal. In California, all participants in the Supplement Security Income (SSI) program are eligible for Medi-Cal. In addition, individuals aged 65 and over and certain persons with disabilities with income above SSI and up to 100% of the federal poverty level may qualify. Individuals with high medical expenses can qualify for Medi-Cal through the medically needy eligibility group when they spend down their income on nursing facilities and/or other medical expenses to a threshold of $600 monthly.

[4] MMEs tend to either be age 65 and over who qualify for Medicare upon turning age 65, or are under age 65 and qualified for Medicare after having received Social Security Disability Insurance for at least 24 months.

[5] Table 1-2. Projected Spending and Revenues Under CBO's Long-Term Budget Scenarios, *The 2012 Long-Term Budget Outlook*, Congressional Budget Office, June 2012.

education (19.6% of state GF expenditures).[6] Over the next decade, enrollment in Medicaid and Medicare is expected to rise by about 30%,[7] placing increasing pressure on federal and state budgets.

Medicaid beneficiaries who use LTSS tend to have multiple chronic conditions, limitations in activities of daily living (ADLs) and instrumental activities of daily living (IADLs), among other needs. These beneficiaries, on average, are among the most costly participants in both the Medicare and Medicaid programs. In Medicaid, spending on LTSS constitutes greater than 30% of all spending on services.[8] In Medicare, MMEs - with and without LTSS needs - cost nearly five times more than individuals enrolled only in Medicare.[9]

Medi-Cal provides an array of LTSS for low-income individuals and families, including the elderly, persons with disabilities, those with specific diseases, and children with special medical needs. In some cases, individuals have their needs met through an extended stay in a nursing facility (NF). However, many prefer and are able to be cared for more cost-effectively in the community with the support of home and community-based services (HCBS). The majority of these services are articulated within a state plan under *Title XIX of the Social Security Act, Medicaid Program.* Among other things, the plan describes the mandatory and optional Medi-Cal benefits available in the state. Most of the provisions of California's State Plan have been in place since 1989, although some provisions (such as additional benefits or more restrictive eligibility) have been modified through amendments and waivers since then. The analyses in this report are focused on the state plan programs, and Medi-Cal section 1915(c) HCBS waivers described in **Appendix A**.

To achieve maximum benefit, LTSS services should be integrated with acute and post-acute care services. Integrated care promotes the efficient use of services by emphasizing the role of care coordination and preventive care. Evaluations of programs that integrate acute, post-acute and LTSS services suggest that MMEs have lower overall use and costs for emergency department (ED) visits, hospitalizations, and extended NF stays.[10,11] The cost-effectiveness of these programs is dependent on the ability to substitute lower-cost services for higher-cost ones.

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[6] *State Expenditure Report: Examining Fiscal 2009-2011 State Spending, 2010*, National Association of State Budget Officers, Washington, D.C., 2011. See: http://www.nasbo.org/sites/default/files/2010%20State%20Expenditure%20Report.pdf

[7] The Congressional Budget Office projects that Medicaid enrollment will rise from 67 million in 2011 to 95 million in 2022 and that Medicare enrollment will rise from 48 million in 2011 to 66 million in 2022. Enrollment increases will be largely related to the growing elderly population in the U.S. Other factors will include program changes and continuing problems in our economy. Source: *The Budget and Economic Outlook: Fiscal Years 2012 to 2022*, Congressional Budget Office, Washington, DC, 2011. See, http://www.cbo.gov/publication/21670

[8] Eiken, S., Sredl, K., Burwell, B. and Gold, L. Medicaid Expenditures for Long-Term Services and Supports: 2011 Update. Cambridge, MA: Thomson Reuters, October 31, 2011.

[9] *FY 2011 Report to Congress*, Medicare-Medicaid Coordination Office, Centers for Medicare and Medicaid Services, Department of Health and Human Services. See, https://www.cms.gov/Medicare-Medicaid-Coordination/Medicare-and-Medicaid-Coordination/Medicare-Medicaid-Coordination-Office/Downloads/MMCO_2011_RTC.pdf

[10] Kane RL, Homyak P, Bershadsky B, Flood S, Zhang H. Patterns of utilization for the Minnesota senior health options program. *J Am Geriatr Soc*. 2004; 52(12):2039-2044.

California is pursing greater integration of LTSS with acute and post-acute care services. This effort begins in 2014, through the Coordinated Care Initiative (CCI). There are three components to the CCI:

1. integration of Medicare and Medi-Cal to cover the full array of health and LTSS for MMEs;
2. mandatory enrollment of MMEs into Medi-Cal managed care; and
3. inclusion of LTSS as a Medi-Cal managed care benefit. Contracts with Medi-Cal managed care plans are being developed. California will initially test the mandatory enrollment of MMEs in managed care in a limited number of counties.[12]

There is the potential in the CCI for LTSS to help keep beneficiaries out of hospitals and NFs. This report provides a baseline understanding of the current degree of integration between acute, post-acute, and LTSS for Medi-Cal beneficiaries. One sign of integration is how rapidly LTSS programs are initiated in the context of an increasing use of acute and post-acute care services. Another is whether the LTSS services delivered to a beneficiary result in a decreased use of acute and post-acute care services.

As part of a partnership between the University of California and the California Department of Health Care Services (DHCS), the California Medicaid Research Institute (CAMRI) developed an integrated and longitudinal database containing Medi-Cal and Medicare claims and assessment data of LTSS recipients in California. The database includes all adults who received a Medi-Cal reimbursed LTSS at any time during calendar years 2005 through 2008.[13] This paper provides the results of an analysis of Medi-Cal and Medicare claims data describing the medical and social service histories of California's LTSS recipients before and after initiating LTSS services.

This report represents the fourth in this series from CAMRI. The first report, *Recipients of Home and Community-Based Services in California*, describes the demographic characteristics, HCBS use, functional level-of-care needs, and rates of nursing facility (NF) admissions and mortality for recipients of HCBS in California.[14] The second, *Medicaid and Medicare Spending on Acute, Post-Acute, and Long-Term Services and Supports in California*, describes the full range of medical expenditures for Medi-Cal-only and MMEs with LTSS needs.[15] The third report,

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[11] Chatterjee P. *Evaluation of the Program of All-inclusive Care for the Elderly (PACE)*. Cambridge, MA: Abt Associates Inc; 1998.

[12] The CCI counties are Alameda, Los Angeles, Orange, Riverside, San Bernardino, San Diego, San Mateo, Santa Clara.

[13] For additional information about CAMRI's process for acquiring, linking and cleaning these data as well as the challenges faced, see Stone J, Newcomer R, Chattopadhyay A, et.al. *Studying Recipients of Long-Term Care Services and Supports: A Case Study in Assembling Medicaid and Medicare Claims and Assessment Data in California*, California Medicaid Research Institute, University of California, November 16, 2011. See, http://camri.universityofcalifornia.edu/publications.html

[14] Newcomer R, Harrington C, Stone J, et al. *Recipients of Home and Community-Based Services in California, June 2012.* http://www.thescanfoundation.org/california-medicaid-research-institute-recipients-home-and-community-based-services-california; and http://camri.universityofcalifornia.edu/publications.html.

[15] Newcomer R, Harrington C, Stone J, et.al. *Medicaid and Medicare Spending on Acute, Post-Acute, and Long-Term Services and Supports in California*, December 2012. See, http://www.thescanfoundation.org/california-

Extended Nursing Facility Stays Among California's Dual Eligible and Medi-Cal-Only Beneficiaries, 2006-2008, describes the demographic, health, and functional status of adult Medi-Cal beneficiaries who are admitted to NFs for extended stays in California and examines whether these beneficiaries received any form of Medi-Cal covered HCBS prior to entry.[16]

AIMS

The aims of the analyses reported here are to improve the understanding of the inter-relationship between acute and post-acute care services with LTSS for Medi-Cal beneficiaries. We address the following broad questions:

1. What acute and post-acute events and expenditures are associated with the initiation of HCBS services for Medi-Cal beneficiaries and how does the initiation of HCBS services impact subsequent acute and post-acute events and expenditures?
2. What acute and post-acute events and expenditures for Medi-Cal beneficiaries are associated with admission for an extended NF stay and how does the initial admission impact subsequent acute and post-acute events and expenditures?
3. How does the use of LTSS at the time of a hospital discharge impact the health care events and expenditures in the following year?

The analyses combine up to four years of Medi-Cal and Medicare claims data assessing recipient-specific service use over time, including the extent to which the health care and NF use patterns are associated with each other and HCBS participation. Findings are presented for adults enrolled in both Medicare and Medi-Cal (MMEs). The corresponding results for those who are eligible only for Medi-Cal are included in **Appendix B**.

STUDY POPULATION

This study focuses on adult Medi-Cal beneficiaries (age ≥18) before and after the initial receipt of specific LTSS services.[17] The adult Medi-Cal beneficiaries who initiate different LTSS services vary, but they are all drawn from a similar starting population applying the following criteria: (1) they were enrolled in the Medi-Cal program for at least one month between January 1, 2006 and December 31, 2007; (2) they were 18 years or older during that same period, and (3) they were not a member in either a Medicare or Medi-Cal managed care plan at any time between January 1, 2005 and December 31, 2008 (this corresponds with the 12 months before and the 12 months after the initiation of HCBS or an extended NF admission between January 1,

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medicaid-research-institute-medicaid-and-medicare-spending-acute-post-acute-and-long-term; and http://camri.universityofcalifornia.edu/publications.html.

[16] Newcomer R, Harrington C, Stone J, et.al. *Extended Nursing Facility Stays Among California's Dual Eligible and Medi-Cal-Only Beneficiaries, 2006-2008.* September 2013. See, http://camri.universityofcalifornia.edu/publications.html or http://www.thescanfoundation.org/california-medicaid-research-institute-extended-nursing-facility-stays-among-californias-dual.

[17] The population from which the study's LTSS sample was selected, had been previously screened to exclude those eligible for Medi-Cal on the basis of a developmental disability, persons under age 18 during 2005-2008 and those with inconsistent socio-demographic information.

2006 and December 31, 2007). Those whose Medi-Cal only eligibility was based on aid codes indicating that it was due to emergency or time limited circumstances, (e.g., a pregnancy) were excluded.[18] Table 1 shows the number of individuals in the original population and the number of individuals remaining after applying each of the exclusion criteria.[19]

Table 1
Medi-Cal LTSS Population 2005-2008

Exclusion Criteria	Number Excluded	% Change	% Cumulative Change	Number Remaining
LTSS Population 2005-2008*	0	0%	0%	1,065,566
Died before 2006	52,643	5%	5%	1,012,923
Not 18 years old by 2006	12,493	1%	6%	1,000,430
Not Medi-Cal 2006-2007	51,759	5%	11%	948,671
Only Pregnancy Aid Code 2006-2007	14,263	1%	12%	934,408
Ever managed care 2005-2008	253,898	24%	36%	680,510

*The baseline estimate of the LTSS population excludes persons under age 18, and children and adults receiving services associated with developmental disabilities at any time during 2005-2008.

Those Medi-Cal recipients who at one point in time were eligible for Medi-Cal on the basis of one of the excluded codes but who subsequently qualified on the basis of a non-excluded eligibility code were retained in the study. Managed care enrollees were excluded from analyses because complete Medicare and/or Medi-Cal claims records were unavailable for these recipients, which makes identification of health care events and expenditures for these beneficiaries unreliable. Further exclusions were applied only for the analysis of the specific program. Such exclusions did not preclude inclusion of these recipients in the analysis of other programs. Anyone participating in a specified HCBS program in the 12 months preceding a 'new' program entry in 2006 or 2007 was excluded. Analyses of extended NF stays likewise excluded anyone having an extended NF stay in the 12 months preceding the NF entry in 2006 or 2007. We refer to events with a 12-month clean period as *index events*. In any given analysis, we required that an individual be eligible for Medi-Cal during the index event month.

Two sub-samples of Medi-Cal recipients in 2006-2007 were selected from this population: (1) recipients dually enrolled in Medi-Cal and Medicare (MMEs) during at least one month of this period and (2) recipients only eligible for Medi-Cal for a minimum of at least one month during this period. In the main body of this report we focus on MME beneficiaries because they represent about 75% of the HCBS users in California.[20] Table 2 displays the demographic characteristics of the MME LTSS study population and includes a comparison with the MME LTSS population without exclusions related to age, eligibility codes or managed care. Similar information is available on the Medi-Cal only group in **Appendix B**.

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[18] Medi-Cal aid codes that refer to pregnancy services only are excluded: 44, 48, 5F, 7N, 76, 86, 87.

[19] While study cases were selected relative to their HCBS use status in 2006-2007, services used by these individuals in 2005 and 2008 were compiled as appropriate to identify service use up to 12-months before and after the HCBS and NF events in 2006-2007.

[20] Newcomer R, Harrington C, Stone J, et al. *Recipients of Home and Community-Based Services in California, June 2012.* http://www.thescanfoundation.org/california-medicaid-research-institute-recipients-home-and-community-based-services-california; and http://camri.universityofcalifornia.edu/publications.html.

Table 2
Sample Characteristics of the MME LTSS Population

	Study Population 2006-2007		Prior to Exclusions 2006-2007	
Demographic Characteristics	**Number**	**%**	**Number**	**%**
Total	474,706	100	647,156	100
Age at 2007 (years)				
18-34	7,662	2	11,442	2
35-44	16,227	3	23,166	4
45-54	34,087	7	46,621	7
55-64	48,288	10	64,812	10
65-74	134,099	28	178,414	28
75-84	149,843	32	205,983	32
≥85	84,500	18	116,718	18
Ethnicity				
Alaskan Native or American Indian	1,922	0	2,253	0
Asian/PI	94,366	20	123,153	19
Black	47,627	10	70,083	11
Hispanic	113,466	24	160,568	25
White	195,215	41	260,263	40
Unknown	22,110	5	30,496	5
Sex				
Female	298,173	63	411,118	64
Male	176,533	37	236,038	36

MEASURES AND DATA SOURCES

Separate Medi-Cal and Medicare enrollment files were used to identify monthly eligibility in each program. These files also included an indicator of whether the individual was enrolled in Medi-Cal managed care or Medicare managed care.[21]

Medicare and Medi-Cal Service Events and Expenditures

We used Medi-Cal and Medicare claims files to identify health care events and expenditures, reporting on three broad categories of medical and social services and their associated expenditures. These are: Acute and Other Medical Care Services, Post-Acute Care, and LTSS. The specific services included in each of these three categories are described in **Appendix A,** along with the files from which the claims records are obtained. The Acute and Other Medical Care Services category primarily refers to hospital care, ED visits, physician office visits, laboratory, imaging and other diagnostic and therapeutic procedures. For MMEs, these services are primarily paid for by Medicare. Medi-Cal contributes the beneficiary's required co-payment for those who are eligible. Post-acute Care refers to time-limited rehabilitative services following a hospitalization typically delivered as a home health service or through a short stay in a skilled NF. For MMEs, this would primarily be paid for by Medicare. LTSS include HCBS and extended NF stays, both of which are primarily paid for by Medi-Cal and are described in greater detail below. Because we did not have comprehensive data on prescription drug expenditures, we did not include these costs in our analysis.

Home and Community-Based Services

HCBS refer to health and social services intended to assist persons with a wide range of daily functioning needs (e.g., care coordination/case management, transportation, meals, house cleaning, as well assistance with bathing, dressing, grooming, eating) in order to maintain or restore the individual's ability and independence at home or in other community-based residential settings. HCBS are often intended to delay, and sometimes even prevent, entry into NFs and other institutional facilities. Medicaid is the largest single payer for HCBS in the United States. For fiscal year 2011, Medicaid spent $63.6 billion nationally on HCBS, or 16% of its total spending on all benefits.[22]

As defined in these analyses, HCBS include the Medi-Cal state plan and HCBS waiver services. State plan service use, including use of In-Home Supportive Services (IHSS), Adult Day Health

[21] The Department Health Care Services used Social Security numbers to link the Medi-Cal sample population with Medicare's enrollment file to identify those Medi-Cal recipients who were also enrolled in Medicare during any month of the study year, and to link Medicare claims, assessment, and Medi-Cal claims records for each recipient. The linked data files were made available to CAMRI using a common encrypted identification number. This number replaced the Social Security, Medi-Cal, and Medicare identification numbers. These data security procedures were approved by the University of California Committee on Human Research (#10-02998) and the California Committee for the Protection of Human Subjects (#12-06-0416).

[22] Table 7. Total Medicaid Benefit Spending by State and Category, FY 2011 (millions), MACPAC analysis of CMS-64 Financial Management Report (FMR) net expenditure data from CMS as of February 2012.

Care (ADHC),[23] Home Health, and Targeted Case Management (TCM) was obtained from Medi-Cal claims data. As shown in **Appendix A**, HCBS also includes several Medi-Cal waiver programs operating for varying periods between 2005 and 2008. Service use and expenditures on all these services was obtained from Medi-Cal claims.[24,25]

Nursing Facility Stays

The analysis of nursing facility (NF) use distinguishes two types of NF stays. These are respectively termed skilled nursing facility (SNF) and extended (or custodial) NF stays. Medicare covers SNF stays for enrollees who need post-acute skilled or rehabilitative services of relatively short duration, following a hospitalization of at least three consecutive days. For enrollees needing skilled care, Medicare will pay the full cost of this care for the first 20 days, and then a portion of the cost for up to 100 days of SNF care per "spell of illness." An individual, Medi-Cal, or a supplemental insurance plan pays for all or a portion of the co-payment beyond 20 days. Medi-Cal covers all SNF expenditures for Medi-Cal-only enrollees.

NF admissions are considered as extended NF stays if they meet any of the following criteria: a NF admission with a length of stay equal to or greater than 21 consecutive days; a NF admission for 20 days or less during which time the individual was enrolled in Medicare, but Medicare did not pay during the stay; or a NF stay for 20 days or less that was paid by a source other than Medicare and during which time the individual dies.

Analysis

A principle aim of HCBS programs from the outset has been to provide an alternative to NF placement. However, as the size of the aging and disabled populations has grown, interest has broadened to include concerns about the health care and other service needs of the HCBS population. The analyses presented here have been organized into three sections. The first looks at recipients as they enter HCBS participation, identifying health service events and expenditures associated with program entry, and duration of enrollment. These analyses also provide detailed service use and expenditure information after program entry. The second section is about beneficiaries in NFs, especially those whose stay is long enough to be considered extended. As with the preceding sections, we examine service use and expenditures both preceding and following NF entry, and contrast these results with those of the HCBS programs. This transition is depicted in the figures in the report by setting an individual's first entry into a defined program as time "0" even though the actual date of time "0" for any given individual can occur anytime during the period of January 1, 2006 to December 31, 2007.

After time-centering an individual's entry into a LTSS program (whether HCBS or NF) we characterize and aggregate the acute, post-acute and LTSS service use and costs for the 12 months prior and the 12 months following the time "0" entry date. For the period following time

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[23] Adult Day Health Care is currently known as Community-Based Adult Services (CBAS).

[24] See Table A-2, Appendix A for a listing of the vendor and other service codes.

[25] A previous CAMRI report: *California's Medi-Cal Home and Community-based Services Waivers, Benefits and Eligibility Policies, 2005-2008, T*ables 1-4 show component service expenditures for each HCBS waiver from 2005-2008. See, http://camri.universityofcalifornia.edu/publications.html.

"0" we censor cost estimates of individuals once they die (we count their costs up until that month); however, we retain individuals who are alive regardless of whether they continue to receive the LTSS service that made them eligible at time "0". This is consistent with what is sometimes referred to in the epidemiology literature as an "intention to treat" analysis. This analytic approach may result in some underestimating of the impact of HCBS but it captures the reality that not all those assigned to an intervention, in this case a LTSS service, will continue to receive it over time.

The programs collectively considered under the label of HCBS share various components (e.g., assessment, care management, monitoring), but they often differ in particulars associated with benefit eligibility, and in direct care services. By combining the first entry to 'any' HCBS, as we do in these initial analyses we obtain a general sense of the factors associated with entry into the HCBS system. Subsequently, we explore specific HCBS programs in order to shed light on the variation across the different types of HCBS services.

We first explore IHSS because it is by far the most common type of HCBS service either used alone or as the base for the other HCBS services. We next explore HCBS services that feature case management as a service. This includes the Targeted Case Management (TCM) program that is exclusively a case management benefit, and five waiver programs (MSSP and four smaller waivers here grouped as "Other Waivers") that also incorporate case management but are usually offered in combination with IHSS and may offer limited additional services.[26] Two other programs, the AIDS Waiver and the Assisted Living Waiver (ALW), are then presented. The analysis concludes with two state plan programs operational in the study period: Adult Day Health Care (ADHC)[27] and Medi-Cal Home Health (HH).

The second section of the results analyzing service use and costs before and after admission for an extended nursing facility stay parallels the approach we take to examine each type of HCBS service.

The third section is limited to individuals having an index hospital stay. These analyses examine the initial discharge disposition, and the expenditures and care setting transitions subsequent to this initial disposition. An index stay is characterized by an absence of a hospital stay, NF, or LTSS use in the 12-months preceding the hospital admission. While this is but one of several possible gateways into LTSS, these inclusion criteria minimize the confounding effects of events prior to a hospital stay for which we are lacking complete information on the start and end date of these events or care episodes.

[26] The "Other Waivers" category consolidates In-Home Medical Care (IHMC), In-Home Operations (IHO), Nursing Facility Acute Hospital (NF/AH), Nursing Facility A/B (NF/AB), and Nursing Facility SubAcute (NF/SA). See Table A-1 in Appendix A for a brief description of all the waivers.

[27] ADHC is no longer a state plan program. It has been replaced with a waiver program known as Community-Based Adult Services (CBAS).

HEALTH CARE USE BEFORE AND AFTER LTSS PROGRAM ENTRY

Previous studies suggest that HCBS may be initiated as a consequence of declining functional or cognitive status, declining health status due to chronic diseases, or changes in living arrangements such as loss of caregiver support.[28,29,30] The use of HCBS programs is generally dependent on the recipient being eligible for Medi-Cal at the time of entering the program, with continued eligibility determined monthly thereafter.[31] For the MME population, only 4% were not eligible for Medi-Cal in the month before HCBS entry. Further, 85% of those entering any HCBS had been enrolled in Medi-Cal for at least the prior 12 months. IHSS was the first HCBS program used by about 83% of HCBS users.[32]

HCBS Program Enrollment and Continued Participation

Figure 1 details the retention and attrition from the various HCBS programs over 12 months. The figure begins in the upper left corner with 100% of those entering each particular HCBS program in 2006-2007. The denominator for the percent calculations shown for each program line in the graph is based on the starting number of recipients in the individual program. The percentages in each month are based on the number of recipients remaining in the specific programs divided by the original number in that program. The attrition over time is inclusive of those lost due to death, Medi-Cal ineligibility, or termination of the service.

Home health care and TCM recipients typically have a short length of participation with just over 10% remaining in each program at two months. HH participation declines to 6% by three months and 2% by the end of the year. TCM, on the other hand remains around 10% across the year. The AIDS waiver also shows a sharp decline, in this case dropping to 30% after one month,

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[28] Beeber, A.S., Thorpe, J.M. and Clipp, E.C. (2008) Community-based service use by elders with dementia and their caregivers: a latent class analysis. *Nursing Research*, 57(5):312-21.

[29] Bookwala, J., Zdaniuk, B, Burton, L., Lind, B, Jackson,S. and Schultz R. (2004) Concurrent and long-term predictors of older adults'use of community-based long-term care services: the caregiver health effects study. *J. Aging Health.* 16 (1):88-115.

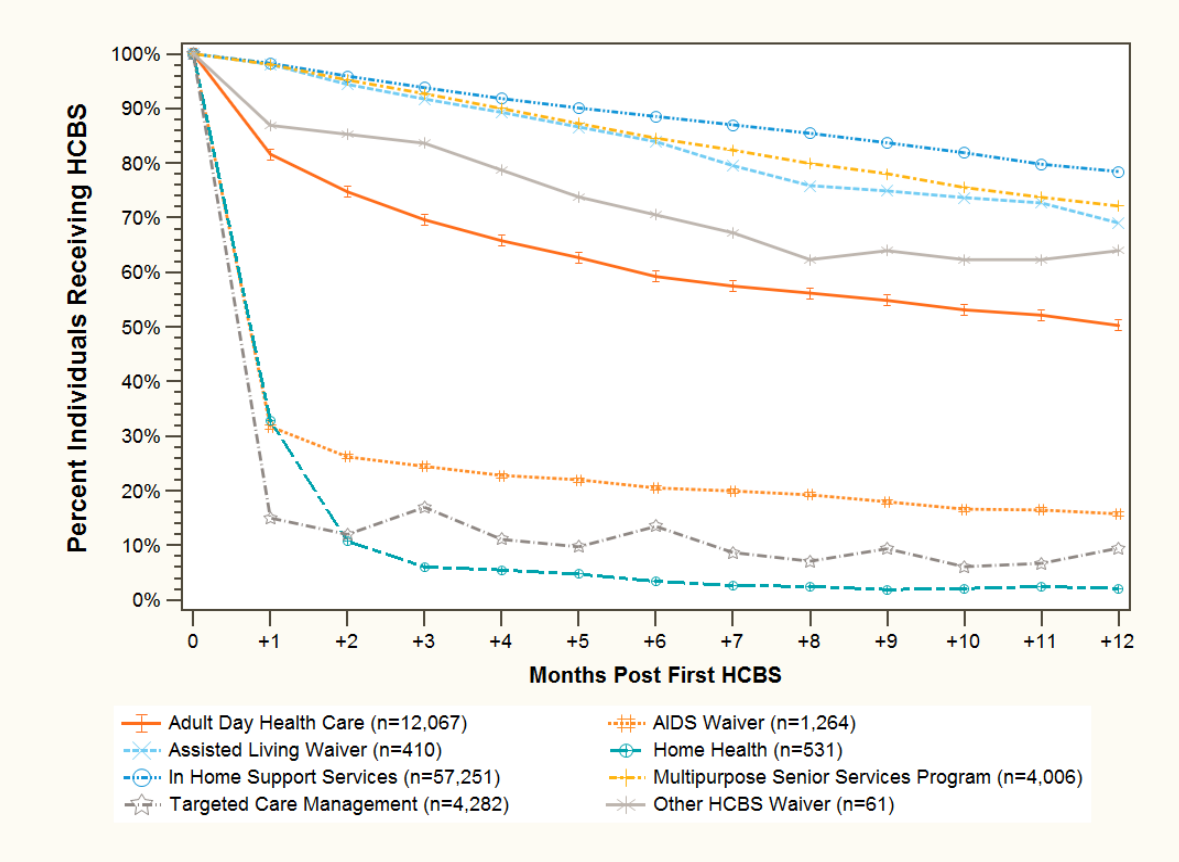
[30] Goodlin, S. Boult, C., Bubolz, T., and Chiang, L. (2004) Who will need long-term care? Creation and validation of an instrument that identifies older people at risk. *Disease Management*. 7(4):267-74.

[31] Medi-Cal eligibility can include program participation among recipients who are required to meet a monthly 'share of cost'. Share of Cost (SOC) eligibility, as distinct from categorical eligibility, is more difficult to gain among HCBS users than NF consumers. This is due in part to HCBS per diem expenses, which are usually much lower per month than those of a NF, and therefore HCBS beneficiaries may not spend assets to levels that qualify for Medi-Cal. Another important factor is that Medi-Cal eligibility rules (during the study period) as applied to state plan programs like IHSS do not allow couples to separate their income and assets (as can be done for NF residents). Separating assets makes it easier for the recipient to qualify for Medi-Cal. HCBS waivers allow for this separation of assets by couples. See our report, *California's Medi-Cal Home and Community-Based Services Waivers, Benefits and Eligibility Policies, 2005-2008* http://camri.universityofcalifornia.edu/publications.html for more information,

[32] Average monthly expenditure and percent service use calculations prior to HCBS entry are based on the number of HCBS recipients eligible for either Medicare or Medi-Cal (or both) in the month of interest. Fee-for-service claims from the available payment source were the data source of use/expenditure information.

and gradually diminishing to 20% by year's end. In contrast, entrants into IHSS, MSSP, other HCBS waivers, and the ALW tend to be long-term enrollees. Between 70% to 80% of those entering these programs remained over the full observation year. ADHC reflects a more intermediary pattern, with about a third of recipients leaving the program within three months, but with the balance of recipients staying in the program for the full 12 months.[33]

Figure 1
HCBS Program Attrition by MME Beneficiaries
Among New Enrollees in 2006-2007



Note: The 'n' for each program is a count of the new entries into that program during 2006-2007. An individual can be included as a new entry into more than one program in this period. Between 4% and 18% of attrition in the various programs is due to death. The death rate in each program is reported in later figures.

Those leaving any particular HCBS program may be entering another program, but this is not universal. Table 3 shows the transitions made by the new HCBS entrants. Just over 70% remained in or returned to an HCBS service over the year. Almost half of the balance discontinued HCBS participation, lost their Medi-Cal eligibility, or died during the period. Only 4% entered into an extended NF stay in the 12 months after initial HCBS.

[33] The retention percentages presented were calculated keeping the mortality cases in the denominator, but the results are not substantially affected if mortality cases are excluded.

Table 3
Recipient Transitions within 12-Months after Initial HCBS Enrollment
Among MME Beneficiaries

Transitions	Number	%
Death	5,633	9.0
Extended Nursing Facility Stay	2,524	4.0
HCBS Discontinued	7,025	11.2
Lost Medi-Cal Eligibility	1,690	2.7
Resumed HCBS	3,601	5.8
Retained HCBS	42,143	67.3
Total	62,614	100.0

Health Expenditures Before and After Any HCBS Program Entry

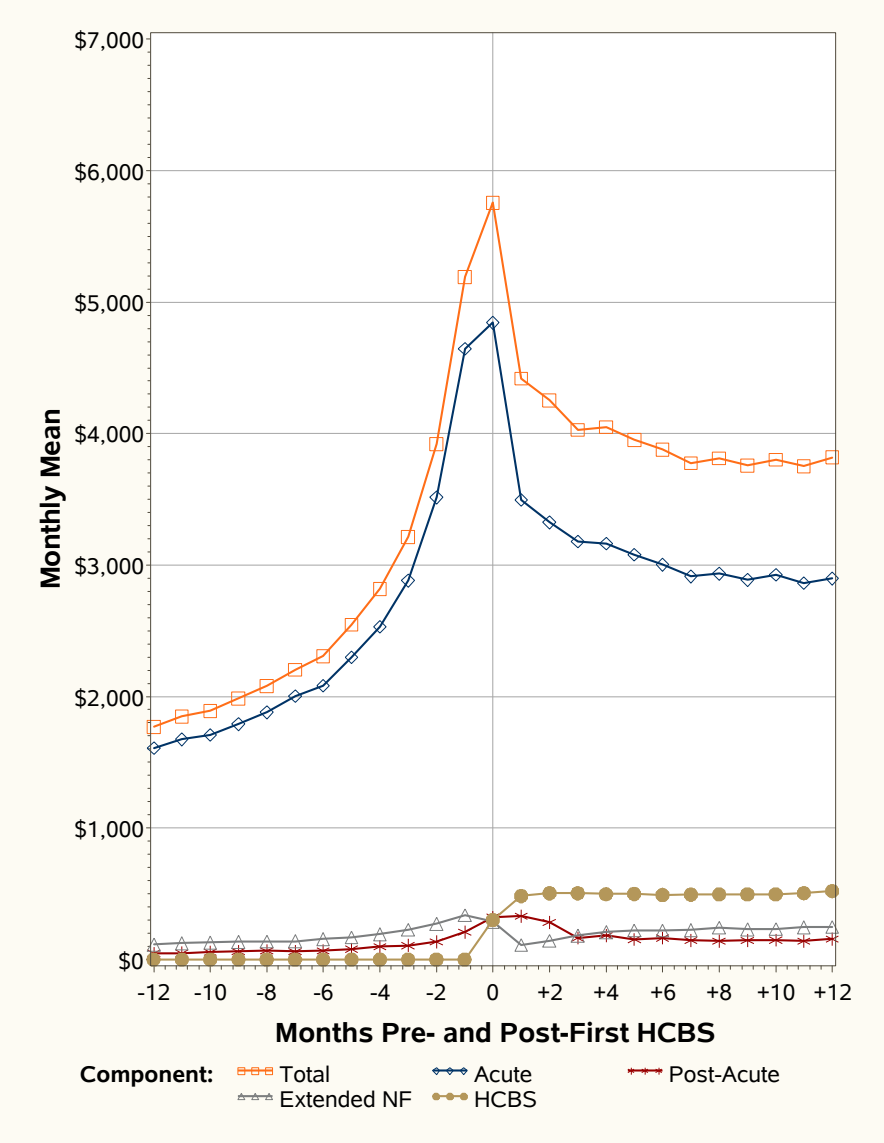
Average monthly total health care expenditures (combining Medicare and Medi-Cal spending) for MME recipients entering any HCBS program in 2006-2007 are shown in Figure 2. The month of entry is shown by the vertical line that intersects the horizontal axis at time '0'. Expenditures shown in any given month are averaged based on the original HCBS recipient enrollee cohort alive in the month of interest, regardless of whether they continue to participate in the HCBS program. Health services are arrayed into five aggregations: total, acute (hospital and other health care services), post-acute (including short stays in SNFs), HCBS, and extended NF.[34] Acute care expenditures are the dominant source of expenditures across the pre-HCBS program entry observation year. These expenditures increase steadily each month, rising most sharply in the three months prior to HCBS entry. Acute care expenditures are primarily Medicare dollars. HCBS expenditures in the period prior to time "0" are zero, because by definition time "0" is when an individual first enters into any HCBS service. In the post-enrollment period HCBS expenditures are covered by Medi-Cal and averaged about $500 per month.

Average monthly expenditures (both total and acute) decline steeply after HCBS entry, then stabilize at levels higher than the average monthly rate in the six months prior to HCBS entry ($p<.0001$).[35] The rate of change in total expenditures in the six months after HCBS entry is significantly lower than the before period ($p<0.0001$).

[34] **Appendix C** has tables paired to this and each of the Service Use figures. These show separate Medicare and Medi-Cal expenditures for adult MME beneficiaries. Medicare is the predominant payer for acute and post-acute care among all the LTSS program users. Medi-Cal is the predominant payer for HCBS and extended NF use.

[35] Statistical significance is evaluated in this analysis and the individual HCBS program analyses comparing mean differences in the average monthly total expenditures in the six-months prior to HCBS program entry and the six-months following entry. We also compare the slope or rate of change in expenditures among individuals with at least two observations in each of these two periods. In these comparisons we use both t-tests and Wilcoxon rank-sum tests. The statistical significance of results are similar.

Figure 2
Initial HCBS Program Entry and Health Care Expenditures
Among MME Beneficiaries
(n=62,614)

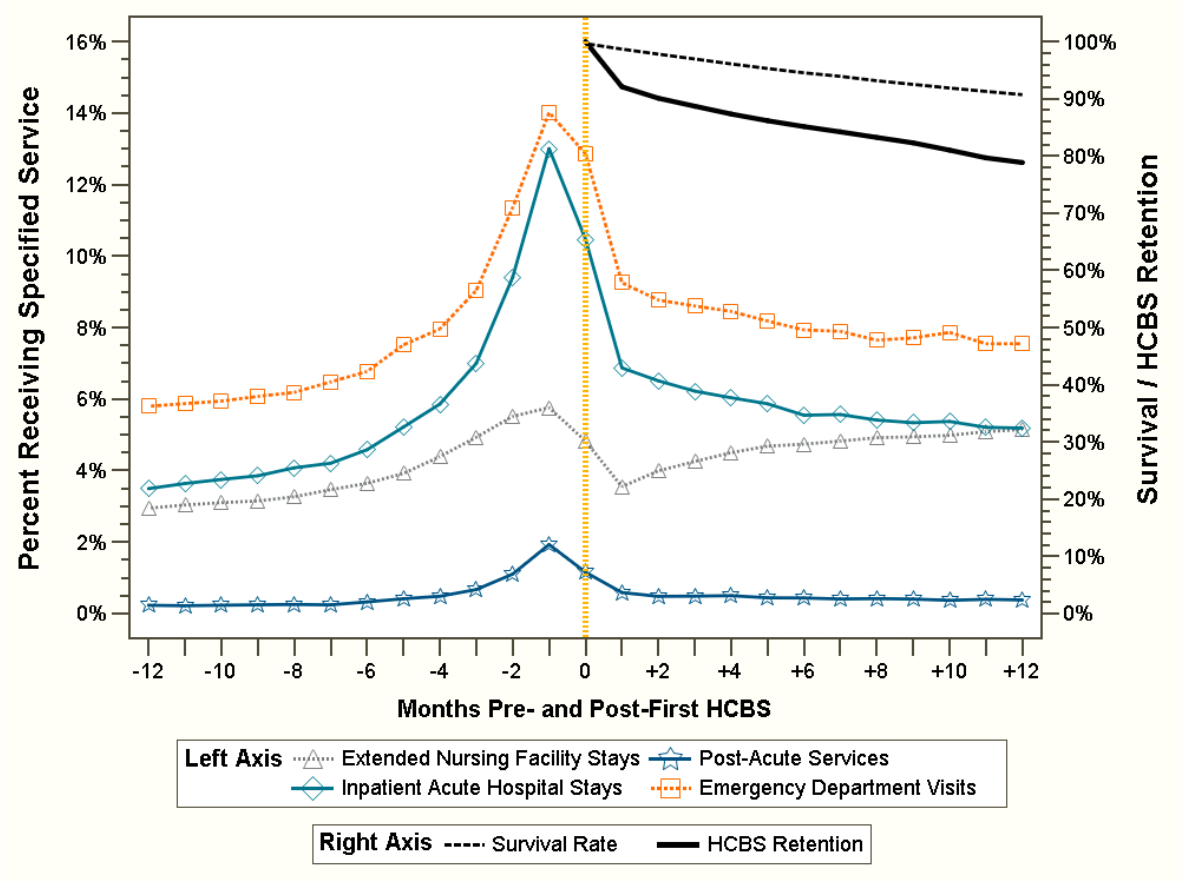


Health Services Use and Initial HCBS Program Entry

Figure 3 shows the relationship between selected service events and the first time entry to any HCBS program. The left vertical axis reveals that monthly use of hospitals and ED averaged between 3% and 5%, respectively, of those entering HCBS through the first months of the year prior to HCBS entry. The average monthly use in each of these services increased to a high of about 13% prior to HCBS entry. For most of this year, use of extended NFs was just under the hospital use rate, peaking at 6% in the two months preceding HCBS entry. The use of skilled and extended NFs combined increased the NF use to 8% in the month preceding HCBS entry. While

70% of those entering HCBS had no health service events in the month prior to HCBS entry, 58% had one or more ED visit, hospital stay, post-acute service, or extended NF stay in the 12 month pre-entry period. Forty-two percent had none of these services in the year prior to HCBS entry.[36] The use of health services prior to HCBS entry varied by the type of HCBS.

Figure 3
Service Use and Initial HCBS Entry
Among MME Beneficiaries
(n=62,614)



Emergency Department visits refer to those not occurring as a part of a hospital admission.

The pattern of service use mirrors what was observed for total expenditures before and after entry into HCBS. In the first month after HCBS entry the hospital and ED use rates declined markedly, but then stabilized at rates marginally higher than in the pre-entry period. These rates, as with all rates shown in this report have not been adjusted for case mix. The average monthly use rates for skilled nursing facilities also return essentially to what had been their prevailing use

[36] Among MME beneficiaries the unadjusted percentages for those entering specific services in 2006-2007 were these: ADHC 48%, AIDS waiver 68%, Assisted Living (ALW) 70%, Home Health (HH) 90%, IHSS 58%, MSSP 71%, TCM 75%, Other HCBS Waivers 67%. Figure B-4 in Appendix B shows service use patterns among Medi-Cal only beneficiaries. Health service use rates were generally higher for these beneficiaries: Any HCBS 73%, ADHC 47%, AIDS 78%, ALW 66%, HH 98%, IHSS 59%, TCM 75%, Other HCBS waivers 80%.

rates before HCBS entry. The percentage of the HCBS cohort with extended NF stays initially declined, but within six months had resumed the growth rate that preceded HCBS entry.

The right vertical axis shows the percentage of the original study cases alive and the population continuing in HCBS each month in the observation year, and the percentage in HCBS. Mortality among the initial HCBS recipient cohort averaged under 1% monthly, 9% for the year.

Entry into Selected HCBS Programs

In the following Figures (i.e., 4 through 21), time "0" corresponds to entry into a specific HCBS service. Unlike the previous analysis of entry into any HCBS service, it is possible that an individual could have HCBS expenditures prior to time "0" if these were related to the use of a different HCBS service. As with the earlier analysis, this section includes a description of the health care expenditures preceding and following a cohort of HCBS recipients entering the program of interest in 2006-2007. These results are intended to help in identifying service episodes that may be potential trigger events or risk factors for entry into HCBS programs. The results also offer insight into the trajectories following entry into different HCBS programs in offsetting use and costs of acute, post-acute and NF. For specific HCBS services other than IHSS, we include information on the use of IHSS both before and subsequent to other HCBS program entry because IHSS is widely used in combination with the other programs and often precedes entry into these other programs.

The discussion gives emphasis to Medi-Cal eligibility. This stems from our earlier work,[37] which showed that many of those entering NF for extended stays had become Medi-Cal eligible within the month preceding or shortly following NF entry. Individuals whose Medi-Cal eligibility coincides with NF or HCBS entry may have had limited opportunity to access HCBS earlier.

In-Home Supportive Services (IHSS)

IHSS is the predominant HCBS program in California, accounting for about 83% of the first HCBS used by MME beneficiaries. Since this program is funded through the Medi-Cal state plan, it can be available concurrently to recipients of other state plan benefits such as ADHC and Home Health as well as to those receiving Medi-Cal waiver services. Among MME beneficiaries enrolling in IHSS, about 85% are Medi-Cal eligible 12 months before enrollment and this rate increases as time moves closer to the date of service entry. In total, more than 80% of surviving recipients remained in the program after 12 months. Only 3% lost their Medi-Cal eligibility over the 12-month follow-up period.

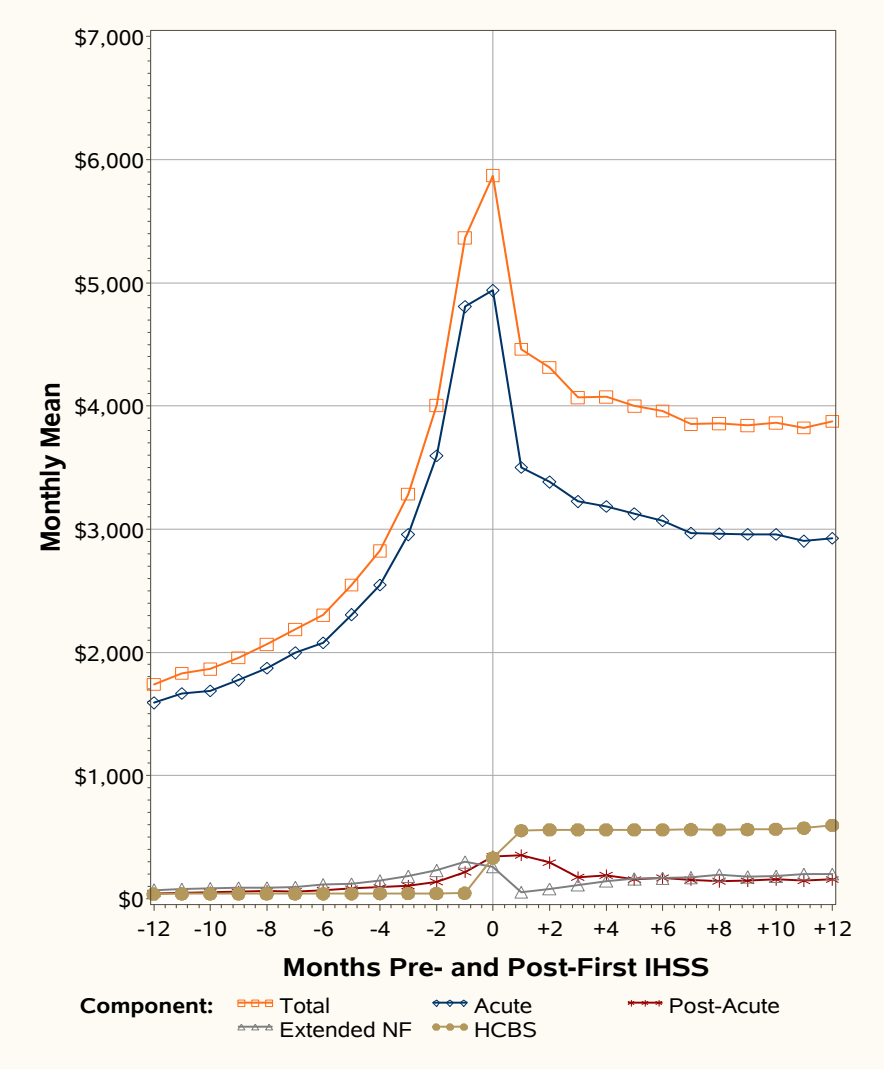
Health Care Expenditures Before and After IHSS Program Entry

Figure 4 shows the average monthly combined Medicare and Medi-Cal expenditures for MME IHSS enrollees. Total average monthly expenditures increase from less than $2,000 at the start of

[37] *Extended Nursing Facility Stays Among California's Dual Eligible and Medi-Cal-Only Beneficiaries, 2006-2008.* See, http://camri.universityofcalifornia.edu/publications.html.

the year to about $5,900 per month at time of IHSS entry. The steepest increases begin three months before program entry. Hospital expenses and trends parallel total expenses. HCBS expenses begin to become apparent with the IHSS entry month, soon climbing to an average of about $500 a month.

Figure 4
IHSS Program Entry and Health Care Expenditures
Among MME Beneficiaries
(n=57,251)



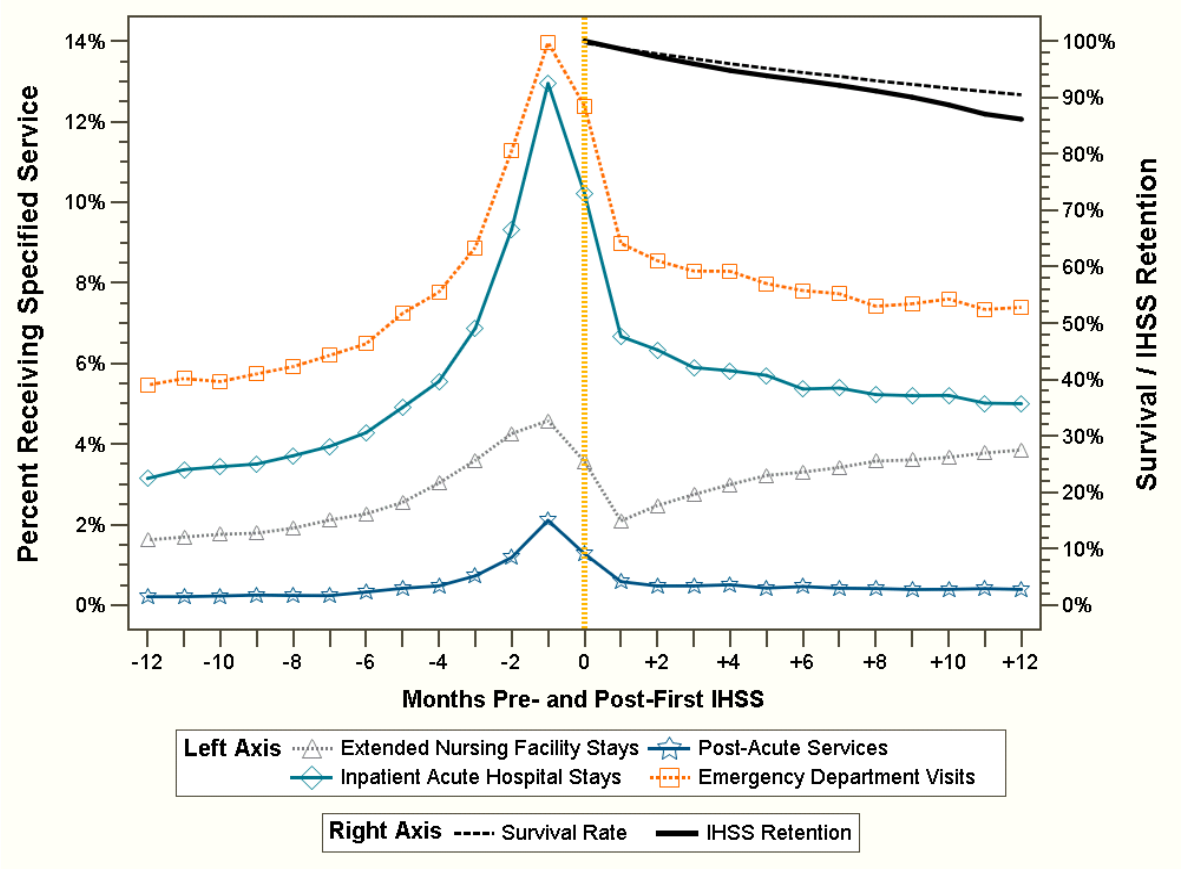
After IHSS entry, total and hospital average monthly expenditures decline by about $1,500 per month in the first month, and continue a modest decrease for about six months, at which point the average monthly rate remains largely unchanged for the balance of the year. The difference in mean monthly expenditures in the six months after program entry is significantly higher than the six months before program entry ($p<0.001$), but the rate of change in total expenditures is significantly lower in the after period than the before period ($p<0.001$). During the year NF

expenses remain relatively level and at approximately the same average monthly expenditure as the pre-IHSS entry period. The expenditures in this and the subsequent expenditure figures are inclusive of all the individuals who had entered the HCBS program of interest (here IHSS), and were alive in the observation month. This denominator is inclusive of both those continuing in IHSS (or the other programs of interest) and those who had left.

Health Services Used Before and After IHSS Program Entry

The percentage of IHSS recipients experiencing selected service events are shown by the left axis of Figure 5. While the likelihood of entry into IHSS was associated with high cost events such as a hospitalization or an ED visit, the majority of those entering into IHSS did not have either of these events in the month prior to entry into IHSS. Together users of these services in the month before IHSS entry accounted for less than one-third of total new IHSS recipients. Relocation from extended NF or SNF stays accounted for about 5% of new IHSS recipients.

Figure 5
Service Use and IHSS Program Entry
Among MME Beneficiaries
(n=57,251)



Emergency Department visits refer to those not occurring as a part of a hospital admission.

Targeted Case Management (TCM)

TCM is a specialized case management service to Medi-Cal eligible individuals in a defined target population to gain access to needed medical, social, educational, and other services. TCM services include: needs assessment, development of an individualized service plan, assistance with accessing services, crisis assistance planning, and periodic review of service effectiveness. TCM does not offer reimbursement for any direct care services. Eligibility is tied to language and comprehension barriers and the absence of a community support system to assist in follow-up care at home. Recipients must have exhibited an inability to handle personal, medical, or other affairs; and/or to be under conservatorship of person and/or estate.[38] Persons receiving case management through other HCBS programs are not eligible for TCM.

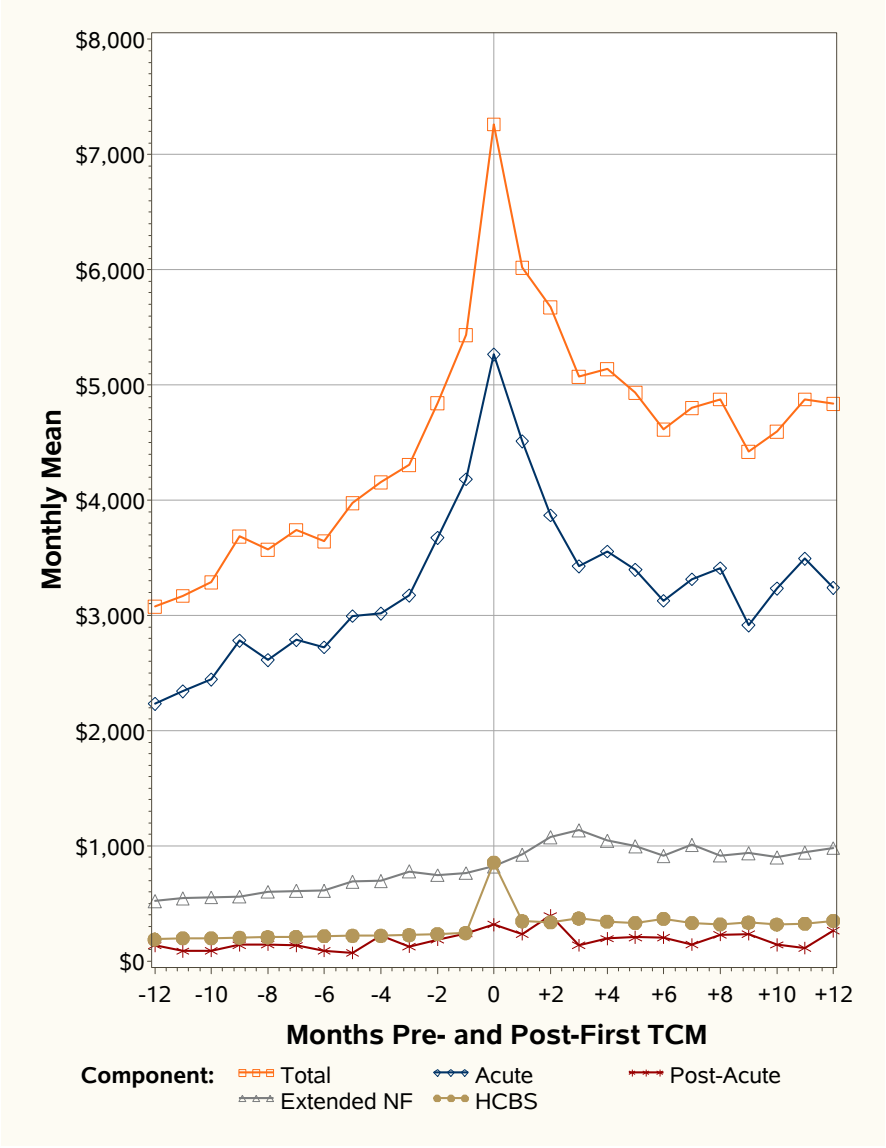
About 90% of the MME beneficiaries entering TCM had Medi-Cal eligibility for at least 10 months prior to entry. In the months prior to entry into TCM, approximately a quarter of recipients were also receiving IHSS. TCM participation for most MME clients is of short duration. A month after enrollment, participation declines to about 15% and reaches 10% one year following entry.

Health Care Expenditures Before and After TCM Entry

In spite of the special needs population entering TCM, this group experiences average monthly health care expenditures similar to those entering HCBS programs in general. As shown in Figure 6, monthly total expenditures averaged about $5,700 at TCM entry, with acute care expenses accounting for about $5,300 of the total. The mean monthly total expenditures is significantly higher in the six months after TCM entry than the six months prior ($p<0.0001$). However, the rate of change in total expenditures is significantly lower post TCM entry than the rate of change prior to program entry ($p<0.0001$). It should be noted that about 85% of TCM enrollees had left the program within one month, minimizing the potential impact of the program.

[38] For a more complete program description and eligibility see http://www.dhcs.ca.gov/tcm

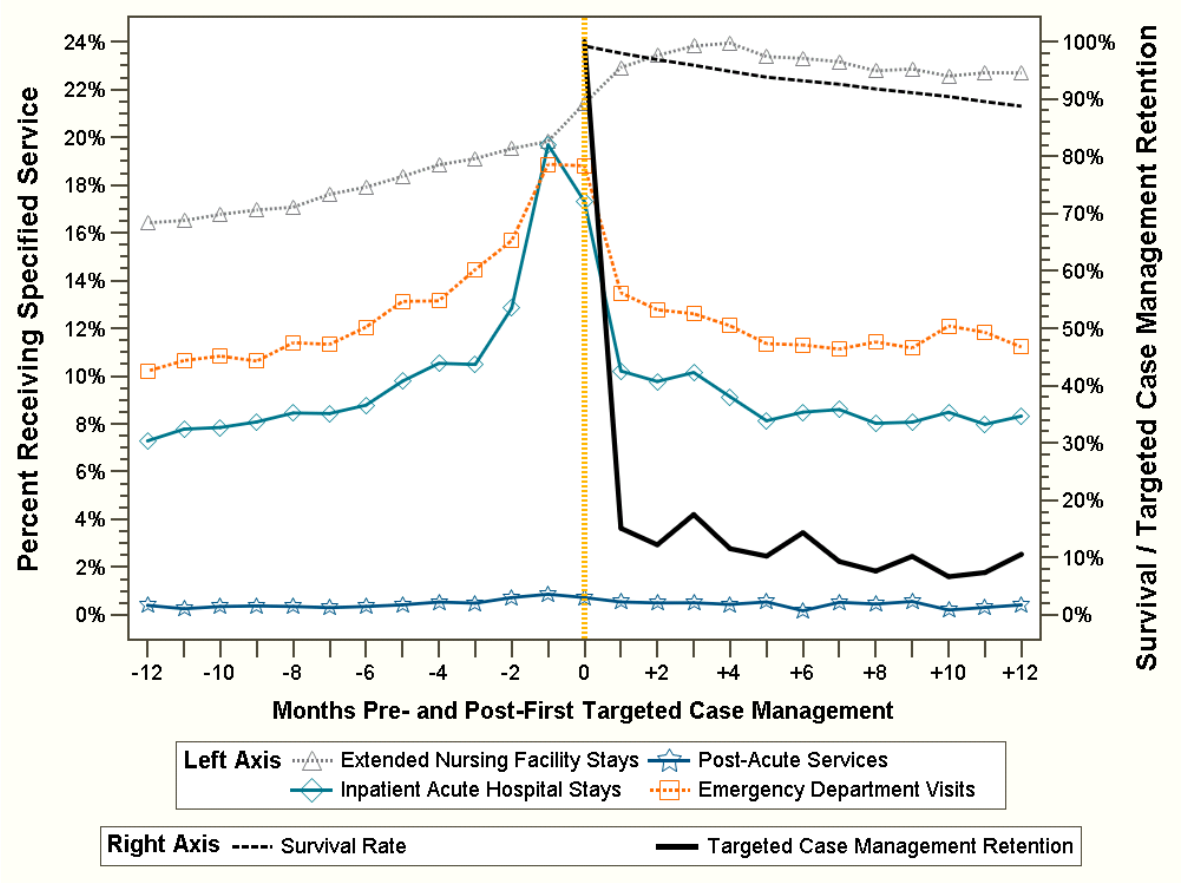
Figure 6
TCM Program Entry and Health Care Expenditures
Among MME Beneficiaries
(n=4,282)



Health Services Used Before and After TCM Entry

The health service patterns among those entering TCM in 2006-2007 are shown in Figure 7. As seen from the left axis, more than half of TCM recipients enter the program following hospital, ED, or NF use in the previous one to two months. The most striking pattern subsequent to TCM enrollment is the rapid decline in hospital and ED use rates. Skilled NF stays show no relationship to TCM use, remaining around 1% for the full observation period. However there is a substantial increase in extended NF use among the TCM entry cohort. The rate of extended NF use increased from 16% in the year prior to entry in TCM to more than 22% in the year afterwards. The right axis shows that the small percentage of this cohort who were participating in TCM in the post-entry months. Mortality among the MME beneficiaries in the TCM entry cohort was about 1% per month in the post-enrollment period.

Figure 7
Service Use and TCM Program Entry
Among MME Beneficiaries
(n=4,282)



Emergency Department visits refer to those not occurring as a part of a hospital admission.

Multipurpose Senior Service Program (MSSP)

MSSP[39] has the largest enrollment among HCBS waivers targeted to aged adults. The primary benefit available through MSSP is case management. Unlike the TCM benefit, this program is usually provided in conjunction with IHSS. For example, more than 85% of MME beneficiaries entering MSSP in 2006-2007 were IHSS recipients at the time of entry. About two-thirds of MMEs entering MSSP had been IHSS recipients for more than eight-months at time of MSSP entry. Further, most (94%) MME beneficiaries entering MSSP had been Medi-Cal beneficiaries for 12 months or more preceding MSSP enrollment and continued to be eligible during the ensuing year. This waiver is available only to community residents with levels of need that qualify them for NF placement; this is a higher level of need than is required for the TCM benefit. About 17% of the surviving MSSP participant cohort left the program over 12 months.

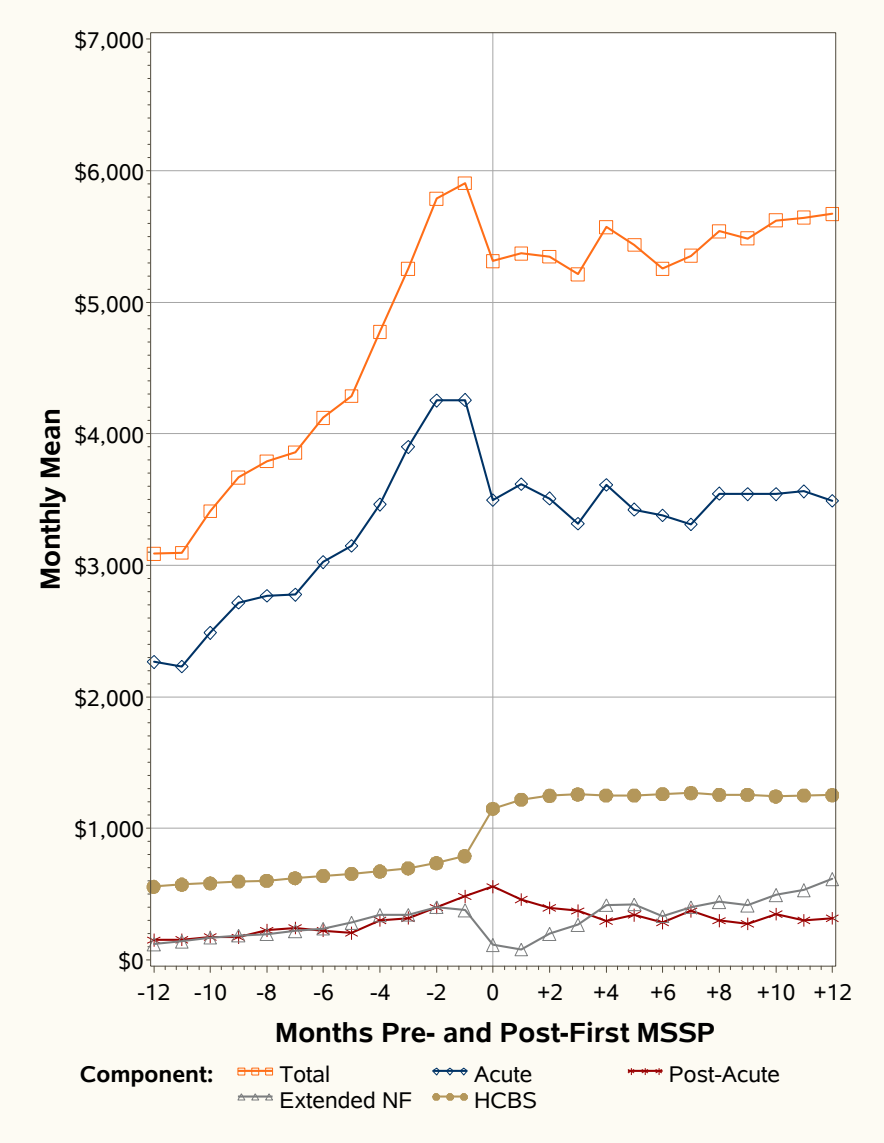
Health Care Expenditures Before and After MSSP Program Entry

As might be expected of a population meeting nursing facility eligibility requirements by the time of MSSP enrollment (Figure 8), there is a relatively linear increase in mean monthly total and acute care expenditures over the year prior to MSSP entry–expenses essentially doubled. After MSSP enrollment these average monthly health care expenditures declined by about $500 and then stabilized to average total expenses between $5,300 and $5,700 per month during the balance of the year. While the average total monthly expenditures were higher in the 6 months after program entry than the six months before ($p<0.0001$), the rate of change in total expenditures is significantly lower in the six months after enrollment than in the prior period ($p<0.0001$).

Both post-acute care and extended NF expenditures were relatively flat for much of the year preceding MSSP enrollment, although both tended to increase (each reaching about $400 in average monthly expenditures) in the two months before MSSP entry. Average post-acute expenditures increased in the month of MSSP enrollment and did not return to the pre-entry levels until the third post-enrollment month. NF expenses decreased at MSSP enrollment, but returned to the $400 level after the third post-enrollment month. Over the balance of the year, average monthly post-acute care expenditures were relatively constant at between $300 and $400. NF expenditures increased to an average monthly expenditure of about $600. The prevailing HCBS spending prior to MSSP entry (mainly IHSS) averaged between $500 and $700 for most of the year. This increased to about $1,200 at MSSP enrollment and remained at this level for the balance of the year.

[39] For more information about this program see California Department of Health Care Services. (2004). Application for a §1915 (c) Medicaid Home and Community-Based Services Waiver: Multipurpose Senior Services Program (MSSP) Medicaid Reimbursement of Home and Community-Based Services. Sacramento: DHCS.

Figure 8
MSSP Entry and Health Care Expenditures
Among MME Beneficiaries
(n=4,006)

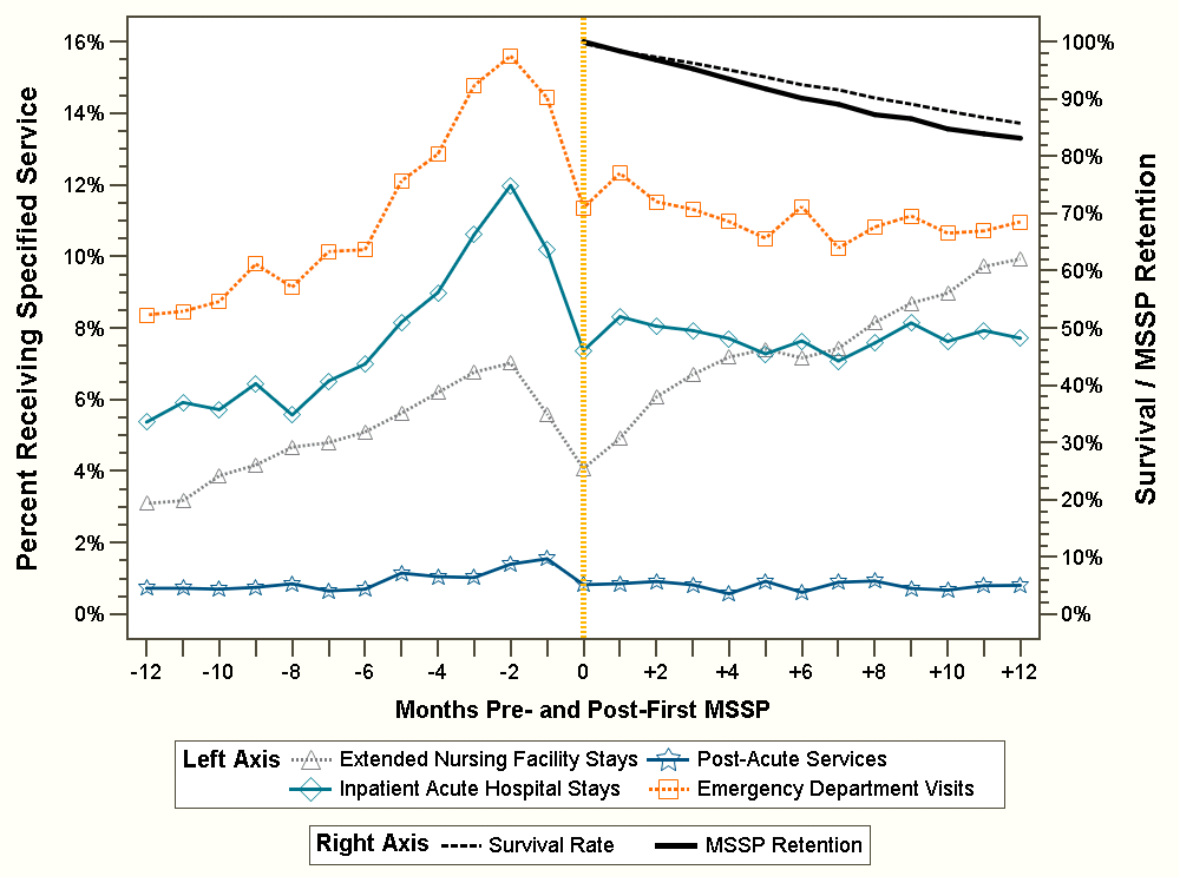


Health Services Used Before and After MSSP Program Entry

By virtue of the requirements to be at risk for NF admission, MSSP recipients are members of a higher need population than those in IHSS only. However, based on service use patterns prior to program entry there tends to be little difference in the pattern shown for MSSP in Figure 9 and what was previously demonstrated for the IHSS population (Figure 5). Reading from the left axis, the average monthly percentage of the MSSP cohort using ED, hospitals, and extended NF stays doubles from the start of the year to the months immediately preceding MSSP enrollment. Following enrollment in MSSP, the rates of hospital, ED, and post -acute care use declined, then remain relatively stable, but at rates higher than those earlier in the year. Extended NF rates

declined in the months immediately preceding MSSP entry, but begin increasing after that. Within three months after MSSP enrollment the NF use approached the pre-enrollment levels and continued to increase, approaching 10% by the end of the year. These NF use patterns reflect a rate about double that of IHSS only recipients. Such a difference is consistent with the proportionately higher prevalence of frailty in the MSSP recipient group. The survival rate, as seen reading the right axis, is also lower among MSSP recipients (about 86% over the year) compared to 90% among the total IHSS group.

Figure 9
Service Use and MSSP Entry
Among MME Beneficiaries
(n=4,006)



Emergency Department visits refer to those not occurring as a part of a hospital admission.

Other HCBS Waiver Programs

Five related waivers are considered together as "Other Waivers": In-Home Medical Care (IHMC), In-Home Operations (IHO), Nursing Facility Acute Hospital (NF/AH), Nursing Facility A/B (NF/AB), and Nursing Facility SubAcute (NF/SA).[40] While a beneficiary can be enrolled in only one waiver at a time, they can concurrently use state plan programs like IHSS. Each of these five waivers has small enrollment caps, so even considered in combination there were few new recipients (n=61 for MMEs) in 2006-2007 available for these analyses. Each of the programs included in "Other Waivers" feature the provision of a case manager and typically supplement IHSS hours. They may also offer some nursing services.

Between 80% and 90% of the MME entrants into these waivers were Medi-Cal eligible for 12 months prior to program entry. Similar to what was observed for the MSSP waiver, approximately 80% of recipients of Other Waivers were also receiving IHSS services at the time of entry. IHSS participation remained at 80% among the Other Waivers cohort, even as recipients left the waiver programs over the ensuing 12 months. Waiver participation declined by about 25% over the observation period.

Health Care Expenditures Before and After Other Waiver Program Entry

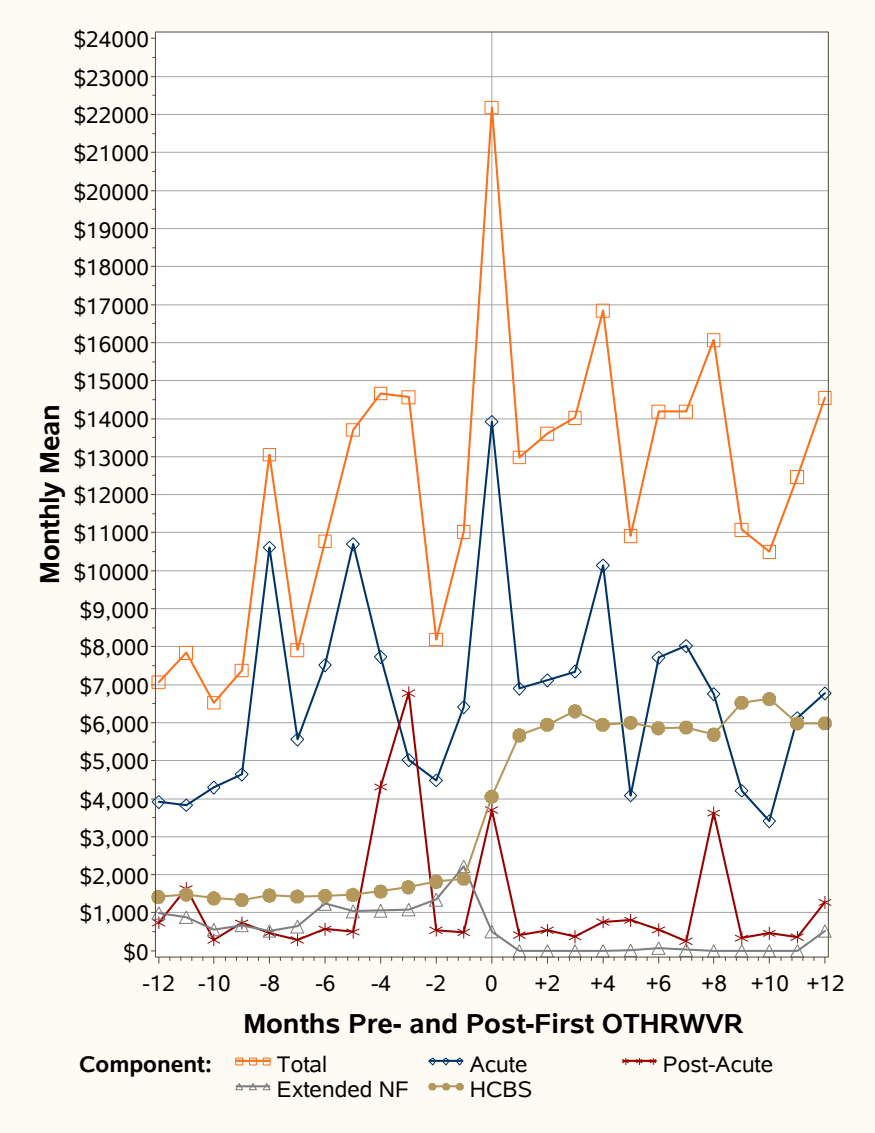
A stable estimate of the average monthly expenditures for the "Other Waiver" program recipients is challenging due to the small number of individuals in these programs. However, there is a spike in average total expenditures to approximately $22,000 per month in the month that precedes enrollment in these waivers (Figure 10). As occurs with the other HCBS programs, acute care accounts for the largest proportion of these expenses. These waivers were intended to serve a very high cost population, aiding recipients to relocate from hospitals and nursing facilities. The programs seem to have achieved the aim of targeting high cost recipients.

Average monthly total expenditures declined dramatically, dropping to $13,000 in the month after waiver entry. Average monthly expenditures fluctuate around this level across the post-enrollment year. The average monthly total expenditures is significantly higher in the six months after program enrollment than the six months before and there is also no significant difference in the rate of change in monthly expenditures in the six month period after program enrollment as

[40] See Table A-1 in Appendix A for a brief description of each of the programs included in "Other Waivers". Full descriptions are available in the waiver applications: California Department of Health Care Services (2003). Application for a §1915 (c) Medicaid Home and Community-Based Services **In Home Medical Care Waiver**. Sacramento: DHCS; California Department of Health Care Services. (2007). Application for a §1915 (c) Medicaid Home and Community-Based Services **In Home Operations Waiver**. Sacramento: DHCS; California Department of Health Care Services. (2007). Application for a §1915 (c) Medicaid Home and Community-Based Services **Nursing Facility Acute Hospital (NF/AH) Waiver**. Sacramento: DHCS; California Department of Health Care Services. (2002). Application for a §1915 (c) Medicaid Home and Community-Based Services **Nursing Facility A/B Level of Care (NF/AB) Waiver**. Sacramento: DHCS; California Department of Health Care Services. (2002). Application for a §1915 (c) Medicaid Home and Community-Based Services **Nursing Facility SubAcute (NF/SA) Level of Care Waiver**. Sacramento: DHCS

compared to the six months before enrollment. Acute care remains the largest component of total expenditures in most months.

Figure 10
Other HCBS Waiver* Program Entry and Health Care Expenditures
Among MME Beneficiaries
(n=61)



"Other Waivers" (OTHRWVR) is defined by combining five waiver programs: In-Home Medical Care (IHMC), In-Home Operations (IHO), Nursing Facility Acute Hospital (NF/AH), Nursing Facility A/B (NF/AB), and Nursing Facility SubAcute (NF/SA)

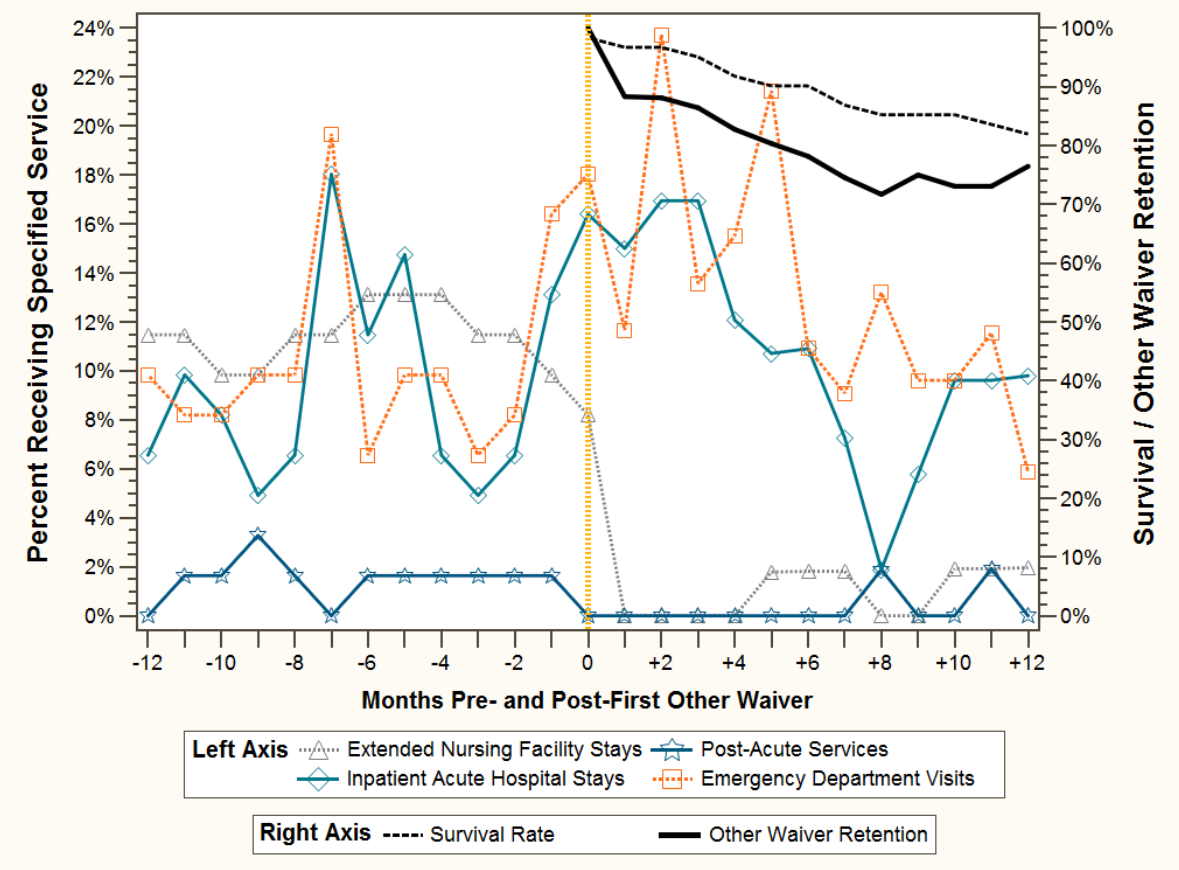
Recognizing that the aim of these waivers includes helping individuals return to the community from extended hospital and NF stays, the declining acute and NF expenditures are expected. Average monthly expenditures for the Other Waiver program participants (inclusive of any additional HCBS programs, e.g., IHSS) are substantial. HCBS expenditures were trending

toward $2,000 a month prior to other waiver enrollment. These expenditures average $6,000 after waiver enrollment.

Health Services Used Before and After Other HCBS Waiver Program Entry

Unlike MSSP, the programs defining "Other Waivers" can include individuals residing in extended NF or hospital stays at the time of program entry. Consequently some of these waiver recipients are in NFs or hospitals 90 to 180 days after waiver entry. As seen reading the left axis in Figure 11, 25% of the group was in either a NF or acute care hospital in the month of entry into one of these waivers. Another 18% had at least one ED visit.

Figure 11
Service Use and Other HCBS Waiver Program Entry
Among MME Beneficiaries
(n=61)



* "Other Waivers" is defined by combining five waiver programs: In-Home Medical Care (IHMC), In-Home Operations (IHO), Nursing Facility Acute Hospital (NF/AH), Nursing Facility A/B (NF/AB), and Nursing Facility SubAcute (NF/SA)

Emergency Department visits refer to those not occurring as a part of a hospital admission.

After waiver entry there was not an immediate decline in hospital use (perhaps reflecting the recruitment of inpatients into the waiver). More dramatic effects are seen in monthly NF use. Among the MMEs these dropped from 8% at program entry to 2% at 12 months. ED use among

program participants increased after program entry, but there was a trend toward fewer visits in the last six months of the observation year. Perhaps reflecting the baseline frailty of the "Other Waiver" recipients, the cumulative mortality rate was 18% (i.e., 82% were alive at the end of the 12 month period).

As seen from the right axis, program retention among survivors was not universal. Across the year about 25% had left the program. About half of this occurred in the first two months. Little of this attrition was explained by extended NF stays.

AIDS Waiver Program

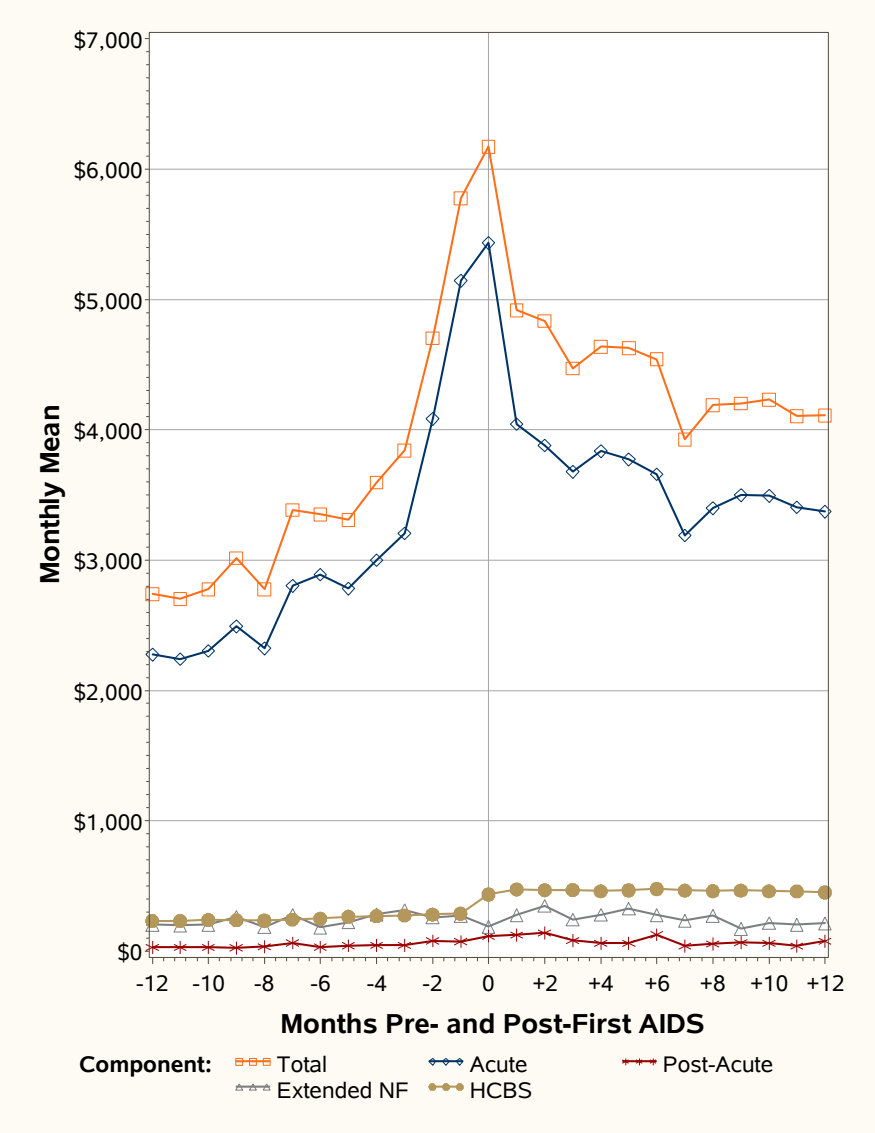
The AIDS waiver[41] provides case management and limited direct service reimbursement for homemaker, environmental modifications, skilled nursing, transportation, specialized medical equipment and supplies, attendant care, psychosocial counseling, nutritional supplements, home-delivered meals and nutritional counseling. To be eligible, individuals must meet NF qualifications, have an active diagnosis of AIDS, and live in a setting where in-home services can be provided. Most program entrants (90% in 2006-2007) had been Medi-Cal eligible for at least 12 months; the proportion increased to 95% within the two months prior to entry. In spite of the chronic care needs of this population, less than a third were IHSS recipients at the time of entry. Approximately 75% of those who remained alive after entering the AIDS waiver program left within three months and another 5% left over the course of the year. The proportion of the entry cohort continuing to use IHSS remained stable at 30%, regardless of whether these individuals continued in the AIDS waiver program.

Health Care Expenditures Before and After AIDS Waiver Program Entry

Average monthly total expenditures were about $2,700 among the AIDS waiver entrant cohort 12 months before enrollment (Figure 12). Average monthly total expenditures more than doubled in the three to four months prior to entering the waiver. The rate of monthly expenditures declined substantially during the six-months after AIDS waiver enrollment as compared to the six months prior to program enrollment ($p<0.0001$). However, the average total monthly expenditures in the six months after program enrollment were significantly higher than the pre-program 6 month period ($p<.0001$). Acute care expenses followed a pattern paralleling total expenditures, although acute expenditures accounted for a lower proportion of total expenses after AIDS waiver enrollment compared with pre-entry. Post-acute and NF average monthly expenditures were constant across the pre- and post-entry period, with combined average monthly expenditures of about $400. HCBS expenditures increased after waiver entry rising to an average monthly level of about $500 by the end of the period. These were primarily a combination of the AIDS waiver program costs and IHSS expenses.

[41] For a full description of this waiver, see California Department of Health Care Services, Application for a §1915 (c) HCBS Waiver Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome (HIV/AIDS) Medicaid Home and Community-Based Services Waiver, Effective January 2007.

Figure 12
AIDS Waiver Program Entry and Health Care Expenditures Among MME Beneficiaries
(n=1,264)

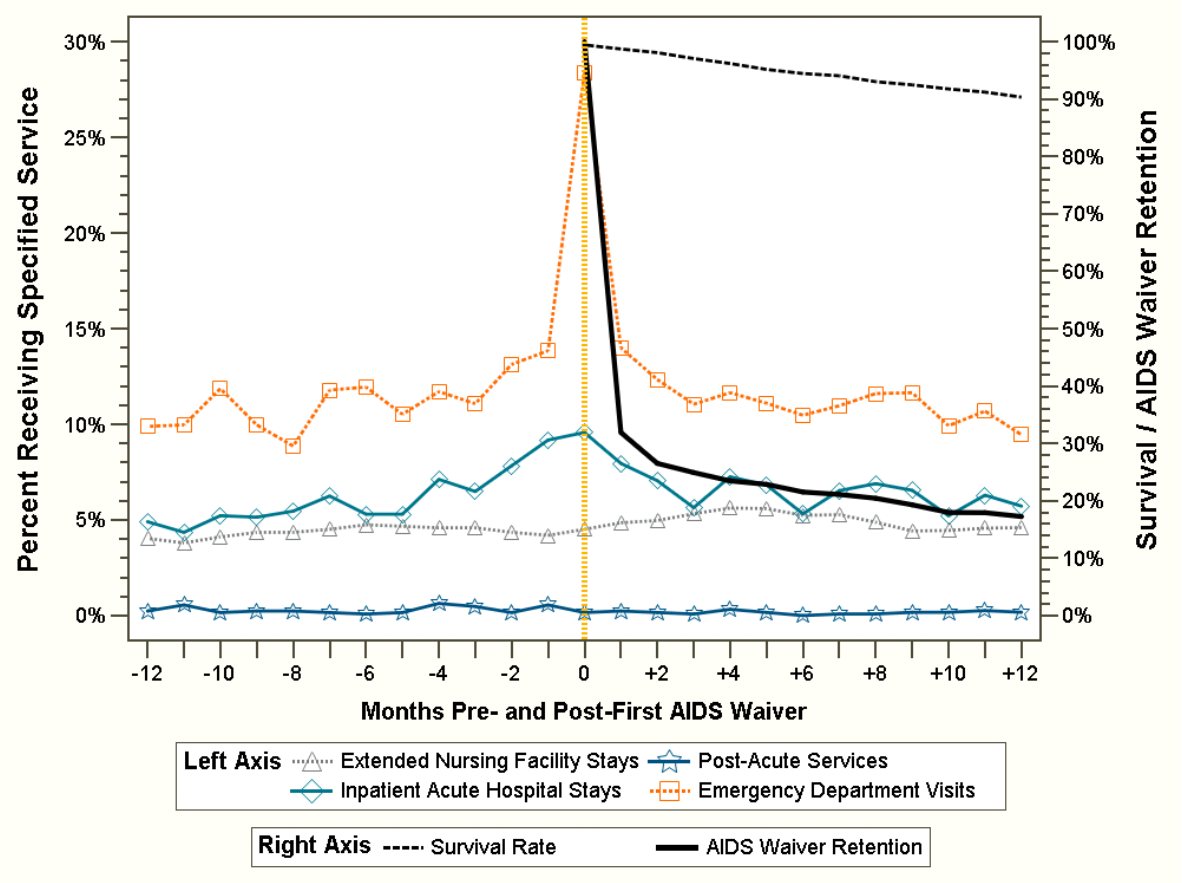


Health Services Used Before and After AIDS Waiver Program Entry

Figure 13 shows that monthly ED use and to a lesser degree hospital use spiked in the month of AIDS waiver enrollment. However, combining the hospital and ED use in the month of waiver entry accounts for fewer than 40% of the AIDS waiver entrants. After waiver entry the service use returned to the pre-enrollment levels. Skilled and extended NF stays are largely constant from month to month in both the pre- and post-AIDS waiver periods. This occurred despite substantial attrition from the program. Participation among survivors declined substantially, dropping to 30% at one month and to 20% by

year's end (see right axis). The cumulative mortality rate among this cohort was about 10% over the post-waiver entry year.

Figure 13
Service Use and AIDS Waiver Program Entry
Among MME Beneficiaries, 2006-2007
(n=1,264)



Emergency Department visits refer to those not occurring as a part of a hospital admission.

After the AIDS waiver entry, total and hospital average monthly expenditures decline by an average of about $1,500 a month in the first month, and continue a modest decrease for about five months, at which point the average monthly rate remains largely unchanged for the balance of the year and approximates the pre-entry rates. Similarly, NF expenses remain relatively level and at approximately the same average monthly expenditure rate as the pre-waiver entry period. The expenditures in this and the subsequent expenditure figures are inclusive of all the individuals who had entered the HCBS program of interest (here AIDS), and were alive in the observation month.

Assisted Living Waiver (ALW)[42]

The Assisted Living Waiver (ALW), unlike the previously presented programs, is largely directed to enabling individuals to live in supported housing environments, particularly those licensed as Residential Care Facilities for the Elderly (RCFEs), rather than in their own homes or those of relatives. This waiver, however, features services common to many HCBS programs: case management, skilled nursing services, and an enhanced level of personal care and homemaker services. ALW serves persons age 21 or older with physical disabilities who qualify for admission to a nursing facility.

ALW program entrants tend to be Medi-Cal eligible for much of the year prior to coming into this program. Eligibility remains above 90% throughout the ALW post-enrollment year. Anyone losing eligibility would have to leave the ALW waiver, but they would not necessarily have to relocate from the supported housing setting. Consistent with the assumed needs of ALW participants, about 20% were IHSS recipients for most of the pre-waiver entry period. After enrolling in ALW, recipients would no longer be able to receive IHSS as this service is expected to be provided under their RCFE rental agreement. Accordingly, IHSS use declines after program entry, eventually dropping to less than 10% in the program cohort. The ALW post-enrollment use of IHSS is attributable to both the public housing participants and those ALW recipients who left the RCFE and returned to a community setting. Over the post-enrollment year, about 20% of the surviving ALW recipients dis-enrolled from the ALW.

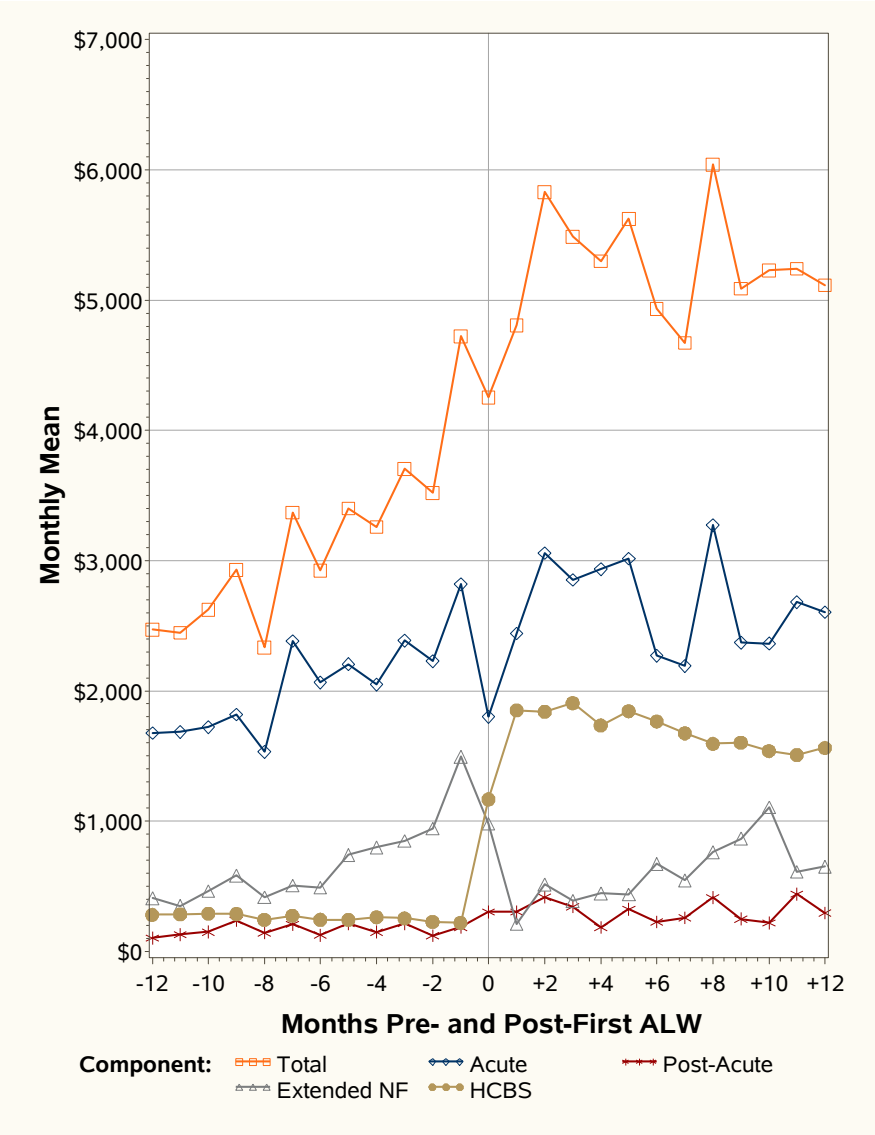
Health Care Expenditures Before and After Assisted Living Waiver Program Entry

Average monthly health care expenditures among the ALW enrollees are shown in Figure 14. Expenditures among this group have a pattern that differs somewhat from the other HCBS programs. Particularly, while acute care remains the main contributor to total average monthly expenditures, total expenditures, even in the month prior to ALW entry are well below those of recipients in most of the other HCBS waivers. This may be attributable to an unwillingness of RCFE providers to accept individuals who are in a medically unstable status. Medically unstable consumers, similarly, may have been unwilling to relocate into an eligible living situation. On the other hand, SNF and extended NF expenses combine for an average of about $500 per month in the ALW entry month. This is a level higher than the other waiver programs.

After ALW entry, total expenditures increased from an average monthly level of about $4,300 to $5,800 within two months. Two main factors were associated with the volatility of the expenditures: acute care and extended NF stays. NF expenditures dropped impressively in the first ALW post-enrollment month, but increased steadily over time. The mean monthly total expenditures are higher in the six months after waiver entry than the six months before ($p<.0001$) and the rate of change in total expenditures in the two time periods is not significantly different.

[42] The waiver description and eligibility presented here was taken from the California Department of Health Care Services. (2006). Application for a §1915 (c) Medicaid Home and Community-Based Services Assisted Living Waiver. Sacramento: DHCS; and the resubmitted application effective March 1, 2009.

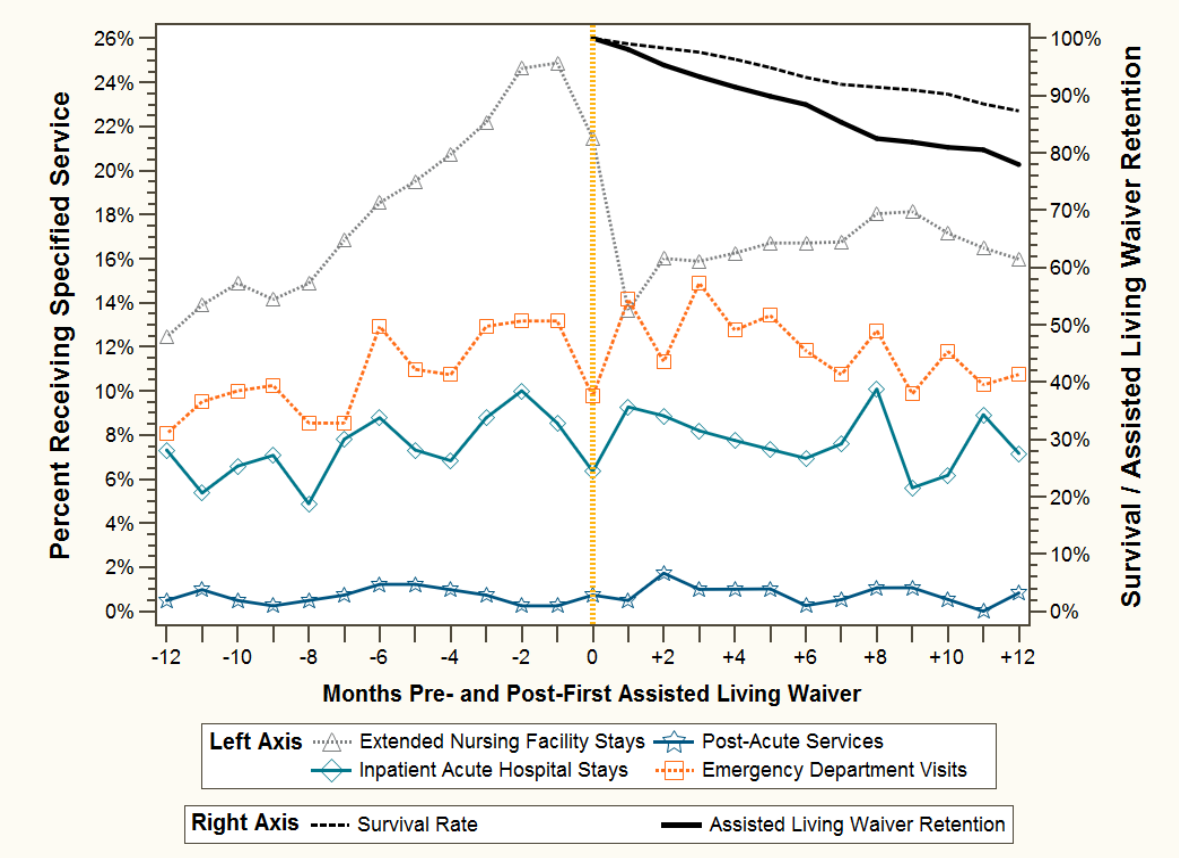
Figure 14
Assisted Living Waiver (ALW) Program Entry and Health Care Expenditures Among MME Beneficiaries
(n=410)



Health Services Used Before and After Assisted Living Waiver Program Entry

As seen in the left axis of Figure 15, about 25% of the ALW enrollees in 2006-2007 had been in extended NF placements in the month before their entry into ALW. Individuals with acute care episodes, such as an ED visit or hospital stay in the month prior to entry were much less likely to be coming into the program. These latter individuals together accounted for about 17% of new entrants. Whether the low proportion of ALW entrants with acute events reflects a selection practice by either the RCFEs, consumers, or the waiver program to limit ALW enrollees to medically stable individuals has not been determined. SNF use was correspondingly low as it is related to hospital stays.

Figure 15
Service Use and Assisted Living Waiver Program Entry
Among MME Beneficiaries
(n=410)



Emergency Department visits refer to those not occurring as a part of a hospital admission.

ALW post-enrollment showed a continuation of the prior year's ED, hospital, and SNF average monthly use rates. Extended NF stays among survivors dropped to an average monthly use rate of between 15%-17%. This use rate roughly corresponds with the rate of ALW disenrollment (see right axis). The mortality in the ALW cohort was about 12% over the year.

Adult Day Health Care (ADHC)[43]

Approximately 90% of the MME beneficiaries entering ADHC in 2006 and 2007 were Medi-Cal eligible for the full year before the ADHC entry date and 97% were eligible three months prior to entry. Medi-Cal eligibility continued among at least 98% of the surviving recipients in the 12 months after ADHC entry. IHSS participation, commonly received concurrently with ADHC, was not prevalent initially among first time ADHC users. About half of the MME beneficiaries were using IHSS in the month of first ADHC use. About 20% of ADHC entrants left the program within one month. By three months about 30% had left the program. By the end of the year, only about half of the surviving ADHC enrollees remained in the program. Over time as the participation in ADHC declined the proportion of remaining ADHC users with IHSS increased.

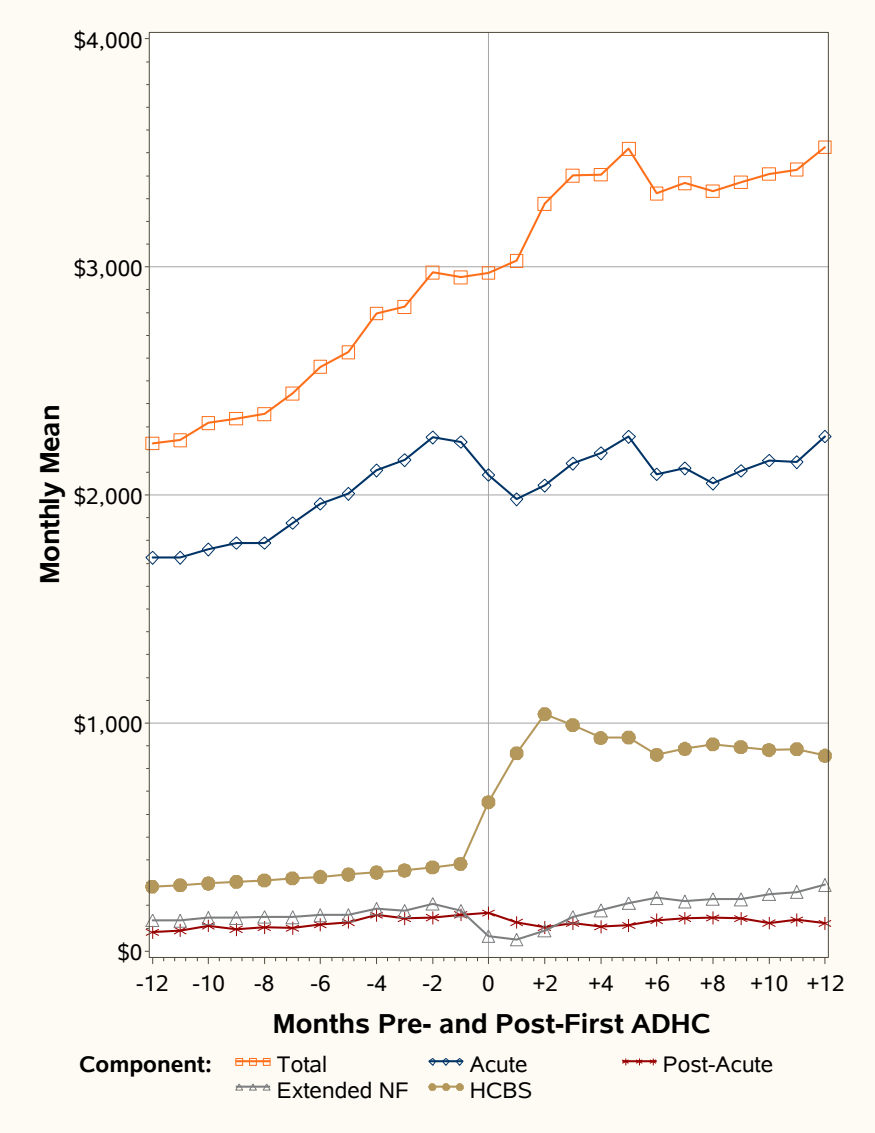
Health Care Expenditures Before and After ADHC Program Entry

As compared with other HCBS recipients, the cohort of ADHC users tended to have relatively modest, but progressive growth in average monthly total health care expenditures ($2,200 to $3,000) in the months preceding program entry (Figure 16). Not only were the average monthly total expenditures higher in the six months post program enrollment than the six months prior to entry ($p<.0001$), but the rate of growth in average monthly total expenditures was significantly higher in the post program period ($p=.003$). The benefits of ADHC may not be fully realized as about 20% of ADHC enrollees left the program within one month of entry, and about 60% of the surviving cohort members left the ADHC program within five months.

Much of the increase in expenditures is associated with the ADHC and other HCBS expenditures. HCBS expenditures climbed to an average of $1,000/month within two months after the ADHC enrollment and remained at this level for the balance of the year. The HCBS monthly expenses are compiled for all surviving individuals in the ADHC participant cohort whether they remain in or leave the ADHC program. Many of the continuing ADHC recipients, as well as ADHC enrollees who had left the program, were using IHSS. Average monthly acute care expenditures parallel total expenditures for most of the pre-entry year. Post-acute and extended NF expenditures were largely unchanged across the pre-enrollment period and into the post-enrollment period. Average monthly NF expenditures began to increase a few months after ADHC entry and correspond to the decline in the ADHC program participation.

[43] The information presented is drawn from California Department of Health Care Services. California Medicaid State Plan Under Title XIX of the Social Security Act. Sacramento: DHCS.

Figure 16
ADHC Program Entry and Health Care Expenditures
Among MME Beneficiaries
(n=12,067)

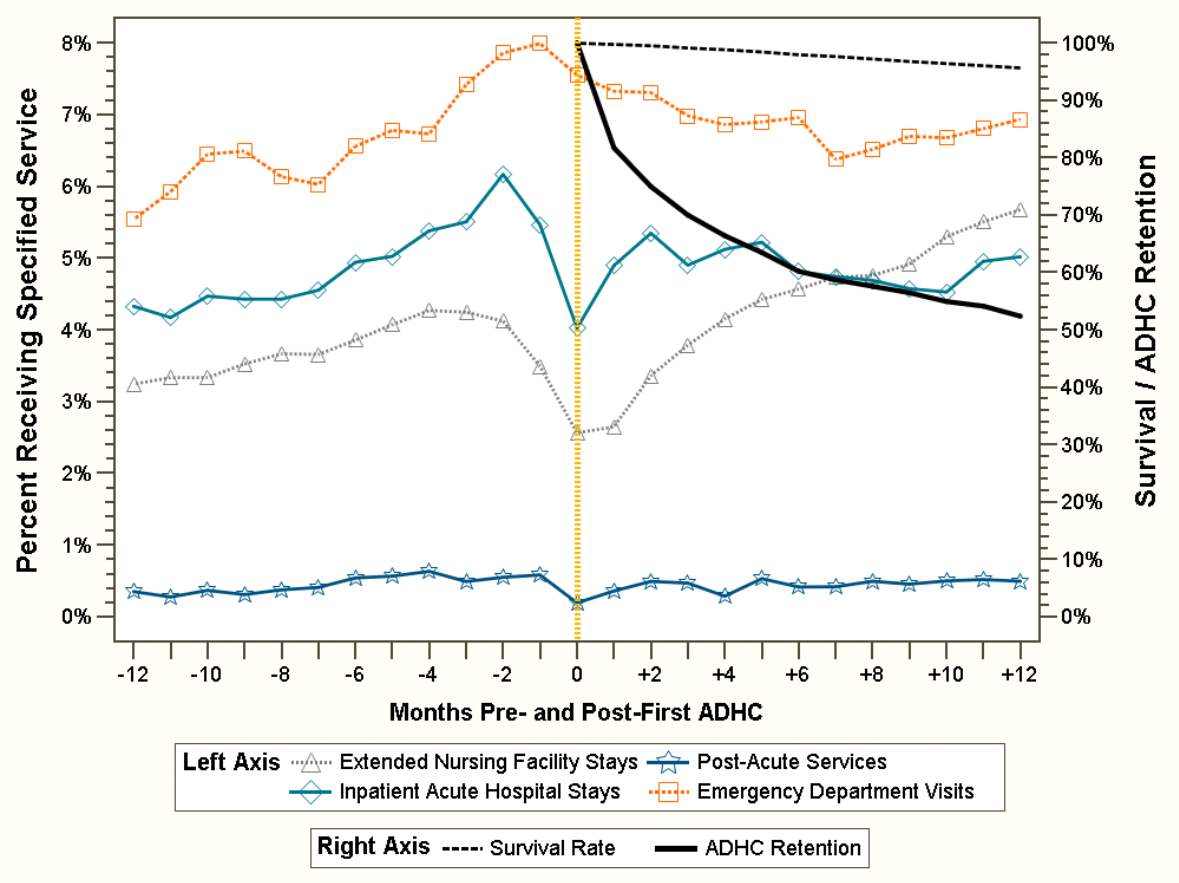


Health Services Used Before and After ADHC Program Entry

Figure 17, through its focus on service use events, provides further insight about those leaving the ADHC program. The majority remained in the community, but 5.5% were in a NF a year after the ADHC entry date and another 4% had died. The rate of inpatient hospital stays and ED visits increased modestly over the months preceding ADHC entry but only 15% of those entering ADHC had one or both of these events in the month prior to entering the program. Average monthly ADHC participation rates (Figure 17, right axis) declined most rapidly within two months after enrollment. The rate was 1%-3% for months 4 to 12.

There was a modest decline in hospital use in the month of ADHC enrollment (Figure 17, left axis), but subsequent average use rates returned to what had been the prevailing pattern in the prior period. ED use after ADHC entry remained at the average monthly ED use rates of the prior period. Corresponding to what was observed in the analysis on expenditures, NF use rates briefly declined following entry into the AHDC program, but then steadily increased among survivors over the course of the year.

Figure 17
Service Use and ADHC Program Entry
Among MME Beneficiaries
(n=12,067)



Emergency Department visits refer to those not occurring as a part of a hospital admission.

Medi-Cal Home Health Care

Home Health (HH) is a required benefit within the Medicare program[44] and in the California state plan for Medi-Cal.[45]

- **Medicare HH Benefit.** Medicare provides HH as long as the care is medically reasonable and necessary for the treatment of illness or injury. A physician must certify the need for covered services. Beneficiaries are confined to their home (i.e., are "homebound"), under the care of a physician, and require skilled nursing care on an intermittent basis or physical or speech therapy. Medicare's HH benefit covers certain services generally delivered to individuals in their homes or other residential care settings. Covered services include skilled nursing; physical, speech, and occupational therapy; HH aide; and medical supplies, equipment, and appliances for use in the home. Among other things Medicare does not pay for 24-hour-a-day care at home, meals delivered to the home, homemaker services, or personal care. These services may be reimbursed through other Medi-Cal HCBS programs.

- **Medi-Cal HH Benefit**. HH must be medically necessary and ordered by a physician as part of a written plan of care that a physician reviews every 60 days. Covered services include: skilled nursing; physical, speech and occupational therapy; HH aide; medical supplies, equipment, and appliances for use in the home. Services are often provided in a participant's residence. To participate in Medi-Cal, HH agencies must meet Medicare's conditions of participation.[46] Independent nurses provide intermittent or part-time nursing services when there is no HH agency in the area.

For MME beneficiaries Medicare is the primary payer, with Medi-Cal providing secondary coverage. Medicare Part A (Hospital Insurance) and/or Medicare Part B (Medical Insurance) covers eligible HH services like intermittent skilled nursing care, physical therapy, speech-language pathology services, continued occupational services, HH aide, medical supplies, equipment, and appliances for use in the home and more. If the beneficiary is eligible for full Medi-Cal (i.e., without a share of cost), Medi-Cal will cover the Medicare Part A and B deductibles and copayments, and pay the monthly Medicare Part B premium. In general, for those enrolled in fee-for-service Medicare (all the MMEs in this study), there are $0 charges for qualified HH care services, and a 20% co-payment for Medicare-approved durable medical

[44] Medicare benefits are shown at: http://www.medicare.gov/Pubs/pdf/11357.pdf; http://www.medicare.gov/coverage/home-health-services.html; also see http://www.cms.gov/Regulations-and-Guidance/Guidance/Manuals/downloads/bp102c07.pdf

[45] California Department of Health Care Services. California Medicaid State Plan Under Title XIX of the Social Security Act. Sacramento: DHCS.

[46] Medicaid and Medicare laws and regulations contain requirements that HHAs must meet to receive payment for Medicare and Medicaid beneficiaries. These requirements are referred to as Conditions of Participation (COP) and are found in title XVIII of the Social Security Act. With one exception, Medicaid-certified HHAs must comply with both Medicaid and Medicare laws and regulations. This exception applies in the case in which a Medicaid beneficiary receives only chore services or other clearly non-medical services. Under this circumstance, the HHA need not comply with Medicare's COPs. Source: Source: According to CMS Transmittal 11. Pub. 100-07 State Operations Provider Certification, Date: August 12, 2005)

equipment (DME). Medi-Cal generally covers HH services for homebound persons ages 21 and older that are entitled to, but not necessarily eligible for, NF coverage in California.[47]

Most of the MME beneficiaries in the current analysis received HH and related post-acute benefits solely through Medicare. These results appear throughout the various program analyses as post-acute use and expenditures. The results reported in this section apply only to the subset of HH recipients who received some HH funding from Medi-Cal. Most MME beneficiaries who were first time Medi-Cal HH recipients in 2006-2007 had been enrolled in Medi-Cal for at least 12 months (80%); this percentage increased to 90% three months before HH entry. About 90% of HH recipients retained their Medi-Cal eligibility through the ensuing 12-month observation period. Thirty percent of the Medi-Cal HH entrants were IHSS recipients for at least 12 months before HH entry. This proportion increased to 40% during the month of HH entry and remained at this level throughout the balance of the period, even though most beneficiaries were no longer in the HH program. Seventy percent of those who entered Medi-Cal HH had either left the program or else Medicare had assumed full funding for the HH services within one month. Within two months HH post-entry Medi-Cal HH payment participation had declined by 90%. Only 5% of those originally receiving Medi-Cal funded HH remained in the program 12 months after entry.

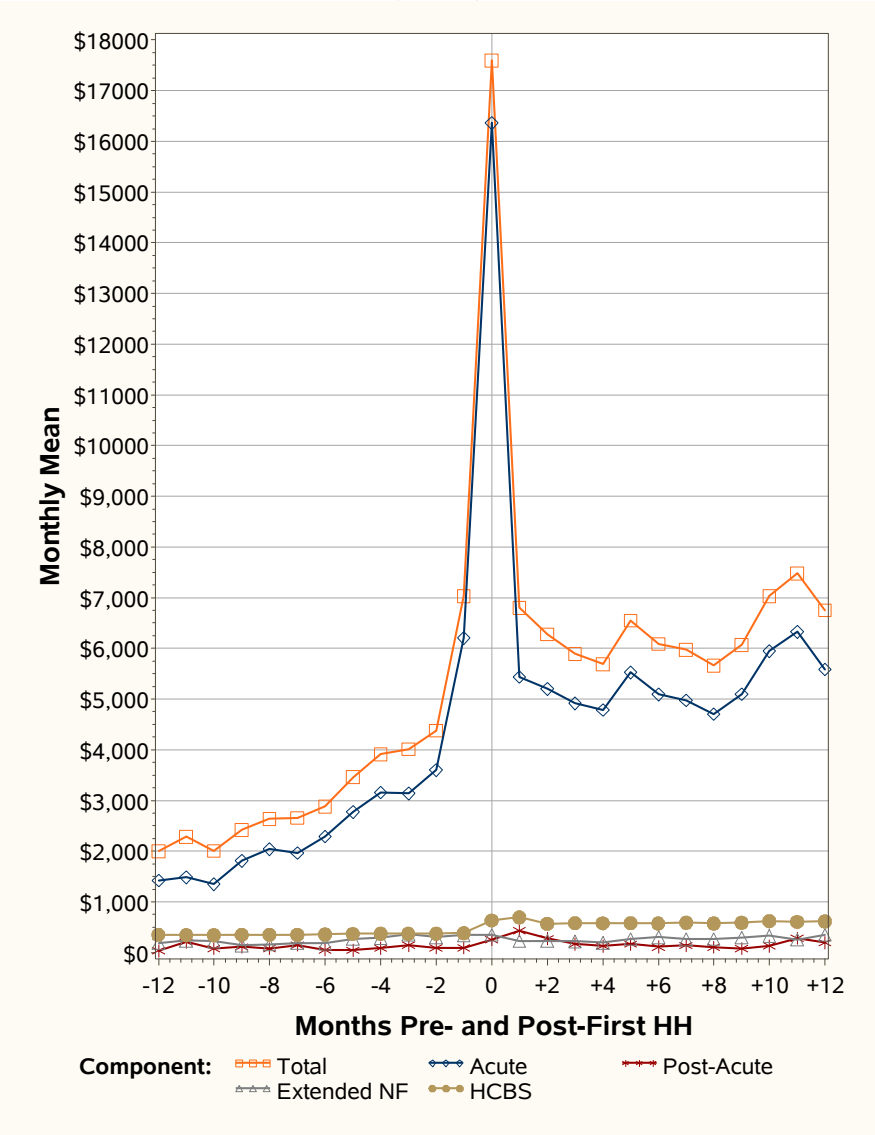
Health Care Expenditures Before and After Home Health Care Entry

Average monthly total health care expenditures among the Medi-Cal HH entrant cohort were about $2,000 at the start of the pre-HH enrollment year. These expenses climbed steadily, reaching almost $18,000 by HH entry (Figure 18). Most of this rise was explained by a growth over time in acute care expenditures. Post-acute, HCBS, and extended NF expenditures were relatively constant during the pre-HH entry year, each with average expenditures of about $500 a month.

Expenses among the surviving cohort after Medi-Cal HH entry continued to rise but less sharply ($p<0.000$) than in the HH pre-enrollment period. While this spending stabilized, average monthly total expenditures were significantly higher in the six months after program entry than the six months before ($p<.0001$). During the Medi-Cal HH post-entry year, post-acute and extended NF expenditures in combination were slightly above pre-entry levels and remained stable during this time with an average monthly expenditure of about $700. HCBS expenditures from all sources (including IHSS which was being used by about 40% of the Medi-Cal HH cohort) also averaged about $700 per month.

[47] Receipt of these HH services is dependent upon a state-determined demonstration of need. Source: J. O'Keeffe, G. Smith, and L. Carpenter, et al., Understanding Medicaid Home and Community Services: A Primer, Office of the Assistant Secretary for Planning and Evaluation, U.S. Department of Health and Human Services, Washington, DC, October 2000.

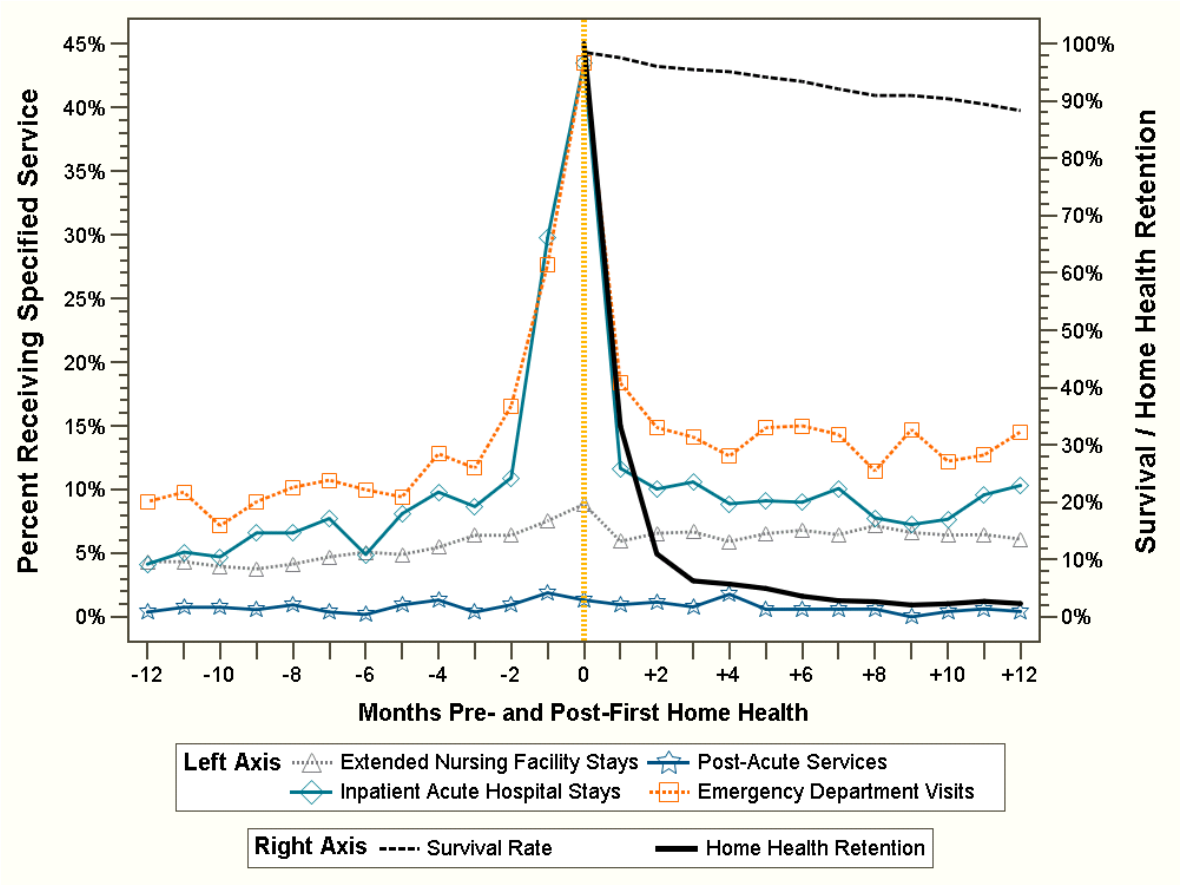
Figure 18
Medi-Cal Home Health Care Program Entry and Health Care Expenditures Among MME Beneficiaries
(n=531)



Health Services Used Before and After Home Health Care Program Entry

Figure 19 provides more specificity in service use and service use trajectories than when looking solely at expenditures. From this figure, we see that except for the two months immediately preceding and following HH entry, average monthly use of hospitals, ED, extended NFs, and SNF stays were relatively constant (even as acute care expenses soared). Mortality among HH users (right axis) was about 1% per month over the HH post-entry observation year. Among MME beneficiaries about 90% of the new HH recipients entered the program following either a hospital stay or ED visit. The balance of the enrollees was recipients of either skilled or extended NF stays. Continued use of Medi-Cal HH was short term for most users (see right axis): 30% at one month, 10% at two months.

Figure 19
Service Use and Medi-Cal Home Health Care Program Entry
Among MME Beneficiaries
(n=531)



Emergency Department visits refer to those not occurring as a part of a hospital admission.

After HH entry (and in most cases HH discharge) the average monthly health care use returned to the pattern of the HH pre-entry period, only at slightly higher use rates. ED use averaged around 15% of this cohort over the observation year. For hospital stays and any NF stay the prevailing rates were about 10% and 5% respectively. Post-acute services were generally 1%.

NURSING FACILITY STAYS

To minimize ambiguity about the factors associated with NF admissions and post admission outcomes, we limited the analysis to 'first' extended NF admissions. These cases were defined using two selection inclusion rules: (1) the recipient had to be eligible for Medi-Cal in the month of the NF admission,[48] and (2) to ensure it was an initial extended NF admission, the recipient could not have had an extended NF stay at any time during the 12 months prior to what was identified to be the *index* extended NF admission. Of the individuals meeting these criteria in 2006-2007 (n=45,361), about 84% were Medi-Cal eligible for at least the year prior to NF entry.

NF Stays and Health Care Expenditures

As seen in Figure 20, average monthly total expenditures among MMEs admitted for an initial extended NF stay grew steadily throughout the year prior to the extended NF stay, spiking to an average monthly rate over $24,000 in the month just before the admission. Most of these expenditures were related to acute care. Post-acute care and HCBS were each under $500 in average monthly expenditures for most of the period. There were no extended NF expenditures in the pre-extended NF admission period because the analysis was limited to the "initial" extended NF admission. The mean total monthly expenditures patterns preceding NF entry are substantially higher than those reported earlier (Figure 2) for persons initially entering HCBS programs.

In the six months after admission for an extended NF stay the average monthly total expenditures were higher than in the six months preceding the entry, but the rate of change in expenditures was lower ($p<.0001$). Within 6 months total expenditures stabilized at approximately $7,000 per person per month. Acute care remained the largest component of total costs, but fell from about $20,500 in the month of admission to approximately $4,000 per month within 6 months of admission for an extended NF stay. While acute expenditures declined over the year, NF expenditures climbed to an average of $6,000 per person in the first month. Average monthly expenses remained at this level for three months and then began to decline (commensurate with the discharge of about one-third of the NF cohort back into the community, and the 100 day limit on Medicare co-payments for nursing facility recipients) to what became a prevailing average monthly rate of about $2,100. Average monthly post-acute and HCBS expenditures remained relatively flat at about $500 each throughout the post-admission period.

These expenditures are calculated only among survivors, and the high mortality rate (35% over the year) may have contributed to lower costs as the higher cost cases expired. The cost estimates in the period following admission for an extended NF stay include the NF entrants who were able to be discharged home over the period. The HCBS expenses apply only to persons living in the community as these services are not provided simultaneously with NF care.

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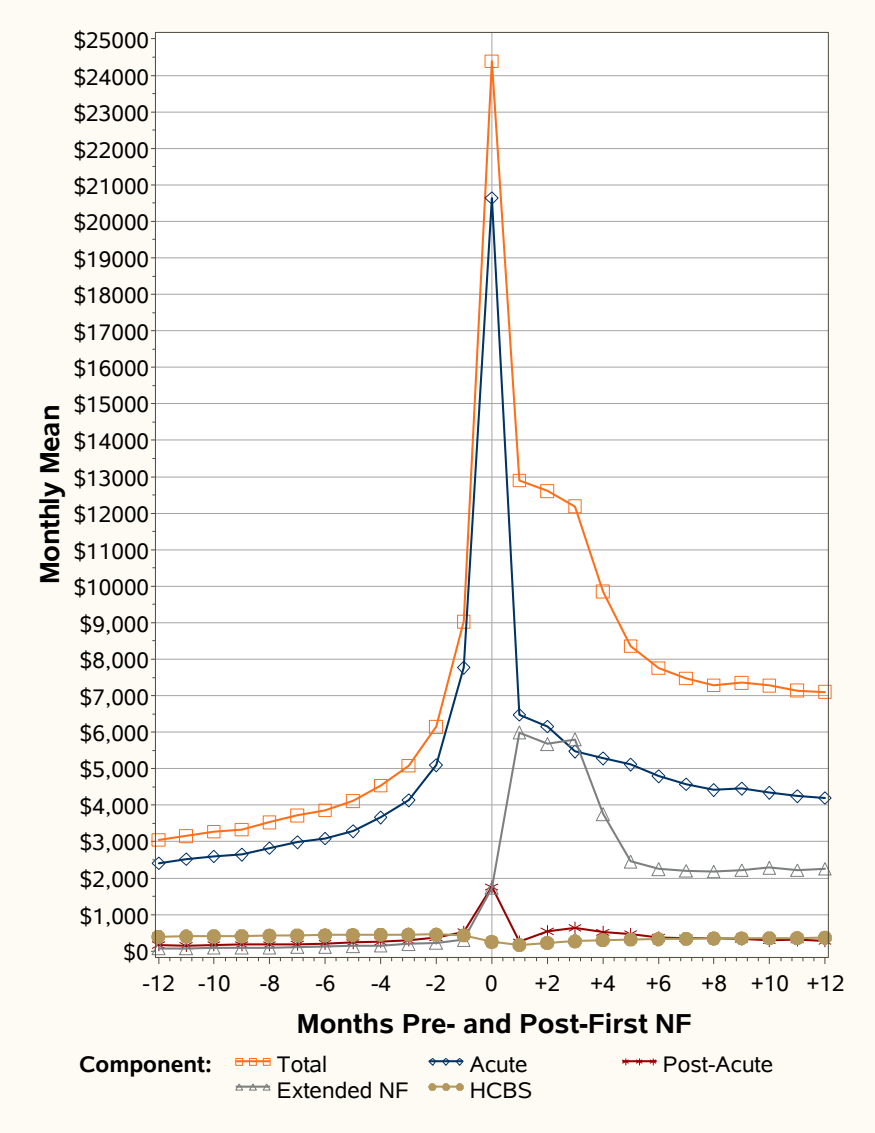
[48] This decision rule omits from the sample recipients who became Medi-Cal eligible in the weeks or months following NF admission, and results in an undercount of first time NF admissions. This rule may also over count the proportion of NF entrants who had access to Medi-Cal HCBS programs prior to NF admission as those who became Medi-Cal after NF admission would not have had access to HCBS before admission. These limitations may bias the results to include proportionately more HCBS recipients in the NF entry group than are observed if the date of Medi-Cal eligibility included those who became eligible post-admission.

Figure 20
Extended Nursing Facility Entry and Health Care Expenditures
Among MME Beneficiaries
(n=43,063)



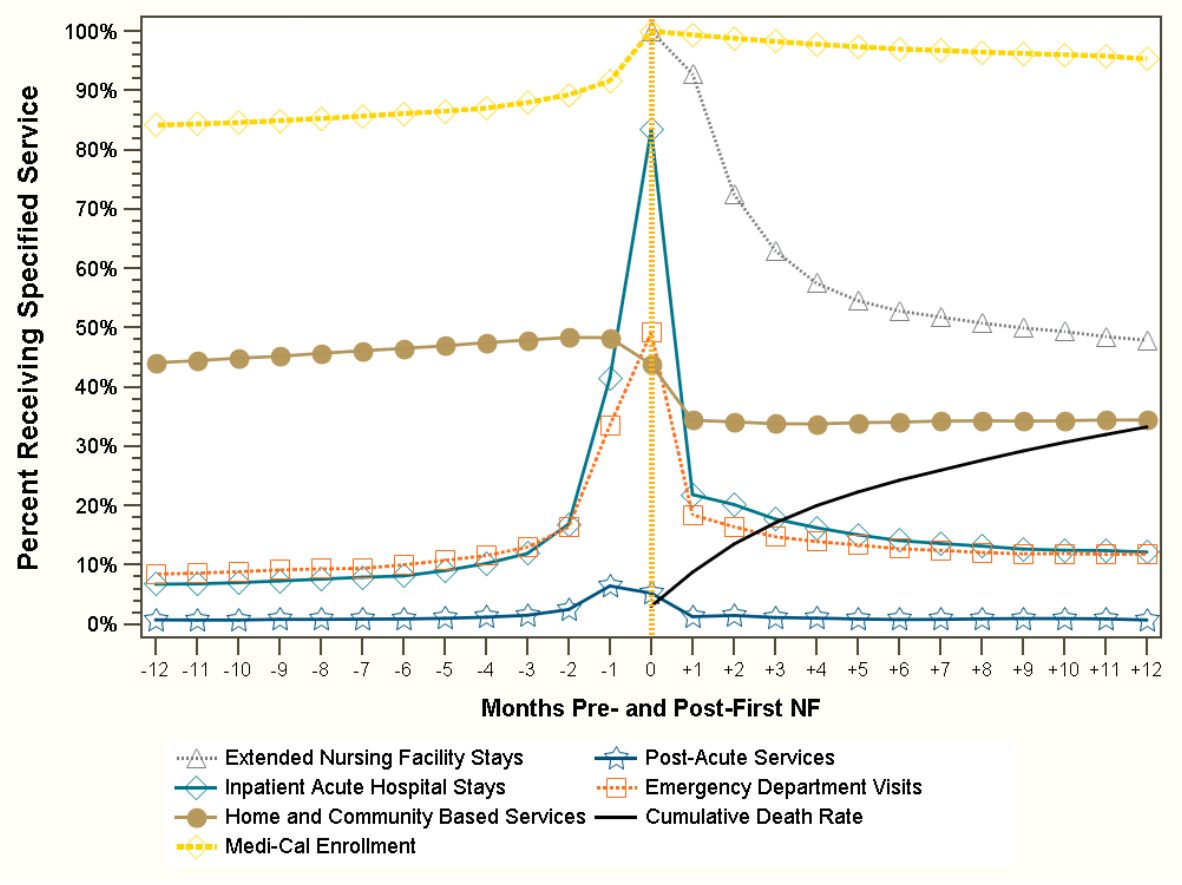
Extended NF Stays and Health Care Events

All new extended NF admissions occurred in the same month as an acute hospitalization, ED visit, and/or SNF stay (Figure 21). The rate of these health care events increased dramatically in the few months leading up to an extended NF admission. The association of these acute and post-acute care events with extended NF admissions is substantially greater than their association with initial use of any HCBS. About 40% of the initial extended NF admissions among MME beneficiaries were receiving some form of HCBS (mostly IHSS) in the month of admission; the majority of those with an extended NF admission did not receive HCBS in the prior year. These difference are partially attributable to differences between Medicaid and Medicare policies.

Medicaid does not require an acute hospitalization immediately prior to the initiation of HCBS or extended nursing facility stays while Medicare does for post-acute care service. Although Medicare does not pay for extended nursing facility stays, many MMEs who enter skilled nursing facilities for post-acute rehabilitation services end up converting into extended stays through Medicaid coverage.

Service use patterns after extended NF admission mirrored the pre-admission period prior to the spike in services that triggered admission to the NF. Twelve months following an extended NF admission about half of those alive had been discharged and most of those individuals were receiving HCBS. Among the survivors, hospital and ED visit use was consistently about 10% per month, similar to what had been seen prior to the spike in acute and post-acute care services that led to the extended NF admission. Medi-Cal eligibility remained above 95% for this cohort throughout the post-admission period.

Figure 21
Service Use and Extended Nursing Facility Entry
Among MME Beneficiaries
(n=43,063)



Emergency Department visits refer to those not occurring as a part of a hospital admission.

HCBS USE AND OTHER OUTCOMES FOLLOWING AN INITIAL HOSPITAL DISCHARGE

The preceding sections show that entry into HCBS and nursing facilities has several pathways. One of the most prevalent of these is an acute hospital stay. Hospital use is also important analytically because it is both an unambiguous starting point both for identifying 1) an "at risk" population that would be potentially eligible for post-acute care, and 2) initial entry into LTSS following a hospital discharge. The post-discharge disposition decision is based on a combination of clinical and social needs, and other considerations. The analysis uses a sample of MME beneficiaries identified by an 'index' hospital discharge. From this population we identify both the incidence of the initial post-discharge dispositions and the service use events and expenditures that are experienced by these consumer cohorts subsequent to their initial disposition.

Identifying the Index Hospital Discharge and Subsequent Events

Index Hospital Discharge

Using the population of Medicare and Medi-Cal beneficiaries described earlier in this report we identified those who had an acute care hospital stay between 2006 and 2007. This 24-month interval allowed an examination of claims, assessments, and hospital discharge files documenting hospital and other health care and LTSS events that occurred a full year before and after the hospital discharge. Further screening limited the sample to individuals who were not enrolled in Medicare and/or Medi-Cal managed care during both this period and the 12-month windows preceding and following this period.

We limited the sample to those who had not had any of the following events in the 12 prior months:

- Hospital stays
- Post-acute services (e.g., skilled nursing or rehabilitation facility stays)
- Extended nursing facility admissions, and
- Medi-Cal HCBS[49]

We restricted the sample in this way to control for differences in health status among MMEs with hospitalizations. While our analytic approach selects a relatively healthier group of MMEs, we found that even in this somewhat narrowly defined group, there was substantial use of acute, post-acute and LTSS in the year following the admission. For our analysis, MMEs had to be eligible for both Medicare and Medi-Cal at time of the index hospital discharge. This ensured

[49] Hospitalizations were identified from OSHPD files, Medicaid claims, and the Medicare Provider Analysis and Research (MedPAR) file. Post-acute and extended NF services were identified from Medicaid claims, MedPAR, and Long Term Care Minimum Dataset (MDS). HCBS services were identified from Medicaid claims and the Case Management, Information and Payrolling System (CMIPS) file.

that all individuals had a similar opportunity in terms of their insurance coverage to receive each of the observed dispositions. Medi-Cal eligibility did not have to be continuous across the remaining post hospital tracking period, but we adjusted our accounting of expenditures based on the number of months an individual was eligible for Medi-Cal in the post-hospitalization period.

Table 4 shows the number of acute care hospitalizations as the various exclusion criteria were applied. There were 1,230,734 acute care hospitalizations among our population between 2006 and 2007. Among the beneficiaries with these admissions, 847,581 were removed from the sample because the individual had another hospitalization in the prior 12-months. After removing individuals enrolled in managed care (121,491) and those with other excluded prior events (132,133) 129,529 beneficiaries with index hospitalizations in 2006-2007 remained. From those we removed individuals whose eligibility for Medi-Cal at time of discharge was due to a family or pregnancy related aid code (i.e., non-disabled or non-aged-related aid code) because this subgroup was out of scope for the study population. Of the remaining hospitalizations, 59,648 were MME beneficiaries (i.e., eligible for both Medicare and Medi-Cal) at time of the discharge.

Table 4
Index Hospital Stay Exclusion Criteria

	Number of Exclusions	Remaining Population
Acute Care Hospital Discharges between 2006-2007	0	1,230,734
First Hospital Discharges between 2006-2007 with no Discharge in the previous 12-months	847,581	383,153
Managed Care between 2005 and 2008	121,491	261,662
No HCBS, Post-Acute Care Facility, or Extended NF in 12 months prior to the 2006-2007 hospital stay	132,133	129,529
Medi-Cal eligibility at time of discharge was via a Family Aid Code (e.g., pregnancy) not related to a disabled or aged beneficiary	2,523	127,006
MME at time of discharge	67,358	59,648

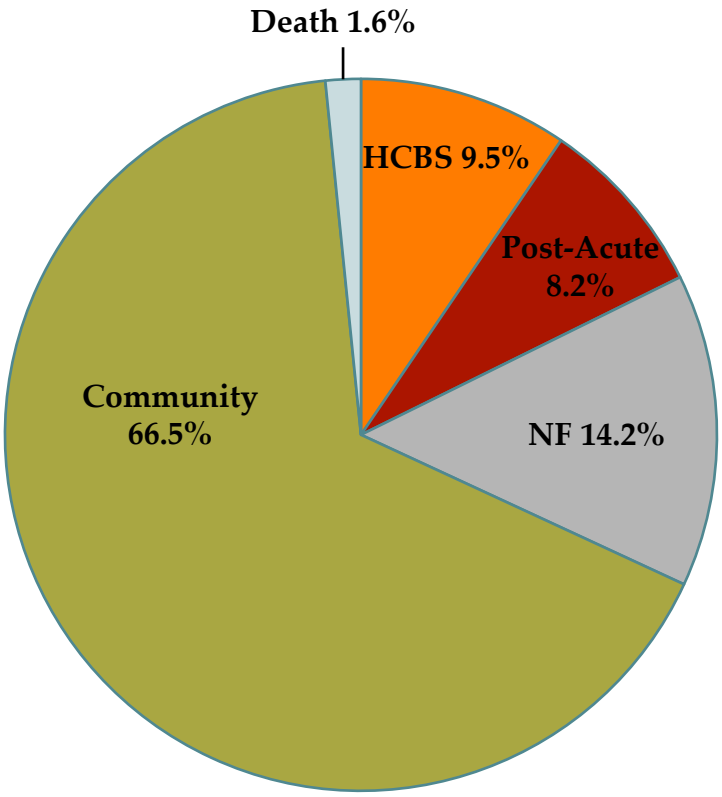
Events Following Hospital Discharge

The disposition following the hospital discharge was categorized into mutually exclusive groups: post-acute services (e.g., skilled nursing facility (SNF)[50] and rehabilitation hospitalization), HCBS, extended NF stays, discharge to the community without any of the above services, and death (within the month of discharge).[51] The distribution of these events in our MME study cohort is displayed in Figure 22.

[50] The distinction between SNF and extended NF stays are fully discussed in the Measures & Data Sources section. The essential differences are that SNF care is usually less than 21 days (but can extend to 100 days), and the purpose includes rehabilitation. For MMEs Medicare would be the primary payer. Extended NF stays are usually for more than 21 days and are for the purpose of custodial care. Medi-Cal would typically be the primary payer.

[51] Because more than one discharge event can occur in any given month we used a hierarchy to define the first event after the hospital discharge. The first events are mutually exclusive. If a post-acute event occurred in month-zero then the first event was identified as post-acute. If a post-acute event did not occur in month zero, but there was

Figure 22
Distribution of MME Hospital Discharge Disposition



Initial Hospital Discharge Disposition and Recipient Characteristics

Table 5 shows the characteristics of the MME beneficiaries having an index hospital stay during 2006 or 2007. Information is presented for each of the initial discharge disposition cohorts.[52] Values in each table cell indicate the column percentage of individuals in the beneficiary subgroup (e.g., age, gender) discharged to the setting or service indicated in the column. Discharge to the community without services was the predominant disposition for all beneficiary subgroups, accounting for about two-thirds of all those discharged from the hospital. Nursing facility placement (whether to post-acute SNF's or what became extended NF stays) accounted

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an occurrence of HCBS, then the first event was identified as HCBS. If neither a post-acute service nor HCBS occurred in month zero, but there was an occurrence of an extended NF stay, then the first event was identified as an extended NF stay. If none of these previous events occurred, but an individual died in month zero, then the first event was identified as death. This hierarchical pattern repeats for month one (the month after month-zero). If none of the events occurred in months zero or one, then the individual was deemed to have been discharged into the community without LTSS. Figure D-1 in Appendix D provides a diagram of these decision rules.

[52] **Appendix D, Table D-1** shows characteristics for MME beneficiaries post hospital discharge calculated as row percentages. Tables D-2 and D-3 show Medi-Cal only beneficiary characteristics as column and row percentages.

for nearly a quarter of all those discharged.[53] Just under 10% received HCBS immediately following discharge. The death rate either during the hospital stay or within the post discharge month was less than 2% of the index hospital stay population.

Beneficiaries age 65-84 account for almost two-thirds (62.3%) of the study sample. The balance in descending order are those ages 45-64 (20.6%), those ≥85 (11.2%), and those ages 18-44 (5.9%). This proportionate distribution is reflected in the percentage of beneficiaries discharged to community—the predominant disposition. A greater percentage of those under age 65 are without LTSS (31.2%), versus those ages 85 and older (7.9% observed).

The observed distribution of women and men among the community disposition group tends to approach their distribution in the study population. Women however, tend to be disproportionately higher users of each LTSS, but the observed vs. expected differences are the largest in HCBS (62.8 observed vs. 57.1% expected) and post-acute use (61.9% vs. 57.1%). Men tend to disproportionately under-use LTSS, with the biggest departure from expected use being HCBS (37.2% observed vs. 42.9% expected) and post-acute care (38.1% vs. 42.9%).

Whites and Hispanics together comprise 68.8% of the study sample. Asians (16.3%), African Americans (8.0%), and all other race/ethnic groups (6.9%) make-up the balance. Comparing the proportionate distributions and the observed discharge distributions, we find noticeable variability among the race/ethnic groups in using LTSS. Fewer Whites use HCBS compared to their proportion of the sample (25.7% vs. 39.2%) and have proportionately higher use of nursing facilities (both post-acute and NF). Hispanics, Asians, and Blacks in contrast have higher observed HCBS use and lower NF use than their proportions in the sample. The "other" group tends to have proportionately higher use of both HCBS and extended NF stays, but proportionately lower use of post-acute stays. There is less difference between the race/ethnic groups in the initial disposition to community placements.

[53] Stays were deemed skilled care and/or rehabilitative rather than extended stay if the length of stay was less than 21 days. The decision rule about stays of 21 days or more are based on the logic that Medicare pays for the first 20 days of skilled nursing care. Extended stays by the criteria used here are not necessary permanent admissions, but they generally involve Medi-Cal payment. The beneficiary or Medi-Cal pays: $0 for the first 20 days each benefit period; then a co-payment for days 21-100 each benefit period; and finally all costs for each day after day 100 in a benefit period.

Table 5
Characteristics of Hospital Discharge Disposition Recipients
MME Beneficiaries Only

Characteristics		Total	Total %	Initial Post-Hospital Discharge Disposition				
				HCBS	Post-Acute	NF	Community	Death
n		59,648		5,647	4,906	8,474	39,662	959
%		100.0		9.5	8.2	14.2	66.5	1.6
Age								
	18-44	3,524	5.9	4.6	2.4	1.6	7.5	2.4
	45-64	12,289	20.6	14.9	18.0	11.5	23.7	19.3
	65-84	37,150	62.3	68.5	66.1	63.2	60.8	58.1
	≥85	6,685	11.2	12.0	13.5	23.8	7.9	20.2
Gender								
	Male	25,594	42.9	37.2	38.1	40.8	44.6	49.6
	Female	34,054	57.1	62.8	61.9	59.2	55.4	50.4
Race/Ethnicity								
	White	23,365	39.2	25.7	45.8	50.1	37.7	46.9
	Hispanic	17,644	29.6	31.1	27.6	22.0	31.4	22.2
	African American	4,784	8.0	10.0	6.5	7.6	8.1	6.7
	Asian	9,755	16.3	26.2	13.9	12.8	16.0	17.6
	Other[a]	4,100	6.9	7.0	6.1	7.5	6.8	6.6
Medi-Cal Aid Code								
	Medically Needy	16,368	27.4	21.2	31.9	31.7	26.8.	28.1
	Aged	22,026	36.9	46.4	38.0	38.6	35.0	41.9
	Disabled	20,525	34.4	32.2	28.6	24.5	37.7	29.3
	Other[b]	729	1.2	0.2	1.5	5.2	0.5	0.7
Health Conditions[c]								
	CDPS mean score Standard Deviation		1.99 1.42	2.02 1.36	2.28 1.59	2.42 1.57	1.81 1.29	3.80 1.97
Activities of Daily Living								
	<3 ADL limitations	46,615	78.2	70.2	40.0	23.5	95.3	94.2
	≥3 ADL limitations[d]	13,033	21.8	29.8	60.0	76.5	4.7	5.8

HCBS: Home and Community-Based Services; NF: Extended admission to nursing facility, generally these were longer than 21 days and included Medi-Cal payment; Post-Acute: includes skilled nursing facility and other rehabilitation facility. Generally these were paid by Medicare or a source other than Medi-Cal; Community: Not receiving Medi-Cal paid supportive services at time of discharge or continuing; Death: died during the hospital stay or first month following discharge.

[a] Includes: Native Alaskan/American Indian/Mixed/Other/Unknown race/ethnic groups

[b] Includes claims missing aid code information.

[c] CDPS (Chronic Illness and Disability Payment System) score is based weights associated with specific diagnoses, all conditions were obtained from the hospital discharge abstracts available from the Office of State Health Planning and Development (OSHPD). Higher score = greater morbidity.

[d] ADL limitations defined as those with assessments reporting tasks for which the assistance of another is needed. Individuals for whom assessments were not conducted and for whom ADL information were missing were coded as <3 limitations. Due to an absence of assessments, ADL data was missing for 55.3% of the MME beneficiary sample. The percentage of missing cases varied by disposition settings: NF 7.7%, SNF 4.4%, HCBS 15.8%, Community 76.5%, death 89.5%.

The Medically Needy[54] are 27.4% of the sample, but they account for proportionately fewer of the HCBS users (21.2%) and proportionately more NF users (about 32%). Categorically eligible adults with disabilities (34.4% of the sample), on the other hand, exhibit proportionately lower use of HCBS and nursing facilities. The categorically eligible Aged group disproportionately uses HCBS (46.4%) relative to their proportion of the sample (36.9%). Proportionately more of the disabled are discharged to the community without HCBS (37.7% despite comprising 34.4% of the sample) than the other eligibility groups.

The Chronic Illness and Disability Payment System (CDPS) scores are based on a count of selected chronic conditions that are associated with health care expenditures.[55] Higher CDPS scores reflect greater morbidity and higher expected expenditures. Those discharged to the community tended to have lower CDPS scores than those discharged with HCBS or to other settings. However, except for those who died, the differences in CDPS scores among the disposition subgroups were not statistically significant.

The number of limitations in activities in daily living (ADLs: e.g., bathing, dressing, personal grooming, transferring, eating) provides another indicator of health status. Documentation of ADL status of each initial discharge disposition cohort comes in most cases from either a NF admission assessment (NF and Post-Acute settings and are available for most such recipients), or from assessments conducted for those entering IHSS (the most widely used of the HCBS programs). Persons discharged to community without services have assessments only under limited conditions. Such data can come from three sources: (1) assessments obtained among those receiving HH care that occurs immediately following their hospital stay, (2) assessments available for beneficiaries who are initially discharged to the community but who entered HCBS within 3 months of leaving the hospital, or (3) assessments available for beneficiaries who are initially discharged to the community but who entered NF within 3 months of leaving the hospital.[56] The functional assessment information available from these latter instruments was assumed to apply to time of hospital discharge, and may over count ADL limitations if there had been a change in status during the observed period. Individuals for whom assessments were not conducted and for whom ADL information were missing were coded as <3 limitations.

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[54] A previous CAMRI report: *California's Medi-Cal Home and Community-based Services Waivers, Benefits and Eligibility Policies, 2005-2008; s*ee, http://camri.universityofcalifornia.edu/publications.html includes a summary of the income, resources, and other factors that allow a person to qualify for Medi-Cal eligibility. Generally, in California all participants in the Supplement Security Income (SSI) program are eligible for Medi-Cal. In addition, individuals aged 65 and over and certain persons with disabilities with income above SSI and up to 100% of the federal poverty level may qualify. Individuals with high medical expenses can qualify as Medically Needy when they spend down their income on nursing facilities and/or other medical expenses to a threshold level ($600 monthly for an individual during our study period).

[55] CDPS was developed as a diagnostic classification system to be used by Medicaid programs to make health-based capitated payments for low-income families and disabled Medicaid beneficiaries (Kronick R, Gilmer T, Dreyfus T, Lee L. (2000) Improving Health-Based Payment for Medicaid Beneficiaries: CDPS. *Health Care Financing Review*, 21(3):29-64.) See **Appendix E**, **Table E-1**, for a listing of the consolidated disease categories and their weights.

[56] Because HH it is usually a short time limited intervention, and may be received in conjunction HCBS or rehabilitation, it was not included as a Post-Acute hospital discharge disposition.

Just over one-fifth of the sample (21.8%) had at least three documented ADLs limitations where assistance from another person was needed at the initial hospital discharge. However, the prevalence (as did the availability of assessments) of these limitations varied markedly. Among those entering HCBS, 29.8% met the 3 or more ADL criterion. This is a substantially lower percentage than among those discharged to a NF (76.5%) or post-acute settings (60%). Among persons initially discharged to community, only (23.5%) have assessments. The percentage is even lower among those who die prior to discharge (10.5%). This high rate of missing data in the community group likely undercounts the prevalence with any ADL limitation, but we have assumed that the hospital clinicians and family members would have been aware of and responsive to the disability associated with 3 or more ADL limitations. For this reason we divided the sample into those with 3 or more ADL limitations and those with fewer limitations.[57]

Duration of the Initial Hospital Discharge Disposition and Subsequent Events

The month in which the first eligible hospital discharge occurred is referred to as month zero. Events in the 12 months subsequent to the first hospital disposition including the initial disposition were also identified. Subsequent events include post-acute services, HCBS[58], extended NF stays, acute hospital admissions, emergency department (ED) visits, community placements without LTSS, and death. Each type of subsequent event is dichotomously categorized as either having occurred at least once or having not occurred during the subsequent 12 months. The occurrence rate for each of these services is summed across individuals. The total of these events is greater than the total number of individuals because the counting of these events is not mutually exclusive (i.e. an individual can have more than one subsequent event in the 12 months of observation).

There is variability in the mean number of months MMEs remained in the initial post-hospital setting over the subsequent 12 months (Table 6). The mean number of months remaining in the same setting is highest among those entering HCBS (9.5 months) and those discharged to the community without HCBS (9.6 months). MMEs discharged to post-acute care have the shortest duration remaining in that setting (mean of 1.0 months) with none remaining longer than three months. MMEs discharged to extended nursing facility stays remain in that setting on average less than half a year (4.8 months), and less than a quarter of these MMEs are in NFs for a full year.

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[57] Limited information on recipient living arrangements is available on the IHSS and NF assessments, but comparable information is not reliably available for those who have not completed assessments. This information was available for about 51% of the sample. The availability of these data varied by discharge disposition. For those in HCBS, almost two thirds were not living alone. The balance was approximately evenly divided between those living alone and those with missing data. Information availability improves a bit more for those in NF or Post-Acute settings. In both situations, almost two thirds were not living alone (rates comparable to HCBS). However, those living alone were twice the proportion of those with missing data. Among the community cohort, two-thirds were missing living arrangement data. Of those with data three-fourths reportedly lived with others.

[58] Appendix A shows the programs included in HCBS.

Table 6
Duration[a] in the Initial Hospital Discharge Disposition
MME Beneficiaries Only

Initial Disposition[b]	n Total	% 0-1 Month	% 2-3 Months	% 4-11 Months	% 12 Months	Mean Months[c]
HCBS	5,647	9.0	7.2	17.3	66.5	9.5
Post-Acute	4,906	97.6	2.4	0.0	0.0	1.0
NF	8,474	35.5	24.6	17.1	22.8	4.8
Community	39,662	7.3	7.8	18.7	66.2	9.6

[a] The calculation of duration in the initial status includes time of discharge through end of the observation year.

[b] HCBS: Home and Community-Based Services; Post-Acute: includes skilled nursing facility and other rehabilitation. Generally post-acute services were paid by Medicare or a source other than Medi-Cal; NF: Extended admission to nursing facility, generally these were longer than 21 days and included Medi-Cal payment; Community: Not receiving any of the above services in the month of discharge or during the subsequent month. Beneficiaries who died in the month of the hospital stay (n=959) are not included in the analyses of post discharge events.

[c] The level of time aggregation is months, rather than days. Consequently, a one-month duration means that the stay is bounded by a calendar month, rather than necessarily meaning 30 days. Similarly, a two-month stay is bounded by two calendar months, and so on through 12-month stays.

Table 7 shows the incidence of transitions between services and settings (shown as columns) within the cohorts defined by their initial hospital disposition (shown as rows). Consistent with the previous table, beneficiaries discharged to HCBS (78.4%) and Community (71.2%) settings were the most likely to remain in this initial status constantly throughout the observation period. Death is shown by cohort, and mortality rates are highest among the initial NF and post-acute care group. However, death may have occurred in any of the subsequent event settings.

Of most interest in this table is the transition between settings. We are showing only the incidence of moves from one setting to another. Duration of stay in that new setting or the ensuing events are not reflected here. Particularly striking are the relatively high rates of hospital and ED events. The experience of these events does not necessarily change one's disposition, but they may trigger a transition to a new setting. More than half of the recipients in each of the initial disposition cohorts experience at least one subsequent hospital admission. Additionally, more than half, regardless of their initial disposition have a subsequent ED visit. (These visits are separate from any ED visits that may have preceded a hospital admission.) Having one or the other of these events need not necessarily change the original discharge disposition, nor does it necessary reflect an event occurring while in the original setting.[59]

Also evident in these data is a tendency across all the initial discharge dispositions towards transitions to community settings without HCBS. For example, among recipients initially discharged to post-acute care, 65.7% were subsequently discharged at least once to the

[59] 31.3% of the 58% having a post-discharge ED visit had this visit within 30 days after the index hospital discharge, 23% had the visit between 31 and 90 days. Of the 51% experiencing a re-hospitalization, 30.9% had this event within 30 days, 22.7% had this event between 31 and 90 days.

community without services. This compares to 33.3% moving to HCBS from post-acute care. Among those initially discharged to NF stays, 41.7% were subsequently discharged to the community vs. 18.9% to HCBS. Even among those initially entering HCBS after the index hospital discharge, 18.4% subsequently discontinue this service and remain in the community without services.[60] On the other hand, about a fifth of those initially discharged to the community without Medi-Cal-funded HCBS eventually moved from that status and began receiving HCBS. Of those initially in the Community cohort but who left this status (28.8%), relatively few (6.9% of the cohort) eventually re-entered the Community status at least once in the tracking period.

Table 7
Events in the 12 Months Following Initial Hospital Discharge Disposition
MME Beneficiaries Only

		Subsequent Events							
	n Total	% HCBS	% Post-Acute	% NF	% Hosp.	% ED[f]	% Community[d]	% Death	% No Change[e]
Initial Disposition[a]									
HCBS	5,647	4.1[c]	4.8	9.3	50.6	57.0	18.4	14.2	78.4
NF	8,474	18.9	5.3	13.8[c]	55.9	59.4	41.7	27.4	43.3
Post-Acute	4,906	33.3	9.6[c]	23.6	59.2	58.4	65.7	19.8	0.0
Community	39,662	20.5	4.7	7.8	50.4	58.8	6.9[c]	8.6	71.2
Total[b]	58,689	19.7	5.2	10.1	51.9	58.6	17.9	12.8	na

[a] HCBS: Home and Community-Based Services; Post-Acute: includes skilled nursing facility and other rehabilitation. Generally post-acute services were paid by Medicare or a source other than Medi-Cal; NF: Extended admission to nursing facility, generally these were longer than 21 days and included Medi-Cal payment; Community: Not receiving any of the above services in the month of discharge or during the subsequent month.

[b] Those who died in the same or first month after the index hospital discharge (n=959) are excluded from the initial disposition cohorts that are tracked in this table, and are not included in the count of individuals with No Change in status

[c] Indicates a "repeat" entry into this service. For example, among those who initially received HCBS following hospital discharge, 4.1% discontinued services at some time, and then re-started HCBS again within the study tracking months.

[d] This column shows the percent of beneficiaries who discontinued receiving HCBS, NF, or Post-Acute at least once and lived in a community setting for at least one month without Medi-Cal HCBS. For example, of those initially discharged to NF, 41.7% exited the NF at least once and lived in a community setting without HCBS. For those initially discharged to Community without Medi-Cal HCBS, 6.9% exited that status (i.e., began receiving LTSS) and re-entered Community status for at least a month in the tracking period.

[e] No Change means that the beneficiary remained in the initial live discharge disposition status throughout the 12-month tracking period, or until the beneficiary died.

[f] ED visits refer to those not occurring as a part of a hospital admission.

[60] Incidence rates for all events are calculated using all members of the initial cohorts as the denominator for that cohort. Recipients surviving the full observation year have more time to contribute to the transition counts. Whether the number of events is similar between survivors and mortality cases has not been determined, however, mortality over one year post-index hospital stay is lowest among those discharged to the community. The mortality rate among those in HCBS is 1.65 time higher than the community group. The difference doubles compared to those discharged to post-acute settings, and increases by about 3 times among discharged to NFs. The progression of these incidence rates is consistent with the differences in age and CDPS scores shown earlier.

On the policy side, our data show that proportionate subsequent post-acute use is similar between those discharged with HCBS and those discharged to the community without HCBS and that the community group use of NFs is slightly lower than the HCBS cohort. Recognizing that our data are not adjusted for recipient characteristics, causal conclusions about the effectiveness of HCBS are inappropriate.

Health Care Expenditures by Initial Disposition Cohorts

As another perspective on the differences following the initial post-discharge disposition, Table 8 displays the 12-month expenditures of MMEs subsequent to the index hospital stay. These data are organized by the beneficiary's initial post-hospital disposition. Each disposition is represented by a separate column. Expenditures within each column have been compiled for Medicare, Medi-Cal, and their total for up to 12 months following the index hospital discharge. The table values show mean monthly expenditures of each separate service disposition cohort.[61] Expenditures in all columns exclude expenses associated with the index hospital stay, and begin in the month following the hospital discharge.

The observed mean monthly Total and Medicare expenditures are ordered as might be expected. They are highest among those initially discharged to NFs, followed by those in post-acute settings, and then HCBS. Those discharged to the community without HCBS have the lowest mean monthly expenditures.

The HCBS cohort (column 1) has Total mean monthly expenditures that are about $3,700 less than those of the NF cohort. About $1,000 of this difference is accounted for by higher monthly Medi-Cal spending for those in NFs. However, the largest contributor to the difference in mean monthly expenditures is from higher (about $2,300) mean monthly Medicare expenditures for those in NFs. Differences between the HCBS cohort ($5,800) and those in the community cohort ($5,200) are not as striking. The differences, about $600 per month higher for the HCBS group, seem to be attributable mostly to Medi-Cal expenditures for HCBS services. The health care use as reflected in mean monthly Medicare expenditures is essentially the same in the two groups. Differences in the total mean monthly expenditures by hospital disposition group are all statistically significant ($p<.001$).

Most expenditures by the post-acute cohort were by Medicare (9 of every 10 dollars). Those initially discharged to post-acute services had mean monthly Medicare expenditures about $1,600 higher than the HCBS and community cohorts. The Medi-Cal mean monthly expenditure differences between these three disposition cohorts were relatively minimal: about $265 higher

[61] The services compiled in expenditures include hospital, ambulatory care, ED visits, diagnostic testing, durable medical equipment, hospice, therapies, other professional services; and SNF, HH, extended nursing facilities and state plan Medicaid HCBS waiver programs. For a full discussion of the items see Appendices B and C in *Medicaid and Medicare Spending on Acute, Post- Acute and Long-Term Services and Supports in California*. California Medicaid Research Institute, University of California, December, 2012. See http://camri.universityofcalifornia.edu/documents/camri_medicare_medicaid_spending-12-12-12.pdf. Mean monthly expenditures were calculated using recipient eligibility months as the denominator.

for the HCBS cohort than for those in post-acute care, and $150 lower for those in the community cohort vs. those in the post-acute group.

Table 8
Mean Monthly Health and LTSS Expenditures in the 12 Months After Hospital Discharge By Payer: MME Beneficiaries Only

	Initial Hospital Discharge Disposition				
	HCBS	**Post-Acute**	**NF**	**Community**	**Total**
Post Discharge Expenditures	**N= 5,647**	**N=4,906**	**N=8,474**	**N=39,662**	**N=58,689**
Total Medicare and Medi-Cal					
Mean $/Month	5,811	7,157	9,489	5,205	6,033
# Eligible months	11.1	10.7	10.1	11.5	11.2
Medicare					
Mean $/Month	4,810	6,433	7,136	4,788	5,259
# Eligible months	11.1	10.7	10.1	11.5	11.2
Medi-Cal					
Mean $/Month	1,013	748	2,405	431	796
# Eligible months	11.0	10.4	9.8	11.2	10.9

Mean expenditures are calculated using the eligible months as the denominator for each recipient. Eligible months with no expenditures had a value of $0. The tracking period is inclusive of all eligibility months over the 12 months following the index hospital stay.

The sample used for these analyses was designed to minimize confounding with the events and experiences that preceded the initial hospital stay. While this limits the generalizability of the findings, it nevertheless reveals the fairly similar and persistent health care risks in the MME population after a hospital discharge. These risks, even with our limited ability to adjust for health conditions and living arrangements, are reflected in relatively similar Medicare expenditures between both HCBS and community residents. These expenditures are substantially lower than for the cohorts initially discharged to NFs and SNFs, with these differences likely being more reflective of case differences than the ability of the care providers. The main takeaway from all cohorts is the importance of care monitoring and the question of whether these expenditures can be effectively reduced relying solely on HCBS without concurrent changes in health care, chronic disease, and functional limitation assistance management.

Table 9 shows the initial hospital discharge disposition (column headings) by subsequent expenditures for major types of service (acute, post-acute and LTSS) shown in rows sorted by payer. These results highlight the relative similarities in Medicare spending over the subsequent 12 months for acute care regardless of the initial hospital disposition. The Medicare LTSS expenditures correspond to when a MME beneficiary enters a NF following a hospitalization for post-acute care and that stay evolves to an extended stay during which Medicare may contribute payments for the first 100 days. Of note the mean monthly Medicare payments for LTSS among those initially discharged for an extended NF stay ($2,210) exceeds the mean monthly Medi-Cal expenditures ($1,891) for this group of patients.

Table 9
Mean Monthly Health and LTSS Expenditures in the 12 Months After Hospital Discharge By Type of Service: MME Beneficiaries Only

		Initial Hospital Discharge Disposition				
		HCBS	**Post-Acute**	**NF**	**Community**	**Total**
Post Discharge Expenditures		N= 5,647	N= 4,906	N= 8,474	N= 39,662	N=58,689
Total Medicare and Medi-Cal						
Acute	Mean $/Month	4,700	5,155	5,048	4,778	4,839
Post-Acute	Mean $/Month	361	990	386	209	312
LTSS	Mean $/Month	750	1,012	4,056	219	881
Medicare						
Acute	Mean $/Month	4,344	4,952	4,552	4,487	4,520
Post-Acute	Mean $/Month	360	968	374	208	308
LTSS	Mean $/Month	106	513	2,210	94	430
Medi-Cal						
Acute	Mean $/Month	361	211	503	300	328
Post-Acute	Mean $/Month	1	23	12	1	5
LTSS	Mean $/Month	651	515	1,891	129	463

Mean expenditures are calculated using the eligible months as the denominator for each recipient. Eligible months with no expenditures had a value of $0. The tracking period is inclusive of all eligibility months over the 12 months following the index hospital stay.

Medi-Cal mean monthly acute expenditures tend to be relatively similar across all disposition cohorts (although about $200 per month higher for those in NFs). Trace amounts of expenditures are allocated to post-acute care. LTSS expenditures are most differentiated among the groups. These approach a mean of $1,900 per month for the NF group, almost four times the mean monthly LTSS expenditures by those discharged to post-acute care, and three times the mean monthly LTSS expenditures by those discharged to HCBS. The community group averages less than $130 per month on LTSS. This is reflective of the relatively few individuals in this cohort who receive HCBS or have a nursing facility stay in the 12-month post-hospital observation period.

LIMITATIONS

While the linked federal and state enrollment, claims and assessment files provide unique insights into the associations between acute, post-acute, and LTSS services, there are several limitations that prevent definitive conclusions about the effectiveness of LTSS services in terms of their impact on overall health care use and costs. First, health status is not assessed in a systematically consistent way across different groups of consumers. Differences in the health status and social service needs of MMEs contribute to whether different individuals receive LTSS and the types of LTSS they receive. It is possible to adjust for some of the observed differences in the groups but there remain unmeasured differences in the health status, social

service needs, and living arrangements of different beneficiaries that could lead to confounding and for the potential of biased interpretation.
Second, other important information is also missing for a large portion of the study population. For example, the social support available to an individual in the home can be a key factor in determining the need for LTSS and whether it can be provided via HCBS or if it requires a nursing facility. Information on the social support available to MMEs is generally available for those entering into HCBS programs or NFs but it is typically missing for those in the community without LTSS. Even for those receiving LTSS, the currency of accurate information regarding an individual's social support availability over time is often lacking as reassessment cycles are typically annual or less frequent.

Third, our analysis comparing events and expenditures among those discharged from a hospital is limited to those who had not had a hospitalization or used LTSS in the previous 12 months. While this approach helped us to control for differences in the need for care among those with different hospital dispositions, it limits our ability to evaluate whether HCBS might be more or less effective among a potentially sicker subgroup of MMEs who had multiple hospitalizations prior to initiating LTSS. Even with our sampling restrictions, the group we studied had substantial morbidity and need for services. Although two-thirds were initially discharged from the hospital to the community, within a year of the index admission, half were re-hospitalized at least once, 20% were enrolled in HCBS, and 7.8% were admitted to a nursing facility for an extended stay.

Fourth, differences in health care utilization and expenditures may be attributable to provider practice patterns independent of the needs of consumers. This study treats each beneficiary as an independent observation, when some of what we have observed might be better understood as being related to provider practice patterns. Future work might consider ways of analyzing the data to take this perspective into consideration.

Fifth, while the analysis of hospital and nursing facility events makes use of all payer databases, the expenditures corresponding to those events are only available as fee-for-service claims files from Medi-Cal and Medicare. This prevents analysis of expenditures of individuals in managed care and any accounting of costs borne by other payers or by the consumer.

Finally, it is beyond the scope of the present study to examine the role that provider practice variation might play in explaining the high rates of hospitalizations and ED visits among patients receiving different types of LTSS. Future research may be able to characterize the contribution of provider variation to the cost and quality of care for MMEs using LTSS.

POLICY CONSIDERATIONS

1. **California's Department of Health Care Services should consider opportunities to establish a more systematic approach for assessing the LTSS needs of its population**

   There is no single entry point for receiving LTSS or for tracking the health status of the Medi-Cal population. The relatively high percentage of Medi-Cal beneficiaries whose first use of LTSS is an extended NF stay is an indicator that California could improve its ability to identify individuals who could benefit from HCBS services that may potentially delay, prevent, or reverse the need for an extended NF stay.

   California's Departments of Health Care Services, Social Services, and Aging are evaluating strategies to create a uniform assessment for those entering selected HCBS programs. While this could potentially eliminate some of the variation in how Medi-Cal beneficiaries are evaluated for LTSS services, the findings in this report suggest that Medi-Cal should also consider broadening the at-risk group of Medi-Cal beneficiaries who are evaluated for LTSS by systematically focusing on those with multiple hospitalizations, ED visits, and high total health care expenditures.

2. **California's Department of Health Care Services should consider ways to encourage greater integration of acute, post-acute, and LTSS service delivery for Medi-Cal beneficiaries.**

   The increasing mean monthly health care cost in the months immediately prior to HCBS and NF service entry, and the subsequent high incidence of ED and hospital use suggest that LTSS may not be providing maximum value because it is not integrated with an optimal health care delivery model. California's plans to include LTSS within managed care programs offer an opportunity to improve the coordination and integration of acute, primary and LTSS. Beginning in 2014, California will start implementation of the Coordinated Care Initiative (CCI) in eight counties. Among the aims of this managed care initiative are to achieve better integrated and coordinated health, behavioral health, and LTSS for individuals who are eligible for both Medicare and Medi-Cal and seniors and persons with disabilities with Medi-Cal only eligibility (SPDs). Capitation payment over the full continuum of care may prove to be an effective incentive for achieving this. However, there is much infrastructure to be developed. Innovative approaches, including data sharing systems, will be needed to bring together primary care providers, care managers/social workers, and LTSS providers to plan and deliver more cost-effective coordinated care to Medi-Cal beneficiaries. For example, Medi-Cal might explore ways for bringing primary care and care management to HCBS recipients who are homebound, who have difficulty making regular office visits, or are otherwise considered at risk for the on-going management of their conditions. Such efforts, if coordinated with HCBS delivery, may enhance the opportunity to use HCBS as a means to reduce health care spending and reliance upon extended stays in NFs.

3. **California's Department of Health Care Services should consider being more strategic in how it organizes the delivery of HCBS.**

   The current HCBS program is a smorgasbord of service options, which are sometimes used alone or in combinations. For most Medi-Cal beneficiaries, IHSS is the only HCBS program being used, and for others it is the foundation upon which to add case management, skilled nursing, and potentially other higher levels of HCBS. The high level of attrition from targeted case management and adult day health center (now called Community-Based Adult Services) programs raises questions about whether this is an effective way to deliver HCBS. Integrating these programs into managed care may make these services more attractive to beneficiaries and more effective as a means to reduce total health care expenditures.

4. **California Department of Health Care Services should consider ways of targeting individuals in post-acute care for HCBS to prevent the need for extended NF services.**

   MMEs who receive post-acute care at a skilled nursing facility following a hospitalization are at an especially high risk of an extended nursing facility stay. Although some individuals need extended NF care depending on the medical and physical conditions and their lack of caregiver support in the home, others could possibly be discharged back to the community if they were offered the appropriate mix of HCBS.

   California has a "Money Follows the Person" (MFP) program that is intended to help identify NF residents that could be discharged back to the community. This program may need to be strengthened and better connected with the health plans and HCBS as part of the CCI. It might also benefit from an early focus on beneficiaries seen as being at risk for avoidable extended stays.

5. **California's Department of Health Care Services should consider opportunities for combining its separate HCBS waiver programs and for broadening the target population eligible for these services**

   Maintaining separate waivers may add administrative costs because of the use of separate eligibility rules, benefits, and screening procedures. CMS rules now allow states to combine HCBS coverage for multiple populations into one waiver. This offers the potential to streamline administrative processes. California's Department of Health Care Services should consider a single combined HCBS waiver as a means to reduce program fragmentation and administrative costs. California might consider opportunities to pursue this approach through its Coordinated Care Initiative in which managed care plans will assume greater financial responsibility for LTSS services. Such an approach could improve the ability to align the level of service with the level of need. This may reduce the administrative burden of managing multiple waivers and help facilitate more timely and sustained integration of benefits.

APPENDIX

Appendix A
Medi-Cal's State Plan and Section 1915(c) HCBS Waivers

Medi-Cal's State Plan HCBS

The state plan programs of interest are Adult Day Health Care (operating in 2006-2007, and since replaced by a waiver program in 2011 known as Community-Based Adult Services or CBAS), Home Health, In-Home Supportive Services, and Targeted Case Management. These are keystones to the state's home- and community-based long-term services and supports programs. The HCBS waiver programs generally supplement or coordinate with the state plan programs. State plan services are available on a statewide basis, to all persons qualifying for Medi-Cal meeting the levels of need appropriate to the services offered.[62]

1. **Adult Day Health Care (ADHC)** was implemented to serve beneficiaries at risk of being institutionalized, although during the study period it was not limited to those meeting NF eligibility. ADHC has both medical and social components serving a mix of short-term, post-acute, and longer-term clients. Among the core services are assessment and monitoring of general health and psychosocial status and medications, coordination, communication with other providers, supervision or assistance with ADL/IADLs.

2. **Home Health (HH)** California is required by federal law to cover HH. All other HCBS state plan services are optional. Medi-Cal generally covers HH services for homebound persons age 21 and older who are entitled to, but not necessarily eligible for, NF coverage in California. HH must be medically necessary and ordered by a physician as part of a written plan of care that a physician reviews every 60 days. Covered services include: skilled nursing; physical, speech and occupational therapy; HH aide; medical supplies, equipment, and appliances for use in the home. Services are often provided in a participant's residence.

3. **In-Home Supportive Services (IHSS)** is the name used by California to label its Personal Care Service program. The IHSS program is limited to individuals who are community-dwelling, eligible for Medi-Cal, and unable to perform needed activities of daily living (e.g., bathing, dressing, toileting, transferring, eating) or instrumental activities of daily living (e.g., shopping, housekeeping, meal preparation, transportation).

4. **Targeted Case Management (TCM)** provides specialized case management services, that include: service plan development, linkage and consultation, assistance to the beneficiary with accessing services, crisis assistance planning, and periodic reviews of the objectives identified in the service plan. TCM does not offer reimbursement for direct care services. Eligibility is more directly tied to language and comprehension barriers than other HCBS programs included in our analysis. Additionally, recipients must be 18

[62] For a more extensive description of these programs see our report, *California's Medi-Cal Home & Community-Base Services, Waivers, Benefits & Eligibility Policies, 2005-2008* (Newcomer R, Harrington C, Stone J, Bindman A, Helmar M. (2011) http://camri.universityofcalifornia.edu/documents/medi-cal-waiver-report.pdf

years of age or older on probation and have a medical/mental condition, and have exhibited an inability to handle personal, medical, or other affairs; and/or to be under conservatorship of person and/or estate; a member of a public health, outpatient clinic, linkages, public guardian/adult probate, or community target population.

Medi-Cal HCBS Waivers

Medi-Cal waivers allow the state to provide benefits outside some of the preceding state program and eligibility rules.[63] The most common waiver authority used by states to provide HCBS to Medicaid beneficiaries is §1915(c) of the Social Security Act. Individuals served live in community-based settings but require the level-of-care offered in an institution. Waiver services complement and/or supplement the services that are available to participants through the Medicaid State plan and other federal, state, and local public programs as well as the supports that families and communities provide. Table A-1 summarizes California's HCBS waivers operational during 2006 and 2007. Three of these were initiated during this period. Two of these consolidated previously operating waivers, the third had operated as a pilot project.[64]

[63] Special features available through a waiver include Geographic Limitations, and Subgroup/Condition Targeting. The former allows programs to target areas of the state where the need is greatest, or perhaps where certain types of providers are available, rather than being statewide. The latter allows limiting waiver services to persons meeting narrow needs criteria, e.g., at risk of institutionalization. Services under a waiver do not have to be available to the Medicaid population at large.

[64] California operated 18 other waivers during some portion of the period of 2005-2008. These were targeted to such things as pregnancy protection, children's dental services, county organized health systems, mental health, and inpatient hospital stay reviews. They do not include HCBS for the aged or non-aged adults.

Table A-1
Selected Medi-Cal HCBS §1915(c) Waivers Programs[65]
Operational in 2006-2007

AIDS Waiver
The California Department of Public Health's Office of AIDS administers the AIDS waiver. Individuals must meet the nursing facility qualifications, income eligibility qualifications, have an active diagnosis of AIDS, and live in a setting where in-home services can be provided. The waiver provides case management, homemaker, environmental modifications, skilled nursing, transportation, specialized medical equipment and supplies, attendant care, psychosocial counseling, nutritional supplements, home-delivered meals, and nutritional counseling. The AIDS waiver began in California in 1994. In 2005, there were 2,882 waiver participants and total expenditures of $11.9 million; in 2008 these numbers were 2,209 and $8.6 million, respectively.
Assisted Living (ALW) Waiver
The Department of Health Care Services administers ALW. This waiver, initiated in 2006, allows case management, skilled nursing services, and an enhanced level of personal care and homemaker services in licensed Residential Care Facilities for the Elderly (RCFEs). These serve older adults and adults with physical disabilities. State regulations, absent this waiver, do not permit state funded IHSS services or HCBS waivers to be used by RCFE residents. The waiver also allows the offering of assisted care services for eligible residents in publicly subsidized housing (PSH). Eligibility requires meeting clinical qualifications for admission to a nursing facility, income eligibility, and being at least 21 years of age. Applicants residing in an institutional setting may be eligible for nursing facility transitional care coordination. If they are relocating to a PSH setting, they may be eligible for funds for environmental accessibility adaptations. The waiver covers skilled nursing, personal care, and homemaker services as supplements to the RCFE's usual care or IHSS if in PSH -- paid through an Assisted Living Services daily rate. Other services are reimbursed to set maximums: care coordination; nursing facility transition services (mostly care coordination available only to those relocating from a nursing facility); environmental accessibility adaptations (limited to those in PSH). ALW served 186 individuals in 2006, at a cost of $1.3 million; and 875 participants at $14.5 million in 2008.
In-Home Medical Care (IHMC) Waiver
The Department of Health Care Services administered the IHMC waiver, operational since 1986. This waiver provided HCBS to severely disabled individuals with a catastrophic illness, and included persons who might be technology dependent, had a risk for life-threatening incidents, and who would otherwise require care in an acute care hospital for a minimum of 90 days. Services included home health aide, respite care, environmental assessment and adaptation, personal emergency response system, private duty nurse, family training, waiver service coordination, and transitional care coordination. The IHMC program was statewide, but enrollment declined to 69 persons by calendar year 2005 and 63 in 2006, its last year of operation. Expenditures in those two years were $11.7 million and $10.6 million respectively. IHMC was consolidated effective January 1, 2007 into the Nursing Facility Acute Hospital (NF/AH) and the In-Home Operations (IHO) waivers.
In-Home Operations (IHO) Waiver
The Department of Health Care Services administers the IHO waiver. It was established effective January 2007. This waiver grandfathered a small population of the Medi-Cal beneficiaries who were previously enrolled in the Nursing Facility A/B Level of Care waiver, the Nursing Facility SubAcute waiver or the In-Home Medical Care (IHMC) waiver. Recipients in the IHO waiver (and the former waiver programs) receive direct care services primarily provided by a licensed nurse and case manager. Additionally, the IHO waiver offers the same services as the NF A/B and NF SA waivers, and adds habilitation and community transition services. IHO waiver services include: environmental accessibility adaptations, case management, respite care (home and facility), personal emergency response systems (PERS), PERS installation and testing, community transition services, home health aide services, habilitation services, family training, waiver personal care services, transitional case management, medical equipment operating expenses, and private-duty nursing, including shared services. The planned enrollment in 2007 was 210 individuals, but due to the timing of the conversion process, actual enrollment was 188 with $16.2 million in total expenditures. Enrollment in 2008 was 180 with expenditures of $16.1 million.

[65] Reference is to §1915(c) of the Social Security Act. Information was obtained from the CMS approved waiver applications and CMS Form 372 reports for the calendar years shown. The In-Home Supportive Service Plus (IHSS Plus) §1115 demonstration waiver was in place between 2004 and 2008. IHSS Plus operated identically to IHSS, except that it allowed payment to legally responsible relatives as IHSS providers. It transitioned into a 1915(j) State Plan Option benefit in 2009. IHSS Plus recipients have been included among those in IHSS for our analytic purposes.

Multipurpose Senior Services Program (MSSP) Waiver
The California Department of Aging administers the MSSP waiver through 41 regional contractors. This waiver began in 1983. To be eligible, individuals must be age 65 or older, reside in a county with a MSSP provider, meet Medi-Cal income qualifications, and be certifiable for Nursing Facility (NF) level of care. Program services include: adult day care, case management, housing assistance, chore/personal care, protective supervision, respite, transportation, meal service, and protective services. About three fourths of MSSP expenditures are for case management. Most MSSP participants are usually jointly participating in IHSS (a state plan program). MSSP declined from 13,871 recipients in calendar year 2005 to 13,143 in calendar year 2008, while program expenditures increased from $43.1 million to $47.0 million.
Nursing Facility Acute Hospital (NF/AH) Waiver
The Department of Health Care Services administers the NF/AH waiver. This waiver was implemented in January 2007. NF/AH (along with the IHO) consolidates three previous waivers: Nursing Facility Level A/B, Nursing Facility SubAcute and the IHMC waivers. NF/AH offers services for individuals at home who would otherwise receive care for at least 90 days in a skilled nursing, intermediate care, subacute facility, or an acute care hospital. Services include: case management, community transition services, environmental accessibility modifications, facility respite, family training, habilitation, home respite, medical equipment operating expenses, personal care services, PERS, private duty nursing, and transitional case management. Enrollment was 1,095 in 2007 and 1,464 in 2008; expenditures were $48.6 million and $63.9 million, respectively. 250 NF/AH waiver slots are allocated for those transitioning from a nursing facility.
Nursing Facility A/B (NF/AB) Waiver
The Department of Health Care Services administered the Nursing Facility A/B (NF/AB) waiver. This statewide program served physically disabled Medi-Cal beneficiaries who, in the absence of this waiver and as a matter of medical necessity, required care in an inpatient NF for at least 365 consecutive days, and who needed assistance with personal care and/or needed skilled nursing care. Case management was a central component of this program, but it included coverage for several other services: community transition services, personal care services, home health aide services, respite care (both in home and in licensed facilities), environmental accessibility adaptations, PERS, private duty nursing, family training, utility coverage, and waiver service coordination. Historically, this waiver had a small enrollment. Between 2001 and 2005 it ranged in size from 538 to 663, decreasing to 645 participants in 2006. Expenditures in 2005 were $16.2 million, decreasing to $14.2 million in 2006. There was a waiting list of 649 individuals at the waiver's expiration in 2006. The NF/AH waiver replaced it in 2007. Continuing recipients were transitioned into the NF/AH waiver.
Nursing Facility SubAcute (NF/SA) Waiver
The Department of Health Care Services administered the NF/SA waiver through 2006. This statewide program provided services to seriously ill, high-cost recipients who would otherwise have received adult or pediatric NF services at a subacute level of care for 180 days or more. It also supported the relocation of persons from NFs to the community or diverted persons from entering a NF. Services covered include: case management, home health aide services, certified home health aide services, waiver personal care services, respite care, environmental accessibility adaptations, PERS, private duty nursing (including shared nursing services), family training, transitional case management services, utility coverage, and waiver service coordination. Services available through the NF/SA waiver generally paralleled those available in the NF/AH waiver. NF/SA had an enrollment of 503 in calendar year 2005 and 505 in 2006. Like the IHMC waiver, NF/SA was combined into the NF/AH and IHO waivers in 2007. About half (240) of the NF/SA participants transferred to the NF/AH Waiver.

Hospital and Other Health Care Service Use & Expenditure Data Sources

We report on three broad categories of medical and HCBS services and expenditures. These are Acute and Other Medical Care Services, Post-Acute Care, and Medi-Cal funded LTSS. The services included in the first two categories are identified below. Because we did not have comprehensive data for prescription drug expenditures, we did not include them in our analysis.

Medicare costs were aggregated from the following six Medicare claims files:[66]

1. CMS MEDPAR file: Hospital inpatient, Skilled Nursing Facility (SNF), Inpatient Rehabilitation Facility (IRF), and Long-Term Care Hospital (LTCH). Hospital inpatient stays were included in Acute Services. The remaining services were included in Post-Acute Care.

2. CMS Carrier: Ambulatory services (including physician services), Emergency Department (ED) visits, Therapies (physical therapy, occupational therapy, and speech therapy), Diagnostic Testing and other services. These services, with the exception of Therapies, were included in Other Medical Care. Therapies were included in Post-Acute Care.

3. CMS Outpatient files: Ambulatory services (including physician services), Emergency Department (ED) visits, Therapies (physical therapy, occupational therapy, and speech therapy), Diagnostic Testing and other services. These services, with the exception of Therapies, are included in Other Medical Care. Therapies are in Post-Acute Care.

4. CMS Hospice file: Hospice services.

5. CMS Durable Medical Equipment (DME) file: equipment and services related to DME.

6. CMS Home Health (HH) File: services related to HH, and included in Post-Acute Care.

Medi-Cal claims were received in a single file in which the state had aggregated services and procedures into mutually exclusive categories known as "Vendor codes." We organized these codes so that Medi-Cal expenditures for specific services and procedures, where appropriate, aligned with comparable Medicare service categories.

[66] Each of these Medicare files captures costs for a mixture of services. For example, some physician claims appear in the MEDPAR file corresponding to when a physician provides services to a Medicare beneficiary in an institutional setting such as a hospital. In general we classified claims according to the file type regardless of what service was provided. Physician services provided during a hospitalization were classified as inpatient hospital claims and physician services provided as a part of hospice care were classified as hospice. Within the Carrier file and the Outpatient file we used the Health Care Procedure Coding System (HCPCS) codes, in combination with place of service, to categorize claims using the Berenson-Eggers Type of Service (BETOS) categorization approach to assign claims to the service categories corresponding to those files shown above. The claims from these two files were combined in presenting the results.

Table A-2
Medi-Cal Services and Related Vendor Codes

Service Groupings	Vendor Codes (VC) or Other Codes
A) Acute and Other Medical Spending	
Hospital	Claim Type = 2 & VC ≠ 62, 80
Physician Services	VC 07, 08, 14, 20, 22, 52, 62, 72, 75, or VC 77 w/ (procedure code ≠ 00006~00009), or VC 50, 60 w/ (Claim Type = 1 or 4)
Emergency Department (ED)	Place of Service = 0 or CPT-4 codes (99281~99285)
Hospice	VC 06
PT/OT/ST	VC 34, 35, 36
Other Professional Services	All other Vendor codes not shown below
(B) Post-Acute Care Spending	
Inpatient Rehabilitation Facility (IRF) Spending	VC 59, 69, 79
(C) LTSS Spending	
Nursing Facility (NF)	VC 80
In-Home Supportive Services (IHSS)	VC 89
Adult Day Health Care (ADHC)	VC 01 or (VC 77 w/ procedure code = 00006~00009)
Targeted Case Management (TCM)	VC 92
Home Health (HH)	VC 44
AIDS Waiver (AIDS)	VC 73
Assisted Living Waiver (ALW)	VC 84
Multi-Senior Service Program (MSSP)	VC 81
Other HCBS Waivers: In-Home Operations (IHO)/ Nursing Facility/Acute Hospital (NF AH)	VC 71 w/(procedure code ≠ Z5804~Z5807, Z5832~Z5836, Z5838, Z5840)

Appendix B

Medi-Cal LTSS Sample Characteristics & Analytic Results for Selected Other State Plan and HCBS Programs

Table B-1
Sample Characteristics of Medi-Cal Only LTSS Population*

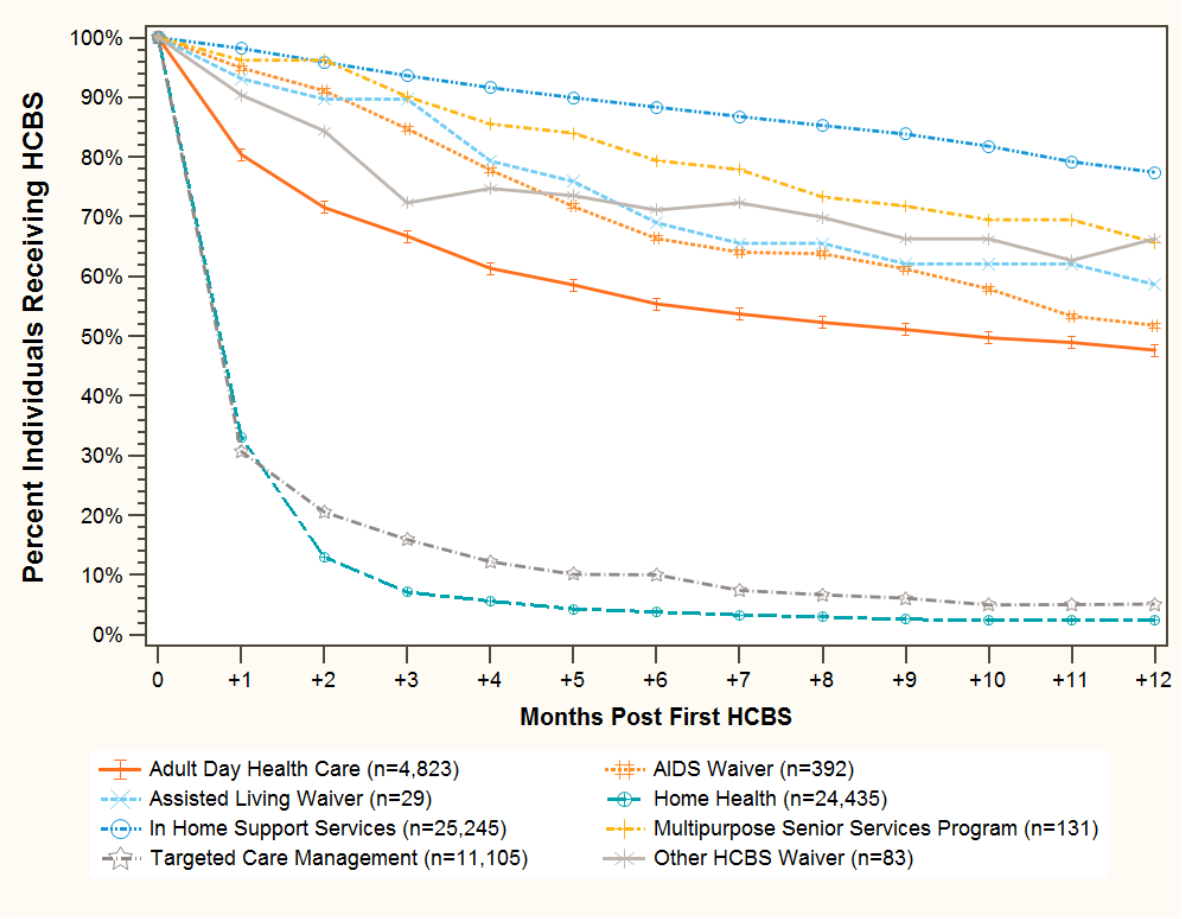
	Study Population 2006-2007		Prior to Exclusions 2006-2007	
Demographic Characteristics	**Number**	**%**	**Number**	**%**
Total	205,804	100	418,410	100
Age in 2007				
18-34	55,761	27	127,828	30
35-44	29,434	14	51,231	12
45-54	47,551	23	71,776	17
55-64	50,869	25	75,197	18
65-74	12,297	6	29,982	7
75-84	7,471	4	32,571	8
≥85	2,421	1	29,825	7
Ethnicity				
Alaskan Native or American Indian	1,741	1	2,620	1
Black	31,238	15	62,307	15
Filipino	4,539	2	7,592	2
Hispanic	71,422	35	143,478	34
Other Asian/PI	19,438	9	39,330	9
White	71,624	35	149,284	36
Unknown	5,802	3	13,799	3
Sex				
Female	134,420	65	282,504	68
Male	71,384	35	135,906	32

*For discussion of the exclusion criteria see pages 9-11 in the main report text.

Table B-2
Recipient Transitions within 12-Months Among Initial HCBS Users, 2006-2007
Medi-Cal Only Beneficiaries

Transitions	#	%
Death	3,745	6.9
Nursing Facility Stay	976	1.8
HCBS Discontinued	16,978	31.2
Lost Medi-Cal Eligibility	9,091	16.7
Resumed Medi-Cal Eligibility	4,980	9.1
Remained in HCBS	18,698	34.3
Total	**54,468**	**100.0**

Figure B-1
HCBS Enrollee Attrition by Program
Medi-Cal Only Beneficiaries



Note: The 'n' for each program is a count of the new entries into that program during 2006-2007. An individual can be included as a new entry into more than one program in this period. Between 4% and 18% of attrition is due to death. The death rate in each program is reported in later figures.

Figure B-2
Medi-Cal Eligibility & Initial HCBS Program Entry
Among Medi-Cal Only Beneficiaries
(n=54,468)

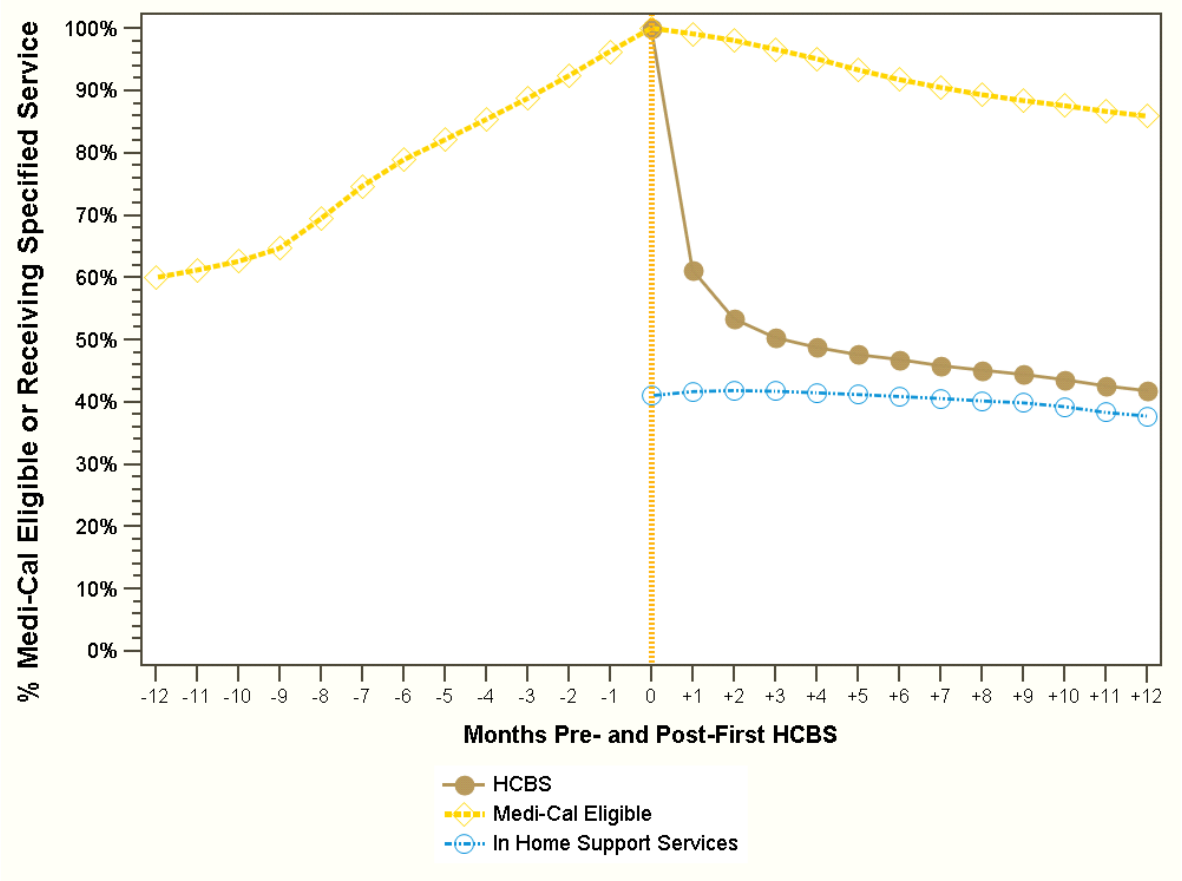


Figure B-3
Initial HCBS Entry & Health Care Expenditures
Among Medi-Cal Only Beneficiaries
(n=54,468)

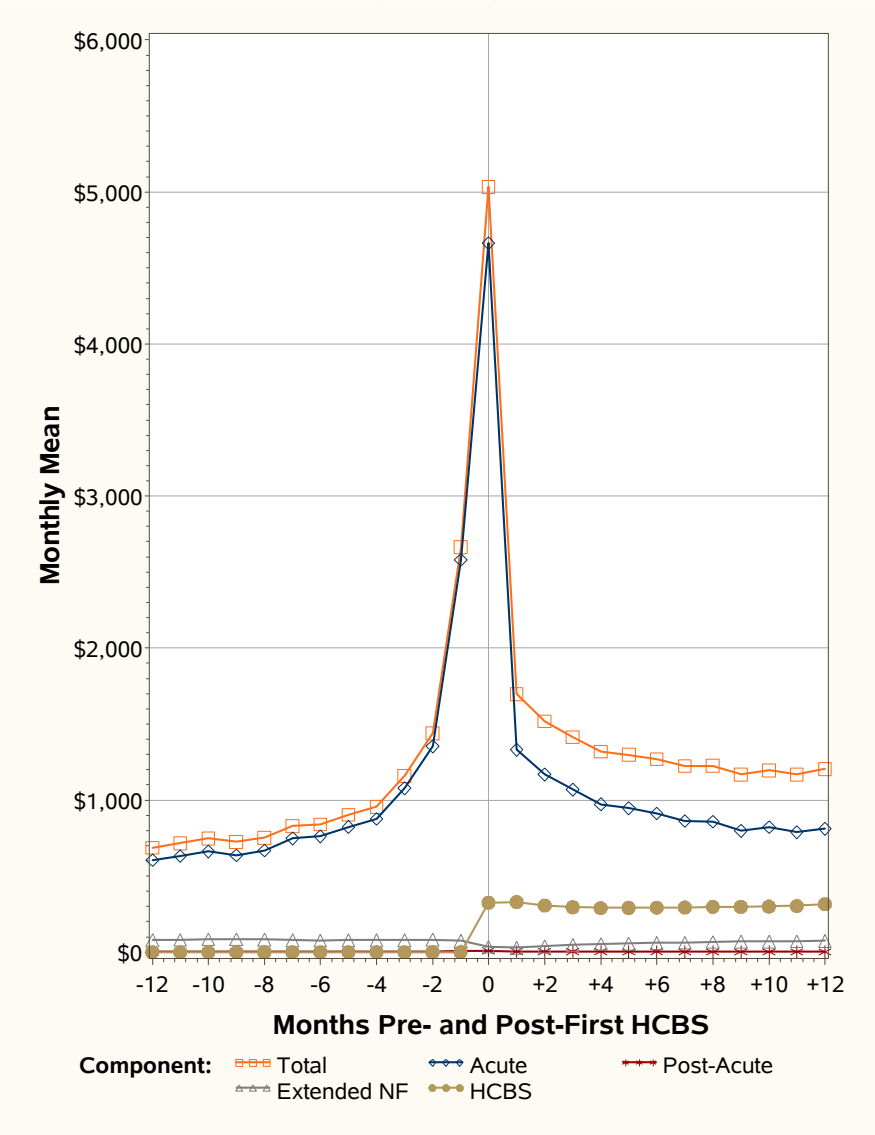
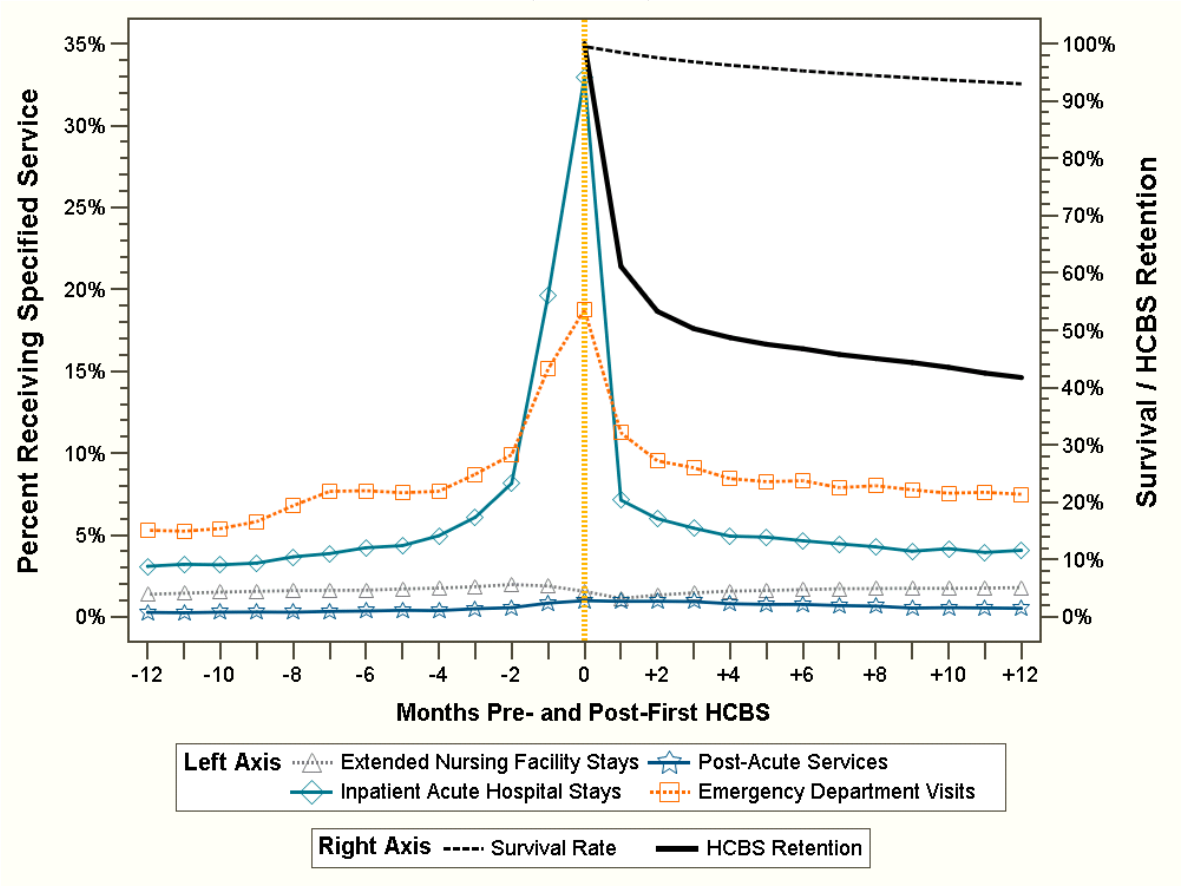


Figure B-4
Service Use & Initial HCBS Program Entry
Among Medi-Cal Only Beneficiaries
(n=54,468)



Emergency Department visits refer to those not occurring as a part of a hospital admission.

Figure B-5
Medi-Cal Eligibility & IHSS Program Entry
Among Medi-Cal Only Beneficiaries
(n=25,245)

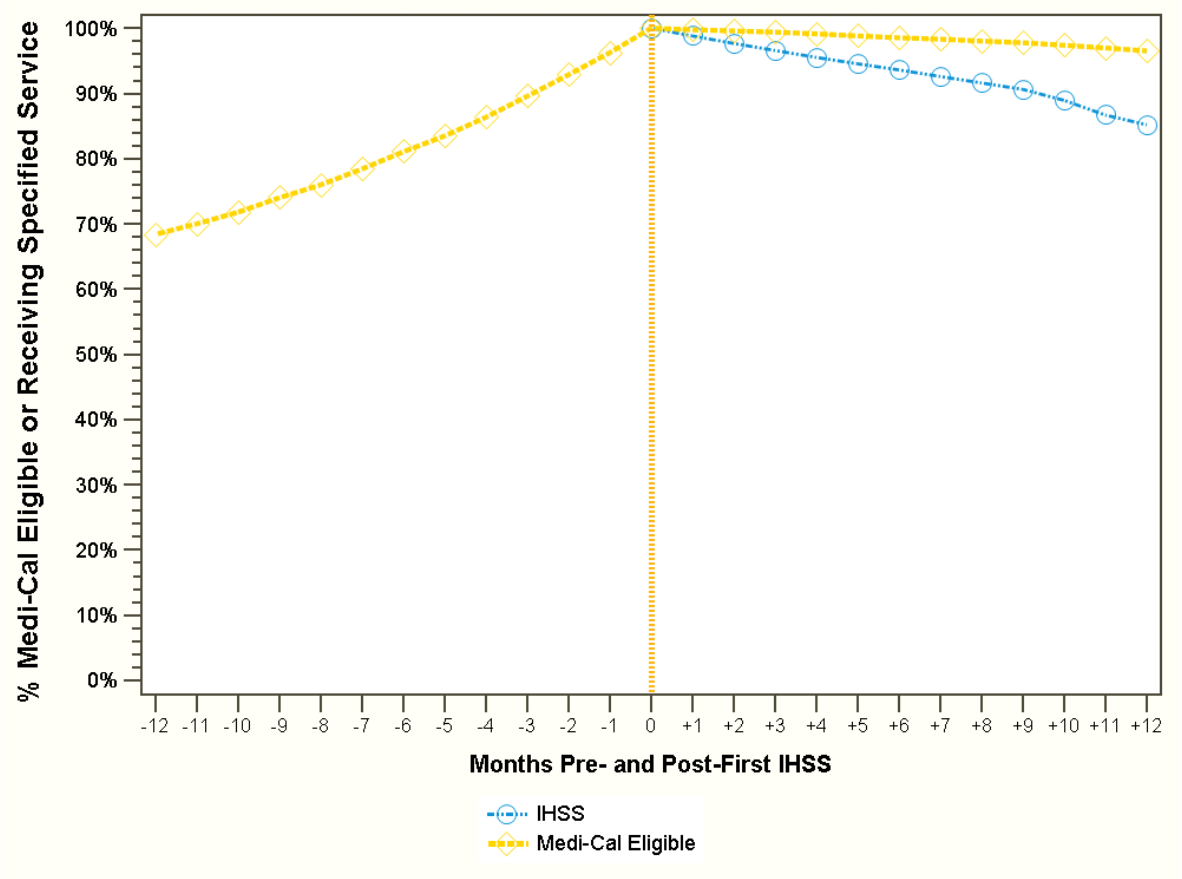


Figure B-6
IHSS Program Entry & Health Care Expenditures
Among Medi-Cal Only Beneficiaries
(n=25,245)

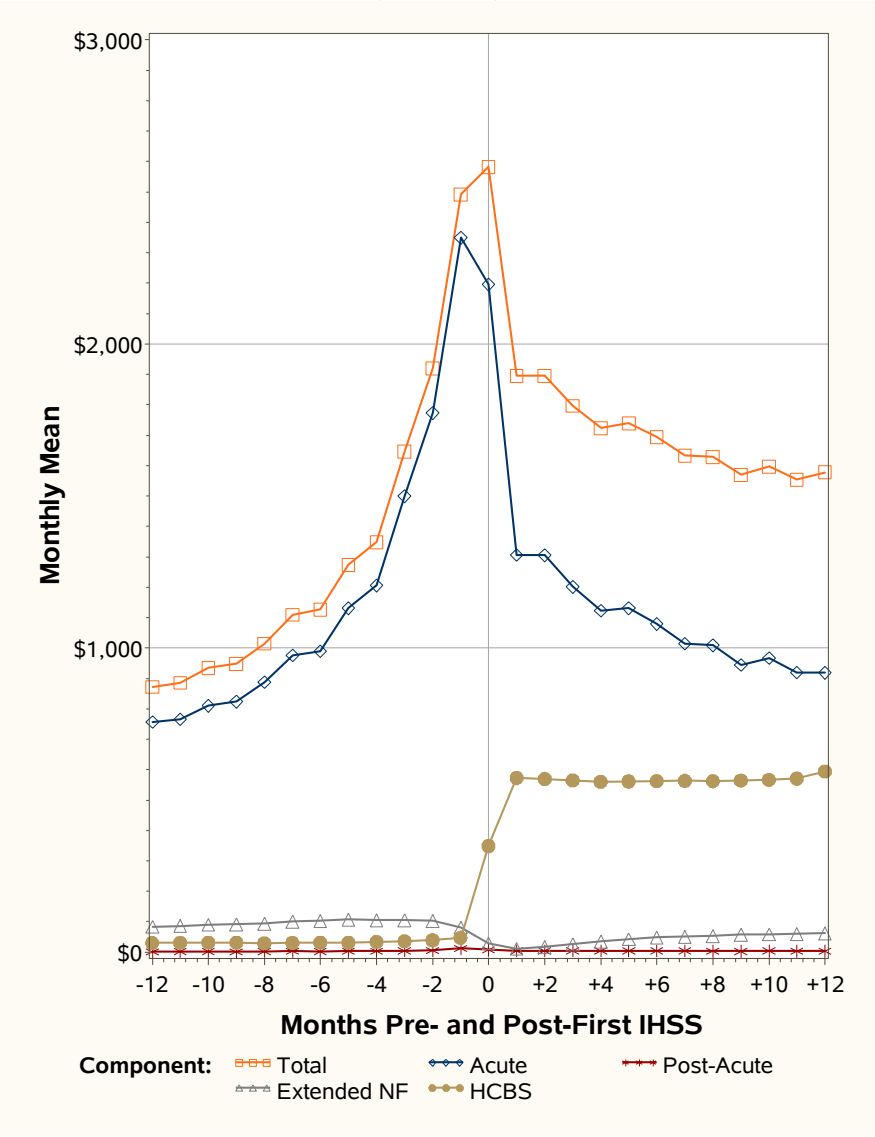
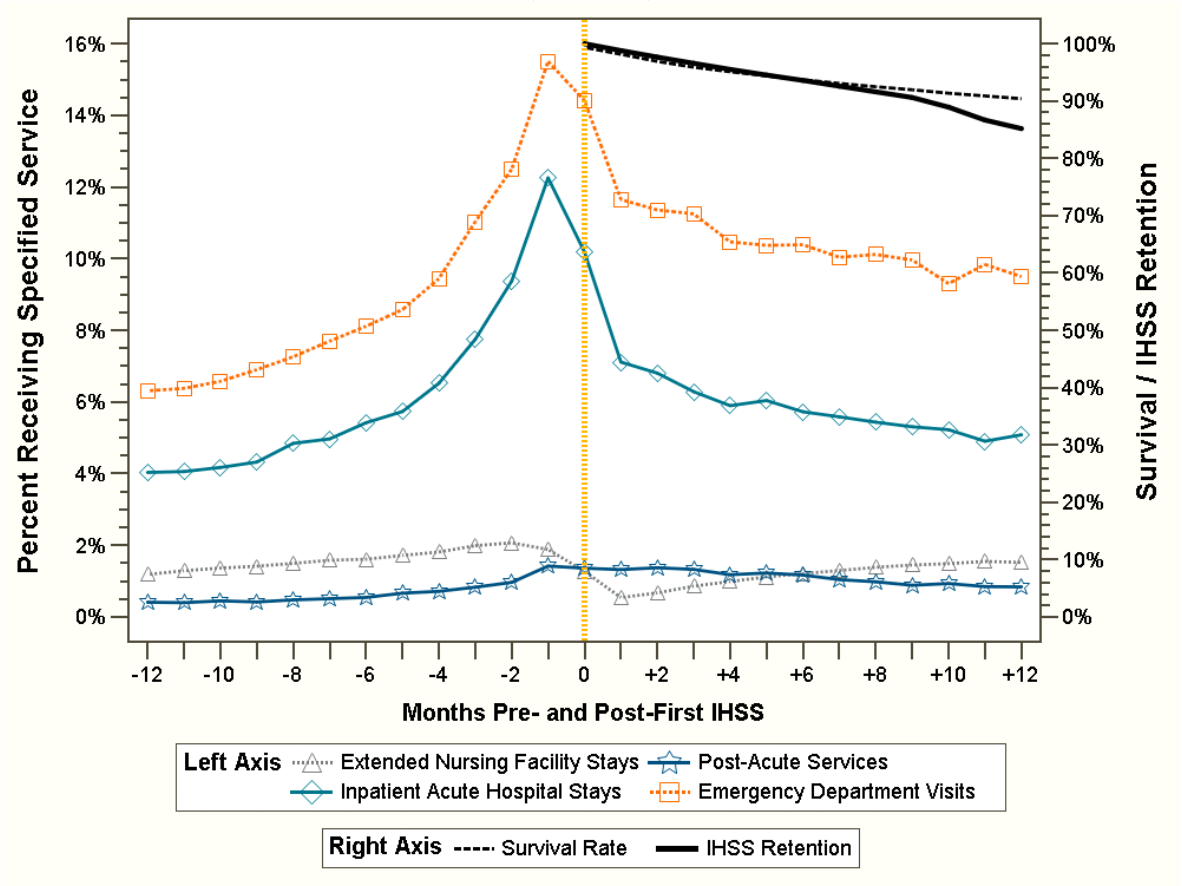


Figure B-7
Service Use & IHSS Program Entry
Among Medi-Cal Only Beneficiaries
(n=25,245)



Emergency Department visits refer to those not occurring as a part of a hospital admission.

Figure B-8
Medi-Cal Eligibility & TCM Program Entry
Among Medi-Cal Beneficiaries
(n=11,105)

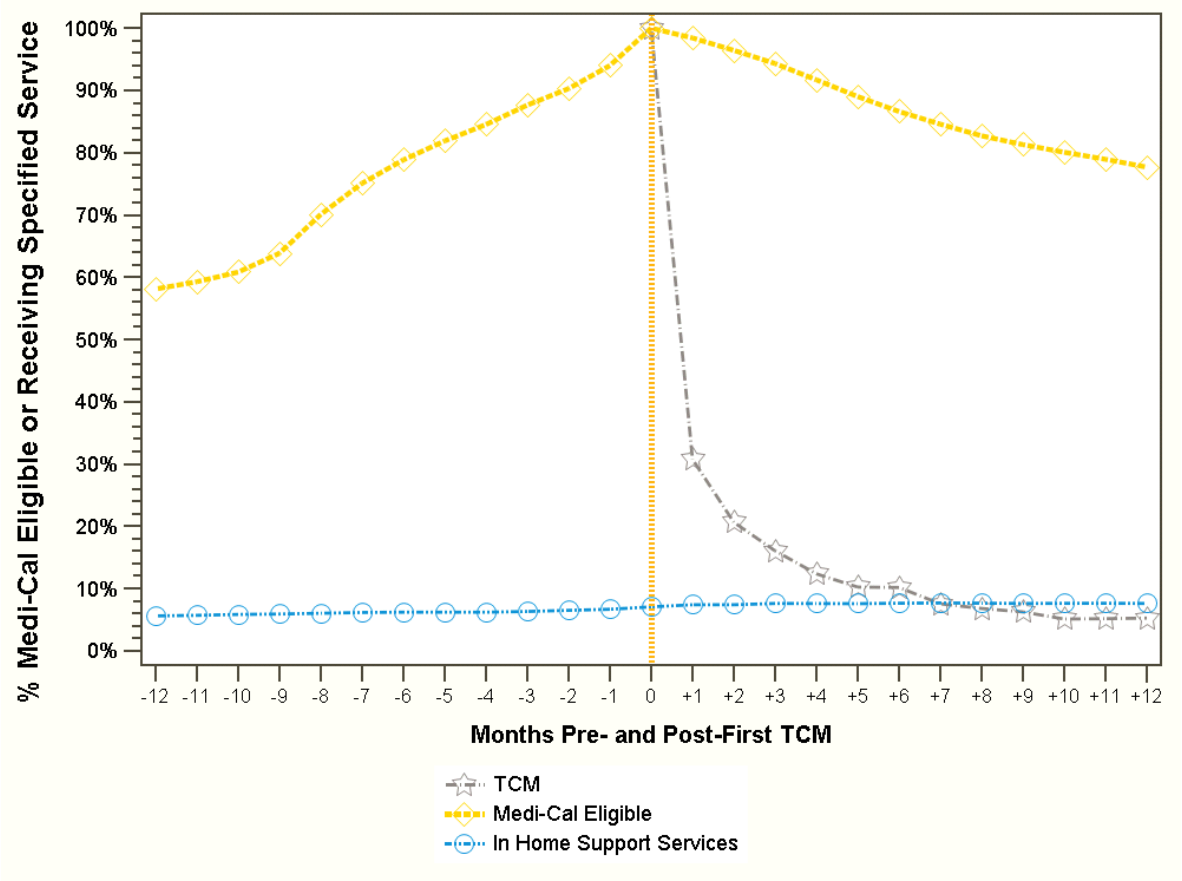


Figure B-9
TCM Program Entry & Health Care Expenditures
Among Medi-Cal Only Beneficiaries
(n=11,105)

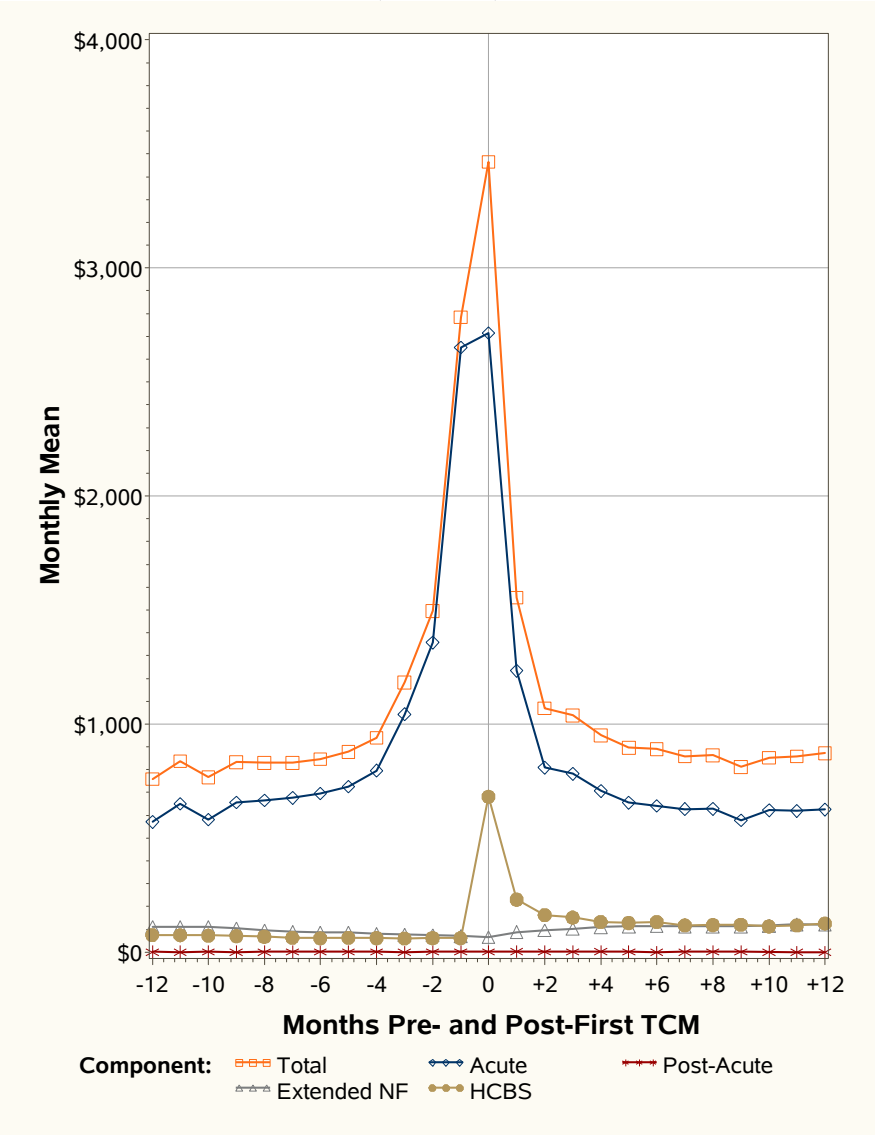
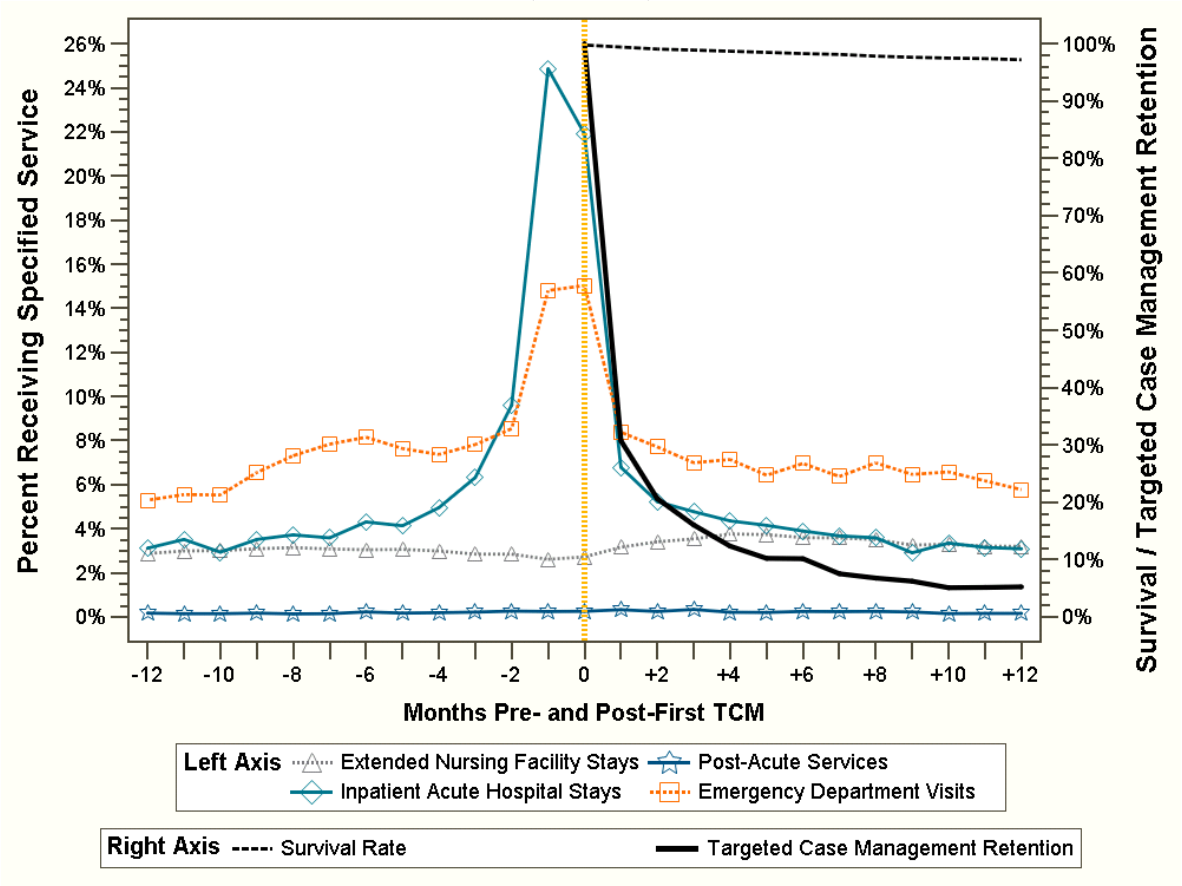


Figure B-10
Service Use & TCM Program Entry
Among Medi-Cal Only Beneficiaries
(n=11,105)



Emergency Department visits refer to those not occurring as a part of a hospital admission.

Figure B-11
Medi-Cal Eligibility & MSSP Entry
Among Medi-Cal Only Beneficiaries
(n=131)

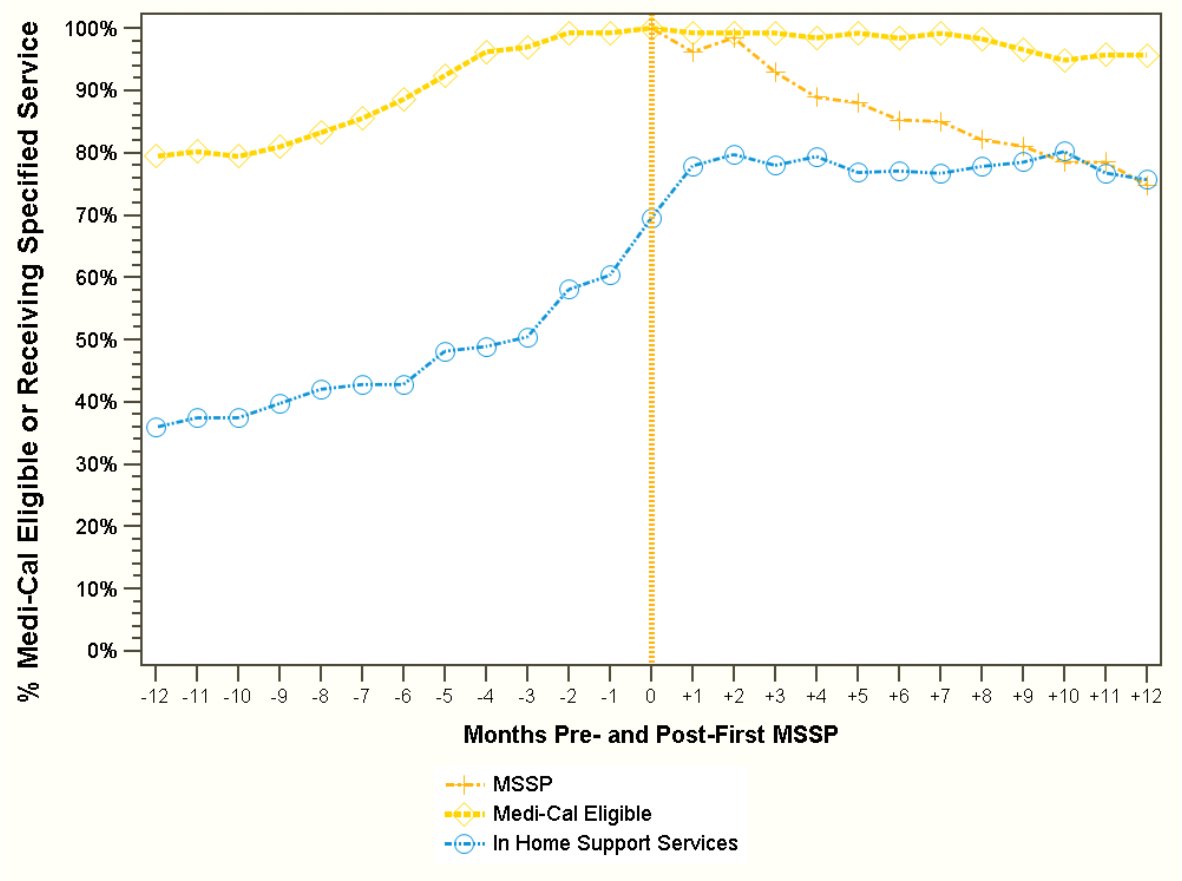


Figure B-12
MSSP Entry & Health Care Expenditures
Among Medi-Cal Only Beneficiaries
(n=131)

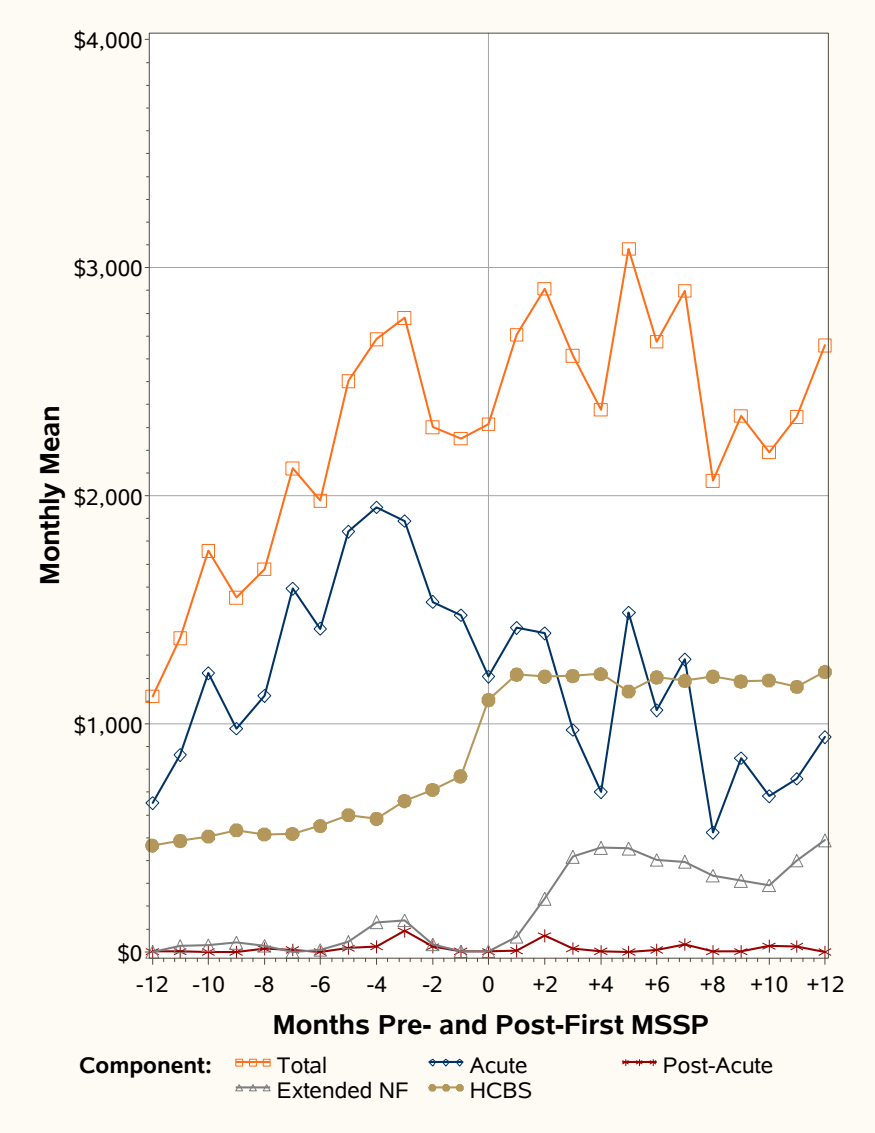
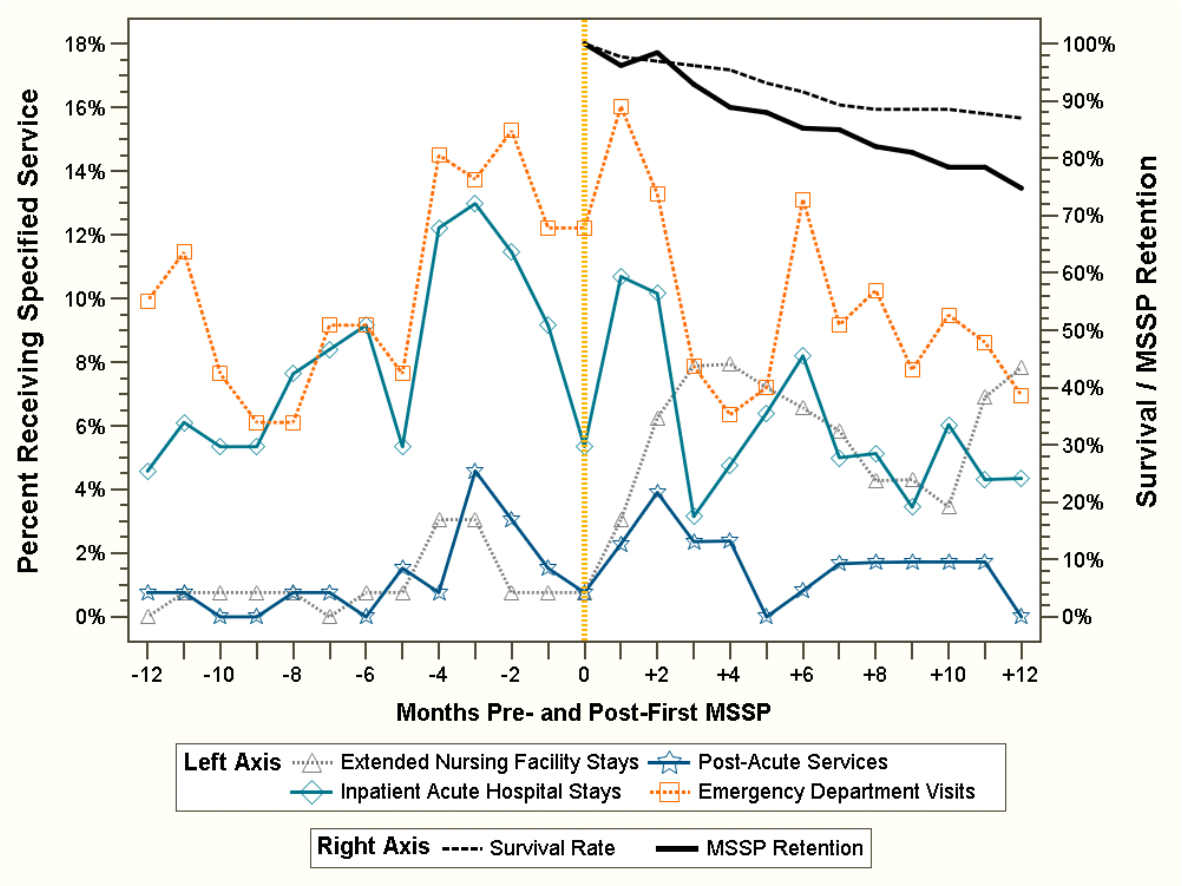


Figure B-13
Service Use & MSSP Entry
Among Medi-Cal Only Beneficiaries
(n=131)



Emergency Department visits refer to those not occurring as a part of a hospital admission.

Figure B-14
Medi-Cal Eligibility & Other HCBS Waiver Program Entry
Among Medi-Cal Only Beneficiaries
(n=83)

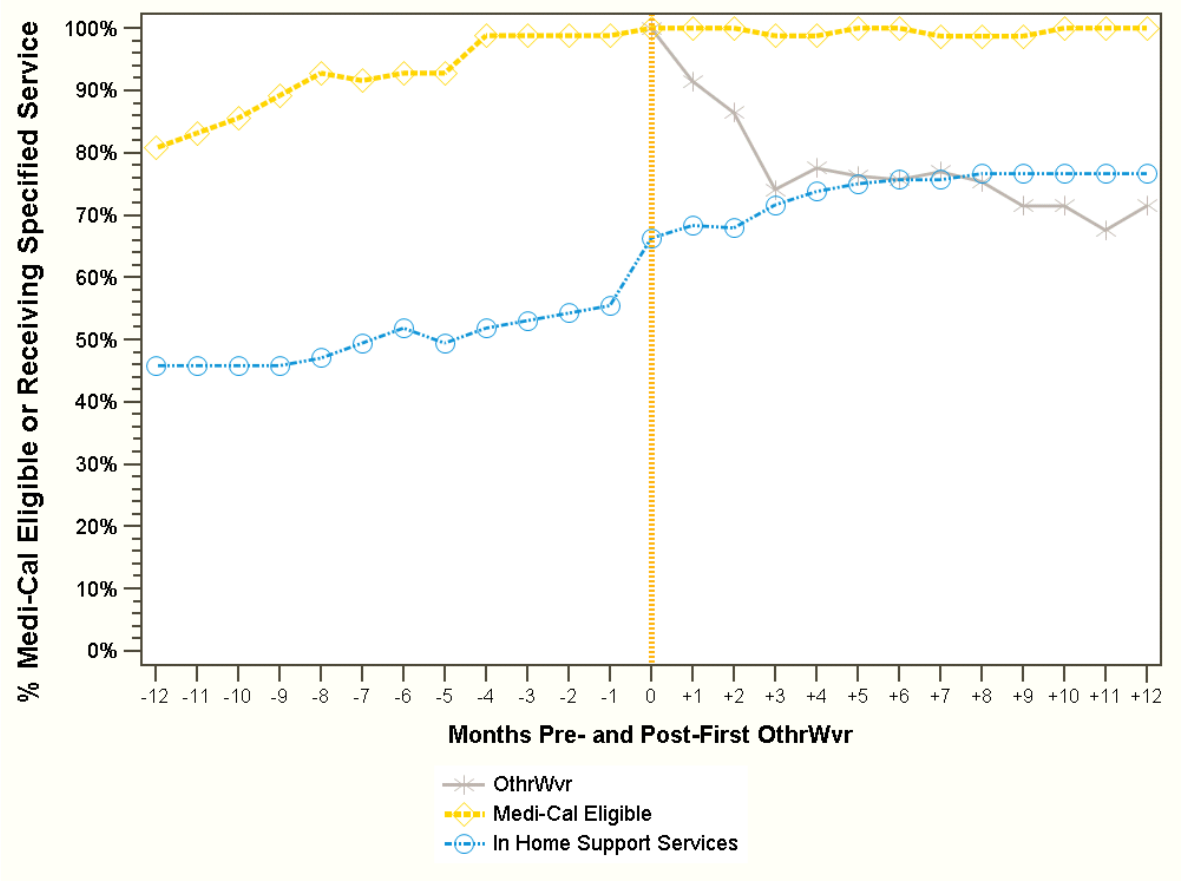


Figure B-15
Other Waiver Program Entry & Health Care Expenditures
Among Medi-Cal Only Beneficiaries
(n=131)

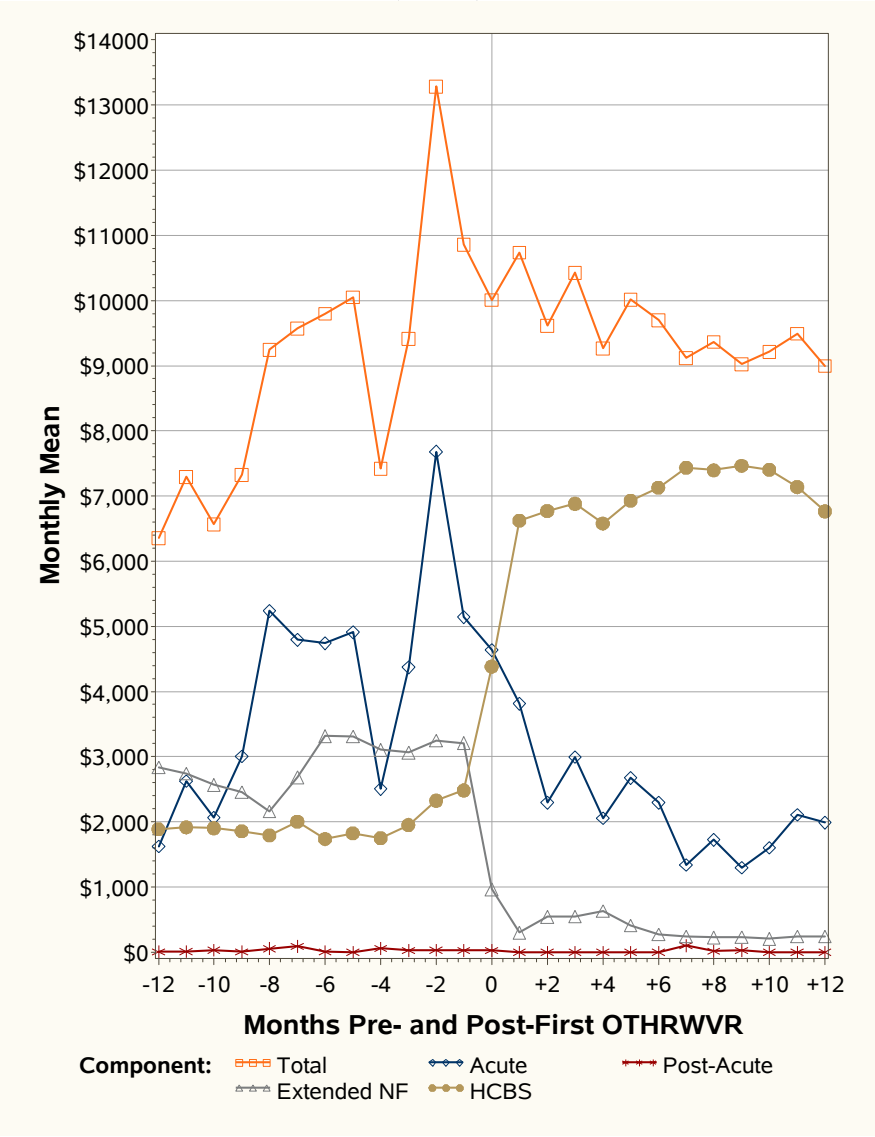
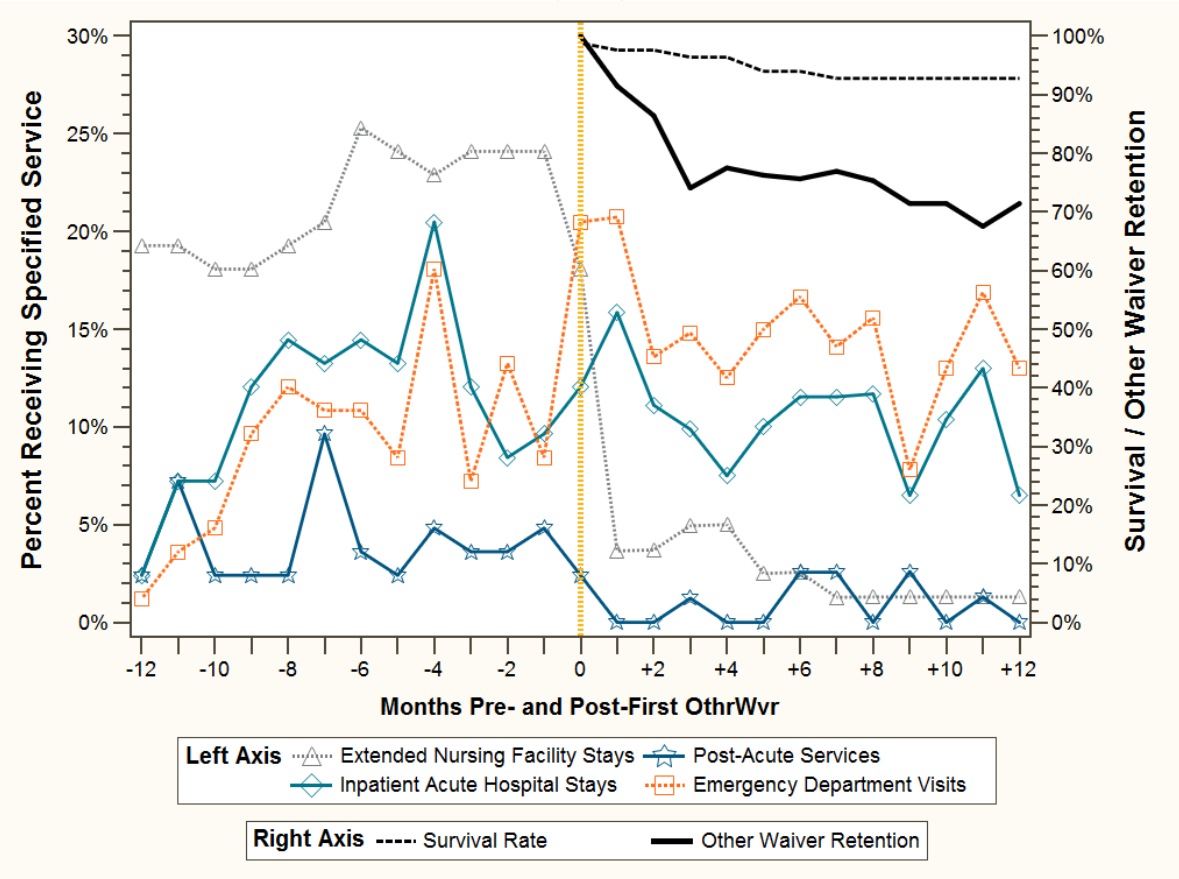


Figure B-16
Service Use & Other Waiver Program Entry
Among Medi-Cal Only Beneficiaries
(n=83)



Emergency Department visits refer to those not occurring as a part of a hospital admission.

Figure B-17
Medi-Cal Eligibility & AIDS Waiver Program Entry
Among Medi-Cal Only Beneficiaries
(n=392)

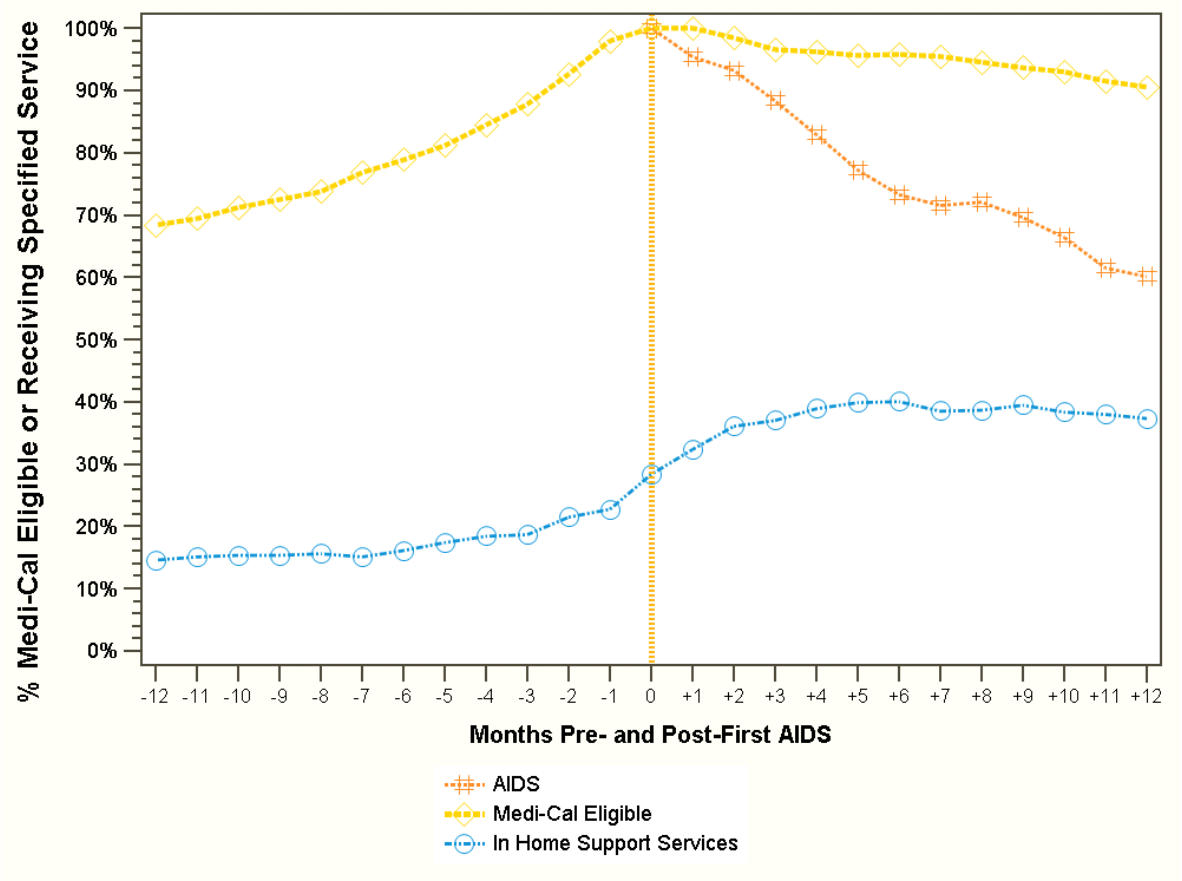


Figure B-18
AIDS Waiver Program Entry & Health Care Expenditures
Among Medi-Cal Only Beneficiaries
(n=392)

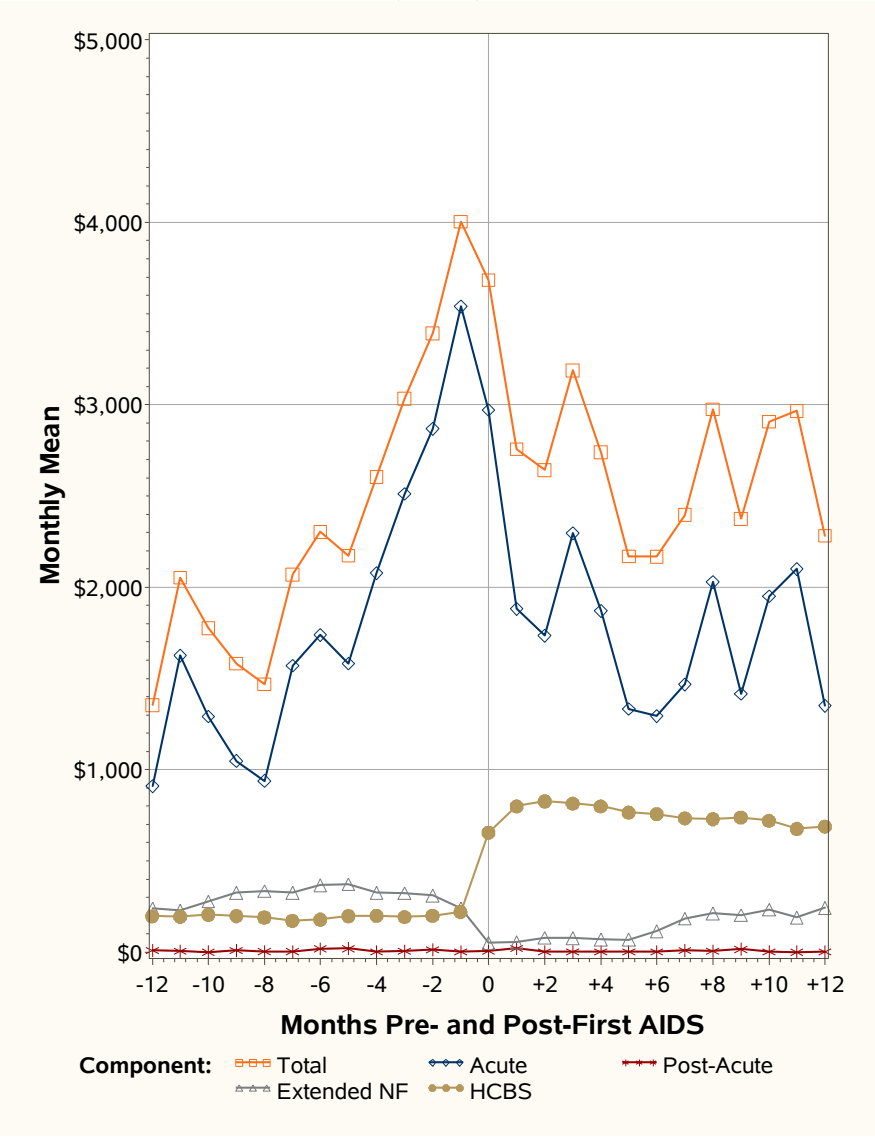
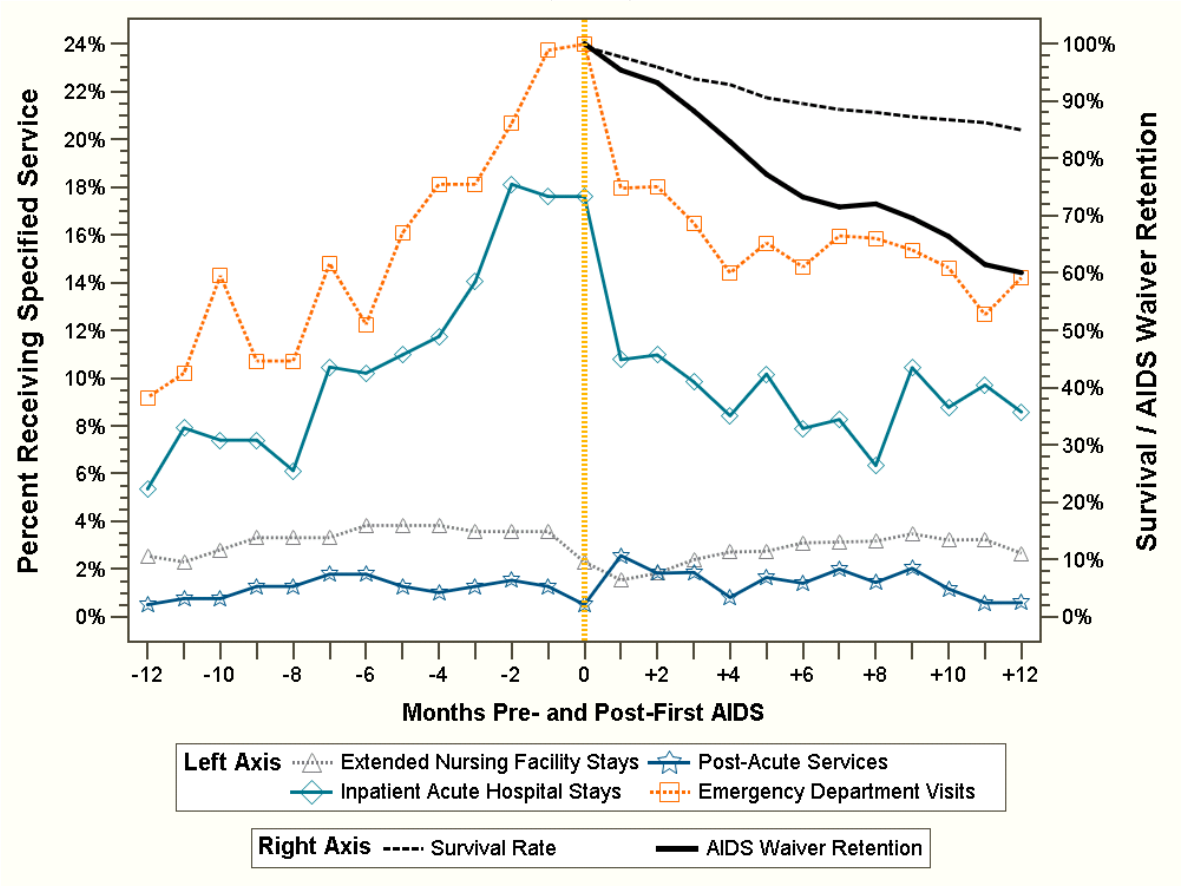


Figure B-19
Service Use & AIDS Waiver Program Entry
Among Medi-Cal Only Beneficiaries
(n=392)



Emergency Department visits refer to those not occurring as a part of a hospital admission.

Figure B-20
Medi-Cal Eligibility & Assisted Living Waiver Program Entry
Among Medi-Cal Only Beneficiaries
(n=29)

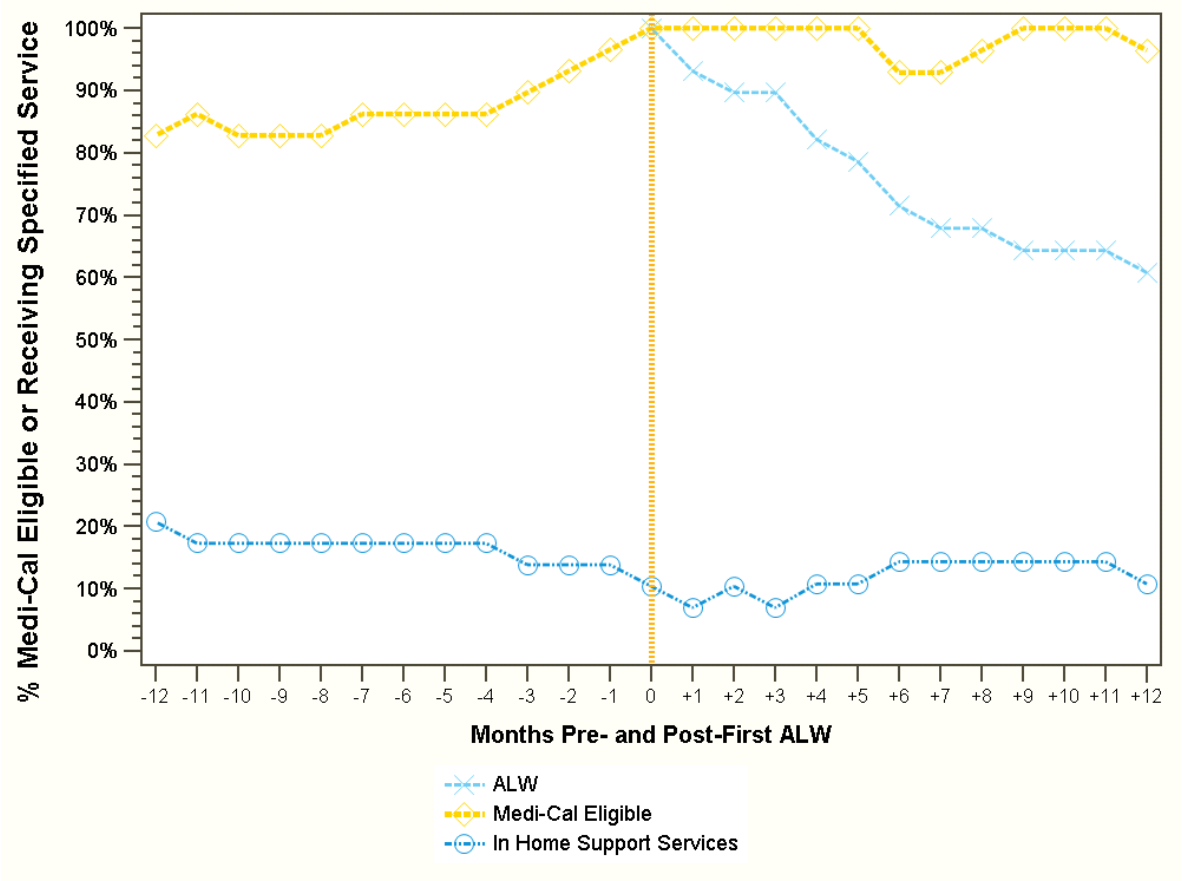


Figure B-21
Assisted Living Waiver Program Entry & Health Care Expenditures
Among Medi-Cal Only Beneficiaries
(n=29)

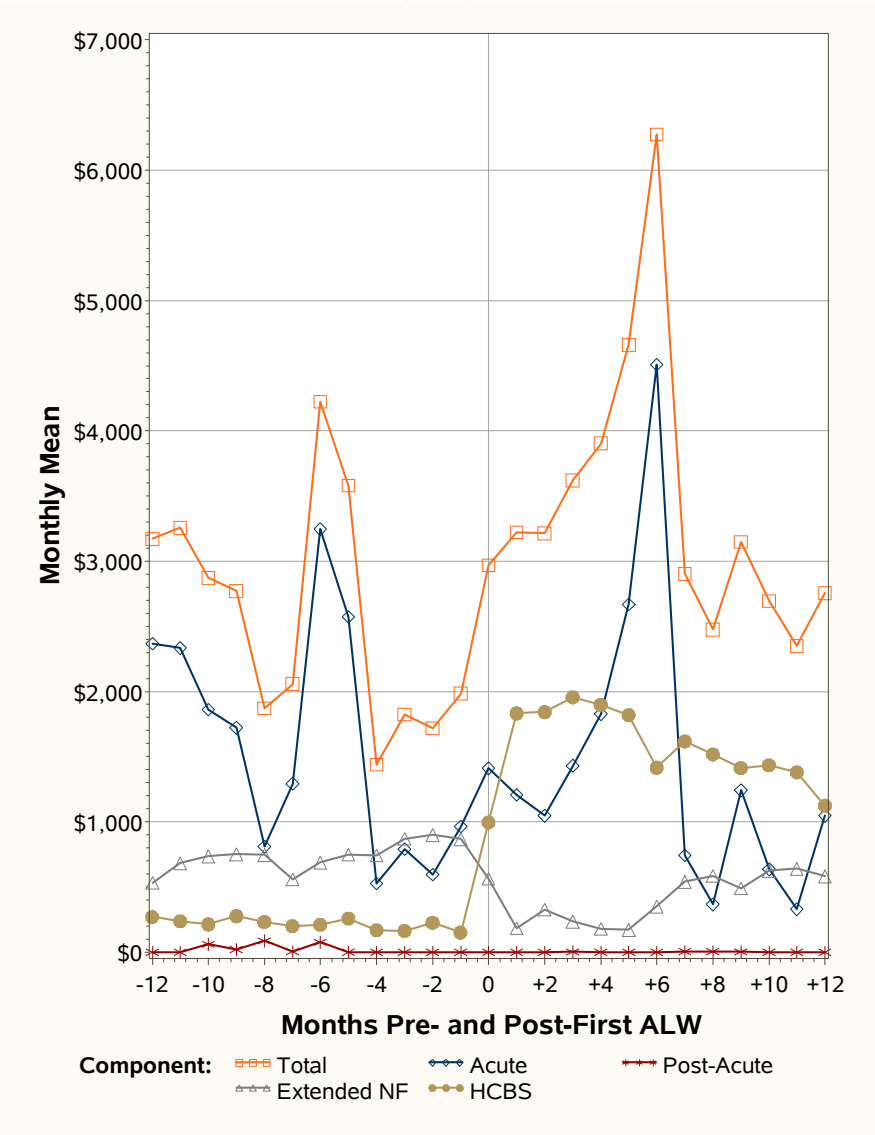
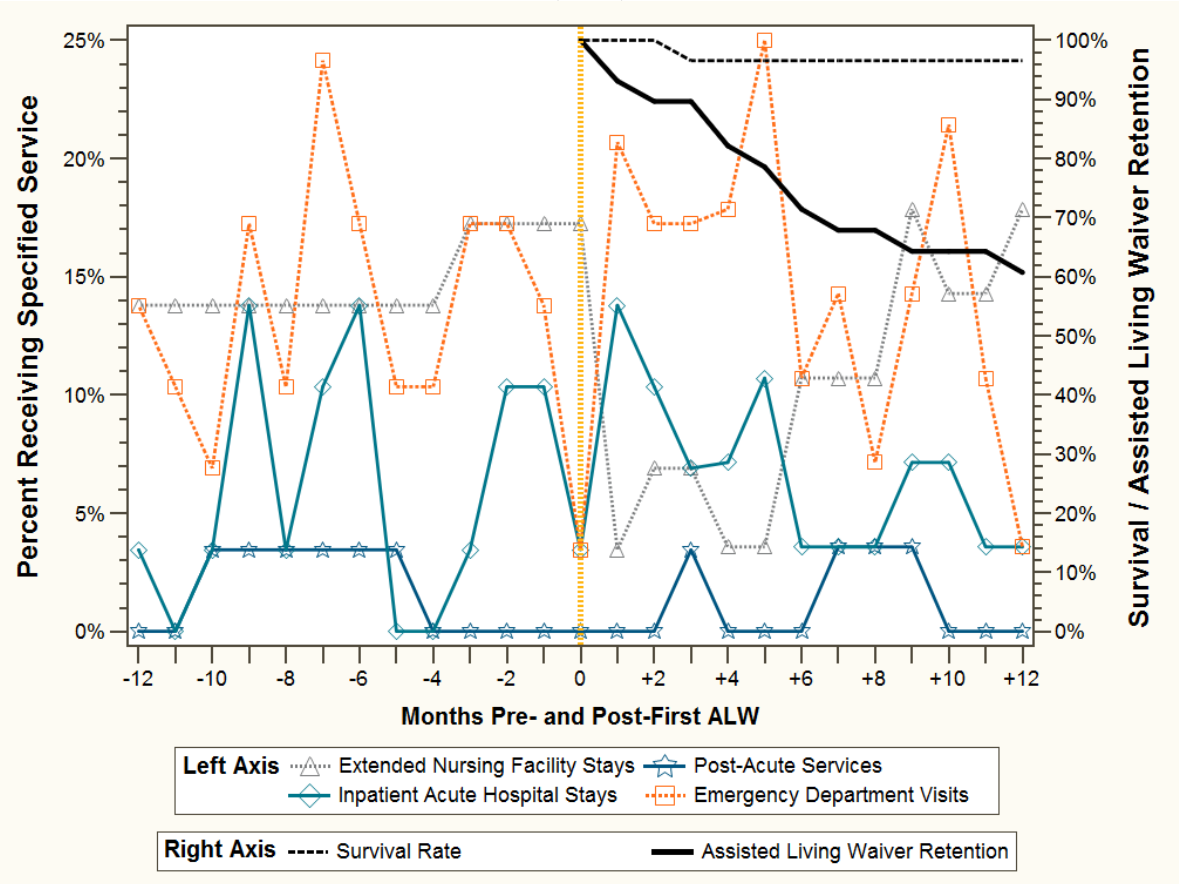


Figure B-22
Service Use & Assisted Living Waiver Program Entry
Among Medi-Cal Only Beneficiaries
(n=29)



Emergency Department visits refer to those not occurring as a part of a hospital admission.

Figure B-23
Medi-Cal Eligibility & ADHC Program Entry
Among Medi-Cal Only Beneficiaries
(n=4,823)

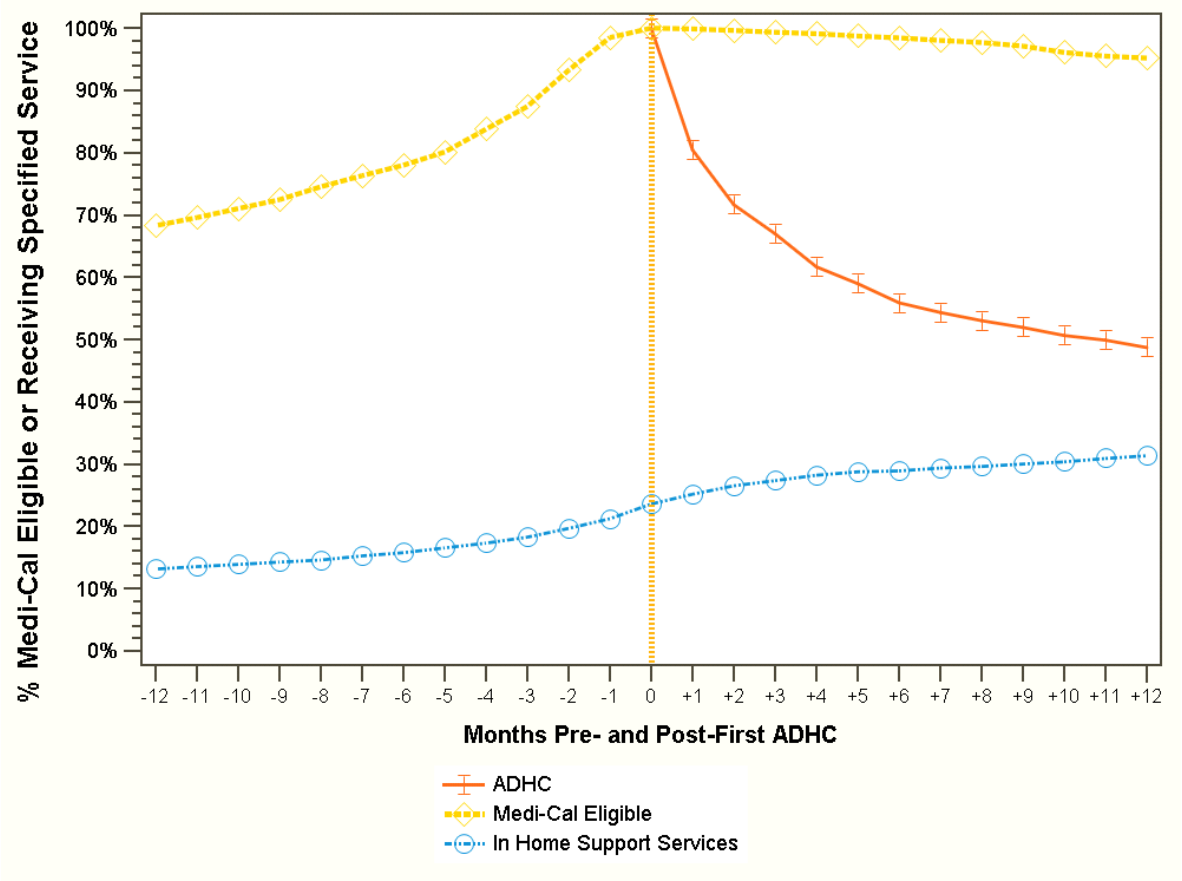


Figure B-24
ADHC Program Entry & Health Care Expenditures
Among Medi-Cal Only Beneficiaries
(n=4,823)

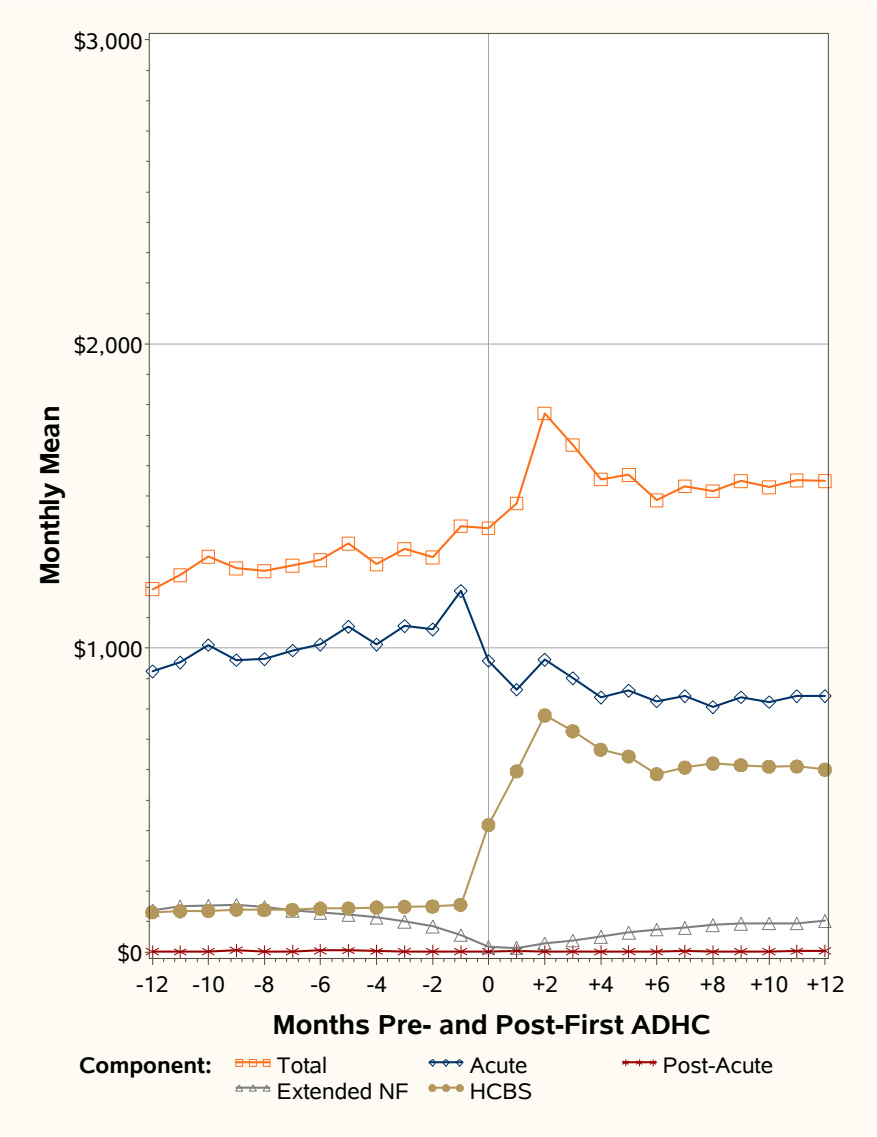
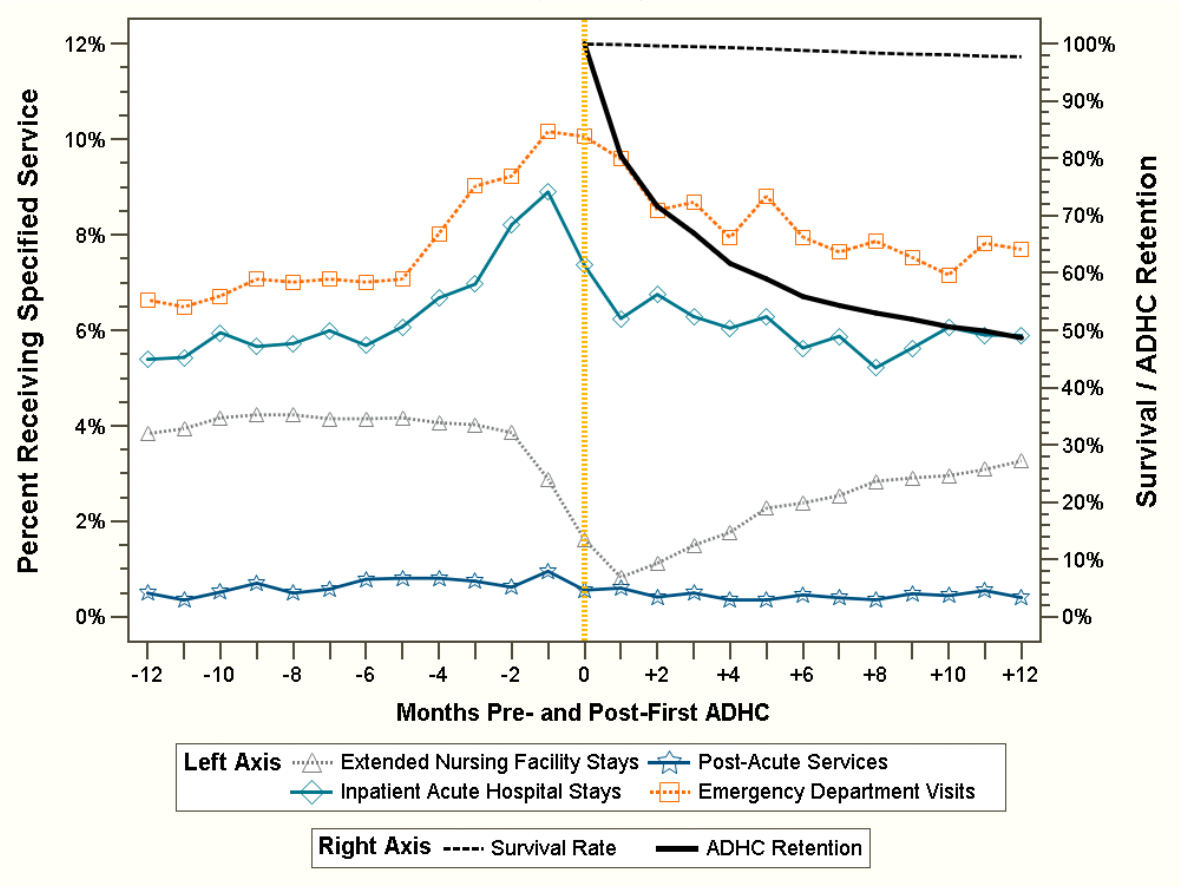


Figure B-25
Service Use & ADHC Program Entry
Among Medi-Cal Only Beneficiaries
(n=4,823)



Emergency Department visits refer to those not occurring as a part of a hospital admission.

Figure B-26
Medi-Cal Eligibility & Medi-Cal Home Health Care Program Entry
Among Medi-Cal Only Beneficiaries
(n=24,435)

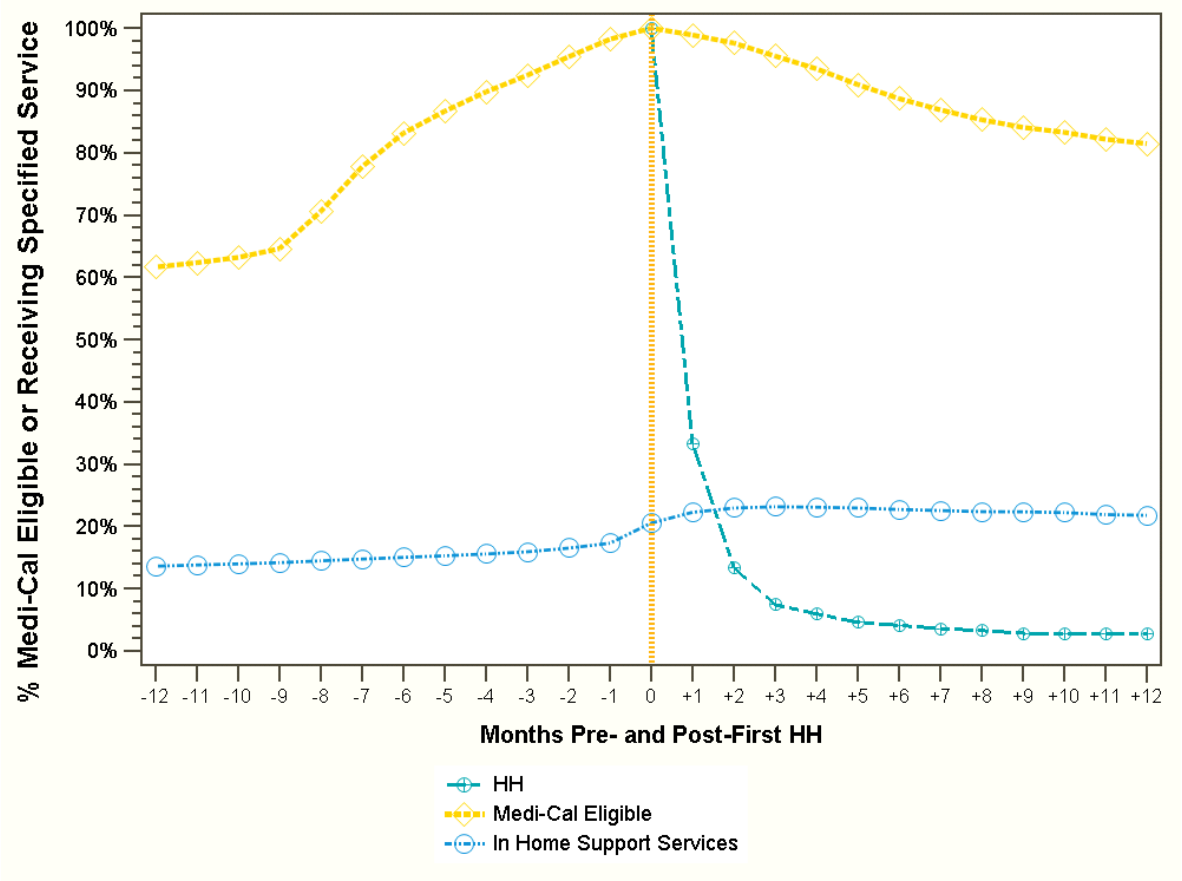


Figure B-27
Medi-Cal Home Health Care Program Entry & Health Care Expenditures Among Medi-Cal Only Beneficiaries
(n=24,435)

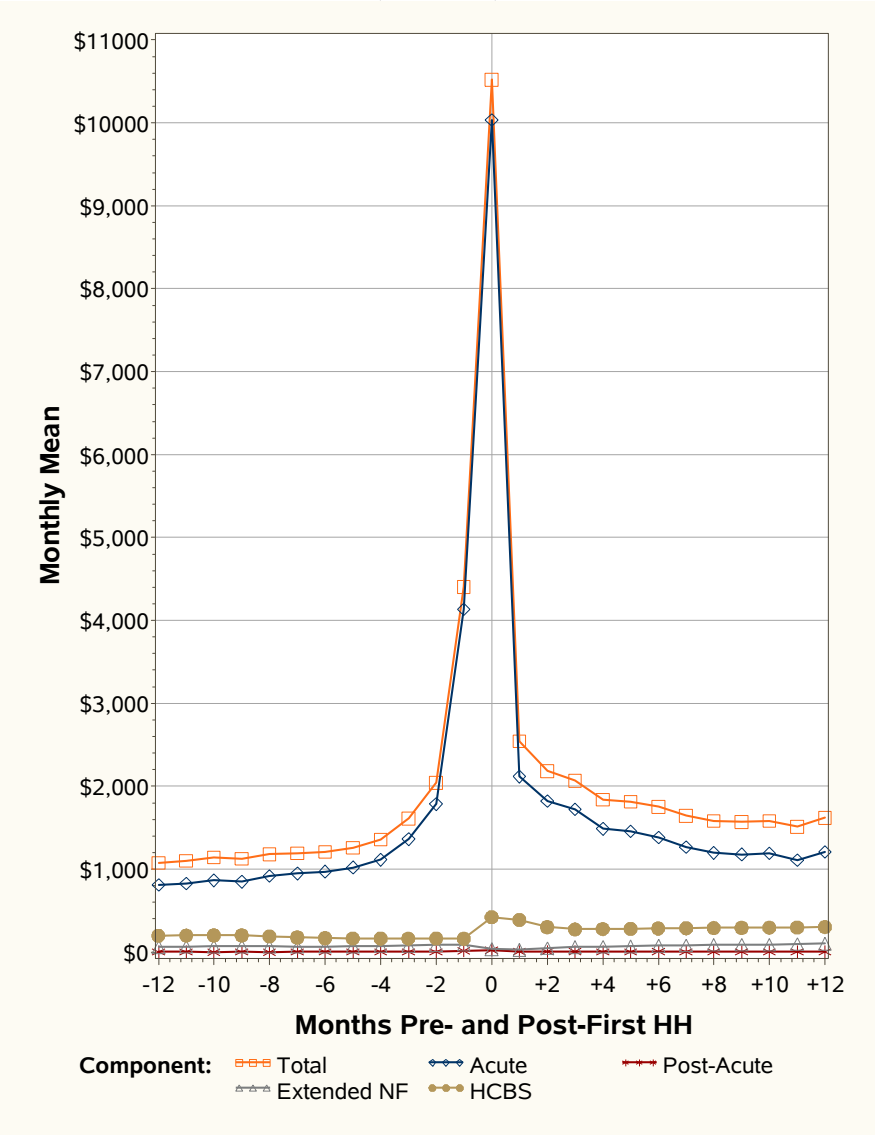
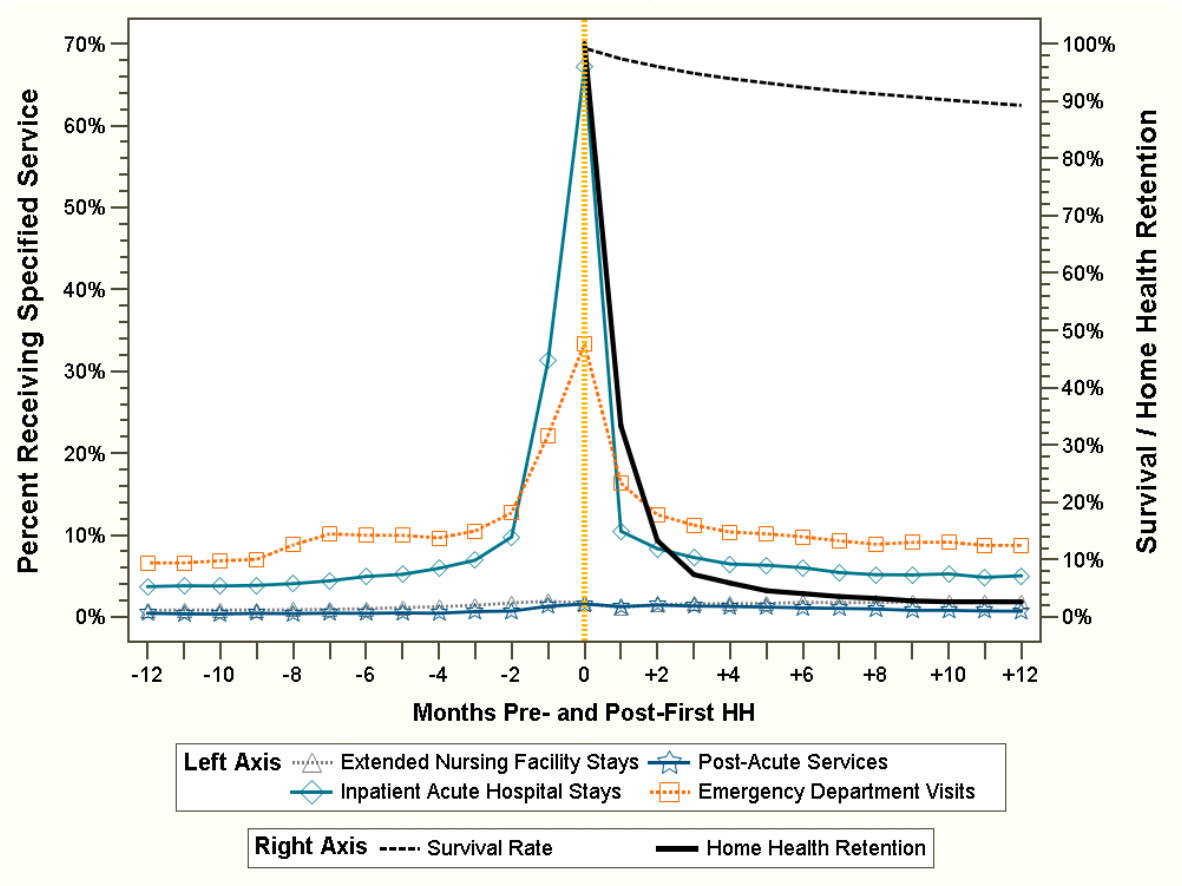


Figure B-28
Service Use & Medi-Cal Home Health Care Program Entry
Among Medi-Cal Only Beneficiaries
(n=24,435)



Emergency Department visits refer to those not occurring as a part of a hospital admission.

Figure B-29
Extended Nursing Facility Entry & Health Care Expenditures
Among Medi-Cal Only Beneficiaries
(n=9,596)

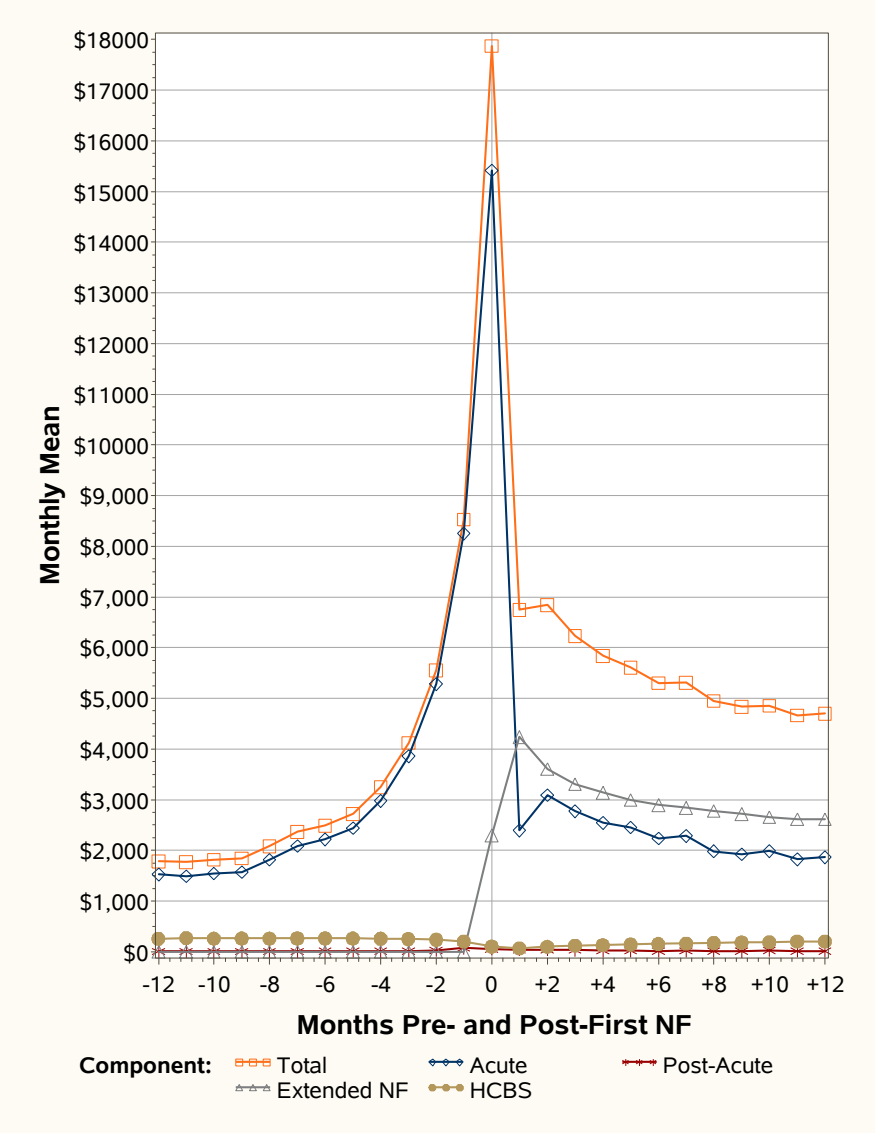
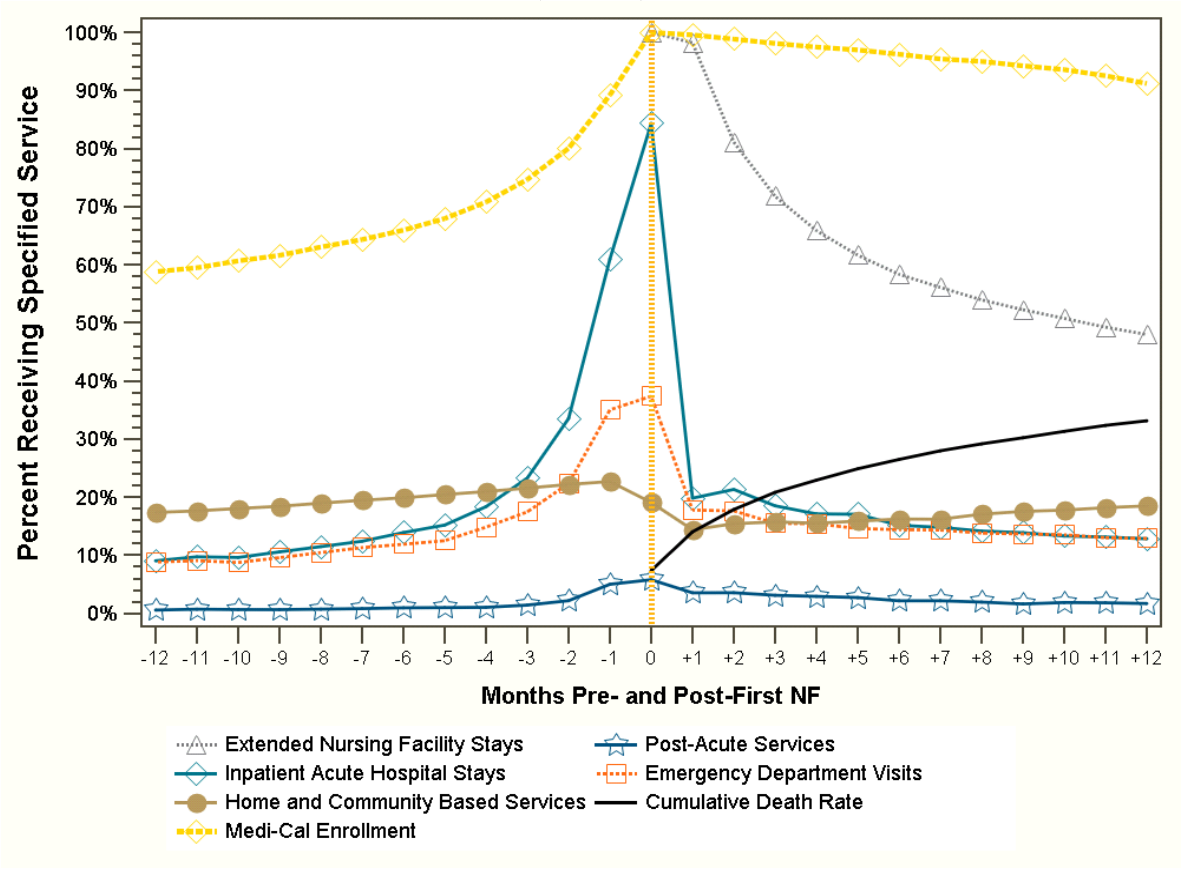


Figure B-30
Service Use & Extended Nursing Facility Entry
Among Medi-Cal Only Beneficiaries
(n=9,596)



Emergency Department visits refer to those not occurring as a part of a hospital admission.

Appendix C

Medicare & Medi-Cal Expenditures Surrounding HCBS & Nursing Facility Entry Among Adult MME Beneficiaries

Table C-1
Monthly Mean Medicare & Medi-Cal Expenditures Surrounding First HCBS* Use
Among Adult MME Beneficiaries
(n=62,614)

Month	Monthly Mean Medicare Acute ($)	Monthly Mean Medicare Post-Acute ($)	Monthly Mean Medicare Extended NF ($)	Monthly Mean Medicare Total ($)	Monthly Mean Medicaid Acute ($)	Monthly Mean Medicaid Post-Acute ($)	Monthly Mean Medicaid Extended NF ($)	Monthly Mean Medicaid HCBS ($)	Monthly Mean Medicaid Total ($)	Monthly Mean Medicare and Medicaid Total ($)
-12	1,549	50	36	1,635	160	0	90	0	251	1,770
-11	1,615	51	44	1,710	158	0	93	0	251	1,848
-10	1,636	57	46	1,738	166	0	96	0	262	1,891
-9	1,714	64	48	1,825	168	0	99	0	267	1,985
-8	1,795	68	49	1,912	171	0	100	0	272	2,081
-7	1,906	63	46	2,015	183	0	105	0	288	2,204
-6	1,974	69	61	2,104	187	0	108	0	296	2,307
-5	2,175	80	70	2,325	200	0	111	0	312	2,548
-4	2,386	99	84	2,569	215	0	120	0	335	2,820
-3	2,708	108	107	2,923	239	1	131	0	371	3,215
-2	3,300	134	140	3,575	272	1	140	0	413	3,920
-1	4,331	208	210	4,749	358	1	134	0	494	5,192
0	4,471	322	214	5,006	375	1	74	300	750	5,756
1	3,261	329	53	3,643	237	1	59	485	782	4,420
2	3,102	282	70	3,454	226	1	73	508	807	4,254
3	2,962	163	98	3,223	222	1	85	509	816	4,030
4	2,945	182	113	3,240	225	1	96	503	825	4,051
5	2,870	151	115	3,137	216	1	108	506	831	3,952
6	2,805	162	106	3,073	207	1	117	500	825	3,880
7	2,709	145	100	2,955	211	1	126	503	841	3,776
8	2,742	140	114	2,996	200	1	131	507	838	3,812
9	2,699	146	97	2,942	198	1	135	509	842	3,759
10	2,728	147	95	2,970	209	1	141	511	861	3,803
11	2,675	138	103	2,917	200	1	145	520	866	3,753
12	2,713	154	98	2,966	194	1	154	538	887	3,819

*HCBS refers to Home and Community Based Services available during 2005-2008 as benefits under the Medi-Cal state plan (Adult Day Health Care, In-Home Supportive Services, Targeted Case Management, Home Health) or as Medicaid waivers (AIDS, Assisted Living, Multipurpose Senior Services Program (MSSP), In-Home Medical Care (IHMC), In-Home Operations (IHO), Nursing Facility A/B (NF/AB), Nursing Facility Acute Hospital (NF/AH), Nursing Facility SubAcute (NF/SA).

Table C-2
Monthly Mean Medicare & Medi-Cal Expenditure Surrounding First Nursing Facility Admission*
Among Adult MME Beneficiaries
(n=45,361)

Month	Monthly Mean Medicare Acute ($)	Monthly Mean Medicare Post-Acute ($)	Monthly Mean Medicare Extended NF ($)	Monthly Mean Medicare Total ($)	Monthly Mean Medicaid Acute ($)	Monthly Mean Medicaid Post-Acute ($)	Monthly Mean Medicaid Extended NF ($)	Monthly Mean Medicaid HCBS ($)	Monthly Mean Medicaid Total ($)	Monthly Mean Medicare and Medicaid Total ($)
-12	2,296	171	78	2,545	203	1	0	491	694	3,049
-11	2,399	155	77	2,631	217	1	0	497	715	3,155
-10	2,467	175	96	2,737	220	0	0	506	726	3,275
-9	2,502	177	98	2,777	228	1	0	512	741	3,331
-8	2,681	183	100	2,964	230	1	0	522	752	3,531
-7	2,824	193	115	3,131	251	1	0	529	781	3,725
-6	2,923	206	127	3,256	250	0	0	534	785	3,859
-5	3,107	236	147	3,490	262	1	0	539	802	4,114
-4	3,477	269	154	3,900	268	1	0	545	814	4,540
-3	3,899	303	196	4,397	310	1	0	545	856	5,083
-2	4,800	367	228	5,395	380	2	0	539	921	6,150
-1	7,206	519	307	8,032	670	6	0	500	1,176	9,030
0	18,894	1,752	947	21,594	1,846	10	823	268	2,948	24,392
1	5,982	247	3,871	10,100	538	10	2,254	181	2,983	12,903
2	5,706	534	3,641	9,880	502	11	2,171	244	2,929	12,608
3	5,054	636	3,910	9,600	468	7	2,028	287	2,791	12,191
4	4,880	511	1,829	7,220	454	11	2,051	316	2,832	9,855
5	4,698	468	570	5,736	467	7	2,009	337	2,820	8,363
6	4,389	376	424	5,189	452	6	1,948	352	2,758	7,758
7	4,207	351	416	4,973	412	5	1,908	365	2,690	7,477
8	4,058	342	423	4,823	397	6	1,880	371	2,654	7,291
9	4,105	322	471	4,898	388	7	1,870	376	2,641	7,352
10	4,017	286	563	4,866	367	7	1,845	380	2,599	7,277
11	3,902	301	515	4,718	382	13	1,833	388	2,616	7,142
12	3,896	270	565	4,731	341	11	1,826	397	2,574	7,105

*Refers to nursing facility admissions for which at least of portion of the expenses are reimbursed by Medi-Cal. For MME beneficiaries such stays generally extended beyond 21 days.

Table C-3
Monthly Mean Medicare & Medi-Cal Expenditures Surrounding First IHSS* Use Among Adult MME Beneficiaries
(n=57,251)

Month	Monthly Mean Medicare Acute $	Monthly Mean Medicare Post-Acute $	Monthly Mean Medicare Extended NF $	Monthly Mean Medicare Total $	Monthly Mean Medi-Cal Acute $	Monthly Mean Medi-Cal Post-Acute $	Monthly Mean Medi-Cal Extended NF $	Monthly Mean Medi-Cal HCBS $	Monthly Mean Medi-Cal Total $	Monthly Mean Medicare and Medi-Cal Total $
-12	1,539	45	27	1,611	152	0	49	43	245	1,739
-11	1,616	49	34	1,699	151	0	51	44	247	1,831
-10	1,622	56	39	1,716	163	0	54	44	261	1,866
-9	1,702	59	37	1,798	166	0	57	44	267	1,957
-8	1,793	64	39	1,897	168	0	58	44	271	2,063
-7	1,902	60	39	2,000	182	0	62	43	288	2,187
-6	1,975	72	56	2,103	182	0	66	44	293	2,302
-5	2,185	83	58	2,326	197	0	70	44	311	2,547
-4	2,408	95	74	2,577	208	0	79	44	332	2,825
-3	2,782	108	98	2,987	240	1	92	45	378	3,286
-2	3,383	139	134	3,655	270	1	103	45	419	4,007
-1	4,506	216	203	4,925	344	1	100	46	491	5,366
0	4,609	342	218	5,169	330	1	41	330	702	5,871
1	3,286	354	35	3,674	218	1	19	554	792	4,463
2	3,175	293	49	3,517	211	1	30	561	803	4,313
3	3,022	174	71	3,267	206	1	40	563	810	4,068
4	2,980	190	91	3,260	211	1	52	563	826	4,075
5	2,930	156	99	3,185	200	1	63	565	828	4,000
6	2,887	168	94	3,148	190	1	72	566	829	3,962
7	2,775	152	91	3,018	201	1	81	570	853	3,853
8	2,784	140	109	3,034	187	1	86	569	842	3,857
9	2,776	143	88	3,008	190	1	91	573	855	3,841
10	2,771	156	88	3,015	196	1	98	577	872	3,863
11	2,728	144	100	2,971	186	1	104	587	878	3,823
12	2,750	154	92	2,995	186	1	112	612	911	3,877

*IHSS refers to In-Home Supportive Services Program.

Table C-4
Monthly Mean Medicare & Medi-Cal Expenditures Surrounding First TCM* Use Among Adult MME Beneficiaries
(n=4,282)

Month	Monthly Mean Medicare Acute $	Monthly Mean Medicare Post-Acute $	Monthly Mean Medicare Extended NF $	Monthly Mean Medicare Total $	Monthly Mean Medi-Cal Acute $	Monthly Mean Medi-Cal Post-Acute $	Monthly Mean Medi-Cal Extended NF $	Monthly Mean Medi-Cal HCBS $	Monthly Mean Medi-Cal Total $	Monthly Mean Medicare and Medi-Cal Total $
-12	2,083	142	113	2,338	297	1	475	217	989	3,078
-11	2,166	89	134	2,390	316	1	477	227	1,021	3,171
-10	2,285	93	137	2,514	300	0	483	225	1,008	3,288
-9	2,594	145	141	2,880	331	1	482	230	1,044	3,684
-8	2,436	150	170	2,757	302	1	498	236	1,037	3,570
-7	2,614	139	155	2,908	296	0	520	237	1,054	3,743
-6	2,479	93	149	2,721	359	1	522	241	1,122	3,643
-5	2,780	73	225	3,077	320	0	522	245	1,087	3,975
-4	2,765	228	220	3,213	345	1	529	242	1,117	4,156
-3	2,880	128	298	3,306	379	1	531	247	1,157	4,306
-2	3,307	188	249	3,744	439	1	537	252	1,230	4,844
-1	3,728	242	262	4,232	497	1	528	255	1,282	5,433
0	4,609	315	338	5,262	657	2	486	855	2,001	7,263
1	4,030	233	337	4,600	493	1	599	352	1,446	6,019
2	3,451	362	432	4,245	434	33	659	346	1,472	5,676
3	2,995	137	482	3,614	452	3	675	382	1,513	5,073
4	3,141	194	386	3,721	443	2	688	357	1,489	5,140
5	3,013	205	324	3,543	410	2	705	346	1,463	4,933
6	2,723	204	228	3,155	435	0	723	387	1,545	4,614
7	2,961	144	317	3,423	381	1	731	350	1,463	4,802
8	3,041	229	227	3,497	402	1	731	338	1,472	4,875
9	2,582	236	248	3,067	361	1	732	355	1,449	4,423
10	2,878	141	210	3,229	387	0	741	340	1,467	4,596
11	3,128	114	254	3,497	402	0	741	352	1,494	4,877
12	2,950	264	296	3,510	326	1	746	380	1,453	4,837

*TCM refers to Targeted Case Management Program.

Table C-5
Monthly Mean Medicare & Medi-Cal Expenditures Surrounding First MSSP* Use Among Adult MME Beneficiaries
(n=4,006)

Month	Monthly Mean Medicare Acute $	Monthly Mean Medicare Post-Acute $	Monthly Mean Medicare Extended NF $	Monthly Mean Medicare Total $	Monthly Mean Medi-Cal Acute $	Monthly Mean Medi-Cal Post-Acute $	Monthly Mean Medi-Cal Extended NF $	Monthly Mean Medi-Cal HCBS $	Monthly Mean Medi-Cal Total $	Monthly Mean Medicare and Medi-Cal Total $
-12	2,150	154	60	2,364	184	0	62	587	834	3,087
-11	2,128	157	76	2,361	166	1	71	603	840	3,097
-10	2,350	178	93	2,621	202	0	82	612	896	3,413
-9	2,564	175	103	2,841	215	0	88	624	927	3,669
-8	2,636	227	111	2,974	190	2	91	630	912	3,792
-7	2,631	247	118	2,996	195	0	105	645	945	3,858
-6	2,868	224	133	3,224	201	2	110	659	972	4,123
-5	2,976	205	169	3,350	212	2	119	672	1,003	4,288
-4	3,237	303	222	3,762	257	1	124	685	1,066	4,776
-3	3,622	320	205	4,147	309	0	141	704	1,153	5,256
-2	3,982	401	273	4,656	291	0	129	739	1,159	5,789
-1	3,956	484	297	4,737	309	0	82	790	1,180	5,907
0	3,296	555	98	3,948	202	1	16	1,148	1,367	5,315
1	3,396	458	45	3,899	222	1	34	1,219	1,476	5,373
2	3,298	395	133	3,826	213	1	65	1,249	1,529	5,349
3	3,092	371	168	3,631	225	1	99	1,260	1,585	5,214
4	3,380	294	289	3,963	236	1	128	1,255	1,620	5,572
5	3,172	341	272	3,785	256	0	151	1,257	1,665	5,438
6	3,136	283	167	3,586	248	1	166	1,267	1,681	5,256
7	3,097	370	203	3,671	223	2	200	1,280	1,705	5,354
8	3,326	296	238	3,860	224	1	206	1,268	1,699	5,539
9	3,326	275	178	3,778	223	1	238	1,270	1,733	5,486
10	3,309	347	236	3,891	239	1	260	1,257	1,757	5,623
11	3,306	301	262	3,869	266	1	272	1,267	1,806	5,644
12	3,271	313	315	3,899	225	3	304	1,268	1,800	5,673

*MSSP refers to Multipurpose Senior Services Program.

Table C-6
Monthly Mean Medicare & Medi-Cal Expenditures Surrounding First Other HCBS Waiver* Use Among Adult MME Beneficiaries
(n=61)

Month	Monthly Mean Medicare Acute $	Monthly Mean Medicare Post-Acute $	Monthly Mean Medicare Extended NF $	Monthly Mean Medicare Total $	Monthly Mean Medi-Cal Acute $	Monthly Mean Medi-Cal Post-Acute $	Monthly Mean Medi-Cal Extended NF $	Monthly Mean Medi-Cal HCBS $	Monthly Mean Medi-Cal Total $	Monthly Mean Medicare and Medi-Cal Total $
-12	3,755	793	314	4,862	488	0	838	1,695	3,021	7,069
-11	3,835	1,754	212	5,800	300	0	824	1,767	2,890	7,836
-10	3,502	310	0	3,812	1,159	2	631	1,560	3,352	6,529
-9	4,040	726	0	4,765	1,013	59	785	1,571	3,428	7,375
-8	10,457	497	0	10,955	948	0	593	1,643	3,184	13,055
-7	5,544	301	64	5,909	334	0	679	1,680	2,694	7,915
-6	6,609	578	682	7,869	1,123	1	634	1,608	3,365	10,774
-5	10,401	506	417	11,324	513	3	702	1,632	2,851	13,709
-4	6,831	4,386	415	11,632	1,124	0	719	1,731	3,574	14,664
-3	4,356	6,898	459	11,713	776	1	665	1,760	3,203	14,566
-2	4,270	543	399	5,212	227	2	1,017	1,943	3,189	8,192
-1	5,914	485	1,164	7,563	529	0	1,135	2,034	3,699	11,020
0	13,316	3,702	0	17,018	608	0	505	4,055	5,169	22,187
1	6,365	415	0	6,780	532	0	0	5,669	6,201	12,980
2	6,524	545	0	7,068	590	0	0	5,947	6,537	13,605
3	7,133	370	0	7,503	213	0	0	6,303	6,516	14,019
4	9,305	762	0	10,067	833	0	0	5,946	6,778	16,845
5	3,938	805	0	4,742	152	0	21	6,108	6,281	10,911
6	7,518	547	0	8,065	194	0	71	5,854	6,119	14,185
7	6,994	251	0	7,245	1,027	0	31	5,879	6,937	14,182
8	6,629	3,625	0	10,254	121	2	0	5,688	5,811	16,065
9	3,568	337	0	3,905	643	0	0	6,524	7,167	11,072
10	3,267	464	0	3,731	142	0	0	6,625	6,767	10,498
11	6,010	364	0	6,374	112	0	0	6,098	6,210	12,465
12	6,629	1,273	525	8,427	138	0	0	5,985	6,123	14,550

*The Other Medicaid Waivers include In-Home Medical Care (IHMC), In-Home Operations (IHO), Nursing Facility A/B (NF/AB), Nursing Facility Acute Hospital (NF/AH), Nursing Facility Sub Acute (NF/SA).

Table C-7
Monthly Mean Medicare & Medi-Cal Expenditures Surrounding First AIDS Waiver Use
Among Adult MME Beneficiaries
(n=1,264)

Month	Monthly Mean Medicare Acute $	Monthly Mean Medicare Post-Acute $	Monthly Mean Medicare Extended NF $	Monthly Mean Medicare Total $	Monthly Mean Medi-Cal Acute $	Monthly Mean Medi-Cal Post-Acute $	Monthly Mean Medi-Cal Extended NF $	Monthly Mean Medi-Cal HCBS $	Monthly Mean Medi-Cal Total $	Monthly Mean Medicare and Medi-Cal Total $
-12	2,194	30	60	2,284	231	0	157	250	639	2,739
-11	2,136	31	54	2,221	248	0	160	251	659	2,703
-10	2,229	32	53	2,314	215	0	165	257	638	2,778
-9	2,423	26	98	2,548	212	0	183	255	650	3,017
-8	2,192	35	11	2,237	250	0	186	251	687	2,776
-7	2,690	67	121	2,878	244	0	171	259	675	3,386
-6	2,757	33	37	2,826	236	0	155	265	656	3,353
-5	2,672	44	67	2,783	196	0	165	279	641	3,310
-4	2,802	46	132	2,980	282	1	160	279	721	3,597
-3	3,025	47	186	3,258	242	0	136	285	663	3,841
-2	3,924	79	110	4,113	213	0	155	288	656	4,704
-1	4,924	74	129	5,127	258	1	146	290	695	5,778
0	5,140	116	44	5,300	296	0	144	435	875	6,175
1	3,838	124	126	4,088	212	0	152	477	841	4,919
2	3,636	140	187	3,963	251	0	163	473	887	4,837
3	3,442	81	82	3,605	246	0	163	475	884	4,471
4	3,584	60	123	3,766	263	1	160	468	892	4,637
5	3,500	61	169	3,730	280	0	160	474	915	4,627
6	3,484	127	110	3,721	183	0	171	486	840	4,542
7	3,014	38	74	3,126	181	0	163	475	820	3,927
8	3,231	55	119	3,405	179	0	158	472	809	4,189
9	3,341	66	31	3,438	169	0	146	478	793	4,204
10	3,329	62	69	3,460	180	0	151	475	805	4,232
11	3,178	39	53	3,271	246	0	155	475	877	4,107
12	3,191	74	74	3,339	198	2	144	468	811	4,112

Table C-8
Monthly Mean Medicare & Medi-Cal Expenditures Surrounding First Assisted Living Waiver (ALW) Use Among Adult MME Beneficiaries
(n=410)

Month	Monthly Mean Medicare Acute $	Monthly Mean Medicare Post-Acute $	Monthly Mean Medicare Extended NF $	Monthly Mean Medicare Total $	Monthly Mean Medi-Cal Acute $	Monthly Mean Medi-Cal Post-Acute $	Monthly Mean Medi-Cal Extended NF $	Monthly Mean Medi-Cal HCBS $	Monthly Mean Medi-Cal Total $	Monthly Mean Medicare and Medi-Cal Total $
-12	1,571	105	153	1,829	140	0	290	317	746	2,470
-11	1,602	131	79	1,812	110	0	305	320	735	2,447
-10	1,642	150	177	1,970	108	0	326	329	763	2,624
-9	1,674	241	340	2,255	183	0	279	324	786	2,930
-8	1,343	144	158	1,646	223	0	289	272	784	2,333
-7	2,262	210	191	2,662	160	0	351	305	816	3,371
-6	1,955	126	139	2,221	141	0	387	268	796	2,923
-5	2,094	214	336	2,643	138	0	442	263	843	3,402
-4	1,940	149	361	2,450	127	0	471	280	878	3,260
-3	2,277	215	429	2,921	123	0	445	269	837	3,706
-2	2,095	121	476	2,692	146	0	490	237	873	3,522
-1	2,653	186	934	3,773	178	0	579	225	981	4,722
0	1,673	297	743	2,712	129	6	237	1,167	1,540	4,253
1	2,264	303	151	2,717	180	0	61	1,860	2,100	4,807
2	2,861	416	348	3,625	198	1	166	1,840	2,204	5,829
3	2,672	335	186	3,193	182	7	203	1,921	2,314	5,489
4	2,720	180	230	3,130	216	4	218	1,749	2,187	5,301
5	2,855	321	193	3,369	165	3	248	1,868	2,284	5,624
6	2,090	226	387	2,703	188	0	292	1,797	2,277	4,933
7	2,083	256	229	2,568	113	2	330	1,734	2,179	4,673
8	2,992	413	394	3,799	291	0	381	1,651	2,323	6,042
9	2,237	249	465	2,950	140	0	415	1,655	2,210	5,090
10	2,230	217	670	3,117	139	2	455	1,599	2,195	5,229
11	2,499	438	216	3,153	191	1	411	1,568	2,171	5,242
12	2,425	295	230	2,950	186	0	437	1,616	2,239	5,115

Table C-9
Monthly Mean Medicare & Medi-Cal Expenditures Surrounding First ADHC* Use
Among Adult MME Beneficiaries
(n=12,067)

Month	Monthly Mean Medicare Acute $	Monthly Mean Medicare Post-Acute $	Monthly Mean Medicare Extended NF $	Monthly Mean Medicare Total $	Monthly Mean Medi-Cal Acute $	Monthly Mean Medi-Cal Post-Acute $	Monthly Mean Medi-Cal Extended NF $	Monthly Mean Medi-Cal HCBS $	Monthly Mean Medi-Cal Total $	Monthly Mean Medicare and Medi-Cal Total $
-12	1,615	87	60	1,762	200	0	83	303	587	2,228
-11	1,619	95	56	1,770	190	0	85	309	584	2,240
-10	1,656	116	65	1,837	183	0	91	316	590	2,316
-9	1,672	99	59	1,830	192	0	94	322	609	2,335
-8	1,685	108	65	1,858	172	0	93	329	594	2,356
-7	1,773	104	58	1,936	167	0	97	336	601	2,446
-6	1,832	119	68	2,019	188	0	96	342	626	2,562
-5	1,845	129	70	2,044	210	0	94	350	654	2,627
-4	1,937	160	95	2,193	215	1	97	358	670	2,797
-3	1,980	144	86	2,211	208	1	94	364	667	2,826
-2	2,083	149	127	2,358	198	0	84	374	656	2,976
-1	2,025	161	118	2,304	222	0	61	386	670	2,955
0	1,910	167	42	2,118	179	0	25	653	857	2,975
1	1,806	126	23	1,955	177	0	28	871	1,076	3,027
2	1,857	104	40	2,002	186	0	50	1,045	1,281	3,277
3	1,954	120	81	2,155	186	1	70	998	1,255	3,401
4	2,002	107	94	2,203	184	1	86	943	1,213	3,405
5	2,040	113	108	2,262	218	0	104	947	1,270	3,518
6	1,907	135	121	2,163	188	1	115	871	1,175	3,323
7	1,932	144	99	2,175	189	1	121	899	1,210	3,368
8	1,878	145	101	2,124	176	1	131	921	1,229	3,333
9	1,927	143	92	2,162	184	1	138	910	1,233	3,372
10	1,970	123	100	2,193	187	1	154	898	1,240	3,409
11	1,959	137	101	2,197	192	1	163	905	1,260	3,427
12	2,076	121	118	2,315	187	1	176	876	1,240	3,526

* ADHC refers to Adult Day Health Care

Table C-10
Monthly Mean Medicare & Medi-Cal Expenditure Surrounding First Home Health* Use
Among Adult MME Beneficiaries
(n=531)

Month	Monthly Mean Medicare Acute $	Monthly Mean Medicare Post-Acute $	Monthly Mean Medicare Extended NF $	Monthly Mean Medicare Total $	Monthly Mean Medi-Cal Acute $	Monthly Mean Medi-Cal Post-Acute $	Monthly Mean Medi-Cal Extended NF $	Monthly Mean Medi-Cal HCBS $	Monthly Mean Medi-Cal Total $	Monthly Mean Medicare and Medi-Cal Total $
-12	1,669	67	43	1,780	563	1	178	383	1,125	2,001
-11	1,537	384	121	2,042	691	1	190	378	1,259	2,282
-10	1,437	135	119	1,691	560	4	171	378	1,112	2,004
-9	1,830	183	3	2,016	766	8	150	380	1,304	2,422
-8	1,681	126	25	1,832	1,043	1	160	383	1,586	2,636
-7	1,886	227	53	2,166	753	0	166	378	1,298	2,660
-6	1,759	77	13	1,848	1,143	0	185	389	1,717	2,885
-5	2,528	60	127	2,715	971	1	194	405	1,571	3,461
-4	2,659	110	111	2,881	1,157	1	219	402	1,778	3,913
-3	2,226	168	171	2,566	1,368	5	229	401	2,004	4,013
-2	2,625	111	77	2,813	1,392	1	256	398	2,046	4,382
-1	3,359	93	96	3,549	3,232	8	266	398	3,903	7,030
0	8,891	243	110	9,244	7,470	11	240	634	8,355	17,600
1	4,081	433	33	4,547	1,374	1	198	705	2,278	6,799
2	3,841	275	41	4,157	1,376	0	194	576	2,147	6,280
3	3,886	167	42	4,095	1,053	1	188	596	1,837	5,892
4	3,986	128	9	4,123	822	2	189	590	1,602	5,689
5	4,623	170	39	4,832	945	1	236	599	1,781	6,552
6	4,229	112	47	4,388	903	0	268	595	1,767	6,087
7	4,148	141	23	4,312	869	0	251	613	1,733	5,973
8	4,146	109	60	4,315	595	1	219	604	1,418	5,660
9	4,396	84	100	4,580	749	0	208	619	1,576	6,072
10	5,356	132	117	5,605	636	0	225	656	1,517	7,029
11	5,595	284	80	5,959	796	2	193	651	1,643	7,477
12	5,158	194	175	5,527	477	2	188	667	1,335	6,752

*Refers to Medi-Cal reimbursed home health (HH) care. Medicare paid home health (HH) is included under Post-Acute care.

Table C-11
Characteristics of Hospital Discharge Disposition Recipients
MME Beneficiaries Only
(Row Percentages)

			Initial Post-Hospital Discharge Disposition				
Characteristics	**Total n**	**Total %**	**HCBS**	**Post-Acute**	**NF**	**Community**	**Death**
	59,648 100.00		5,647 9.5	4,906 8.2	8,474 14.2	39,662 66.5	959 1.6
Age							
18-44	3,524	100.0	7.4	3.3	3.8	84.8	0.7
45-64	12,289	100.0	6.9	7.2	7.9	76.5	1.5
65-84	37,150	100.0	10.4	8.7	14.4	65.0	1.5
≥85	6,685	100.0	10.1	9.9	30.1	47.0	2.9
Gender							
Male	25,594	100.0	8.2	7.3	13.5	69.1	1.9
Female	34,054	100.0	10.4	8.9	14.7	64.6	1.4
Race/Ethnicity							
White	23,365	100.0	6.2	9.6	18.2	64.1	1.9
Hispanic	17,644	100.0	9.9	7.7	10.6	70.6	1.2
African American	4,784	100.0	11.8	6.7	13.5	66.7	1.3
Asian	9,755	100.0	15.2	7.0	11.1	65.0	1.7
Other [a]	4,100	100.0	9.7	7.3	15.6	65.9	1.5
Medi-Cal Aid Code							
Medically Needy	16,368	100.0	7.3	9.6	16.4	65.1	1.6
Aged	22,026	100.0	11.9	8.5	14.9	62.9	1.8
Disabled	20,525	100.0	8.9	6.8	10.1	72.8	1.4
Other [b]	729	100.0	1.2	10.0	59.8	28.0	1.0
Health Conditions [c]							
CDPS mean score Standard Deviation		1.99 1.42	2.02 1.36	2.28 1.59	2.42 1.57	1.81 1.29	3.80 1.97
Activities of Daily Living							
<3 ADL limitations	46,615	100.00	8.5	4.2	4.3	81.1	1.9
≥3 ADL limitations[d]	13,033	100.00	12.9	22.6	49.7	14.3	0.4

HCBS: Home and Community-Based Services; NF: Extended admission to nursing facility, generally these were longer than 21 days and included Medi-Cal payment; Post-Acute: includes skilled nursing facility and other rehabilitation facility. Generally these were paid by Medicare or a source other than Medi-Cal; Community Not receiving Medi-Cal paid supportive services at time of discharge or continuing; Death: died during the hospital stay or first month following discharge.

[a] Includes: Native Alaskan/American Indian/Mixed/Other/Unknown race/ethnic groups.

[b] Includes claims missing aid code information.

[c] CDPS (Chronic Illness and Disability Payment System) score is based on weights associated with specific diagnoses. All conditions were obtained from the hospital discharge abstract available from the Office of State Health Planning & Development (OSHPD). Higher score = greater morbidity

[d] ADL limitations defined as those with assessments reporting tasks for which the assistance of another is needed. Individuals for whom assessments were not conducted and for whom ADL information were missing were coded as <3 limitations.

Appendix D

Post-Hospital Discharge Disposition
Medi-Cal Only Beneficiaries

Table D-1
Characteristics of Hospital Discharge Disposition Recipients
Medi-Cal Only Beneficiaries
(Column Percentages)

			Initial Post-Hospital Discharge Disposition				
Characteristics	**Total N**	**Total %**	**HCBS**	**Post-Acute**	**NF**	**Community**	**Death**
n	55,072		18,544	1,461	2,382	32,272	413
%	100.0		33.7	2.6	4.3	58.6	0.8
Age							
18-44	28,995	52.6	75.2	17.9	12.5	44.7	9.9
45-64	21,007	38.1	19.4	63.2	66.0	45.3	69.7
65-84	4,510	8.2	4.9	16.5	17.4	9.0	15.3
≥85	560	1.1	0.5	2.5	4.1	1.0	5.1
Gender							
Male	16,030	29.1	14.3	51.9	59.1	34.0	57.1
Female	39,042	70.9	85.7	48.1	40.9	66.0	42.9
Race/Ethnicity							
White	16,183	29.4	23.8	37.4	37.5	31.5	39.5
Hispanic	27,011	49.0	61.5	29.0	29.5	44.5	27.4
African American	4,886	8.9	5.2	10.8	13.6	10.5	9.2
Asian	3,950	7.2	5.9	13.4	11.6	7.2	13.3
Other[a]	3,042	5.5	3.6	9.4	7.8	6.2	10.6
Medi-Cal Aid Code							
Medically Needy	31,813	57.8	72.8	45.1	50.1	50.4	51.3
Family	2,497	4.5	5.9	5.5	4.8	3.7	0.7
Disabled	17,961	32.6	18.8	41.5	34.2	39.9	44.3
Other[b]	2,801	5.1	2.5	7.9	10.9	6.0	3.6
Health Conditions[c]							
CDPS mean score		1.23	0.8	2.11	2.48	1.31	3.41
Standard Deviation		1.25	1.03	1.58	1.61	1.19	1.72
Activities of Daily Living							
<3 ADL limitations	52,180	94.7	94.4	75.2	48.7	99.2	98.8
≥3 ADL limitations[d]	2,892	5.3	5.6	24.8	51.3	0.8	1.2

HCBS: Home and Community-Based Services; NF: Extended admission to nursing facility, generally these were longer than 21 days and included Medi-Cal payment; Post-Acute: includes skilled nursing facility and other rehabilitation facility. Generally these were paid by Medicare or a source other than Medi-Cal; Community: Not receiving Medi-Cal paid HCBS at time of discharge and continuing; Death: died during the hospital stay or first month following discharge.

[a] Includes: Native Alaskan/American Indian/Mixed/Other/Unknown race/ethnic groups.

[b] Includes claims missing aid code information.

[c] CDPS (Chronic Illness and Disability Payment System) score is based on weights associated with specific diagnoses. All conditions were obtained from the hospital discharge abstract available from the Office of State Health Planning & Development (OSHPD). Higher score = greater morbidity.

[d] ADL limitations defined as those with assessments reporting tasks for which the assistance of another is needed. Individuals for whom assessments were not conducted and for whom ADL information were missing were coded as <3 limitations. ADL data was missing for 86.7% of the whole sample. The percentage of missing cases ranged across the disposition settings: NF 27.9%, SNF 57.6%, HCBS 77.4%, Community 97.6%, death 98.3%

Table D-2
Characteristics of Hospital Discharge Disposition Recipients
Medi-Cal Only Beneficiaries
(Row Percentages)

		Initial Post-Hospital Discharge Disposition					
Characteristics	**Total n**	**Total %**	**HCBS**	**Post-Acute**	**NF**	**Community**	**Death**
	n	55,072	18,544	1,461	2,382	32,272	413
	%	100.00	33.7	2.6	4.3	58.6	0.8
Age							
18-44	28,995	100.0	48.1	0.9	1.0	49.8	0.1
45-64	21,007	100.0	17.1	4.4	7.5	69.7	1.4
65-84	4,510	100.0	20.0	5.3	9.2	64.1	1.4
≥85	560	100.0	17.7	6.4	17.3	54.8	3.8
Gender							
Male	16,030	100.0	16.6	4.7	8.8	68.4	1.5
Female	39,042	100.0	40.7	1.8	2.5	54.6	0.4
Race/Ethnicity							
White	16,183	100.0	27.2	3.4	5.5	62.9	1.0
Hispanic	27,011	100.0	42.3	1.6	2.6	53.1	0.4
African American	4,886	100.0	19.9	3.2	6.6	69.5	0.8
Asian	3,950	100.0	27.5	5.0	7.0	59.1	1.4
Other[a]	3,042	100.0	21.9	4.5	6.1	66.1	1.4
Medi-Cal Aid Code							
Medically Needy	31,813	100.0	42.4	2.1	3.7	51.1	0.7
Family	2,497	100.0	44.1	3.2	4.6	48.0	0.1
Disabled	17,961	100.0	19.4	3.4	4.5	71.7	1.0
Other [b]	2,801	100.0	16.7	4.1	9.3	69.4	0.5
Health Conditions[c]							
CDPS mean score		1.23	0.8	2.11	2.48	1.31	3.41
Standard Deviation		1.25	1.03	1.58	1.61	1.19	1.72
Activities of Daily Living							
<3 ADL limitations	52,180	100.0	33.5	2.1	2.2	61.4	0.8
≥3 ADL limitations[d]	2,892	100.0	36.1	12.6	42.2	9.0	0.2

HCBS: Home and Community-Based Services; NF: Extended admission to nursing facility, generally these were longer than 21 days and included Medi-Cal payment; Post-Acute: includes skilled nursing facility and other rehabilitation facility. Generally these were paid by Medicare or a source other than Medi-Cal; Community: Not receiving Medi-Cal paid HCBS at time of discharge and continuing; Death: died during the hospital stay or first month following discharge.

[a] Includes: Native Alaskan/American Indian/Mixed/Other/Unknown race/ethnic groups.

[b] Includes claims missing aid code information.

[c] CDPS (Chronic Illness and Disability Payment System) score is based on weights associated with specific diagnoses. All conditions were obtained from the hospital discharge abstract available from the Office of State Health Planning & Development (OSHPD). Higher score = greater morbidity.

[d] ADL limitations defined as those with assessments reporting tasks for which the assistance of another is needed. Individuals for whom assessments were not conducted and for whom ADL information were missing were coded as <3 limitations. ADL data was missing for 86.7% of the total sample. Two-thirds (66%) of the missing data was among those with a community disposition. Of the remaining missing data 30% was from those with a HCBS disposition, 1.8% SNF, 1.4% NF, and death .8%.

Table D-3
Duration in the Initial Hospital Discharge Disposition
Medi-Cal Only Beneficiaries

Initial Disposition	n Total	% 0-1 Month	% 2-3 Months	% 4-11 Months	% 12 Months	Mean Months
HCBS	18,544	79.2	8.6	4.2	8.0	1.7
Post-Acute	1,461	76.4	23.6	0.0	0.0	1.2
NF	2,382	8.1	38.2	27.4	26.3	6.0
Community	32,272	1.0	10.7	18.7	69.6	10.6

HCBS: Home and Community-Based Services; Post-Acute: includes skilled nursing facility and other rehabilitation. Generally these were paid by Medicare or a source other than Medi-Cal; NF: Extended admission to nursing facility, generally these were longer than 21 days and included Medi-Cal payment; Community: Not receiving Medi-Cal paid supportive services at time of or within 30 days of discharge.

Table D-4
Incidence of Events in the 12 Months Following Index Hospital Discharge by Initial Post-Discharge Disposition, Medi-Cal Only Beneficiaries.

		Subsequent Events							
Initial Disposition [a]	n Total	% HCBS	% Post-Acute	% NF	% Hosp	% ED [f]	% Comm [d]	% Death	% No Change [e]
HCBS	18,544	8.0 [c]	2.2	1.7	19.3	32.7	88.5	4.7	11.0
NF	2,382	13.6	8.5	11.8 [c]	50.5	51.5	39.8	31.4	49.6
Post-Acute	1,461	31.3	24.1 [c]	20.3	47.0	53.9	69.8	21.9	0.0
Community	32,272	22.0	3.6	4.4	43.9	54.6	12.3 [c]	8.3	72.6
Total [b]	54,659	17.1	3.9	4.2	35.9	47.0	40.9	8.5	n/a

[a] HCBS: Home and Community-Based Services; Post-Acute: includes skilled nursing facility and other rehabilitation. Generally post-acute services were paid by Medicare or a source other than Medi-Cal; NF: Extended admission to nursing facility, generally these were longer than 21 days and included Medi-Cal payment; Comm: Community, Not receiving any of the above services in the month of discharge or during the subsequent month.

[b] Those who died in the same or first month after the index hospital discharge (n=413) are excluded from the initial disposition cohorts counts.

[c] Indicates a "repeat" entry into this service. For example, among those who initially received HCBS following hospital discharge, 8% discontinued services and then re-started HCBS again within the study tracking months.

[d] This column shows the percent of consumers who discontinued receiving HCBS, NF, or Post-Acute at least once and lived in a community setting for at least one month without Medi-Cal HCBS. For example, of those initially discharged to NF, 39.8% exited the NF at least once and lived in a community setting without HCBS. For those initially discharged to Community without Medi-Cal HCBS, 12.3% exited that status (i.e., began receiving LTSS) and re-entered Community status for at least one month in the tracking period.

[e] No Change means that the beneficiary remained in the initial discharge disposition status throughout the 12-month tracking period, or until the beneficiary died.

[f] Emergency Department visits refer to those not occurring as a part of a hospital admission.

Table D-5
Mean Monthly Health & LTSS Expenditures in 12 Months After Hospital Discharge, Medi-Cal Only Beneficiaries

	HCBS	Post-Acute	NF	Community	Total
Total Medi-Cal					
# Beneficiaries	18,544	1,461	2,382	32,272	54,659
Mean $/month	1,005	4,644	6,226	1,922	1,860
# Eligible months	10.0	9.8	9.4	10.7	10.4

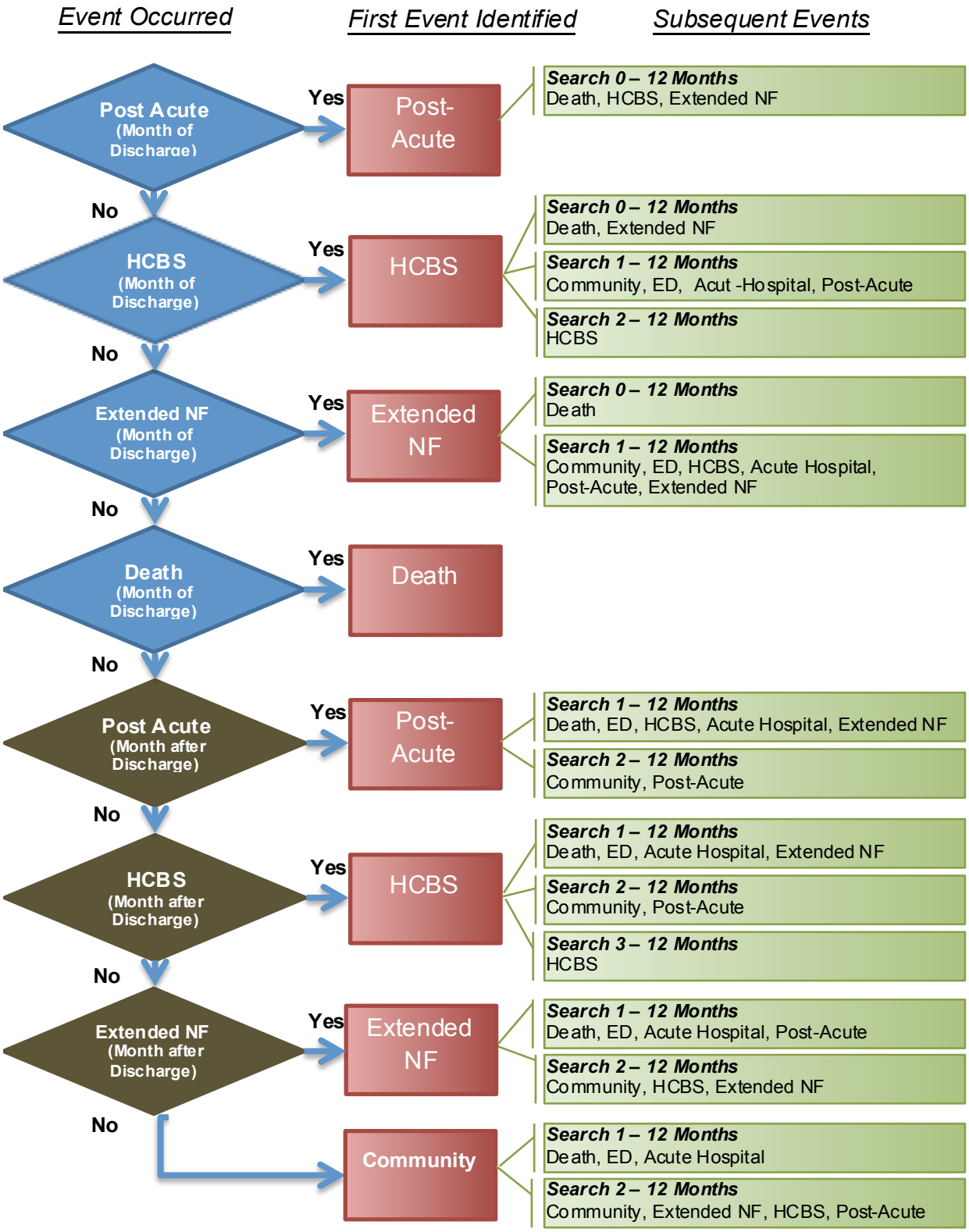
Mean expenditures are calculated using the eligible months as the denominator for each recipient. Eligible months with no expenditures had a value of $0. The tracking period is inclusive of all Medi-Cal eligible months over the 12 months following the index hospital stay.

Table D-6
Mean Monthly Health and LTSS Expenditures in the 12 Months After Hospital Discharge By Type of Service, Medi-Cal Only Beneficiaries Only

Medi-Cal		HCBS	Post-Acute	NF	Community	Total
Acute	Mean $/Month	862	3,510	2,752	1,807	1,569
Post-Acute	Mean $/Month	2	174	32	5	9
LTSS	Mean $/Month	142	959	3,442	110	281

Mean expenditures are calculated using the eligible months as the denominator for each recipient. Eligible months with no expenditures had a value of $0. The tracking period is inclusive of all eligibility months over the 12 months following the index hospital stays.

Figure D-1
Decision Rules to Identify First and Subsequent Events after Hospital Discharge



Appendix E
Chronic Illness and Disability Payment System (CDPS)

CDPS is a risk-based model developed for capitated payments to health plans that enroll Medicaid beneficiaries[67] Weights for each of the CDPS categories were developed from a national claims database of disabled adult Medicaid beneficiaries, and represent the incremental, prospective expenditure risk associated with that category. Beneficiary CDPS scores are calculated by multiplying the 58 CDPS category indicators (and indicators for age and gender) by the set of CDPS weights. These are then summed and calculated for each beneficiary. The resultant scores are counts of chronic conditions weighted by severity. Conditions not included in the CDPS categories are given a weight of zero. **Table E-1** shows the CDPS categories and their respective weights.

Table E-1
Listing of Chronic Disease Categories and their Weight Values

CDPS Category Labels	Weights	CDPS Category Labels	Weights
Intercept	0.267	Skin, high	1.126
age<18	-0.130	Skin, low	0.473
15<=age<25	-0.039	Skin, very low	0.114
25<=age<45 male	0.000	Renal, extra high	3.610
25<=age<45 female	0.045	Renal, very high	1.186
45<=age<65 male	0.043	Renal, medium	0.573
45<=age<65 female	0.097	Renal, low	0.421
65<=age	0.070	Substance abuse, low	0.303
Cardiovascular, very high	1.827	Substance abuse, very low	0.036
Cardiovascular, medium	0.665	Cancer, very high	2.394
Cardiovascular, low	0.257	Cancer, high	1.040
Cardiovascular, extra low	0.086	Cancer, medium	0.443
Psychiatric, high	0.807	Cancer, low	0.207
Psychiatric, medium	0.478	DD, medium	1.001
Psychiatric, medium low	0.276	DD, low	0.394
Psychiatric, low	0.153	Genital, extra low	0.016
Skeletal, medium	0.421	Metabolic, high	0.526
Skeletal, low	0.167	Metabolic, medium	0.526
Skeletal, very low	0.125	Metabolic, very low	0.231
CNS, high	1.610	Pregnancy, complete	0.005
CNS, medium	0.639	Pregnancy, incomplete	0.253
CNS, low	0.302	Eye, low	0.198
Pulmonary, very high	2.280	Eye, very low	0.057
Pulmonary, high	0.942	Cerebrovascular, low	0.286
Pulmonary, medium	0.712	AIDS, high	1.412
Pulmonary, low	0.226	Infectious, high	1.412
Gastro, high	0.884	HIV, medium	0.466
Gastro, medium	0.494	Infectious, medium	0.466
Gastro, low	0.195	Infectious, low	0.156
Diabetes, type 1 high	0.540	Hematological, extra high	13.320
Diabetes, type 1 medium	0.540	Hematological, very high	1.457
Diabetes, type 2 medium	0.273	Hematological, medium	0.756
Diabetes, type 2 low	0.273	Hematological, low	0.374

[67] Kronick R, Gilmer T, Dreyfus T, Lee L. (2000) Improving Health-Based Payment for Medicaid Beneficiaries: CDPS. *Health Care Financing Review*, 21(3): 29-64