



# Medicare Hospice Payment Reform: Analyses to Support Payment Reform

HHSM-502005-000181

May 1, 2014

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## 1. Introduction

Section 3132(a) of The Patient Protection and Affordable Care Act of 2010 (ACA) requires the Secretary of Health and Human Services (HHS) to revise Medicare’s payment system for hospice care. This legislation comes as a response to (1) significant changes in hospice utilization since the hospice benefit was established in 1983, and (2) recommendations by the Medicare Payment Advisory Commission (MedPAC) and others, for updating the hospice payment system. These updates, as required by the ACA include revising the Routine Home Care rate and the corresponding methodology, as well as the rates for other hospice services as deemed appropriate by the Centers for Medicare and Medicaid Services (CMS). Additionally, it allows for the Secretary to collect “...additional data and information as the Secretary determines appropriate to revise payments for hospice care.” These additional data collection efforts may include data on:

- Hospice-related charges, payments, costs, number of days, and number of visits attributable to each type of service;
- Type of practitioner providing the hospice visit;
- Length of visit and other information related to visit;
- Number of hospice days attributable to Medicare beneficiaries enrolled under Part A; and/or
- Charitable contributions and other revenues for hospice providers.

From data such as these (which, as required by the legislation, the Secretary should begin collecting no later than January 1, 2011), HHS is required to implement revisions to the hospice payment methodology no earlier than October 1, 2013. The ACA mandates that the revisions to Medicare’s hospice payment system “...shall result in the same estimated amount of aggregate expenditures under this title for hospice care furnished in the fiscal year in which such revisions in payment are implemented as would have been made under this title for such care in such fiscal year if such revisions had not been implemented.” That is, revisions need to be budget neutral for the first year.<sup>1</sup>

CMS contracted with Abt Associates Inc., teaming with Social and Scientific Systems, Inc. and the Brown University Center for Gerontology and Healthcare Research, to conduct comprehensive data analyses. This report is an update of the April 24, 2013 report “Medicare Hospice Payment Reform: Hospice Study Technical Report”.<sup>2</sup> This report will share some initial results of the data analysis performed since the last report. The data analyses that the Abt team has focused on since the last report deal with potential vulnerabilities within the hospice benefit. Those analyses attempt to measure how the hospice benefit is being utilized. Additionally, we examine how hospice is utilized simultaneously with other parts of the Medicare program and whether there are areas within the hospice benefit which could be improved in order to provide better patient centered care for beneficiaries at the end of life. While last year’s technical report provided some potential payment

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<sup>1</sup> The law does not provide HHS with the authority to change the eligibility and coverage requirements under the hospice benefit. We also note that the ACA makes additional changes to the hospice program that are unrelated to payment reform (e.g., 3132(b), 3140, and 10326).

<sup>2</sup> As of February 28, 2014, available at <https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/Hospice/Downloads/Hospice-Study-Technical-Report-4-29-13.pdf>

reform options, this year's technical report provides analyses to better understand provider behaviors that may influence a beneficiary's access to quality hospice services, which will inform future payment reform efforts.

The chapters of report are described briefly below:

- Chapter 2 describes the construction of the analytic files used for this project.
- Chapter 3 provides the total costs associated with hospice during 2012. This includes payments to hospice providers and Medicare non-hospice services utilized by beneficiaries on days in which they elected hospice.
- Chapter 4 presents an analysis of out-of-pocket coinsurance payments for non-hospice services incurred during a hospice election.
- Chapter 5 examines how “concentrated” amongst certain nursing facilities the provision of hospice was for each hospice provider during 2012.
- Chapter 6 tabulates the total number of drugs which may have been covered by the hospice benefit but were instead billed to Part D, the total cost of these drugs, and the number hospice beneficiaries receiving these drugs during calendar year 2012.
- Chapter 7 presents the findings of an analysis of FY 2004-2012 Medicare hospice cost reports which examined the sources of costs for hospice providers.
- Chapter 8 examines the relationship between the risk of exceeding the aggregate cap and live discharge rates and also whether above-cap hospices' readmissions are clustered at the start of the following cap year.
- Chapter 9 describes the effect of utilizing hospice on Medicare reimbursements among nursing home decedents.
- Chapter 10 examines the rate of live discharge amongst hospices.
- Chapter 10.1 provides descriptive statistics on how frequently hospice beneficiaries don't receive skilled visits during their last two days of life.
- Chapter 11 examines how frequently Medicare Part B services are utilized by hospice beneficiaries and whether appropriate modifiers (GV/GW) are used.
- Chapter 12 examines how frequently Emergency Room services and Observational Visits are utilized by hospice beneficiaries.
- Chapter 13 provides descriptive statistics on the most frequently used Resource Utilization Groups (RUGs) that Medicare beneficiaries who utilize hospice in the nursing home are enrolled in.
- Chapter 14 provides an analysis of the impact of the Face-to-Face Physician Visit Requirement for Hospice on the probability of a beneficiary having a recertification that is his second or later.
- Chapter 15 analyzes how hospice is utilized when a non-Routine Home Care (RHC) level of care is being billed.
- Appendix A—Provides various descriptive statistics on hospice utilization during 2012.
- Appendix B—Examines geographic variation in the utilization of the hospice benefit.

## 2. Construction of Data Files for the Analysis

This chapter provides an overview of the data files used for the analyses presented in this report.

We constructed multiple data files to support our analyses. The main set of analytic files focuses on these individuals:

1. One set of files contains data on all Medicare beneficiaries who used at least 1 day of hospice services (based on claims) between 2005 and 2012 (n = 6,964,808) [These are referred to as the Hospice Beneficiary files].

The Hospice Beneficiary files are comprised of two types of files: The Hospice Claims files and the Hospice Day file. These files were used in all the analyses discussed in this report except for the analysis of cost reports in Chapter 7. We also created a hospice level file that includes information on hospice characteristics (Provider of Services or POS file) and the Medicare Hospice Cost Reports (Cost Reports file). These files were used in a variety of analyses, including the analysis of cost reports in Chapter 7.

### 2.1 Specific Analytic Files Created

#### 2.1.1 Hospice Claims File (Created from the Hospice SAF)

Social & Scientific Systems, Inc. (SSS) created a hospice claim-level analytic file using information from the Hospice Standard Analytic File (SAF). The unit of observation in this file is a specific hospice claim for a particular beneficiary. This file contains claim-level information, that is, variables that do not change over the course of the claim. Examples of these variables include:

- Provider number
- Diagnoses codes
- Payment amount
- Claim from and through dates
- Dates identifying the start and end of a hospice benefit period.

#### 2.1.2 Hospice Day Level Analytic File (Created from the Hospice SAF)

SSS also created a day-level hospice analytic file using information from the Hospice SAF. The unit of observation in this file is an individual day of hospice services for a particular beneficiary at a specific hospice. The file is meant to describe the level of services (in terms of the number and length of visits and minutes) on a particular day of hospice enrollment. Examples of these variables include:

- Number of visits by discipline
- Number of minutes of care by discipline
- Level of care for a particular day of hospice
- Site of service for a particular day of hospice
- Daily payment amounts

Abt Associates has added information from the Enrollment Database (EDB) to this file, such as demographic data, and hospice enrollment period information for time periods prior to the earliest SAF file we acquired.

## 2.2 Data Sources Used

To analyze trends in Medicare hospice utilization, we have acquired several administrative data files from CMS, in addition to the Hospice SAF. They are:

- Hospice Provider of Services (POS) File
- Medicare Enrollment Database (EDB)
- Hospice Cost Reports
- Inpatient SAF
- Skilled Nursing Facility (SNF) SAF
- Outpatient SAF
- Home Health Agency SAF
- Part B Claims (e.g. Carrier SAF)
- Durable Medical Equipment (DME) SAF
- Part D Drug Claims

Table 2.1 shows the years for which each type of data have been obtained and incorporated into an analytic file:

**Table 2.1: Years of Data Currently Acquired and Incorporated into an Analytic File**

Dataset	2004	2005	2006	2007	2008	2009	2010	2011	2012
Hospice (SAF)		✓	✓	✓	✓	✓	✓	✓	✓
Hospice POS				✓	✓	✓	✓	✓	✓
Enrollment Database (EDB)		✓	✓	✓	✓	✓	✓	✓	✓
Hospice Cost Reports	✓	✓	✓	✓	✓	✓	✓	✓	✓
Inpatient SAF				✓	✓	✓	✓	✓	✓
SNF SAF				✓	✓	✓	✓	✓	✓
Outpatient SAF				✓	✓	✓	✓	✓	✓
HHA SAF				✓	✓	✓	✓	✓	✓
Part B Claims				✓	✓	✓	✓	✓	✓
DME SAF				✓	✓	✓	✓	✓	✓
Part D Drug Claims				✓	✓	✓	✓	✓	✓

### 2.2.1 Hospice SAF

SSS has used the Hospice SAF to create both the “Day-level” file and “Claim-level” file described above. Both files currently include claims with “Through Dates” between January 2005 and December 2012. The 2012 Hospice SAF data represented the June 2013 final SAF. Table 2.2 provides details regarding the number of beneficiaries, hospices, and hospice days represented in each year of data.

**Table 2.2: Number of Beneficiaries, Hospices, and Days of Hospice as Found in the Analytic File Created from the Hospice SAF after EDB information is Merged**

Calendar Year	Number of Unique Beneficiary IDs	Number of Unique Hospice Numbers	Number of Hospice Days <sup>a</sup>
2005	870,370	2,880	49,946,238
2006	934,129	3,045	57,313,079
2007	996,477	3,249	64,818,674
2008	1,051,028	3,329	71,059,476
2009	1,090,337	3,386	76,869,197
2010	1,159,634	3,497	81,312,681
2011	1,219,554	3,584	85,022,044
2012	1,274,150	3,727	91,322,751

As discussed in section 2.3.1, these numbers may differ slightly from previous versions due to changes in what beneficiaries are excluded from the analysis.

<sup>a</sup>This counts hospice days billed at any level of care. Days are considered Continuous Home Care (CHC) if the CHC rate was billed on a particular day.

### 2.2.2 Enrollment Database (EDB)

We use information from the Medicare Enrollment Database (EDB) for both the Hospice Day-Level file and the Non-Hospice Decedent file.<sup>3</sup>

These items include:

- Birth and death date
- Sex and race
- Indicators for Part A, B, D, Medicaid, and Medicare Advantage Coverage
- Indicator for hospice election period

### 2.2.3 Hospice Provider of Services (POS) File

The Provider of Services (POS) files contain quarterly updates of information on the hospice itself. Examples of variables found in this file include:

- Location (city, state, county)
- Age of hospice
- Provider number
- Staffing information (as of most recent survey)<sup>4</sup>
- Facility type (freestanding or facility-based)
- Ownership type

We currently have the POS extracts that correspond to the following dates:

<sup>3</sup> A small number of beneficiaries (roughly 300-500 per year) were dropped from the final analytic file because they could not be merged to the EDB.

<sup>4</sup> Note that hospice providers are not surveyed frequently. Examining the CMS POS file (as of March 2013) shows that, on average, active hospices have gone 3.5 years since their last survey. In fact, one provider had not been surveyed in 27 years.

- POS as of January 1, 2008
- POS as of January 1, 2009
- POS as of January 1, 2010
- POS as of January 1, 2011
- POS as of April 1, 2011
- POS as of January 1, 2013
- POS as of April 1, 2013

### 2.2.4 Hospice Cost Reports

We have collected hospice Medicare costs reports for fiscal years 2004–2012. We use this information to study hospice costs by cost center. More information about how cost reports are trimmed and how they are used for analysis can be found in Chapter 7 of this report.

## 2.3 Construction of the Hospice Analytic Files

This chapter provides some additional detail describing the data, data elements, and exclusions used in the creation of the analytic file(s).

### 2.3.1 Hospice Beneficiary Exclusions

A number of beneficiaries were excluded from the Hospice SAF data due to missing or unusual data that would make the creation of the “day-level” file excessively complicated. These exclusions are made by looking at all years of the Hospice SAF combined (e.g., 2005–2012) and dropping a small number of beneficiaries (roughly 0.25% of the sample).<sup>5</sup> Prior to the exclusions, there were 6,981,963 unique beneficiary IDs included in the file. Due to the exclusions listed below, 17,074 beneficiaries were dropped, leaving 6,964,889 beneficiaries in the SSS analytic files.<sup>6</sup> All claims for a beneficiary were dropped if any of the following occurred.<sup>7</sup>

1. A claim for a beneficiary was missing the hospice start date [1,897 beneficiaries].
2. A line item for a beneficiary had revenue units equal to 0 and the revenue center was not equal to “0001” [948 beneficiaries].
3. A line item for a beneficiary had a missing revenue date and the revenue center was not equal to “0001” [7,928 beneficiaries].

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<sup>5</sup> A slightly different sample of beneficiaries from years prior to 2012 are used, compared to the sample referenced in the previous year’s technical report. This is because, for long stay beneficiaries who utilize hospice in both 2012 and prior years, they may be dropped in the most recent dataset but not in the previous dataset due to poor data in 2012.

<sup>6</sup> Due to the short length of time many individuals utilize hospice before they die, we did not cross-reference beneficiary IDs. It is therefore possible that a single person may be represented in either the Hospice SAF data or any other Medicare claims we use under multiple beneficiary IDs.

<sup>7</sup> Note, some beneficiaries appear in multiple exclusions.

4. A claim for a beneficiary had a benefit period start date that is later than the “from” date of the claim [2,679 beneficiaries].
5. Two claims (from the same hospice) for a beneficiary covered overlapping time periods [3,080 beneficiaries].
6. A beneficiary had hospice days without corresponding hospice period days [123 beneficiaries].
7. A claim for a beneficiary had inconsistent or out of order start dates (based on through date) [419 beneficiaries].

## 2.4 Analysis of Hospice Analytic Files

We use the analytic files described above to examine several aspects of hospice utilization. Appendix A in this report provides several basic descriptive statistics on hospice utilization from 2012. The other chapters of this report also use the analytic files to produce the results that are described.

### 2.4.1 Background Information Regarding Hospice Utilization by Medicare Beneficiaries in 2012

Table A.1 in Appendix A provides detailed information about hospice utilization based on elections that occurred in 2012. The results include information on 138,306,501 hospice days across 1,370,146 hospice elections among 1,273,721 unique beneficiaries. Elections were concentrated amongst the older population of Medicare beneficiaries. Of the elections examined, 47.7% were for beneficiaries who were 85 years or older on the first day of the election. We found that 30.3% of the elections were for beneficiaries who were between (and including) 75 years of age and 84 years of age. Almost 60% of the hospice elections were for female beneficiaries. Hospice is predominantly (87.2% of elections) used by beneficiaries identifying themselves as White, non-Hispanic. Hospice is primarily being used for individuals without a primary diagnosis of cancer. Specifically, 71.7% of the elections had a non-cancer principal diagnosis listed on the first claim of the election. We also found that 6.45% of the elections had “adult failure to thrive” as the principal diagnosis on the first claim of the election (As discussed in the FY 2014 Hospice Wage Index Final Rule (78 FR 48234, August 7, 2013), this diagnosis will no longer be permitted to be recorded as a primary diagnosis).<sup>8</sup> Typically (71.8% of elections), only one diagnosis is listed on each of the claims that corresponded to the elections. Approximately 46.0% of the elections occurred at for-profit hospices based on the hospice identified during the first day of the election. In addition, 41.4% of the elections occurred in the South census region.

There was some variation in the length of the elections with 13.2% of the elections examined (not restricted to decedents) lasting between 1–3 days, 13.6% lasting between 4–7 days, and 6.2% lasting between 8–10 days. We also found that 16.8% of elections lasted 181 days or longer. Overall, the average length of stay for the elections examined was 85 days (Figure A.1). There was some variation in this average by site of service with average length of stay in the patient home being 84 days,

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<sup>8</sup> Available online at <http://www.gpo.gov/fdsys/pkg/FR-2013-08-07/pdf/2013-18838.pdf>

average length of stay in the nursing home being 92 days, and average length of stay in an assisted living facility being 128 days.

As shown in Figure A.2, based on the elections examined, 84% died in hospice, 7% were alive in hospice as of December 31, 2012. Four percent were discharged/revoked from hospice and alive after discharge/revocation. Five percent were discharged/revoked from hospice and died after discharge/revocation. These figures are mostly consistent across each site of service. However, the assisted living site of service had a smaller percentage of elections that died in hospice and a larger percentage of elections that were alive and in hospice as of December 31, 2012. On average, elections received 72.7 Part A visits (including Physician/NP visits recorded on the hospice claim as well as discipline visits) as shown in Figure A.3. There was substantial variation related to the site of service (which will also related to the length of stay mentioned above) with average visits in the patient home being 57.1, average visits in the nursing home being 71.4, and average visits in the assisted living facility being 96.9.

Although we do not report the following in Appendix A, we also examined all Medicare hospice claims that occurred in 2012 and found:

- Total Medicare payments on hospice claims equaled \$15.0 billion.
- There were 3,727 hospice providers that provided at least 1 day of hospice.

## 3. Total Costs of Hospice in 2012 (“Inside” and Outside the Benefit)

### 3.1 Background

The analyses in this chapter estimate the total costs associated with hospice during a single year. These costs include payments made to hospices for services through the hospice benefit and additionally other Medicare non-hospice services also utilized by beneficiaries on days in which they elected hospice. In work during the prior year, Abt has calculated the expenditure totals of Part D (drug) utilization for hospice beneficiaries in 2010. We estimated that hospice beneficiaries with recorded Part D enrollment received drugs with aggregate gross costs of approximately \$350 million on days in which they were enrolled in hospice. Given the therapeutic nature of these drugs, we believe that at least \$99 million likely should not have been billed to Part D, and instead should have been covered by the hospices treating these patients.

This analysis includes additional medical services used during hospice enrollment beyond drugs which were paid for by Medicare. We estimate the total non-hospice expenditures utilized by beneficiaries electing hospice during 2012 and add this total to the aggregate Medicare payments made to hospices in 2012, thus producing a “total cost” of hospice. Because we do not examine the individual non-hospice services utilized, we are unable to ascertain whether utilization is appropriate or inappropriate, but we would be able to pursue this objective in future analyses with clinical guidance from our subcontractor, Brown University’s Center for Gerontology and Healthcare Research. The estimates produced in this analysis are best thought of as an “upper threshold” on potential inappropriate spending.

This chapter also provides estimates of beneficiary liability payments (deductibles and copayments) for non-hospice services (Part B, Inpatient, DME, and SNF) received during hospice days in 2012. We calculated that in 2012 the hospice benefit provided 89,732,825 days of hospice service after excluding hospice days that were either admission days or days in which the beneficiary was discharged alive. Hospice beneficiaries paid \$135,454,501 (\$135.5M) for non-hospice services received during these days (this calculation is discussed further in Chapter 4).

### 3.2 Methodology

Abt downloaded non-hospice claims for calendar year 2012 which includes the utilization of Part B (institutional and outpatient sources), inpatient care, durable medical equipment (DME), skilled nursing facility (SNF), and home health services.<sup>9</sup> We then constructed day-level analytic files indicating the dollar amount which Medicare paid for services received by beneficiaries on each date; where specific days were not given for line items, we apportioned out averages for each day over the claim period.<sup>10</sup> We cross-checked these records against our hospice day file to only retain those dates

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<sup>9</sup> Note that home health patients do not pay Medicare coinsurance.

<sup>10</sup> E.g., for a billed \$700 hospital stay claim that lasted one week (seven days), we would assign \$100 to each date of that week.

during which the beneficiary received hospice services. As with previous analyses involving non-hospice utilization, we excluded non-hospice services received on the “boundary” days of a hospice election—hospice admission or live discharge days—to prevent the inclusion of services incurred on the admission day prior to the admission decision or later in the day after a revocation/discharge.

For each hospice day in 2012, we aggregated total expenditures for non-hospice services. Our final analytic file retained the site of service field and primary ICD-9 diagnosis code from the hospice claims to examine whether non-hospice expenditures vary by service location or disease. We additionally amended our file with POS file characteristics to examine whether utilization varies by the typical hospice characteristics with which we have described hospice programs (hospice time period of certification, hospice tax status, freestanding/facility-based status, state & Census region, and urban/rural status).

### 3.3 Results

#### 3.3.1 Total Medicare Hospice Days and Payments in 2012

During calendar year 2012, the total number of hospice days which were not admission days or live discharge days was 89.7 million days. When we include admission and live discharge days, we calculate that in total 91.3 million hospice days were provided by the Medicare Hospice Benefit in 2012. That year, total Medicare hospice payments for all those hospice days totaled \$15.0 billion.

#### 3.3.2 Estimates of Medicare Expenditures for Parts A & B Non-Hospice Services in 2012

During 2012, we estimate that Medicare Parts A and B paid in total approximately \$710.1 million for DME, Home Health, Inpatient, Part B, and SNF services received by beneficiaries on days in which they elected the hospice benefit.

We also calculated hospice beneficiaries’ Medicare expenditures for non-hospice services in 2010: approximately \$638.6 million in total. Thus, non-hospice expenditures grew about 3.9% over the course of two years from \$638.6 million in 2010 to \$710.1M in 2012. Comparatively, we calculated that Medicare hospice expenditures were \$12.9 billion in 2010 which grew about 16.9% to \$15.0 billion in 2012. Therefore, from 2010 to 2012 the rate of non-hospice utilization grew substantially more slowly than expenditures within the hospice benefit.

Table 3.1, below, displays total Part A and B Medicare spending and percentages by non-hospice service claims source during hospice days in 2012. Two-thirds of this total (\$468.4 million out of \$710.1 million) is attributable to combined Inpatient (\$203.0 million, or 28.6% of the \$710.1 million) and non-outpatient Part B (\$265.4 million, or 37.4% of total) expenditures.

**Table 3.1: Parts A and B Non-Hospice Spending during Hospice by Claims Source, 2012**

Non-hospice Medicare	Total \$	% of Total
<b>Total</b>	<b>\$710,087,321</b>	<b>100.0%</b>
Durable Medical Equipment	\$49,529,040	7.0%
Home Health	\$32,140,138	4.5%
Inpatient	\$202,981,798	28.6%
Outpatient Part B	\$119,712,503	16.9%
Physician/Supplier and Other Part B	\$265,389,997	37.4%
Skilled Nursing Facilities	\$40,333,844	5.7%

Source: Abt Associates analysis of 100% 2012 Medicare Claim Files

Table 3.2 below displays total Medicare expenditures and percentages of the total by hospice patients' site of service. In 2012, beneficiaries at home received \$307.3 million of non-hospice services (43.3% of the \$710.1 million), beneficiaries in unskilled nursing facilities received \$142.1 million (20.0%), and beneficiaries in skilled nursing facilities received \$58.7 million (8.3%).

**Table 3.2: Parts A and B Non-Hospice Spending during Hospice by Hospice Sites of Service, 2012**

Hospice Site of Service	Total \$	% of Total
<b>Total</b>	<b>\$710,087,321</b>	<b>100.0%</b>
Assisted Living	\$72,139,477	10.2%
Patient's Home	\$307,347,490	43.3%
Unskilled Nursing	\$142,138,813	20.0%
Skilled Nursing	\$58,703,855	8.3%
Inpatient	\$100,344,857	14.1%
All Other	\$29,412,829	4.1%

Source: Abt Associates analysis of 100% 2012 Medicare Claim Files

The Inpatient site of service typically comprises a small portion of hospice activity. In 2012, 514,541 hospice days were at Inpatient sites of service out of the 89.7 million non-“boundary” days that year—just half a percent of total hospice days. Yet, total non-hospice expenditures on days which the beneficiary was in an inpatient setting were sizeable: \$100.3 million, or 14.1% of the total expenditures for non-hospice services in 2012.

### 3.3.3 Estimates of Parts A and B Medicare Expenditures for Non-Hospice Services in 2012 by Hospice Characteristic

Table 3.3 below presents estimates of (non-boundary) hospice days, expenditures during hospice for non-hospice services, and rates of expenditures per hospice day for several hospice characteristics from the POS file we typically examine. There appears to be little variation across hospice characteristics in terms of expenditures outside. Most noticeable characteristics where we do observe variation is facility status (\$8.36 daily in freestanding hospices vs. \$5.81 daily in facility-based hospices) and geography (\$6.70 daily for hospices in the Midwest, \$7.42 daily in the Northeast, \$10.67 daily in the South, and \$4.04 daily in the West). We have also created a map on the following page to provide further details of state-by-state variation.

**Table 3.3: Non-Boundary Hospice Days and Parts A and B Non-Hospice Expenditures by Hospice Characteristics**

	Hospice Days	Other Medicare During Hospice (\$) {DME, HHA, Inpatient, Part B, SNF}	Other Medicare (\$) Per Day
All hospice days	89,732,825	\$710,087,321	\$7.91
<b>Decade of certification</b>			
1980s	27,212,293	\$224,002,576	\$8.23
1990s	27,445,436	\$188,066,270	\$6.85
2000s+	34,813,611	\$295,103,313	\$8.48
Missing hospice of service	261,485	\$2,915,161	\$11.15
<b>Ownership</b>			
For-profit	48,311,721	\$394,238,462	\$8.16
Government	8,999,030	\$64,328,784	\$7.15
Non-profit	32,160,589	\$248,604,914	\$7.73
Missing hospice of service	261,485	\$2,915,161	\$11.15
<b>Facility type</b>			
Facility-based	15,941,385	\$92,675,738	\$5.81
Freestanding	73,529,955	\$614,496,421	\$8.36
Missing hospice of service	261,485	\$2,915,161	\$11.15
<b>Urban/rural status</b>			
Urban	78,488,425	\$617,528,960	\$7.87
Rural	11,244,400	\$89,412,362	\$7.95
Missing urban/rural	310,903	\$3,145,999	\$10.12
<b>Census region</b>			
Midwest	19,820,588	\$132,840,418	\$6.70
Northeast	12,174,069	\$90,332,833	\$7.42
South	38,603,455	\$412,015,806	\$10.67
West	17,998,355	\$72,656,616	\$4.04
Outlying territories	1,136,358	\$2,241,648	\$1.97

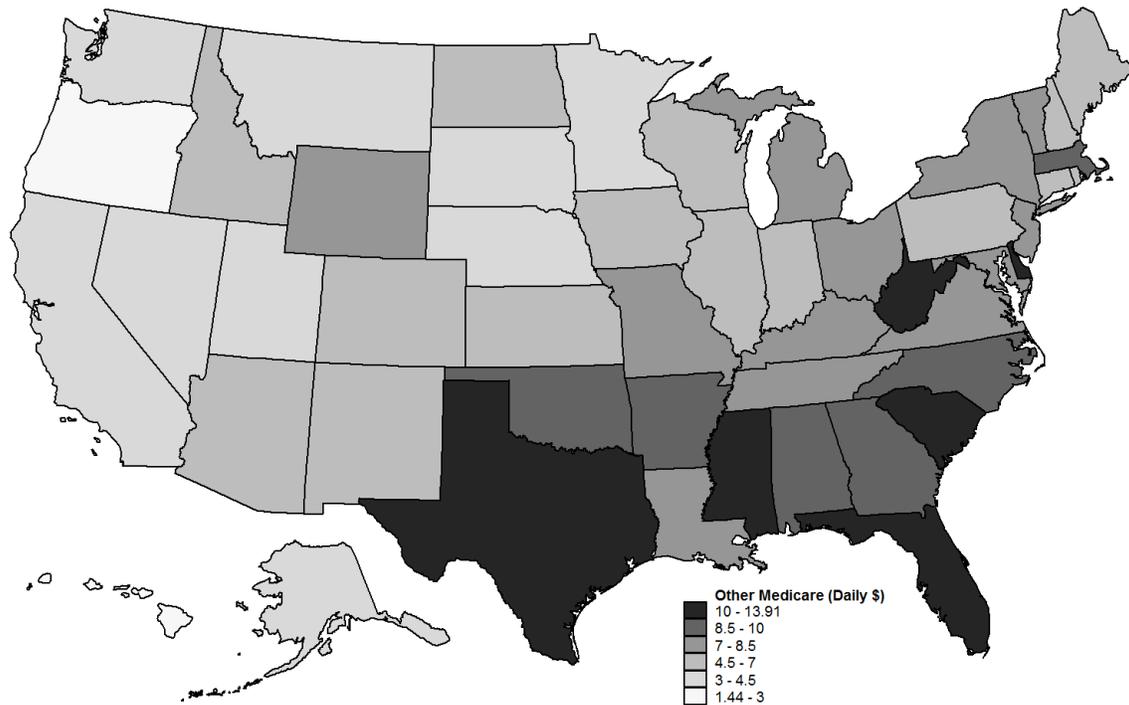
Source: Abt Associates analysis of 100% 2012 Medicare Claim Files

### 3.3.4 Estimates of Part A and B Medicare Expenditures for Non-Hospice Services in 2012 by State

Figure 3.1 below displays geographic variation in daily rates of Parts A and B expenditures outside the hospice benefit across U.S. states. Statewide rates ranged from \$1.44 (Hawaii) to \$13.91 (West

Virginia). As is noticeable on the map (and also as noted in the regional averages of Table 3.4 above), expenditure rates were higher in the Southern states, particularly Florida (\$13.17 daily), Texas (\$12.45 daily), Mississippi (\$11.91 daily), and South Carolina (\$10.16 daily).

**Figure 3.1: Geographic Variation in Parts A & B Non-Hospice Medicare (Expenditures per Day), 2012**



Source: Abt Associates analysis of 100% 2012 Medicare Claim Files

**3.3.5 Estimates of Part D Gross Drug Costs for Drugs Received by Hospice Beneficiaries in 2012**

We estimated that during hospice days in 2012, hospice beneficiaries received drugs through Part D with a total gross cost of about \$417.9M on days in which they elected the hospice benefit (excluding admission and live discharge hospice days). What portion of this Part D utilization was paid by beneficiaries and what amount was paid by Medicare? The Part D files contain a field which indicates the “gross total cost” of drugs, and then six component fields indicating sources of payment. Table 3.4 below lists each component, gives a brief description, and in the final column indicates the total dollar amount for 2012 drugs received by hospice beneficiaries. Note as indicated at the bottom of the table at the bottom that the total of the six components (\$405,593,660) does not perfectly equal the total reported gross cost of the drugs (\$417,901,263). The Research Data Assistance Center (or “ResDAC”) indicated that the totals were not expected to match, for example due to reconciliations between the plan and Medicare which the data do not reflect.<sup>11</sup> As reported, however, beneficiaries directly paid \$48.2 million for drugs they received during a hospice election in 2012 (about 11.9% of the total of the six components’ report totals).

<sup>11</sup> <http://www.resdac.org>

**Table 3.4: Drug Cost Sources for Hospice Beneficiaries' 2012 Drugs Received through Part D**

Component	Description	\$ Total, 2012 PDEs
Patient Pay Amount	The dollar amount the beneficiary paid that is not reimbursed by a third party.	\$48,191,067
Low Income Cost-Sharing Subsidy	Medicare payments to plans to subsidize the cost-sharing liability of qualifying low-income beneficiaries at the point of sale.	\$117,558,814
Other True Out-of-Pocket Amount	Records all other third-party payments on behalf of beneficiary. Examples are state pharmacy assistance programs and charities.	\$2,366,896
Patient Liability Reduction due to Other Payer Amount	Amount patient liability reduced due to other benefits. Examples are Veteran's Administration and TRICARE.	\$3,120,834
Covered Drug Plan Paid Amount	Contains the net amount the plan paid for standard benefits.	\$217,370,068
Non-Covered Plan Paid Amount	Contains the net amount the plan paid beyond standard benefits. Examples include supplemental drugs, supplemental cost-sharing, and OTC drugs paid under plan administrative costs.	\$16,985,982
<b>Components' Total</b>		<b>\$405,593,660</b>
<b>Gross Total Drug Costs, Reported</b>		<b>\$417,901,263</b>

Source: Abt Associates analysis of 100% 2012 Medicare Claim Files

### 3.3.6 Estimating the Total Medicare Cost of Hospice in 2012

Table 3.5 below summarizes the estimates of total Medicare expenditures by hospice beneficiaries both inside and concurrent with the hospice benefit during calendar year 2012.

- We calculated that there were 91.3 million total hospice days in 2012 and hospice payments on these days amounted to \$15.0 billion that year (“inside” the benefit)
- There were 89.7 million hospice days in 2012 which were not admission day nor live discharge days, and on these days there was \$1.3 billion in expenditures outside the hospice benefit
  - We estimated Medicare paid in total to be \$710.1 million for non-hospice Medicare Parts A and B services during hospice days in 2012
  - We estimated the hospice beneficiaries paid in total to be \$135.5 million for non-hospice Medicare Part A and B services during hospice days in 2012
  - We also estimated that \$417.9 million in Part D drug costs was utilized during hospice in 2012
- Therefore, \$15.0 billion in hospice expenditures (inside the benefit) + \$1.3 billion non-hospice expenditures (outside the benefit) = \$16.3 billion total hospice cost in 2012.

These results may be conservative because we ignore any non-hospice utilization on hospice admission days and days in which the beneficiary was discharged alive (to ensure the spending we calculate takes place within hospice enrollment) and we also do not include hospice costs covered by non-Medicare payers, such as private insurance.

**Table 3.5: The Total Medicare Cost of Hospice—Expenditures Inside and Outside the Benefit in 2012**

	<b>CY 2012 Expenditures (\$)</b>
Medicare hospice payments	\$15,046,808,584
Beneficiary coinsurance for services during hospice (Part B, Inpatient, DME, and SNF)	\$135,454,501
Medicare payments for services during hospice (Part B, Inpatient, DME, SNF, and HHA)	\$710,087,321
Estimated Part D utilization (Patient Pay Amount)	\$48,191,067
Estimated Part D utilization (Low Income Cost-Sharing Subsidy and Covered Drug Plan Paid Amount)	\$334,928,882
Estimated Part D utilization (All Other Sources)	\$22,473,712
<b>Total cost of hospice (hospice payments and outside-benefit \$)</b>	<b>\$16,310,251,669</b>

Source: Abt Associates analysis of 100% 2012 Medicare Claim Files

### **3.3.7 Estimates of Total Medicare Expenditures During Hospice Enrollment by Patient Diagnosis: Hospice, non-Hospice Part A, B, and D Total Spending in 2012**

Table 3.6 below displays estimates of total hospice payments during all days of hospice election, and additionally payments for non-hospice Part A and B services and Part D total drug costs that occurred on (non-boundary) hospice days for numerous common hospice diagnoses. The table is sorted by total associated cost. Hospice elections days for patients admitted with a diagnosis of Non-Alzheimer's Dementia were associated with the greatest aggregate cost (\$2.6 billion), followed by Debility NOS (\$2.3 billion), Non-Infectious Respiratory Diseases (\$1.3 billion), Adult Failure to Thrive (\$1.2 billion), and Congestive Heart Failure (\$1.2 billion).

**Table 3.6: Medicare Hospice and non-Hospice Parts A, B, and D Expenditures Occurring During Hospice Election in CY 2012**

Primary Diagnosis (or Disease Grouping) at Hospice Admission	ICD-9 Codes	Medicare Hospice Payments	Medicare A & B Payments	Beneficiary Payments, A & B Services	Part D Gross Drug Costs (All Payers)	Non-Hospice Total	Hospice + Non Hospice Total
<b>All Diagnoses</b>	<b>All</b>	<b>\$15,046,808,585</b>	<b>\$710,087,321</b>	<b>\$135,454,501</b>	<b>\$417,901,263</b>	<b>\$1,263,443,086</b>	<b>\$16,310,251,670</b>
Non-Alzheimer's Dementia	290s;294s; 331s (not 331.0)	\$2,462,643,383	\$94,671,306	\$19,884,266	\$60,819,291	\$175,374,863	\$2,638,018,246
Debility NOS	799.3	\$2,175,202,204	\$68,835,156	\$15,199,298	\$59,180,753	\$143,215,207	\$2,318,417,411
Non-Infectious Respiratory Diseases (inc. COPD)	490-496s	\$1,165,877,604	\$74,785,015	\$12,878,449	\$47,329,417	\$134,992,881	\$1,300,870,485
Failure to Thrive	783.7	\$1,138,065,567	\$49,870,866	\$10,271,562	\$30,904,498	\$91,046,925	\$1,229,112,493
Congestive Heart Failure	428s	\$1,109,968,861	\$75,763,445	\$13,713,525	\$35,316,698	\$124,793,668	\$1,234,762,529
Alzheimer's Disease	331.0	\$1,038,781,920	\$33,617,398	\$7,038,751	\$25,062,231	\$65,718,380	\$1,104,500,300
Other Heart Diseases	390-398s; 402-404s; 410-417s; 420-427s; 429s	\$965,288,932	\$67,481,902	\$12,610,525	\$30,071,614	\$110,164,041	\$1,075,452,973
Lung Cancer	162-165s	\$791,576,206	\$35,812,210	\$6,161,272	\$18,372,994	\$60,346,476	\$851,922,682
CVA/Stroke	430-434s; 436-438s	\$558,037,396	\$29,241,947	\$5,468,845	\$14,278,875	\$48,989,667	\$607,027,063
Parkinson's	332-335s	\$502,033,683	\$19,406,595	\$3,976,070	\$18,365,734	\$41,748,399	\$543,782,082
Colorectal Cancer	153-154s	\$315,014,089	\$14,239,297	\$2,548,562	\$5,781,787	\$22,569,646	\$337,583,735
Breast Cancer	174-175s	\$246,462,850	\$10,629,779	\$1,878,218	\$5,788,593	\$18,296,590	\$264,759,440
Pneumonia	480-488s; 510-519s	\$204,783,173	\$10,377,529	\$1,854,316	\$6,126,168	\$18,358,013	\$223,141,186
Prostate Cancer	185s	\$202,607,762	\$11,027,050	\$1,864,952	\$4,608,596	\$17,500,598	\$220,108,360
Blood/lymph Cancer	200-207s	\$188,236,553	\$10,259,285	\$1,778,736	\$4,686,386	\$16,724,407	\$204,960,959
Pancreatic Cancer	157s	\$178,923,465	\$7,968,607	\$1,284,268	\$3,358,253	\$12,611,128	\$191,534,593
Chronic Kidney Disease	585-587s	\$168,168,540	\$9,894,924	\$1,747,003	\$4,708,338	\$16,350,264	\$184,518,804
Liver Cancer	155-156s	\$114,972,844	\$6,081,538	\$972,230	\$3,297,447	\$10,351,215	\$125,324,059
Chronic Liver Disease	571-573s	\$114,822,697	\$11,171,670	\$1,842,160	\$4,618,775	\$17,632,604	\$132,455,302
Bladder Cancer	188s	\$87,829,580	\$4,263,696	\$741,582	\$1,533,621	\$6,538,899	\$94,368,479
Brain Cancer	191s	\$87,475,960	\$2,930,800	\$543,495	\$1,680,026	\$5,154,321	\$92,630,281
Ovarian Cancer	183s	\$83,193,840	\$3,299,660	\$620,186	\$1,431,586	\$5,351,432	\$88,545,271
Stomach Cancer	151s	\$49,894,145	\$2,478,612	\$438,659	\$1,044,974	\$3,962,245	\$53,856,391
All Other Diagnoses	All other codes	\$1,096,947,332	\$55,979,033	\$10,137,574	\$29,534,609	\$95,651,216	\$1,192,598,548

Source: Analysis of 100% Hospice, Part A, Part B claims and 100% Part D event records (2012). Non-Hospice Expenditures include Inpatient, Outpatient, Physician/Supplier Part B, DME, Home Health, SNF and Part D utilization occurring in non-boundary days (i.e., admit and live discharge days).

## 4. Hospice Beneficiary Cost Sharing for Parts A and B Non-Hospice Services

During 2012, 575,099 hospice beneficiaries (46.5% of all hospice users) were liable for over \$135.5 million in deductibles and copayments for non-hospice Part A or Part B services received on days in which they elected the hospice benefit. Daily average coinsurance (across *total* 2012 hospice days) was \$1.51. Coinsurance rates were greater for beneficiaries in a skilled nursing facility (\$2.42 daily) than in their own homes (\$1.17 daily). There was little variation in coinsurance across hospice characteristics with the exception of geography: coinsurance rates were greater in the South (\$1.92 daily vs. \$0.80 daily in the West), where coinsurance were highest in Texas (\$2.37 daily), Mississippi (\$2.34 daily), and Florida (\$2.17 daily).

### 4.1 Background

The Medicare Hospice Benefit covers end-of-life care and symptom management for beneficiaries' terminal illness and related conditions. Beneficiaries may still receive services through other Parts of Medicare for illnesses which are unrelated to the terminal illness or related conditions, and for these services beneficiaries are responsible for any associated cost sharing. The analyses in this section tabulate out-of-pocket coinsurance payments for non-hospice services incurred during hospice election.

### 4.2 Methodology

Abt downloaded non-hospice claims for calendar year 2012 that indicated the amounts hospice users paid that year for Part B (institutional and outpatient sources), inpatient care, durable medical equipment (DME), and skilled nursing facility (SNF) services. We cross-checked daily coinsurance records against our hospice day file to verify that these payments occurred on days in which the beneficiary was under a hospice election, excluding hospice admission and live discharge days. We retained the site of service field from the hospice day file to examine whether coinsurance payments vary by hospice service location. On each hospice day, we also calculated total Medicare hospice payments. Finally, we aggregated total beneficiary (non-hospice) coinsurance payments, total Medicare hospice payments, and total hospice days for each hospice over 2012. We calculated each hospice's average beneficiary (non-hospice) coinsurance and hospice payments per hospice day. We additionally amended these estimates with POS file characteristics to examine whether daily coinsurance rates vary by the typical hospice characteristics we use to describe hospice programs (hospice size by total number of days provided, hospice years in operation, hospice tax status, freestanding/facility-based status, state & Census region, and urban/rural status).

### 4.3 Results

In 2012, we identified 3,725 unique hospices<sup>12</sup> that collectively provided 89.7 million days of hospice care and received \$14.7 billion in Medicare payments (*excluding* hospice admission and live discharge days). This same year, 575,099 beneficiaries (or 46.5% of 1,237,483 total hospice users) paid \$135.5 million for non-hospice items or services on days in which they were enrolled in the hospice benefit: \$32.5 million (24.0%) for Physician/Supplier and other non-outpatient Part B claims, \$76.2 million for outpatient Part B claims (56.2%), \$0.9 million (0.7%) for inpatient services, \$11.3 million (8.4%) for SNF services, and \$14.6 million (10.8%) for DME. Table 4.1 displays beneficiary coinsurance payments, Medicare hospice payments, and total hospice days by hospice site of service (Assisted Living, Patient’s Home, Unskilled Nursing, Skilled Nursing, or Other) in the top half of the table.<sup>13</sup> The lower half of the table shows average daily liability and Medicare payment amounts (which are the totals dollar amounts from the top half divided by corresponding hospice days). Average daily coinsurance for non-hospice services were \$1.51 for each hospice day during 2012. Notably, beneficiaries incurred more liability payments in a skilled nursing facility (\$2.42 daily) than in their own homes (\$1.17 daily); this disparity was largely due to SNF residents paying comparatively more for outpatient Part B (\$1.21 daily in a SNF vs. \$0.60 daily in the patient’s own home) and (of course) for SNF services (\$0.72 daily in a SNF vs. \$0.02 daily in the patient’s own home).

Table 4.2 displays estimates of total (non-hospice) coinsurance payments, Medicare hospice payments and total hospice days. From these figures, daily coinsurance and Medicare hospice payments are calculated and presented by hospice characteristics; these estimates are day-weighted (the figures are simply aggregate dollars divided by aggregate days).<sup>14</sup> There are some differences by hospice characteristics, but those differences are not striking: daily coinsurance payment averages are higher in freestanding hospices (\$1.58 daily) than for facility-based hospices (\$1.17 daily), which might simply reflect that facility-based beneficiaries use more non-hospice services. There was also geographic variation in patient liability averages – from a high of \$1.92 daily in the South to \$0.80 daily in the West.

Figure 4.1 is a heat map displaying daily statewide average estimates of beneficiary coinsurance for non-hospice services while on hospice across four thresholds (\$0.00-\$1.24; \$1.25-\$1.49; \$1.50-\$1.74; \$1.75-\$2.50). The range was \$0.36 daily in Hawaii to \$2.43 daily in Delaware. Generally, the daily rates are greater in the Eastern half of the country relative to the West, especially in the South, where three of the five states above the threshold of \$2.00 coinsurance per hospice day are located: Texas (\$2.37 daily), Mississippi (\$2.34 daily), and Florida (\$2.17 daily).

<sup>12</sup> During 2012, the Hospice benefit paid for 91,322,751 days of hospice care to 3,727 hospices. After excluding admission days and live discharge days, there were 89,732,825 days remaining provided by 3,725 hospices. This indicates that two hospices provided only admission/live discharge days in 2012.

<sup>13</sup> The table contains some “odd” results, such as inpatient beneficiary liability paid when the patient received hospice at home. This either reflects the inaccuracy of the site of service field or a transition day where the patient returned home after an earlier hospitalization.

<sup>14</sup> **Please note** that Table 4.2 estimates are slightly less (\$575,733 in patient liability payments) than Table 4.1 due to the exclusion of 38 hospices from this table which were not present on the POS file.

**Table 4.1: Beneficiary Non-Hospice Coinsurance Payments during Hospice Election, Medicare Payments to Hospices, and Total Hospice Days by Site of Service in Calendar Year 2012**

Aggregate/Daily Payments by Hospice Site of Service	Beneficiary Coinsurance Payments					Total Coinsurance (non-hospice)	Medicare Payments (hospice)	Hospice Days
	Physician/Supplier and Other Non-Outpatient Part B	Outpatient Part B	Inpatient Services	Skilled Nursing Facility Services	Durable Medical Equipment			
<b>Aggregate payments</b>								
Assisted living	\$2,971,680	\$9,848,574	\$12,186	\$177,513	\$1,364,191	\$14,374,144	\$2,100,307,562	13,120,798
Patient's home	\$18,318,453	\$30,117,508	\$316,596	\$981,048	\$9,132,601	\$58,866,206	\$7,733,007,950	50,249,858
Unskilled Nursing	\$7,407,174	\$20,155,208	\$80,296	\$5,505,280	\$2,680,256	\$35,828,213	\$2,617,590,395	17,341,349
Skilled Nursing	\$2,130,761	\$7,549,916	\$25,611	\$4,502,321	\$937,799	\$15,146,408	\$1,004,721,097	6,248,820
Other	\$1,659,302	\$8,494,464	\$453,708	\$177,541	\$454,514	\$11,239,530	\$1,219,576,951	2,772,000
<b>Total (\$)</b>	<b>\$32,487,370</b>	<b>\$76,165,670</b>	<b>\$888,396</b>	<b>\$11,343,703</b>	<b>\$14,569,361</b>	<b>\$135,454,501</b>	<b>\$14,675,203,955</b>	<b>89,732,825</b>
<b>Average daily payments</b>								
Assisted living	\$0.23	\$0.75	\$0.00	\$0.01	\$0.10	\$1.10	\$160.07	-
Patient's home	\$0.36	\$0.60	\$0.01	\$0.02	\$0.18	\$1.17	\$153.89	-
Unskilled Nursing	\$0.43	\$1.16	\$0.00	\$0.32	\$0.15	\$2.07	\$150.95	-
Skilled Nursing	\$0.34	\$1.21	\$0.00	\$0.72	\$0.15	\$2.42	\$160.79	-
Other	\$0.60	\$3.06	\$0.16	\$0.06	\$0.16	\$4.05	\$439.96	-
<b>Total (\$)</b>	<b>\$0.36</b>	<b>\$0.85</b>	<b>\$0.01</b>	<b>\$0.13</b>	<b>\$0.16</b>	<b>\$1.51</b>	<b>\$163.54</b>	<b>-</b>

Source: Abt Associates Analysis of Medicare Claims Data, 2012

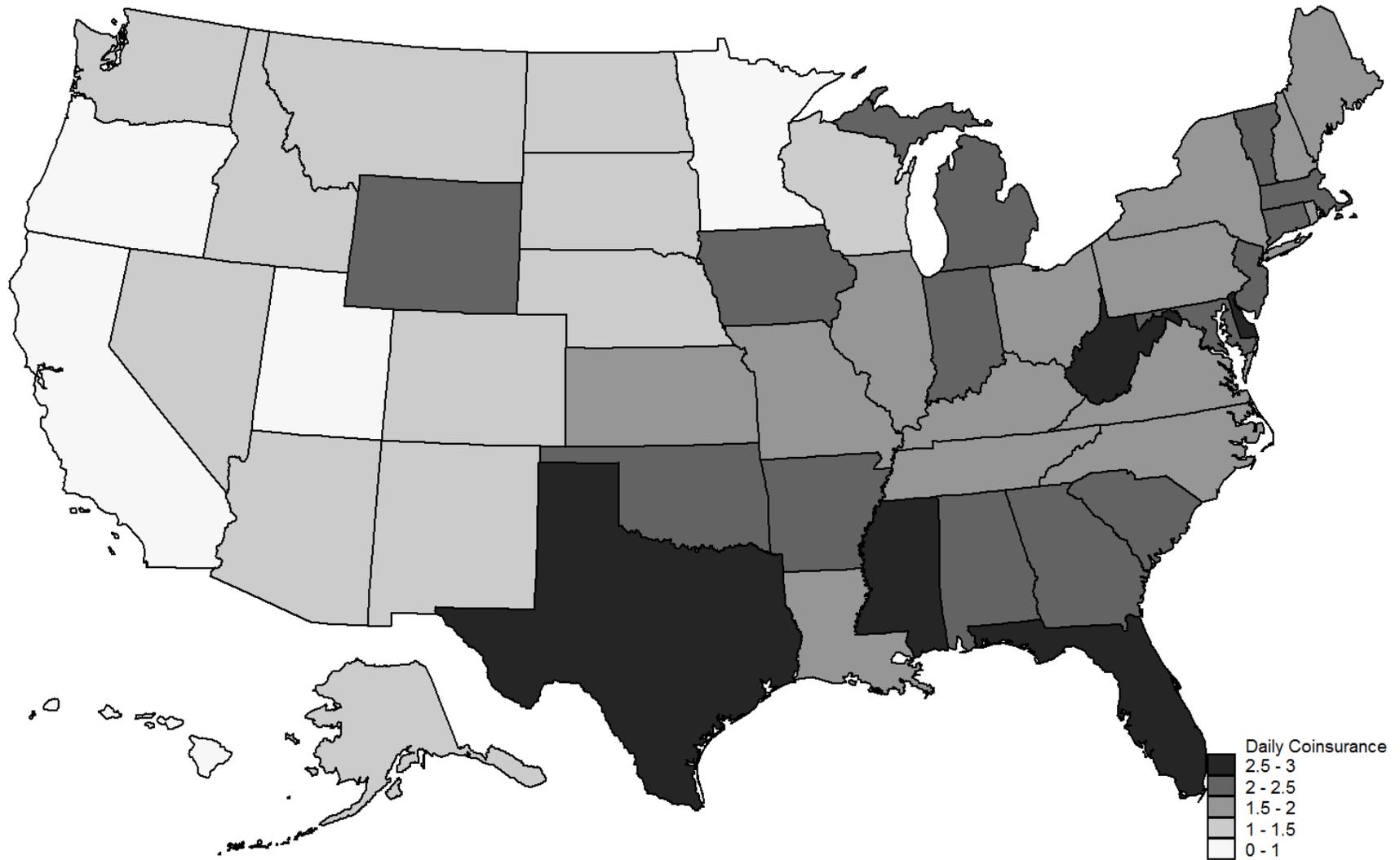
**Table 4.2: Hospice Aggregate Non-Hospice Coinsurance Payments during Hospice Election, Medicare Payments, Total Hospice Days, and Daily Coinsurance/Medicare Payment Averages by Hospice Characteristic in Calendar Year 2012**

Hospice Characteristic	Non-hospice Coinsurance	Medicare Hospice Payments	Hospice Days	Average Daily Coinsurance	Average Daily Medicare Payments
<b>Overall averages</b>					
All hospices	\$134,878,769	\$14,634,942,659	89,471,340	\$1.51	\$163.57
<b>Hospice size (all hospice days, 2012)</b>					
0–999 hospice days	\$147,411	\$17,624,046	91,835	\$1.61	\$191.91
1,000–1,999 hospice days	\$364,256	\$39,452,914	257,779	\$1.41	\$153.05
2,000–4,999 hospice days	\$2,848,841	\$280,646,236	1,851,570	\$1.54	\$151.57
5,000–9,999 hospice days	\$7,427,492	\$786,502,640	5,183,952	\$1.43	\$151.72
10,000–17,499 hospice days	\$13,022,079	\$1,323,762,902	8,679,915	\$1.50	\$152.51
17,500–24,999 hospice days	\$12,947,326	\$1,380,497,078	8,923,347	\$1.45	\$154.71
25,000–49,999 hospice days	\$30,241,275	\$3,388,257,357	21,155,435	\$1.43	\$160.16
50,000–74,999 hospice days	\$15,667,258	\$1,878,147,756	11,494,127	\$1.36	\$163.40
75,000–149,999 hospice days	\$26,572,943	\$2,931,399,831	17,341,366	\$1.53	\$169.04
150,000+ hospice days	\$25,639,888	\$2,608,651,899	14,492,014	\$1.77	\$180.01
<b>Hospice certification year</b>					
1980s	\$40,655,937	\$4,703,868,567	27,212,293	\$1.49	\$172.86
1990s	\$37,108,253	\$4,415,045,101	27,445,436	\$1.35	\$160.87
2000–2004	\$23,803,222	\$2,383,789,411	14,650,218	\$1.62	\$162.71
2005–2010	\$33,311,356	\$3,132,239,579	20,163,393	\$1.65	\$155.34
<b>Ownership type</b>					
Government	\$12,506,751	\$1,484,458,394	8,999,030	\$1.39	\$164.96
Non-profit	\$46,076,288	\$5,438,263,273	32,160,589	\$1.43	\$169.10
For-profit	\$76,295,730	\$7,712,220,992	48,311,721	\$1.58	\$159.63
<b>Facility type</b>					
Facility-based	\$18,713,942	\$2,601,974,529	15,941,385	\$1.17	\$163.22
Freestanding	\$116,164,827	\$12,032,968,130	73,529,955	\$1.58	\$163.65
<b>Region</b>					
Northeast	\$18,356,739	\$2,078,923,316	12,173,846	\$1.51	\$170.77
Midwest	\$28,272,877	\$3,116,436,623	19,806,809	\$1.43	\$157.34
South	\$73,577,581	\$6,095,002,448	38,399,120	\$1.92	\$158.73
West	\$14,285,980	\$3,229,014,949	17,955,207	\$0.80	\$179.84
Outlying territories	\$385,591	\$115,565,322	1,136,358	\$0.34	\$101.70

Hospice Characteristic	Non-hospice Coinsurance	Medicare Hospice Payments	Hospice Days	Average Daily Coinsurance	Average Daily Medicare Payments
<b>Urban/rural status</b>					
Rural	\$17,717,995	\$1,579,298,988	10,933,497	\$1.62	\$144.45
Urban	\$117,160,773	\$13,055,643,671	78,537,843	\$1.49	\$166.23

Source: Abt Associates Analysis of Medicare Claims Data, 2012. Note that totals in Table 4.2 are slightly less than Table 4.1 due to the exclusion of 39 hospices which were not listed in the POS file

Figure 4.1: Geographic Variation in Average Daily Coinsurance Payments during Hospice Election in Calendar Year 2012



Source: Abt Associates Analysis of Medicare Claims Data, 2012

## 5. Concentration of Nursing Facility Usage Among Hospices

### 5.1 Background

The analyses in this chapter examine how “concentrated” unskilled or skilled nursing facility services were within each hospice. This was meant to include, if a hospice treats twenty beneficiaries who use a nursing facility, are the beneficiaries in one nursing facility or twenty facilities (i.e., one facility each)? Additionally, the analysis examines not just the number of nursing facilities associated with each hospice but also the *distribution* of hospice days among each associated nursing facility. Hospice/nursing facility relationships might be evenly distributed or more concentrated in particular nursing facilities.

For example, two hospices might each perform one hundred total hospice days in two nursing facilities. Suppose one hospice has fifty hospice days in each nursing facility while the other hospice has twenty days in one nursing facility and eighty days in the other. Although the two hospices have equal numbers of nursing facilities and total nursing facility hospice days, the first hospice has a more even distribution of hospice days by facility (a 50-50 split) while the other is more concentrated (20% of patients in one nursing facility, 80% in the other). An objective of this analysis is to examine nursing day concentration among all hospices nationwide during a single calendar year. We also investigated whether any hospice characteristics were associated with varying degrees of concentration.

### 5.2 Methods

Our analysis focused within the scope of calendar year 2012. We began by selecting all hospice election dates in 2012. This corresponded to 1,273,720 unique beneficiaries receiving 91,322,751 days of hospice election. Of these, 17,573,604 days (19.2%) were in an unskilled nursing facility and 6,354,258 days (7.0%) were in a skilled nursing facility, as indicated by the site of service field on the hospice day file.

To this 2012 hospice day subset we matched a data file summarizing time periods of nursing facility stays that was recently constructed from nursing facility claims and Minimum Data Set (MDS) assessments (2009-2012). We retained all hospice days from the 91.3 million 2012 hospice days where the hospice day fell within the nursing facility stay. We identified 22,685,706 hospice days which overlapped a nursing stay with an identifiable nursing facility provider ID. Of the 22.7 million hospice days which match our nursing facility dates, however, there were a sizeable number of days (2,122,220 days, or 9.4%) in which our nursing facility file indicated that the beneficiary was in a nursing facility, yet the hospice file’s site of service field indicated hospice service occurred in some other place—predominantly the patient’s home (1,693,385 days or almost four-fifths of these cases). In these instances we assumed the beneficiary was in the nursing facility which the stay file specified regardless of the hospice site of service field. The other problematic matches were instances in which we were unable to identify a nursing facility Medicare ID for an apparent nursing facility stay. Sometimes (though very rarely) the nursing facility’s ID would be missing in the stay file. More often, the hospice claim or assessment’s site of service field indicated that hospice service was performed in a NF or SNF, yet there was no corresponding stay for those dates on our hospice stay file. There were 3,368,913 hospice day instances of these occurrences. Being unable to associate

these service dates with any particular nursing facility, we did not further include these days in our analysis.<sup>15</sup>

For all those hospice days which we were able to match to a nursing facility (Medicare ID) in our nursing facility stay file, we aggregated the total the number of unique beneficiaries and hospice days for each hospice/nursing facility combination. Table 5.1 presents a hypothetical depiction of that that dataset for illustration. In Table 5.1 there are four hospices (A-D) and six nursing facilities (1-6). Hospice “A” treats beneficiaries in four nursing facilities, Nursing Facility “1” (50 beneficiaries, 304 days), Nursing Facility “2” (46 beneficiaries, 2,622 days), and Nursing Facility “3” (100 beneficiaries, 2,801 days), and Nursing Facility “4” (21 beneficiaries, 1,553 days). Hospice “B” treats patients in nursing facilities Nursing Facility “1” and Nursing Facility “3”, and etc. for the other hospices.

**Table 5.1: Hypothetical Data: Hospice/Nursing Facility Dyads**

Hospice	Nursing Facility	Shared # of Beneficiaries	Shared # of Hospice Days
A	1	50	304
A	2	46	2,622
A	3	100	2,801
A	4	21	1,553
B	1	33	693
B	3	50	1,250
C	1	22	380
C	3	83	6,421
C	5	27	351
D	2	44	2,384
D	4	44	2,384
D	6	44	2,384

We use the Hunter-Gaston Index<sup>16</sup> (“HGI”) to measure the concentration of hospice days within each hospice. In the formula depicted below, hospice  $H$  performs services in  $F$  number of nursing facilities. The number  $n_i^H$  represents the total number hospice days for hospice  $H$  in the  $i^{\text{th}}$  nursing facility (from 0 to  $F$ ), and the number  $N^H$  represents the total hospice days in all nursing facilities associated with hospice  $H$ :

<sup>15</sup> We explored these missing days and found that the 3+ million unmatched days corresponds to about 58,000 unique beneficiaries. We subsequently found that about half of these beneficiaries did not have an MDS assessment in our records and hence would not appear in our file. We are still not definitively certain why they did not have an MDS.

<sup>16</sup> The HGI itself is just a small-sample probability replacement correction for the (more famous) Herfindhal Index; the expression for which is:

$$\sum_{i=1}^F \frac{(n_i^H)(n_i^H)}{(N^H)(N^H)} = \sum_{i=1}^F \left( \frac{n_i^H}{N^H} \right)^2$$

$$\text{Hunter - Gaston Index, Hospice } H = \sum_{i=1}^F \frac{(n_i^H)(n_i^H - 1)}{(N^H)(N^H - 1)}$$

The equation produces a number between 0 and 1; a *higher* value indicates that hospice days are *more* concentrated in a nursing facility. **The literal interpretation of the resulting index score is the probability that two hospice days chosen from the same hospice will also share the same nursing facility.** Table 5.2, below, provides hospice-level summaries—including calculations of the HGI score—based on the values in Table 5.1 above:

**Table 5.2: Hypothetical Data: Hospice-Level Summaries**

Hospice	Total Beneficiaries	Total Hospice Days	Hunter-Gaston Index
A	217	7,280	0.3249
B	83	1,943	0.5409
C	132	7,152	0.8112
D	132	7,152	0.3332

Note the difference in HGI scores between hospices “C” and “D”. Both have the same number of hospice days (7,152), and as is clear from Table 5.1, both “C” and “D” each used three nursing facilities. Yet, the HGI for Hospice “C” is 0.8112 and the HGI for Hospice “D” is 0.3332. The reason for this is that in Table 5.1, quite visibly the hospice days in Hospice “C” are much more concentrated in one hospice/nursing facility pairing—6,421 out of 7,152 (89.8%) of hospice days for Hospice “C” are associated with Nursing Facility “1”—whereas for Hospice D the days are evenly allocated among its three nursing facilities. Again, by the interpretation of the HGI, two days selected at random from Hospice “C” would have an 81% probability of being from the same nursing facility (probably Nursing Facility “3”, the most common facility). Two days selected at random from Hospice “D” would only have a 33% chance of being from the same nursing facility, following that the hospice days are equally distributed among the three facilities.

### 5.3 Results

Our analytic file for these results contains 22,685,706 nursing facility hospice days which corresponds to 358,547 unique hospice beneficiaries that received services from 3,551 hospices and 14,904 nursing facilities. Table 5.3 below gives detailed estimates of the distributions of associated nursing facilities for each hospice and the average number of hospice days for each nursing facility/hospice combination. Among hospices treating beneficiaries in the nursing facility, the average number of associated hospices was 16.2, with hospices providing, on average, 338.4 days of care in each associated nursing facility.

**Table 5.3: Distributions of Nursing Facilities Associated with Hospices and Average Hospice Days per Associated Nursing Facility, 2012**

	Nursing Facilities Associated with Each Hospice	Hospice Days for Each Associated Nursing Facility
Minimum	1.0	1.0
1 <sup>st</sup> percentile	1.0	1.0
5 <sup>th</sup> percentile	1.0	6.0
10 <sup>th</sup> percentile	2.0	26.9

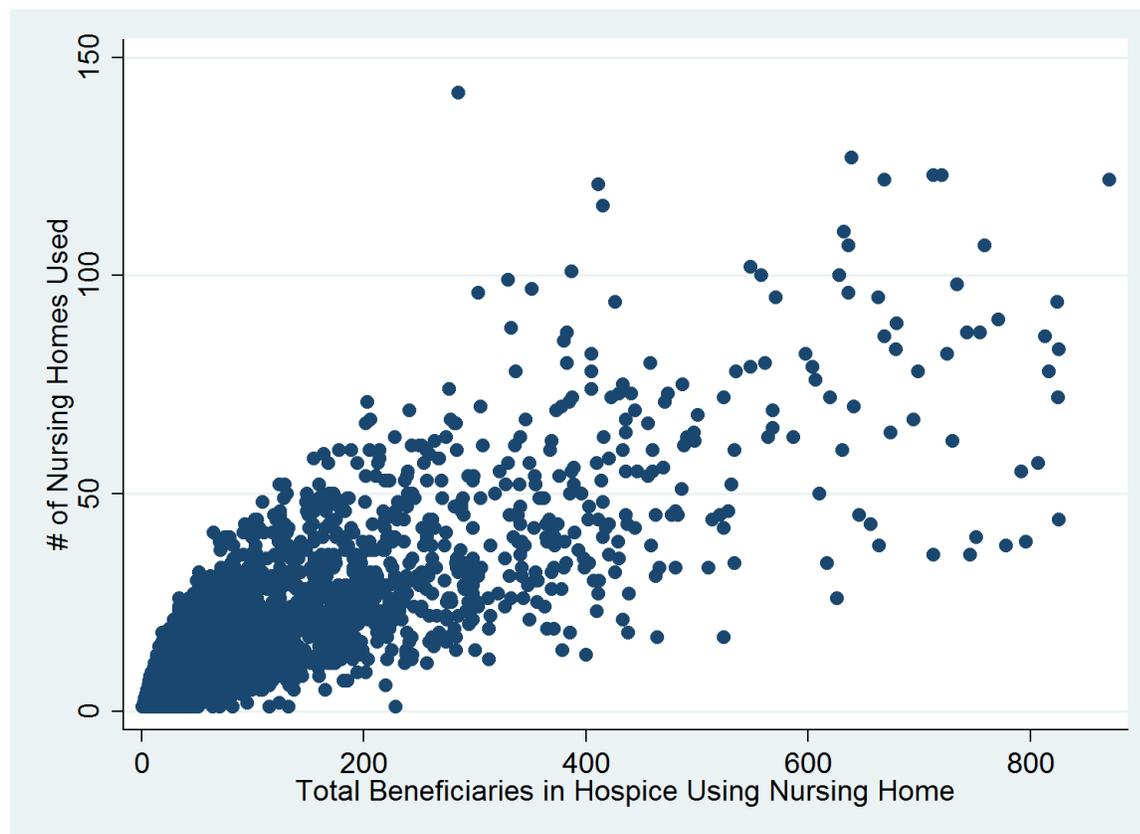
	Nursing Facilities Associated with Each Hospice	Hospice Days for Each Associated Nursing Facility
25 <sup>th</sup> percentile	5.0	97.2
Median	10.0	230.6
Mean	16.2	338.4
75 <sup>th</sup> percentile	20.0	459.6
90 <sup>th</sup> percentile	37.0	740.0
95 <sup>th</sup> percentile	52.0	955.7
99 <sup>th</sup> percentile	88.0	1,707.3
Maximum	291.0	11,233.0

Source: Abt Analysis of Medicare Claims, 2012

**5.3.1 Hospice Size Positively Related to the Number of Associated Nursing Facilities**

Perhaps, unsurprisingly, the hospices that were associated with the most nursing facilities were the hospices treating greater numbers of beneficiaries (with a larger scope or market, there is an increased likelihood of treating beneficiaries from more and different service sites). Figure 5.1, below, depicts the positive relationship between beneficiaries and related nursing facilities. The graph is limited to those facilities treating 900 nursing facility beneficiaries or fewer for easier display (this only excludes 23 hospices from the graph).

**Figure 5.1: The Positive Association between Total Beneficiaries and Nursing Facilities Used (Truncated to Hospices with Less than 900 Nursing Facility Beneficiaries for Display)**



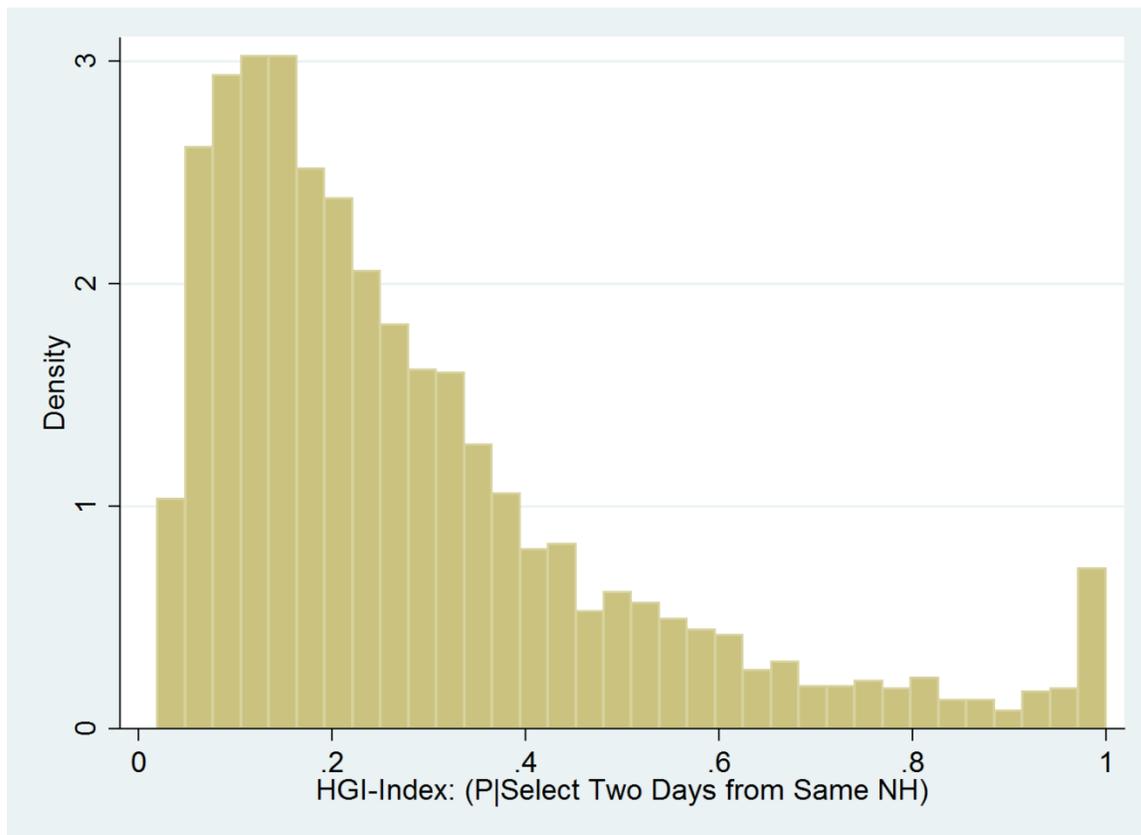
Source: Abt Analysis of Medicare Claims, 2012

**5.3.2 Hospice Day Concentration: Distribution of the Hunter-Gaston Index**

We use the Hunter-Gaston index to measure concentration of nursing facility hospice days among hospices. Among all hospices, the mean value of the HGI was 0.3584 (the median is 0.2623). This estimate states that if two nursing facility hospice days were selected at random from the typical hospice in 2012, there is a little more than a one-in-three chance that both days would be associated with the same nursing home.

Figure 5.2 presents the histogram of the range of values of the HGI for the 3,551 hospices treating patients in the nursing facility in 2012. The height of the bars indicates the relative frequency of the HGI values among hospices in 2012. Again, the display in this figure is restricted to hospices that had 900 beneficiaries or less (and also here at least 10 beneficiaries) in 2012. Note that the greatest mass of values for the index is less than about 0.40. More than half of all hospices represented by this graph had HGI values between 0.1262 and 0.3686.

**Figure 5.2: Histogram of Hunter-Gaston Index for Hospice Nursing Facility Hospice Day Concentration**



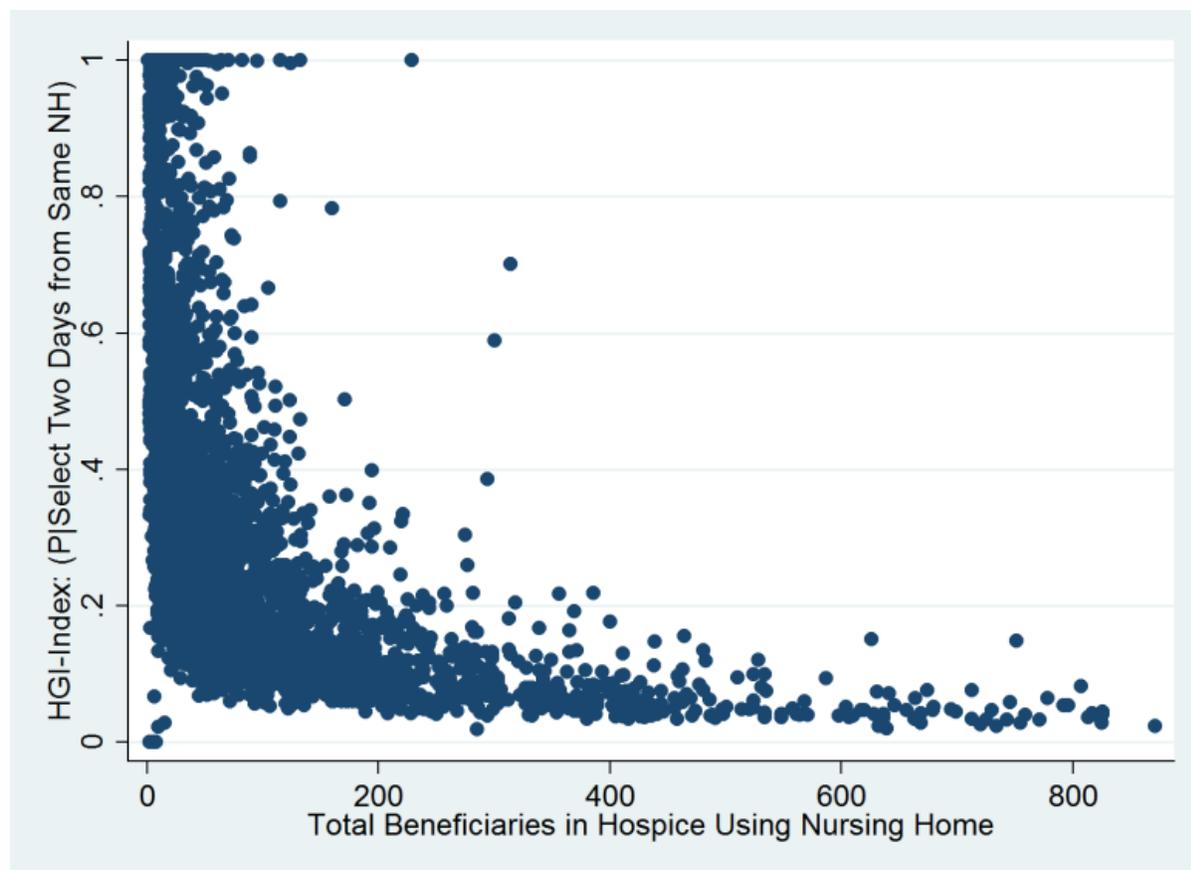
Source: Abt Analysis of Medicare Claims, 2012

**5.3.3 Hospice Size Negatively Related to the Number of Associated Nursing Facilities**

Hospices’ HGI values are also related to the number of beneficiaries they treat, although now inversely. Hospices that treat greater numbers of beneficiaries typically have a lower HGI score. This is plausible, as with more beneficiaries, it is less likely that all beneficiaries would be found in one

specific nursing facility. Figure 5.3 depicts the relationship between nursing facility beneficiaries treated by the hospice and that hospice's HGI score:

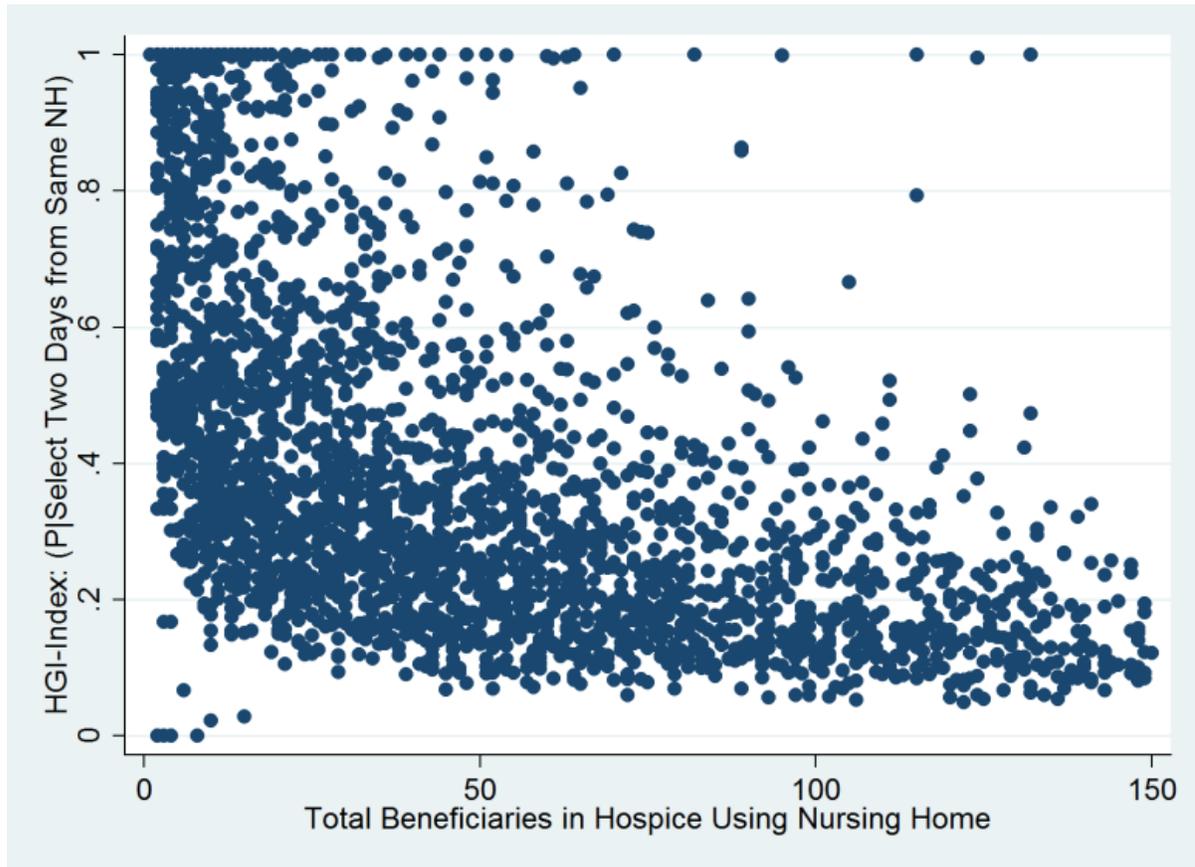
**Figure 5.3: Hunter-Gaston Scores (Nursing Facility Day Concentration) by Total Nursing Facility Users in Hospice (Hospices with  $\leq 900$  Users)**



Source: Abt Analysis of Medicare Claims, 2012

Note that on the fewer beneficiary (left-hand) side of the scale, there is substantially more variation among HGI scores, even for hospices of the same size. Consider Figure 5.4, which takes Figure 5.3 and “zooms in” to only those hospices with fewer than 150 beneficiaries ( $n = 2,856$ ). Hospices with 50 beneficiaries may typically have HGI scores of 0.10, 0.60, or even 1.0. In contrast, Figure 5.3 above shows less variation—after 200 total beneficiaries a hospice's HGI score will rarely exceed 0.20. Such scores are common for hospices with less than 200 beneficiaries.

**Figure 5.4: Hunter-Gaston Scores (Nursing Facility Day Concentration) by Total Nursing Facility Users in Hospice (Hospices with  $\leq 150$  Users)**



Source: Abt Analysis of Medicare Claims, 2012

### 5.3.4 Nursing Facility Service is More Concentrated in Rural Areas and for Facility-Based Hospices

Figures 5.3 and 5.4 suggest that nursing facility concentration (as measured by the HGI index) is related to hospice size. However, an interesting question is what influences concentration among hospices of the same size? As was shown in Figure 5.4, a hospice with 50 beneficiaries may be either very concentrated or not as concentrated with respect to associated nursing facility hospice days. The analysis tested numerous hospice characteristics for any statistical association with the hospice's HGI score. The analysis found no significant relationship between the HGI score and either *ownership type*, *decade of Medicare certification*, or *Census region*. However, **urban/rural status** did explain some variation in the HGI score. HGI scores by urban/rural status are presented in Table 5.4, below. Among hospices of all sizes (that were found in the POS file:  $n = 3,520$ ), the average HGI score was 0.3567. In rural areas (non-CBSA counties) the average HGI score was 0.4772 and in urban areas (CBSA counties) the average HGI score was 0.3129. Averages are also presented for those hospices with  $\leq 900$  beneficiaries and  $\leq 150$  beneficiaries, respectively. One plausible explanation for the relative concentration of rural hospices might be that there are fewer nearby nursing facilities. Relatively denser urban areas might have more numerous "options" in terms of greater number of nursing facilities from which to treat patients, so it is less possible for an urban hospice to become as concentrated. There was also a difference in HGI scores by **facility type** in Table 5.4: facility-based

hospices tended to be more concentrated than freestanding hospices: the HGI score for facility-based hospices was 0.4264 (for all hospices of any size) vs. a score of 0.3297 for free-standing hospices.

**Table 5.4: Hospice/Nursing Facility Hospice Day Hunter-Gaston Index Scores, by Urban/Rural Status and Facility Type**

	All Hospices		All Hospices ≤ 900 Beneficiaries		All Hospices ≤ 150 Beneficiaries	
	HGI	# Hospices	HGI	# Hospices	HGI	# Hospices
All hospices	0.3567	3,520	0.3589	3,497	0.4187	2,825
Rural hospices	0.4772	939	0.4772	939	0.5052	870
Urban hospices	0.3129	2,581	0.3154	2,558	0.3802	1,955
Facility-based hospices	0.4264	985	0.4271	983	0.4656	872
Freestanding hospices	0.3297	2,535	0.3322	2,514	0.3977	1,953

Source: Abt Analysis of Medicare Claims

Therefore, in summary, hospices in rural areas and facility-based hospices tend to have a higher number of their patients concentrated in a smaller number of nursing homes. However, it is likely that this trend may simply be explained by the availability of nursing homes in the hospice's market.

## 6. Part D Utilization While Enrolled in Hospice

### 6.1 Background

Medicare Part D is a Federal program, implemented in 2006, which subsidizes prescription drug costs for Medicare beneficiaries. The program is relatively large: annual Part D expenditures were \$56 billion in 2010 whereas hospice expenditures were \$13 billion the same year. Individuals entitled to Medicare Part A benefits are eligible for Part D coverage, therefore all (Part A) hospice beneficiaries are also eligible to enroll in Part D.

Prior to the creation of Part D and continuing to the present, the hospice benefit has provided drugs. All drugs related to beneficiaries' terminal illnesses and related conditions are fully covered by the hospice benefit:

“...[D]rugs...used primarily for the relief of pain and symptom control related to the individual's terminal illness are covered [hospice services].” (§ 418.202f)

Moreover, the provision of such drugs is a condition of participation for hospices:

“...[D]rugs and biologicals related to the palliation and management of the terminal illness and related conditions, as identified in the hospice plan of care, must be provided by the hospice while the patient is under hospice care.” (§ 418.106)

Hospices are compensated for providing these drugs through the *per diem* payments they receive each day a beneficiary they are treating is enrolled in the benefit. That is, the *per diem* payment amounts are set to incorporate the costs of these drugs. If Part D were to be billed for a hospice beneficiary's covered medication, Medicare would effectively be paying twice for the same drug: once directly through Part D, and a second time—implicitly—through the *per diem* payment the hospice provider received.

Concerned about the possibility of paying twice, CMS issued a call letter in 2011 to educate Part D plan sponsors on how to identify hospice enrollment. CMS informed sponsors (i) how to identify hospice enrollees using transaction reply reports, (ii) that Part D should not be billed for drugs related to hospice beneficiaries' terminal illnesses or related conditions, and (iii) to enact processes preventing such payments from occurring. CMS' concerns were validated the following year (2012) when the Office of Inspector General (OIG) issued a report (A-06-10-00059; “Medicare Could Be Paying Twice for Prescription Drugs for Beneficiaries in Hospice”) finding that in 2009, Medicare Part D was billed \$33.6 million for “prescription analgesic, antinausea, laxative, and antianxiety drugs, as well as prescription drugs used to treat COPD and ALS, that likely should have been covered under the *per diem* payments made to hospice organizations.”

In this chapter of the technical report we expand upon the OIG's findings using updated data. We focus on drugs that fall within the scope of standard palliative care: drugs treating pain, nausea, vomiting, and constipation. We also examine utilization of drugs that manage symptoms of congestive heart failure or COPD/non-infectious respiratory diseases for beneficiaries admitted to hospice with those diagnoses. Lastly, we also examine utilization of all other drugs for beneficiaries admitted to hospice with an ill-defined condition: debility unspecified or adult failure to thrive. Any drugs treating symptoms of the terminal or related conditions should be covered by hospices under

the regulation cited above; our belief is that for ill-defined conditions all medical care is related to the end-of-life and therefore all care should be the hospice's responsibility.

Our results tabulate the total number of drugs hospices likely should have paid for but which were instead billed to Part D, the total cost of these drugs, and the number hospice beneficiaries receiving these drugs during calendar year 2012. We estimate the total amount billed to Medicare for these drugs and the total amount paid for by hospice beneficiaries. We additionally examine geographical variation in billing patterns by calculating the rate of billing for these drugs per hospice admission across U.S. states and territories.

## 6.2 Methods

We created an analytic file which identifies all drugs filled for hospice beneficiaries in 2012 on days in which the beneficiary also was under a hospice election. To build our file, we combined both our Hospice Day File and Medicare Part D event records file to identify drugs meeting the following criteria:

1. *The drug was filled in 2012.* This was accomplished by ensuring that the drug fill date occurred during calendar year 2012.
2. *The drug was filled for a hospice beneficiary.* We verified this criterion by matching the beneficiary identifier on the hospice day file to the beneficiary identifier on the Part D record.
3. *The hospice beneficiary was enrolled in Medicare Part D within thirty days prior to hospice election.* We argue that the appropriate rate of Part D billing limits the total base to only those beneficiaries enrolled in Medicare Part D. We identified Part D enrollment (within thirty days of hospice election) using the Master Beneficiary Summary File.
4. *The drug was filled during a beneficiary's hospice election.* This was accomplished by matching drug fill dates listed on the Part D event records to the dates of the hospice election on the hospice claims. We excluded any drugs filled on the hospice admission day to avoid the inclusion of drugs written earlier in the day before a decision to elect hospice. Similarly, we excluded any drugs filled on a day of live discharge to avoid the inclusion of drugs written after discharge or after the revocation of hospice election.
5. *The drug likely should have been covered by hospices instead of being billed to Medicare Part D.* This was accomplished using the 11-digit National Drug Code provided on the Part D claim. Using the Epocrates drug database and expert clinical opinion and we established a list of drug codes which were analgesics, antiemetics, for constipation, or that managed symptoms of congestive heart failure or COPD/other non-infectious respiratory diseases *if and only if* the beneficiaries were admitted to hospice with these diseases listed as the principal hospice diagnosis on their claim. We additionally flagged any and all other drugs filled for beneficiaries admitted with ill-defined conditions (debility unspecified or adult failure to thrive). Congestive heart failure is identified by ICD-9 codes 428.0-428.9, COPD/other non-infectious respiratory diseases are ICD-9 codes 490.0-496.9, debility unspecified is ICD-9 code 799.3, and adult failure to thrive is ICD-9 code 783.7.

### 6.3 Results

We identified 868,380 Medicare beneficiaries utilizing the hospice benefit in 2012 (with hospice elections exceeding one-day stays) who were also enrolled in Part D within thirty days prior to hospice election. These beneficiaries correspond to 934,951 admissions because some beneficiaries received the benefit over multiple elections in 2012. In total, for 2012, these beneficiaries collectively received 7,057,893 prescription drugs of any purpose through Part D totaling \$408,300,011. Note that our previous reported estimate (Chapter 3) of total Part D utilization during hospice was \$417.9M. However, that analysis used a larger sample of *all* hospice users. Here we *only* included those beneficiaries we flagged with Part D enrollment 30 days prior to hospice enrollment.

Moreover, we identified 233,939 beneficiaries (26.9% of all beneficiaries enrolled in Part D) that received 2,143,390 prescription drugs through Part D during hospice enrollment in the following drug categories: analgesics; antiemetic; constipation drugs; drugs managing COPD and other non-infectious respiratory diseases; drugs managing CHF; and any other drug filled for a hospice patient admitted under a diagnosis of adult failure to thrive or debility unspecified. The total gross value of these drugs was \$108,901,988. We calculate that of this amount, \$54.2 million (49.8%) was paid by the federal government to Part D plans and another \$32.4 million (29.8%) was paid indirectly through the low income subsidy reduction (this subsidy lowers qualifying beneficiaries' coinsurance responsibilities and is administered by the states using Federal funds). Beneficiaries paid \$13.6 million (12.5%) through coinsurance and the remaining \$5.4 million (5.0%) was paid by a variety of sources including charities and auxiliary military benefits.

In Table 6.1 we display subtotals by drug category for drugs which hospice likely ought to have covered but were instead billed to Part D: the total numbers of drugs, the numbers and percentages of Part D enrolled beneficiaries receiving those drugs, and the total dollar amount billed to Part D for each respective drug class. We highlight two findings: First, analgesics were received by the greatest number of beneficiaries also enrolled in Part D – 100,719 beneficiaries (11.6%) received an analgesic through Part D in 2012 while on hospice; second, of the \$99.1 million in drugs billed to Part D which hospices likely should have covered, over three-fourths was accounted for by all other drugs filled for beneficiaries with non-specific conditions – beneficiaries admitted to hospice with a diagnosis of debility unspecified received at least \$55.8 million in drugs through Part D and beneficiaries admitted to hospice with a diagnosis of adult failure to thrive received at least \$29.1 million in drugs through Part D, in addition to the costs of analgesics, antiemetics, constipation, heart, or lung drugs they also received.

Table 6.2 examines geographic variation in Part D utilization during hospice. The table displays for each state and outlying territory, the aggregate dollar amount of drugs billed to Part D for hospice beneficiaries which hospices likely should have covered but which were instead billed to Part D in that state/territory, the total number of admissions in that state/territory, and finally, the per-admission average amount billed to Part D for these drugs. Overall, the per-admission average amount billed to Part D was \$116.48. The per-admission average billing ranged from \$58.78 per admission in Connecticut to \$197.21 per admission in Idaho for drugs hospices likely should have covered but which were instead billed to Part D. In decreasing order Idaho was followed by West Virginia (\$180.33 per admission), Alabama (\$179.38 per admission), and Oklahoma (\$178.88 per admission). The median average among states was in New Mexico, where \$112.19 per admission was billed to Part D for drugs which hospice likely should have covered.

**Table 6.1: Total Drug Fills, Recipients, and Costs for Likely Covered Hospice Drugs Received by Part D Enrolled Beneficiaries, Only, while Enrolled in Hospice, 2012**

	Total # of Drug Fills	# Beneficiaries Receiving Drug	% Beneficiaries Receiving Drug	Total Drug Cost
Total likely covered hospice drugs billed to Part D	2,143,390	233,939	26.9%	\$108,901,988
Analgesics	281,764	100,729	11.6%	\$9,807,009
Antiemetics	72,860	37,431	4.3%	\$2,760,488
Constipation	45,452	19,553	2.3%	\$937,521
Drugs related to CHF	102,945	19,995	2.3%	\$1,558,089
Drugs related to COPD/non-infect. resp. disease	49,978	12,811	1.5%	\$8,869,433
Any other drug to debility patients	1,044,047	72,114	8.3%	\$55,837,630
Any other drug to adult failure to thrive patients	546,344	39,183	4.5%	\$29,131,817
All other drugs billed to Part D	4,914,503	368,758	42.5%	\$299,398,024
<b>Total drugs billed to Part D</b>	<b>7,057,893</b>	<b>478,647</b>	<b>55.1%</b>	<b>\$408,300,011</b>

Source: Abt Associates analysis of 100% Medicare hospice claims and Part D event records, 2012. The percentage of beneficiaries receiving drugs is based on an estimated 868,380 total hospice beneficiaries enrolled in Part D during 2012.

**Table 6.2: Geographic Variation in Hospice Beneficiaries' Aggregate Drug Total Costs Billed to Part D for Drugs which Hospices Likely Should Have Covered, Number of Hospice Admissions with Part D Enrollment, and Average Total Costs for these Drugs per Hospice Admission, 2012**

State/Territory	Aggregate Total Billed to Part D	Admissions of Part D Enrolled Beneficiaries	Amount Billed to Part D Per Admission
Alaska	\$19,104.00	272	\$70.24
Alabama	\$3,611,085.15	20,131	\$179.38
Arizona	\$3,272,244.38	26,409	\$123.91
Arkansas	\$757,588.06	9,988	\$75.85
California	\$6,434,841.64	88,966	\$72.33
Colorado	\$1,431,697.27	12,997	\$110.16
Connecticut	\$551,559.69	9,384	\$58.78
Delaware	\$467,075.79	3,399	\$137.42
District of Columbia	\$111,419.67	911	\$122.30
Florida	\$8,675,953.10	80,368	\$107.95
Georgia	\$4,626,637.91	31,055	\$148.98
Hawaii	\$208,361.13	3,302	\$63.10
Idaho	\$1,009,109.19	5,117	\$197.21
Illinois	\$3,434,947.18	31,288	\$109.78
Indiana	\$2,583,277.02	19,102	\$135.24
Iowa	\$1,504,026.65	13,656	\$110.14
Kansas	\$826,641.77	9,465	\$87.34
Kentucky	\$837,616.88	11,427	\$73.30
Louisiana	\$2,089,054.20	17,049	\$122.53
Maine	\$660,701.12	4,596	\$143.76
Maryland	\$1,017,789.63	10,506	\$96.88
Massachusetts	\$2,628,880.00	18,771	\$140.05
Michigan	\$3,101,797.40	29,712	\$104.40
Minnesota	\$1,040,992.10	15,303	\$68.03
Mississippi	\$1,589,299.23	12,912	\$123.09
Missouri	\$3,092,865.59	22,750	\$135.95
Montana	\$217,372.75	2,691	\$80.78
Nebraska	\$743,457.28	5,987	\$124.18
Nevada	\$881,800.66	8,440	\$104.48
New Hampshire	\$515,889.88	3,094	\$166.74
New Jersey	\$4,033,157.14	24,134	\$167.12
New Mexico	\$722,144.45	6,437	\$112.19
New York	\$3,010,726.35	31,371	\$95.97
North Carolina	\$3,553,156.35	29,236	\$121.53
North Dakota	\$178,320.07	1,859	\$95.92
Ohio	\$6,142,874.23	48,286	\$127.22
Oklahoma	\$2,705,674.72	15,126	\$178.88
Oregon	\$1,142,690.42	14,297	\$79.93
Pennsylvania	\$7,550,179.60	49,976	\$151.08
Rhode Island	\$370,857.08	4,493	\$82.54
South Carolina	\$3,152,007.84	18,163	\$173.54
South Dakota	\$177,805.67	1,990	\$89.35
Tennessee	\$1,773,567.65	20,289	\$87.42
Texas	\$7,652,691.79	67,234	\$113.82

<b>State/Territory</b>	<b>Aggregate Total Billed to Part D</b>	<b>Admissions of Part D Enrolled Beneficiaries</b>	<b>Amount Billed to Part D Per Admission</b>
Utah	\$1,217,814.85	7,209	\$168.93
Vermont	\$85,489.14	1314	\$65.06
Virginia	\$2,022,125.77	16,404	\$123.27
Washington	\$1,185,808.02	15,552	\$76.25
West Virginia	\$1,190,019.05	6,599	\$180.33
Wisconsin	\$2,646,881.85	16,923	\$156.41
Wyoming	\$45,309.04	705	\$64.27
Puerto Rico	\$373,723.65	8,156	\$45.82
Virgin Islands	\$25,876.53	140	\$184.83
Guam	\$0.00	10	\$0.00
<b>Total</b>	<b>\$108,901,987.58</b>	<b>934,951</b>	<b>\$116.48</b>

Source: Abt Associates analysis of 100% Medicare hospice claims and Part D event records, 2012

## 7. Hospice Cost Reports—Benchmarks and Trends (2004–2012)

### 7.1 Introduction

This chapter contains analyses of Healthcare Cost Report Information System (HCRIS) data to inform specific policy questions surrounding hospice payment reform. These analyses use FY 2004–2012 cost reports from freestanding hospices to describe the sources of costs for hospices. In particular, we use this information to determine: how much various cost centers contribute to total costs for a “typical” hospice; how sources of costs vary across hospices; and how the average total costs per election period have changed over time.

The set of cost reports used for analyses was trimmed of cost reports that contain missing or unusual data values that may cause measures of “average” to be misleading. Specifically, the following exclusion restrictions were applied to the 2004 to 2012 free-standing hospice cost reports. The exclusions were made individually to each year of cost reports and were not applied sequentially. Therefore, any exclusion based on the distribution of costs, payments, or margins is calculated on the complete sample of hospices.

1. Short or long cost report periods: Cost reports with period less than 10 months or greater than 14 months.
2. Missing or negative value costs or payments: Cost reports with missing information or negative reported values for total costs or payments.
3. Top and bottom 1% of cost per day: hospices in the highest and lowest percentile in costs per days across all levels of care.
4. Top and bottom 5% of hospice margins.
5. Aggregate of cost centers does not equal total costs as reported.

Using the trimmed sets of cost reports, cost centers are grouped into four broad categories: Inpatient Care, Visiting Services, Other Hospice Services, and Non-reimbursable Services. All costs are taken from Worksheet B of the freestanding hospice cost reports and include allocated costs from general services (e.g. A&G costs).<sup>17</sup> Information regarding the number of patients and hospice patient-days is taken from worksheet S1 of the cost reports and includes patients from all payer sources. The patient count describes a census count of the number of election periods and, thus, patients with two or more election periods will be counted multiple times. The result of using such a census count is that figures calculated as “cost per patient” will more accurately provide a cost per election period and underestimate the true cost per *patient*. Additionally, if a patient’s election period spans two cost reporting periods, even if she only has one election period, she will be counted as a patient in both cost reports. However, to be consistent with the cost report terminology the following refers to this the patient count including duplicates as “patients.”

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<sup>17</sup> General service costs include costs for capital, plant operation and maintenance, staff transportation, volunteer service coordination, and administrative and general costs.

Throughout the document means are calculated two ways: over all hospices, and at the individual hospice provider level. If a mean is calculated over all hospices (weighted), then it is defined using the totals across hospices in a given year. For instance, the mean cost per patient calculated over all hospices is defined as the sum of costs across all hospices divided by the sum of patients across all hospices. When the mean is calculated in this manner, larger hospices influence the mean to a greater degree than smaller hospices and may be more representative of the industry as a whole.

Alternatively, when the mean is calculated at the hospice level, it is calculated for each hospice; then a mean of those hospice means is calculated. When calculated in this manner, smaller hospices and larger hospices have an equal weight in the calculation.

Below is a brief description of each broad cost category, as taken from the Provider Cost Reporting Forms and Instructions (Form CMS-1984-99), and accompanying tables regarding the costs for each year of cost reports. Again, the costs from each cost center include general service costs allocated to the cost centers which receive the services on a statistical basis.

## 7.2 Inpatient Care

Inpatient care includes costs from general inpatient (GIP) care and inpatient respite care. Costs represent direct costs of furnishing routine and ancillary services associated with general inpatient or respite care—such as 24-hour nursing, meals, laundry, and housekeeping—and include drug costs incurred while the patient is in an inpatient unit. Direct patient care services, such as patient-specific nursing or therapy for patients receiving GIP or respite care, are recorded in the visiting services cost centers. If a hospice does not maintain its own inpatient beds, but furnishes inpatient care through a contractual arrangement with another facility, the contracted costs for routine and ancillary services are included.

Table 7.1 shows information regarding the average inpatient costs per patient for hospices. Section (a) of Table 7.1 shows the mean inpatient costs when averaged over all hospices (i.e. all hospice inpatient costs/ all patients from all hospices). Section (b) shows the mean, standard deviation, and median costs per patient across hospices attributed to the inpatient care cost centers for freestanding hospices. The mean of costs is significantly higher than the median indicating that the data are skewed right. Given that these three measures of central tendency disagree, care should be taken when describing the “average” costs of inpatient care for hospices.

Section (c) of Table 7.1 shows that roughly one-third of hospices report zero inpatient costs. As these costs should include contractual costs for inpatient care, if a hospice does not have inpatient beds, zero costs on the cost report should reflect zeros rather than differences in accounting.

Section (d) of Table 7.1 shows the mean, standard deviation, and median for inpatient costs per patient for hospices that report that they had inpatient costs.

**Table 7.1: Inpatient Care Costs per Patient by Year, Nominal Dollars**

	2004	2005	2006	2007	2008	2009	2010	2011	2012
<b>PANEL A<sup>a</sup></b>									
Number	n = 1,047	n = 1,218	n = 1,490	n = 1,694	n = 1,834	n = 1,882	n = 1,929	n = 2,015	n = 2,054
<b>(a) Costs per patient averaged over all hospices</b>									
Mean	\$874	\$945	\$987	\$1,018	\$1,010	\$1,065	\$1,074	\$1,140	\$1,123
<b>(b) Hospice-level costs per patient</b>									
Mean	\$638	\$689	\$627	\$646	\$636	\$660	\$605	\$679	\$674
Std Dev	(2,093)	(2,457)	(1,330)	(1,475)	(1,340)	(1,367)	(1,180)	(1,449)	(1,567)
Median	\$178	\$83	\$80	\$87	\$96	\$111	\$109	\$107	\$115
<b>(c) Proportion of hospices reporting inpatient costs = 0</b>									
	0.26	0.36	0.36	0.36	0.33	0.33	0.34	0.33	0.31
<b>PANEL B<sup>b</sup></b>									
Number	n = 770	n = 776	n = 955	n = 1,090	n = 1,230	n = 1,260	n = 1,279	n = 1,360	n = 1,414
<b>(d) Hospice-level costs per patient   costs &gt; 0</b>									
Mean	\$867	\$1,081	\$978	\$1,005	\$948	\$985	\$912	\$1,006	\$980
Std Dev	(2,400)	(3,010)	(1,554)	(1,739)	(1,543)	(1,572)	(1,350)	(1,668)	(1,807)
Median	\$330	\$402	\$392	\$390	\$344	\$364	\$346	\$343	\$315

Data are from the Abt Trim sample of freestanding hospice cost reports. The total inpatient care service costs include inpatient general care and inpatient respite care. Costs are in nominal dollars. Costs of direct patient care provided by hospice staff are not included.

<sup>a</sup>Panel A shows descriptive information on the Abt Trim sample of freestanding hospice cost reports for each fiscal year.

<sup>b</sup>Panel B further restricts the sample to hospices with non-zero inpatient costs.

Investigating the high count of \$0 inpatient costs, there is an issue with hospices reporting conflicting information regarding inpatient stays for hospice patients. Specifically, significant numbers of cost reports list a non-zero number of days but zero costs for inpatient care, i.e., conflicting information. A smaller proportion report non-zero costs and zero inpatient days. Table 7.2 below shows the cross tabulation of indicators for reports of non-zero inpatient costs and days, conflicting information is highlighted in bold.

**Table 7.2: Cross Tabulation of Indicators for Reports of Non-Zero Inpatient Costs and Days**

Inpatient costs	Inpatient Days > 0	No Inpatient Days	Row Total
Inpatient costs > 0	64.00%	<b>2.84%</b>	66.83%
No inpatient costs	<b>21.78%</b>	11.39%	33.17%
Column total	85.77%	14.23%	

In fiscal years 2004–2012, 11.39% of cost reports have both zero inpatient costs and zero inpatient days reported, and 64% of cost reports denote positive amounts of both inpatient costs and days. However, a significant proportion of hospices report that they did not incur inpatient costs but reported providing some inpatient days (21.78%); and a smaller proportion of cost reports denote serving zero inpatient days but positive inpatient costs (2.84%).

### 7.3 Visiting Services (Labor)

Visiting services include thirteen labor disciplines: physician services, nursing care, nursing care—Continuous Home Care (CHC), physical therapy, occupational therapy, speech/language pathology, medical social services, spiritual counseling, dietary counseling, counseling-other, home health aide and homemaker, home health aide/homemaker-CHC, and other.

Table 7.3 shows the mean weighted visiting service costs per patient calculated over all hospices, as well as the mean, standard deviation, and median of hospice-level costs per patient in the visiting services (labor) cost centers. The weighted mean is slightly higher than the mean costs averaged at the hospice level. This suggests that smaller hospices have slightly higher visiting service costs per patient. For the hospice-level averages, the mean is greater than the median; but, the difference is not as dramatic as that seen for inpatient costs. This is partly because almost all hospices report some costs associated with visiting services. The mean value of nominal costs increases by a significant amount for the 2006 and 2012 years. However, these changes are driven by high cost outliers—note the large standard deviations associated with these means. Conversely, the median hospice visiting service cost per patient trends upward over time without significant year-to-year jumps in value.

**Table 7.3: Visiting Services Costs per Patient by Year, Nominal Dollars**

	2004	2005	2006	2007	2008	2009	2010	2011	2012
Number	n = 1,047	n = 1,218	n = 1,490	n = 1,694	n = 1,834	n = 1,882	n = 1,929	n = 2,015	n = 2,054
<b>Costs averaged over all hospices</b>									
Mean	\$4,433	\$4,695	\$5,311	\$5,811	\$5,804	\$6,139	\$6,068	\$6,239	\$6,410
<b>Costs averaged at hospice level</b>									
Mean	\$5,167	\$5,939	\$7,756	\$6,877	\$6,950	\$7,137	\$7,080	\$7,652	\$7,924
Std Dev	(2,437)	(6,045)	(60,445)	(5,155)	(3,260)	(3,096)	(3,313)	(10,377)	(19,550)
Median	\$4,737	\$5,293	\$5,690	\$6,208	\$6,385	\$6,640	\$6,623	\$6,827	\$6,987

Data are from the Abt Trim sample of freestanding hospice cost reports.

## 7.4 Other Hospice Services

Other Hospice Services include the following ten cost centers: drugs, biologicals, and infusion; durable medical equipment/oxygen; patient transportation; imaging services; labs and diagnostics; medical supplies; outpatient services (incl. E/R dept.); radiation therapy; chemotherapy; and “other.” For the drugs, biological, and infusion cost center, we have also aggregated the sub-lines (i.e. analgesics and sedatives/hypnotics) up to this center. Three cost centers—drugs, DME, and medical supplies—account for the majority of the “Other Hospice Service” costs. Only a few hospices (fewer than 5%) have more than half of other service costs come from cost centers other than these three; and three-quarters of hospices report that 90% or more of other service costs are attributed to these three cost centers.

Table 7.4 shows the proportion of total costs attributed to the other service costs lines for each year of cost reports. The means calculated over all facilities show the proportion of total costs over all hospices attributed to the other service cost centers (i.e. all hospice “other service” costs/ all hospice total costs). The bottom panel describes the proportion of total costs attributed to other service lines when calculated at the hospice level. There are not significant year-to-year changes in these proportions. However, there is a downward trend in this proportion over time.

Examining the drivers of a downward trend in other hospice service costs, Table 7.5 shows mean, standard deviation, and median costs of drugs, biologicals, and infusions per patient-day for hospices. Additionally, Table 7.5 presents trimmed means of the costs per patient-day when the top and bottom 1% and 5% of hospices, in terms of cost per patient-day, are eliminated from the calculation. The costs are in constant 2010 dollars, indexed using the producer price index for prescription pharmaceuticals. The information in Table 7.5 suggests that drug costs for hospices were trending downward significantly, in real dollars, from an average of \$20 per patient day to \$11 per patient day over the 2004–2012 FYs. Conversely, in results not shown, the daily deflated mean costs of medical supplies increased from \$3.80 in 2004 to \$4.69 in 2012.

Non-reimbursable services include bereavement counseling, volunteer program, and fundraising costs. While there is a cost center line for “other” non-reimbursable costs on the cost report, these “other” costs are omitted from total costs and are not described below. Omitting “other” non-reimbursable costs is consistent with instructions for calculating the total costs and per diem costs on Worksheet D of the cost report.

As with inpatient costs, measures of “average” do not tend to agree; this is the result of a significant proportion of facilities reporting zero costs in these cost centers. Up to 27% of cost reports include \$0 in non-reimbursable costs with the proportion of hospices reporting zero costs trending upward over time. The report of \$0 in non-reimbursable costs comes despite the requirement of providing bereavement services.

**Table 7.4: Proportion of Total Costs Attributed to “Other Hospice Service Costs” Lines**

	2004	2005	2006	2007	2008	2009	2010	2011	2012
Number	n = 1,047	n = 1,218	n = 1,490	n = 1,694	n = 1,834	n = 1,882	n = 1,929	n = 2,015	n = 2,054
<b>Calculated over all hospices</b>									
Mean	0.228	0.216	0.212	0.204	0.200	0.196	0.198	0.191	0.189
<b>Costs averaged at hospice level</b>									
Mean	0.243	0.231	0.227	0.215	0.211	0.206	0.211	0.204	0.205
Median	0.239	0.220	0.213	0.204	0.203	0.201	0.205	0.200	0.199

Data are from the Abt Trim sample of freestanding hospice cost reports.

**Table 7.5: Reported Drug Costs per Patient-Day by Year, 2010 Dollars**

	2004	2005	2006	2007	2008	2009	2010	2011	2012
Number	n = 1,047	n = 1,218	n = 1,490	n = 1,694	n = 1,834	n = 1,882	n = 1,929	n = 2,015	n = 2,054
<b>Hospice-level drug costs per patient-day</b>									
Mean	\$20	\$18	\$17	\$15	\$14	\$13	\$12	\$11	\$11
Std Dev	(10)	(11)	(11)	(9)	(9)	(9)	(7)	(6)	(6)
Median	\$20	\$17	\$16	\$15	\$14	\$13	\$12	\$11	\$10
<b>Trimmed means</b>									
1%-99%	\$21	\$19	\$17	\$16	\$15	\$14	\$13	\$12	\$11
5%-95%	\$20	\$18	\$16	\$15	\$14	\$13	\$12	\$11	\$10

Data are from the Abt Trim sample of freestanding hospice cost reports. The costs are averaged at the hospice-level and adjusted to constant 2010 dollars using the Producer Price Index for prescription pharmaceuticals.

**Total Costs:** Table 7.6 displays information regarding total costs. The top portions of Table 7.6 display the weighted proportion of total costs attributed to each broad group of cost centers and the average total costs per patient. The bottom portions of Table 7.6 display the hospice-level mean proportion of costs attributed to each broad cost center grouping and the median total cost per patient in each year. The costs per patient statistics have been adjusted to constant 2010 dollars using the hospital market basket update.

Using either the weighted or hospice-level measures suggests that the visiting services cost centers make up the largest and an increasing proportion of the total costs over time. Other hospice services account for the second largest proportion of costs; however, this proportion is declining over time.

The measures of average cost per patient when measured in constant dollars have remained fairly flat over time, trending upward until 2007 and downward after this time. Compared to 2004, the 2012 average costs per patient increased by roughly \$400 to \$500 (4% to 6%). Note that the mean costs per patient reflect costs associated with the mean length of election, which is significantly longer than the median length of election.

**Table 7.6: Percent of Total Costs by Cost Center Grouping and Average Total Costs per Patient**

Cost Center Group	2004	2005	2006	2007	2008	2009	2010	2011	2012
<b>Total costs by cost center group over all hospices</b>									
Visiting services	61%	62%	63%	65%	65%	65%	66%	66%	67%
Other services	23%	22%	21%	20%	20%	20%	20%	19%	19%
Inpatient services	12%	12%	12%	11%	11%	11%	12%	12%	12%
Non-reimbursable services	4%	4%	4%	4%	4%	4%	3%	3%	3%
<i>Total costs per patient over all hospices (2010 dollars)<sup>a</sup></i>									
	\$8,784	\$8,871	\$9,464	\$9,798	\$9,455	\$9,578	\$9,237	\$9,165	\$9,153
<b>Total costs by cost center group at hospice level</b>									
Visiting services	65%	67%	67%	69%	70%	70%	70%	71%	71%
Other services	24%	23%	23%	21%	21%	21%	21%	20%	21%
Inpatient services	7%	7%	7%	7%	6%	6%	6%	7%	6%
Non-reimbursable services	4%	3%	3%	3%	3%	3%	2%	2%	2%
<i>Median of hospices' average costs per patient (2010 dollars)</i>									
	\$8,847	\$9,507	\$9,515	\$9,976	\$9,801	\$9,780	\$9,524	\$9,373	\$9,399

<sup>a</sup>Costs per patient are in 2010 dollars, normalized using the hospital market basket update.

## 8. Updating Trend Estimates of the Aggregate Cap + Seasonality Analyses

### 8.1 Background

This chapter contains analyses examining the aggregate Medicare reimbursement cap. The aggregate cap indicates the maximum (or capped) amount that CMS would pay to a hospice during the cap period.

The aggregate cap is calculated as follows:

$$\text{Aggregate Cap Limit}_{h,y} = (\text{Cap Amount}_y) * (\text{Beneficiaries}_{h,y})$$

This equation states that the aggregate cap limit (*Aggregate Cap Limit<sub>h,y</sub>*) for hospice *h* in cap year *y* is equal the product of two numbers multiplied together:

1. **The per-beneficiary cap amount** (*Cap Amount<sub>y</sub>*) for year *y*; the cap amount originated during the creation of the hospice benefit in the early 1980s with the intention of ensuring that the cost of hospice care would not exceed the cost of conventional care. The planned cap was intended to equal 40% of the average medical expenditures for cancer patients in the last six months of life.<sup>18</sup> The original base cap amount was set at \$6,500 in the 1983 Hospice Final Rule. This figure is updated each year using the CPI-U for medical care expenditures, and in 2012 the cap amount was \$25,377.01.<sup>19</sup>
2. **The number of beneficiaries electing hospice** (*Beneficiaries<sub>h,y</sub>*) in hospice *h* in year *y*; under the original method of counting beneficiaries, this number was specifically limited to “new” or “unduplicated” beneficiaries, defined as having not previously elected hospice in a prior cap year. However, beneficiaries receiving care from multiple hospices were counted proportionally, and assigned as “fractions” of a single beneficiary to each of the hospices from which they received service, allotted by the number of hospice days each hospice provided.
  - *Note:* This original beneficiary counting method is now known as the “**streamlined**” methodology. Beginning in 2011, the “proportional” counting methodology will be used for all new hospices, with existing hospices given their choice of counting methods, within certain limits. The “**proportional**” counting method assigns all multi-year and/or multi-hospice beneficiaries as fractions to their corresponding hospice/cap year. We have found both methods lead to similar estimates for percentages of hospices exceeding their cap.

<sup>18</sup> A concise history of the aggregate cap is available here [http://www.nhpco.org/sites/default/files/public/regulatory/History\\_of\\_Hospice\\_Cap.pdf](http://www.nhpco.org/sites/default/files/public/regulatory/History_of_Hospice_Cap.pdf) (Accessed February 28, 2014)

<sup>19</sup> Note: At 2012 RHC rates (\$151/day) this amount is equivalent to approximately 168 RHC hospice days.

- In this analysis we use the “streamlined” methodology for all hospices in all years. It is uncertain since the transition period how to determine the counting method used by hospices that cap year. We could only be certain the “proportional” method was used by the relatively small number of hospices which opened since 2011.

When the total of Medicare payments to a hospice exceeds their aggregate cap limit, hospices are required to return any excess payment to the government. Note that the cap calculation has a unique time period—the “cap year.” Total payments are counted from November 1<sup>st</sup> through the following October 31<sup>st</sup>. The time period for counting beneficiaries for the same cap year is shifted slightly earlier, beginning on the September 28<sup>th</sup> approximately one month before the cap year ends through the following September 27<sup>th</sup>.

The aggregate cap gained notice after an increasing number of hospices began to exceed their cap in the 2000s. MedPAC reports that 2.6% of hospices exceeded their cap in 2002, which increased to a high of 12.5% in 2009. That percentage decreased slightly to 10.1% in 2010, in the last year MedPAC reported cap estimates. In 2010, the average amount of overpayments hospices received was \$426,000 per above-cap hospice. MedPAC reported that overpayments in 2010 were equal to 1.2% of overall Medicare hospice spending (which was \$12.9 billion in 2010), indicating that cap overpayments exceeded \$150 million. MedPAC also linked above-cap status to other potential hospice vulnerabilities: higher rates of live discharge and higher percentages of beneficiaries with elections longer than 180 days.

This analysis addresses the following questions:

1. *What are the basic trends for cap years 2006-2012 in terms of hospices exceeding the cap, overpayments, and overpayments per beneficiary?*
2. *What are the current common characteristics of hospices which exceed the cap?*
3. *Where do hospices end their cap year in terms of payments received relative to their limit, and has that changed at all over time?*
4. *How much does risk for exceeding the cap increase the rate of live discharges?*
5. *Which beneficiaries are most at risk for any cap-related discharges?*
6. *Is there seasonality in readmissions for discharges due to cap risk?*

Our data files include claims for seven calendar years, 2005 to 2012, of which we are able to calculate cap statuses for six cap years: cap years ending 2006 through 2012. In constructing our longitudinal analytical file, we only included cap years in which the hospice had been in operation for the full cap year—i.e., hospices with a Medicare certification date prior to the start of the cap year. We made this exclusion because (i) new hospices have slightly different cap calculation rules and (ii) this allows a “grace period” of at least one year so that we only consider at least somewhat experienced hospices. To determine a hospice’s age, we used the effective (certification) date on the POS file, and so we also excluded any hospice not included on that file as well. Finally, our results also only include those hospices in operation in the final month (i.e., October) of each cap year.

**Table 8.1: Basic Trends in the Aggregate Hospice Cap, 2006–2012**

Cap year	# of hospices included	% of hospices exceeding cap		Average beneficiaries per hospice		Average hospice overpayments, total		Average hospice overpayments, per-beneficiary		Net reimbursements per-beneficiary (hospice payments-cap overpayments)	
		Abt	MedPAC	Below-Cap	Above-Cap	Below-Cap	Above-Cap	Below-Cap	Above-Cap	Below-Cap	Above-Cap
2006	2,474	9.1%	9.4%	293	135	-\$2,784,152	\$732,103	-\$9,936	\$7,384	\$10,649	\$20,585
2007	2,689	10.4%	-	290	130	-\$2,738,487	\$567,528	-\$9,815	\$6,957	\$11,595	\$21,410
2008	2,907	10.9%	10.2%	288	115	-\$2,849,776	\$509,925	-\$10,085	\$9,310	\$12,301	\$22,386
2009	3,061	12.8%	12.5%	293	102	-\$2,838,340	\$515,407	-\$10,057	\$8,805	\$12,957	\$23,015
2010	3,202	10.9%	10.1%	296	99	-\$3,039,697	\$471,496	-\$10,563	\$8,776	\$13,312	\$23,875
2011	3,347	10.5%	9.8%	302	95	-\$3,265,454	\$440,727	-\$11,028	\$9,274	\$13,500	\$24,528
2012	3,486	11.6%	-	304	112	-\$3,371,791	\$547,011	-\$11,277	\$9,983	\$14,100	\$25,377

Source: Abt Associates Analysis of 100% Medicare Hospice Claims, 2005-2012. "Beneficiaries" in this table refers to unduplicated (new) beneficiaries in the cap year.

Table 8.1 (above) presents basic trends in the aggregate cap from cap years 2006 through 2012. Several findings are highlighted in bullet points below:

- **Upward Changes in Several Trends:** Whereas the percentage of hospices exceeding the cap had been decreasing since a high of 12.8% in 2009, the percentage again increased to 11.6% in 2012 from 10.5% in 2011. Additionally, there *had also been* consistent decreases since 2006 in both the average number of new beneficiaries and average overpayments (\$) in above-cap hospices. However in 2012 the average number of beneficiaries in above-cap hospices increased to 110 from 95 in 2011, and average hospice overpayments increased to \$547,011 from \$440,727 in 2011.
- **Overpayments, Per-Beneficiary:** Above-cap hospices continued to trend upwards in terms of cap overpayments per beneficiary to \$9,983 in 2012, up 35.2% from \$7,384 in 2006. Conversely, below-cap hospices' continued to trend increasingly negative—indicating below-cap hospices were on average increasingly below their cap—down to -\$11,277 in 2012, a decrease of 13.5% from -\$9,936 in 2006.
- **Net Reimbursements Per-Beneficiary:** The final column displays net reimbursements—total payments less any overpayments—per-beneficiary; for below-cap hospices this is total payments per-beneficiary and for above-cap hospices it is essentially that year's aggregate cap amount. We note that the ratio between the two hospice types is fairly constant over time with only a slight narrowing: in 2006 the net ratio was 1.9 (\$20,585 in above-cap hospices to \$10,649 in below-cap hospices) and in 2012 the ratio was 1.8 (\$25,377 to \$14,100). Also note for below-cap hospices, net reimbursements have increased over time, yet overpayments have decreased over time (as discussed above), which indicates that on average, below-cap hospices' aggregate cap threshold continues to increase relative to the payments they receive (e.g., more shorter-stay patients could cause this).

### 8.1.1 Common Characteristics of Hospices Exceeding the Cap

In its 2012 Report to Congress,<sup>20</sup> MedPAC analyzed 2009 hospice claims and determined that above-cap hospices tended to be “for profit, freestanding hospices and to have smaller patient loads” (p. 294). The fourth column-section of Table 8.1 (“Average Beneficiaries per Hospice”) similarly found that above-cap hospices are much smaller (on average above-cap hospices serve one-third as many beneficiaries as below-cap hospices). In Table 8.2 below, we display the percentages of hospices exceeding the cap by POS file characteristics (age, tax status, facility type, and geography) for the two cap years at the extremes of our data.

This table shows findings similar to those reported by MedPAC: a higher percentage of above-cap hospices are for-profit and are freestanding (in 2012, 17.9% for-profit vs. 2.4% nonprofit & 15.1% freestanding vs. 2.7% facility based). Additionally, this table shows hospices are more likely to be above-cap if they are newer (19.9% certified since 2000, 4.0% certified in the 1990s, and 1.2% certified in the 1980s), urban (13.2% urban vs. 7.3% rural) and in the South or West (16.5% South, 14.2% West, 5.0% Northeast, 4.0% Midwest). These patterns seemed to remain fairly consistent across time—the same characteristics were associated with above-cap status in 2006 as in 2012.

<sup>20</sup> Available via: [http://www.medpac.gov/chapters/Mar12\\_Ch11.pdf](http://www.medpac.gov/chapters/Mar12_Ch11.pdf)

**Table 8.2: Above-Cap Status Rates by Hospice Characteristics; Cap Years 2006 & 2012**

Hospice Characteristic	2006	2012
<b>Overall</b>		
All Hospices	9.1%	11.6%
<b>Decade of Certification</b>		
1980s	0.7%	1.2%
1990s	6.4%	4.0%
2000s Onward	20.4%	19.9%
<b>Ownership</b>		
Government	4.8%	6.0%
Non-Profit	1.1%	2.4%
For-Profit	17.6%	17.9%
<b>Facility Type</b>		
Facility-Based	2.2%	2.7%
Freestanding	13.1%	15.1%
<b>Region</b>		
Northeast	1.2%	5.0%
Midwest	3.2%	4.0%
South	14.9%	16.5%
West	10.5%	14.2%
Outlying Territories	13.9%	14.6%
<b>Urban/Rural Status</b>		
Rural	8.6%	7.3%
Urban	9.4%	13.2%

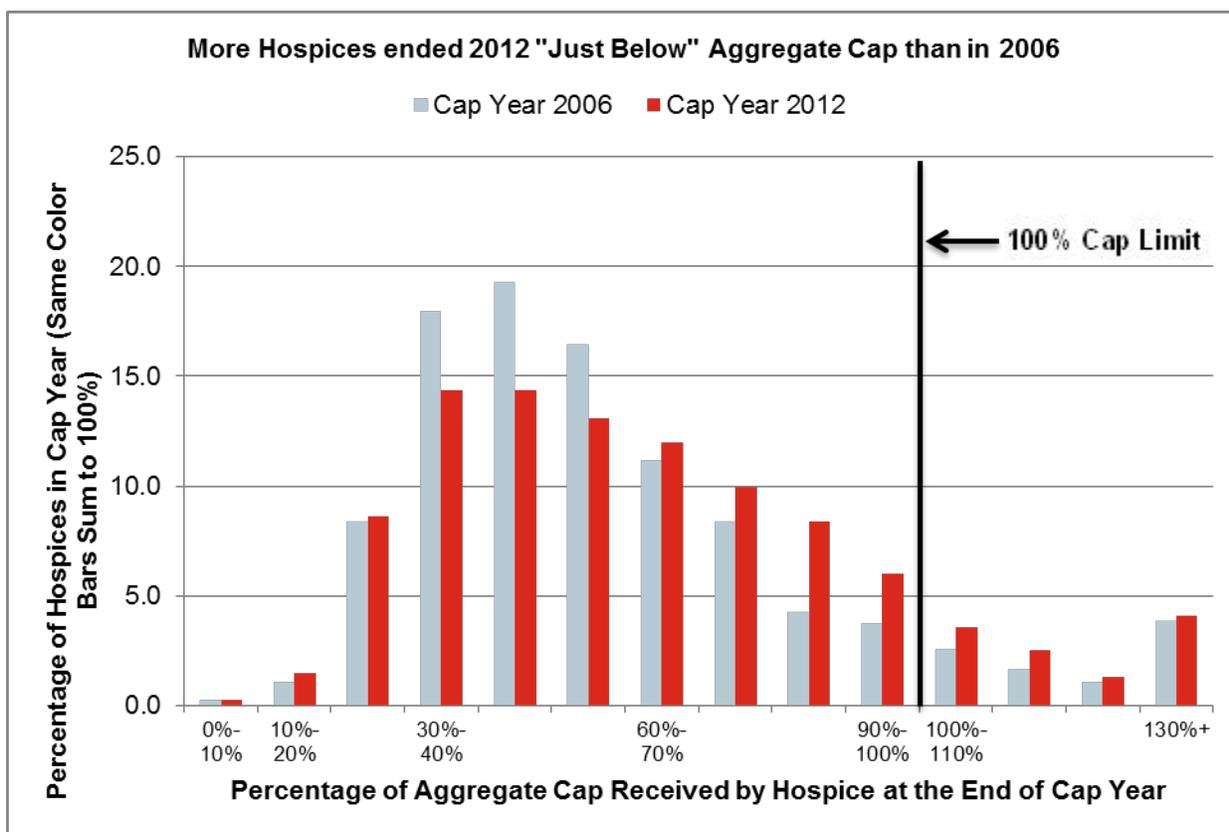
Source: Abt Associates Analysis of 100% Medicare Hospice Claims, 2005-2012.

### 8.1.2 Comparing Hospices' Year-End Aggregate Cap Percentage Received Over Time

We examined the proportion of hospices ending the cap year “just below” their cap threshold; in other words, we examined where hospices ended their cap year in terms of Medicare reimbursements received, relative to that year’s aggregate cap limit.

To analyze this we selected the two cap years at the extremes of our dataset—2006 and 2012. The analysis grouped hospices by the percentage of their aggregate cap they had received in reimbursements at the end of each cap year: 0-10%, 20-30%, ..., 120%-130%, and 130% and above of their cap amount. Figure 8.1 (below) displays the percentage of hospices falling into each year-end reimbursements-received group in 2006 (the light bars) and 2012 (the dark bars). The sets of bars which are the same color sum to 100% of hospices that year. A dark vertical line is present at 100% (of the aggregate cap).

Figure 8.1: Year-End Aggregate Cap Percentages Received, Cap Years 2006 and 2012



Source: Abt Associates Analysis of 100% Medicare Hospice Claims, 2005-2012

The figure indicates that a higher percentage of hospices ended cap year 2012 nearer to their cap limit (or slightly above) than in cap year 2006. The dark bars being taller than the light bars indicates that relatively more hospices ended cap year 2012 between 60% and 120% of their aggregate cap than in 2006. In 2006, more hospices had ended their cap year between 20% and 60% of their aggregate cap. Even among hospices remaining in “below-cap” status, the figure suggests a shift nearer to the cap limit.

**8.1.3 The Relationship between the Aggregate Cap and Hospice Vulnerabilities**

In its 2012 Report to Congress,<sup>21</sup> MedPAC reported that in 2009 above-cap hospices had higher rates of live discharges (Table 11-8, p. 295) and beneficiaries utilizing the benefit beyond 180 days (Table 11-7, also p. 295) across diagnoses. These findings led MedPAC to suggest that some hospices pursue hospice-inappropriate patients whom they later discharge as they near the aggregate cap (i.e., to maximize their revenue potential without creating a cap liability).

In Table 8.3 below, we similarly calculated rates for these outcomes by cap status over time. Similar to MedPAC’s findings, we also found that rates of live discharges and long stays are higher in above-

<sup>21</sup> Available via: [http://www.medpac.gov/chapters/Mar12\\_Ch11.pdf](http://www.medpac.gov/chapters/Mar12_Ch11.pdf)

cap hospices (in 2012: 38.8% live discharge above-cap vs. 17.4% live discharge below-cap; 34.6% lifetime utilization >180 days above-cap vs. 15.7% >180 days below-cap). Comparatively, MedPAC's 2009 live discharge estimates were 44% above-cap and 16% below-cap compared to our live discharge estimates of 46.2% and 18.9%, respectively. MedPAC's 2009 long stay estimates were .42% above-cap and .19% below-cap, compared to our long stay estimates of 36.0% and 15.3%, respectively. It is probable that we do not define long stays precisely the same way as MedPAC, but qualitatively the result holds that rates are higher in above-cap hospices across both sets of estimates.

**Table 8.3: Live Discharge Rates and Extreme Stays by Hospice Cap Status Across Cap Years (2006–2012)**

Cap Year	# Discharges Included	% Live Discharges			% Discharges Exceeding 180 Lifetime Days		
		Below-cap	Above-cap	All Hospices	Below-cap	Above-cap	All Hospices
2006	730,731	17.2%	52.4%	19.2%	12.7%	35.8%	13.9%
2007	799,505	18.7%	50.6%	20.6%	13.8%	35.8%	15.2%
2008	869,662	19.1%	48.2%	20.8%	14.8%	36.1%	16.0%
2009	925,813	18.9%	46.2%	20.5%	15.3%	36.0%	16.6%
2010	976,327	17.8%	42.6%	19.0%	15.3%	35.4%	16.3%
2011	1,042,611	17.9%	42.3%	18.9%	15.6%	35.0%	16.4%
2012	1,090,631	17.4%	38.8%	18.5%	15.7%	34.6%	16.7%
All years	6,435,280	18.1%	45.6%	19.6%	14.9%	35.5%	16.0%

Source: Abt Associates Analysis of 100% Medicare Hospice Claims, 2005-2012

Table 8.4 (below) displays the relationship between the percentage of the aggregate cap the hospice has attained at the time of discharge and the likelihood of live discharge. The table's rows represent various thresholds of the cap the hospice has received at discharge (0-20%, 20-40%...); the following two columns indicate the number of total discharges and the percentage of live discharges that occurred within those thresholds during cap years 2006-2012, respectively. The interpretation of these estimates is as such: during cap years 2006-2012, there were 267,201 recorded discharges that occurred in hospices that had between 0% and 20% of their aggregate cap at the time of discharge, and in 12.5% of these instances the beneficiary was discharged alive. There were 1,049,523 recorded discharges that occurred in hospices that had between 60% and 80% of their aggregate cap at the time of discharge, and in 25.1% of these instances, the beneficiary was discharged alive. There were 24,743 recorded discharges that occurred in hospices that 150% or more of their aggregate cap at the time of discharge, and in 72.4% of these instances, the beneficiary was discharged alive. Visibly, the raw rates of live discharge increase progressively with the percentage of the cap that was attained at the time of discharge.

**Table 8.4: Live Discharge Rates by Percent of Aggregate Cap Attained at Discharge, Cap Years 2006-2012**

% Aggregate Cap Received at Discharge Month	# Discharges	% Live Discharges	AOR	95% CI
0-20%	267,201	12.5%	<i>Baseline Odds</i>	
20-40%	2,351,422	14.7%	1.25	1.21-1.29
40-60%	2,251,234	18.5%	1.47	1.42-1.53
60-80%	1,049,523	25.1%	1.71	1.64-1.78
80-100%	361,406	31.9%	1.96	1.87-2.05
100-120%	86,379	46.8%	2.26	2.13-2.39
120-150%	43,181	59.9%	2.67	2.49-2.87
150%+	24,743	72.4%	3.10	2.83-3.41
All Cap Levels	6,435,089	19.6%		

Source: Abt Associates Analysis of 100% Medicare Hospice Claims, 2005-2012

The final columns show adjusted odds ratios with 95% confidence intervals associated with the percentage of the cap attained on the likelihood of live discharge. These estimates were produced using a within-hospice logistical regression adjusting for beneficiaries' age, gender, race, diagnosis, cap year, and discharge month (20% random discharge sample, n=1.3M). These estimates indicate that, relative to when a hospice has received 0-20% of its aggregate cap, the odds of live discharge when the *exact same* hospice has received 20-40% of its cap are 1.25 times greater. When that same hospice has received 80-100% of its cap, the odds of live discharge are 1.96 times greater; and the odds of live discharge are 3.10 times greater when that same hospice has received 150% or more of its cap. These estimates demonstrate that not only do above-cap hospices have higher live discharge rates, but that the timing of these live discharges is closely related to the cap risk. This supports MedPAC's hypothesis that some hospices discharge patients as they near their payment cap. If hospices discharge more beneficiaries alive as they near their cap limit, a natural follow-up question is "*which beneficiaries?*"—is there systematic or random discharging? An initial way to examine "*which beneficiaries?*" is to categorize patients by diagnosis. Table 8.5 displays the rates of live discharges occurring at different thresholds of aggregate cap received, but here the table displays live discharge rates across common hospice diagnoses. For cancer patients, the overall live discharge rate was 14.2% (bottom row). Among all discharges with a cancer diagnosis that occurred among hospices having between 0-20% of their cap at the month of discharge, the live discharge rate was 10.8%. Among all discharges with a cancer diagnosis that occurred among hospices having between 60-80% of their cap at the month of discharge, the live discharge rate was 18.5%.

Noticeably, *all* diagnoses experience increases in rates of live discharge nearer (and beyond) the cap limit. Before creating this table, we expected some diagnoses—for example, cancer—would be fairly constant with respect to nearness to the cap, and the increased live discharge rates would be concentrated among the ill-defined conditions. That said, the rates of live discharge do not increase uniformly across diseases: cancer's live discharge rate increases 38.8 percentage points across the range of the table (10.8% live discharge in the 0-20% first row to 49.6% live discharge in the 150+% last row), debility increases 60.7 percentage points (16.6% to 77.3% live discharge) and non-CHF heart disease increases 72.7 percentage points (15.1% to 87.8%).

**Table 8.5: Live Discharge Rates by Percent of Aggregate Cap Attained at Discharge Across Common Hospice Diagnoses, Cap Years 2006-2012**

% Aggregate Cap Attained at Discharge Month	Live Discharge Rate by Primary Hospice Diagnosis												
	Cancer	Alzheim.	CHF	Kidney Disease	Liver Disease	Stroke/ CVA	Debility	Failure to Thrive	Other Dementia	COPD/ Lung Disease	Heart disease (non-CHF)	Parkinson's	Pneumon.
0-20%	10.8%	18.3%	14.4%	8.5%	13.7%	8.8%	16.6%	16.5%	14.4%	15.5%	15.1%	16.6%	7.1%
20-40%	11.9%	20.5%	16.9%	9.1%	14.6%	10.6%	20.4%	19.3%	17.2%	18.5%	18.1%	19.5%	8.5%
40-60%	14.2%	22.6%	20.8%	10.5%	18.6%	14.2%	25.2%	24.1%	19.5%	23.3%	22.7%	23.0%	10.6%
60-80%	18.5%	27.6%	29.5%	13.5%	25.4%	20.5%	32.3%	31.6%	24.4%	31.8%	30.7%	29.7%	14.8%
80-100%	21.7%	33.8%	39.7%	18.0%	31.3%	28.1%	40.1%	39.0%	29.9%	40.1%	38.8%	36.0%	17.9%
100-120%	29.7%	45.7%	58.5%	24.2%	39.7%	44.3%	56.5%	50.7%	43.1%	55.2%	59.3%	49.2%	30.0%
120-150%	39.1%	55.6%	70.3%	33.5%	55.5%	59.4%	66.7%	64.4%	52.8%	67.8%	74.8%	61.1%	51.8%
150%+	49.6%	69.0%	78.6%	50.0%	62.2%	70.7%	77.3%	75.5%	62.9%	79.0%	87.8%	70.9%	54.2%
<b>All cap levels</b>	<b>14.2%</b>	<b>24.8%</b>	<b>23.4%</b>	<b>10.8%</b>	<b>19.3%</b>	<b>15.3%</b>	<b>26.6%</b>	<b>25.9%</b>	<b>21.3%</b>	<b>25.4%</b>	<b>26.0%</b>	<b>24.6%</b>	<b>10.5%</b>

Source: Abt Associates Analysis of 100% Medicare Hospice Claims, 2005-2012



## 9. Hospice Effect on Medicare Reimbursements Among Nursing Home Decedents

Over the past decade, hospice has experienced a large increase in utilization. This increase has been particularly large among patients with non-cancer diagnoses and those residing in nursing homes (NH). This change in population served raises the question of whether hospice is cost neutral or reduces health care expenditures for these patients. Previous research that suggests that hospice reduces expenditures has important limitations. For example, Kelley and colleagues' recent article in *Health Affairs* excluded a significant number of potentially costly long stay hospice patients from the analysis.<sup>22</sup> More importantly, in all prior studies there is a persistent concern about selection bias due to a lack of information on important factors such as patient preferences.

To address these problems, we have proposed a novel approach that takes advantage of the rapid growth in hospice in the last decade to use year of death as an instrumental variable that minimizes selection bias. Large growth in hospice enrollment means when comparing cohorts of decedents from two different years we can find beneficiaries that did not enroll in great numbers in the earlier year but enroll at higher rates by the later year, the “new adopters” of hospice. Using data from 2004 and 2009, our method compares costs of beneficiaries that enrolled in hospice in 2009 to individuals that did not choose in 2004 but that a 2009 propensity score matching model predicted they would have chosen hospice had they died in 2009. Because the method compares costs in different years (which are close in time), we account for non-hospice related changes to expenditures over this time interval by considering the changes in expenditures over that time period for the matched group of decedents not enrolling in hospice in either year, the “never takers.” Their change in expenditures provides a conservative estimate for what the change would have been for the new adopters had they not switched to enrolling in hospice. The net effect of hospice on expenditures is given by the difference in expenditures between the new adopters of hospice and the never takers of hospice.

The focus of the analysis is on NH decedents to take advantage of several important factors. First, the NH setting has experienced one of the largest expansions of hospice in the last decade. Additionally, the MDS assessments provide us with a wealth of risk adjustors not present when only using claims data to better match individuals across different decedent year cohorts, including socio-demographic characteristics, comorbidities, prior utilization, and patient preferences (Do-Not-Resuscitate and Do-Not-Hospitalize orders).

In 2004 and 2009 there were a combined total of 786,328 fee-for-service NH decedents with hospice enrollment rates of 27.6% in 2004 and 39.5% in 2009. Decedent cohorts were very similar (average age 85, 35% male, 24% with cancer).

Comparing expenditures in the last year of life between decedents in 2004 and 2009, never takers (those that would not enroll in hospice in either year) saw an increase in expenditures of \$2,795 compared to \$9,580 among the new adopters for a **net hospice effect of an additional \$6,785**

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<sup>22</sup> Kelley, A. S., Deb, P., Du, Q., Carlson, M. D. A., & Morrison, R. S. (2013). Hospice enrollment saves money for Medicare and improves care quality across a number of different lengths-of-stay. *Health Affairs*, 32(3), 552-561.

**(95%CI \$6,332, \$7237) for new adopters (those that previously would not have enrolled in hospice but would have enrolled in the later year) enrolling in hospice in their last year of life.**

The main reason behind this net increase was that those non-hospice NH decedents in 2004 identified as the best matches for becoming the new adopters of hospice by 2009 were decedents with some of the lowest expenditures and had different characteristics than non-hospice users in 2004 that would remain as non-hospice users by 2009: they had higher rates of dementia, of physical and cognitive impairment, and use of DNR orders. We performed a stratified analysis to examine differentials in the hospice effect on expenditures by major diagnosis groups showing that the increased expenditures among new hospice adopters was present across all major diagnosis groups although there were important differences in the magnitude of the increase. New hospice adopters with cancer but not dementia had the smallest hospice associated net increase at \$2,307 (95%CI \$972, \$3,643) in their last year of life. By contrast, new hospice adopters with dementia and no cancer had the largest increase with an additional cost of \$8,643 (95%CI \$8,116, \$9,169). New hospice adopters with both cancer and dementia had an additional expenditure of \$7,229 (95%CI \$5,987, \$8,471). Finally, new adopters without cancer or dementia experienced an increase of \$5,244 (95%CI \$4,155, \$6,332).

In summary, the increase in hospice use did not reduce Part A health care expenditures among NH decedents mainly due to the new enrollment coming from a population that had a low rate of health care utilization.

## 10. Trends in Hospice Utilization at Discharge

### 10.1 Analysis of Live Discharge

Prior to July 1, 2012, the hospice claim did not differentiate between a hospice discharge and a patient revocation. Analysis based on the first discharges indicated in CY 2010, 18.2% (182,172/1,003,958) of the hospice discharges were alive and 1.4% (13,770/1,003,958) had a pattern of live discharge followed by hospital admission within 2 days of live discharge and hospice readmission within 2 days of hospital discharge in 2010 (“burdensome transition”). New small, for-profit hospices had a higher rate of live discharges compared to their not-for-profit counterparts. In addition, the hospices that seem to exhibit “burdensome transition” behavior tend to be above cap hospices and with an average length of stay of more than 180 days. Since the above cap hospices substantially show higher live discharges combined with a longer length of stay, it raises questions about whether above cap hospices are admitting patients before they meet hospice eligibility.

In order to better understand live discharges, we conducted research to answer the following three questions:

1. What is the rate of live discharge and problematic live discharge (i.e. live discharge early or late within a hospice election or a contiguous series of elections) from 2000 to 2012?
2. How does the rate of hospice readmission rate and subsequent hospitalizations in the month after live hospice discharge vary between 2000 and 2012?
3. What is the initial experience with the new discharge status code in terms of characteristics of patients that revoke, how a hospice prior behavior in live discharges predicts the use of the new codes, and the one month outcome of live discharges in September to November, 2012?

#### 10.1.1 What Is the Rate of Live Discharge and Problematic Live Discharge from 2000 to 2012?

The rate of live discharges increased from 13.2% in 2000 to 17.2% in 2006. The rate of increase slowed down post 2006, increasing to 18.1% in 2012. The facility variation in the rate of hospice live discharges has persisted with mean hospice rate of live discharges increasing from 20.6 (2006) to 22.5 (2012). There was slight decrease in the rate of early live discharges (see Table 10.1), but an increase in the rate of late live discharge for beneficiaries with a length of stay that exceeded 365 days, from 4.1 to 10.5. Even after adjustment for age, race, gender, and hospice primary diagnosis in multivariate random effects model, the increase in late live discharges remain (AOR 1.09 95% CI 1.03-1.15 comparing 2012 to 2006 and AOR 2.04 95% CI 1.91 -2.18).

Not for profits and Government hospices have lower rate of live discharges after adjustment for age, gender, race, and hospice primary diagnosis. The adjusted odds ratio for not-for-profits compared to for profit hospices was 0.64 (95% CI 0.60-0.66).

**Table 10.1: Pattern of Hospice Live Discharges from 2000 to 2012**

	2000	2006	2008	2010	2012
<b>Overall rate of live discharge<sup>a</sup></b>					
Mean	13.2	17.2	18.6	18.2	18.1
AOR	Ref	1.07	1.14	1.12	1.10
95% CI		1.06-1.09	1.13-1.17	1.11-1.14	1.10-1.08
N	466,903	791,435	911,150	1,003,962	1,009,729
<b>Hospice rate of Live Discharge</b>					
Mean	17.0	20.6	22.4	22.1	22.5
10 <sup>th</sup> percentile	9.3	11.3	12.5	12.7	13.0
Median	13.7	15.7	17.6	18.1	18.5
IQR	20.2	23.5	26.6	26.4	27.5
90 <sup>th</sup> percentile*	31.6	38.3	43.4	40.2	40.9
N	2233	2561	2878	3045	3233
<b>Live discharge within 7 days<sup>b</sup></b>					
Mean	13.7%	11.8	11.2	10.8	10.5
AOR		1.04	1.01	0.98	0.94
95% CI		1.00-1.08	0.96-1.05	.93-1.03	.91-.98
N	64,069	136,435	169,559	182,176	183,003
<b>Live discharge greater than 180 days<sup>b</sup></b>					
Mean	14.9	24.7	27.2	26.6	26.7
AOR	Ref	1.56	1.75	1.72	1.76
95% CI		1.50-1.63	1.69-1.82	1.66-1.79	1.69-1.82
N	64,069	136,435	169,559	182,176	183,003
<b>Live discharge greater than 365 days<sup>b</sup></b>					
Mean	4.1	9.6	11.3	10.7	10.5
AOR	Ref	2.04	2.43	2.42	2.44
95% CI		1.91 -2.18	2.28-2.59	2.27-2.58	2.30-2.61
N	64,069	136,435	169,559	182,176	183,003

<sup>a</sup>The overall rate of hospice discharges is based on the number of live discharges over all discharges in that calendar year. A person may have more than one live discharge

<sup>b</sup>The denominator is the number of live discharges.

## 10.2 Change in Hospice Rate of Live Discharges

There are 2,471 hospice programs that existed both in 2006 and 2012. Their overall rate of live discharge did not decrease or increase (mean = 0.0). However, individual hospices both increased and decreased their rate of live discharges. For example, 10% of hospice providers increased their rate of live discharges by 11.6% while 10% decreased it by 10.6%.

### 10.2.1 How Does the Rate of Hospice Readmission and Subsequent Hospitalizations in the Month after Live Hospice Discharge Vary between 2000 and 2012?

Table 10.2 examines the six month outcomes of live discharges over time between 2000 and 2012. Over time, there was increase in the rate of burdensome transitions (i.e., going from hospice to hospital and hospice readmission) from a rate of 3.4% among those with a live discharge to 6.4% in

2012.<sup>23</sup> Hospices varied in the rate of burdensome transitions from a 25<sup>th</sup> percentile of 0.0 to a 75<sup>th</sup> percentile of 9.8 in 2012. One in ten hospices in 2012 had nearly 15% of their patients with this pattern (14.8%). A multivariate random effects model examined whether there was trend in the changes of each outcome after adjusting for socio-demographic information and the hospice primary diagnosis.

**Table 10.2: Six-Month Outcomes of First Live Discharges in the First Six Months of 2000–2012**

	Frequency				
	Adjusted Odds Ratio (Confidence Intervals)				
	2000	2006	2008	2010	2012
<b>Live discharges<sup>a</sup></b>	N=28,219	N= 56,674	N=66,173	N=70,151	N=77,598
<b>Hospice burdensome transitions<sup>b</sup></b>					
Mean	3.4	5.9	6.2	6.5	6.4
AOR		1.62	1.71	1.80	1.78
95% CI	Ref	1.51-1.76	1.59-1.85	1.67-1.94	1.65-1.92
<b>Hospice readmission within 14 days</b>					
Mean	18.6	25.6	26.9	27.7	28.2
AOR	Ref	1.67	1.09	1.18	1.23
95% CI		1.61-1.74	1.07-1.12	1.15-.121	1.21-1.27
<b>Hospice readmission within 180 days</b>					
Mean	32.4	42.3	44.2	46.1	46.7
AOR	Ref	1.64	1.80	2.00	2.10
95% CI		1.59-1.70	1.74-1.86	1.94-2.07	2.04-2.17
<b>Surviving 180 days without readmission</b>					
Mean	32.9	34.7	35.4	36.2	36.7
AOR	Ref	.90	.91	.93	.93
95% CI		0.87-0.93	0.88-0.94	0.89-0.96	0.90-0.96
<b>Died within 180 days</b>					
Mean	58.3	48.8	48.0	47.1	46.2
AOR	Ref	0.87	0.86	0.84	0.82
95% CI		0.84-0.90	0.84-0.89	0.81-0.87	0.80-0.85
<b>Died 180 days after hospice readmission</b>					
Mean	32.4	42.3	44.2	46.1	46.7
AOR	Ref	1.64	1.80	2.00	2.10
95% CI		1.60-1.70	1.74-1.86	1.94-2.07	2.04-2.17

<sup>a</sup>The denominator for this analysis is the number of live discharges with the events listed in rows being the numerator.

<sup>b</sup>A burdensome transition was defined as hospitalization within 2 days of hospice discharge with hospice readmission with 2 days of hospital discharge.

<sup>23</sup> Burdensome transitions are further defined in Gozalo P, Teno J, Mitchell SL, et al. End-of-life Transitions among Nursing Home Residents with Cognitive Issues. *N Engl J Med*. September 29, 2011;365(13):1212-1221.

Among those with a burdensome transition, the trend in the mean length of hospital stay decreased over time.

**Table 10.3: Length of hospital stay for those with a burdensome transition**

Year	Hospital length of stay		
	Mean	Median	90 <sup>th</sup> Percentile
2006	6.1	5	11
2008	6.1	5	11
2010	5.6	5	10
2012	5.4	4	10

### 10.3 Describe the Initial Experience with the New Discharge Status Code

#### 10.3.1 Examination of New Hospice Discharge Status Codes

As of July 2012, there are new condition codes and occurrence codes that hospices record on a claim to better describe the reason for discharge. The occurrence codes now allow for a further clarification of whether a patient or proxy decision maker revoked the hospice benefit or the patient was discharged for stabilization of the patient's terminal condition such that they no longer qualify for hospice services.<sup>24</sup>

The utilization of the codes has appeared to stabilize shortly after they were introduced in July 2012. The initial rate of revocations in August was 8.9% of the discharges and this decreased to November rate of 7.3%. The rate of discharges for no longer being considered terminally ill remained relatively stable at about 8.5%. In the last four months of 2012, the type of hospice live discharges were reported as follows with their average hospice discharge length of stay varying as expected:

**Table 10.4: Utilization of New Discharge Status Codes and Corresponding Length of Stay for the Last Four Months of 2012**

	N	Length of Hospice Stay
Patient revokes	21,565	101.4 (SD 112)
Patient condition stabilizes	23,861	167.8 (SD 125)

We examined the socio-demographic and hospice organizational characteristics associated with the use of revocation in the last four months of 2012 (see Table 10.5). Beneficiaries reporting their race as Black had a higher rate of revocations, and cancer patients were more likely to revoke hospice services.

<sup>24</sup> More information on this change is available at <http://www.cms.gov/Regulations-andGuidance/Guidance/Manuals/downloads/clm104c11.pdf>

**Table 10.5: Characteristics of Patients who Revoked the Hospice Benefit.**

Characteristic	Revokes in last Four months of 2012	
	AOR	95% CI
<b>Race</b>		
White	Reference	
Black	1.23	1.13-1.33
Hispanic	1.07	0.86-1.32
<b>Gender</b>		
Female	Reference	
Male	0.88	0.85-0.92
<b>Diagnosis</b>		
Cancer	Reference	
Dementia	0.44	0.38-0.47
Parkinson's disease	0.55	0.49-0.62
Debility or failure to thrive	0.50	0.46-0.55
Pneumonia	0.83	0.70-0.97
ESRD	0.68	0.58-0.80
CHF	0.79	0.72-0.86
CVA	0.60	0.54-0.68
Other diagnosis	0.60	0.55-0.65
<b>Hospice organizational characteristics</b>		
For profit	Reference	
Not-for-profit	0.96	0.85-1.08
Government owned	0.79	0.67-0.94

The rate of revocations was highest for beneficiaries in an inpatient hospice facility (68.3%), with those at home having the next highest rate of revocation, being 50.0% of live discharges. Nursing homes had a lower rate of revocations. Within the nursing home, looking at all live discharges, roughly half were because of a patient led revocation and the other half were because the condition stabilized. Compared to persons who revoked, 21.0% of persons who were discharged for no longer being considered terminally ill were readmitted to hospice in the next 30 days.

In multivariate analyses, we found that hospice previous rate of live discharges operationalized in deciles did not predict the use of the revocation code.

## 10.4 Skilled Visits During the Last Two Days of Life

The purpose of this analysis is to provide descriptive statistics on how frequently hospice beneficiaries did not receive skilled visits during their last two days of life when those last two days of life are billed at the Routine Home Care (RHC) level of care. In some cases, an absence of in-person visit by skilled hospice staff may be an indication of poor quality of care.

### 10.4.1 Methodology

For this analysis, 100% of hospice days with a service date of 2012 that were included in the SSS analytic file were used. We examined outcomes of beneficiaries who were either discharged dead or who had a date of death that equaled the beneficiary's last day in hospice. Specifically, we only examined beneficiaries whose last days of hospice enrollment were billed to the RHC level of care. A

skilled visit was considered to be a visit from a social worker, therapist, or nurse. Demographic information about the hospice was found either from information on the claim or the POS file.

## 10.4.2 Results

Table 10.4.1 shows how frequently beneficiaries did not receive skilled visits at the end of life.

**Table 10.4.1: Number of Beneficiaries With No Skilled Visits during the End of Life**

	Number of Decedents with No Skilled Visits at End of Life	Number of Decedents	Percentage of Decedents with No Skilled Visits at End of Life
No skilled visits on last day (and last day was RHC)	189,624	656,355	28.9%
No skilled visits on last two days (and last two days were RHC)	89,518	622,449	14.4%
No skilled visits on last three days (and last three days were RHC)	53,548	585,648	9.1%
No skilled visits on last four days (and last four days were RHC)	34,251	551,359	6.2%

A relatively high percentage (28.9%) of beneficiaries who received RHC on their last day of life did not receive skilled visits on the very last day of life. However, this large percentage is partially explained by beneficiaries dying suddenly or unexpectedly where a hospice would not be able to send out a staff person in time to perform a visit.

The percentage of beneficiaries without a skilled visit at the end of life declines as the look back period is extended. For example, only 6.2% of the beneficiaries who have RHC on the last four days of life also have no skilled visits on any of those days. The remainder of this chapter will focus on beneficiaries who received no skilled visits on their last two days of life and whose last two days of life were RHC.

Table 10.4.2 examines one likely predictor of individuals who do not receive skilled visits at the end of life. The table examines the percentage of beneficiaries without a visit by what day of the week they died on. 23.4% of beneficiaries dying on a Sunday (and therefore would need to have a visit either on Sunday or Saturday) received no skilled visits at the end of life. This is contrasted by individuals dying on a Tuesday (and therefore would need to have a visit either on a Monday or Tuesday). Only 9.1% of individuals dying on a Tuesday received no skilled visits at the end of life. In general (regardless of whether a beneficiary dies), fewer visits are provided on the weekend. Hospices which are less likely to provide needed daily care may represent a vulnerability in the current hospice benefit, particularly for beneficiaries at the very end of life.

**Table 10.4.2: Number of Beneficiaries With No Skilled Visits during the Last Two Days of Life (2012) (by Date of Death)**

Description	Number of Beneficiaries with RHC on Last Two Days of Life	% of Beneficiaries with RHC on Last Two Days of Life with No Skilled Visits on Either Day
Beneficiary died on a Sunday	91,733	23.4%
Beneficiary died on a Monday	88,857	17.1%
Beneficiary died on a Tuesday	85,503	9.1%
Beneficiary died on a Wednesday	87,277	11.9%
Beneficiary died on a Thursday	88,111	12.2%
Beneficiary died on a Friday	89,530	11.8%
Beneficiary died on a Saturday	91,307	14.6%

Table 10.4.3 shows whether the pattern of those who receive no visits during the last two days of life is influenced by the beneficiary's lifetime length of stay in hospice. Only 10.3% of very short stay beneficiaries (5 days or less) did not receive visits at the end of life. However, 14.9%–15.9% of beneficiaries in the other categories (6-30 days, 31-90 days, 91-180 days, and 181+ days) shown in Table 10.4.3 did not receive visits in the last two days. Excluding the very short stay beneficiaries, length of stay does not have a large impact on the probability of receiving a visit at the end of life.

**Table 10.4.3: Number of Beneficiaries With No Skilled Visits during the Last Two Days of Life (2012) (by Length of Stay)**

Description	Number of Beneficiaries with RHC on Last Two Days of Life	% of Beneficiaries with RHC on Last Two Days of Life with No Skilled Visits on Either Day
Beneficiary's lifetime length of stay was 5 days or less	106,724	10.3%
Beneficiary's lifetime length of stay was between 6 and 30 days (inclusive)	229,877	14.9%
Beneficiary's lifetime length of stay was between 31 and 90 days (inclusive)	126,341	15.3%
Beneficiary's lifetime length of stay was between 91 and 180 days (inclusive)	63,926	15.2%
Beneficiary's lifetime length of stay was 181 days or longer	95,466	15.9%

As shown in Table 10.4.4, age at death is associated with receiving no visits. For example, a higher percentage of those 85 or older (15.5%) did not receive a skilled visit compared to those between the age of 65 and 74 (12.6%).

**Table 10.4.4: Number of Beneficiaries with No Skilled Visits during the Last Two Days of Life (2012) (by Age)**

Description	Number of Beneficiaries with RHC on Last Two Days of Life	% of Beneficiaries with RHC on Last Two Days of Life with No Skilled Visits on Either Day
Beneficiary's age at death was under 65	29,143	13.4%
Beneficiary's age at death was between 65 and 74 (inclusive)	89,311	12.6%
Beneficiary's age at death was between 85 or higher (inclusive)	164,924	13.6%
Beneficiary's age at death was 85 or older	301,043	15.5%

Table 10.4.5 shows that the size of the hospice providing services was not associated with providing of skilled visits in the last two days of life, although smaller hospices more frequently did not provide visits at the end of life (15.6%) compared to large hospices (14.1%). These differences were not large enough to be meaningfully different.

**Table 10.4.5: Number of Beneficiaries with No Skilled Visits during the Last Two Days of Life (2012) (by Hospice Size)**

Description	Number of Beneficiaries with RHC on Last Two Days of Life	% of Beneficiaries with RHC on Last Two Days of Life with No Skilled Visits on Either Day
Beneficiary died under the care of a "Small" hospice (3,499 or fewer RHC Days in 2012)	12,564	15.2%
Beneficiary died under the care of a "Medium" hospice (3,500–19,999 RHC Days in 2012)	150,162	14.9%
Beneficiary died under the care of a "Large" hospice (20,000+ RHC Days in 2012)	459,608	14.2%

Newer hospices (5 years or less since Medicare certification) were more likely to have beneficiaries with no skilled visits at the end of life (17.8%) compared to older hospices (6 years or more since Medicare certification) (14.0%).

Further, there was large regional variation in skilled visits at the end of life based on the state of the beneficiary's home address. The five states with the lowest percentage of beneficiaries with no visits on the last two days of life were: Wisconsin (5.7%), North Dakota (7.3%), Vermont (7.5%), Tennessee (7.5%), and Kansas (8.7%). The five states with the highest percentage of beneficiaries with no visits on the last two days of life were: New Jersey (23.0%), Massachusetts (22.9%), Oregon (21.2%), Washington (21.0%), and Minnesota (19.4%).

Finally, Table 10.4.6 shows facility level rates of the percentage of beneficiaries who didn't receive skilled services during the last two days of life (and had RHC during the last two days of life). Overall, there is considerable variation, with some hospices always providing skilled care at end of life, and other hospices not providing skilled care to any decedent whose last two days are RHC. Overall, the difference between the 25<sup>th</sup> percentile (3.1%) and 75<sup>th</sup> percentile (22.2%) is 19.1%. The distribution of values looks similar even upon breaking out certain types of hospice providers. For example, for most categories, the median value ranges from 8-10%. Similarly, for most categories the difference between the 25<sup>th</sup> percentile and 75<sup>th</sup> percentile ranges between 15% and 25%.

**Table 10.4.6: Hospice Level Rates of the Percent of Beneficiaries Who Died in Hospice and Whose Last Two Days Are RHC and Received No Skilled Visits on the Last Two Days**

Type of Hospices	Number of Hospices	Minimum Value	1st Percentile	10th Percentile	25th Percentile	Median	75th Percentile	90th Percentile	99th Percentile	Maximum Value
All hospices	3,677	0.0%	0.0%	0.0%	3.1%	9.4%	22.2%	42.1%	100.0%	100.0%
Unknown ownership	32	0.0%	0.0%	0.0%	2.9%	13.4%	49.4%	100.0%	100.0%	100.0%
Non-profit hospice	1,086	0.0%	0.0%	0.9%	3.2%	8.1%	18.3%	36.2%	92.3%	100.0%
For-profit hospice	2,066	0.0%	0.0%	0.0%	3.1%	10.5%	24.9%	42.9%	100.0%	100.0%
Government/other hospice	493	0.0%	0.0%	0.0%	3.3%	8.7%	20.4%	43.2%	100.0%	100.0%
Small hospice (3,499 or fewer RHC days in 2012)	601	0.0%	0.0%	0.0%	0.0%	7.4%	25.0%	58.1%	100.0%	100.0%
Medium hospice (3,500–19,999 RHC days in 2012)	1,775	0.0%	0.0%	0.6%	3.2%	9.9%	22.8%	44.6%	100.0%	100.0%
Large hospice (20,000+ RHC Days in 2012)	1,301	0.0%	0.0%	1.7%	4.0%	9.5%	21.0%	32.7%	71.0%	100.0%
Hospice with unknown Medicare certification date	32	0.0%	0.0%	0.0%	2.9%	13.4%	49.4%	100.0%	100.0%	100.0%
New hospice (5 Years or less since Medicare certification)	816	0.0%	0.0%	0.0%	2.9%	11.7%	28.6%	50.0%	100.0%	100.0%
Old hospice (6 years or more since Medicare certification)	2,642	0.0%	0.0%	0.7%	3.1%	8.8%	20.0%	37.9%	100.0%	100.0%

Note: Each hospice's rates are defined by using the following numerator and denominator.

Numerator: Number of beneficiaries who died in hospice and whose last two days were RHC and received no skilled visits on the last two days.

Denominator: Number of beneficiaries who died in hospice and whose last two days were RHC.

## 11. Analysis of Part B Utilization by Hospice Beneficiaries

Two modifiers should be used by physicians or nurse practitioners when billing for physician services provided to beneficiaries on hospice: 1) the GW modifier is for any provider who provides physician services that are unrelated to the terminal condition; and 2) the GV modifier is for the patient's designated attending on record (AOR) (i.e., physician or nurse practitioner) for physician services that are related to the terminal condition. Regardless of the modifier, to bill Part B for hospice beneficiaries, the provider should not be employed by the hospice, nor can the physician be under contract with the hospice to provide physician services (note that NP are not allowed to be "under contract" with hospices).

We examined the frequency and characteristics of physician carrier ("Part B") claims for hospice beneficiaries. For our analysis, we constructed a dataset that had all Part B claims in 2011-12 for any beneficiary who received hospice in 2011-12. We restricted the Part B claims to dates that occurred after the beneficiary entered hospice and that occur on days that the beneficiary is in hospice.

Of the 2.2 million beneficiaries with a hospice claim in 2011-12, approximately 34% had a Part B claim with a GW and/or GV modifier during their hospice period. There were just over 6.4 million Part B claim line items with GV or GW modifiers that accounted for over \$372 million, the majority of which was for physician services unrelated to the terminal diagnosis (i.e.; GW modifier; \$260 million). On average, Medicare payment for physician services related to the hospice diagnosis is slightly higher than Medicare payment for physician services unrelated to the hospice diagnosis (\$63.06 vs. \$55.77, respectively).

### 11.1 Part B Claims Without Hospice-Related Modifiers

We found a sizeable number of Part B claims for hospice beneficiaries that had neither a GV nor GW modifier. Specifically, there were 1,094,089 Part B claim line items that had neither a GV or GW modifier that were associated with approximately \$64 million in total Medicare payments. Note that this excludes Part B claims that occurred on the first day of the hospice election (and last day of hospice for beneficiaries who were discharged) live since these were plausible non-hospice physician services (i.e., the beneficiary had a Part B claim in the morning and then enrolled in hospice later that day, or the patient was discharged from hospice in the morning and had a Part B claim later that same day).

Most providers who billed Part B without a GV/GW modifier are in the South; specifically CMS Region 4 (NC, SC, TN, FL, GA, AL, KY, MS). About a third of all Part B line items without a GV/GW modifier are from providers in FL, TX, PA, or MI. Most of these Part B claims occurred while the beneficiary was receiving hospice at home (43.3%) or in a nursing home (24.2%). Over half of the unexplained non GV/GW Part B claim line items were billed by for-profit hospices, and over four-fifths of the hospices were freestanding.

### 11.2 DME and Carrier File Claims With Hospice Modifiers

Chapter 3 of this report discusses our findings on utilization of non-hospice services during hospice enrollment in 2012. These findings included our estimates that Medicare paid for approximately \$49.5 million in DME services and \$265.4 million in Carrier file charges for utilization on days in which the receiving beneficiary elected the hospice benefit which *did not* occur on a hospice

admission or live discharge day. In Table 11.1 (below), we disaggregate these totals – claims on non-boundary hospice election days – according to the presence of a GW or a GV modifier. GV modifiers are not used in DME claims, but of the \$49.5 million we identified occurring during hospice election, \$2.6 million (5.3%) of claims had a GW modifier present and the remaining \$46.9 (94.7%) in DME claims did not include a GW modifier. Among the \$265.4 million in Carrier File charges during hospice, we found \$163.5 million (61.6%) associated with a GW modifier, \$65.3 million (24.6%) associated with a GV modifier, and the remaining \$36.6 million (13.8%) were associated with neither modifier. Therefore, the majority of Carrier File charges for services received during hospice election were for services that were presumably unrelated to the terminal condition.

**Table 11.1: Part B Medicare Claims during Hospice Enrollment by Source File in 2012**

	Durable Medical Equipment		Carrier File Charges	
	\$	%	\$	%
<b>Total</b>	<b>\$49,529,040</b>	<b>100.0%</b>	<b>\$265,389,997</b>	<b>100.0%</b>
Has GW modifier	\$2,611,193	5.3%	\$163,486,065	61.6%
Has GV modifier	\$0	0.0%	\$65,346,184	24.6%
Has neither	\$46,917,847	94.7%	\$36,557,748	13.8%

### 11.3 Diagnoses

We also examined Part B line items based on diagnosis. We focused our analyses on common hospice diagnoses; specifically, the “top 20” most common diagnoses reported in the hospice claims (Table 11.2).

**Table 11.2: The 20 Most Commonly Reported Diagnoses on Hospice Claims**

Rank	Diagnosis
1	Debility NOS
2	Non-Alzheimer's Dementia
3	Lung & Chest Cavity Cancer
4	Congestive Heart Failure
5	Non-Infectious Respiratory Disease
6	Failure to Thrive - Adult
7	Other Heart Disease
8	Alzheimer's
9	Cerebrovascular Accident
10	Colo-Rectal Cancer
11	Chronic Kidney Disease
12	Blood & Lymphatic Cancer
13	Parkinson's & Other Degenerative
14	Pneumonia & Other Lung Disease
15	Breast Cancer
16	Pancreatic Cancer
17	Prostate Cancer
18	Liver Cancer
19	Chronic Liver Disease
20	Bladder Cancer

Hospice patients with chronic kidney disease listed on their Part B claim had the highest average payment on GV claims, and patients with prostate cancer had the highest average payment on GW claims. Other heart disease was associated with the lowest average payment for GW claims and Non-Alzheimer's dementia for GV claims. Average payment by diagnosis for GW only claims vs. GV only claims does not vary substantially for most of the diagnoses (i.e., on average, they were within \$10 of each other). However, average payments were over \$10 higher for GV only claims compared to GW only claims for three diagnoses: other heart disease, CHF, and chronic liver disease. Conversely, average payments for prostate cancer and chronic kidney disease were over \$10 higher for GW only claims compared to GV only claims. Most of the top 20 diagnoses had higher average payments relative to the non-top 20 diagnoses.

Although the GW modifier should be used for care unrelated to the hospice diagnosis, we found a small percentage of Part B GW claims that had the same top 20 diagnoses as that listed on the hospice claim. Conversely, while the GV modifier should be used for care related to the hospice diagnosis, most diagnoses on the Part B claims did not match the hospice diagnosis. Matching diagnoses were particularly low for hospice beneficiaries with debility NOS, Non-Alzheimer's dementia, and failure to thrive.

## 11.4 HCPCS

We found a significant amount of concentration in Healthcare Procedure Coding System (HCPCS) Codes in the Part B claims for hospice beneficiaries (Table 11.3).<sup>25</sup> Of the 4,550 unique HCPCS Codes on the Part B claims with a GV or GW modifier, the top five appeared on 25% of all claims, the top 10 HCPCS codes appear on 38% of the claims, and the top 20 HCPCS codes appear on 53% of all claims. Concentration of HCPCS codes is slightly larger for Part B claims with a GV modifier compared to a GW modifier (i.e., the top 5 HCPCS codes appear on 38% of GV claims vs. 25% of GW claims).

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<sup>25</sup> Level 1 HCPCS codes consist of (that is, are identical to) the American Medical Association's Common Procedure Terminology (CPT). For ease of presentation, we refer to all HCPCS codes and CPT codes as "HCPCS codes" in this section. CPT only copyright 2013 American Medical Association. All rights reserved.

**Table 11.3: Five Most Commonly Used HCPCS Codes Among Part B Claims for Hospice Beneficiaries**

HCPCS code	N	%
<b>For GV only</b>		
99308: Subsequent nursing facility care, per day, for the evaluation and management of a patient; medical decision making of low complexity	231,585	14%
99309: Subsequent nursing facility care, per day, for the evaluation and management of a patient; medical decision making of moderate complexity	162,547	10%
99232: Subsequent hospital care, per day, for the evaluation and management of a patient, moderate complexity	107,190	6%
99307: Subsequent nursing facility care, per day, for the evaluation and management of a patient; straightforward medical decision making.	72,689	4%
99214: Office or other outpatient visit for the evaluation and management of an established patient, moderate to high complexity	67,644	4%
Total for top 5 HCPCS codes	641,655	38%
<b>For GW only</b>		
36415: Collection of venous blood by venipuncture	298,233	6%
A0425: Emergency ambulance services, Ground mileage, per statute mile	269,512	6%
99308: Subsequent nursing facility care, per day, for the evaluation and management of a patient; medical decision making of low complexity	229,371	5%
A0428: Ambulance service, basic life support, nonemergency transport	187,252	4%
99309: Subsequent nursing facility care, per day, for the evaluation and management of a patient; medical decision making of moderate complexity	169,662	4%
Total for top 5 HCPCS codes	1,154,030	25%

For the top 5 HCPCS combined, about a quarter of the Part B claims with GV or GW modifiers are billed 0-14 days into the hospice election, and about 35% of Part B claims are billed 15 days to 3 months into the hospice election. The remaining 40% are billed 3 months after the hospice election begins.

The timing is similar for the four E&M HCPCS on the Part B GV claims, with about 26-32% occurring in 0-30 days with the remaining share spread out over days 31 to the end of the hospice election. The timing for subsequent hospital care is more concentrated in the beginning of the hospice election, with over a quarter occurring on days 0-2, and over half occurring in the first two weeks of hospice. The timing is similar for 3 of the top 5 HCPCS on the Part B GW claims, with about a quarter occurring in 0-30 days and a little over half occur in days 91-the end of the hospice election. The billing for ambulance services is much more concentrated in the beginning of the hospice

election with 27% of Part B GW claims for emergency ambulance services and 35% of Part B GW claims for nonemergency transport occurring on days 0-2.<sup>26</sup>

The most common HCPCS for the non GV/GW Part B claim line items were similar to those reported above for the GV/GW Part claims, and about half were billed 30 days after the beneficiary begins hospice. However, nearly a quarter of Part B claims with no GV or GW modifier for E&M subsequent hospital care occurred on the second day of hospice, and half are billed on days 2-7 (as mentioned above, this excludes Part B claims that occurred on the first day of the hospice election, and last day of hospice for beneficiaries who were discharged).

There was also interest in the reported HCPCS on the Part B claim while the hospice beneficiary was in a nursing home or receiving GIP.<sup>27</sup>

- The most common HCPCS reported on Part B claims while hospice patients were in nursing homes were similar between the GV and GW claims. Common HCPCS included subsequent nursing facility care, travel allowance one way in connection with medically necessary laboratory specimen collection, collection of venous blood by venipuncture, and debridement of nail(s) by any method(s). There were also differences, with ambulance services more common with GW claims. Among Part B claims for hospice patients in a nursing home, there is less concentration of HCPCS among Part B GW claims than Part B GV claims: the top 20 HCPCS are used on 67% of Part B GW claims compared to 82% for Part B GV claims.
- For hospice beneficiaries on GIP, subsequent and initial hospital care, hospital discharge day management, radiologic examination, and emergency ambulance services are among the most common HCPCS for both GV and GW Part B claims. For Part B GW claims, ambulance services (emergency and non-emergency) were among the most common HCPCS for hospice beneficiaries on GIP. Similar to the findings regarding concentration of HCPCS for hospice beneficiaries in nursing homes, HCPCS are more concentrated among the GV Part B claims than GW Part B claims for hospice beneficiaries on GIP: the top 20 HCPCS were used on 92% of Part B GV claims vs. 86% of Part B GW claims.

We examined the top 5 HCPCS associated with the highest average Medicare payments and the 5 HCPCS associated with the highest total (i.e., sum of all) Medicare payments (Table 11.4). To be expected, many of the HCPCS associated with the highest total Medicare payments were also the most common HCPCS (discussed above). There are relatively few Part B line items with the highest average Medicare payment HCPCS (N=110) and most of them occur after the first month of hospice. This suggests most of these high costs Part B claims are for longer stay hospice beneficiaries.

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<sup>26</sup> On the first day of hospice (i.e. zero days into hospice) ambulance service would not be covered under hospice but would be covered under the ambulance benefit. CPT only copyright 2013 American Medical Association. All rights reserved.

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**Table 11.4: Top Five HCPCS Codes With Highest Average or Highest Total Medicare Payments**

Modifier Type	Top 5 HCPCS with Highest Average Medicare Payment	Top 5 HCPCS with Highest Total Medicare Payment
GV modifier	Treatment of hemophilia, percutaneous vertebral augmentation, helicopter ambulance transportation (\$4,000-\$25,000 average costs)	Subsequent facility nursing care and hospital care and E&M office visits with moderate to high complexity (\$38.6 million)
GW modifier	Treatment of hemophilia (\$8,000-\$19,000 average costs)	Ambulance services and subsequent nursing facility care (\$84.5 million)
Neither GV or GW modifier	Stent and atherectomy and angioplasty, treatment of hemophilia, a lung transplant, and implantable neurostimulator electrode (\$4,000-\$8,000 average costs)	Ambulance services and E&M office visits with moderate to high complexity (\$24.0 million)

We also investigated the frequency of “high cost” HCPCS—defined as those that begin with 70, 71, 72, 74, 78—on Part B claims for hospice beneficiaries. Across all modifiers, these HCPCS are used on fewer than 5% of Part B claims.<sup>28</sup>

### 11.5 Hospice Level of Care

As to be expected, RHC is the most common level of care, regardless of the Part B modifier. However, a higher percentage of Part B GV claims (i.e., related to hospice diagnosis) occur when the beneficiary is in GIP compared to Part B GW claims (14.1% vs. 5.5%).

We also examined hospice level of care for the 5 HCPCS that had the highest total Medicare payment. For Part B claims with a GV modifier, RHC was most common for all HCPCS except subsequent hospital care, which was most often done for beneficiaries on GIP. For Part B claims with a GW modifier or no modifier, RHC was the most common level of care for all HCPCS.

### 11.6 Hospice Site of Service

Almost half of Part B claims with a GV or GW modifier were billed when the hospice patient was in a nursing home (LTCNF/SNF), and about a third were billed when the hospice patient was at home. For the unexplained non GV/GW claims, home was the most frequent site of service (43%) followed by nursing home (34%).

We also looked at site of service for the 5 HCPCS that had the highest total Medicare payment. For Part B claims with a GV modifier, LTCNF/SNF was the most common site of service for subsequent nursing facility care, inpatient for hospital care, and home for E&M office visits. For Part B claims with a GW modifier, home was the most common site for ambulance services (nearly half of claims). Not surprisingly, LTCNF/SNF was the site of service for subsequent nursing facility care. For Part B

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claims that do not have a hospice-related modifier, home was the most common site of service for all HCPCS. LTCNF/SNF accounted for at least a fifth of the ambulance claims.

## 11.7 Provider Analysis

Among all hospices, the six hospices that had the largest share of Part B claims for hospice patients were also among the top eight largest hospices.

Presumably, each hospice patient has only 1 AOR. However, a third (33%) of hospice patients had multiple providers submit Part B claims with a GV modifier, implying that they have multiple AORs. Overall, a fifth of hospice beneficiaries with any Part B GV modifier claim had two AORs, 14% had three or more AORs, and 7% had four or more AORs.

We also identified providers who ever billed under Part B for a hospice beneficiary and whose NPI also appears on any hospice claim for that beneficiary as the AOR. We found that about three-fifths of Part B GV line items have a matching NPI for a beneficiary in the hospice claims, but only about 18% of Part B GW line items have a matching NPI for a beneficiary in the hospice claims. Given that GW can be used by virtually any provider (i.e., not just for AORs), the relatively small percentage of matching could be because of a large number of NPIs in the Part B claims. Finally, we found that 21% of Part B claims with neither GV nor GW had a matching NPI for a beneficiary in the hospice claims as the AOR, suggesting that at least some hospice MDs/NPs are billing Part B without the necessary hospice-related modifiers.



## 12. Emergency Room Visits During Hospice Election of 2011 Hospice Admissions

### 12.1 Background

The analyses in this chapter examine emergency room (ER), Observational Stay (OV)<sup>29</sup>, and non-ER Inpatient (IP) visits during hospice enrollment. Our sample is based on 100% of hospice admissions in 2011. We follow these elections through hospice discharge or December 31<sup>st</sup>, 2012 (the last day of our claims data), whichever comes first. Based on the days in which our cohort was observed electing hospice, we identify all the ER, OV, and IP visits experienced by these hospice beneficiaries during their hospice election. In these analyses we exclude any ER/OV/IP visits occurring on either the hospice admission day or a day in which the beneficiary was discharged alive from hospice. This exclusion is intended to prevent the inclusions of ER/OV/IP utilization in the hours prior to hospice admission or after hospice discharge, when both a hospice transition and ER/OV/IP visit occurred on the same day.

#### 12.1.1 File Construction

Each record in our analytic file is a single ER/OV/IP visit, matched to the hospice election during which the ER/OV/IP visit occurred. ER/OV/IP visits may be either inpatient or outpatient. Inpatient ER/OV/IP visits may occur over multiple days. Outpatient ER/OV/IP visits occur on a single day by file construction—the date associated with the identified ER/OV/IP revenue center codes.

For each ER/OV/IP visit, we retain ER/OV/IP service dates, all diagnoses (ICD-9s and DRG on inpatient claims), provider number, condition code, and payment totals. Our payment estimates include ER payments, OV payments, ER/OV payments that cannot be separated (exclusively inpatient visits), non-carrier file “other” Part B payments, and carrier file payments. We separate carrier file payments occurring on “boundary days” (the ER/OV/IP admission and discharge days) and “internal days” (days between the ER admission and discharge days). We cannot ascertain whether carrier file payments are for medical care related to the ER admission. For this reason, we separate internal days (where we know all carrier file services occurred during the ER visit) and boundary days (where carrier file services may have occurred prior to ER/OV/IP admission or after discharge).

### 12.2 Analytic Results

#### 12.2.1 Cohort Description and Number of Identified ER/OV/IP Visits

We identified 1,088,561 hospice admissions that occurred during 2011 (for 1,026,905 unique beneficiaries). Because our final file excludes all ER/OV/IP visits which occurred on any hospice admission or live discharge days, we similarly excluded those hospice elections which are only

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<sup>29</sup> We identified observational stays by the following revenue center/HCPSC codes (see section 290.9 in <http://www.cms.gov/Regulations-and-Guidance/Guidance/Manuals/downloads/clm104c04.pdf>): 0760—General Classification category; 0762—Observation Room; G0378—Hospital observation service, per hour; and G0379—Direct admission of patient for hospital observation care.

comprised of admission and live discharge days (that is, very short hospice stays). We deleted 32,406 one-day stay elections (the one day was both an admission and discharge day) and then deleted 5,078 two-day elections where on the second day (the day following admission) the beneficiary was discharged alive. Our remaining cohort is comprised of 1,051,077 admissions (992,967 unique beneficiaries).

Within our final cohort, 70,365 hospice admissions (6.7% of the cohort total) experienced an ER, OV, or IP visit during hospice election. Of those experiencing a visit, about three-quarters (53,608 or 76.2%) admissions experienced just one ER/OV/IP visit; 11,191 (15.9%) experienced two ER/OV/IP visits, 3,212 (4.6%) experienced three, 1,208 (1.7%) experienced four, and the remainder (1,146 or 1.6%) experienced five or more ER/OV/IP visits—the extreme maximum was 35 ER/OV/IP visits—during election.

In total, there were 97,920 ER/OV/IP visits occurring on non-boundary hospice days in 2011. Table 12.1 (below) displays a cross-tabulation of visit types, by ER/OV/IP status and whether the visit was identified in an inpatient or outpatient claim. The table indicates that the visits in our analytic file are predominantly ER visits, and OV/IP stays are a small fraction of the file (2,460 total OV-only visits, 4,571 are both ER/OV visits, and 4,849 are IP visits vs. 86,040 ER-only visits). Additionally, there are over twice as many outpatient visits (67,750) as inpatient visits (30,170).

**Table 12.1: Frequencies of ER/OV/IP Visits during Hospice Election by Claim Source for 2011 Hospice Admissions**

	Inpatient Claims	Outpatient Claims	Total
ER visit, only	23,878	62,162	86,040
Observational Stay, only	165	2,295	2,460
Both an Observational and ER visit	1,278	3,293	4,571
Inpatient-Only Visit	4,849	0	4,849
Total	30,170	67,750	97,920

Table 12.2 (below) presents the average number of ER/OV/IP visits per 100 admissions for numerous beneficiary and hospice characteristics. Additionally, the table shows Adjusted Iterated Rate Ratios (AIRRs) and 95% confidence intervals. IRRs are roughly interpreted as the number of ER/OV/IP visits associated with each characteristic relative to a reference group (e.g., an AIRR of 2.0 would indicate on average that characteristic is associated with twice as many ER/OV/IP visits as the reference group). Highlights are as follows:

- Younger beneficiaries have the highest rate of ER/OV/IP visits per admission. Beneficiaries ages 0-64 averaged 15.3 ER/OV/IP visits per 100 admissions, whereas for all other ages the average is in the 7.8-10.0 visits per 100 admissions range. The AIRR for the 0-64 age group is 1.62 [95% CI 1.56-1.68] relative to the 85-89 age reference group; i.e., beneficiaries aged 0-64 have about 1.6x more ER/OV/IP visits than the 85-89 age reference group, adjusted for all other characteristics.
- Black beneficiaries have more ER/OV/IP visits (15.8 visits per 100 admissions for blacks vs. 8.7 visits per 100 admissions for whites; AIRR 1.39 95% CI 1.35-1.43).
- Cancer admissions have fewer ER/OV/IP visits (6.8 per 100 admissions for cancer patients vs. 10.4 per 100 admissions for non-cancer patients; AIRR 0.64 95% CI 0.63-0.65).

However, this might reflect that cancer patients have shorter stays and thus a shorter time window to incur ER/OV/IP visits.

- ER/OV/IP visit rates are higher in recently certified hospices (13.7 visits per 100 admissions in hospices certified in 2005 or after vs. 7.5 visits per 100 admissions in hospices certified in the 1980s; AIRR 1.34 95% CI 1.30-1.39).
- Lastly, ER/OV/IP visit rates were greatest in the South (13.4 visits per 100 admissions in southern-state hospices vs. 7.0 visits per 100 admissions in hospices in the Northeast; AIRR 1.46 95% CI 1.42-1.50).

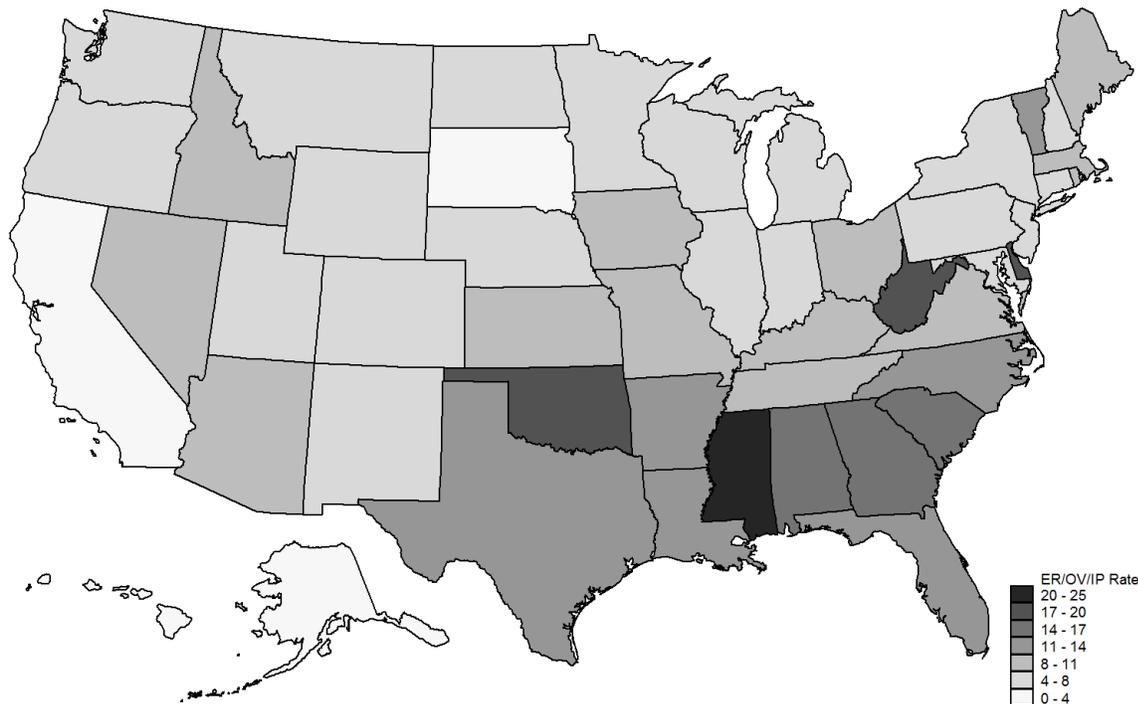
**Table 12.2: ER/OV/IP Visits per 100 Hospice Admissions, Adjusted Iterated Rate Ratios, and 95% CIs associated with Beneficiary and Hospice Characteristics**

<b>Beneficiary &amp; Hospice Characteristics</b>	<b>ER/OV/IP per 100 Admissions</b>	<b>Adjusted IRR</b>	<b>95% CI</b>
<b>Beneficiary age</b>			
0-64	15.3	1.62	1.56-1.68
65-69	10.0	1.17	1.12-1.21
70-74	9.4	1.09	1.06-1.13
75-79	9.3	1.06	1.03-1.10
80-84	9.2	1.04	1.01-1.07
85-89	8.9	Reference	Reference
90-94	8.5	0.95	0.92-0.97
95+	7.8	0.85	0.82-0.88
<b>Gender</b>			
Male	9.0	Reference	Reference
Female	9.5	1.07	1.05-1.09
<b>Race ethnicity</b>			
White	8.7	Reference	Reference
Black	15.8	1.39	1.35-1.43
Hispanic	9.8	1.08	1.02-1.15
Asian	5.2	0.77	0.69-0.85
Other race	8.4	0.98	0.91-1.05
<b>Hospice diagnosis (simple)</b>			
Cancer admission	6.8	0.64	0.63-0.65
Non-cancer admission	10.4	Reference	Reference
<b>Site of service at admission</b>			
Nursing home admission	8.8	0.83	0.81-0.85
Admission from other sites	9.5	Reference	Reference
<b>Hospice total admissions</b>			
0-99	14.9	1.18	1.13-1.22
100-199	11.3	1.00	0.97-1.04
200-399	9.2	0.95	0.92-0.98
400-599	8.3	0.92	0.89-0.95
600-999	8.8	1.02	1.00-1.05
1,000+	8.3	Reference	Reference
<b>Hospice certification period</b>			
1980s	7.5	Reference	Reference
1990s	8.0	1.01	0.99-1.03
2000-2004	12.1	1.18	1.15-1.22

Beneficiary & Hospice Characteristics	ER/OV/IP per 100 Admissions	Adjusted IRR	95% CI
2005+	13.7	1.34	1.30-1.39
<b>Ownership type</b>			
Government	7.8	1.06	1.03-1.09
Non-profit	7.1	Reference	Reference
For-profit	11.8	1.26	1.23-1.28
<b>Facility type</b>			
Facility-based	5.9	Reference	Reference
Freestanding facility	10.3	1.36	1.33-1.40
<b>Region</b>			
Northeast	7.0	Reference	Reference
Midwest	7.5	0.99	0.97-1.02
South	13.4	1.46	1.42-1.50
West	5.4	0.67	0.65-0.69
Outlying territories	3.8	0.43	0.38-0.49
<b>Urban/rural status</b>			
Rural mailing address	8.9	1.33	1.29-1.36
Urban mail address	12.4	Reference	Reference

Figure 12.1 presents a heat map where intensity of the shading indicates a greater rate of ER/OV/IP visits per 100 hospice admissions in 2011. Visibly, ER/OV/IP rates are greater (darker) in the southeastern states than in the rest of the country. Nationwide, Mississippi has the highest rates (24.0 ER/OV/IP visits per 100 admissions) followed by Oklahoma (19.4 ER/OV/IP visits per 100 admissions).

**Figure 12.1: Heat Map Indicating Average ER/OV/IP Rates per 100 Hospice Admissions**



### 12.2.2 Medicare Payments Associated with ER/OV/IP Visits

Medicare was billed at least \$329.3 million for the 97,920 ER/OV/IP visits occurring during hospice enrollment for 2011 hospice admissions. A more conservative estimate, which excludes boundary days from the carrier file (to which we cannot accurately match dollars to an ER/OV/IP visit) is \$293.5 million. This amount is displayed in component sources in Table 12.3, below. Payments may have been associated with ER and/or OV revenue codes, other non-carrier Part B payments, or carrier file payments. The table further distinguishes payments by inpatient and outpatient visits. The results indicate that the largest payment totals are attributable to inpatient ER payments, which comprise \$196.4 million (about three-fifths of the \$329.3 million total).

**Table 12.3: Medicare Payments Associated with ER/OV/IP Visits during Hospice Election**

	Inpatient Claims		Outpatient Claims		Total	
ER Payments	\$196,417,427	70.0%	\$13,693,564	28.2%	\$210,110,991	63.8%
OV Payments	\$1,308,305	0.5%	\$209,106	0.4%	\$1,517,411	0.5%
Mixed Claim ER/OV/IP Payments	\$8,201,034	2.9%	\$0	0.0%	\$8,201,034	2.5%
Non-Carrier Other Part B Payments	\$44,131,347	15.7%	\$12,807,515	26.4%	\$56,938,862	17.3%
Carrier File Total Payments	\$30,655,710	10.9%	\$21,860,467	45.0%	\$52,516,177	15.9%
Carrier File "Internal" ER/OV/IP Days	\$16,742,543	6.0%	\$0	0.0%	\$16,742,543	5.1%
Carrier File "Boundary" ER/OV/IP Days	\$13,913,167	5.0%	\$21,860,467	45.0%	\$35,773,634	10.9%
Total Payments	\$280,713,822	100.0%	\$48,570,652	100.0%	\$329,284,474	100.0%

### 12.2.3 Timing of ER/OV/IP Visits

We found that ER/OV/IP visits tended to occur near the end of the hospice election. We found 34.2% of inpatient visits and 17.3% of outpatient visits occurred during the last 7 days of hospice election, and 16.8% of inpatient visits and 8.4% of outpatient visits occurred during the last 2 days of hospice election. In contrast, 10.5% of visits occurred in the first 7 days of election and 3.4% of visits occurred in the first 2 days of election. Eventual live discharges were also disproportionately represented: 55.0% of inpatient visits and 46.8% of outpatient visits were for beneficiaries who later left hospice alive.

We found no evidence of weekends being disproportionately unrepresented during visit dates. Both inpatient and outpatient visits were essentially evenly distributed throughout the week—approximately one-seventh of all visits fell on each day of the week. This does not suggest a problem with weekend access to services for hospice beneficiaries.

### 12.2.4 Cause of Hospitalization

To examine the causes of ER visits, Table 12.4 shows the most commonly occurring DRG codes for inpatient ER/OV/IP visits experienced by our cohort. The table presents the frequencies of ER/OV/IP visits and total associated inpatient ER payments.

The thirty-three DRG groups displayed below account for over half (53.0%) of inpatient ER/OV/IP visits during the elections of 2011 hospice admissions and were associated with over \$99 million in ER payments. The most frequently appearing DRG was Septicemia or Severe Sepsis w/o MV 96+ hours (1,641 ER/OV/IP visits or 5.5% of all inpatient ER/OV/IP visits; \$17.2 million in ER payments), followed by Kidney and Urinary Tract Infections (1,126 visits), Hip & Femur Procedures (933 visits), G.I Hemorrhage (643 visits) and Simple Pneumonia and Pleurisy (638 visits).

**Table 12.4: Most Frequently Appearing DRG on Inpatient Claims for ER/OV/IP Services during Hospice Election (and Associated ER Payments)**

DRG Title (FY2011)	DRG Code	# ER Visits	% ER Visits	Cum. % ER Visits	Assoc. Inpatient ER Payments
SEPTICEMIA OR SEVERE SEPSIS W/O MV 96+	871	1,641	5.5%	5.5%	\$17,231,238
KIDNEY & URINARY TRACT INFECTIONS W/O M	690	1,126	3.7%	9.2%	\$3,576,913
HIP & FEMUR PROCEDURES EXCEPT MAJOR JOI	481	933	3.1%	12.3%	\$9,100,061
G.I. HEMORRHAGE W CC	194	643	2.1%	14.4%	\$2,895,796
SIMPLE PNEUMONIA & PLEURISY W CC	378	638	2.1%	16.5%	\$2,711,124
RENAL FAILURE W CC	536	594	2.0%	18.5%	\$1,818,703
FRACTURES OF HIP & PELVIS W/O MCC	470	593	2.0%	20.5%	\$5,580,371
NUTRITIONAL & MISC METABOLIC DISORDERS	193	536	1.8%	22.3%	\$3,359,129
MAJOR JOINT REPLACEMENT OR REATTACHMENT	291	535	1.8%	24.0%	\$3,302,887
SEPTICEMIA OR SEVERE SEPSIS W/O MV 96+	689	509	1.7%	25.7%	\$2,896,997
KIDNEY & URINARY TRACT INFECTIONS W MCC	641	482	1.6%	27.3%	\$1,489,323
RED BLOOD CELL DISORDERS W/O MCC	683	472	1.6%	28.9%	\$2,843,007
HEART FAILURE & SHOCK W MCC	292	459	1.5%	30.4%	\$1,932,443
ESOPHAGITIS, GASTROENT & MISC DIGEST DI	177	458	1.5%	31.9%	\$3,936,923
CELLULITIS W/O MCC	392	447	1.5%	33.4%	\$1,213,264
SIMPLE PNEUMONIA & PLEURISY W MCC	872	442	1.5%	34.9%	\$2,883,038
HEART FAILURE & SHOCK W CC	682	440	1.5%	36.4%	\$3,064,677
PULMONARY EDEMA & RESPIRATORY FAILURE	812	412	1.4%	37.7%	\$1,236,583
RENAL FAILURE W MCC	603	375	1.2%	39.0%	\$1,398,163
RESPIRATORY INFECTIONS & INFLAMMATIONS	480	373	1.2%	40.2%	\$5,424,839
RESPIRATORY INFECTIONS & INFLAMMATIONS	189	347	1.2%	41.4%	\$2,639,686
HIP & FEMUR PROCEDURES EXCEPT MAJOR JOI	377	345	1.2%	42.5%	\$2,965,150
G.I. HEMORRHAGE W MCC	178	336	1.1%	43.6%	\$2,303,236
CHRONIC OBSTRUCTIVE PULMONARY DISEASE W	312	316	1.1%	44.7%	\$852,491
CHRONIC OBSTRUCTIVE PULMONARY DISEASE W	190	315	1.1%	45.7%	\$1,725,895
SIGNS & SYMPTOMS W/O MCC	191	296	1.0%	46.7%	\$1,373,280
DEGENERATIVE NERVOUS SYSTEM DISORDERS W	640	290	1.0%	47.7%	\$1,296,950
PSYCHOSES	948	287	1.0%	48.6%	\$783,845
INTRACRANIAL HEMORRHAGE OR CEREBRAL INF	065	281	0.9%	49.5%	\$1,600,454
ORGANIC DISTURBANCES & MENTAL RETARDATI	389	274	0.9%	50.5%	\$1,085,721
SYNCOPE & COLLAPSE	208	265	0.9%	51.3%	\$2,981,539
NUTRITIONAL & MISC METABOLIC DISORDERS	309	252	0.8%	52.2%	\$930,797
G.I. OBSTRUCTION W CC	394	247	0.8%	53.0%	\$1,123,211

### 12.2.5 Verifying Condition Code “07”

Claims for ER and OV visits that overlap with hospice utilization should contain condition code 07 if the visit was for the treatment of a condition that is unrelated to the terminal condition and related conditions. Table 12.5 displays the frequency of the presence of Condition Code “07” by claim source. We found that among beneficiaries currently electing hospice, 6.2% of outpatient care claims (4,177 visits) and 5.6% of inpatient care stays (1,687 visits) in our analytic file did not include condition code “07”.

**Table 12.5: Frequency of ER/OV/IP Visits Missing Condition Code “07” (Treatment of Nonterminal Condition)**

	Inpatient Claims		Outpatient Claims		Total	
Condition Code “07” absent	1,687	5.6%	4,177	6.2%	5,864	6.0%
Condition Code “07” present	28,483	94.4%	63,573	93.8%	92,056	94.0%
Total	30,170	100.0%	67,750	100.0%	97,920	100.0%

The code is absent from a relatively minor percentage of claims. Table 12.6 (below) displays raw percentages of claims missing condition code “07” along with adjusted odds ratios and 95% confidence intervals (as in Table 12.2, the category marked “reference” serves as the reference category in each respective group). Highlights are:

- Younger beneficiaries are more likely to be missing condition code “07” (11.1% of beneficiaries ages 0-64 vs. 6.3% of beneficiaries ages 85-89; AOR 1.58 95% CI 1.42-1.77).
- Asian beneficiaries had high rates of visits without code “07” (Asians 13.1% vs. Whites 7.0%; Asian AOR 1.95 95% CI 1.43-2.65).
- Cancer diagnoses had a high rate of missing “07” (10.1% cancer vs. 6.5% non-cancer; AOR 1.56 95% CI 1.46-1.66).
- Rates of missing “07” were higher in smaller hospices (12.1% in 0-99 total hospice admissions vs. 5.2% in 1,000+ total hospice admissions; AOR 2.27 95% CI 2.01-2.56).

**Table 12.6: Beneficiary and Hospice Characteristics Associated with ER/OV/IP Visits Missing Condition Code “07” (Treatment of Nonterminal Condition); Raw Percentage with Missing Codes, AORs, and 95% CIs**

Beneficiary & Hospice Characteristics	Raw % w/o “07”	Adjusted OR	95% CI
<b>Beneficiary age</b>			
0-64	11.1%	1.58	1.42-1.77
65-69	10.1%	1.41	1.26-1.59
70-74	8.3%	1.19	1.06-1.33
75-79	7.5%	1.10	0.99-1.22
80-84	7.2%	1.09	0.99-1.20
85-89	6.3%	Reference	Reference
90-94	5.7%	0.94	0.84-1.04
95+	6.1%	1.05	0.92-1.19
<b>Gender</b>			
Male	8.4%	Reference	Reference
Female	6.6%	0.83	0.78-0.88
<b>Race ethnicity</b>			
White	7.0%	Reference	Reference
Black	9.2%	1.12	1.03-1.22
Hispanic	9.6%	1.38	1.15-1.67
Asian	13.1%	1.95	1.43-2.65
Other race	8.7%	1.08	0.85-1.38
<b>Hospice diagnosis (simple)</b>			
Cancer admission	10.1%	1.56	1.46-1.66

<b>Beneficiary &amp; Hospice Characteristics</b>	<b>Raw % w/o "07"</b>	<b>Adjusted OR</b>	<b>95% CI</b>
Non-cancer admission	6.5%	Reference	Reference
<b>Site of service at admission</b>			
Nursing home admission	6.7%	1.01	0.94-1.09
Admission from other sites	7.5%	Reference	Reference
<b>Hospice total admissions</b>			
0-99	12.1%	2.27	2.01-2.56
100-199	8.5%	1.58	1.41-1.76
200-399	7.6%	1.45	1.31-1.61
400-599	8.2%	1.63	1.47-1.80
600-999	6.8%	1.32	1.19-1.45
1,000+	5.2%	Reference	Reference
<b>Hospice certification period</b>			
1980s	6.1%	Reference	Reference
1990s	7.4%	1.09	1.00-1.18
2000-2004	6.8%	0.98	0.87-1.09
2005+	9.1%	1.25	1.13-1.40
<b>Ownership type</b>			
Government	8.6%	1.18	1.07-1.31
Non-profit	6.6%	Reference	Reference
For-profit	7.5%	0.98	0.90-1.06
<b>Facility type</b>			
Facility-based	8.9%	Reference	Reference
Freestanding facility	7.0%	0.79	0.73-0.86
<b>Region</b>			
Northeast	7.8%	Reference	Reference
Midwest	6.1%	0.76	0.68-0.84
South	7.7%	0.99	0.90-1.08
West	7.1%	0.89	0.80-1.00
Outlying territories	8.9%	1.11	0.71-1.75
<b>Urban/rural status</b>			
Rural mailing address	7.2%	0.90	0.83-0.98
Urban mail address	8.2%	Reference	Reference

### 12.2.6 Concentrations in ER/OV/IP Visits across Hospices

We examined whether ER/OV/IP visits were concentrated in a small number of hospices. To do this, we tabulated total hospice admissions and Medicare payments associated with ER/OV/IP visits for each hospice into a hospice-level file. We used this information to calculate total ER/OV/IP payments per hospice admission for each hospice. We sorted hospices by per-admission ER/OV/IP payment rates and grouped them into deciles (ten groups with equal numbers of hospices). Finally, we flagged those hospices which were in the 10<sup>th</sup> decile—the group with the highest rate of per-admission ER/OV/IP payments.

For each decile, Table 12.7 (below) displays the ER/OV/IP payments per-admission, aggregate total payments, the percentage which that decile's aggregate payments contributes to the \$293 million total (the conservative total for all ER/OV/IP services during hospice), total visits in the decile, and average ER/OV/IP payments per visit. Average ER/OV/IP payments per-admission ranges from

\$0.48 per-admission in the first decile to \$1,921.52 per admission in the tenth decile. Note that the first decile of hospices was associated with \$30,318 total ER/OV/IP payments, or 0.0% of the total; in contrast, the tenth decile was associated with \$88,523,776; i.e., or 30.2%, of the total—thus one-tenth of hospices<sup>30</sup> accounted for almost one-third of all payments. There are seemingly two factors explaining the greater payment totals in the tenth decile: (1) the tenth decile is associated with more ER/OV/IP visits during hospice—21,299 total ER/OV/IP visits among cohort beneficiaries received service from hospices in the tenth decile vs. 142 ER/OV/IP visits in the first decile, and (2) those ER/OV/IP visits which occur have greater average expenditures in the tenth decile—\$4,156.24 per ER/OV/IP visit for beneficiaries receiving service from tenth decile hospices, vs. \$213.51 per ER/OV/IP visit which occurs among first decile hospices.

**Table 12.7: ER/OV/IP Payments Per-Admission and Aggregate during Hospice Enrollment, by Decile (n=3,486 Hospices; 2011 Admissions)**

Decile	ER/OV/IP Payments per-admission	Total ER/OV/IP Payments	% of Total (=293.5M)	Total ER/OV/IP Visits	Average ER/OV/IP Payments per Visit
1	\$0.48	\$30,318	0.0%	142	\$213.51
2	\$9.01	\$679,307	0.2%	1,724	\$394.03
3	\$27.48	\$3,049,881	1.0%	3,375	\$903.67
4	\$61.25	\$7,931,591	2.7%	5,133	\$1,545.22
5	\$105.02	\$15,713,668	5.4%	8,003	\$1,963.47
6	\$164.96	\$23,227,147	7.9%	9,615	\$2,415.72
7	\$253.18	\$42,137,733	14.4%	15,257	\$2,761.86
8	\$379.15	\$48,559,799	16.5%	15,026	\$3,231.72
9	\$627.36	\$63,657,620	21.7%	18,346	\$3,469.84
10	\$1,921.52	\$88,523,776	30.2%	21,299	\$4,156.24

Source: Abt Associates Analysis of 100% Medicare Hospice/Part B Claims (2011-2012)

Table 12.8 (below) examines how per-admission ER/OV/IP payments vary by hospice characteristics, and for each characteristic we display the percentage of all hospices in that category which belonged to the tenth decile of per-admission ER/OV/IP payments. Newer hospices are associated with higher ER/OV/IP payments—payments were \$199.51 per-admission for hospices certified in the 1980s vs. \$510.40 per-admission for hospices certified since 2005; 16.7% of all hospices certified since 2005 were in the top decile vs. 2.4% of hospices certified in the 1980s. For-profit hospices are associated with higher ER/OV/IP payments—payments were \$180.72 per-admission for non-profits vs. \$472.99 per-admission for for-profits; 14.4% of for-profit hospices were in the top decile vs. 2.7% of non-profits. Freestanding hospices are associated with higher ER/OV/IP payments—payments were \$156.15 per-admission for facility-based hospices vs. \$430.55 per-admission for freestanding hospices; 12.6% of freestanding hospices were in the top decile vs. 2.8% of facility-based hospices. Southern hospices are associated with higher ER/OV/IP payments—payments were \$584.95 per-

<sup>30</sup> Additionally, the tenth decile accounted for 9.0% of total hospice service days in the cohort, which rules out the possibility payments a greater for this group simply because more hospice service is provided. The tenth decile comprises 10% of hospices, approximately 10% of hospice service days, but a disproportionate amount (30.2%) of ER/OV payments.

admission for hospices located in southern states—the next closest region the Northeast with \$208.34 per-admission; 18.4% of all hospices in the South were in the top decile compared to 4.0% of hospices in the Northeast.

**Table 12.8: Average ER/OV/IP Payments Per-Admission and Raw Percentage in Top Decile Billing Per-Admission, by Hospice Characteristic (n=3,486 Hospices; 2011 Admissions)**

Hospice Characteristic	ER/OV/IP Payments per-admission	% Hospices in Top Decile
<b>Hospice size (total admissions, 2011)</b>		
0-49 admissions	\$614.55	18.9%
50-99 admissions	\$380.64	12.8%
100-199 admissions	\$307.53	9.0%
200-399 admissions	\$246.87	4.7%
400-599 admissions	\$229.41	4.3%
600-999 admissions	\$257.10	5.5%
1000+ admissions	\$228.73	3.5%
<b>Hospice certification year</b>		
1980s	\$199.51	2.4%
1990s	\$222.57	4.9%
2000-2004	\$435.85	12.8%
2005+	\$510.40	16.7%
<b>Ownership type</b>		
For-profit	\$472.99	14.4%
Non-profit	\$180.72	2.7%
Government	\$247.93	6.9%
<b>Facility type</b>		
Freestanding	\$430.55	12.6%
Facility-based	\$156.15	2.8%
<b>Region</b>		
Northeast	\$208.34	4.0%
Midwest	\$190.84	2.9%
South	\$584.95	18.4%
West	\$176.48	4.5%
Outlying territories	\$102.26	2.4%
<b>Urban/rural status</b>		
Urban	\$356.13	9.6%
Rural	\$341.87	10.1%

Source: Abt Associates Analysis of 100% Medicare Hospice/Part B Claims (2011-2012)

## 13. Most Frequently Used RUGs to Classify Medicare Beneficiaries Utilizing Hospice in Skilled Nursing Facilities

The purpose of this analysis is to provide descriptive statistics on the most frequently used Resource Utilization Groups (RUGs) for Medicare hospice beneficiaries in skilled nursing facilities. This analysis was intended to present new options for the size of the payment rate for Inpatient Respite Care (IRC). One approach for reforming payment to IRC is to set the payment equal to the Skilled Nursing Facility (SNF) payment rate for the most commonly used RUGs.

### 13.1 Methodology

For this analysis, a new analytic file was created from Minimum Data Set (MDS) assessments and SNF claims. This new analytic file contained information on the dates a particular beneficiary was a SNF resident and the corresponding RUG (if one was recorded) for the time in the SNF. Because there are multiple MDS assessments during a nursing home stay (with potentially multiple RUG groups), the RUG information was assigned to specific days based on the assessment date.<sup>31</sup>

Information from this file was merged to the SSS Hospice Day Level File (100%). Only hospice days in 2012 where the site of service was recorded as either “Hospice care provided to SNF residents in a non-Medicare covered stay and nursing facility residents” (Q5003) or “Hospice care provided to skilled nursing facility residents in a Medicare covered stay” (Q5004) were used.<sup>32</sup> There were 23,927,862 such days in the file. Of those days, 11.40% (n=2,728,844) did not match to the analytic file on nursing home stays. A small number of days (3.57%; n=854,790) did match the nursing home stay file, but there was no RUG group recorded for the day.

### 13.2 Results

Table 13.1 shows information from the two merged files described above. The table shows how many days of hospice from 2012 (with a site of service of nursing home or skilled nursing home) were associated with a particular RUG and the associated payment rate for FY 2012 (using the payment rate for urban locations).

As mentioned previously, 11.40% of the hospice days which have recorded the site of service being in the nursing or skilled nursing facility do not show up in the nursing home stay file. A small number of hospice days (3.57%) with a NF/SNF site of service do show up in the stay file, but do not have a RUG. A large percentage (33.53%) of the days are associated with the PD1, PE1, and PC1 RUGs, which are the three most frequently used RUGs in our sample. These are all associated with the “Physical Function Reduced Category.” The next 6 most frequently used RUGs are LE1 (special care

<sup>31</sup> A particular day was assigned the RUG that matched the closest MDS assessment date within the nursing home stay. In the event the day is “in the middle” of two MDS assessment dates, the date is matched to the assessment date that occurs before the date being examined.

<sup>32</sup> Some facilities are dually certified as both skilled and residential and it is not clear which Q-code a hospice uses in that situation. Therefore, we include both in this analysis. Some non-Medicare nursing home stays may not have a RUG recorded and that may explain some of the mismatch that is later noted.

low), LD1 (special care low), CD1 (clinically complex), CC1 (clinically complex), CE1 (clinically complex), LC1 (special care low). These RUG groups correspond to 23.98% of all the hospice days in the sample. Between the categories already mentioned, this accounts for 72.49% of all hospice days in the sample.

The range in payment rates for these RUG groups (using base payment rates for Urban SNFs for FY 2012) is between \$184.94 and \$454.49. The range in the non-labor portion for these RUG groups is between \$57.81 and \$104.07.

For FY 2012, the IRC base payment rate was equal to \$156.22. The RHC base payment rate was equal to \$151.03.

Two potential approaches could be used to update the IRC Rate.

1. Update it to one of the payment rates in the range of the RUG group mentioned.
2. Update it to incorporate just the non-labor portion and add the RHC rate (151.03).

For the first option:

- The minimum payment of the RUGs mentioned would be \$184.64 (which is larger than the current IRC rate by a factor of 1.2).
- The maximum payment of the RUGs mentioned would be \$454.49 (which is larger than the current IRC rate by a factor of 2.9)
- The median payment of the RUGs mentioned would be \$332.42 (which is larger than the current IRC rate by a factor of 2.1)

For the second option:

- The minimum payment of the RUGs mentioned would be \$151.03 (which is larger than the current IRC rate by a factor of 1.3).
- The maximum payment of the RUGs mentioned would be \$293.32 (which is larger than the current IRC rate by a factor of 1.9)
- The median payment of the RUGs mentioned would be \$252.08 (which is larger than the current IRC rate by a factor of 1.6)

**Table 13.1: Frequencies of RUG-IV Groupings by Number of Days a “Hospice in the Nursing Home Beneficiary” Is Assigned to a Particular Group**

RUG-IV Group	RUG IV Category	Number of Hospice Days	%	Cum.	Total SNF Rate Urban FY2012	Labor Portion	Non-Labor Portion	Ratio of Urban SNF Rate to FY2012 IRC Rate	Ratio of Sum of FY2012 RHC Rate Plus Non-labor Portion of SNF Rate Over the FY2012 IRC Rate
PD1	Physical Function Reduced	2,965,314	12.39	12.39	\$303.50	\$208.48	\$95.02	1.94	1.58
Not in MDS		2,728,844	11.4	23.8					
PE1	Physical Function Reduced	2,666,149	11.14	34.94	\$322.78	\$221.73	\$101.05	2.07	1.61
PC1	Physical Function Reduced	2,392,364	10	44.94	\$261.74	\$179.80	\$81.94	1.68	1.49
LE1	Special Care Low	1,196,281	5	49.94	\$345.26	\$237.17	\$108.09	2.21	1.66
LD1	Special Care Low	1,160,961	4.85	54.79	\$332.42	\$228.35	\$104.07	2.13	1.63
CD1	Clinically Complex	1,064,110	4.45	59.24	\$319.57	\$219.52	\$100.05	2.05	1.61
CC1	Clinically Complex	921,877	3.85	63.09	\$282.62	\$194.14	\$88.48	1.81	1.53
No RUG		854,790	3.57	66.66					
CE1	Clinically Complex	793,242	3.32	69.98	\$338.84	\$232.76	\$106.08	2.17	1.65
LC1	Special Care Low	601,440	2.51	72.49	\$293.87	\$201.87	\$92.00	1.88	1.56
BB1	Behavior Symptoms & Cognitive Performance	523,510	2.19	74.68	\$242.47	\$166.56	\$75.91	1.55	1.45
HD1	Special Care High	500,121	2.09	76.77	\$354.90	\$243.79	\$111.11	2.27	1.68
HC1	Special Care High	437,708	1.83	78.6	\$335.63	\$230.55	\$105.08	2.15	1.64
HE1	Special Care High	417,103	1.74	80.34	\$377.39	\$259.24	\$118.15	2.42	1.72
PD2	Physical Function Reduced	297,506	1.24	81.58	\$319.57	\$219.52	\$100.05	2.05	1.61
CB1	Clinically Complex	293,276	1.23	82.81	\$261.74	\$179.80	\$81.94	1.68	1.49
PC2	Physical Function Reduced	268,043	1.12	83.93	\$274.59	\$188.62	\$85.97	1.76	1.52
RMC	Rehab	263,404	1.1	85.03	\$366.95	\$252.07	\$114.88	2.35	1.70
PE2	Physical Function Reduced	256,880	1.07	86.1	\$338.84	\$232.76	\$106.08	2.17	1.65
LE2	Special Care Low	253,763	1.06	87.16	\$412.73	\$283.52	\$129.21	2.64	1.79

RUG-IV Group	RUG IV Category	Number of Hospice Days	%	Cum.	Total SNF Rate Urban FY2012	Labor Portion	Non-Labor Portion	Ratio of Urban SNF Rate to FY2012 IRC Rate	Ratio of Sum of FY2012 RHC Rate Plus Non-labor Portion of SNF Rate Over the FY2012 IRC Rate
CA1	Clinically Complex	229,438	0.96	88.12	\$223.19	\$153.32	\$69.87	1.43	1.41
PB1	Physical Function Reduced	221,819	0.93	89.05	\$223.19	\$153.32	\$69.87	1.43	1.41
LD2	Special Care Low	212,254	0.89	89.94	\$396.66	\$272.48	\$124.18	2.54	1.76
CD2	Clinically Complex	211,699	0.88	90.82	\$348.48	\$239.38	\$109.10	2.23	1.67
CE2	Clinically Complex	199,482	0.83	91.66	\$367.75	\$252.62	\$115.13	2.35	1.70
BA1	Behavior Symptoms & Cognitive Performance	183,483	0.77	92.42	\$200.71	\$137.87	\$62.84	1.28	1.37
HB1	Special Care High	174,264	0.73	93.15	\$332.42	\$228.35	\$104.07	2.13	1.63
PA1	Physical Function Reduced	151,557	0.63	93.78	\$184.64	\$126.83	\$57.81	1.18	1.34
CC2	Clinically Complex	151,255	0.63	94.42	\$305.11	\$209.59	\$95.52	1.95	1.58
HD2	Special Care High	116,168	0.49	94.9	\$425.57	\$292.34	\$133.23	2.72	1.82
HE2	Special Care High	114,370	0.48	95.38	\$454.49	\$312.20	\$142.29	2.91	1.88
RMB	Rehab	103,994	0.43	95.81	\$344.47	\$236.63	\$107.84	2.21	1.66
LC2	Special Care Low	97,383	0.41	96.22	\$348.48	\$239.38	\$109.10	2.23	1.67
Another RUG Not Already Listed		904,010	3.78	100					
<b>Total</b>		<b>23,927,862</b>	<b>100</b>						

## 14. Analysis of Face-to-Face Requirement

The analyses in this chapter examine the impact of the Face-to-Face Physician Visit Requirement for Hospice on the probability of a beneficiary having a recertification that is his second or later. The regulation requires that a beneficiary have a face-to-face visit with a hospice physician or nurse practitioner on the 2<sup>nd</sup> and any subsequent recertification (the recertification required to start the 3<sup>rd</sup> benefit period is the beneficiary's second recertification). One possible impact of this requirement is that beneficiaries who do not have an expectation of death within six months would be discharged from hospice more frequently than prior to the requirement when a physician was not required to meet with the beneficiary.

The specific face-to-face requirement has several components, two of which are relevant for the analysis included in this chapter.

- A hospice physician or hospice Nurse Practitioner (NP) must have a face-to-face encounter with hospice patients prior to, but not more than 30 days prior to, the 3<sup>rd</sup> benefit period recertification, and prior to, but not more than 30 days prior to, each recertification thereafter, to determine continued eligibility for the hospice benefit.
- A hospice physician or nurse practitioner who performs the encounter must attest in writing that he or she had a face-to-face encounter with the patient, including the date of that visit. The attestation of the nurse practitioner or non-certifying hospice physician shall state that the clinical findings of that visit were provided to the certifying physician for use in determining continued eligibility for hospice care.

The face-to-face requirement fully went into effect April 1, 2011. Any 3<sup>rd</sup> or later benefit period recertification on or after April 1, 2011 required a face-to-face encounter.

### 14.1 Methodology

This analysis attempts to answer a very specific question that should provide information on the impact of the Face-to-Face requirement.

*For beneficiaries whose first and second benefit periods are consecutive 90 day benefit periods, is the frequency of a 2<sup>nd</sup> or subsequent recertification greater for beneficiaries who began their first period during October 2009–January 2010 compared to beneficiaries who began their first period during October 2010–January 2011 and also compared to beneficiaries who began their first period during October 2011 – January 2012?*

Beneficiaries beginning hospice between October 2009 and January 2010 would not be impacted by the Face-to-Face requirement. Beneficiaries beginning hospice between October 2010 and January 2011 or October 2011 and January 2012 would be impacted by the Face-to-Face requirement.

For the beneficiaries whose first benefit period began during October 2009–January 2010, we only looked at first benefit periods that started between October 4, 2009 and January 31, 2010. Similarly, for the beneficiaries whose first benefit period began during October 2010–January 2011, we only looked at first benefit periods that started between October 4, 2010 and January 31, 2011. Finally, for the beneficiaries whose first benefit period began during October 2011–January 2012, we only looked at first benefit periods that started between October 4, 2011 and January 31, 2012.

For each cohort of beneficiaries, we examined up to five benefit periods. In the previous year's technical report, a similar analysis was done that required additional assumptions to ensure a beneficiary was in their first or second benefit period. These additional assumptions (which were caused by data limitations at the time) caused the sample to be smaller than it otherwise would have been without the data limitations. This year, the analysis uses the benefit period enrollment dates as recorded in the Medicare Enrollment Database (Medicare EDB) which was not available for the previous year's analysis. This allows us to look at all beneficiaries utilizing hospice during the time period of the analysis.

The following bullets help explain why the time period mentioned was picked:

- If a benefit period starts on October 4, April 1<sup>st</sup> occurs 180 days later.<sup>33</sup> On April 1, 2011, hospices were expected to have fully established internal processes for face-to-face and provide appropriate documentation.
- 180 days including and after January 31<sup>st</sup> is July 29<sup>th</sup>. 60 days including and after July 29<sup>th</sup> is September 26<sup>th</sup>. 60 days including and after September 26<sup>th</sup> is November 25<sup>th</sup>. Our data runs through the end of 2012, therefore, for each cohort we examine at minimum we have data through the start of each beneficiary's fifth benefit period.

We look at beneficiaries' benefit periods from their first benefit period to the time they first leave hospice or their fifth benefit period (whichever comes first). Table 14.1 shows the number of beneficiaries utilizing hospice based on the number of consecutive benefit periods they had. We look at consecutive benefit periods to ensure beneficiaries do not have a live discharge from hospice. From Table 14.1, there are an increasing number of beneficiaries in each cohort (i.e. 57,097 for the October 2009 – January 2010 cohort and 65,253 for the October 2011 – January 2012 cohort). However, the percentage of beneficiaries who did not continue in hospice past their second benefit period is nearly identical between each cohort, ranging from 43.4% – 44.5%. This trend holds up for each benefit period examined.

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<sup>33</sup> This therefore assumes that if a beneficiary started hospice on October 4<sup>th</sup> and had no breaks in hospice care, the first day that the 2<sup>nd</sup> recertification could occur would be on April 1<sup>st</sup>.

**Table 14.1: Number of Consecutive Benefit Periods for Beneficiaries Whose First Two Benefit Periods were Consecutive and had 90 Days**

Benefit period	First Benefit Period had a Start Date Between					
	October 2009–January 2010		October 2010–January 2011		October 2011–January 2012	
	Beneficiaries	% of Beneficiaries Who Have Left Hospice	Beneficiaries	% of Beneficiaries Who Have Left Hospice	Beneficiaries	% of Beneficiaries Who Have Left Hospice
1	57,097	—	60,414	—	65,253	—
2	57,097	—	60,414	—	65,253	—
3	32,296	43.4%	33,510	44.5%	36,896	43.5%
4	23,822	58.3%	24,375	59.7%	27,048	58.6%
5	18,118	68.3%	18,583	69.2%	20,311	68.9%

Table 14.2 provides information on the discharge status of a beneficiary at the end of a benefit period.<sup>34</sup> Again, this table looks at beneficiaries whose first two periods were consecutive and had 90 days each (i.e. no live discharge between the first and second benefit period).

The discharge status at the end of the second period looks similar for the periods affected by the face-to-face requirement (October 2010–January 2011; October 2011 – January 2012) compared to the period not affected by the face-to-face requirement (October 2009–January 2010). The vast majority of beneficiaries in each time period end the period in death or remain in hospice. The beneficiaries affected by the face-to-face requirement have a similar percentage of benefit periods ending in live discharge, “still in hospice”, or ending in death compared to the beneficiaries not affected by the requirement.

<sup>34</sup> A small portion of beneficiaries identified using hospice from the EDB did not match to our hospice claims file due to the exclusions discussed in Chapter 2. Additionally, a small number of beneficiaries had discharge status codes that indicated they had left hospice, however, additional benefit periods (consecutive to the benefit period where a claim indicated the beneficiary left hospice) existed in the claims. Both issues impact between 100 and 500 beneficiaries in each cohort and benefit period.

**Table 14.2: Discharge Status Upon End of Benefit Period for Beneficiaries Whose First Two Benefit Periods were Consecutive and had 90 Days**

Benefit Period	Statistics	First Claim has a Start Date Between October 2009–January 2010				First Claim has a Start Date Between October 2010–January 2011				First Claim has a Start Date Between October 2011–January 2012			
		Died	Still in Hospice	Live Discharge	Unk Dsch Code	Died	Still in Hospice	Live Discharge	Unk Dsch Code	Died	Still in Hospice	Live Discharge	Unk Dsch Code
1	N	-	-	-	-	-	-	-	-	-	-	-	-
	Row %	-	-	-	-	-	-	-	-	-	-	-	-
2	N	17,121	32,359	7,327	51	18,223	33,702	8,114	50	19,667	37,199	8,100	257
	Row %	30.1%	56.9%	12.9%	0.1%	30.3%	56.1%	13.5%	0.1%	30.2%	57.0%	12.4%	0.4%
3	N	5,201	23,769	3,103	14	5,561	24,339	3,285	26	6,101	27,192	3,360	216
	Row %	16.2%	74.1%	9.7%	0.0%	16.7%	73.3%	9.9%	0.1%	16.5%	73.8%	9.1%	0.6%
4	N	3,451	18,021	2,147	17	3,474	18,514	2,105	18	4,063	20,497	2,266	178
	Row %	14.6%	76.2%	9.1%	0.1%	14.4%	76.8%	8.7%	0.1%	15.0%	75.9%	8.4%	0.7%
5	N	2,524	13,748	1,621	7	2,543	14,317	1,453	24	2,932	15,770	1,459	117
	Row %	14.1%	76.8%	9.1%	0.0%	13.9%	78.1%	7.9%	0.1%	14.5%	77.8%	7.2%	0.6%

Table 14.3 provides a day-by-day tabulation of how many physician services appear on a hospice claim for a particular day of hospice. Table 14.3 is further broken down into three parts to compare the beneficiaries affected by the face-to-face requirement (2010–2011; 2011-2012) to those beneficiaries who were not (2009–2010). This table shows that physician services are rarely recorded on the claim. For example, looking at beneficiary with a start date between October 2009 and January 2010, during their first 90 days in hospice, there were 5,015,704 days where no physician services were recorded on the hospice claim and there were 41,393 days where one physician service was recorded on the hospice claim. Since the physician would have a face-to-face encounter with the beneficiary at the second and subsequent recertification period, it is possible that more physician services would be recorded during that time period. However, the percentage of days with a physician visit is small and does not vary in a meaningful way across the different cohorts of beneficiaries and does not vary in a meaningful way across the different lengths of the episode (i.e. Day 1-90, Day 91-160, etc.).

**Table 14.3: Number of Physician Services Recorded on Hospice Claim by Day**

Day In Hospice	First Claim has a Start Date Between October 2009–January 2010			First Claim has a Start Date Between October 2010–January 2011			First Claim has a Start Date Between October 2011–January 2012			
	Number of Physician Services Provided on Hospice Claim			Number of Physician Services Provided on Hospice Claim			Number of Physician Services Provided on Hospice Claim			
	0	1	2+	0	1	2+	0	1	2+	
Day 1–90	N	5,015,704	41,393	1,853	5,313,358	42,169	1,682	5,791,533	41,421	1,806
	Row %	99.2%	0.8%	0.0%	99.2%	0.8%	0.0%	99.3%	0.7%	0.0%
Day 91–160	N	3,144,901	23,352	984	3,340,279	23,202	893	3,671,905	22,725	1,036
	Row %	99.2%	0.7%	0.0%	99.3%	0.7%	0.0%	99.4%	0.6%	0.0%
Day 161–215	N	1,714,283	11,881	400	1,790,963	12,525	493	1,996,712	12,329	451
	Row %	99.3%	0.7%	0.0%	99.3%	0.7%	0.0%	99.4%	0.6%	0.0%
Day 216–270	N	1,294,468	8,617	315	1,334,015	8,414	300	1,499,460	8,425	313
	Row %	99.3%	0.7%	0.0%	99.4%	0.6%	0.0%	99.4%	0.6%	0.0%
Day 271+	N	1,141,113	7,625	296	1,182,401	7,132	221	1,314,643	6,980	242
	Row %	99.3%	0.7%	0.0%	99.4%	0.6%	0.0%	99.5%	0.5%	0.0%

Note: a beneficiary with multiple days in a category (e.g. Day 0–90) would appear multiple times on that row. Row percentages refer to the percentage of physician services on a hospice claim within a particular group of beneficiaries (i.e. the October 2009 – January 2010 cohort) for a particular length of time (i.e. 1 – 90 days in hospice).

## 15. Non-RHC Utilization

The analyses in this chapter examine how frequently non-RHC levels of care (i.e., GIP, IRC, and CHC) are utilized by hospice beneficiaries and the characteristics of that utilization.

### 15.1 GIP Utilization

#### 15.1.1 Beneficiaries with a GIP Stay

Among the 1,274,150 beneficiaries who had a hospice claim in 2012, 22.7% (N=288,938) had at least 1 GIP day in 2012. There was a total of 314,368 GIP stays in 2012 among 288,938 hospice beneficiaries (“GIP stay” is defined as consecutive GIP days in the hospice claims file). As Table 15.1 shows, the vast majority of these beneficiaries had just one GIP stay (average number of GIP stays per beneficiary: 1.1).

**Table 15.1: Number of GIP Stays among Hospice Beneficiaries Who Had at Least One GIP Stay in 2012**

Number of GIP Stays/Beneficiary	Number of Beneficiaries	%
1	269,079	93.1%
2	16,110	5.6%
3	2,697	0.9%
4+	1,052	0.4%
<b>Total</b>	<b>288,938</b>	<b>100%</b>

#### 15.1.2 GIP Length of Stay

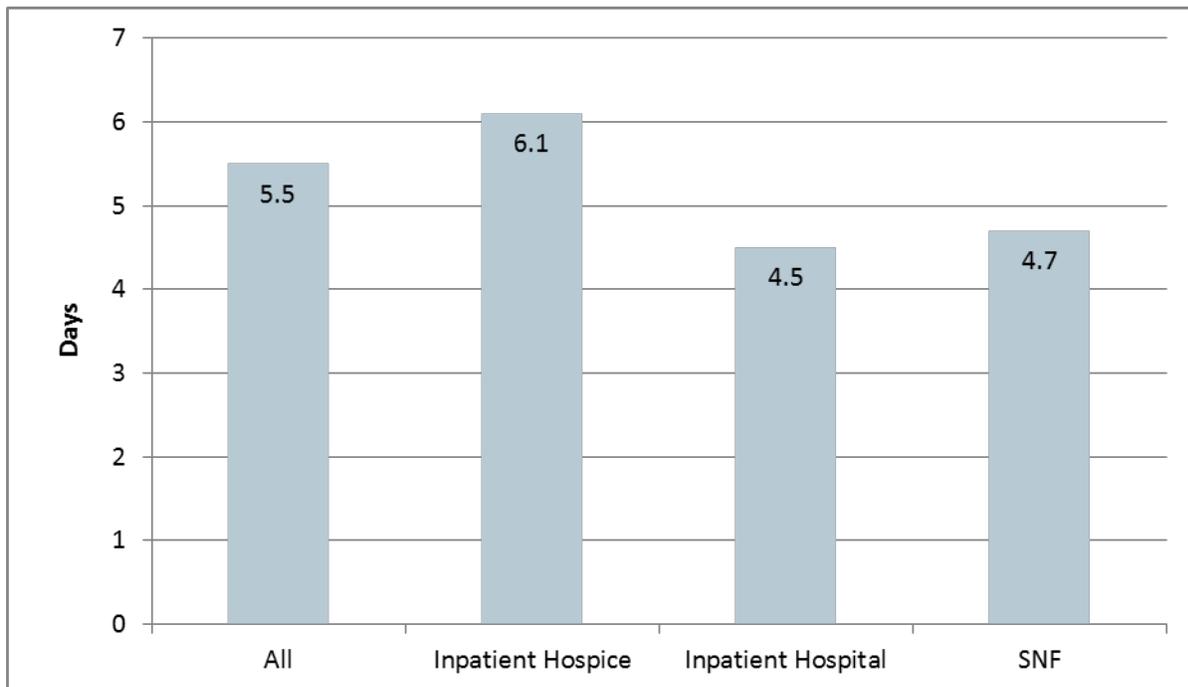
Among the 314,368 GIP stays in 2012, the average length of stay (LOS) was 5.5 days, with a median of 4 days. Most stays (i.e., the mode) were just 2 days. Table 15.2 shows the distribution of length of GIP stays in 2012.

**Table 15.2: Distribution of Length of GIP Stays in 2012**

Length of GIP Stay	% of Stays (total N=314,368)
1 day	11.2%
2 days	19.5%
3 days	14.9%
4 days	11.6%
5-7 days	21.4%
8-10 days	10.0%
11-30 days	10.7%
31+ days	0.6%
<b>Total</b>	<b>100%</b>

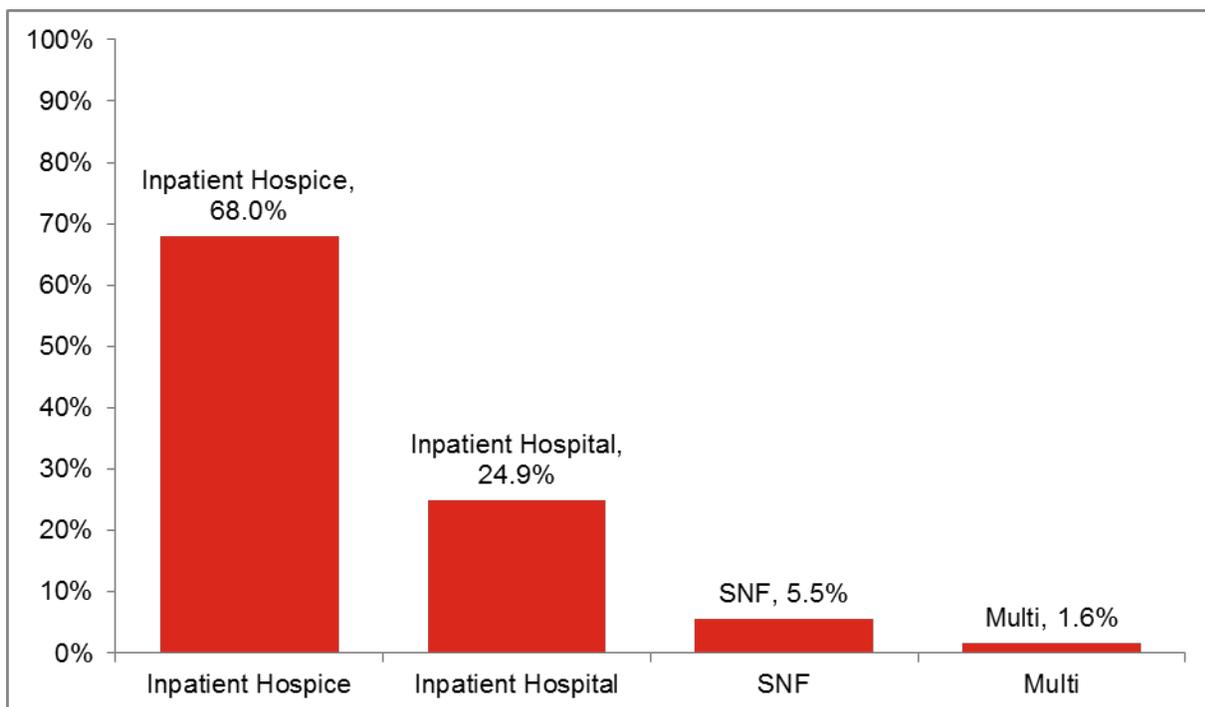
GIP LOS varied by site of service (Figure 15.1). GIP LOS was longest in the inpatient hospice setting (6.1 days) and shortest at in the inpatient hospital setting (4.5 days). GIP LOS provided in a skilled nursing facility (SNF) was 4.7 days.

**Figure 15.1: GIP Length of Stay in 2012, by Site of Service**



There were a total of 1,714,900 days among the 314,368 GIP stays in 2012. Over two-thirds of GIP days were provided in an inpatient hospice setting (68.0%), and about a quarter of GIP days were provided in an inpatient hospital (24.9%; Figure 15.2). Only 5.5% of GIP days were provided in a SNF.

**Figure 15.2: GIP Days in 2012, by Site of Service**



**15.1.3 Transitions to and from GIP**

Figure 15.3 presents where hospice beneficiaries were before and after their GIP stay. Overall, 65% of beneficiaries began their hospice election on GIP (i.e., they were not in hospice prior to their GIP stay). Nearly a quarter (23%) were receiving hospice services at their home (that is, site of service = home), while the remaining 12% were receiving hospice services at a different site of service. Over two-thirds (69%) of beneficiaries died on GIP, and 27% returned to hospice with a different level of care. Very few (4%) were discharged from hospice immediately following a GIP stay.

**Figure 15.3: Transitions to and from the GIP Stay**

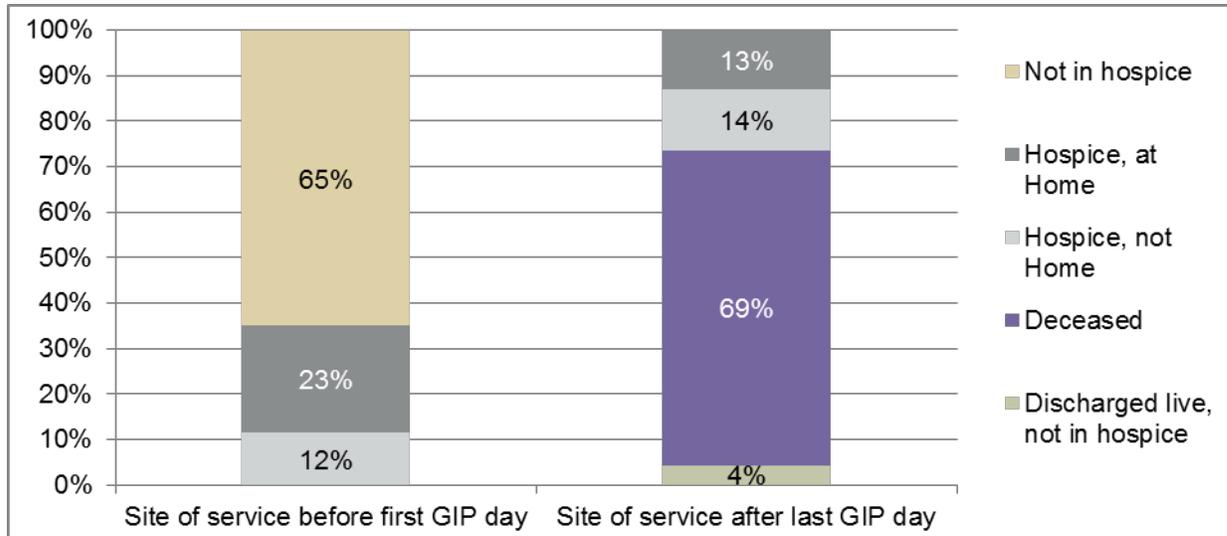


Table 15.3 presents the hospice patient’s site of service on the day immediately following the GIP stay for the subgroup of GIP stays where the beneficiary did not die or leave hospice immediately following the GIP stay (N=83,264). In all, 47,044 GIP stays occurred in a hospice inpatient unit (see last row of third column in Table 15.3). A total of 6,800 beneficiaries with a GIP stay were in a hospice inpatient unit immediately after their GIP stay (that is, they were no longer receiving GIP level of care yet were in a hospice inpatient unit), and most of these beneficiaries (N=6,307) also received their GIP care in a hospice inpatient setting (see italicized, underlined cells below). A small number of beneficiaries (4,093; 4.9%) were in a hospital inpatient setting on the day immediately after their last GIP day (see italicized, underlined cell in the last column).

**Table 15.3: Cross tabulation of GIP Site of Service and Site of Service Immediately after GIP among Beneficiaries Who Did Not Die on GIP or Leave Hospice Immediately after a GIP Stay in 2012**

Site of Service Day After GIP		GIP Site of Service				Total
		Hospice Inpatient	Inpatient Hospital	SNF	Other	
Assisted living	Frequency	2,396	1,357	213	253	4,219
	Row Pct.	56.8%	32.2%	5.1%	6.0%	
	Col Pct.	5.1%	5.4%	3.1%	5.9%	5.1%
Home	Frequency	22,924	13,876	1,097	2,548	40,445
	Row Pct.	56.7%	34.3%	2.7%	6.3%	
	Col Pct.	48.7%	55.4%	15.9%	59.8%	48.6%
Hospice	Frequency	9,547	504	5	313	10,369
	Row Pct.	92.1%	4.9%	0.1%	3.0%	
	Col Pct.	20.3%	2.0%	0.1%	7.4%	12.5%
Hospice inpatient	Frequency	<u>6,307</u>	239	10	244	<u>6,800</u>
	Row Pct.	92.8%	3.5%	0.2%	3.6%	
	Col Pct.	13.4%	1.0%	0.1%	5.7%	8.2%
Inpatient hospital	Frequency	222	3,817	18	36	<u>4,093</u>
	Row Pct.	5.4%	93.3%	0.4%	0.9%	
	Col Pct.	0.5%	15.2%	0.3%	0.9%	4.9%
LTCH	Frequency	8	14	2	53	77
	Row Pct.	10.4%	18.2%	2.6%	68.8%	
	Col Pct.	0.0%	0.1%	0.0%	1.2%	0.1%
LTC_NF	Frequency	3,370	3,184	3,062	261	9,877
	Row Pct.	34.1%	32.2%	31.0%	2.6%	
	Col Pct.	7.2%	12.7%	44.3%	6.1%	11.9%
Multiple Site of Service	Frequency	276	234	18	183	711
	Row Pct.	38.8%	32.9%	2.5%	25.7%	
	Col Pct.	0.6%	0.9%	0.3%	4.3%	0.9%
NOS	Frequency	97	60	32	25	214
	Row Pct.	45.3%	28.0%	15.0%	11.7%	
	Col Pct.	0.2%	0.2%	0.5%	0.6%	0.3%
None	Frequency	917	267	82	248	1,514
	Row Pct.	60.6%	17.6%	5.4%	16.4%	
	Col Pct.	2.0%	1.1%	1.2%	5.8%	1.8%
Psych	Frequency	9	1	-	-	10
	Row Pct.	90.0%	10.0%	0.0%	0.0%	
	Col Pct.	0.0%	0.0%	0.0%	0.0%	0.0%
SNF	Frequency	971	1,496	2,372	96	4,935
	Row Pct.	19.7%	30.3%	48.1%	2.0%	
	Col Pct.	2.1%	6.0%	34.3%	2.3%	5.9%
Total		47,044	25,049	6,911	4,260	83,264
	Row Pct.	56.5%	30.1%	8.3%	5.1%	100.0%

Table 15.4 shows the level of care the day after the GIP stay for the 6,307 beneficiaries who had a GIP stay in a hospice inpatient unit and were still in a hospice inpatient unit the day after GIP. The majority (66%) were billed at RHC, with the remainder (32%) billed at IRC. These results are largely

the same for all beneficiaries who were in a hospice inpatient unit immediately after the GIP stay (i.e., the 6,800 in Table 15.3 above; results not shown).

**Table 15.4: Level of Care for Beneficiaries Who Had GIP in a Hospice Inpatient Unit and Were Also in a Hospice Inpatient Unit the Day after Their Last GIP Day**

Level of Care	Frequency	%
IRC	2,044	32.4
Multi	129	2.1
RHC	4,134	65.6
Total	6,307	100

Table 15.5 shows the level of care the day after the GIP stay for the 4,093 beneficiaries who were in an inpatient setting immediately following their GIP stay (this is regardless of where they received their GIP). The results are similar to those presented above except a smaller percentage of these patients receive IRC on the day immediately after their last GIP day (22% in Table 15.5 vs. 32% in Table 15.4). These results are largely the same for beneficiaries who received GIP in any inpatient setting (results not shown).

**Table 15.5: Level of Care for Beneficiaries Who Were in an Inpatient Setting the Day after Their Last GIP Day**

Level of Care	Frequency	%
IRC	893	21.8
Multi	60	1.5
RHC	3,140	76.7
Total	4,093	100

#### 15.1.4 GIP Hospices

Among the 3,727 hospices in 2012, 74% (N=2,758; “GIP hospices”) provided at least one GIP day in 2012. On average, 1.6% of GIP hospices’ days were GIP days (median=0.5%). Ninety-five percent of GIP hospices had 6.8% or fewer days of GIP, but the top 1% of GIP hospices had 13% of their days billed to GIP, and one had nearly three-quarters (73.1%) of their days billed to GIP.

**Table 15.6: Distribution of Percent of GIP Days among GIP Hospices in 2012**

	Average	Percentile of GIP Hospices						Max
		25th	50th	75th	90th	95th	99th	
% GIP days	1.6%	0.1%	0.5%	1.8%	4.6%	6.8%	13.0%	73.1%

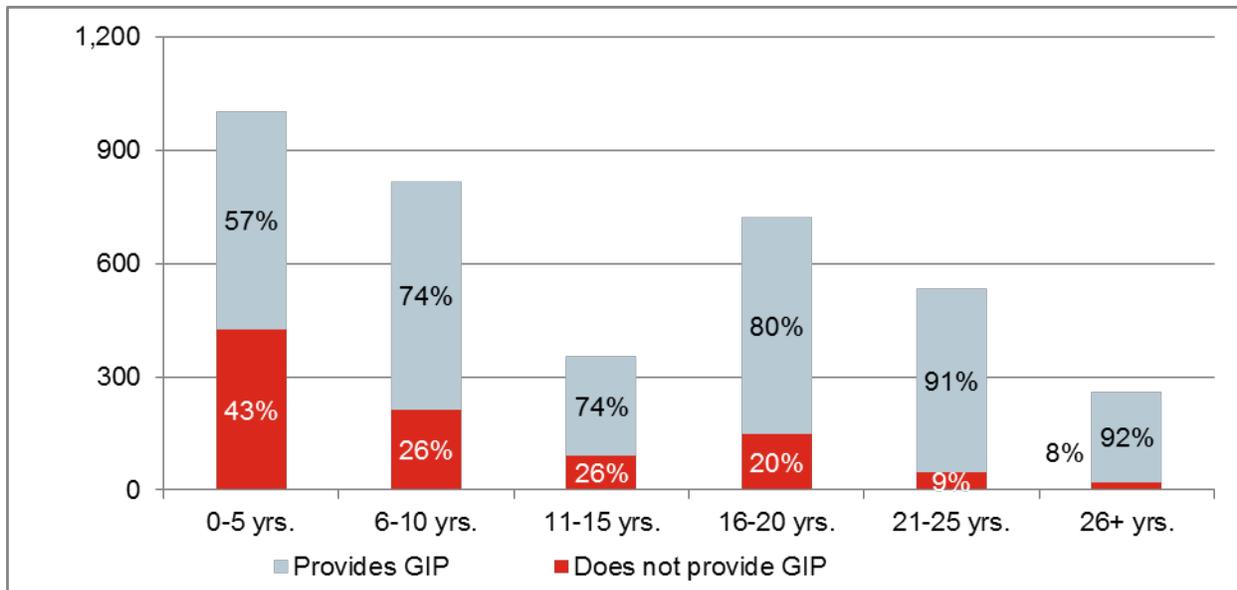
% GIP days = GIP days in 2012/all days in 2012

#### GIP Provision by Hospice Characteristics

There was variation in GIP provision across a number of hospice characteristics. Figure 15.4 shows that a higher proportion of older hospices provide GIP compared to younger hospices. Over ninety percent of hospices who have been in operation for over 20 years provided GIP, whereas less than two-thirds (57%) of hospices who have been in operation for 5 years or less provided GIP. Smaller hospices are less likely to provide GIP than larger hospices (Figure 15.5). Just over a third (37%) of small hospices (i.e., fewer than 3,500 hospice days billed in 2012) provide GIP, whereas 92% of large hospices (i.e., over 20,000 hospice days billed in 2012) provide GIP. There is also variation in GIP

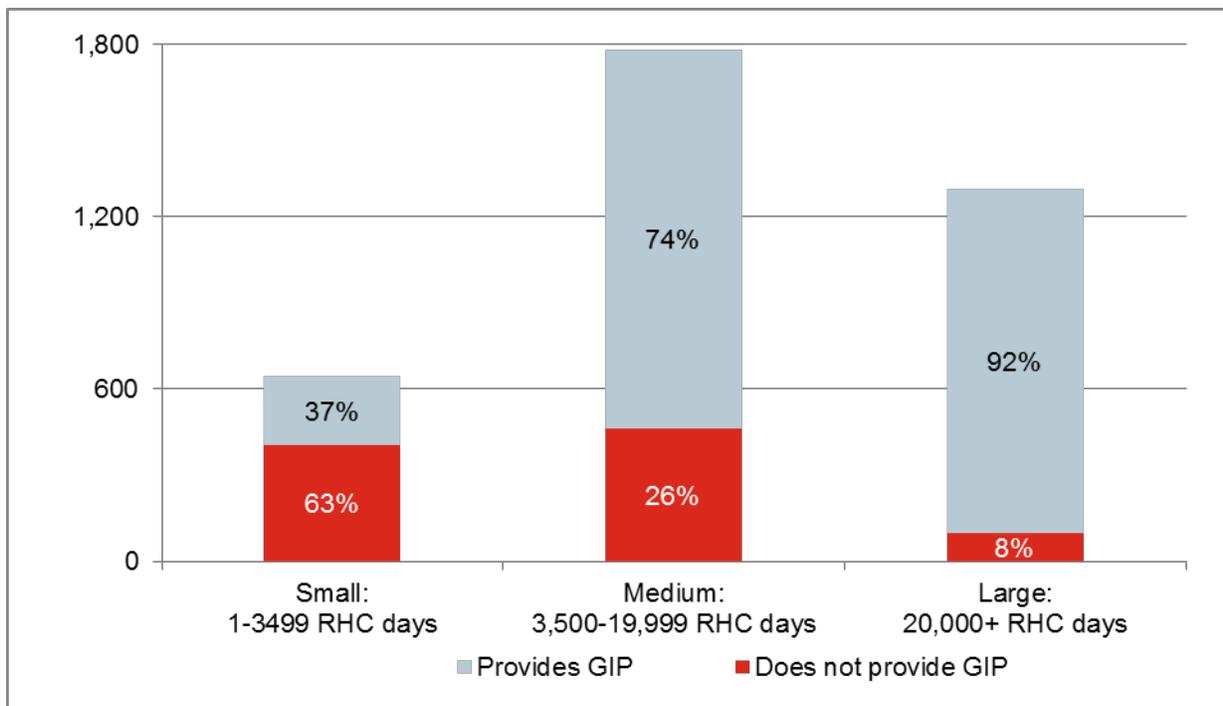
provision based on the hospice’s geographic location (Figure 15.6). Although the South has the greatest number of hospices (N=1,562), only 28% of hospices provide GIP. Conversely, 85% of the 462 hospices in the Northeast provide GIP.

**Figure 15.4: Provision of GIP by Hospices in 2012, by Hospice Age**



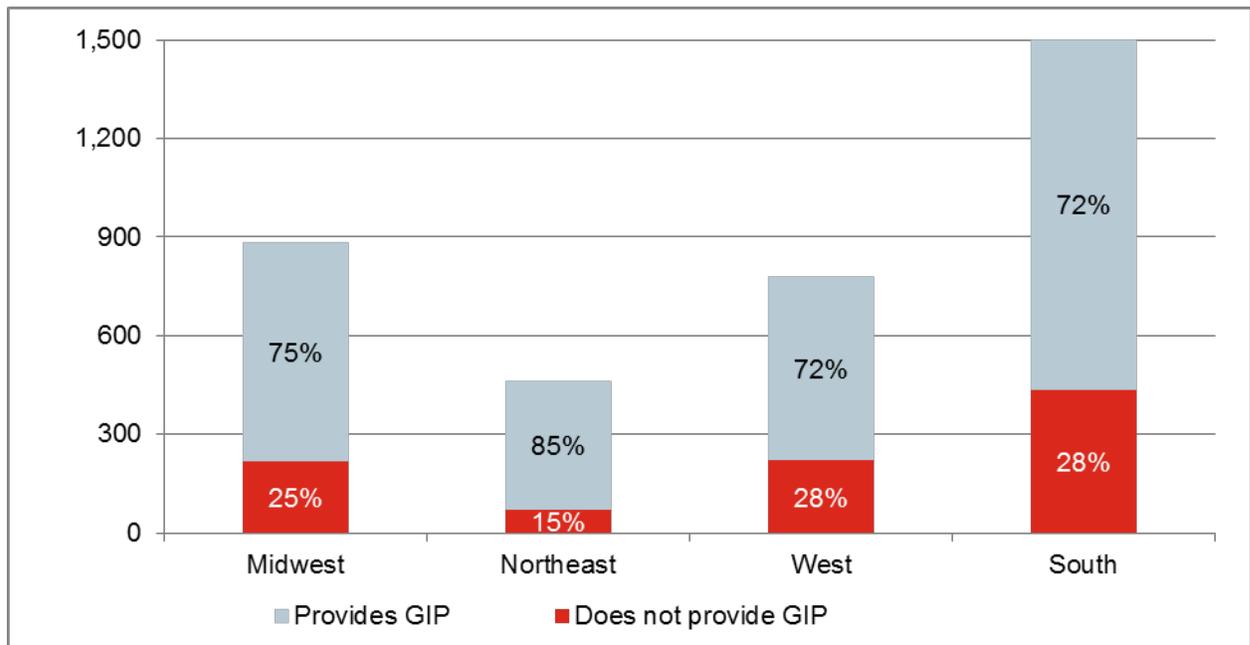
Hospice age as of 1/1/2012.

**Figure 15.5: Provision of GIP by Hospices in 2012, by Hospice Size**



Hospice size in 2012.

**Figure 15.6: Provision of GIP by Hospices in 2012, by Hospice Location**



The two figures below are maps of the US that show the location of non-GIP hospices for 2012, including a breakdown by urban/rural status. Specifically, Figure 15.7 shows the location of non-GIP (orange) and GIP (gray) hospices, and Figure 15.8 breaks this down further by urban and rural.

Figure 15.7 is a graphical representation of what we presented above: higher concentration of non-GIP hospices (orange dots) in the South. There’s also a fair amount of orange relative to gray in California. The darker dots in Figure 15.8 represent the non-GIP hospices: dark tan for urban; dark blue for rural. The corresponding lighter shades represent GIP hospices: light tan for urban; light blue for rural. The concentration of rural vs. urban non-GIP hospices are as expected—rural (dark blue dots) are in the South or West, non-California states, and urban (dark tan dots) are in California, East coast, and Midwest.

Figure 15.7: Map of GIP vs. Non-GIP Hospices in 2012

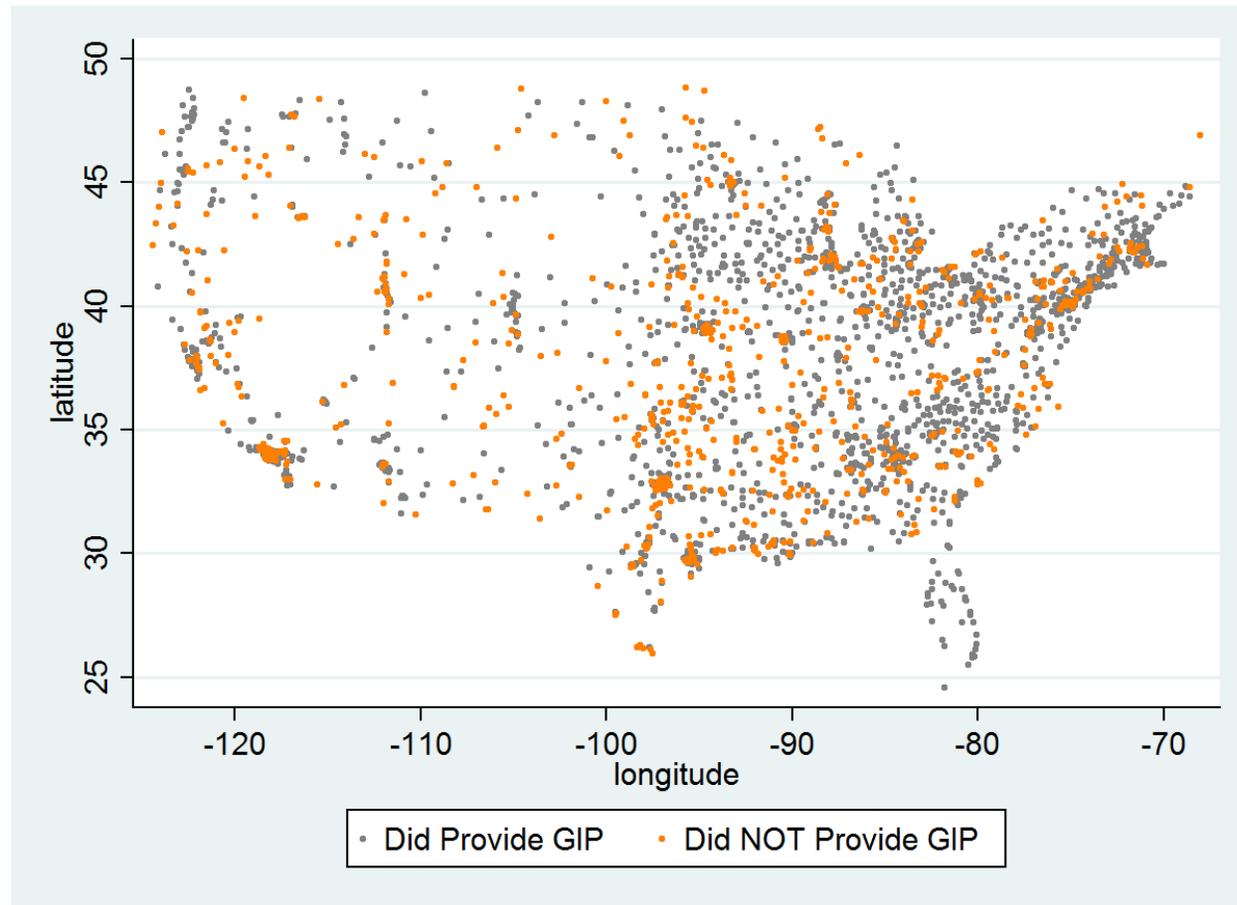
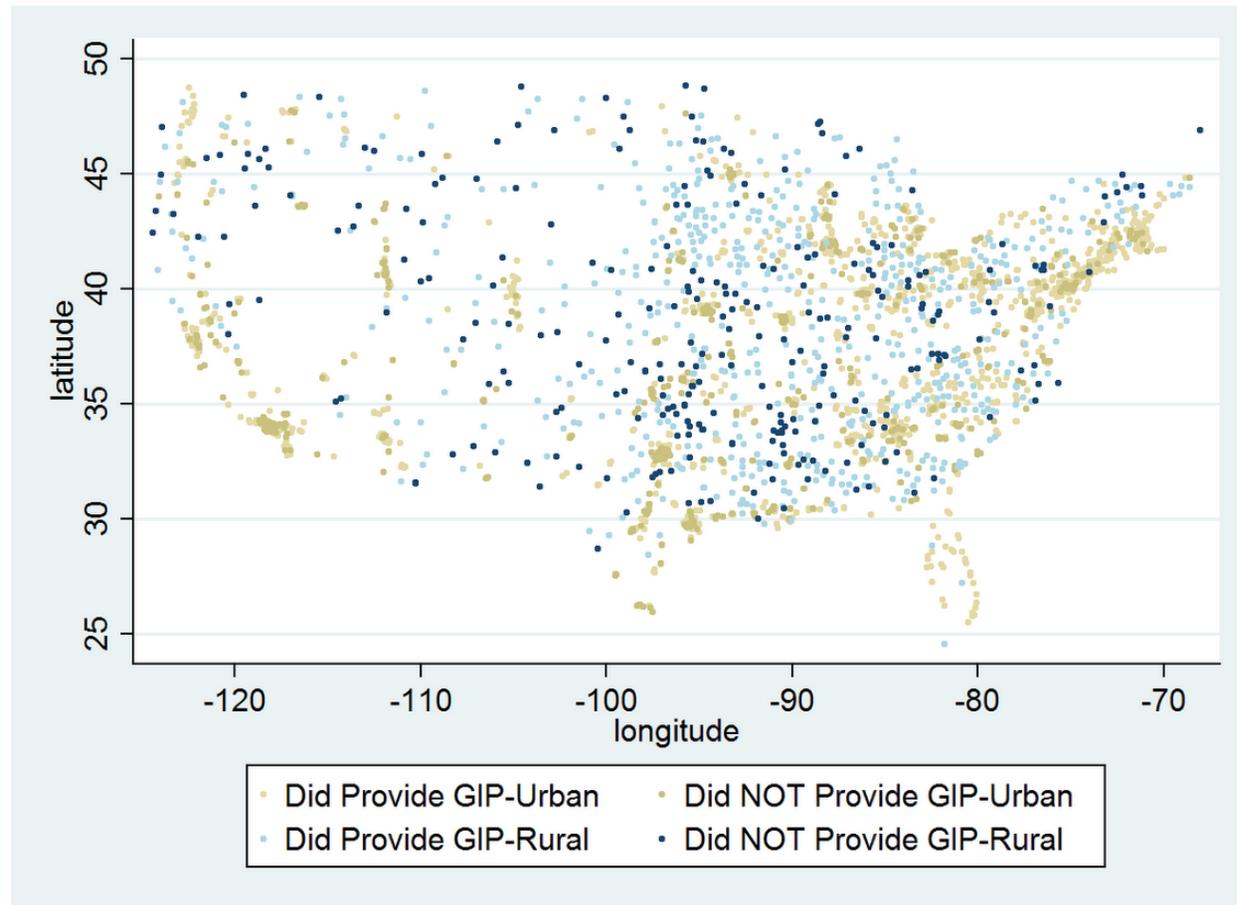


Figure 15.8: Map of GIP vs. Non-GIP Hospices in 2012, by Rural/Urban Status



As discussed above, non-GIP hospices tend to be smaller, younger, and operating in the South. Table 15.6 shows the combination of these three characteristics for non-GIP hospices in 2012. The rows are listed in descending order of frequency. As to be expected, the three largest ‘buckets’ are non-GIP hospices in the South, not large (i.e., small or medium), and young ( $\leq 10.5$  years). The South also has the highest number of hospices (1,562; see above).

**Table 15.6: Characteristics of 2012 Non-GIP Hospices**

Hospice Size (as of 1/1/12)	Age	Region	Frequency	%
Small hospice: 1-3499 RHC days	Q1	South	100	10.32
Medium hospice: 3500-19999 RHC days	Q1	South	89	9.18
Medium hospice: 3500-19999 RHC days	Q2	South	88	9.08
Small hospice: 1-3499 RHC days	Q1	West	62	6.4
Medium hospice: 3500-19999 RHC days	Q1	West	40	4.13
Medium hospice: 3500-19999 RHC days	Q2	Midwest	36	3.72
Small hospice: 1-3499 RHC days	Q1	Midwest	36	3.72
Small hospice: 1-3499 RHC days	Q3	Midwest	36	3.72
Medium hospice: 3500-19999 RHC days	Q3	South	34	3.51
Small hospice: 1-3499 RHC days	Q2	South	34	3.51
Medium hospice: 3500-19999 RHC days	Q1	Midwest	26	2.68
Small hospice: 1-3499 RHC days	Q3	South	25	2.58
Medium hospice: 3500-19999 RHC days	Q3	Midwest	23	2.37
Medium hospice: 3500-19999 RHC days	Q2	West	22	2.27
Medium hospice: 3500-19999 RHC days	Q3	West	21	2.17
Small hospice: 1-3499 RHC days	Q3	West	21	2.17
Small hospice: 1-3499 RHC days	Q1	Missing	17	1.75
Medium hospice: 3500-19999 RHC days	Q4	South	16	1.65
Small hospice: 1-3499 RHC days	Q2	West	16	1.65
Large hospice: 20000+ RHC days	Q3	South	16	1.65
Medium hospice: 3500-19999 RHC days	Q1	Northeast	15	1.55
Medium hospice: 3500-19999 RHC days	Q4	West	15	1.55
Large hospice: 20000+ RHC days	Q2	Midwest	14	1.44
Medium hospice: 3500-19999 RHC days	Q4	Midwest	13	1.34
Small hospice: 1-3499 RHC days	Q1	Northeast	13	1.34
Large hospice: 20000+ RHC days	Q1	South	13	1.34
Large hospice: 20000+ RHC days	Q2	South	12	1.24
Large hospice: 20000+ RHC days	Q3	Midwest	10	1.03
Medium hospice: 3500-19999 RHC days	Q3	Northeast	9	0.93
Small hospice: 1-3499 RHC days	Q4	Midwest	9	0.93
Medium hospice: 3500-19999 RHC days	Q4	Northeast	8	0.83
Small hospice: 1-3499 RHC days	Q2	Midwest	7	0.72
Small hospice: 1-3499 RHC days	Q3	Northeast	7	0.72
Large hospice: 20000+ RHC days	Q2	West	7	0.72
Large hospice: 20000+ RHC days	Q3	West	7	0.72
Small hospice: 1-3499 RHC days	Q2	Northeast	6	0.62
Small hospice: 1-3499 RHC days	Q4	West	6	0.62
Large hospice: 20000+ RHC days	Q1	Midwest	6	0.62
Medium hospice: 3500-19999 RHC days	Q1		5	0.52
Small hospice: 1-3499 RHC days	Q4	South	5	0.52

Hospice Size (as of 1/1/12)	Age	Region	Frequency	%
Small hospice: 1-3499 RHC days	Q4	Northeast	5	0.52
Medium hospice: 3500-19999 RHC days	Q2	Northeast	4	0.41
Large hospice: 20000+ RHC days	Q4	South	4	0.41
Large hospice: 20000+ RHC days	Q1	West	2	0.21
Large hospice: 20000+ RHC days	Q2	Northeast	2	0.21
Large hospice: 20000+ RHC days	Q4	West	2	0.21
Small hospice: 1-3499 RHC days	Q2	Missing	1	0.1
Large hospice: 20000+ RHC days	Q1	Missing	1	0.1
Large hospice: 20000+ RHC days	Q1	Northeast	1	0.1
Large hospice: 20000+ RHC days	Q3	Northeast	1	0.1
Large hospice: 20000+ RHC days	Q4	Midwest	1	0.1

1<sup>st</sup> quartile: <=4.7 yrs.; 2<sup>nd</sup> quartile: 4.8-10.5 yrs.; 3<sup>rd</sup> quartile: 10.6-19.0 yrs.; 4<sup>th</sup> quartile: >19.1 yrs.

### Further Exploration of non-GIP Hospices

Table 15.7 presents the number of hospices in 2011 and 2012, by provision of GIP. As discussed above, about a quarter of all hospices did not provide any GIP in 2011 or 2012 (26% for both years). The last column shows that among the 3,790 unique hospices in 2011-12, 811 (21.4%) provided no GIP in 2011 and provided no GIP in 2012.

**Table 15.7: Hospices in 2011-12, by Provision of GIP.**

	2011	2012	2011-12
Number of hospices	<b>3,584</b>	<b>3,727</b>	<b>3,790</b>
non-GIP	931 (26.0%)	969 (26%)	811 (21.4%)
GIP	2,653	2,758	2,979

Table 15.8 provides additional detail on provision of GIP over 2011-12, disaggregating the hospices by the year(s) they are in operation. Among the 3,790 unique hospices in 2011-12, the vast majority (N=3521; 93%) operated in both years. Just 63 (2%) operated in 2011 but not 2012, and 206 (5%) operated in 2012 but not 2011. The last column shows hospices that were in operation in both years.

**Table 15.8: Breakdown of Hospices, by Provision of GIP and Which Years in Operation**

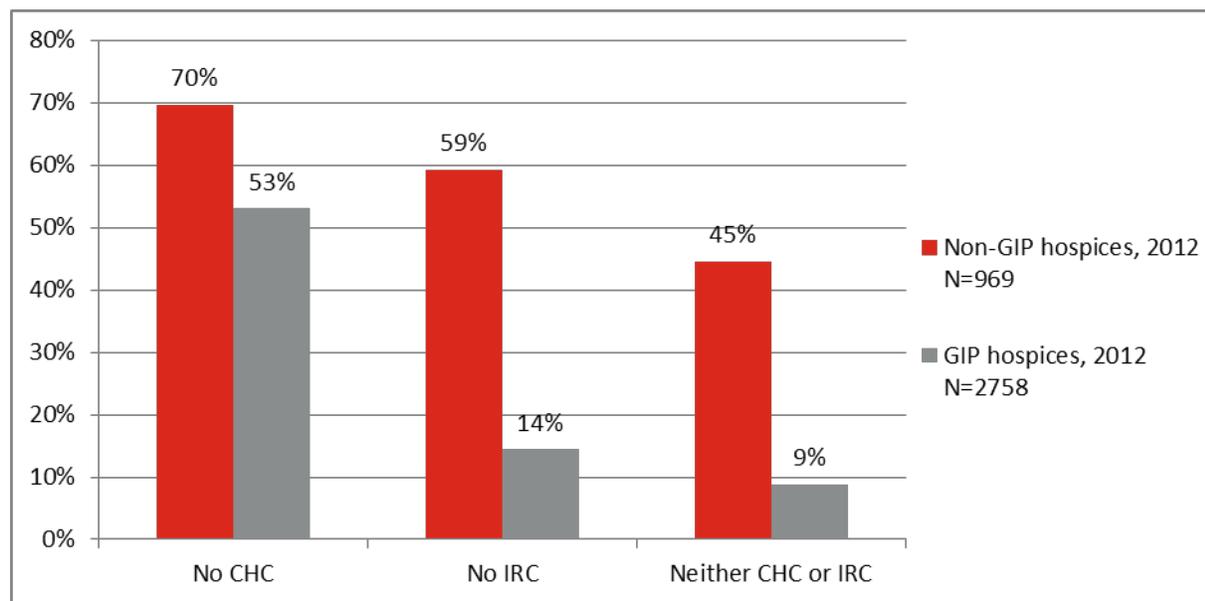
	2011 and 2012 Hospices	2011 Only Hospices	2012 Only Hospices	Total Number of Unique Hospices 2011-12
TOTAL	3,521 (100%)	63 (100%)	206 (100%)	3,790
Provision of GIP <sup>a</sup>				
GIP both years	2,423 (63.9%)	N/A	N/A	2,423
GIP 2011, no GIP 2012	204 (5.4%)	26 (41.2%)	N/A	230
no GIP 2011, GIP 2012	274 (7.2%)	N/A	61 (29.6%)	335
no GIP in either year	620 (16.3%)	37 (58.7%)	145 (70.4%)	802

<sup>a</sup>Column percents are presented, but note that cells are mutually exclusive.

Figure 15.9 shows the hospice's other levels of care (LOC) by GIP provision in 2012. Non-GIP hospices (blue bars) are less likely to provide CHC and/or IRC compared to GIP hospices (red bars). 70% of non-GIP hospices also did not provide CHC, compared to 53% of GIP hospices. The difference is even more dramatic for IRC: 59% of non-GIP hospices did not provide any IRC

compared to just 14% of GIP hospices. The last set of bars shows that nearly half (45%) of non-GIP hospices provide RHC only (i.e., provided neither CHC nor IRC) whereas only 9% of GIP hospices do not provide CHC or IRC. These findings are largely the same as those reported by recent OIG Report that reported 429 of the 953 non-GIP hospices provided only RHC.<sup>35</sup>

**Figure 15.9: Breakout of Non-CHC, Non-IRC, and Neither CHC/IRC Hospices, by GIP Provision in 2012**



**Beneficiaries in non-GIP Hospices**

Table 15.9 shows that relatively few beneficiaries are in non-GIP hospices (<8%). This is to be expected from the findings above that show non-GIP hospices tend to be small.

**Table 15.9: Number of Beneficiaries in Non-GIP Hospices in 2012**

Year	Total Beneficiaries	Beneficiaries in Non-GIP Hospices	% of Beneficiaries in Non-GIP Hospices
2012	1,274,150	93,309	7.3%

To better understand how characteristics of beneficiaries in non-GIP hospices differ from beneficiaries in GIP hospices, the following exhibits examine diagnoses (primary and number of), total number of hospice periods, and discharge status for 2012 hospices. For all tables below, the beneficiary characteristics reported for GIP hospices include *all* hospice beneficiaries, not just those who received GIP.

<sup>35</sup> 5/3/13 Memorandum Report: Medicare Hospice: Use of General Inpatient Care, OEI-02-10-00490.

Table 15.10 suggests that beneficiaries in non-GIP hospice generally have the same number of diagnoses as beneficiaries who are in GIP hospice.<sup>36</sup>

**Table 15.10: Number/Percent of Beneficiaries' Diagnoses for GIP vs. Non-GIP Hospices in 2012**

Number of Diagnoses	2012 Hospices		
	GIP	No GIP	Total
1	860,785 72.90%	67,623 72.47%	928,408 72.86%
2	98,934 8.38%	9,091 9.74%	108,025 8.48%
3	63,913 5.41%	5,275 5.65%	69,188 5.43%
4	39,047 3.31%	3,462 3.71%	42,509 3.34%
5+	118,162 10.01%	7,858 8.42%	126,020 9.89%
<b>Total</b>	<b>1,180,841</b>	<b>93,309</b>	<b>1,274,150</b>

To examine if beneficiaries in non-GIP hospices have burdensome transitions in/out of hospice more frequently than those in GIP hospices, we compared the rate of live discharges (Table 15.11) and number of hospice enrollment periods per beneficiary in each group (Table 15.12).

A higher percentage of beneficiaries in non-GIP hospices were discharged live compared to beneficiaries in GIP hospices: 39% vs. 28% (Table 15.11). Fewer beneficiaries in non-GIP hospices had only one election (that is, more beneficiaries in non-GIP hospices had multiple elections compared to beneficiaries in GIP hospices (Table 15.12). Almost a fifth (19%) of patients in non-GIP hospices had multiple elections compared to only about 12% of beneficiaries in GIP hospices.

**Table 15.11: Number/Percent of Live Discharges for GIP vs. Non-GIP Hospices in 2012**

Discharge Status	2012 Hospices		
	GIP	No GIP	Total
Live discharge	330,795 28.01%	36,447 39.06%	367,242 28.82%
Died	850,046 71.99%	56,862 60.94	906,908 71.18%
<b>Total</b>	<b>1,180,841</b>	<b>93,309</b>	<b>1,274,150</b>

<sup>36</sup> We note that the majority of hospices only report a single diagnosis (see last column of Table 15.10).

**Table 15.12: Number/Percent of Hospice Elections/Beneficiary for GIP vs. Non-GIP Hospices in 2012**

Number Hospice Elections/Beneficiary	2012 Hospices		
	GIP	No GIP	Total
	1,035,630	75,752	1,111,382
1	87.70%	81.18%	87.23%
2	113622	13028	126650
	9.62%	13.96%	9.94%
3	22655	3105	25760
	1.92%	3.33%	2.02%
4+	8934	1424	10358
	0.76%	1.53%	0.81%
<b>Total</b>	<b>1,180,841</b>	<b>93,309</b>	<b>1,274,150</b>

Table 15.13 compares the primary diagnoses (top 20) between beneficiaries in non-GIP and GIP hospices in 2012. The percentages of beneficiaries in GIP vs. non-GIP hospices are largely similar for most of the top 20 diagnoses. Compared to non-GIP hospices, GIP hospices tend to have slightly more beneficiaries with lung cancer (7.96 vs. 6.29%) and pneumonia (2.58% vs. 1.19%; see italicized, underlined cells below). Conversely, non-GIP hospices have a much higher percentage of Alzheimer's beneficiaries compared to GIP hospices (7.16% vs. 4.50%; see italicized, underlined cells below).

**Table 15.13: Number/Percent of Beneficiaries' Hospice Top 20 Diagnoses for GIP vs. Non-GIP Hospices in 2012**

Number Hospice Elections/Beneficiary by Primary Diagnosis	2012 Hospices		
	GIP	No GIP	Total
1. Debility NOS	136,830	11,560	148,390
	11.59%	12.39%	11.65%
2. Non-Alzheimer's Dementia	80,020	6,336	86,356
	6.78%	6.79%	6.78%
3. Lung Cancer	94,046	5,866	99,912
	<u>7.96%</u>	<u>6.29%</u>	7.84%
4. Congestive Heart Failure	87,251	7,446	94,697
	7.39%	7.98%	7.43%
5. Non-infectious Respiratory	77,439	6,004	83,443
	6.56%	6.43%	6.55%
6. Failure to Thrive	73,433	6,856	80,289
	6.22%	7.35%	6.30%
7. Other Heart Disease	63,860	5,122	68,982
	5.41%	5.49%	5.41%
8. Alzheimer's	53,131	6,684	59,815
	<u>4.50%</u>	<u>7.16%</u>	4.69%
9. CVA / Stroke	58,255	4,412	62,667
	4.93%	4.73%	4.92%
10. Colo-rectal Cancer	30,768	2,146	32,914
	2.61%	2.3%	2.58%

Number Hospice Elections/Beneficiary by Primary Diagnosis	2012 Hospices		
	GIP	No GIP	Total
11. Chronic Kidney Disease	28,104 2.38%	2,022 2.17%	30,126 2.36%
12. Blood/Lymph Cancer	27,676 2.34%	1,696 1.82%	29,372 2.31%
13. Parkinson's	26,829 2.27%	2,230 2.39%	29,059 2.28%
14. Pneumonia	30,493 2.58%	1,113 1.19%	31,606 2.48%
15. Breast Cancer	22,263 1.89%	1,551 1.66%	23,814 1.87%
16. Pancreatic Cancer	23,968 2.03%	1,460 1.56%	25,428 2.00%
17. Prostate Cancer	19,223 1.63%	1,492 1.6%	20,715 1.63%
18. Liver Cancer	15,709 1.33%	1,142 1.22%	16,851 1.32%
19. Chronic Liver Disease	14,196 1.20%	1,066 1.14%	15,262 1.20%
20. Bladder Cancer	10,645 0.90%	689 0.74%	11,334 0.89%
All Other	206,702 17.50%	16,416 17.59%	223,118 17.51%
Total	1,180,841	93,309	1,274,150

## 15.2 CHC Utilization

### 15.2.1 Variation in and Use of CHC

Overall, only 0.42% of all hospice days in 2012 were billed at the CHC level of care. Roughly 42.7% of hospices (1,590 out of 3,727) billed at least 1 day of CHC. We found considerable variation in the share of CHC days among hospices that provided any CHC. Nearly nine-tenths (89.4%; 1,422 out of 1,590) of the CHC hospices had less than 1% of their days billed as CHC, but four hospices billed more than 10% of their days at the CHC level of care. A single hospice accounted for over a quarter of all CHC days in the analytic file. The top 40 hospices in terms of the percentage of their days billed as CHC (roughly 1% of hospices and 3.9% of total hospice days) accounted for 46% of all of the CHC days.

We also examined site of service for CHC. Among all hospices who billed for any CHC, nearly two-thirds (64.5%; 1,025 out of 1,590) don't provide any at a nursing home, while 9.4% (150 out of 1,590) provide over half of their CHC in a nursing home. Among CHC hospices, 43.3% (688 out of 1,590) provided all CHC at the patient's home, and 78.6% (1,250 out of 1,590) provided half or more of their CHC at home.

### 15.3 IRC Utilization

Table 15.14 shows the percent of beneficiaries who had at least one day of IRC and percent of hospice days that were billed under the IRC level of care for 2005-2012. The percentage of beneficiaries who receive any IRC increases from 1.4% in 2005 to 3.4% in 2012. Similarly, the percentage of IRC days also increases over the eight year period, from 0.12% in 2005 to 0.28% in 2012.

**Table 15.14: Change in IRC Utilization over Time**

Year	% of Hospice Beneficiaries With at Least One IRC day	% of IRC Days
2005	1.4%	0.12%
2006	1.4%	0.11%
2007	1.6%	0.13%
2008	1.9%	0.15%
2009	2.4%	0.19%
2010	2.7%	0.22%
2011	3.0%	0.25%
2012	3.4%	0.28%

Percent of IRC days = IRC days/all days

#### 15.3.1 Beneficiaries with an IRC Stay

Among the 1,274,150 hospice beneficiaries in 2012, 3.5% (45,116) received at least 1 day of IRC in 2012.<sup>37</sup> These 45,116 beneficiaries had a total of 64,606 IRC stays associated with a total of 275,784 IRC days in 2012 (“IRC stay” is defined as consecutive IRC days in the hospice claims file).

Among beneficiaries who had an IRC stay, most had only 1 (77%), and 13.5% had 2 IRC stays (Table 15.15). Three or more stays was relatively uncommon, occurring with only 4,141 beneficiaries (9.2% of IRC beneficiaries).

**Table 15.15: Distribution of Number of IRC Stays/Beneficiaries in 2012**

IRC Stay/Beneficiary	N	%
1	34,888	77.3
2	6,087	13.5
3	2,028	4.5
4	914	2.0
5+	1,199	2.6
<b>Total</b>	<b>45,116</b>	<b>100.0</b>

<sup>37</sup> This figure differs slightly from what is reported in Table 15.14 (3.4%). The difference stems from excluding days with multiple “levels of care” (e.g., IRC and RHC) in Table 15.14. The remaining exhibits and related text *include* days with multiple “levels of care”.

### 15.3.2 IRC Stays and Days, by Site of Service

The most common site of service for IRC was an inpatient hospice setting (34% of IRC stays; Table 15.16). About a quarter (28%) of IRC stays were in SNFs, 18% in LTC nursing facilities, and about 13% were at hospitals. The distribution of IRC days across sites of service largely mirrors IRC stays (Table 15.17).

**Table 15.16: Site of Service of IRC Stays in 2012**

Site of Service	Freq.	%	Cumulative	
			Freq.	%
Hospice inpatient	21,870	33.9	21,870	33.9
SNF	17,944	27.8	39,814	61.6
LTC NF	11,436	17.7	51,250	79.3
Inpatient hospital	8,293	12.8	59,543	92.2
Other	5,063	7.8	64,606	100.0

**Table 15.17: Site Of service of IRC Days in 2012**

Site of Service	Freq.	%	Cumulative	
			Freq.	%
Hospice inpatient	90,218	32.7	90,218	32.7
SNF	80,626	29.2	170,844	61.9
LTC NF	51,288	18.6	222,132	80.5
Inpatient hospital	32,914	11.9	255,046	92.4
Other	20,738	7.5	275,784	100.0

### 15.3.3 LOS of IRC Stays

The average length of stay (LOS) for IRC stays was 4.3 days (Table 15.18). IRC LOS was shortest when delivered in a hospital (3.9 days), and longest (4.5 days) where site of service was SNF, LT NF, and other (includes LTCH, Multi, and NOS).

**Table 15.18: Length of IRC Stays in 2012, by Site of Service**

Site of Service	N	Average LOS
Overall	64,606	4.3
<b>By site of service:</b>		
Hospice inpatient	21,870	4.1
SNF	17,944	4.5
LTC NF	11,436	4.5
Inpatient hospital	8,293	3.9
Other	5,063	4.5

Just over a third of IRC stays were 1-4 days (37%) and over half (62%) of all IRC stays were 5 days (Table 15.19); 5 days was also the mode and median.

**Table 15.19: Distribution of IRC LOS in 2012**

LOS	Freq.	%	Cumulative	
			Freq.	%
1 day	3,577	5.5	3,577	5.5
2 days	4,781	7.4	8,358	12.9
3 days	5,372	8.3	13,730	21.3
4 days	9,892	15.3	23,622	36.6
5 days	40,198	62.2	63,820	98.8
6-7 days*	585	0.9	64,405	99.7
8-57 days*	201	0.3	64,606	100

\* IRC stays are limited to 5 days, so these LOS values that exceed 5 are likely billing errors.

### 15.3.4 IRC Hospices

In 2012, 3,727 hospices had at least one hospice claim. Of these, 74% provided at least one IRC day (N=2,755 “IRC hospices”).

#### Variation in IRC Provision by Hospice Characteristics

On average, IRC hospices billed 0.4% of their days to IRC. Table 15.20 below shows the distribution of IRC days among the 2012 IRC hospices (restricted to hospices that had at least 100 hospice days in 2012). The top 5% of IRC hospices billed over 1% of all hospice days at the IRC level of care, with a maximum of 9.1% days billed at IRC.

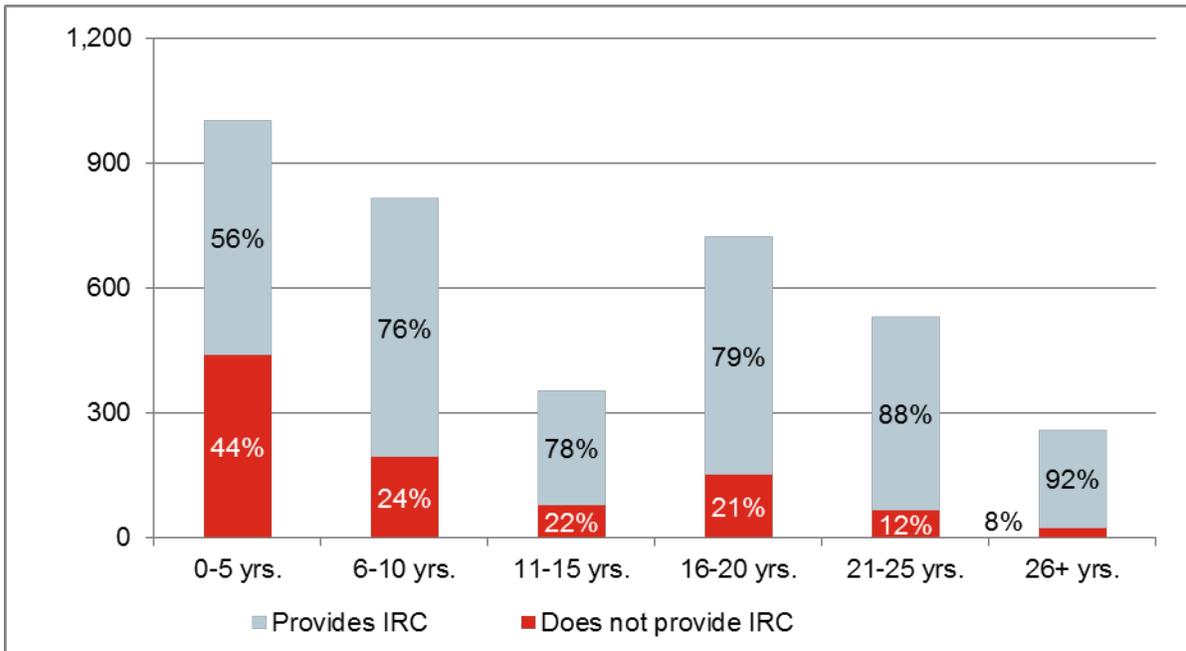
**Table 15.20: Distribution of Percent of IRC Days among IRC Hospices in 2012**

	Average	Percentile of IRC Hospices						Max
		25th	50th	75th	90th	95th	99th	
% IRC days	0.4%	0.1%	0.3%	0.5%	0.8%	1.1%	2.1%	9.1%

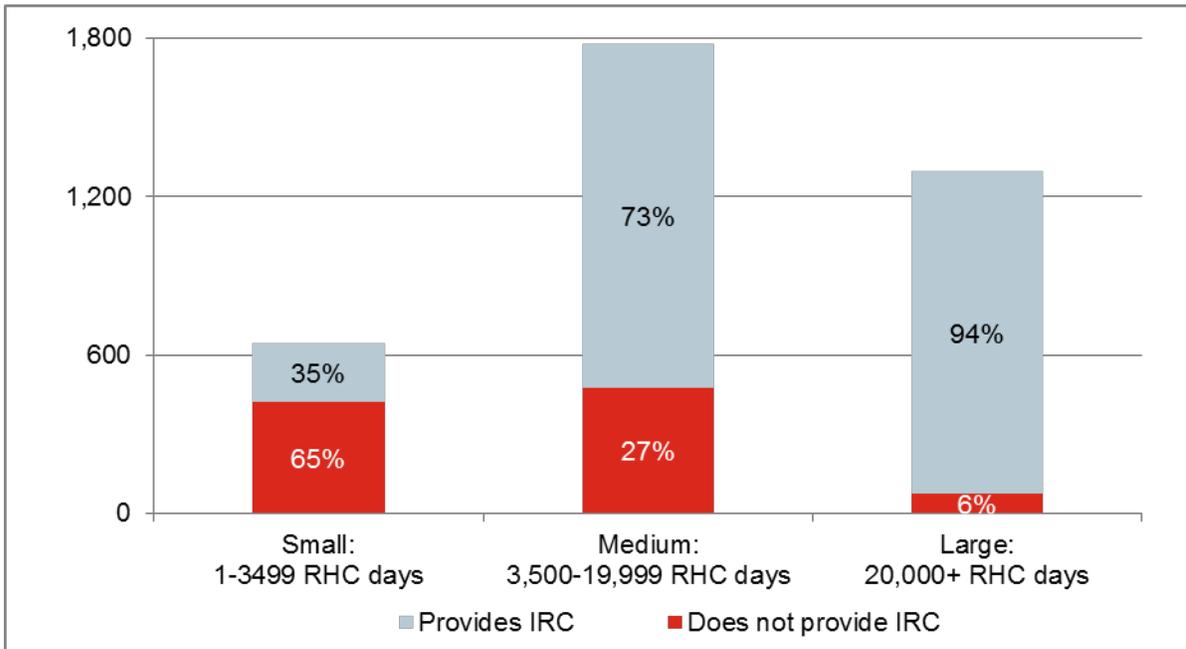
% IRC days = IRC days in 2012/all days in 2012

There was variation in IRC provision across a number of hospice characteristics. Figure 15.10 shows the distribution of hospice age for IRC and non-IRC hospices. Older hospices are more likely to provide IRC compared to younger hospices. For example, 92% of hospices in operation for 26 years or more provide IRC compared to only 56% of hospices who have been in operation less than six years. Overall, IRC hospices tend to be older than non-IRC hospices (13.3 vs. 8.2 years, respectively; not shown). Virtually all (94%) large hospices provided at least one IRC day compared to only about a third (35%) of small hospices (Figure 15.11). A higher percentage of hospices in the Midwest and New England states provided IRC (81% and 78%, respectively) compared to hospices in the West or South (72% and 70%, respectively; Figure 15.12). A slightly higher percentage of non-profit hospices provided IRC compared to for-profit hospices (79% and 71%, respectively; Figure 15.13).

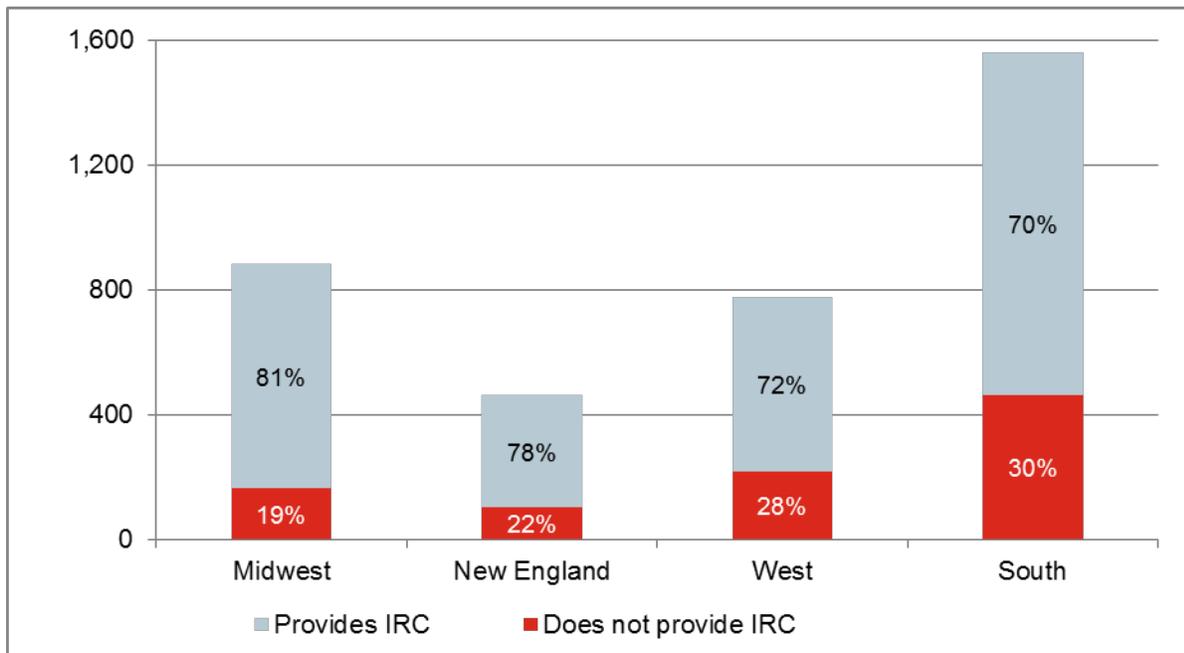
**Figure 15.10: Provision of IRC by Hospices in 2012, by Hospice Age**



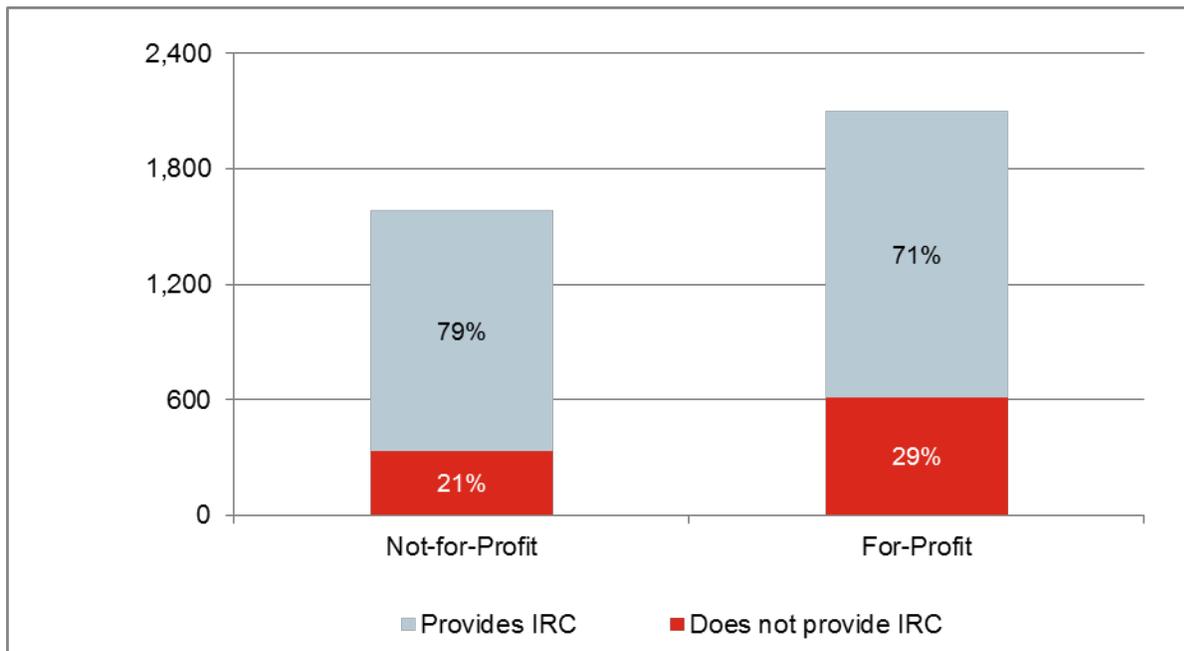
**Figure 15.11: Provision of IRC by Hospices in 2012, by Hospice Size**



**Figure 15.12: Provision of IRC by Hospices in 2012, by Hospice Location**



**Figure 15.13: Provision of IRC by Hospices in 2012, by Hospice Profit Status**



## Appendix A: Descriptive Statistics on Hospice Utilization for 2012

Data in Table A.1 below come from several Medicare data sources, including hospice claims, the Medicare enrollment database, a hospice-level data file, and the area resource file.

We constructed the dataset by identifying beneficiaries who received any hospice service in calendar 2012 and included all of their hospice elections that occurred in calendar year 2012. A “hospice election” was defined as contiguous days in the hospice program. Approximately 17% of the hospice elections began prior to 1/1/2012. For these elections, we included all hospice days that were part of the contiguous hospice stay (that is, days prior to 1/1/2012 that were part of the hospice election). We excluded any elections that do not include at least one claim in 2012, unless otherwise noted. In all, there were 138,306,501 hospice days across 1,370,146 hospice elections among 1,273,721 unique beneficiaries.

For the site of service stratification: (1) election-level summary data was defined using all elections where at least one claim in the election indicated the corresponding site of service; and (2) beneficiary-level summary data was defined using all beneficiaries where at least one claim (across all elections) indicated the corresponding site of service. For variables that can vary within a hospice election (e.g., level of care, visits, and payment), only days that matched the specific site of service are included in the tabulation.

For discharge status, the “died in hospice” category does not include beneficiaries who were enrolled in hospice as of 12/31/2012 and died sometime in 2013.

The “Visits per day per election” results reflect the average visits per day within each election, averaged across all elections. Similarly, the “Spending per day per election” results reflect the average spending per day within each election, averaged across all elections.

Table A.1: Descriptive Statistics on Hospice Utilization for 2012

Data Item	All Elections	Patient Home	Nursing Home	Assisted Living
<b>Beneficiary demographics</b>				
Age as of 1 <sup>st</sup> day of election				
<65	5.58%	6.70%	4.08%	1.36%
65–<75	16.47%	19.79%	10.90%	5.62%
75–<85	30.30%	32.12%	27.85%	23.89%
85+	47.65%	41.39%	57.17%	69.14%
Gender				
Male	40.59%	44.01%	33.44%	30.53%
Female	59.41%	55.99%	66.56%	69.47%
Race/ethnicity				
White, non-Hispanic	87.16%	85.47%	88.17%	94.92%
African-American, non-Hispanic	8.46%	9.32%	8.31%	2.33%
Hispanic	1.96%	2.33%	1.45%	1.42%
Other, non-Hispanic	2.42%	2.88%	2.07%	1.33%
<b>Disease and comorbidities</b>				
Principal diagnosis on the first day of the election				
“Lung & other chest cavity cancer”	7.78%	10.47%	3.63%	2.30%
“Colorectal cancer”	2.59%	3.39%	1.50%	1.05%
“Alzheimer’s”	4.68%	3.81%	7.17%	8.30%
“Non-Alzheimer’s dementia”	11.92%	8.23%	19.78%	21.73%
“Cerebrovascular accident”	4.79%	3.15%	5.25%	3.07%
“Congestive heart failure”	7.48%	7.98%	6.93%	7.28%
“Other heart disease”	5.43%	5.83%	4.60%	5.58%
“Non-infectious respiratory disease”	6.68%	7.98%	5.45%	4.60%
“Failure to thrive—adult”	6.45%	5.48%	9.39%	10.14%
“Debility NOS”	12.03%	10.61%	15.80%	21.19%
“Parkinson & other degenerative”	2.25%	2.44%	2.64%	2.52%
“Pneumonias and other lung diseases”	2.42%	1.53%	1.24%	0.93%
“HIV/AIDS”	0.06%	0.07%	0.06%	0.02%
“Chronic liver disease”	1.21%	1.34%	0.84%	0.37%
“Chronic kidney disease”	2.32%	1.90%	2.18%	1.04%
Other	21.89%	25.80%	13.55%	9.87%
Principal diagnosis on the first day of the election was cancer vs. non-cancer				
Cancer	28.34%	36.96%	15.08%	10.86%

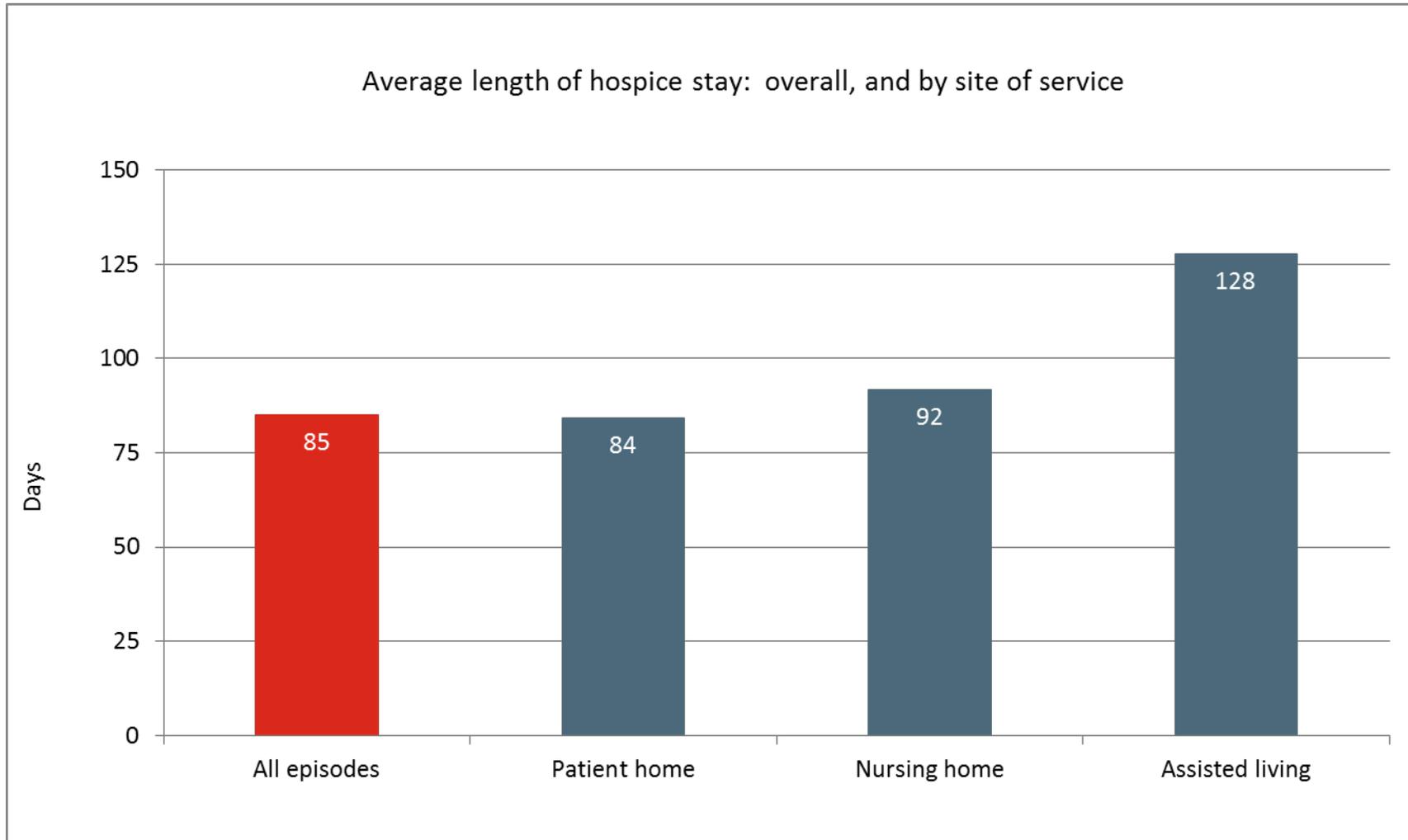
Data Item	All Elections	Patient Home	Nursing Home	Assisted Living
Non-cancer	71.66%	63.04%	84.92%	89.14%
Comorbidities per election (highest number of comorbidities over the time period examined)				
1 diagnosis	71.81%	69.60%	73.81%	73.89%
2 diagnoses	8.90%	9.35%	8.42%	8.76%
3 diagnoses	5.56%	6.01%	5.01%	5.61%
4+ diagnoses	13.73%	15.04%	12.77%	11.73%
Medicare/Medicaid Dual eligibility status				
Dual eligible	28.65%	20.45%	54.22%	14.50%
Not dual-eligible	71.35%	79.55%	45.78%	85.50%
Medicare Advantage enrollment status				
FFS enrollee (one month prior to election)	74.64%	72.01%	80.08%	73.40%
MA enrollee (one month prior to election)	25.36%	27.99%	19.92%	26.60%
<b>Hospice characteristics as of 1st day of election</b>				
Tax status				
For-profit	45.99%	45.02%	54.68%	56.35%
Non-profit	42.67%	43.36%	34.74%	33.07%
Government	11.35%	11.62%	10.58%	10.58%
Ownership status				
Freestanding	77.82%	76.27%	81.05%	83.29%
Hospital	8.83%	9.27%	6.95%	5.18%
SNF	0.25%	0.19%	0.46%	0.12%
HHA	13.10%	14.27%	11.54%	11.40%
Census regions				
Northeast	15.44%	14.62%	17.99%	10.38%
Midwest	23.42%	19.53%	32.88%	21.46%
South	41.37%	43.34%	35.20%	34.89%
West	19.78%	22.51%	13.93%	33.28%
Census divisions				
New England	4.48%	3.94%	6.31%	2.63%
Middle Atlantic	11.29%	11.21%	11.69%	8.12%
South Atlantic	16.25%	13.91%	20.09%	15.92%
East North Central	7.21%	5.71%	12.76%	5.59%
East South Central	22.37%	22.61%	15.68%	24.92%
West North Central	6.73%	8.09%	5.20%	2.28%
West South Central	11.85%	11.94%	14.32%	7.22%
Mountain	7.54%	7.90%	5.35%	14.26%

<b>Data Item</b>	<b>All Elections</b>	<b>Patient Home</b>	<b>Nursing Home</b>	<b>Assisted Living</b>
Pacific	12.28%	14.69%	8.59%	19.06%
<b>Rural/urban status</b>				
Urban	87.55%	86.07%	86.78%	92.42%
Rural	12.45%	13.93%	13.22%	7.58%
<b>Hospice level of care (LOC)</b>				
<b>Received any care (not mutually exclusive)</b>				
Any RHC	86.84%	99.41%	92.56%	99.33%
Any CHC	5.99%	6.66%	4.60%	10.58%
Any GIP	22.14%	0.59%	6.00%	0.36%
Any IRC	3.86%	0.59%	7.58%	0.06%
<b>Level of Care combinations (mutually exclusive)</b>				
RHC only	69.98%	92.28%	82.36%	89.05%
GIP only	12.61%	0.00%	2.97%	0.00%
RHC/CHC	4.70%	6.01%	4.11%	9.87%
RHC/GIP	7.69%	0.49%	2.56%	0.31%
Other	5.02%	1.22%	8.01%	0.76%
<b>Hospice Benefit Periods &amp; Days</b>				
<b>Number of benefit periods per beneficiary (for all beneficiaries who had a hospice election in 2012)</b>				
1 benefit period	60.66%	55.86%	50.57%	37.70%
2 benefit periods	12.81%	15.10%	13.62%	15.92%
3 benefit periods	5.82%	6.59%	6.83%	8.64%
4+ benefit periods	20.71%	22.45%	28.98%	37.74%
<b>Number of days per election among decedents</b>				
Average number of TOTAL days per election	84.92	84.30	91.68	127.72
Average number of RHC days per election	82.87	83.88	90.59	126.92
Average number of CHC days per election	0.34	0.36	0.24	0.79
Average number of GIP days per election	1.47	0.03	0.36	0.02
Average number of IRC days per election	0.24	0.03	0.48	0
Median number of TOTAL days per election	21	28	21	52
Median number of RHC days per election	19	27	20	52
Median number of CHC days per election	0	0	0	0
Median number of GIP days per election	0	0	0	0
Median number of IRC days per election	0	0	0	0
<b>Number of days per election (categories), not restricted to decedents</b>				
1–3 days	13.18%	9.17%	12.51%	5.90%
4–7 days	13.64%	11.09%	15.03%	7.88%

Data Item	All Elections	Patient Home	Nursing Home	Assisted Living
8–10 days	6.20%	5.84%	6.42%	4.15%
11–14 days	6.10%	6.42%	5.77%	4.71%
15–30 days	13.08%	15.32%	12.47%	12.11%
31–60 days	11.85%	14.46%	10.99%	13.12%
61–90 days	7.56%	8.87%	7.06%	9.67%
91–180 days	11.61%	12.89%	11.53%	16.62%
181+ days	16.78%	15.94%	18.22%	25.85%
<b>Hospice Discharge Status at beneficiary level</b>				
Died in hospice	84.3%	80.3%	80.9%	74.4%
Alive and in hospice as of 12/31/2012	6.9%	7.4%	7.8%	11.8%
Discharged from hospice—Alive after discharge	4.0%	4.9%	4.7%	6.0%
Discharged from hospice—Died after discharge	4.9%	7.5%	6.6%	7.7%
Average number of days until death	165	144	173	181
<b>Hospice Visits</b>				
<b>Visits per election</b>				
Average number of PART A VISITS	72.68	57.12	71.43	96.87
Average number of PART A PHYSICIAN/NP VISITS	1.14	0.54	0.37	0.77
Average number of PART A PER DIEM VISITS	71.54	56.57	71.06	96.09
Average number of PART A PER DIEM SKILLED NURSING VISITS	30.49	24.22	24.65	36.15
Average number of PART A PER DIEM HOME HEALTH AIDE VISITS	35.19	27.03	40.12	51.91
Average number of PART A PER DIEM SOCIAL SERVICE VISITS	5.77	5.22	6.22	7.93
Average number of PART A PER DIEM THERAPY VISITS (physical, speech, occupational)	0.09	0.11	0.06	0.10
Median number of PART A VISITS	21	20	20	42
Median number of PART A PHYSICIAN/NP VISITS	0	0	0	0
Median number of PART A PER DIEM VISITS	20.6	20	20	42
Median number of PART A PER DIEM SKILLED NURSING VISITS	11	11	9	19
Median number of PART A PER DIEM HOME HEALTH AIDE VISITS	4	3	7	16
Median number of PART A PER DIEM SOCIAL SERVICE VISITS	2	2	2	4
Median number of PART A PER DIEM THERAPY VISITS (physical, speech, occupational)	0	0	0	0
<b>Visits per day per election</b>				
Average number of PART A VISITS	1.45	0.82	0.89	0.86
Average number of PART A PHYSICIAN/NP VISITS	0.06	0.01	0.01	0.01
Average number of PART A PER DIEM VISITS	1.39	0.81	0.88	0.85
Average number of PART A PER DIEM SKILLED NURSING VISITS	0.84	0.47	0.45	0.44

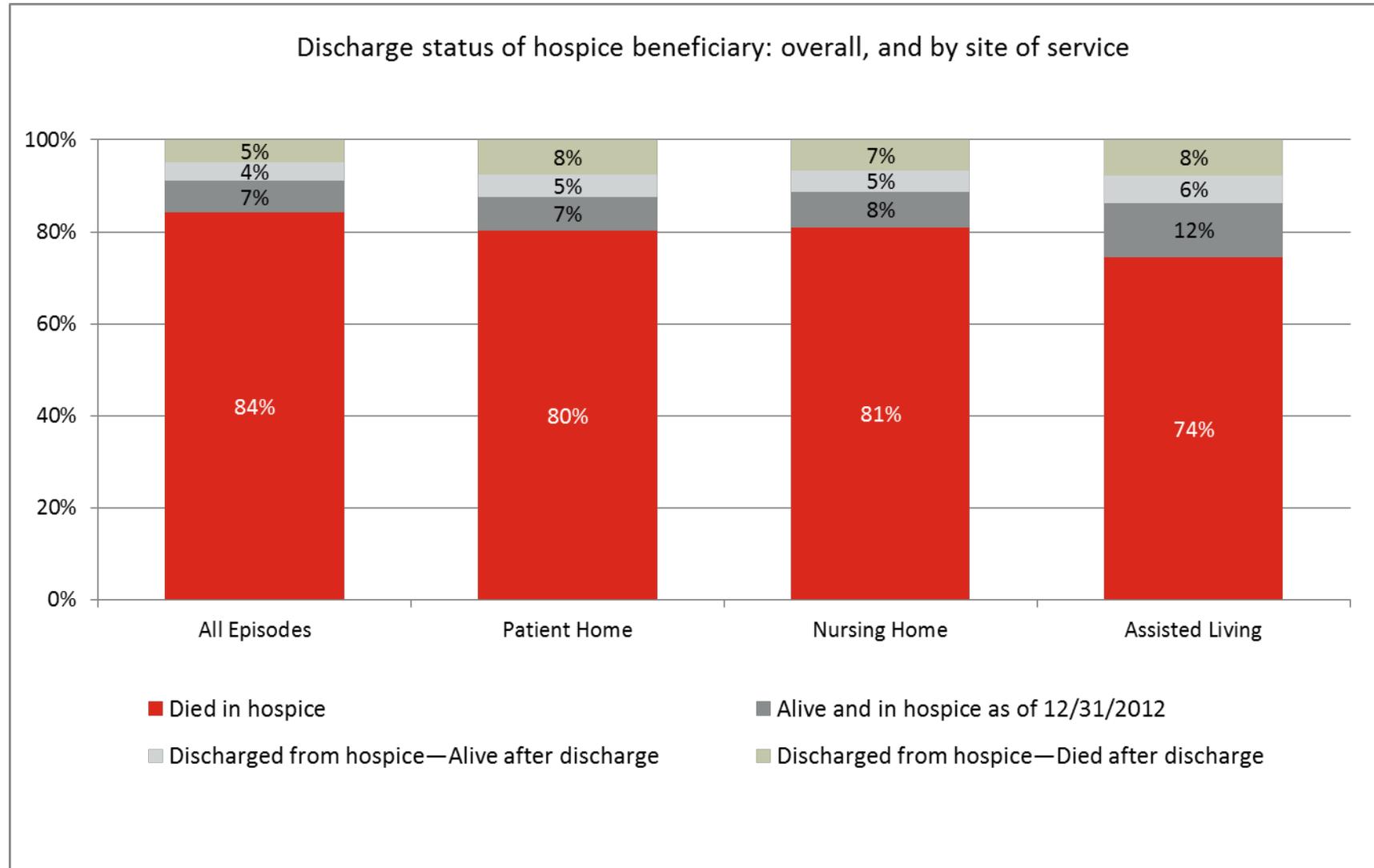
<b>Data Item</b>	<b>All Elections</b>	<b>Patient Home</b>	<b>Nursing Home</b>	<b>Assisted Living</b>
Average number of PART A PER DIEM HOME HEALTH AIDE VISITS	0.43	0.24	0.31	0.31
Average number of PART A PER DIEM SOCIAL SERVICE VISITS	0.12	0.1	0.12	0.09
Average number of PART A PER DIEM THERAPY VISITS (physical, speech, occupational)	0	0	0	0
Median number of PART A VISITS	0.76	0.68	0.75	0.71
Median number of PART A PHYSICIAN/NP VISITS	0	0	0	0
Median number of PART A PER DIEM VISITS	0.73	0.67	0.75	0.71
Median number of PART A PER DIEM SKILLED NURSING VISITS	0.33	0.32	0.3	0.29
Median number of PART A PER DIEM HOME HEALTH AIDE VISITS	0.24	0.19	0.28	0.28
Median number of PART A PER DIEM SOCIAL SERVICE VISITS	0.07	0.06	0.07	0.06
Median number of PART A PER DIEM THERAPY VISITS (physical, speech, occupational)	0	0	0	0

**Figure A.1: Average Length of Hospice Stay Among Decedents: Overall and by Site of Service**



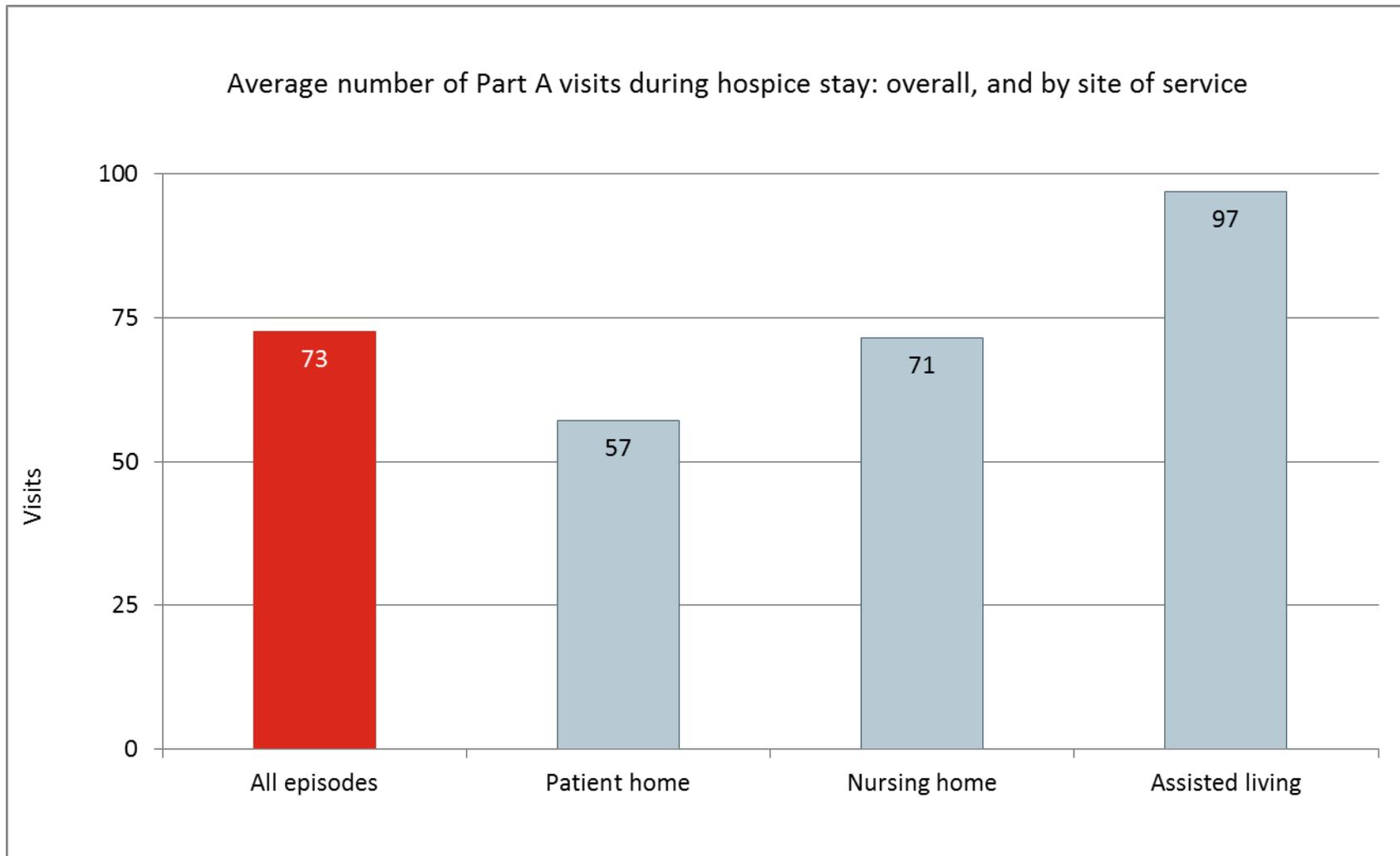
Source: 2012 Medicare hospice claims.

Figure A.2: Discharge Status of Hospice Beneficiary: Overall and by Site of Service



Source: 2012 Medicare hospice claims.

**Figure A.3: Average Number of Part A Visits during Hospice Stay: Overall and by Site**



Source: 2012 Medicare hospice claims.



## Appendix B: Geographic Variation in Hospice Utilization and Payments during 2012

### Background

The table and maps shown in this appendix display the geographic variation in Medicare hospice benefit utilization and payments during 2012.

### Methods

We identified all hospice days in the Hospice Day File that occurred during 2012 and which were serviced by hospices located in the fifty U.S. states as identified by the first two digits of their Medicare provider ID. All hospice days serviced by hospices located in an outlying territory or the District of Columbia were excluded (as they could not appear on the state-level heat maps we construct). After these territorial exclusions, we identified 90,070,702 hospice days for 1,262,393 unique beneficiaries that accounted for \$14.9 billion in hospice payments.

### Results

Table B.1 on the following page presents estimates across states of total hospice payments, hospice days, and beneficiaries served<sup>38</sup> during 2012. These estimates are used to calculate the estimates of total payments and hospice days per beneficiary appearing in the fifth and sixth columns of the table, respectively. Figure B.1 displays a heat map in red shades illustrating the fifth column of the table (“Total Hospice Payments per Beneficiary”) and Figure B.2 displays a heat map in green shades illustrating the sixth column of the table (“Hospice days per Beneficiary”). In both maps, states are grouped into quintiles (20% of states), so that each color shade corresponds to ten states on each map.

Nationwide, the average total payments per beneficiary was \$11,764 (ranging from \$7,228 in North Dakota to \$15,657 in Nevada); the average total hospice days per beneficiary was 71.1 (ranging from 43.1 in Alaska to 91.7 in Alabama).

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<sup>38</sup> Note that due to transfers beneficiaries are counted more once if they received hospice services from hospices in more than one state. The total in the beneficiaries column (1,267,502) of Table 1 exceeds the number of the unique beneficiaries in the dataset (1,262,393).

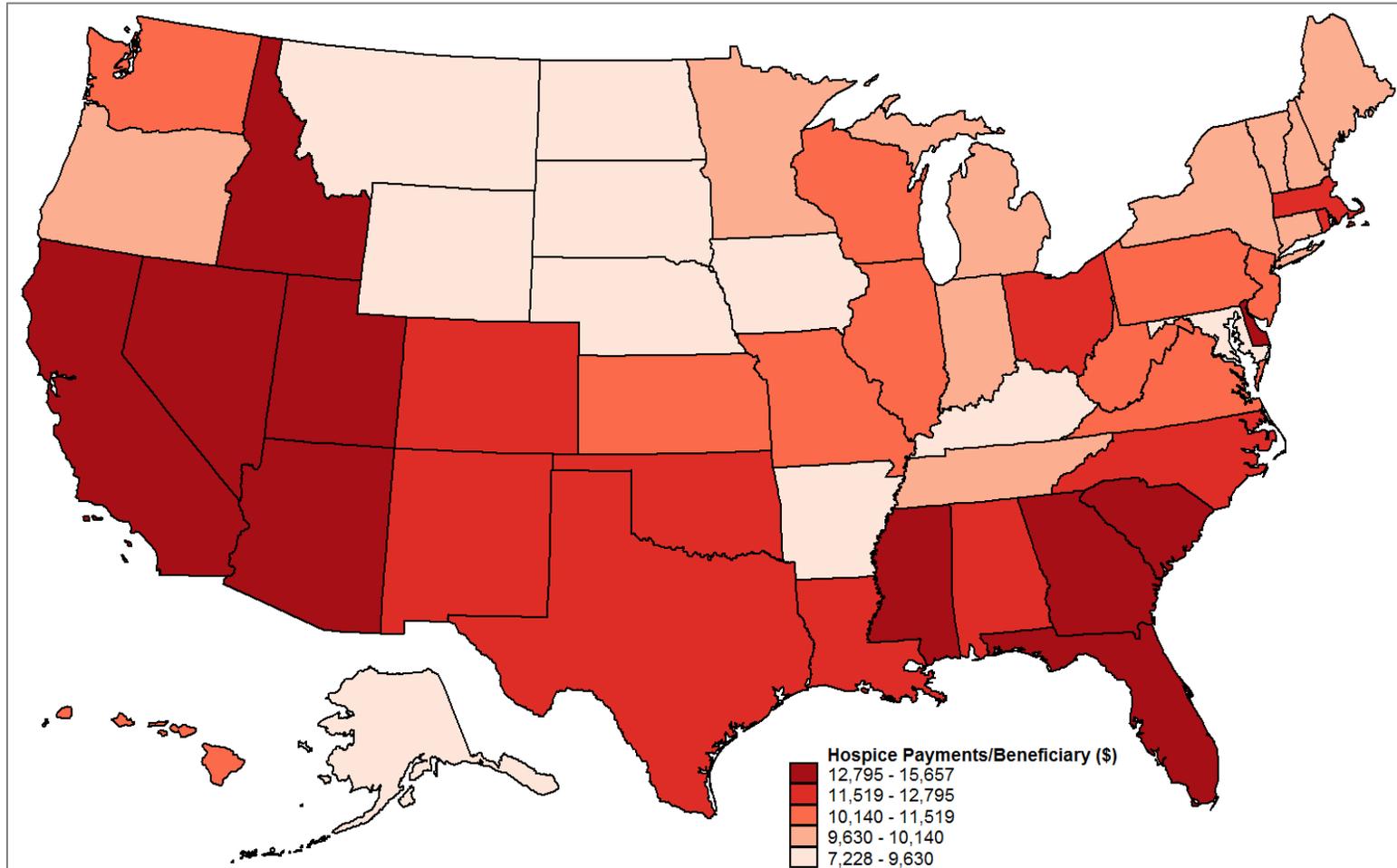
**Table B.1: Geographic Variation in Hospice Utilization and Payment per Beneficiary during 2012**

Hospice State (by Medicare ID)	Total Hospice Payments	Total Hospice Days	Total Beneficiaries Served by State Hospices	Total Hospice Payments per Beneficiary	Hospice Days per Beneficiary
Alabama	\$347,100,912	2,488,866	27,134	\$12,792	91.7
Alaska	\$4,202,847	23,361	542	\$7,754	43.1
Arizona	\$521,737,105	2,919,432	34,688	\$15,041	84.2
Arkansas	\$132,326,884	863,508	13,766	\$9,613	62.7
California	\$1,547,388,257	7,905,082	111,608	\$13,864	70.8
Colorado	\$227,837,183	1,354,482	18,410	\$12,376	73.6
Connecticut	\$128,819,741	623,256	12,796	\$10,067	48.7
Delaware	\$77,691,638	461,702	5,231	\$14,852	88.3
Florida	\$1,486,586,640	7,968,237	111,016	\$13,391	71.8
Georgia	\$559,743,726	3,543,694	41,238	\$13,573	85.9
Hawaii	\$46,298,760	263,558	4,178	\$11,082	63.1
Idaho	\$91,407,053	623,927	7,035	\$12,993	88.7
Illinois	\$474,969,581	2,797,898	45,921	\$10,343	60.9
Indiana	\$264,826,224	1,716,623	27,018	\$9,802	63.5
Iowa	\$168,710,410	1,117,687	18,099	\$9,322	61.8
Kansas	\$132,317,347	896,285	12,787	\$10,348	70.1
Kentucky	\$146,349,604	926,391	15,669	\$9,340	59.1
Louisiana	\$254,734,072	1,721,588	21,251	\$11,987	81.0
Maine	\$59,774,510	374,400	6,089	\$9,817	61.5
Maryland	\$174,546,754	1,024,128	18,204	\$9,588	56.3
Massachusetts	\$305,383,415	1,724,428	25,963	\$11,762	66.4
Michigan	\$488,336,546	3,105,568	48,522	\$10,064	64.0
Minnesota	\$198,385,533	1,205,084	19,609	\$10,117	61.5
Mississippi	\$199,310,682	1,384,669	15,253	\$13,067	90.8
Missouri	\$327,582,425	2,251,677	30,092	\$10,886	74.8
Montana	\$37,862,857	262,751	3,966	\$9,547	66.3
Nebraska	\$71,348,317	472,584	7,959	\$8,964	59.4
Nevada	\$172,112,236	923,174	10,993	\$15,657	84.0
New Hampshire	\$48,130,248	283,192	4,766	\$10,099	59.4
New Jersey	\$376,305,150	2,122,787	32,677	\$11,516	65.0
New Mexico	\$104,163,089	665,987	8,523	\$12,221	78.1
New York	\$443,589,907	2,358,887	43,931	\$10,097	53.7
North Carolina	\$465,734,630	2,871,152	40,280	\$11,562	71.3
North Dakota	\$17,766,134	130,998	2,359	\$7,531	55.5
Ohio	\$747,313,559	4,589,655	63,742	\$11,724	72.0
Oklahoma	\$243,925,387	1,733,573	19,559	\$12,471	88.6
Oregon	\$180,819,825	1,069,233	18,741	\$9,648	57.1
Pennsylvania	\$693,567,762	4,453,022	65,206	\$10,637	68.3
Rhode Island	\$63,784,911	353,807	5,536	\$11,522	63.9
South Carolina	\$354,145,853	2,325,065	25,732	\$13,763	90.4
South Dakota	\$19,551,852	130,289	2,705	\$7,228	48.2
Tennessee	\$263,729,647	1,759,385	26,881	\$9,811	65.5
Texas	\$1,179,520,867	7,557,918	93,400	\$12,629	80.9
Utah	\$135,995,118	921,674	10,627	\$12,797	86.7
Vermont	\$19,915,334	123,050	2,035	\$9,786	60.5
Virginia	\$282,869,781	1,862,418	26,920	\$10,508	69.2
Washington	\$232,406,660	1,327,614	22,866	\$10,164	58.1
West Virginia	\$94,122,607	663,086	9,205	\$10,225	72.0

Hospice State (by Medicare ID)	Total Hospice Payments	Total Hospice Days	Total Beneficiaries Served by State Hospices	Total Hospice Payments per Beneficiary	Hospice Days per Beneficiary
Wisconsin	\$287,479,097	1,768,390	25,679	\$11,195	68.9
Wyoming	\$8,773,322	55,480	1,095	\$8,012	50.7
All States	\$14,911,302,000	90,070,702	1,267,502	\$11,764	71.1

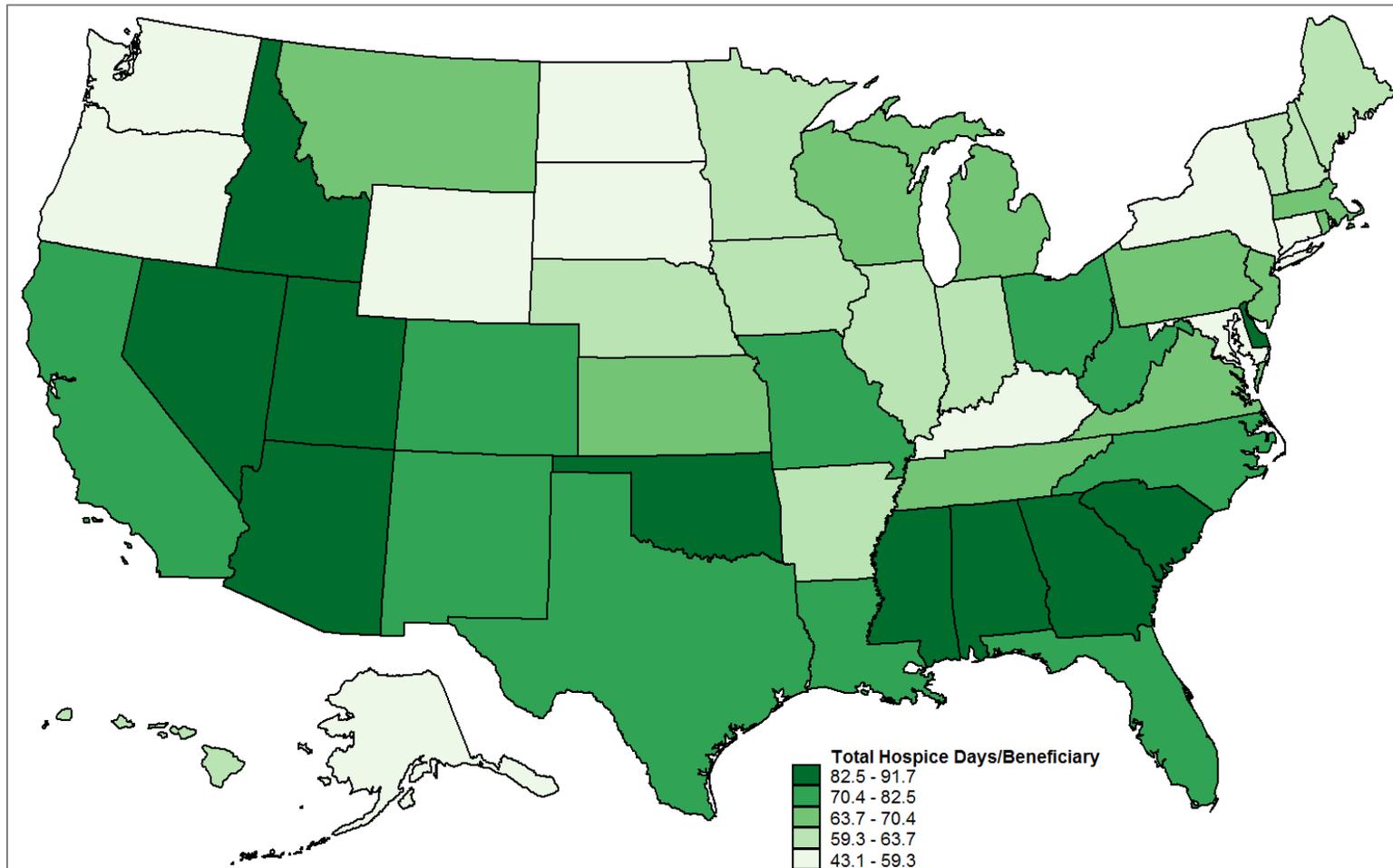
Source: Abt Associates analysis of 100% Medicare Hospice Claims (2012); Estimates exclude hospice service in U.S. outlying territories and the District of Columbia

Figure B.1: Geographic Variation in Total Hospice Payment per Beneficiary during 2012



Source: Abt Associates analysis of 100% Medicare Hospice Claims (2012); Estimates exclude hospice service in U.S. outlying territories and the District of Columbia

Figure B.2: Geographic Variation in Total Hospice Days per Beneficiary during 2012



Source: Abt Associates analysis of 100% Medicare Hospice Claims (2012); Estimates exclude hospice service in U.S. outlying territories and the District of Columbia