



Hospice Care Index Technical Report



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Executive Summary

Introduction to the Hospice Care Index

The Hospice Quality Reporting Program (HQRP) was implemented as authorized by Section 3004(c) of the Affordable Care Act amended section 1814(i)(5) in the Federal Fiscal Year (FY) 2012 Hospice Wage Index final rule.¹ Through its HQRP, the Centers for Medicare & Medicaid Services (CMS) promotes the delivery of high-quality hospice services. Quality measures (QMs) adopted for the HQRP promote person-centered, high-quality, and safe care. The goal of HQRP QM development is to specify and test measures using a variety of data sources that provide a window into hospice care delivery throughout the dying process. New QMs should also meet the objectives of the Meaningful Measures initiative,² which identifies high-priority areas for quality measurement and improvement. The Meaningful Measures initiative was launched to improve outcomes for patients, families, and caregivers while also reducing burden on clinicians and providers. The HQRP utilizes the Meaningful Measures initiative as a framework to review current quality measurement gaps. The initiative also guides, with an assessment of available data sources, the development of new QM concepts to fill those gaps, resulting in relevant and meaningful QMs that meet public reporting standards.³

This technical report provides context and descriptive analyses for a new HQRP QM, the **Hospice Care Index** (or **HCI**). CMS developed this QM in accordance with the Meaningful Measures initiative to capture care processes occurring across the hospice stay and fill gaps in the HQRP measure set. The HCI is an index measure; it scores hospices on a 0 to 10 scale using ten claims-based indicators which capture a broad array of information on hospice service provision. The HCI provides information that reflects care processes during a hospice stay and allows patients, families, and caregivers to make informed decisions. More details, including the HCI specifications can be found in HQRP QM User's Manual, located in the downloads section of the [Current Measure](#) page on the [CMS HQRP website](#).

Hospice Care Index Development

The HCI QM comprises multiple indicators designed to augment the HQRP with new measurement domains and add value to the program. To identify high-priority areas to address in the HQRP, CMS conducted information gathering activities including soliciting feedback from hospice stakeholders such as providers and patients, families, and caregivers; seeking hospice and quality expert input through a Technical Expert Panel (TEP); considering public comments received in previous rulemaking; and reviewing quality measurement recommendations offered by the Office of the Inspector General (OIG), Medicare Payment Advisory Commission (MedPAC), and peer-reviewed literature.

All indicators included in the HCI are fully calculated from Medicare claims data.⁴ Prior to FY 2022, the HQRP did not include any QMs calculated from claims data. In contrast, every one of CMS' other quality

¹ Medicare Program; Hospice Wage Index for Fiscal Year 2012, 42 C.F.R. 418 (2011).

² See: <https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/QualityInitiativesGenInfo/CMS-Quality-Strategy>.

³ CMS uses the Measure Evaluation Criteria developed by the current Consensus-Based Entity, the National Quality Forum. See Measure Evaluation Criteria and Guidance for Evaluating Measures for Endorsement (Effective September 2021), available via: <https://www.qualityforum.org/WorkArea/linkit.aspx?LinkIdentifier=id&ItemID=88439>. These guidelines are used as measure development objectives for the HQRP.

⁴ Although, it should be noted that CMS does already publicly report several hospice specific pieces of information derived from claims data in the HQRP, including (i) the levels of care the hospice provided, (ii) the primary diagnoses of patients the hospice served, (iii) sites of service in which the hospice operated, and (iv) the hospice's average daily census.

reporting programs included claims-based QMs. CMS added two claims-based QMs to the HQRP – Hospice Visits in the Last Days of Life (HVLDDL) and HCI – to enrich the quality reporting program and to better align the HQRP measure set with data encompassed within other CMS quality reporting programs. CMS calculates the non-claims-based HQRP QMs using Hospice Item Set (HIS) data and Consumer Assessment of Healthcare Providers and Systems® (CAHPS®) Hospice survey data. These HIS-based and CAHPS®-based measures capture the hospice team’s processes at admission and discharge, and caregiver experiences after the patient’s death. Claims data are the best currently available data source for measuring care during the hospice stay. CMS incorporated claims-based measures to report a large amount of information on hospice care practices, without imposing further data collection burden.

To address the concerns regarding limitations of single-concept, claims-based measures received during rulemaking, CMS purposefully created the HCI with an index design that incorporates multiple claims-based indicators simultaneously. As an index of claims-based indicators, the HCI provides a broad overview of hospice care quality between admission and discharge. Such measures better depict a comprehensive, holistic view of provider performance, simultaneously captured across multiple dimensions of care provision. Whereas a single-concept measure could be distorted by circumstances outside the hospice’s control – as was noted in public comments – this is less likely in a measure that incorporates several indicators. The index is thus a more reliable indicator of overall hospice performance, as it is unlikely that a hospice could consistently fall short across multiple indicators due to practices beyond their control.

Each HCI indicator is assigned a threshold that determines whether the hospice earns a point towards its total index score for that indicator. The thresholds reflect either normative performance standards (such as providing certain kinds of services) or reference thresholds relative to national hospice performance (such as performing higher or lower than a certain percentage of all hospices). These thresholds were set based on CMS’ statistical analysis of national hospice performance during FY 2019-2021. Hospices will score better if they meet more indicators’ thresholds. Together with other publicly reported HQRP QMs, HCI scores help patients, families, and caregivers better select hospice providers.

Hospice Care Index Indicators Overview

The HCI provides a broad overview of hospice care quality. Each indicator in the index represents a particular care practice of concern, as identified by CMS’ information gathering activities. The HCI was developed to fill several identified information gaps:

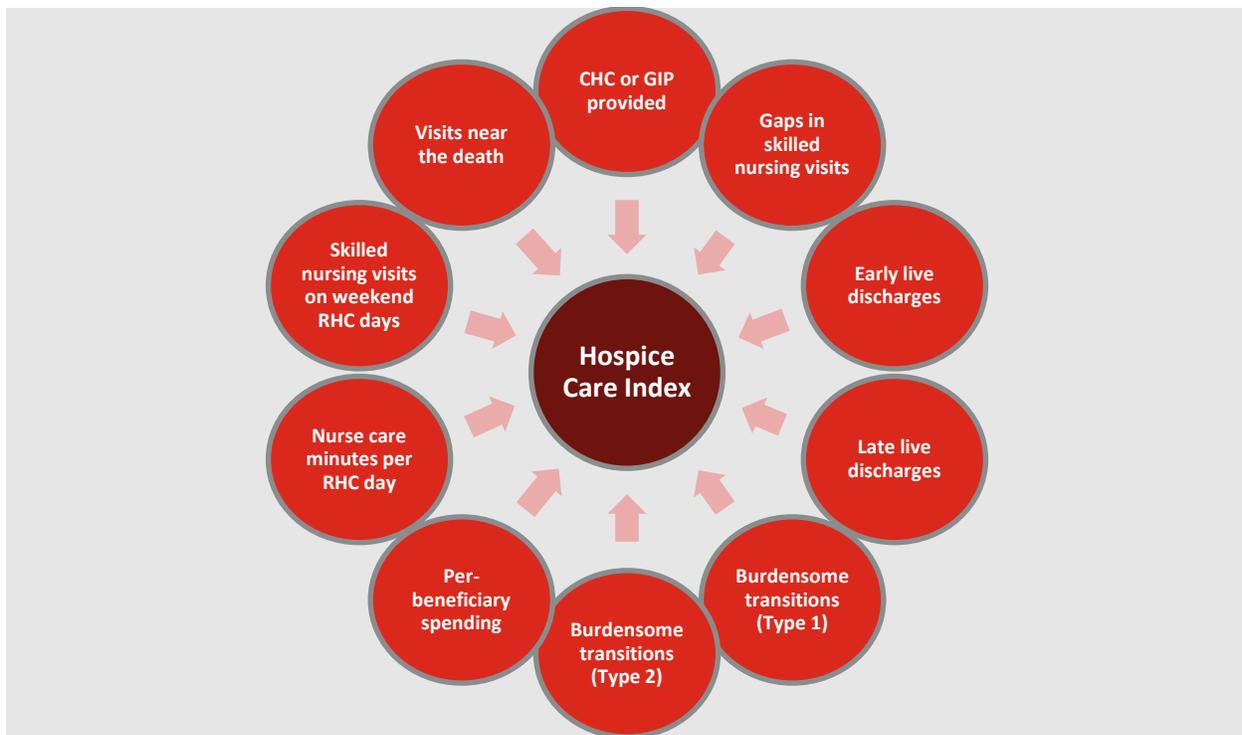
- **Provision of Higher Levels of Hospice Services:** CMS requires hospices be able to provide both continuous home care (CHC) and general inpatient care (GIP) to manage more intense symptom crises. However, around a quarter of all programs do not provide GIP services each year, and it is unclear if patients in crisis received appropriate care (a similar concern exists regarding the CHC level of care).
- **Visits by Professional Hospice Staff:** Medicare Conditions of Participation require the hospice interdisciplinary team to ensure on-going patient and caregiver assessment, plan of care implementation, and 24/7 availability of hospice services. Additionally, the end of life is typically the period in the terminal illness trajectory with the highest symptom burden, necessitating close care and attention from hospice staff.
- **Patterns of Hospice Live Discharges and Transitions:** Providers are expected to have some live discharges, but rates that are substantially higher than other hospices could signal a potential problem such as poor care quality, poor program integrity, failing to meet patients’ or families’

needs, or admitting patients who do not meet eligibility criteria. Atypical transition patterns suggest problems in hospices’ care processes, advance care planning to prevent hospitalizations, or discharge processes. Revocations may also be related to business practices or quality of care.

- **Medicare Spending:** CMS currently reports per-beneficiary spending estimates for other care settings. Half of hospice expenditures are for patients that have had at least 180 or more days on hospice, raising concerns that some programs do not appropriately discharge ineligible patients, enroll patients with longer predicted lengths of stay in hospice, or inappropriately bill for high-level, higher-rate services such as GIP.

CMS selected ten HCI indicators to address these information gaps, overviewed in **Exhibit ES.1**, which represent a hospice’s ability to address patients’ needs, best practices hospices should observe, and/or care outcomes that matter to consumers.

Exhibit ES.1: Claims-Based Indicators Contributing to the Hospice Care Index



The ten indicators contribute to the HCI score as follows:

- Each HCI indicator has its own numerator, denominator, and resulting indicator score. A hospice’s given indicator score relative to an *Index Earned Point Criterion* determines whether the hospice earns a point for that indicator towards the full index score.
- *Index Earned Point Criteria* were set based on CMS’ statistical analysis of national hospice performance to ensure meaningful distinction between hospices.
- Hospices’ HCI scores are calculated as the total number of *Index Earned Points* across the ten indicators and can range from a perfect 10 to a 0.

Analytic Findings Summary

Using 100 percent Medicare Fee-For-Service (FFS) claims data from eight quarters across calendar years 2019 through 2021,⁵ we calculated scores for the ten indicators and the overall index to assess the HCI against National Quality Forum (NQF) performance standards. Additionally, we sought to understand patterns or trends in scores across different hospice types. To assess against NQF standards, we tested the HCI's variability and validity. These tests respectively ensure that the HCI can sufficiently differentiate providers in public reporting, that the HCI's results are consistent with other established QMs, and that the HCI scores are comparable across time periods. High-level findings are as follows:

- **Variability.** Most hospices (among the 4,777 tested that had sufficient data available for public reporting⁶) tend to score between eight to ten points on the HCI, which indicates that the majority do well on the HCI, earning points on all (or almost all) the indicators. We also observe about 15 percent of hospices score seven and below. This score distribution allows the HCI to differentiate between higher-performing hospices and those hospices with room for improvement.
- **Validity.** We found a correlation between a higher HCI score and a higher percentage of caregivers reporting that they would recommend the hospice (through the CAHPS[®] Hospice Survey). This correlation demonstrates that the HCI aligns with caregiver perceptions of hospice quality.
- Nationally, the average HCI score is 8.8, with 37.9 percent of hospices receiving a score of 10. In general, HCI scores were higher on average among larger hospices, older hospices, non-profit hospices, and facility-based hospices. Scores were also higher on average among hospices in northern states. There was not a strong difference in average HCI scores between hospices in urban and rural areas.

⁵ The eight quarters of data used in these analyses are Quarter 2, 3, and 4 of calendar year (CY) 2019; Quarter 3 and 4 of CY 2020; and Quarter 1, 2, and 3 of CY 2021. As discussed in the FY 2022 Hospice Final Rule, CMS decided to use eight quarters of data instead of four to ensure that greater numbers of hospices meet the minimum data threshold for public reporting, and therefore that measure scores can be reported for more hospices. CMS also determined that Q1 2020 and Q2 2020 data could not be used for public reporting due to the impact of the COVID-19 Public Health Emergency (PHE). In the absence of the PHE, CMS would have calculated the HCI based on FY2020-2021 (October 2019 through September 2021). With the exclusion of Q1 2020 and Q2 2020, CMS decided to use the next most recent quarters as replacement data: Q2 and Q3 of 2019.

⁶ Hospices were included in the measure calculation if they had at least 20 claims during the eight quarters used for data. Across CMS quality reporting programs, providers qualify for public reporting if they have at least 20 units in the reporting period. By using eight quarters for the sample period, this analytic sample includes more small providers who otherwise would have insufficient claims volume during a given year to be included in public reporting.

1. Introduction

1.1. Hospice Care Index Technical Report Objectives and Outline

This technical report provides context and descriptive analyses in support of the HCI, a new QM developed by CMS. The HCI is an index measure; it scores hospices on a 0 to 10 scale using ten claims-based indicators that capture a broad array of information on hospice service provision. CMS adopted the HCI into HQRP in the FY2022 Hospice Final Rule. CMS developed this report to share information on the HCI's goals and trends, as well as further describe the rationale for claims-based indicators. This report includes detailed HCI analyses.

The main body of this report is organized as follows:

- The remainder of **Section 1** provides an overview and history of the CMS hospice benefit and quality reporting program, including the current set of publicly reported hospice QMs, and the process by which new QMs are developed.
- **Section 2** describes the rationale for the HCI, including an overview of claims data used in other public reporting programs; how the HCI is calculated; and a summary of feedback received during outreach and engagement activities CMS undertook while developing this measure.
- **Section 3** provides an overview of each of the ten claims-based indicators used to calculate the hospice's HCI score. Distinct subsections list each indicator's rationale, calculation, and contribution to the HCI score. This section also provides a walk-through, mock-up example of how the HCI and its component indicator scores are derived using a simulated, hypothetical hospice.
- **Section 4** includes descriptive analyses of both HCI scores nationwide and the individual indicators, simulated using actual 100 percent Medicare claims data from eight quarters between 2019 and 2021.
- Finally, **Section 5** concludes the main body of the report.

Additionally, the following appendices provide supplemental information:

- **Appendix A** provides a list of references cited in this report.
- **Appendix B** provides a listing and definitions of all acronyms used in this report.
- **Appendix C** provides supplemental mapping exhibits, i.e., state-level trends for each indicator.
- **Appendix D** provides analysis results comparing individual HCI indicator scores and aggregate hospice ratings by decedent caregivers.
- **Appendix E** provides analyses of how individual HCI indicator trends relate to CAHPS® score trends.

1.2. Background of the Medicare Hospice Benefit

1.2.1 History and Objectives

The Medicare hospice benefit was implemented by Congress in 1983, authorized by section 122 of the Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA), Public Law 97-248, with the intent of

providing fully-covered hospice services to eligible⁷ Medicare beneficiaries who choose to elect the benefit. Hospice care is a holistic approach to treatment, which recognizes the impending death of an individual and focuses care goals on comfort and quality of life.⁸ Hospice seeks to meet the physical, medical, psychosocial, spiritual, and emotional needs of patients, their families, and caregivers. Hospices designate an interdisciplinary care group, which includes (but is not limited to) a Doctor of Medicine or Osteopathy who is not the patient's attending physician, a registered nurse, a social worker, and pastoral, clergy, or other spiritual counselors. The patient, family, and patient's physician may also meet with the interdisciplinary group. The interdisciplinary group establishes an individualized plan of care to meet the specific patient and family needs.⁹

The benefit originally limited enrollments to 210 days,¹⁰ but currently, Medicare beneficiaries can elect hospice care for an unlimited duration as long as eligibility is maintained. The benefit also originally emphasized care in patients own homes,¹¹ but hospice services are now provided to beneficiaries in nursing facilities, assisted living facilities, acute care hospitals, and hospice facilities. CMS compensates hospices through *per diem* payments that vary with the level of services provided. Through these payments, CMS expects hospices to provide all care sufficient to manage patients' terminal diagnosis and related conditions. When beneficiaries elect hospice, they waive Medicare coverage for curative treatment of their terminal diagnosis but retain the right to leave hospice at any time and resume coverage for curative treatment. Beneficiaries may later return to hospice at any time as long as they are eligible.

1.2.2 Current Hospice Care Utilization Patterns

There has been substantial growth in hospice utilization over the past two decades. In 2000, 22.9 percent of Medicare decedents elected hospice (a little over half a million beneficiaries); in 2020, that share increased to 47.8 percent (with 1.7 million hospice users).¹² During the same time period in which hospice utilization rates doubled, Medicare hospice expenditures have risen more than seven times, from

⁷ Eligibility for the Medicare hospice benefit requires (1) entitlement to Medicare Part A and (2) physician-certification of a prognosis of six months or less.

⁸ As stated in the Medicare and Medicaid Programs: Hospice Conditions of Participation (73 FR 32087), "Hospice care is an approach to caring for the terminally ill individual that provides palliative care rather than traditional medical care and curative treatment. Palliative care is an approach that improves the quality of life of patients and their families facing the problems associated with life-threatening illness through the prevention and relief of suffering by means of early identification, assessment and treatment of pain and other issues."

⁹ Medicare and Medicaid Programs: Hospice Conditions of Participation (73 FR 32087).

¹⁰ Initially, beneficiaries could receive three election periods: Two 90-day periods and one 30-day period. (81 FR 52143).

¹¹ As stated in the August 22, 1983 proposed rule entitled "Medicare Program; Hospice Care" (48 FR 38146), "the hospice experience in the United States has placed emphasis on home care. It offers physician services, specialized nursing services, and other forms of care in the home to enable the terminally ill individual to remain at home in the company of family and friends as long as possible."

¹² MedPAC, Chapter 11, 2022.

\$2.9 billion in FY 2000¹³ to approximately \$22.4 billion in FY 2020.¹⁴ The increase in hospice expenditures was driven by an increase in the number of elections to the hospice benefit, which itself resulted from an increased number of Medicare beneficiaries over time and a greater awareness of the Medicare hospice benefit.¹⁵ During the same period, the number of hospice providers also more than doubled.¹⁶ The Medicare hospice benefit compensates providers using *per diem* payments, which incentivizes longer lengths of stay within the hospice benefit. Between 2000 and 2020, the average lifetime days of hospice that hospice users received rose from 53.5 days¹⁷ to 97.0 days.¹⁸

The Medicare Hospice Benefit provides coverage for four levels of care, defined in **Exhibit 1.2.2**. A review of recent claims over ten years¹⁹ shows that most hospice days (97.6 percent) were billed as RHC. CHC accounts for 0.4 percent of total hospice days.²⁰ GIP service comprises 1.7 percent of total hospice days.²¹ Finally, IRC accounts for 0.3 percent of total hospice service days.²²

Over time, there have also been notable changes in the diagnosis patterns among Medicare hospice enrollees. At the time of Medicare hospice benefit implementation, cancer diagnoses were the most frequently reported diagnoses, comprising 91.7 percent of hospice patients in 1985.²³ This has since declined so that in 2000, 52 percent of hospice patients had a cancer diagnosis.²⁴ In

Exhibit 1.2.2: Hospice Levels of Care

Routine Home Care (RHC): A routine home care day is a day on which an individual who has elected to receive hospice care is at home and is not receiving continuous home care.

Continuous Home Care (CHC): A continuous home care day is one on which a hospice patient is in a period of crisis, and during which the hospice seeks to achieve palliation or management of acute medical symptoms using services as necessary to maintain a patient at home during symptom crises.

General Inpatient (GIP): A general inpatient day is one on which a hospice patient is treated in a facility for a brief period of symptom crisis to achieve palliation or management of acute medical symptoms that cannot be managed in other settings.

Inpatient Respite Care (IRC): An inpatient respite care day is one on which a hospice patient is treated in facilities to allow caregivers respite.

¹³ MedPAC, Chapter 12, 2020.

¹⁴ MedPAC, Chapter 11, 2022.

¹⁵ See MedPAC, Chapter 12, 2020.

¹⁶ From 2,255 hospices in 2000 (see MedPAC, Chapter 12, 2020) to 5,058 in 2020 (see MedPAC, Chapter 11, 2022).

¹⁷ MedPAC, Chapter 12, 2020.

¹⁸ MedPAC, Chapter 11, 2022.

¹⁹ FY 2009 – FY 2018 in the FY 2020 Hospice Wage Index and Payment Rate Update and Hospice Quality Reporting Requirements (See: 84 FR 38484; <https://www.govinfo.gov/content/pkg/FR-2019-08-06/pdf/2019-16583.pdf>).

²⁰ See: 84 FR 38484; <https://www.govinfo.gov/content/pkg/FR-2019-08-06/pdf/2019-16583.pdf>.

²¹ See: 84 FR 38484; <https://www.govinfo.gov/content/pkg/FR-2019-08-06/pdf/2019-16583.pdf>.

²² See: 84 FR 38484; <https://www.govinfo.gov/content/pkg/FR-2019-08-06/pdf/2019-16583.pdf>.

²³ See Davis, F.A. (1988)

²⁴ MedPAC, Chapter 12, 2020 (p.335).

2020, the share of hospice patients with a cancer diagnosis further declined to 24 percent.²⁵ Correspondingly, there has been a significant increase in the reporting of neurologically-based diagnoses, including Alzheimer’s disease, which has been the top-reported diagnosis on hospice claims since 2014.²⁶

Additionally, the patterns of sites of service for Medicare hospice beneficiaries have changed. As noted, nursing home residents were originally ineligible to elect the hospice benefit. By 2009, Department of Health & Human Services OIG reports found that approximately one-third of Medicare beneficiaries resided in nursing homes.²⁷ Moreover, there were hundreds of hospices for which more than two-thirds of their Medicare patients resided in nursing facilities.²⁸ MedPAC reported instances of hospices aggressively marketing services to nursing home residents (who were more likely to have longer hospice stays, and as a result, produce higher revenues) and entering into financial relationships with nursing home administrators to promote referrals.²⁹

1.3. Background of the Hospice Quality Reporting Program

HQRP was authorized by Section 3004 of the Affordable Care Act and implemented in the FY 2012 Hospice Wage Index final rule.³⁰ Through its HQRP, CMS promotes the delivery of high-quality hospice services. The QMs adopted for the HQRP promote person-centered, high quality, and safe care. The current list of QMs for the HQRP is listed in **Exhibit 1.4.1**. Hospices were required to begin collecting quality data in July 2014 and submit those quality data to support quality measures.

The HQRP is a “pay-for-reporting” initiative and, per Section 1814(i)(5)(A)(i) of the Act, providers incur a penalty to their annual payment update (APU) if they do not meet submission requirements for a particular FY. Because administrative data are collected from claims, hospices are automatically considered 100% compliant with this requirement. Hospices must also submit HIS records and CAHPS® Hospice Survey data. As of FY 2024 (CY 2022 data), the APU penalty for failing to submit required data will increase to four-percentage points.

CMS launched the Meaningful Measures initiative (which identifies high priority areas for quality measurement and improvement) in 2017 to improve outcomes for patients, their families, and providers while also reducing clinicians’ and providers’ burden.³¹ Meaningful Measure initiative areas are intended to increase measure alignment across programs and other public and private initiatives. Additionally, this initiative helps identify high priority areas where there may be gaps in available QMs and guide efforts to develop and implement QMs to fill those gaps. Meaningful Measures guidance for QM development is described in **Section 1.5**.

When developing HQRP QMs, CMS considers public comments from a variety of stakeholders (including national hospice organizations, MedPAC, providers, and family caregivers) and conducts additional outreach to hospice quality experts. Stakeholder input is a critical component of the measure

²⁵ MedPAC, Chapter 11, 2022 (in Footnote #9).

²⁶ See: 84 FR 38484; <https://www.govinfo.gov/content/pkg/FR-2019-08-06/pdf/2019-16583.pdf>.

²⁷ Department of Health and Human Services, Office of Inspector General. (2009a).

²⁸ Department of Health and Human Services, Office of Inspector General. (2009b).

²⁹ MedPAC, Chapter 6, 2009.

³⁰ See: 76 FR 47320 through 47324, <https://www.govinfo.gov/content/pkg/FR-2011-08-04/pdf/2011-19488.pdf>.

³¹ accessed via More information about the Meaningful Measures initiative can be accessed via: <https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/QualityInitiativesGenInfo/MMF/General-info-Sub-Page>.

planning, development, and review processes. For more information about the specific stakeholder outreach conducted for the HCI, see **Section 2.4**.

1.4. Current State of the Hospice Quality Reporting Program

Exhibit 1.4.1 displays a list of QMs currently used in the HQR. The current set of HQR measures are calculated from three data sources: the Hospice Item Set (HIS), administrative data (Medicare claims), and the CAHPS® Hospice survey. The HIS is completed by hospice staff and must be completed and submitted within 30 days from admission and up to 30 days after hospice discharge.³² The HIS provides information used to capture standard hospice care admission processes represented through the Hospice and Palliative Care Composite Process Measure – Comprehensive Assessment at Admission QM (and its seven component measures). Medicare claims data are administrative records of services provided and capture care processes throughout the hospice stay. The HCI incorporates many of the hospice care processes captured in claims data. Claims data also capture care processes near death – specifically visits by hospice staff in the last days of life – which are at present represented by the Hospice Visits in the Last Days of Life (HVLDL) measure. The CAHPS® Hospice Survey is mailed to caregivers of hospice beneficiaries who have died and captures caregiver experiences of care.

Exhibit 1.4.1: Current Quality Measures in the Hospice Quality Reporting Program

Quality Measure	NQF #	Data Source	Description
Hospice and Palliative Care Composite Process Measure – Comprehensive Assessment at Admission	NQF #3235	Hospice Item Set	Percentage of patient stays during which the patient received all seven care processes: Beliefs/Values Addressed if desired by the patient, Treatment Preferences, Pain Screening, Pain Assessment, Dyspnea Treatment, Dyspnea Screening, and Patients Treated with an Opioid who are Given a Bowel Regimen, as applicable.
Hospice Care Index (HCI)	Not currently endorsed	Medicare Claims	The degree to which a hospice met criteria for ten care processes occurring throughout hospice stays. The indicators included in the HCI are: CHC or GIP Provided, Gaps in Skilled Nursing Visits, Early Live Discharges, Late Live Discharges, Burdensome Transitions (Type 1) - Live Discharges from Hospice Followed by Hospitalization and Subsequent Hospice Readmission, Burdensome Transitions (Type 2) - Live Discharges from Hospice Followed by Hospitalization with the Patient Dying in the Hospital, Per-beneficiary Medicare Spending, Skilled Nursing Care Minutes per RHC Day, Skilled Nursing Minutes on Weekend RHC Days, and Visits Near Death.
Hospice Visits in Last Days of Life (HVLDL)	Not currently endorsed	Medicare Claims	The proportion of hospice patients who have received in-person visits from a Registered Nurse or Medical Social Worker (non-telephonically) on at least two out of the final three days of the patient's life
Measures calculated from the CAHPS® Hospice Survey	NQF #2651	CAHPS® Hospice Survey	Communication with family; Getting timely help; Treating patient with respect; Emotional and spiritual support; Help for pain and symptoms; Training family to care for patient; Rating of this hospice; Willing to recommend this hospice.

³² Hospice Quality Reporting Program: Requirements for the Fiscal Year (FY) 2021 and Future FY Reporting Years: <https://www.cms.gov/files/document/hqrp-requirements-fy-2021-and-future-fy-reporting-yearsjan2020.pdf>. For more information about timely reporting standards please see: 80 FR 47141; <https://www.govinfo.gov/content/pkg/FR-2015-08-06/pdf/2015-19033.pdf>.

1.5. Developing Quality Measures for the Hospice Quality Reporting Program

The goal of QM development is to identify constructs based on a variety of data sources that provide a window into hospice care throughout the dying process, fit well with the hospice business model, and meet Meaningful Measures initiative objectives. The HQRP utilizes the Meaningful Measures initiative as a framework to identify and develop potential new measure concepts. The initiative facilitates reviewing current measures to identify gaps in quality measurement, and, with an assessment of available data sources, facilitates proposing new QM concepts by which to fill those gaps. Ultimately, CMS seeks to develop appropriate concepts into QMs that meet public reporting standards. There are five stages in the initiative:³³

1. *Measure conceptualization* includes information gathering (reviews of literature and clinical guidelines, reviews of policy briefings, expert interviews, and data analysis), outreach to stakeholders, and convening a technical expert panel.
2. *Measure specification* establishes the basic elements of the measure, including its data source and calculation algorithm.
3. *Measure testing* ensures the measure meets scientific standards, including that it produces reliable, meaningful results. Two concepts of particular interest are ensuring “variability” (that the measure can sufficiently differentiate providers in public reporting) and “validity” (that the measure demonstrates results consistent with other established QMs).
4. *Measure implementation* includes a transparent process for soliciting stakeholder and public comment through rulemaking. In addition, CMS considers recommendations from a consensus-based entity (currently the NQF), in accordance with the pre-rulemaking process.³⁴ Based on feedback, CMS decides whether to implement and publicly report the measure.
5. *Measure use, continuing evaluation, and maintenance* involve continued monitoring of implemented measures’ use, performance, importance, accuracy, and impacts. Based on monitoring activities, measures can be re-specified to ensure their continued importance and usefulness.

The end-product of measure development is a specified, valid, and reliable measure that is meaningful to clinicians, patients, families, and caregivers. The QMs should provide timely, understandable, comprehensive, clinically valid, and meaningful feedback to hospice leadership, its staff, and their different teams regardless of the hospice setting where care is provided.³⁵

³³ CMS, Measures Management System Blueprint, 2020 (See: <https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/MMS/Downloads/Blueprint.pdf>).

³⁴ See: <https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/QualityMeasures/Pre-Rulemaking>.

³⁵ CMS, Measures Management System Blueprint, 2020 (See: <https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/MMS/Downloads/Blueprint.pdf>).

2. Developing the Hospice Care Index

CMS sought to develop a new QM to provide more information to better reflect care processes during a hospice stay and allow patients, families, and caregivers to make informed decisions. This new measure, the **Hospice Care Index** (which CMS also refers to as the **HCI**), is a QM comprising multiple indicators from Medicare claims data that are collected during a hospice stay. The index augments the HQRP with new measurement domains that were either directly recommended by other Federal agencies for CMS to publicly report or identified as areas for improvement during information gathering.³⁶ The index currently monitors ten indicators simultaneously, rather than measuring only a single aspect of care. This index characterizes hospices holistically, ensuring reliable provider rankings. The HCI helps consumers differentiate between hospices and identify providers who consistently underperform.

2.1. Uses of Claims Data in Quality Reporting Programs

Medicare claims are administrative records of services provided and Medicare payments for those services.³⁷ Claims are a rich and comprehensive data source for many care processes and aspects of health care utilization. As such, claims data are a valuable source of quality measurement information for several reasons:

1. Claims data are readily available and do not impose provider burden for implementation. Conversely, assessment-based or survey-based data collection requires additional effort from clinicians, patients, families, and caregivers before data can be submitted and used by CMS.
2. Claims data are collected as care is delivered, providing a more direct reflection of care delivery decisions and actions than assessment-based QMs or self-reported survey-based measures.
3. Claims data use standardized and established coding for more consistent data submissions.

The HQRP presently includes two QMs calculated from claims data. In addition, CMS publicly reports several pieces of information derived from claims data in the HQRP, including (i) the levels of care the hospice provided, (ii) the primary diagnoses of patients the hospice served, (iii) sites of service in which the hospice operated, and (iv) the hospice's average daily census. All eleven CMS quality reporting programs include at least one claims-based measure. **Exhibit 2.1.1** lists an example of a claims-based measure used in each:

³⁶ Indicator selection is discussed further in **Section 2.2**, **Section 2.3**, and **Section 3.1**.

³⁷ In addition to payments to providers from Medicare, claims can also provide information on the payments made by beneficiaries, such as copayments for physician office visits. Note that for the hospice setting, in practice, patients are almost never charged such copayments.

SECTION 2: Developing the Hospice Care Index

Exhibit 2.1.1: Examples of Claims-Based Measures used in CMS Quality Reporting Programs

Quality Reporting Program (QRP)	Example of Claims-Based Measure in Program
Ambulatory Surgical Center QRP	Facility 7-Day Risk-Standardized Hospital Visit Rate after Outpatient Colonoscopy
End-Stage Renal Disease QRP	Hemodialysis Vascular Access: Long-term Catheter Rate
Home Health QRP	Rehospitalization during the First 30 Days of Home Health
Hospital Inpatient QRP	Excess Days in Acute Care
Hospital Outpatient QRP	Admissions and Emergency Department Visits for Patients Receiving Outpatient Chemotherapy
Hospice HQRP	Hospice Care Index (HCI)
Inpatient Psychiatric Facility QRP	Follow-Up After Hospitalization for Mental Illness
Inpatient Rehabilitation Facility QRP	Potentially Preventable 30-Day Post-Discharge Readmission
Long Term Care Hospitals QRP	Discharge to Community
Prospective Payment System-Exempt Cancer Hospital QRP	Admissions and Emergency Department Visits for Patients Receiving Outpatient Chemotherapy
Skilled Nursing Facility QRP	Medicare Spending Per Beneficiary

CMS added claims-based QMs to the HQRP to enrich the quality reporting program and to better align the HQRP measure set with the types of data used within other CMS quality reporting programs. In the FY 2018 Hospice Proposed Rule,³⁸ CMS solicited public comment on two high-priority claims-based measure concepts; one which looked at transitions from hospice and another which examined access to higher levels of hospice care. CMS received public comments highlighting the potential limitations of a single concept claims-based measure, in particular the inability of claims data to adequately account for all relevant circumstances that might influence a hospice’s performance on a single concept measure.³⁹ Taking this public feedback into consideration, CMS purposefully designed the HCI as an index measure – to summarize multiple claims-based indicators simultaneously – to address the limitations of single-concept, claims-based measures expressed by commenters. The HCI’s construction is discussed more fully in **Section 2.3**.

2.2. Intent of the Hospice Care Index

The HCI adds value to the HQRP by measuring aspects of hospice care not addressed by other HQRP QMs. CMS conducted several information gathering activities to identify gaps in the HQRP QM set, including:

- Soliciting feedback from hospice stakeholders such as providers, families, and caregivers.
- Seeking input from hospice and quality experts through a TEP and interviews with hospice quality experts.
- Reviewing public comments received in response to previous CMS solicitations on claims-based hospice quality initiatives.
- Reviewing quality measurement recommendations offered by the OIG, MedPAC, and peer-reviewed literature.

³⁸ See: 82 FR 30750; <https://www.gpo.gov/fdsys/pkg/FR-2017-05-03/pdf/2017-08563.pdf>.

³⁹ See: 84 FR 38484; <https://www.govinfo.gov/content/pkg/FR-2019-08-06/pdf/2019-16583.pdf>.

SECTION 2: Developing the Hospice Care Index

As discussed in **Section 1.4** of this report, HQRP QMs are currently calculated using data collected from Medicare claims, the HIS, and the CAHPS® Hospice survey. These measures capture the hospice team’s processes at admission, discharge and through the hospice stay, in addition to caregiver experiences after the patient’s death.

Prior to adopting HCI, the HQRP measure set did not fully address all aspects of hospice services or outcomes (e.g., frequency of services, transitions after live discharge). Therefore, CMS identified a need for a new QM to reflect care delivery processes during the hospice stay that uses currently available data. Claims data are the best currently available data source for measuring care during the hospice stay and bridging the identified quality measurement gap. CMS had also previously heard from hospices that claims data can provide insights into utilization patterns and practices. CMS determined that publicly reporting this information could assist consumers when selecting a hospice.

The HCI provides a broad, multi-disciplinary overview of hospice care quality between admission and discharge. HCI indicators represent a hospice’s ability to address patients’ needs (such as providing CHC & GIP services), best practices hospices should observe (such as ensuring patients have access to care during weekends, or providing regular nursing visits), and/or care outcomes that matter to consumers (such as live discharges from hospice followed by death in a hospital). The HCI helps to identify whether hospices have performance trends across the multiple indicators that indicate higher or lower quality of care than comparable peer hospices.

2.3. Hospice Care Index Scoring Methodology

CMS designed the HCI as an index composed of multiple claims-based indicators to address the limitations of individual claims-based measures. Individual performance indicators are useful in targeting specific areas for improvement and monitoring improvement progress. However, individual indicators do not necessarily indicate how well a provider is performing in the aggregate. Aggregating individual indicators into an index better assesses overall performance. Such measures better depict consistent performance, simultaneously captured across multiple care provision dimensions. As such, indices are well-suited to identifying differences between hospices without distortion by circumstances outside the hospice’s control, as might be the case with a single-concept measure. The index thus produces more reliable results, as it is unlikely that a hospice could consistently fall short across multiple indicators due to practices beyond their control.

Hospices’ HCI scores will depend on their summative performance scores on the component indicators included in the index.⁴⁰ Each indicator represents a particular care practice of concern, as identified by CMS’s information gathering and measure testing activities. The indicators are assigned a threshold that determines whether that indicator contributes to the hospice’s total index score. These thresholds reflect either normative performance standards (such as providing certain kinds of services) or reference thresholds relative to national hospice performance (such as performing higher or lower than a certain percentage of all hospices). The thresholds have been set based on CMS’s statistical analysis of national hospice performance to ensure validity, reliability, and meaningful distinction between hospices. Each of these indicators, their rationale, and calculation, are explained in more detail in **Section 3**. Empirical analyses for the indicators are explained in **Section 4**.

Hospices’ index scores are tied to the number of indicator thresholds they meet. Hospices score better if they meet more thresholds for indicator credit and score worse if they meet fewer indicator thresholds. Each indicator for which a hospice meets or exceeds the “Index Earned Point Criterion” adds 1 point to the hospice’s overall HCI score. A hospice’s HCI score could range from a perfect 10 (if a hospice

⁴⁰ The indicator thresholds and the processes by which the thresholds were determined are explained in detail in **Section 3** of this report.

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received credit for all indicator thresholds) to a 0 (if a hospice failed to meet all performance thresholds). For a detailed example of HCI indicator calculations, please see **Section 3.2**.

2.4. Summary of Stakeholder Engagement Activities

2.4.1 Provider Perspectives on the Hospice Care Index

During the summer of 2020, CMS convened five listening sessions with national hospice provider organizations to discuss the HCI concept, with the goals of engaging stakeholders and receiving feedback early in the measure's development. The organizations were generally supportive of an index QM using claims data for public reporting. Providers suggested several valuable exploratory analyses, improvements for the example indicators presented, and ideas for eventual public display for CMS to consider. Based on this feedback, CMS refined the HCI to incorporate input received, and when selecting indicators, focused on those with the strongest association with CAHPS® Hospice scores and that quality experts identified as salient issues for measurement and observation.

Across the different listening sessions, several key themes arose frequently. First, hospices raised concerns that claims data may not adequately express the quality of care provided and may be better suited as an indicator for program integrity or compliance issues. Second, hospices stated that claims may lack sufficient information to adequately reflect individual patient needs or the full array of hospice practices. Specifically, administrative records such as claims do not fully capture patients' clinical conditions, patient and caregiver preferences, or hospice activities such as telehealth, chaplain visits, and specialized services such as massage or music therapy.

2.4.2 Caregiver Perspectives on the Hospice Care Index

CMS also convened two workgroups of hospice caregivers to obtain input for measure development and public reporting considerations. Six caregivers in total provided their personal experiences in informal hospice care delivery, initial reactions to the HCI concept, and more broadly how caregivers and the public would use publicly reported information to make hospice decisions. At the beginning of the workgroups, caregivers were given an overview of the Medicare hospice benefit, the HQRP, and a tour of CMS's Care Compare website. Care Compare is the current website where CMS provides QM data and information to empower consumers to select a health care provider in eight care settings, including hospice.⁴¹ Previously CMS hosted a separate website for each setting, including the Hospice Compare site.⁴²

Several caregivers noted that the current Care Compare is generally unknown by hospice caregivers, and that most families and caregivers receive information about hospice from hospitals, social workers, or nurses. They noted that more outreach and training to those individuals who recommend hospices could bring more traffic to the website. Reviewing the information available on Care Compare at the time, caregivers felt it provided little useful or relevant information for users, nor did it provide useful distinctions between hospices that would assist caregivers in making a choice. Caregivers felt the HCI would present much more useful information to hospice caregivers and decision-makers. Caregivers noted the simple overall score combined with detailed breakdowns of points earned for the various indicators would be very helpful in differentiating hospices by their quality. However, caregivers also cautioned that a balance should be struck between providing too little information and so much information that it becomes overwhelming. Overall, caregivers felt the HCI would be very useful for

⁴¹ For more information about the Care Compare website, please see <https://www.medicare.gov/care-compare/resources/about-this-tool>.

⁴² Hospice Compare (formerly <https://www.medicare.gov/hospicecompare>) was launched in August 2017 as the newest of CMS's Compare websites. Hospice Compare was retired in December 2020, and all data was migrated to the successor website, Care Compare.

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caregivers in the future, so long as there was sufficient effort in ensuring awareness of Care Compare before the need to make a hospice decision arises.

2.4.3 Summary of Public Comment on the Hospice Care Index

After submitting the HCI to NQF's 2020 Measures Under Consideration and Measure Application Partnership for deliberation,⁴³ CMS introduced the measure in the FY2022 Hospice Wage Index and Payment Rate notice of proposed rule (NPRM).⁴⁴ In the FY2022 NPRM, CMS described the HCI rationale and calculation, and solicited public comment on the measure concept. CMS received several comments⁴⁵ agreeing that the HCI would add value to the HQRP by providing important hospice information patients and families could use when selecting a hospice provider. Commenters also appreciated the need for CMS to identify hospices with aberrant practices.

Among comments expressing some concerns about the HCI, most related to the limitations of available claims data— for example, that claims do not capture patient refusals for service, or the full interdisciplinary team, such as chaplain visits. Other comments suggested modifications to the HCI specifications. In response to comments, CMS emphasized the measure, as a whole, meets NQF performance standards and brings value to the HQRP.

Additional comments expressed interest in trends and monitoring of the measure, contributing to the development of this Technical Report. After considering public comments to the FY 2022 Hospice Wage Index NPRM, CMS finalized the proposal to add the HCI to the HQRP in the FY 2022 Hospice Wage Index and Payment Rate Update final rule.

After much evaluation of all input received, CMS concluded the benefits of adopting the HCI outweighed its limitations. The HCI was not intended to account for all potentially valuable aspects of hospice care, nor was it expected to entirely close the QM gaps previously found in the HQRP. Rather, the HCI serves as a useful step to provide more information to consumers and better empower them to make informed health care decisions. CMS feels the HCI adds value to the HQRP, augmenting the prior measure set with an index of indicators compiled from currently available claims data. This provides useful information to patients and their families without further burden to patients, caregivers, or providers.

⁴³ Public comments received through NQF are summarized on the document “2020-2021 MAP PAC/LTC Preliminary Analyses Worksheet Preliminary Analyses Worksheet” (accessible via: https://www.qualityforum.org/Projects/i-m/MAP/PAC-LTC_Workgroup/2020-2021_Preliminary_Analyses_Worksheet.aspx) on the NQF Measures Application Partnership page (<https://www.qualityforum.org/ProjectMaterials.aspx?projectID=75367>).

⁴⁴ See 86 FR 19731; <https://www.govinfo.gov/content/pkg/FR-2021-04-14/html/2021-07344.htm>.

⁴⁵ See: 86 FR 42586; <https://www.govinfo.gov/content/pkg/FR-2021-08-04/html/2021-16311.htm>.

3. Hospice Care Index Design and Structure

3.1. Hospice Care Index Indicator Selection Criteria and Rationale

In this section, we describe the ten claims-based indicators which comprise the HCI. More detailed specifications for all HCI indicators, including guidance to calculate the indicators using underlying claims data files, can be found in the HQRP QM Manual v1.00, available on the HQRP Current Measures webpage.⁴⁶ Each of the ten HCI indicators was selected based on a review of government reports, academic literature, and analyses of Medicare service utilization patterns. After reviewing the findings of this research, CMS selected ten indicators representing hospice care domains recommended by leading hospice and quality experts or other Federal agencies^{47,48} as areas for improvement for CMS to publicly report, or a requirement included in the Medicare Hospice Conditions of Participation (CoPs). Based on the recommendations and support, HCI presents a group of indicators which reflect practices or outcomes hospices should pursue.

3.1.1 CHC or GIP Provided

Rationale

Medicare Hospice CoPs require hospices to be able to provide both CHC and GIP levels of care, if needed, to manage more intense symptoms.^{49,50} However, a 2013 OIG report⁵¹ found that 953 hospice programs did not provide any GIP level of care services, and it was unclear if dying patients at such hospices were receiving appropriate pain control or symptoms management (a similar concern exists for hospice services at the CHC level). To assess the provision of adequate services needed to manage patients' symptoms, the HCI index includes an indicator for whether hospice programs did or did not provide any CHC or GIP service days.

Numerator, Denominator, & Index Earned Points Criterion

Numerator: The total number of CHC or GIP service days provided by the hospice within a reporting period.⁵²

Denominator: The total number of hospice service days provided by the hospice at any level of care within a reporting period.

Index Earned Point Criterion: Hospices earn a point towards the HCI if they provided at least one CHC or GIP service day within a reporting period.

⁴⁶ <https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/Hospice-Quality-Reporting/Current-Measures>

⁴⁷ 2019: Vulnerabilities in Hospice Care (Office of the Inspector General)

⁴⁸ Report to Congress: Medicare Payment Policy (March 2019) MedPAC

⁴⁹ See §418.204 (https://www.ecfr.gov/cgi-bin/text-idx?rgn=div5;node=42%3A3.0.1.1.5#se42.3.418_1204).

⁵⁰ See §418.302 (https://www.ecfr.gov/cgi-bin/text-idx?rgn=div5;node=42%3A3.0.1.1.5#se42.3.418_1302).

⁵¹ Department of Health and Human Services, Office of Inspector General. (2013)

⁵² The reporting period for HCI is eight quarters (or two years). For this report, the reporting period included Quarter 2, 3, and 4 of calendar year (CY) 2019; Quarter 3 and 4 of CY 2020; and Quarter 1, 2, and 3 of CY 2021.

3.1.2 Gaps in Skilled Nursing Visits

Rationale

The Medicare Hospice Benefit's CoPs require an interdisciplinary team member to ensure ongoing assessment of patient and caregiver needs and plan of care implementation.⁵³ The Office of the Inspector General has found instances of infrequent nurse visits to hospice patients. For example, one hospice they reviewed did not provide nurse visits for two weeks despite the beneficiary's care plan including weekly nurse visits.⁵⁴ To assess patients' receipt of adequate oversight, one HCI indicator examines hospices that have a high rate of patients who are not seen by nursing staff at least once a week.

Numerator, Denominator, & Index Earned Points Criterion

Numerator: The number of hospice stays where the patient experienced at least one gap between nursing visits exceeding seven days, excluding hospice stays where the patient elected hospice for less than 30 days within a reporting period.

Denominator: The total number of stays with the hospice, excluding hospice stays where the patient elected hospice for less than 30 days within a reporting period.

Index Earned Point Criterion: Hospices earn a point towards the HCI if their individual hospice score for gaps in skilled nursing visits greater than seven days falls below the 90th percentile ranking among hospices nationally.

3.1.3 Early Live Discharges

Rationale

Prior work has identified problematic patterns of live discharge from hospice. High rates of live discharge suggest problems in hospices' care processes, their advance care planning to prevent hospitalizations, or their discharge processes.⁵⁵ As MedPAC noted,⁵⁶

Hospice providers are expected to have some rate of live discharges because some patients change their mind about using the hospice benefit and dis-enroll from hospice or their condition improves and they no longer meet the hospice eligibility criteria. However, providers with substantially higher rates of live discharge than their peers could signal a potential problem with quality of care or program integrity. An unusually high rate of live discharges could indicate that a hospice provider is not meeting the needs of patients and families or is admitting patients who do not meet the eligibility criteria.

Our live discharge indicators included in the HCI, like MedPAC's, comprise discharges for all reasons. They include instances where the patient was no longer found terminally ill and revocations due to the patient's choice. MedPAC explains their rationale for including all discharges as follows:⁵⁷

Some stakeholders argue that live discharges initiated by the beneficiary — such as when the beneficiary revokes his or her hospice enrollment — should not be included in a live-

⁵³ See §418.56 (https://www.ecfr.gov/cgi-bin/text-idx?rgn=div5;node=42%3A3.0.1.1.5#se42.3.418_156) and §418.76 (https://www.ecfr.gov/cgi-bin/text-idx?rgn=div5;node=42%3A3.0.1.1.5#se42.3.418_176).

⁵⁴ Department of Health and Human Services, Office of Inspector General. (2019).

⁵⁵ Teno J. M., Bowman, J., Plotzke, M., Gozalo, P. L., Christian, T., Miller, S. C., Williams, C., & Mor, V. (2015). Characteristics of hospice programs with problematic live discharges. *Journal of Pain and Symptom Management*, 50, 548-552. doi: 10.1016/j.jpainsymman.2015.05.001.

⁵⁶ MedPAC, Chapter 12, 2020.

⁵⁷ MedPAC, Chapter 11, 2011.

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discharge measure because, some stakeholders assert, these discharges reflect beneficiary preferences and are not in the hospice's control. Because beneficiaries may choose to revoke hospice for a variety of reasons, which in some cases are related to the hospice provider's business practices or quality of care, we include revocations in our analysis.

The HCI includes four indicators that capture these patterns, starting with the rate of live discharge within seven days of hospice election.

Numerator, Denominator, & Index Earned Points Criterion

Numerator: The total number of live discharges from the hospice occurring within the first seven days of a hospice stay within a reporting period.

Denominator: The total number of all live discharges from the hospice within a reporting period.

Index Earned Point Criterion: Hospices earn a point towards the HCI if their individual percentage of live discharges on or before the seventh day of hospice falls below the 90th percentile ranking among hospices nationally.

3.1.4 Late Live Discharges

Rationale

The second live discharge indicator is the rate of live discharge that occurred 180 days or more after hospice election. MedPAC, in descriptive analyses of hospices exceeding the Medicare annual payment cap, noted that “if some hospices have rates of discharging patients alive that are substantially higher than most other hospices it raises concerns that some hospices may be pursuing business models that seek out patients likely to have long stays who may not meet the hospice eligibility criteria.”⁵⁸ Because of quality implications for hospices who pursue such business models, the live discharge rate after long hospice stays was included in the index.

Numerator, Denominator, & Index Earned Points Criterion

Numerator: The total number of live discharges from the hospice occurring on or after 180 days of election in hospice within a reporting period.

Denominator: The total number of all live discharges from the hospice within a reporting period.

Index Earned Point Criterion: Hospices earn a point towards the HCI if their individual hospice score for live discharges on or after the 180th day of hospice falls below the 90th percentile ranking among hospices nationally.

3.1.5 Burdensome Transitions (Type 1) – Live Discharges from Hospice Followed by Hospitalization and Subsequent Hospice Readmission

Rationale

The third live discharge indicator, referred to as burdensome transitions (Type 1), reflects hospice live discharge with a hospital admission within two days of hospice discharge, and then hospice readmission within two days of hospital discharge. This pattern of transitions may lead to fragmented care and may be associated with problematic care processes. For example, burdensome transitions (Type 1) may arise from a deficiency in advance care planning to prevent hospitalizations or a discharge process that does not appropriately identify a hospice patient whose conditions are stabilized prior to discharge.⁵⁹

⁵⁸ MedPAC, Chapter 11, 2011.

⁵⁹ For example, see: Teno et al, 2015.

Numerator, Denominator, & Index Earned Points Criterion

Numerator: The total number of live discharges from the hospice followed by hospital admission within two days, then hospice readmission within two days of hospital discharge within a reporting period.

Denominator: The total number of all live discharges from the hospice within a reporting period.

Index Earned Point Criterion: Hospices earn a point towards the HCI if their individual hospice score for Type 1 burdensome transitions falls below the 90th percentile ranking among hospices nationally.

3.1.6 Burdensome Transitions (Type 2) – Live Discharges from Hospice Followed by Hospitalization with the Patient Dying in the Hospital

Rationale

Death in a hospital following live discharge is another problematic pattern in hospice use. This indicator reflects hospice live discharge followed by hospitalization within two days and with the patient dying in the hospital, referred to as burdensome transitions (Type 2). This transition pattern may be associated with a discharge process that does not appropriately assess the stability of a hospice patient's conditions prior to live discharge.⁶⁰

Numerator, Denominator, and Index Earned Point Criterion

Numerator: The total number of live discharges from the hospice followed by a hospitalization within two days of live discharge and with death in the hospital within a reporting period.

Denominator: The total number of all live discharges from the hospice within a reporting period.

Index Earned Point Criterion: Hospices earn a point towards the HCI if their individual hospice score for burdensome transitions (Type 2) falls below the 90th percentile ranking among hospices nationally.

3.1.7 Per-Beneficiary Medicare Spending

Rationale

Estimates of per-beneficiary spending are endorsed by NQF (#2158)⁶¹ and publicly reported by CMS for other care settings. Because the Medicare hospice benefit pays a per diem rate, an important determinant of per-beneficiary spending is the length of stay. MedPAC reported that nearly half of Medicare hospice expenditures are for patients that have had at least 180 or more days on hospice,⁶² and expressed a concern that some programs do not appropriately discharge patients whose medical condition makes them no longer eligible for hospice services, or, that hospices selectively enroll patients with non-cancer diagnoses and longer predicted lengths of stay in hospice.⁶³ The other determinant of per-beneficiary spending is the level of care at which services are billed. In a 2016 report the OIG has expressed concern about potentially inappropriate billing of high-level, higher-rate services such as GIP care.⁶⁴ For these reasons the HCI includes one indicator for per-beneficiary spending; lower-rates of per-beneficiary spending may identify hospices that provide efficient care at a lower cost to Medicare.

Numerator, Denominator, & Index Earned Points Criterion

Numerator: Total Medicare hospice payments received by a hospice within a reporting period.

⁶⁰ For example, see: Teno et al, 2015. For example, see: Teno et al, 2015.

⁶¹ See: https://www.qualityforum.org/Projects/c-d/Cost_and_Resource_Project/2158.aspx.

⁶² MedPAC, Chapter 12, 2020.

⁶³ MedPAC, Chapter 12, 2020.

⁶⁴ Department of Health and Human Services, Office of Inspector General. (2016).

Denominator: Total number of beneficiaries electing hospice with the hospice within a reporting period.

Index Earned Point Criterion: Hospices earn a point towards the HCI if their average Medicare spending per beneficiary falls below the 90th percentile ranking among hospices nationally.

3.1.8 Skilled Nursing Care Minutes per RHC Day

Rationale

Medicare Hospice CoPs require a member of the interdisciplinary team to ensure ongoing assessment of patient and caregiver needs.⁶⁵ Such assessment is necessary to successfully prepare, implement, and refine the plan of care. Hospices must also ensure that patients and caregivers receive education and training as appropriate to conduct the care and services identified in the plan of care. To assess adequate oversight, this indicator measures the average number of skilled nursing minutes per day during RHC days.

Numerator, Denominator, & Index Earned Points Criterion

Numerator: Total skilled nursing minutes provided by a hospice on all RHC service days within a reporting period.

Denominator: The total number of RHC days provided by a hospice within a reporting period.

Index Earned Point Criterion: Hospices earn a point towards the HCI if their individual hospice score for Nursing Minutes per RHC day falls above the 10th percentile ranking among hospices nationally.

3.1.9 Skilled Nursing Minutes on Weekend RHC Days⁶⁶

Rationale

The Medicare Hospice Benefit's CoPs require that "Nursing services, physician services, and drugs and biologicals...must be made routinely available on a 24-hour basis, seven days a week".⁶⁷ Ongoing assessment of patient and caregiver needs, and plan of care implementation are necessary for adequate hospice care oversight. Fewer observed hospice services on weekends (relative to that provided on weekdays) is not itself an indication of a lack of access – in fact, on weekends patients' caregivers are more likely to be present and could prefer privacy from hospice staff. However, patterns of variation across providers could signal less service provider availability and access for patients on weekends. To assess hospice service availability, this indicator includes minutes of care provided by skilled nurses on weekend RHC days.

Numerator, Denominator, & Index Earned Points Criterion

Numerator: Total sum of minutes provided by the hospice during skilled nursing visits during RHC service days occurring on Saturdays or Sundays within a reporting period.

Denominator: Total skilled nursing minutes provided by the hospice during RHC service days within a reporting period.

Index Earned Point Criterion: Hospices earn a point towards the HCI if their individual hospice score for percentage of skilled nursing minutes provided during the weekend is above the 10th percentile ranking among hospices nationally.

⁶⁵ See §418.56 (https://www.ecfr.gov/cgi-bin/text-idx?rgn=div5;node=42%3A3.0.1.1.5#se42.3.418_156) and §418.76 (https://www.ecfr.gov/cgi-bin/text-idx?rgn=div5;node=42%3A3.0.1.1.5#se42.3.418_176).

⁶⁶ This indicator is listed on Care Compare as "Skilled Nursing Minutes on Weekends."

⁶⁷ See: §418.100 (https://www.ecfr.gov/cgi-bin/text-idx?rgn=div5;node=42%3A3.0.1.1.5#se42.3.418_1100).

3.1.10 Visits Near Death

Rationale

The end of life is typically the period in the terminal illness trajectory with the highest symptom burden. Particularly during the last few days before death, patients (and caregivers) experience many physical and emotional symptoms, necessitating close care and attention from the integrated hospice team and drawing increasingly on hospice team resources.^{68,69,70} Physical symptoms of actively dying can often be identified within three days of death in some patients.⁷¹ This indicator captures staff visits during the three days prior to the beneficiary's death. It should be noted hospices could never be expected to accurately predict the date of death for 100 percent of patients; some patients will die suddenly, and some patients will have a disease trajectory that is more difficult to predict.

Numerator, Denominator, & Index Earned Points Criterion

Numerator: The number of decedent beneficiaries receiving a visit by a skilled nurse or social worker staff for the hospice in the last three days of the beneficiary's life within a reporting period.

Denominator: The number of decedent beneficiaries served by the hospice within a reporting period.

Index Earned Point Criterion: Hospices earn a point towards the HCI if their individual hospice score for percentage of decedents receiving a visit by a skilled nurse or social worker in the last three days of life falls above the 10th percentile ranking among hospices nationally.

3.2. Hospice Care Index Scoring Explanation

This section provides a numerical illustration for a hypothetical hospice and how the ten indicator scores would combine to produce the hospice's HCI score. A more complete description of the data used to calculate the indicators (and by extension, the HCI) is available in the HQRP QM Users' Manual v1.00.⁷²

A hospice's HCI score is based on its performance on ten claims-based performance indicators. Hospices earn a point for each indicator and the more points earned (from 0 to 10), the better the score. The HCI's component indicators are assigned a threshold based on national hospice performance. A hospice's individual indicator scores are compared to the threshold to determine whether they receive a point.

Exhibit 3.2 illustrates how a hypothetical hospice's score is determined across all ten indicators, and how the ten indicators' scores determine the overall HCI score. Each indicator in the table has the following attributes:

- **Name (Hospice Score Units):** The name of the HCI indicator, with the indicator's units of measurement displayed in parentheses.

⁶⁸ de la Cruz, M., et al. (2015). Delirium, agitation, and symptom distress within the final seven days of life among cancer patients receiving hospice care. *Palliative & Supportive Care*, 13(2): 211-216. doi: 10.1017/S1478951513001144.

⁶⁹ Dellon, E. P., et al. (2010). Family caregiver perspectives on symptoms and treatments for patients dying from complications of cystic fibrosis. *Journal of Pain & Symptom Management*, 40(6): 829-837. doi: 10.1016/j.jpainsymman.2010.03.024.

⁷⁰ Kehl, K. A., et al. (2013). A systematic review of the prevalence of signs of impending death and symptoms in the last 2 weeks of life. *American Journal of Hospice & Palliative Care*, 30(6): 601-616. doi: 10.1177/1049909112468222.

⁷¹ Hui D et al. (2014). Clinical Signs of Impending Death in Cancer Patients. *The Oncologist*. 19(6):681-687. doi:10.1634/theoncologist.2013-0457.

⁷² <https://www.cms.gov/files/document/hqrp-qm-users-manual-v100oct2021.pdf>

Section 3: Hospice Care Index Design and Structure

- **Numerator:** Describes the target process, event, or concept which is the focus of the indicator.
- **Denominator:** Defines the population or group which the indicator measures.
- **Hospice Observed Score:** The hospice's score on the specified indicator. For each indicator, the hospice score is calculated by dividing the hospice's numerator by its denominator.
- **National Average Score:** The average hospice score for the specified indicator across all hospices nationwide.
- **Percentile Rank Among Hospices Nationally:** The percentage of nationwide hospices which had lower indicator scores than this hospice. For example, a percentile rank of "75" indicates the Hospice Observed Score is greater than 75% of other hospices nationwide.
- **Index Earned Point Criterion:** The threshold a hospice must achieve to receive a point for this indicator that would contribute to its total HCI score.
- **Points Earned:** This column states whether the hospice received points for this indicator, based on whether the hospice's performance satisfied the Index Earned Point Criterion.
- **Points Awarded:** The number of points the hospice received for the specified indicator. Hospices may receive either zero (0) points if they do *not* meet the Index Earned Point Criterion, or one (1) point if they *do* meet the Index Earned Point Criterion.

Section 3: Hospice Care Index Design and Structure

Exhibit 3.2: Hospice Care Index Indicator Scoring

Name (Hospice Score Units)	Numerator	Denominator	Hospice Observed Score	National Average Score	Percentile Rank Among Hospices Nationally	Index Earned Point Criterion	Points Earned?	Points Awarded
Provided CHC/GIP (% days)	48	3,904	1.2%	0.9%	83	Hospice Score Above 0%	Yes	+1
Gaps in skilled nursing visits (% elections)	12	104	11.5%	5.9%	92	Below 90 Percentile Rank	No	0
Early live discharges (% live discharges)	3	27	11.1%	7.7%	75	Below 90 Percentile Rank	Yes	+1
Late live discharges (% live discharges)	14	27	51.9%	37.3%	84	Below 90 Percentile Rank	Yes	+1
Burdensome transitions, Type 1 (% live discharges)	4	27	13.8%	8.7%	77	Below 90 Percentile Rank	Yes	+1
Burdensome transitions, Type 2 (% live discharges)	0	27	0.0%	2.7%	1	Below 90 Percentile Rank	Yes	+1
Per-beneficiary Medicare spending (dollars \$)	\$2,322,657	256	\$9,073	\$12,959	22	Below 90 Percentile Rank	Yes	+1
Skilled nursing care minutes per routine home care day (minutes)	44,100	6,985	6.3	16.0	2	Above 10 Percentile Rank	No	0
Skilled nursing minutes on weekend RHC days (minutes)	9,090	157,230	5.8%	9.4%	17	Above 10 Percentile Rank	Yes	+1
Visits near death (% decedents)	147	151	97.4%	94.5%	46	Above 10 Percentile Rank	Yes	+1
Hospice Care Index Total Score =								8

SECTION 4: Primary Analytic Findings

We will use the “Gaps in skilled nursing visits” indicator in the second row of **Exhibit 3.2** to provide an in-depth example. The “Gaps in skilled nursing visits” indicator measures the percentage of all patients enrolled in hospice for at least 30 days who experienced a gap between nursing visits of longer than seven days. This is indicated by the “% elections” designation in the **Name (Hospice Score Units)** column. At this hospice, 12 patients (listed as the **Numerator**) out of 104 total patients enrolled in hospice for at least 30 days (listed as the **Denominator**) experienced a gap in nursing visits. Thus, this hospice has an **Observed Score** of 11.5% for the indicator ($12/104 \times 100\% = 11.5\%$). The nationwide average percentage of stays with gaps in skilled nursing visits exceeding seven days was 5.9%, and the example hospice’s score falls within the 92nd percentile among all nationwide hospices, meaning it has a larger percentage of stays with gaps in skilled nursing visits exceeding seven days than 92% of other hospices in the country. To receive points for this indicator within the total HCI score, a hospice must meet the **Index Earned Point Criterion**; the threshold for this indicator requires a score below the 90th percentile rank. The example hospice does not meet this threshold, as its percentile rank is 92 (i.e., greater than 90). Therefore, it does not earn points for the “Gaps in skilled nursing visits” indicator and is awarded 0 points for this indicator towards its total HCI score.

A hospice’s total HCI score is calculated as the total number of points earned across all ten indicators. Looking at **Exhibit 3.2**, the example hospice met the thresholds to receive points for eight HCI indicators and failed to meet the thresholds for two indicators (marked in red). Therefore, this hospice’s final HCI score is 8 out of a possible 10.

4. Primary Analytic Findings

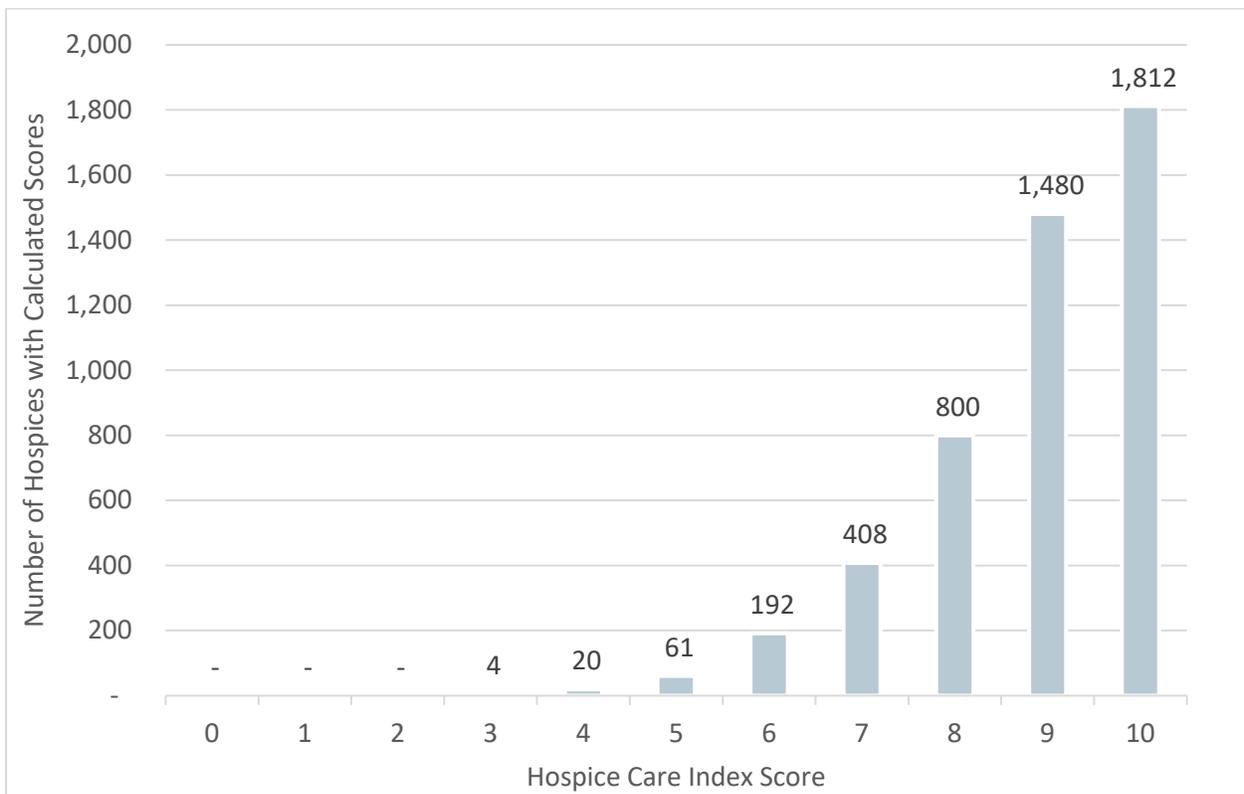
4.1. Hospice Care Index Analyses

In this section we present descriptive trends for the overall index score. These analyses are calculated using 100 percent Medicare claims from eight quarters of data from 2019 to 2021.⁷³ All hospices with at least 20 claims during the sample period have indicator and HCI scores; this resulted in an analytic sample of 4,777 hospices.

4.1.1 Trends in Hospice Care Index Scores

Most hospices score well on the HCI, as illustrated in **Exhibit 4.1.1**: over 85% of hospices had scores of eight or more. Moreover, more than one in three hospices had a score of ten, meaning they earned points on all ten indicators. At the same time, there were some lower scoring hospices: less than one in ten hospices scored seven on the index, and the remaining 5.8% scored six or lower. Out of the 4,777 total hospices with scores calculated in FY 2019-2021, 192 hospices scored a six, 61 hospices scored a five, 20 hospices scored a four, four hospices scored a three, and zero hospices scored a two or below. This range of scores indicates sufficient potential to differentiate hospice performance, an important feature of a publicly reported QM.

Exhibit 4.1.1: Distribution of Hospice Care Index Scores [n = 4,777 Hospice Providers with 20+ Hospice Claims]



Note: Abt Associates analysis of 100% Medicare claims, Federal Fiscal Year 2019 – 2021.

⁷³ These analyses use Medicare claims data from Quarters 2, 3, and 4 of 2019; Quarters 3 and 4 of 2020; and Quarters 1, 2, and 3 of 2021. These represent the most recent eight quarters of data not impacted by the COVID-19 PHE available at the time of analysis.

SECTION 4: Primary Analytic Findings

Exhibit 4.1.2 displays the average HCI score and percentage of hospices achieving a score of 10 by various characteristics. Nationally, the average HCI score is 8.8, with 37.9% receiving a score of 10.

We also stratified HCI scores by several hospice characteristics derived from data included in the Provider of Services (POS) file.⁷⁴ The characteristics we examined were the decade by which the hospice was certified to first provide Medicare services (1980s, 1990s, 2000s, and 2010s), ownership status (government-owned, non-profit, for-profit), facility type (freestanding, facility-based), Census region (Northeast, Midwest, South, and West), and urban vs. rural status. Using Medicare hospice claims, we also measure the number of claims submitted by the hospice to create strata (20-49, 50-79, 80-199, 200-499, and 500+ treated in the target year). In general, HCI scores were greater among:

- Larger hospices (average score 9.5 among hospices with 500+ claims, with 63.8% of hospices scoring a 10),
- Older hospices (average score 9.5 among hospices first certified to provide Medicare services in the 1980s, with 63.3 percent of such hospices scoring a 10),
- Non-profit hospices (average score 9.4 among non-profit hospices, with 58.7% of such hospices scoring a 10),
- Facility-based hospices (average score 9.2 among facility-based hospices, with 49.8% of such hospices scoring a 10), and
- Hospices in the Northeast and Midwest (average score 9.2 each, with 48.9% and 51.9% of such hospices scoring a 10, respectively).

There was a minor difference in HCI scores between hospices in urban and rural areas.

Exhibit 4.1.2: Percentage of Hospices by Hospice Characteristic and Corresponding Average Hospice Care Index Score and Percentage of Hospices Nationally Scoring a 10 out of 10 [n = 4,777 Hospice Providers with 20+ Hospice Claims]

Hospice Characteristic	% Hospices	Average Hospice Care Index Score	Percentage of National Hospices with Score of "10"
National Rate			
All Hospices	100.0%	8.8	37.9%
Number of Claims			
20-49	10.2%	7.9	11.3%
50-79	8.9%	8.1	13.8%
80-199	23.0%	8.5	21.6%
200-499	26.6%	9.0	40.0%
500+	31.3%	9.5	63.8%
Decade of Hospice Certification			
1980s	10.9%	9.5	63.3%
1990s	19.1%	9.2	50.2%
2000s	22.5%	9.0	41.8%
2010s	47.5%	8.5	25.3%

⁷⁴ POS file data is available via: <https://www.cms.gov/Research-Statistics-Data-and-Systems/Downloadable-Public-Use-Files/Provider-of-Services>.

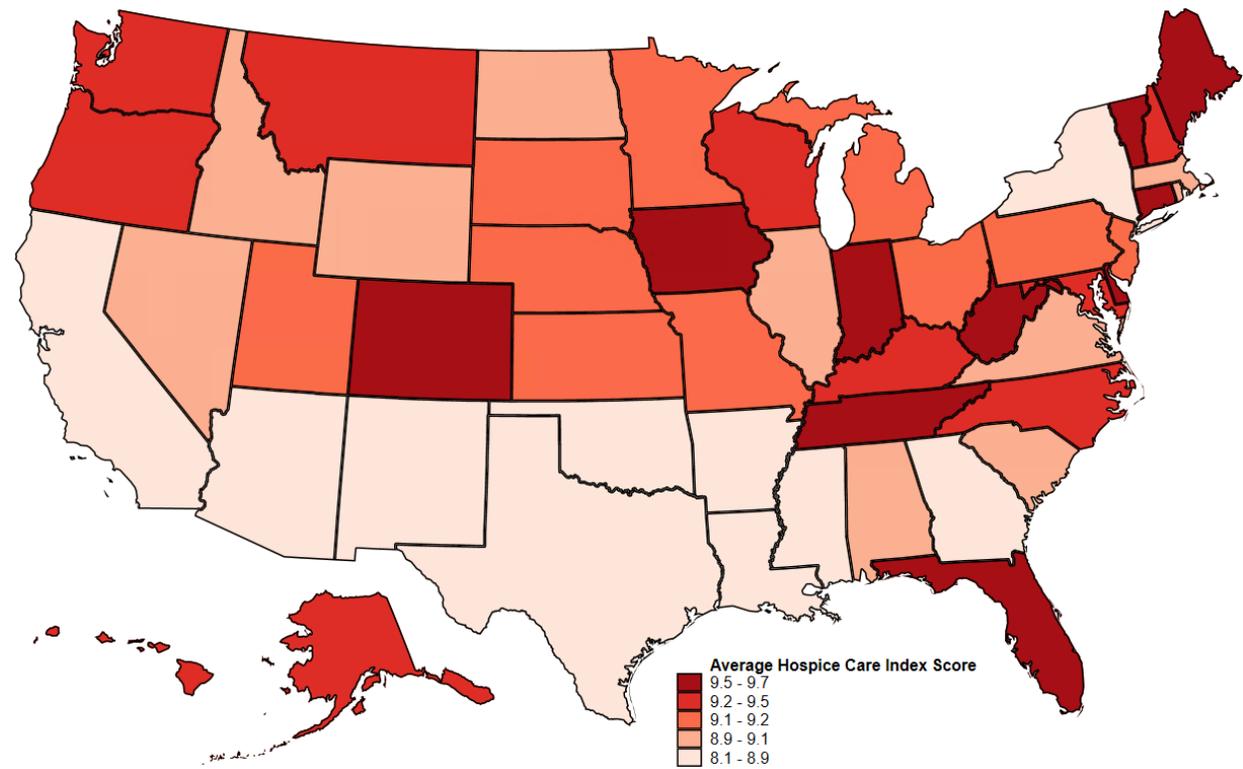
SECTION 4: Primary Analytic Findings

Ownership			
Government-owned	11.1%	9.0	41.0%
Nonprofit	19.2%	9.4	58.7%
For-Profit	69.6%	8.7	31.7%
Facility Type			
Facility-based	14.4%	9.2	49.8%
Freestanding	85.6%	8.8	35.9%
Region			
Northeast	8.9%	9.2	48.9%
Midwest	19.5%	9.2	51.9%
South	35.9%	8.8	34.6%
West	34.6%	8.7	31.6%
Outlying Territories	1.0%	7.8	4.1%
Urban/Rural			
Urban	82.8%	8.8	37.7%
Rural	17.2%	9.0	38.9%

Note: Abt Associates analysis of 100% Medicare claims and Provider of Services file records, Federal Fiscal Year 2019 -2021.

The regional variation in HCI scores noted in **Exhibit 4.1.2** is more apparent in **Exhibit 4.1.3**. The northern states have generally higher average HCI scores. Those states with the highest HCI scores are: Colorado, Connecticut, Delaware, Florida, Indiana, Iowa, Maine, Tennessee, Virginia, and West Virginia.

Exhibit 4.1.3: Hospice Care Index Statewide Averages

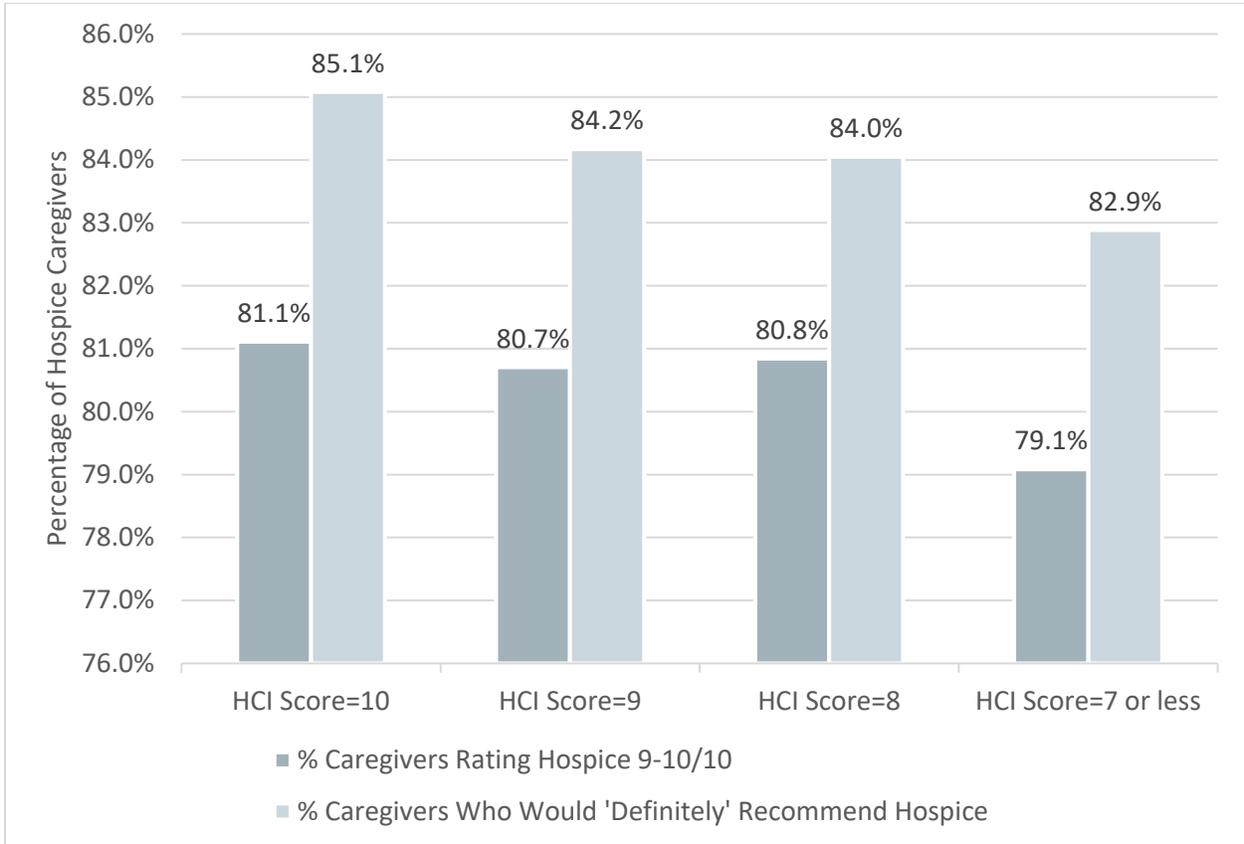


Note: Abt Associates analysis of 100% Medicare claims, 8 quarters of data from Federal Fiscal Year 2019 – 2021.

4.1.2 Hospice Care Index Alignment with Other Hospice Quality Reporting Program Quality Measures

The HCI score produces rankings consistent with other endorsed QMs in the HQRP, as displayed in **Exhibit 4.1.4**. On average, hospices with higher HCI scores have better CAHPS® Hospice ratings. Among hospices scoring a 10 by the HCI, 81.5% of caregivers gave the hospice the highest overall ranking vs. 78.7% of hospices with a score of 7 or less. Likewise, 85.1% of caregivers treated by hospices scoring a 10 reported they would definitely recommend the hospice vs. 81.5% reporting they would definitely recommend the hospice among hospices with a score of 7 or less. The alignment between the HCI and CAHPS® Hospice scores supports the validity of the HCI as a quality construct. This pattern suggests that the HCI captures care processes which resonate with patient caregivers.

Exhibit 4.1.4: CAHPS® Hospice Outcome Scores by Hospice Care Index Score



Note: Abt Associates analysis of 100% Medicare claims and hospice-level Consumer Assessment of Healthcare Providers and Systems® Hospice survey scores, Federal Fiscal Year 2019 – 2021.

Further analysis of patterns between CAHPS® Hospice scores and the HCI’s individual claims-based indicators is available in **Appendix E**.

4.2. Hospice Care Index Indicator Analyses

In this section, we describe and analyze the ten claims-based indicators which make up the HCI, using actual Medicare hospice data from FY 2019-2021. Particular attention is paid towards characterizing trends in hospices more likely to have individual indicator scores affecting their HCI scores.

This section is divided into ten subsections, with each devoted to one of the respective claims-based indicators. All subsections adhere to the same general template. First, we present the rationale for the indicator, and reference the government reports or academic studies recommending this indicator or motivating its inclusion. Next, we review the *numerator* and *denominator* statement for each indicator.

The *numerator* refers to the target concept which the indicator measures, and the *denominator* refers to the indicator's target population. The indicator's score for a hospice is calculated as its *numerator* divided by its *denominator*. For example, for the indicator "Medicare Spending per Beneficiary" (see **Section 3.1.7**), the *numerator* is the hospice's total Medicare payments received in a year and the *denominator* is the hospice's total number of beneficiaries served in a year. A hypothetical hospice receiving \$3.5 million from treating 100 beneficiaries would have a score for that indicator of \$35,000 (the *numerator* of \$3,500,000 divided by the *denominator* of 100 beneficiaries equals \$35,000 per beneficiary).

As described in **Section 2.3**, each indicator has a defined threshold by which it is established whether the hospice will receive a point towards the HCI score. This threshold is most often defined against a national benchmark (for example, having a score more than the bottom ten percent of national hospice scores). Readers may refer to **Section 3.2** for a walkthrough of a numerical example of scoring the HCI for a hypothetical hospice.

Each subsection includes two descriptive analyses for each of the ten indicators.

- Each subsection's first descriptive analysis presents the indicator scores across hospice deciles to show the national distribution of scores. Note that a "decile" is a ranked grouping of hospices by score, where each decile represents one out of ten groups of hospices with equal numbers. The first decile is the ten percent of hospices with the lowest scores, the second decile is the next ten percent of hospices with the next highest scores, and so on until the tenth decile, which is the ten percent of hospices with the greatest indicator scores.
- ***Each subsection's second descriptive analysis shows average indicator scores stratified by several hospice characteristics.*** Most characteristics are derived from data taken from the Provider of Services (POS) file.⁷⁵ The characteristics we examined were the decade by which the hospice was certified to first provide Medicare services (1980s, 1990s, 2000s, and 2010s), ownership status (government-owned, non-profit, for-profit), facility type (freestanding, facility-based), Census region (Northeast, Midwest, South, and West), and urban vs. rural status. Using Medicare hospice claims, we also measure the number of claims submitted by the hospice to create strata (20-49, 50-79, 80-199, 200-499, and 500+ treated in the target year). We also use these characteristics to describe the likelihood a hospice will not meet the threshold for earning points towards the index by estimating a logistic regression.

⁷⁵ POS file data is available via: <https://www.cms.gov/Research-Statistics-Data-and-Systems/Downloadable-Public-Use-Files/Provider-of-Services>.

Interpreting Logistic Regression Estimates

In each subsection, we calculate a logistic regression using information about hospice's institutional characteristics: the hospice's decade of certification, ownership status, facility type, geography, and size. Results from this regression describe the likelihood a hospice will not earn a point for that indicator for a particular hospice attribute. These results include an adjusted odds ratio (AOR) and 95% confidence interval (CI).

- An **AOR** value can be (approximately) interpreted as the estimated relative likelihood that a hospice in a certain category will not earn a point, relative to another specified reference category. AOR values greater than “1.0” imply a higher likelihood that hospices in that category would not earn a point, and values less than “1.0” imply a lower likelihood that hospices in that category would not earn a point. For example, if the reference category is “urban” and the AOR for “rural” is 2.0, it implies rural hospices would be twice as likely as urban hospices to not earn a point on that indicator.
- The range of the **95% CI** denotes the statistical significance of the AOR estimate. If the range of the 95% CI is entirely above or entirely below 1.0, then it indicates that result is statistically significant at the 95% confidence level. For example, 95% CI ranges of [1.2-1.8] or [0.3-0.4] would imply the associated AOR is statistically significant because the range does not include “1.0”. A 95% CI of [0.5-1.5] implies the associated AOR is not statistically significant, because the range includes “1.0”.

Finally, each indicator discussion ends with a brief conclusion summarizing the results for that indicator. Note that the previous section, **Section 4.1**, presents further analyses of hospice-level HCI scores. Readers seeking further information about the calculation of the indicators (and overall HCI) should refer to the following appendix sections:

- A summary of the HCI scoring methodology is available in **Section 3.2**, which provides a detailed numerical example for a hypothetical hospice and how the ten indicator scores combine to produce the hospice’s HCI score.
- Three appendices contain additional supplemental analyses for the ten claims-based HCI indicators. **Appendix C** presents a series of state-level maps of the rates of hospices’ attainment of HCI points for each indicator. **Appendix D** describes patterns of HCI point attainment, comparing attainment of each indicator against overall HCI score and comparing each indicator against each other indicator. **Appendix E** displays patterns between attainment of HCI points and CAHPS® Hospice scores for each indicator.

4.2.1 CHC or GIP Provided

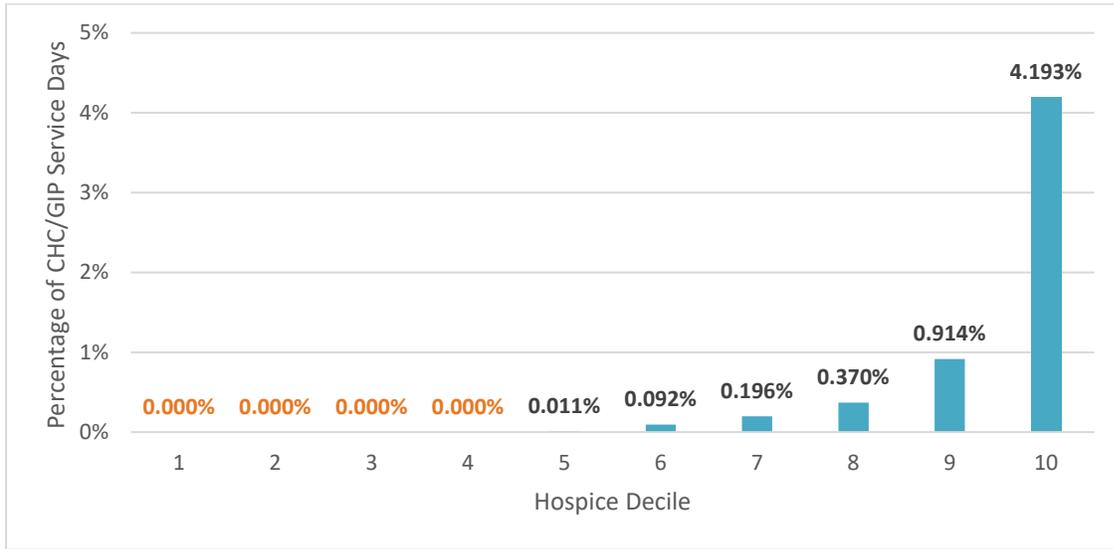
Distribution of Indicator Scores

During the sample period, among the hospices included in our sample, 0.7 percent of service days were billed under the CHC or GIP levels of care (on average 380 combined CHC and GIP days per hospice). However, almost one-fifth of hospices, 876 providers or 18.3 percent, did not provide a single day of CHC or GIP service during FY 2019-2021. The provision of CHC and GIP days is rare overall, less than one percent of service days among hospices in the first nine deciles (and, in contrast, over four percent in hospices among the tenth decile), as shown in **Exhibit 4.2.1**.⁷⁶

⁷⁶ Generally, the hospices in the higher deciles (especially the 10th), providing higher rates of CHC and GIP service, also provided greater number of hospice service days overall. Hospices in the lower deciles, which provided little to no CHC and GIP service, provided fewer days overall.

SECTION 4: Primary Analytic Findings

Exhibit 4.2.1: Percentage of CHC or GIP Levels of Care Service Days by Decile of Prevalence [n = 4,777 Hospice Providers with 20+ Hospice Claims, Equally Divided by Decile]



Note: Abt Associates analysis of 100% Medicare claims, Federal Fiscal Year 2019 – 2021. The orange percentage numbers for hospices in deciles one through four represent the hospices not earning a point towards the Hospice Care Index.

Prevalence & Trends

There are notable patterns in the percentage of hospices not providing CHC or GIP service by provider characteristics (**Exhibit 4.2.2**). In FY 2019-2021, hospices with fewer than 200 claims had a higher percentage of stays that did not provide any CHC/GIP care compared to hospices with 200 or more claims (40.2%, 33.0% and 27.1% for hospices with 20-49, 50-79, and 80-199 claims respectively). Additionally, hospices that were certified to bill Medicare since 2010 had a higher proportion with no CHC or GIP service days (23.8 percent). In contrast, about five percent of hospices certified in the 1980s did not provide any CHC/GIP care. Non-provision of CHC or GIP service occurred more often among for-profit hospices (20.3 percent for-profit vs. 11.8 percent non-profit) and rural hospices (23.0 percent rural vs. 17.4 percent urban). Also, just 12.6 percent of hospices in Northeastern states did not provide any CHC/GIP service, lower than the rate in any other region.

Exhibit 4.2.2: Percentage of Hospice Stays with No CHC or GIP Levels of Care Service Days by Hospice Characteristics, [n = 4,777 Hospice Providers with 20+ Hospice Claims]

Hospice Characteristic	% Hospices	% CHC/GIP Service Days Provided	% Not Achieving Earned Index Points	Not Achieving Earned Index Points AOR [95% CI]
National Rate				
All Hospices	100.0%	0.7%	18.3%	—
Number of Claims				
20-49	10.2%	0.4%	40.2%	2.9 [1.9-4.3]
50-79	8.9%	0.3%	33.0%	2.5 [1.7-3.8]
80-199	23.0%	0.3%	27.1%	2.3 [1.6-3.2]
200-499	26.6%	0.4%	15.4%	1.6 [1.1-2.2]
500+	31.3%	1.3%	3.1%	reference
Decade of Hospice Certification				

SECTION 4: Primary Analytic Findings

1980s	10.9%	1.8%	5.2%	reference
1990s	19.1%	1.0%	15.3%	1.5 [1.0-2.5]
2000s	22.5%	0.5%	15.8%	1.7 [1.1-2.8]
2010s	47.5%	0.3%	23.8%	1.8 [1.1-2.8]
Ownership				
Government-owned	11.1%	0.9%	17.3%	0.9 [0.7-1.3]
Nonprofit	19.2%	1.4%	11.8%	reference
For-Profit	69.6%	0.4%	20.3%	1.0 [0.8-1.4]
Facility Type				
Facility-based	14.4%	1.1%	18.0%	0.9 [0.7-1.2]
Freestanding	85.6%	0.6%	18.4%	reference
Region				
Northeast	8.9%	0.8%	12.6%	reference
Midwest	19.5%	0.6%	20.0%	1.3 [0.9-1.9]
South	35.9%	0.9%	16.0%	0.8 [0.5-1.1]
West	34.6%	0.4%	19.6%	0.6 [0.4-0.9]
Outlying Territories	1.0%	0.0%	73.5%	13.6 [6.4-29.1]
Urban/Rural				
Urban	82.8%	0.7%	17.4%	reference
Rural	17.2%	0.6%	23.0%	1.5 [1.2-1.9]

Note: Abt Associates analysis of 100% Medicare claims and Provider of Services file records, Federal Fiscal Year 2019 – 2021.

Note that a state-level map depicting the rate of hospices not earning a point is available in **Appendix Section C.1**. An examination of differences in CAHPS® Hospice scores and hospices' attainment of HCI points is presented in **Appendix E**.

Conclusion

CHC and GIP service can play an important role in palliating patients' symptoms in periods of crisis. Federal agencies have expressed concerns about inadequate provision of these services. Our data demonstrate that about one in five hospices did not provide any of these services in FY 2019-2021. Between 2019 and 2021, hospices not providing CHC or GIP care were likely to be smaller, to have first begun providing Medicare services in 2010 or later, and to be outside the Northeast.

4.2.2 Gaps in Skilled Nursing Visits

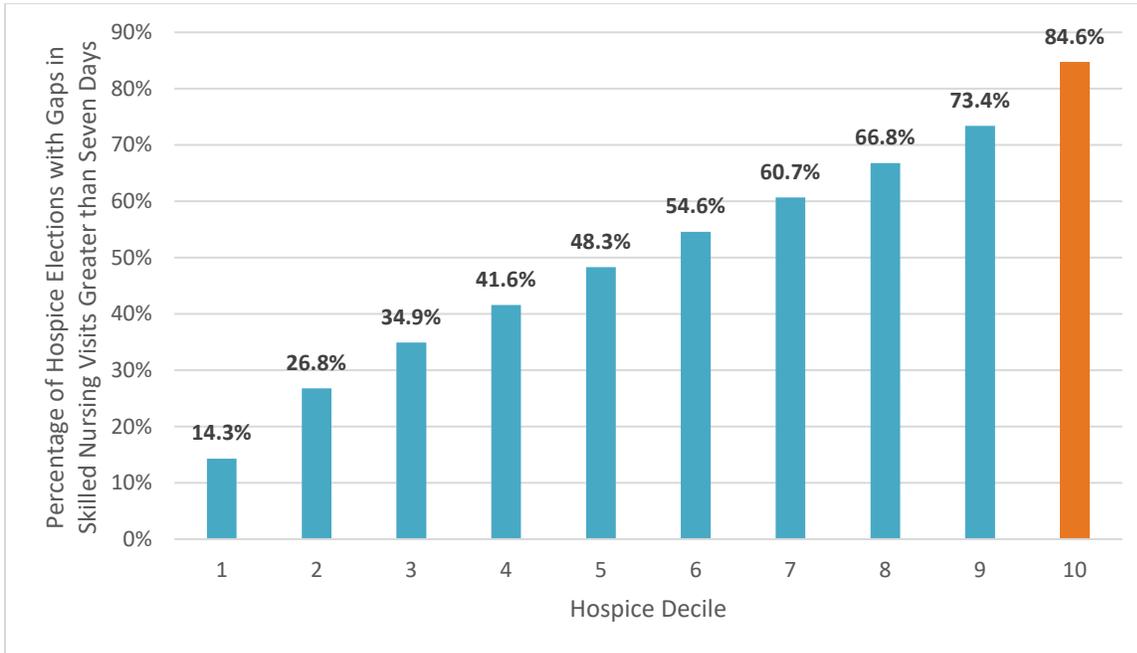
Distribution of Indicator Scores

During the sample period, 51.2 percent of hospice stays (of at least 30 days) had gaps exceeding seven days (median 52.2 percent, Interquartile Range (IQR)⁷⁷ 35.6 percent – 67.3 percent with the 90th percentile 78.2 percent and the 99th percentile 93.8 percent). Among those hospices not meeting the earned point criterion (i.e., hospices with a percentage of nursing visit gaps exceeding the 90th percentile nationally), the average value was 84.6 percent (**Exhibit 4.2.3**), almost twice the average among the other 90 percent of hospices (47.1 percent).

⁷⁷ The interquartile range (IQR) is a measure of score spread (i.e., range) from the 25th to 75th percentiles of the distribution of all scores. In this report, we describe the IQR by reporting the 25th and 75th percentile scores (not the difference between the two).

SECTION 4: Primary Analytic Findings

Exhibit 4.2.3: Percentage of Hospice Stays of at Least 30 Days with Gaps in Skilled Nursing Visits Greater than Seven Days, by Decile of Prevalence [n = 4,777 Hospice Providers with 20+ Hospice Claims, Equally Divided by Decile]



Note: Abt Associates analysis of 100% Medicare claims, Federal Fiscal Year 2019 – 2021. The orange bar decile represents the hospices not earning a point towards the Hospice Care Index.

Prevalence & Trends

There are notable patterns in the percentage of nursing visits gaps by provider characteristics (**Exhibit 4.2.4**). Smaller hospices (one in five hospices with less than 50 claims), newer hospices (17.2 percent of hospices certified since 2010), and hospices outside the midwestern states more often failed to achieve a point towards the HCI and were more likely to have higher percentages of patients with gaps between nursing visits.

Exhibit 4.2.4: Percentage of Hospice Stays of at Least 30 Days with Gaps in Skilled Nursing Visits Exceeding Seven Days, by Hospice Characteristics [n = 4,777 Hospice Providers with 20+ Hospice Claims]

Hospice Characteristic	% Hospices	% Stays with Gaps Exceeding Seven Days	% Not Achieving Earned Index Points	% Not Achieving Earned Index Points AOR [95% CI]
National Rate				
All Hospices	100.0%	51.2%	11.0%	—
Number of Claims				
20-49	10.2%	55.0%	21.6%	2.9 [1.9-4.3]
50-79	8.9%	56.0%	19.7%	2.5 [1.7-3.8]
80-199	23.0%	50.8%	14.8%	2.3 [1.6-3.2]
200-499	26.6%	47.9%	7.6%	1.6 [1.1-2.2]
500+	31.3%	51.7%	5.1%	reference
Decade of Hospice Certification				

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1980s	10.9%	50.0%	3.8%	reference
1990s	19.1%	43.8%	3.9%	1.0 [0.5-1.8]
2000s	22.5%	50.4%	7.4%	1.2 [0.7-2.1]
2010s	47.5%	54.9%	17.2%	2.3 [1.4-4.0]
Ownership				
Government-owned	11.1%	47.6%	8.6%	1.3 [0.8-2.1]
Nonprofit	19.2%	47.2%	4.5%	reference
For-Profit	69.6%	52.9%	13.2%	1.2 [0.8-1.8]
Facility Type				
Facility-based	14.4%	41.7%	3.6%	0.5 [0.3-0.8]
Freestanding	85.6%	52.8%	12.2%	reference
Region				
Northeast	8.9%	50.1%	10.8%	reference
Midwest	19.5%	44.1%	4.1%	0.3 [0.2-0.5]
South	35.9%	54.1%	12.9%	0.8 [0.5-1.1]
West	34.6%	52.9%	12.9%	0.4 [0.3-0.6]
Outlying Territories	1.0%	38.4%	12.2%	0.8 [0.3-2.2]
Urban/Rural				
Urban	82.8%	53.1%	12.4%	reference
Rural	17.2%	42.3%	4.3%	0.5 [0.3-0.7]

Note: Abt Associates analysis of 100% Medicare claims and Provider of Services file records, Federal Fiscal Year 2019 – 2021.

Note that a state-level map depicting the rate of hospices not earning a point is available in **Appendix Section C.2**. An examination of differences in CAHPS® Hospice scores and hospices' attainment of HCI points is presented in **Appendix E**.

Conclusion

Gaps between nursing visits has been an area of concern for the OIG. Our data demonstrate a wide range of rates in patients being visited weekly (i.e., with no gaps longer than seven days) by nurses across hospices.

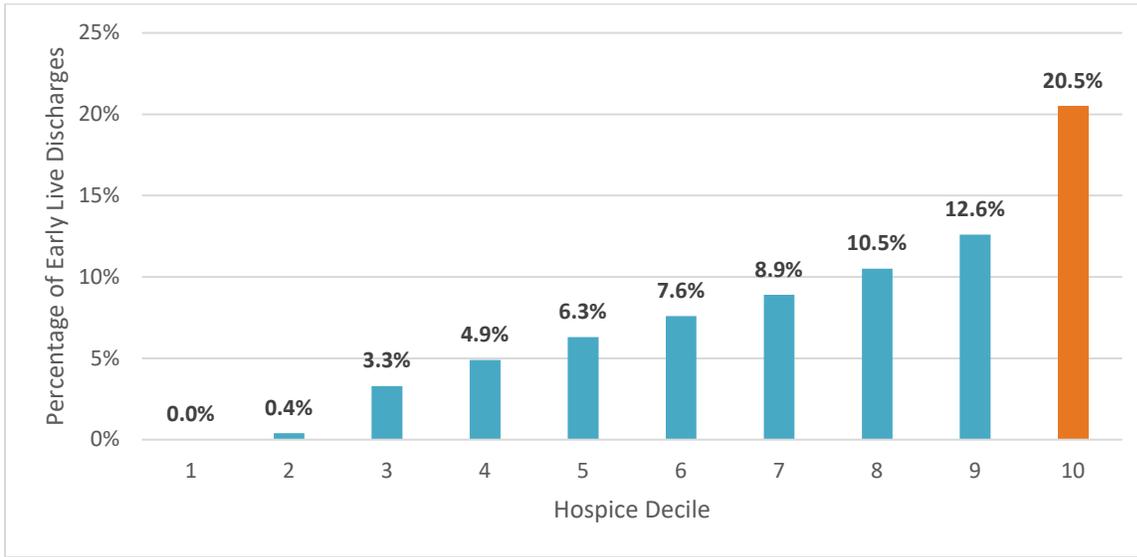
4.2.3 Early Live Discharges

Distribution of Indicator Scores

During the sample period, among hospices nationally, 7.8 percent of live discharges occurred within the first seven days of a hospice stay (median 7.1 percent, IQR 3.6 percent-10.8 percent with the 90th percentile 14.8 percent and the 99th percentile 30.0 percent). Among those hospices not meeting the earned point criterion (i.e., hospices with a percentage of live discharges in the first seven days of hospice falling above the 90th percentile ranking among hospices nationally), the average is 20.5 percent (**Exhibit 4.2.5**), over three times greater than the average percentage among the other 90 percent of hospices, 6.1 percent.

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Exhibit 4.2.5: Percentage of Live Discharges that Occurred in the First Seven Days of Hospice, by Decile of Prevalence [n = 4,777 Hospice Providers with 20+ Hospice Claims, Equally Divided by Decile]



Note: Abt Associates analysis of 100% Medicare claims, Federal Fiscal Year 2019 – 2021. The orange bar decile represents the hospices not earning a point towards the Hospice Care Index.

Prevalence & Trends

Relative to large hospices, smaller hospices are more likely not to have met the earned index point criterion for live discharges within seven days of a hospice stay (**Exhibit 4.2.6**). Hospices with fewer than 50 claims are more likely not to have met the threshold than hospices with 500 or more claims (16.1 percent for hospice with 20-49 claims vs. 10.0 percent for hospices with 500+ claims; AOR 2.9, 95% CI [1.9-4.3]). There were no statistically meaningful differences in rates across the other provider characteristics. Facility-based hospices were slightly more likely not to have met the earned index point criterion than other hospices. Conversely, hospices certified in the 2000s were less likely not to achieve the threshold than other hospices.

Exhibit 4.2.6: Percentage of Live Discharges that Occurred in the First Seven Days of a Hospice Stay, by Hospice Characteristics [n = 4,777 Hospice Providers with 20+ Hospice Claims]

Hospice Characteristic	% Hospices	% Live Discharges that Occurred within Seven Days of Hospice Election	% Not Achieving Earned Index Points	Not Achieving Earned Index Points AOR [95% CI]
National Rate				
All Hospices	100.0%	7.8%	11.8%	—
Number of Claims				
20-49	10.2%	7.0%	16.1%	2.9 [1.9-4.3]
50-79	8.9%	6.6%	15.7%	2.5 [1.7-3.8]
80-199	23.0%	6.8%	12.6%	2.3 [1.6-3.2]
200-499	26.6%	8.0%	10.4%	1.6 [1.1-2.2]
500+	31.3%	9.1%	10.0%	reference
Decade of Hospice Certification				
1980s	10.9%	9.6%	15.0%	reference

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1990s	19.1%	8.7%	13.6%	0.8 [0.6-1.1]
2000s	22.5%	7.8%	8.6%	0.5 [0.4-0.7]
2010s	47.5%	7.1%	12.0%	0.7 [0.5-1.0]
Ownership				
Government-owned	11.1%	9.0%	15.6%	1.2 [0.9-1.7]
Nonprofit	19.2%	8.6%	13.5%	reference
For-Profit	69.6%	7.5%	10.8%	0.9 [0.7-1.2]
Facility Type				
Facility-based	14.4%	9.0%	17.1%	1.4 [1.1-1.8]
Freestanding	85.6%	7.7%	11.0%	reference
Region				
Northeast	8.9%	8.7%	11.5%	reference
Midwest	19.5%	8.3%	13.7%	1.1 [0.8-1.6]
South	35.9%	8.5%	12.7%	1.2 [0.8-1.6]
West	34.6%	6.8%	10.2%	0.8 [0.5-1.1]
Outlying Territories	1.0%	5.1%	6.1%	0.5 [0.2-1.8]
Urban/Rural				
Urban	82.8%	7.7%	11.1%	reference
Rural	17.2%	8.5%	15.2%	1.1 [0.9-1.5]

Note: Abt Associates analysis of 100% Medicare claims and Provider of Services file records, Federal Fiscal Year 2019 – 2021.

Note that a state-level map depicting the rate of hospices not earning a point is available in **Appendix Section C.3**. An examination of differences in CAHPS® Hospice scores and hospices' attainment of HCI points is presented in **Appendix E**.

Conclusion

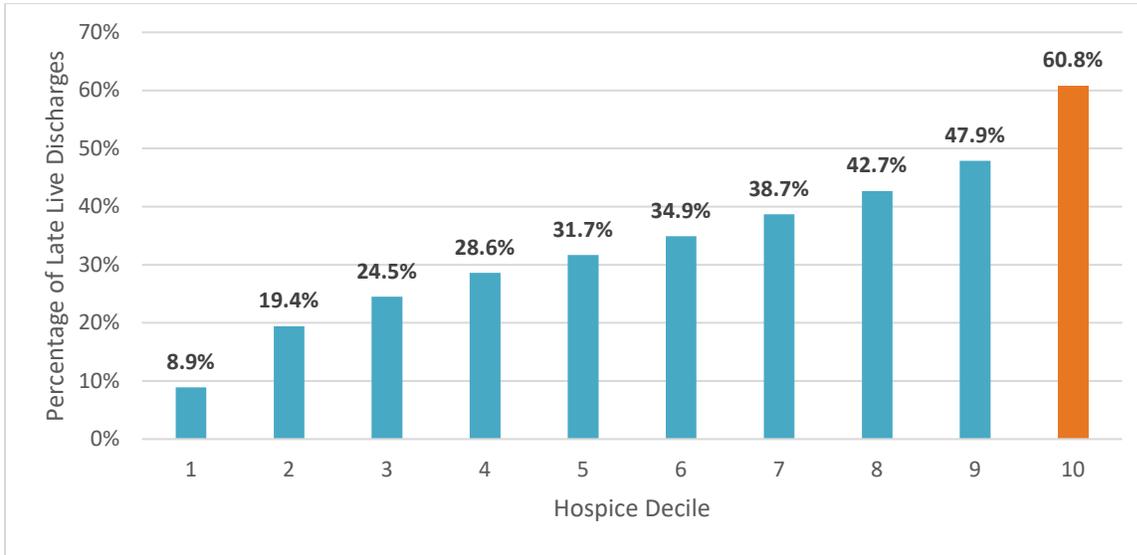
Federal agencies have cited high percentages of live discharges among hospices as a potential quality concern for some time, and early live discharges – occurring within seven days of a hospice stay – is one indicator of live discharges examined for the index. We found that such discharges tend to be clustered among a small number of hospices, with the 10th decile having a percentage of these discharges over three times that of the other 90 percent of hospices. We found that such hospices tend to treat a smaller number of beneficiaries and tend to be facility-based.

4.2.4 Late Live Discharges

Distribution of Indicator Scores

During the sample period, 34.4 percent of hospices' live discharges occurred on or after the 180th day of a hospice stay (median 33.7 percent, IQR 25.0 percent-42.9 percent with the 90th percentile 52.6 percent and the 99th percentile 75.0 percent). Among those hospices not meeting the earned point criterion (hospices with a percentage of live discharges on or after the 180th day of hospice falling above the 90th percentile ranking among hospices nationally), the average is 60.8 percent (**Exhibit 4.2.7**), almost twice the average among the other 90 percent of hospices, 31.1 percent.

Exhibit 4.2.7: Percentage of Hospice Live Discharges that Occurred on or after the 180th Day in Hospice by Decile of Prevalence [n = 4,777 Hospice Providers with 20+ Hospice Claims, Equally Divided by Decile]



Note: Abt Associates analysis of 100% Medicare claims, Federal Fiscal Year 2019 – 2021. The orange bar decile represents the hospices not earning a point towards the Hospice Care Index.

Prevalence & Trends

There are several patterns of hospice characteristics in the rate of hospice live discharges on or after 180 days of a hospice stay (**Exhibit 4.2.8**). The largest disparity in rates is by facility type; freestanding hospices have a higher percentage of late discharges (35.6 percent) than facility-based hospices (27.2 percent) (AOR 0.6, 95% CI [0.4-0.8]). Smaller hospices had more late discharges than hospices with 500 or more claims (34.4% for 200-499 claims, 35.6% for 80-199 claims, 36.2% for 50-79 claims, and 34.9% for 20-49 claims). Newer hospices had more late discharges than hospices certified in the 1980s (30.2% for 1990s, 37.1% for 2000s, and 36.2% for 2010s). For-profit hospices had more late discharges (36.5%) than nonprofit hospices.

We found several geographic trends in the rate of hospice late live discharges. Hospices in the Midwest and South were less likely to have high rates of late discharge, while hospices in outlying territories were significantly more likely to have high rates of late discharge. Rural hospices were less likely to have high rates of late discharge than urban hospices.

Exhibit 4.2.8: Percentage of Hospice Live Discharges that Occurred on or After 180 Days of Election by Hospice Characteristics [n = 4,777 Hospice Providers with 20+ Hospice Claims]

Hospice Characteristic	% Hospices	% Live Discharges that Occurred on or after Day 180	% Not Achieving Earned Index Points	Not Achieving Earned Index Points AOR [95% CI]
National Rate				
All Hospices	100.0%	34.4%	11.0%	—
Number of Claims				
20-49	10.2%	34.9%	21.6%	2.9 [1.9-4.3]
50-79	8.9%	36.2%	21.3%	2.5 [1.7-3.8]
80-199	23.0%	35.6%	15.1%	2.3 [1.6-3.2]

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200-499	26.6%	34.4%	8.7%	1.6 [1.1-2.2]
500+	31.3%	32.8%	3.5%	reference
Decade of Hospice Certification				
1980s	10.9%	28.5%	1.2%	reference
1990s	19.1%	30.2%	5.5%	3.2 [1.4-7.8]
2000s	22.5%	37.1%	10.7%	4.9 [2.1-11.6]
2010s	47.5%	36.2%	15.7%	3.7 [1.5-8.7]
Ownership				
Government-owned	11.1%	30.0%	6.2%	1.1 [0.7-1.9]
Nonprofit	19.2%	29.4%	3.5%	reference
For-Profit	69.6%	36.5%	13.9%	1.7 [1.1-2.5]
Facility Type				
Facility-based	14.4%	27.2%	4.4%	0.6 [0.4-0.8]
Freestanding	85.6%	35.6%	12.1%	reference
Region				
Northeast	8.9%	33.3%	9.8%	reference
Midwest	19.5%	31.4%	6.2%	0.5 [0.3-0.8]
South	35.9%	33.7%	7.1%	0.4 [0.3-0.6]
West	34.6%	36.7%	17.4%	0.8 [0.6-1.2]
Outlying Territories	1.0%	46.2%	34.7%	2.6 [1.3-5.4]
Urban/Rural				
Urban	82.8%	35.4%	12.2%	reference
Rural	17.2%	29.6%	5.2%	0.6 [0.4-0.9]

Note: Abt Associates analysis of 100% Medicare claims and Provider of Services file records, Federal Fiscal Year 2019 – 2021.

Note that a state-level map depicting the rate of hospices not earning a point is available in **Appendix Section C.4**. An examination of differences in CAHPS® Hospice scores and hospices' attainment of HCI points is presented in **Appendix E**.

Conclusion

Federal agencies have cited hospices with a high percentage of live discharges as a potential quality concern for many years, and late live discharges – occurring on or after 180 days of a hospice stay – is another indicator of live discharges included in the index. The rate of such discharges among those not meeting the earned index point criterion was over twice that of other hospices. Hospices not meeting the earned index point criterion were more likely to be freestanding facilities, for-profit, smaller, newer, urban, and located in outlying territories.

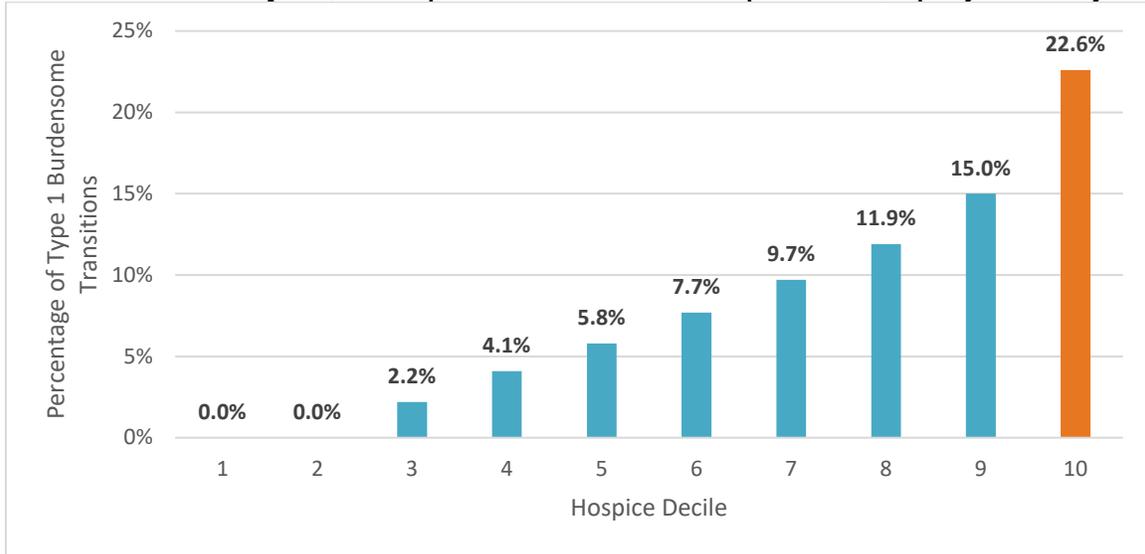
4.2.5 Burdensome Transitions (Type 1) – Live Discharges from Hospice Followed by Hospitalization and Subsequent Hospice Readmission

Distribution of Indicator Scores

In the sample period, 8.2 percent of hospice live discharges satisfied the threshold for Type 1 burdensome transitions (median 6.9 percent, IQR 2.5 percent-12.2 percent with the 90th percentile at 17.8 percent and the 99th percentile at 30.2 percent). Among hospices in the top 10 percent of Type 1 burdensome transitions, the average is 22.6 percent (**Exhibit 4.2.9**), almost four times greater than the average among the other 90 percent of hospices (6.4 percent). About 18 percent of hospices have no Type 1 burdensome transitions.

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Exhibit 4.2.9: Percentage of Hospice Live Discharges with Type 1 Burdensome Transitions by Decile of Prevalence [n = 4,777 Hospice Providers with 20+ Hospice Claims, Equally Divided by Decile]



Note: Abt Associates analysis of 100% Medicare claims, Federal Fiscal Year 2019 – 2021. The orange bar decile represents the hospices not earning a point towards the Hospice Care Index.

Prevalence & Trends

Smaller hospices, non-profit, and government-owned hospices were more likely to be in the top decile of Type 1 burdensome transitions (**Exhibit 4.2.10**). The largest disparity in rates is among hospices in the South, with an average of 20.9 percent of hospices in the top decile, compared to 4.4 percent of hospices in the Northeast (AOR 3.8, 95% CI [2.3-6.1]). Hospices with fewer than 500 claims were also significantly more likely to be in the top decile of Type 1 burdensome transitions compared to hospices with over 500 claims; among hospices with 500+ claims, the rate was 8.0 percent and among hospices with fewer than 500 claims, the rate was 11.3% or more.

Exhibit 4.2.10: Percentage of Hospice Live Discharges with Type 1 Burdensome Transitions by Hospice Characteristics [n = 4,777 Hospice Providers with 20+ Hospice Claims]

Hospice Characteristic	% Hospices	Average % Live Discharges with Burdensome Transitions (Type 1)	% Not Achieving Earned Index Points	Not Achieving Earned Index Points AOR [95% CI]
National Rate				
All Hospices	100.0%	8.2%	11.2%	—
Number of Claims				
20-49	10.2%	6.5%	12.0%	2.9 [1.9-4.3]
50-79	8.9%	7.7%	13.6%	2.5 [1.7-3.8]
80-199	23.0%	8.0%	11.3%	2.3 [1.6-3.2]
200-499	26.6%	9.1%	13.6%	1.6 [1.1-2.2]
500+	31.3%	8.2%	8.0%	reference
Decade of Hospice Certification				
1980s	10.9%	5.9%	4.4%	reference
1990s	19.1%	6.4%	5.8%	1.0 [0.6-1.7]

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2000s	22.5%	9.8%	15.8%	1.8 [1.1-3.0]
2010s	47.5%	8.7%	12.7%	1.8 [1.1-3.0]
Ownership				
Government-owned	11.1%	7.6%	11.5%	3.1 [1.9-5.0]
Nonprofit	19.2%	5.2%	2.8%	reference
For-profit	69.6%	9.1%	13.4%	3.3 [2.1-5.2]
Facility Type				
Facility-based	14.4%	5.3%	4.6%	0.7 [0.4-1.0]
Freestanding	85.6%	8.7%	12.3%	reference
Region				
Northeast	8.9%	6.8%	4.4%	reference
Midwest	19.5%	7.3%	7.9%	1.6 [1.0-2.8]
South	35.9%	11.2%	20.9%	3.8 [2.3-6.1]
West	34.6%	6.0%	5.0%	0.6 [0.4-1.0]
Outlying Territories	1.0%	3.9%	0.0%	1.0 [0.0-0.0]
Urban/Rural				
Urban	82.8%	8.5%	11.2%	reference
Rural	17.2%	6.9%	10.9%	1.0 [0.7-1.3]

Note: Abt Associates analysis of 100% Medicare claims and Provider of Services file records, Federal Fiscal Year 2019 – 2021.

Note that a state-level map depicting the rate of hospices not earning a point is available in **Appendix Section C.5**. An examination of differences in CAHPS® Hospice scores and hospices' attainment of HCI points is presented in **Appendix E**.

Conclusion

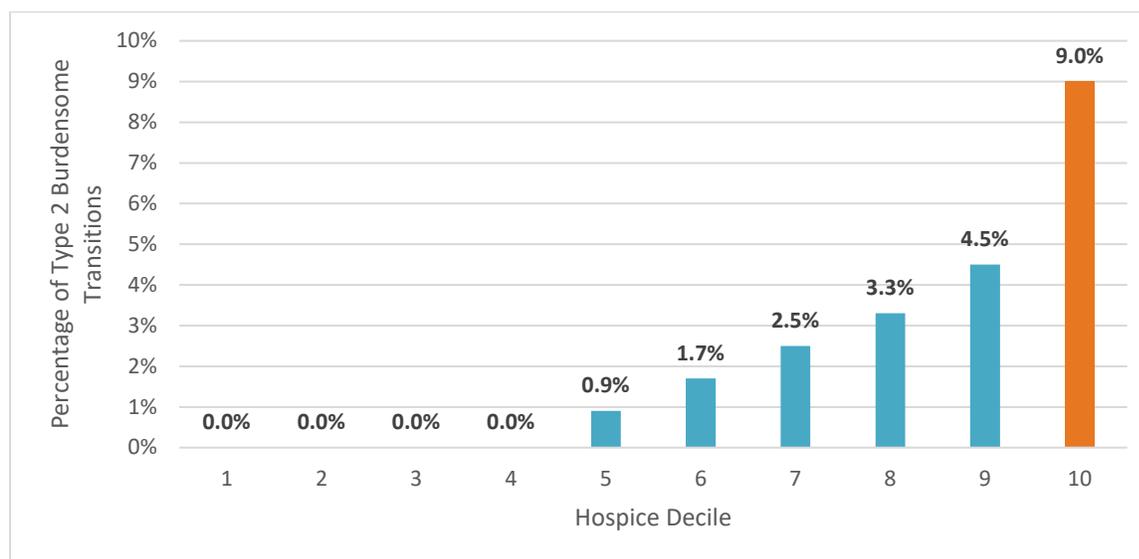
As noted, hospices with a high percentage of live discharges have long been a potential quality concern, and Type 1 burdensome transitions is another indicator of live discharges included in the index. Almost one in five hospices have no Type 1 burdensome transitions. Higher rates of Type 1 burdensome transitions are geographically concentrated in the South.

4.2.6 Burdensome Transitions (Type 2) – Live Discharges from Hospice Followed by Hospitalization with the Patient Dying in the Hospital

Distribution of Indicator Scores

In the sample period, 2.3 percent of hospice live discharges satisfied the thresholds for Type 2 burdensome transitions (median 0.15 percent, IQR 0 percent-3.4 percent with the 90th percentile at 5.8 percent and the 99th percentile at 15.0 percent). Among hospices in the top 10 percent of Type 2 burdensome transitions, the average is 9.0 percent, six times greater than the percentage among the other 90 percent of hospices (1.5 percent). Almost 40 percent of hospices do not have any Type 2 transitions (**Exhibit 4.2.11**).

Exhibit 4.2.11: Percentage of Hospice Live Discharges with Type 2 Burdensome Transitions by Decile of Prevalence [n = 4,777 Hospice Providers with 20+ Hospice Claims, Equally Divided by Decile]



Note: Abt Associates analysis of 100% Medicare claims, Federal Fiscal Year 2019 – 2021. The orange bar decile represents the hospices not earning a point towards the Hospice Care Index.

Prevalence & Trends

Smaller hospices were significantly more likely to be in the top decile of Type 2 burdensome transitions (**Exhibit 4.2.12**). Hospices with fewer than 50 claims were more likely not to meet the earned point criterion than hospices with 500+ claims, (20-49 claims 14.0 percent vs. 6.0 percent for hospices with 500+ claims; AOR 2.9, 95% CI [1.9-4.3]). Hospices in the Midwest were least likely to be in the top decile of Type 2 burdensome transitions (7.7 percent vs. 11.2 percent for Northeast hospices; AOR 0.6, 95% CI [0.4-0.8]). There were no statistically meaningful differences in rates across the other provider characteristics.

Exhibit 4.2.12: Percentage of Hospice Live Discharges with Type 2 Burdensome Transitions by Hospice Characteristics [n = 4,777 Hospice Providers with 20+ Hospice Claims]

Hospice Characteristic	% Hospices	Average % Live Discharges with Burdensome Transitions (Type 2)	% Not Achieving Earned Index Points	Not Achieving Earned Index Points AOR [95% CI]
National Rate				
All Hospices	100.0%	2.3%	11.2%	—
Number of Claims				
20-49	10.2%	2.1%	14.0%	2.9 [1.9-4.3]
50-79	8.9%	2.3%	15.2%	2.5 [1.7-3.8]
80-199	23.0%	2.3%	14.8%	2.3 [1.6-3.2]
200-499	26.6%	2.5%	11.9%	1.6 [1.1-2.2]
500+	31.3%	2.3%	6.0%	reference
Decade of Hospice Certification				
1980s	10.9%	2.0%	7.5%	reference

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1990s	19.1%	2.2%	9.7%	1.0 [0.7-1.5]
2000s	22.5%	2.7%	13.1%	1.1 [0.7-1.7]
2010s	47.5%	2.3%	11.8%	0.9 [0.6-1.4]
Ownership				
Government-owned	11.1%	2.4%	13.2%	1.4 [1.0-2.0]
Nonprofit	19.2%	1.9%	8.0%	<i>reference</i>
For-profit	69.6%	2.4%	11.8%	1.2 [0.9-1.6]
Facility Type				
Facility-based	14.4%	2.1%	10.4%	1.0 [0.7-1.3]
Freestanding	85.6%	2.4%	11.4%	<i>reference</i>
Region				
Northeast	8.9%	2.6%	11.2%	<i>reference</i>
Midwest	19.5%	1.9%	7.7%	0.6 [0.4-0.8]
South	35.9%	2.8%	14.6%	1.1 [0.8-1.5]
West	34.6%	2.0%	9.4%	0.6 [0.4-0.8]
Outlying Territories	1.0%	3.4%	18.4%	1.2 [0.5-2.7]
Urban/Rural				
Urban	82.8%	2.3%	10.9%	<i>reference</i>
Rural	17.2%	2.2%	12.7%	1.0 [0.8-1.3]

Note: Abt Associates analysis of 100% Medicare claims and Provider of Services file records, Federal Fiscal Year 2019 – 2021.

Note that a state-level map depicting the rate of hospices not earning a point is available in **Appendix Section C.6**. An examination of differences in CAHPS® Hospice scores and hospices' attainment of HCI points is presented in **Appendix E**.

Conclusion

Live discharge followed by death in a hospital raises concern that patients' conditions are not being adequately assessed. Consequently, we included these Type 2 burdensome transitions in the index. Almost 40 percent of hospices have no Type 2 burdensome transitions, while an average of one in eleven (9%) hospice live discharges are Type 2 burdensome transitions among the top ten percent of hospices. Higher rates of Type 2 burdensome transitions are geographically concentrated in the South.

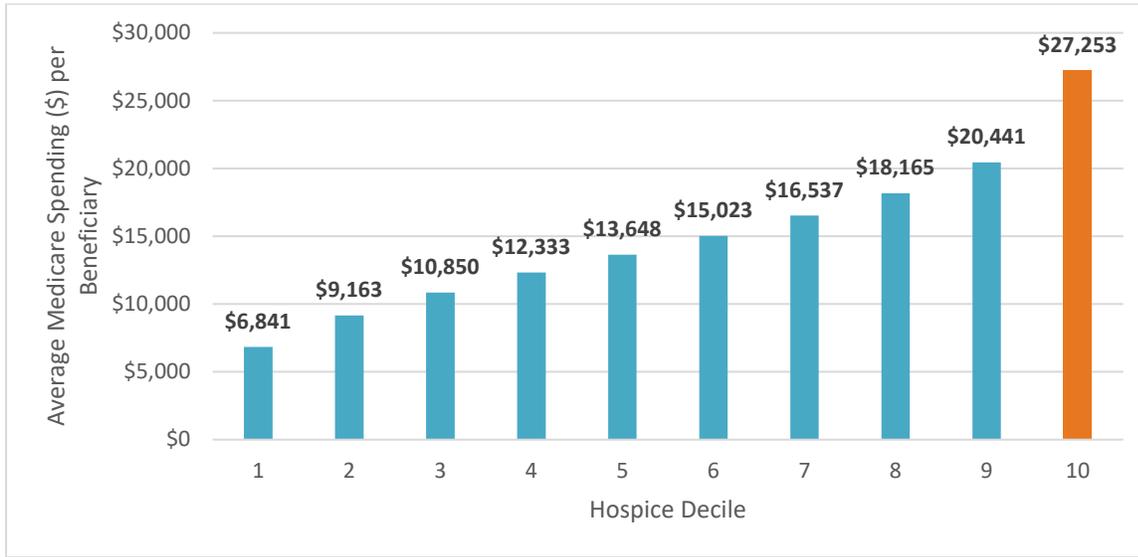
4.2.7 Per-Beneficiary Medicare Spending

Distribution of Indicator Scores

In the sample period, hospices had an average of \$15,207 in Medicare spending per beneficiary nationally (median \$14,490, IQR \$10,988-\$18,303, with the 90 percent percentile at \$22,689 and the 99th percentile at \$34,733). The average among hospices in the top 10 percent of Medicare spending is \$27,253 (**Exhibit 4.2.13**), almost twice the average of \$13,719 among the remaining 90 percent of hospices.

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Exhibit 4.2.13: Average Medicare Spending Per Beneficiary by Decile of Spending [n = 4,777 Hospice Providers with 20+ Hospice Claims, Equally Divided by Decile]



Note: Abt Associates analysis of 100% Medicare claims, Federal Fiscal Year 2019 – 2021. The orange bar decile represents the hospices not earning a point towards the Hospice Care Index.

Prevalence & Trends

Average Medicare spending per beneficiary varied across several hospice characteristics. Smaller hospices (those with fewer than 500 claims), newer hospices (those certified after 2010) and urban hospices were more likely to be in the top decile of spending (**Exhibit 4.2.14**). The largest disparity in the percentage of hospices not achieving earned index points is for hospices in the West (26.8 percent vs. 1.9 percent in the Northeast; AOR 5.9, 95% CI [2.8-12.3]).

Exhibit 4.2.14: Average Medicare Spending Per Beneficiary by Hospice Characteristics [n = 4,777 Hospice Providers with 20+ Hospice Claims]

Hospice Characteristic	% Hospices	Average Medicare Spending Per Beneficiary	% Not Achieving Earned Index Points	Not Achieving Earned Index Points AOR [95% CI]
National Rate				
All Hospices	100.0%	\$15,207	11.0%	—
Number of Claims				
20-49	10.2%	\$18,482	29.7%	2.9 [1.9-4.3]
50-79	8.9%	\$18,650	27.6%	2.5 [1.7-3.8]
80-199	23.0%	\$16,502	16.2%	2.3 [1.6-3.2]
200-499	26.6%	\$14,342	5.0%	1.6 [1.1-2.2]
500+	31.3%	\$12,939	1.5%	reference
Decade of Hospice Certification				
1980s	10.9%	\$10,797	0.2%	reference
1990s	19.1%	\$11,520	1.9%	7.3 [0.9-56.7]
2000s	22.5%	\$14,475	3.5%	6.9 [0.9-52.9]
2010s	47.5%	\$18,052	20.7%	12.9 [1.7-96.9]

SECTION 4: Primary Analytic Findings

Ownership				
Government-owned	11.1%	\$12,360	3.6%	0.9 [0.4-2.0]
Nonprofit	19.2%	\$11,137	1.2%	reference
For-profit	69.6%	\$16,785	14.9%	1.6 [0.8-3.1]
Facility Type				
Facility-based	14.4%	\$10,556	1.0%	0.3 [0.1-0.6]
Freestanding	85.6%	\$15,991	12.7%	reference
Region				
Northeast	8.9%	\$12,632	1.9%	reference
Midwest	19.5%	\$12,236	1.1%	0.4 [0.2-1.2]
South	35.9%	\$14,123	3.7%	1.1 [0.5-2.4]
West	34.6%	\$18,818	26.8%	5.9 [2.8-12.3]
Outlying Territories	1.0%	\$10,322	0.0%	1.0 [0.0-0.0]
Urban/Rural				
Urban	82.8%	\$15,997	13.0%	reference
Rural	17.2%	\$11,394	1.1%	0.2 [0.1-0.5]

Note: Abt Associates analysis of 100% Medicare claims and Provider of Services file records, Federal Fiscal Year 2019 – 2021.

Note that a state-level map depicting the rate of hospices not earning a point is available in **Appendix Section C.7**. An examination of differences in CAHPS® Hospice scores and hospices’ attainment of HCI points is presented in **Appendix E**.

Conclusion

Estimates of per-beneficiary spending are NQF-endorsed and publicly reported by CMS for other care settings.⁷⁸ The HCI includes an indicator for per-beneficiary Medicare spending in light of published concerns about patterns of hospice utilization. There is wide variation in average hospice Medicare spending per beneficiary across hospice characteristics and spending is significantly higher in the West.

4.2.8 Skilled Nursing Care Minutes per Routine Home Care (RHC) Day

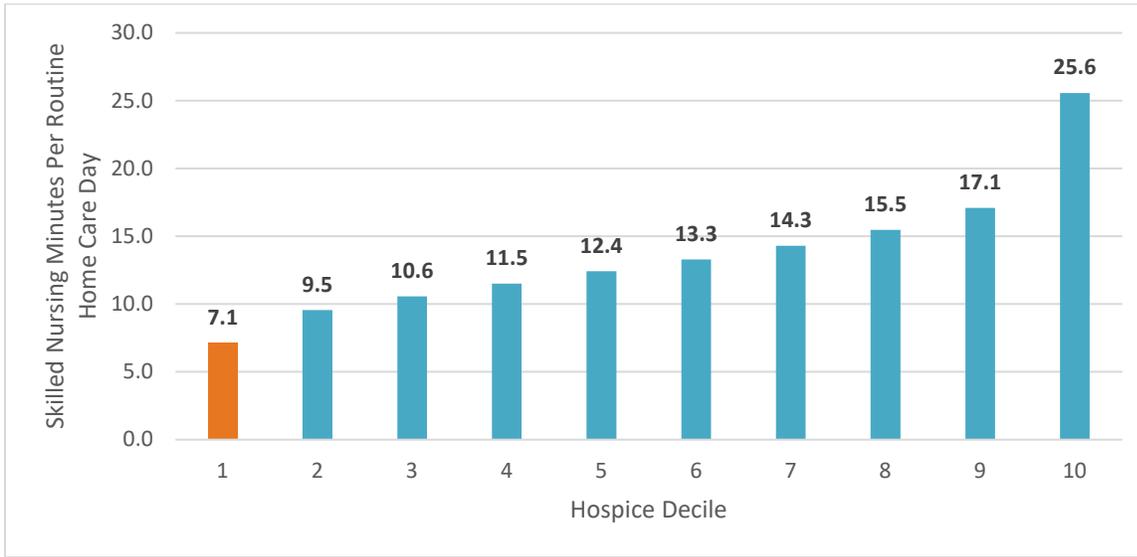
Distribution of Indicator Scores

In the sample period, hospices nationally provided an average of 13.9 skilled nursing minutes on each RHC day (median 13.0, IQR 10.7-15.7 with the 10th percentile 9.0 and the 1st percentile 4.4 minutes). Among those hospices not meeting the earned points criterion (hospices with an average percentage of skilled nursing minutes per RHC day falling below the 10th percentile ranking of hospices nationally) for this indicator, the average skilled nursing minutes provided is 7.1 per RHC day (**Exhibit 4.2.15**), half the average among the other 90 percent of hospices, 14.6.

⁷⁸ It should be noted that the Medicare Spending Per-Beneficiary quality measure endorsed by NQF (NQF #2158) was not developed or tested for the hospice setting and involves a considerably more complicated algorithm than the per-beneficiary spending indicator used for the HCI.

SECTION 4: Primary Analytic Findings

Exhibit 4.2.15: Skilled Nursing Care Minutes Provided per Routine Home Care Day by Decile [n = 4,777 Hospice Providers with 20+ Hospice Claims, Equally Divided by Decile]



Note: The orange bar decile represents the hospices not earning a point towards the HCI Note: Abt Associates analysis of 100% Medicare claims, Federal Fiscal Year 2019 – 2021. The orange bar decile represents the hospices not earning a point towards the Hospice Care Index.

Prevalence & Trends

There is some variation across hospices in average skilled nursing minutes per RHC day when stratified by hospice characteristics, but it is not typically statistically significant (**Exhibit 4.2.16**). For instance, hospices certified since 2010 are 2.6 times more likely (95% CI [1.5-4.5]) not to meet the index earned point criterion of being above the 10th national percentile ranking among hospices. Hospices in this group provided on average 13.2 minutes of skilled nursing per day, about half a minute (or roughly 4%) less than the national average. Hospices with fewer than 500 claims were also statistically more likely to be in the bottom decile (AOR 1.6 for 200-499, 2.3 for 80-199, 2.5 for 50-79, and 2.9 for 20-49 claims). Additionally, hospices in the South were almost twice as likely (AOR 1.9) to be in the bottom decile and not receive a point for this indicator.

Exhibit 4.2.16: Skilled Nursing Care Minutes per Routine Home Care Day by Hospice Characteristics [n = 4,777 Hospice Providers with 20+ Hospice Claims]

Hospice Characteristic	% Hospices	Nursing Minutes per RHC Day	% Not Achieving Earned Index Points	% Not Achieving Earned Index Points AOR [95% CI]
National Rate				
All Hospices	100.0%	13.9	10.0%	—
Number of Claims				
20-49	10.2%	13.2	16.3%	2.9 [1.9-4.3]
50-79	8.9%	13.2	13.6%	2.5 [1.7-3.8]
80-199	23.0%	13.8	13.3%	2.3 [1.6-3.2]
200-499	26.6%	13.8	9.6%	1.6 [1.1-2.2]
500+	31.3%	14.4	4.8%	reference
Decade of Hospice Certification				
1980s	10.9%	15.7	3.6%	reference

SECTION 4: Primary Analytic Findings

1990s	19.1%	15.2	5.4%	1.3 [0.7-2.3]
2000s	22.5%	13.5	10.5%	2.1 [1.2-3.6]
2010s	47.5%	13.2	13.1%	2.6 [1.5-4.5]
Ownership				
Government-owned	11.1%	14.6	8.8%	0.9 [0.6-1.4]
Nonprofit	19.2%	15.4	5.7%	reference
For-Profit	69.6%	13.4	11.4%	0.9 [0.7-1.4]
Facility Type				
Facility-based	14.4%	15.8	6.4%	0.9 [0.7-1.4]
Freestanding	85.6%	13.6	10.6%	reference
Region				
Northeast	8.9%	14.6	7.0%	reference
Midwest	19.5%	15.4	4.4%	0.5 [0.3-0.9]
South	35.9%	12.6	15.8%	1.9 [1.2-2.8]
West	34.6%	14.2	7.7%	0.6 [0.4-0.9]
Outlying Territories	1.0%	13.6	14.3%	1.7 [0.7-4.3]
Urban/Rural				
Urban	82.8%	13.6	10.2%	reference
Rural	17.2%	15.3	8.9%	0.9 [0.7-1.2]

Note: Abt Associates analysis of 100% Medicare claims and Provider of Services file records, Federal Fiscal Year 2019 – 2021.

Note that a state-level map depicting the rate of hospices not earning a point is available in **Appendix Section C.8**. An examination of differences in CAHPS® Hospice scores and hospices' attainment of HCI points is presented in **Appendix E**.

Conclusion

Ongoing assessment of patient and caregiver needs is necessary to ensure the successful preparation, implementation, and updating of the plan of care. Skilled nursing minutes per RHC day is incorporated in the index to measure a hospice's capacity to meet those needs. Smaller hospices, newer hospices, and hospices in the South tend to provide fewer daily nursing visits than other hospices. Data show that 10 percent of hospices nationally provide daily nursing minutes at half the rate as the other 90 percent of hospices.

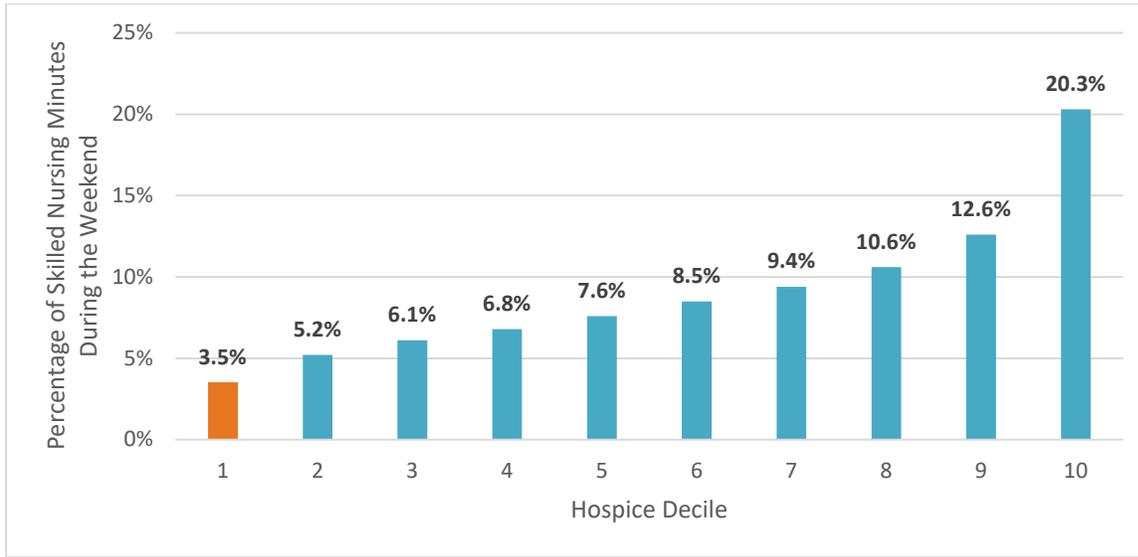
4.2.9 Skilled Nursing Minutes on Weekend Routine Home Care Days

Distribution of Indicator Scores

If skilled nursing visits occurred evenly during the week, each day would account for roughly 14% (one divided by seven) of the total amount of time spent with a skilled nurse, and the expected total amount of time for a two-day weekend would be 28% (or two divided by seven). In the sample period, 9.3% of skilled nursing minutes occurred on the weekend (median 8.2%, IQR 6.2%-10.8% with the 10th percentile at 4.7% and the 1st percentile at 2.0%). Among those hospices in the bottom 10% for this indicator, the average is 3.5%, about one-third of the time among the other 90% of hospices (9.9%). Even in the top decile, the share of skilled nursing minutes during the weekend was less than the expected 28% if minutes were spread out equally across the week (**Exhibit 4.2.17**). Although, as noted above, there are good reasons (such as family preferences) that there could be fewer hospice services provided on weekends, those hospices in the bottom decile are providing considerably less weekend service than other hospices.

SECTION 4: Primary Analytic Findings

Exhibit 4.2.17: Percentage of Skilled Nursing Minutes During Weekend RHC Days by Decile of Prevalence [n = 4,777 Hospice Providers with 20+ Hospice Claims, Equally Divided by Decile]



Note: Abt Associates analysis of 100% Medicare claims, Federal Fiscal Year 2019 – 2021. The orange bar decile represents the hospices not earning a point towards the Hospice Care Index.

Prevalence & Trends

Smaller hospices, government-owned hospices, hospices in outlying territories, and rural hospices were more likely to be in the bottom decile of skilled nursing minutes during the weekend (**Exhibit 4.2.18**). The largest disparity in the percentage of hospices not achieving an earned index point is with hospice size. For hospices with 20 to 49 claims, 12.8 percent of hospices are in the bottom decile compared to 3.5 percent of hospices with 500 claims or more (AOR 2.9, 95% CI [1.9-4.3]).

Exhibit 4.2.18: Percentage of Skilled Nursing Minutes During Weekend RHC Days by Hospice Characteristics [n = 4,777 Hospice Providers with 20+ Hospice Claims]

Hospice Characteristic	% Hospices	Average % Stays with Weekend Skilled Nurse Visits	% Not Achieving Earned Index Points	Not Achieving Earned Index Points AOR [95% CI]
National Rate				
All Hospices	100.0%	9.3%	9.7%	—
Number of Claims				
20-49	10.2%	12.3%	12.8%	2.9 [1.9-4.3]
50-79	8.9%	10.6%	12.9%	2.5 [1.7-3.8]
80-199	23.0%	8.8%	14.3%	2.3 [1.6-3.2]
200-499	26.6%	8.1%	10.9%	1.6 [1.1-2.2]
500+	31.3%	9.2%	3.5%	reference
Decade of Hospice Certification				
1980s	10.9%	9.8%	4.8%	reference
1990s	19.1%	8.7%	9.7%	1.2 [0.7-1.9]
2000s	22.5%	7.9%	11.6%	1.3 [0.8-2.2]
2010s	47.5%	10.0%	10.0%	1.0 [0.6-1.7]
Ownership				
Government-owned	11.1%	8.6%	10.0%	1.2 [0.8-1.8]

SECTION 4: Primary Analytic Findings

Nonprofit	19.2%	9.6%	6.2%	reference
For-Profit	69.6%	9.3%	10.7%	1.5 [1.1-2.2]
Facility Type				
Facility-based	14.4%	9.1%	10.3%	1.0 [0.7-1.4]
Freestanding	85.6%	9.3%	9.6%	reference
Region				
Northeast	8.9%	8.9%	8.4%	reference
Midwest	19.5%	8.6%	8.6%	0.7 [0.5-1.1]
South	35.9%	8.0%	11.5%	0.9 [0.6-1.4]
West	34.6%	11.0%	8.0%	0.6 [0.4-0.9]
Outlying Territories	1.0%	6.7%	40.8%	4.5 [2.2-9.0]
Urban/Rural				
Urban	82.8%	9.5%	8.4%	reference
Rural	17.2%	7.8%	16.3%	2.1 [1.6-2.7]

Note: Abt Associates analysis of 100% Medicare claims and Provider of Services file records, Federal Fiscal Year 2019 – 2021.

Note that a state-level map depicting the rate of hospices not earning a point is available in **Appendix Section C.9**. An examination of differences in CAHPS® Hospice scores and hospices' attainment of HCI points is presented in **Appendix E**.

Conclusion

To assess consistent availability of hospice services, this indicator includes minutes of care provided by skilled nurses on weekend RHC days. Patients receive fewer skilled nursing minutes on Saturdays and Sundays compared to the rest of the week for virtually all hospices. This trend underscores the importance of ensuring patients' access to hospice services during the weekend. Among hospices in the 99th percentile, an average of one-fifth of nursing minutes occurs on the weekend. Low percentages of skilled nursing minutes during the weekend are more likely to occur among smaller hospices. On average, hospices with 49 claims or fewer are more likely to be in the bottom decile of skilled nursing minutes during the weekend (14.5 percent) compared to hospices with 500 or more beneficiaries (2.6 percent). Rural hospices are about twice as likely to be in the bottom decile compared with urban hospices.

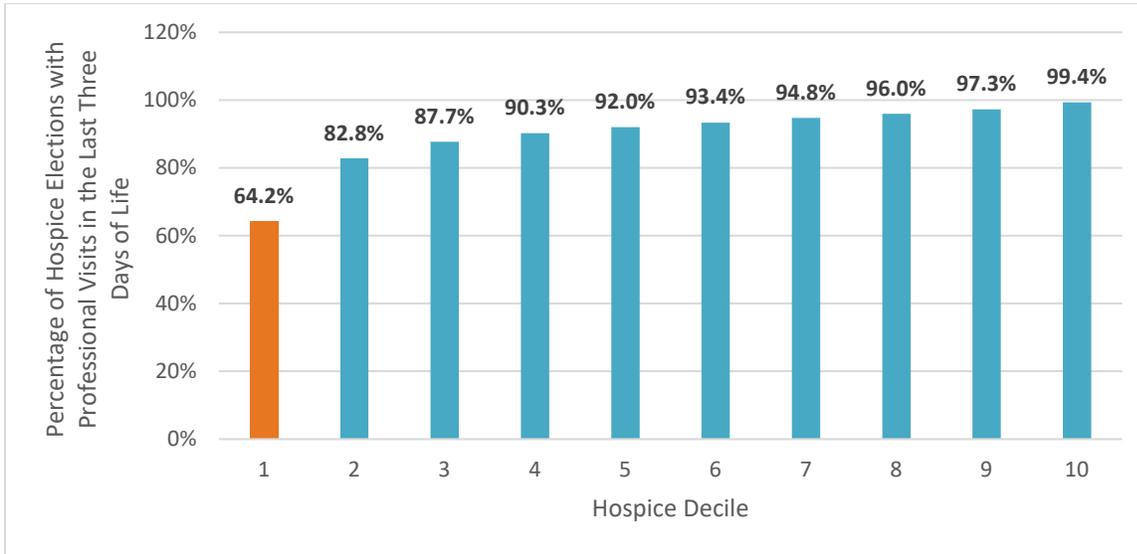
4.2.10 Visits Near Death

Distribution of Indicator Scores

In the sample period, 90.0 percent of hospice decedents had a professional visit⁷⁹ in the last three days of life (median 92.9 percent, IQR 88.2%-96.2% with the 10th percentile at 100.0%). Around 5 percent of hospices provide professional visits in the last three days of life for 100 percent of their hospice decedents (**Exhibit 4.2.19**). However, among hospices in the bottom 10 percent, the average rate is 64.2 percent, almost 19 percentage points less than the next decile (82.8 percent).

⁷⁹ The Visits Near Death indicator measures visits by a skilled nurse or social worker staff for the hospice.

Exhibit 4.2.19: Percentage of Hospice Stays with Professional Visits in the Last Three Days of Life by Decile of Prevalence [n = 4,777 Hospice Providers with 20+ Hospice Claims, Equally Divided by Decile]



Note: Abt Associates analysis of 100% Medicare claims, Federal Fiscal Year 2019 – 2021. The orange bar decile represents the hospices not earning a point towards the Hospice Care Index.

Prevalence & Trends

The percentage of professional visits in the last three days of life varied across several hospice characteristics. Smaller hospices (those with fewer than 500 claims), newer hospices (those certified after 2010), and hospices in the outlying territories are more often in the bottom decile of professional visits at the end of life (**Exhibit 4.2.20**). The largest disparity in the percentage of hospices not achieving earned index points is for hospices with fewer than 50 claims (24.7% vs. 2.7% in hospices with 500 claims or more; AOR 2.9, 95% CI [1.9-4.3]).

Exhibit 4.2.20: Professional Visits in the Last Three Days of Life by Hospice Characteristics [n = 4,777 Hospice Providers with 20+ Hospice Claims]

Hospice Characteristic	% Hospices	Average % Stays Receiving Professional Visits Near Death	% Not Achieving Earned Index Points	Not Achieving Earned Index Points AOR [95% CI]
National Rate				
All Hospices	100.0%	90.0%	9.9%	—
Number of Claims				
20-49	10.2%	85.1%	24.7%	2.9 [1.9-4.3]
50-79	8.9%	87.1%	18.3%	2.5 [1.7-3.8]
80-199	23.0%	88.0%	14.8%	2.3 [1.6-3.2]
200-499	26.6%	91.3%	5.5%	1.6 [1.1-2.2]
500+	31.3%	92.7%	2.7%	reference
Decade of Hospice Certification				
1980s	10.9%	92.9%	2.1%	reference

SECTION 4: Primary Analytic Findings

1990s	19.1%	92.0%	4.7%	1.5 [0.8-3.1]
2000s	22.5%	91.2%	5.5%	1.4 [0.7-2.8]
2010s	47.5%	88.0%	15.8%	2.4 [1.2-4.7]
Ownership				
Government-owned	11.1%	90.7%	7.0%	1.1 [0.7-1.9]
Nonprofit	19.2%	92.5%	3.6%	<i>reference</i>
For-Profit	69.6%	89.2%	12.1%	1.3 [0.8-2.0]
Facility Type				
Facility-based	14.4%	91.8%	5.1%	0.8 [0.5-1.2]
Freestanding	85.6%	89.7%	10.7%	<i>reference</i>
Region				
Northeast	8.9%	91.2%	5.9%	<i>reference</i>
Midwest	19.5%	91.9%	4.9%	0.7 [0.4-1.1]
South	35.9%	90.4%	8.0%	0.9 [0.5-1.4]
West	34.6%	88.4%	15.3%	1.1 [0.7-1.7]
Outlying Territories	1.0%	82.4%	20.4%	2.7 [1.1-6.3]
Urban/Rural				
Urban	82.8%	89.7%	10.7%	<i>reference</i>
Rural	17.2%	91.6%	5.6%	0.8 [0.5-1.1]

Note: Abt Associates analysis of 100% Medicare claims and Provider of Services file records, Federal Fiscal Year 2019 – 2021.

Note that a state-level map depicting the rate of hospices not earning a point is available in **Appendix Section C.10**. An examination of differences in CAHPS® Hospice scores and hospices' attainment of HCI points is presented in **Appendix E**.

Conclusion

Hospice services at the end of life may be particularly important as it is typically the period in the terminal illness trajectory with the highest symptom burden. Over half of hospices provide professional visits at the end of life for at least 92.9 percent of hospice stays. Low rates of professional visits at the end of life vary across hospice characteristics but are more likely among smaller and newer hospices.

5. Conclusion

CMS developed the HCI to describe provider performance across a broad array of indicators of hospice service that represent care throughout the hospice stay. Through information-gathering activities to identify gaps in the HQRP, CMS identified new measurement domains and areas of concern. Sources included analyses and subsequent recommendations by the OIG, MedPAC, and academic literature. In addition, CMS reviewed the Medicare Hospice Benefit CoPs and initiatives from prior rulemaking proposals.

The “index” aspect of the HCI – combining multiple indicators – responds to public comments that noted the limitations of single concept, claims-based measures, where the available data may not reflect all circumstances that could affect measure performance. That is, there could be more explanations for a hospice’s performance score than the claims information captures. The HCI overcomes this concern by incorporating multiple indicators simultaneously. This design feature acknowledges that although circumstances beyond a hospice’s control could affect performance in one area during a reporting period, it is unlikely that multiple, disparate domains would be thus affected. Therefore, the concept yields much greater internal validity, as it is unlikely that a hospice could consistently fall short across multiple indicators due to factors outside their control. Moreover, the index only seeks to identify excessively high (or low) indicator scores, benchmarked against other providers. This feature of the index also incorporates the fact that CMS recognizes that some utilization patterns are to be expected. For example, hospices will normally have some live discharges. As a result, the HCI scores encapsulate excessive indicator scores across multiple areas simultaneously.

The HCI adds value to the HQRP and fills information gaps about hospice care provided between admission and discharge, such as the provision of higher-level services, visits by professional hospice staff, and patterns of live discharge and transitions. The information included in HCI complements other HQRP measures. HCI is not intended as a be-all/end-all measure – it can only report information included in the underlying claims data – but the empirical results presented here reinforce the suitability of this measure for the QRP. The variation in the HCI scores demonstrates its usefulness as a differentiator. The HCI scores also demonstrated consistency with other NQF-endorsed QMs in the HQRP, validating the underlying measure construct.

As HQRP is CMS’ newest quality reporting program, the measure set is still being developed to eventually match the robust measure sets of other programs. Utilizing numerous claims-based indicators through the HCI greatly increases the amount of information available to Medicare beneficiaries by leveraging a readily available data source, without further reporting burden to hospices, patients, or their families.

During the HCI’s conception, development, and refinement, CMS solicited input and incorporated feedback received through several outreach calls with national hospice organizations and hospice caregivers. The process produced a measure that incorporates the considerations of a diverse range of stakeholders. Many of the analyses in this report were conducted to answer helpful questions posed during these calls. Ultimately, stakeholders believed that the HCI would provide useful information to individuals choosing a hospice. This feedback reinforced the value of the HCI to the relevant audience of the HQRP and the Medicare Hospice Care Compare website.

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Appendix B: Acronym List

AOR	Adjusted Odds Ratio
APU	Annual Payment Update
CAHPS®	Consumer Assessment of Healthcare Providers and Systems®
CCW	Chronic Conditions Warehouse
CHC	Continuous home care
CMS	Centers for Medicare & Medicaid Services
CoPs	Conditions of Participation
CY	Calendar Year
FFS	Fee-for-service
FY	(Federal) Fiscal Year
GIP	General inpatient
HCI	Hospice Care Index
HIS	Hospice Item Set
HQRP	Hospice Quality Reporting Program
HVLDL	Hospice Visits in the Last Days of Life
IRC	Inpatient respite care
IQR	Interquartile range
MedPAC	Medicare Payment Advisory Commission
NQF	National Quality Forum
OIG	Office of the Inspector General
PHE	Public Health Emergency
POS	Provider of Services
QM	Quality Measure
QRP	Quality Reporting Program
RHC	Routine home care
TEFRA	Tax Equity and Fiscal Responsibility Act of 1982
TEP	Technical Expert Panel
VRDC	Virtual Research Data Center

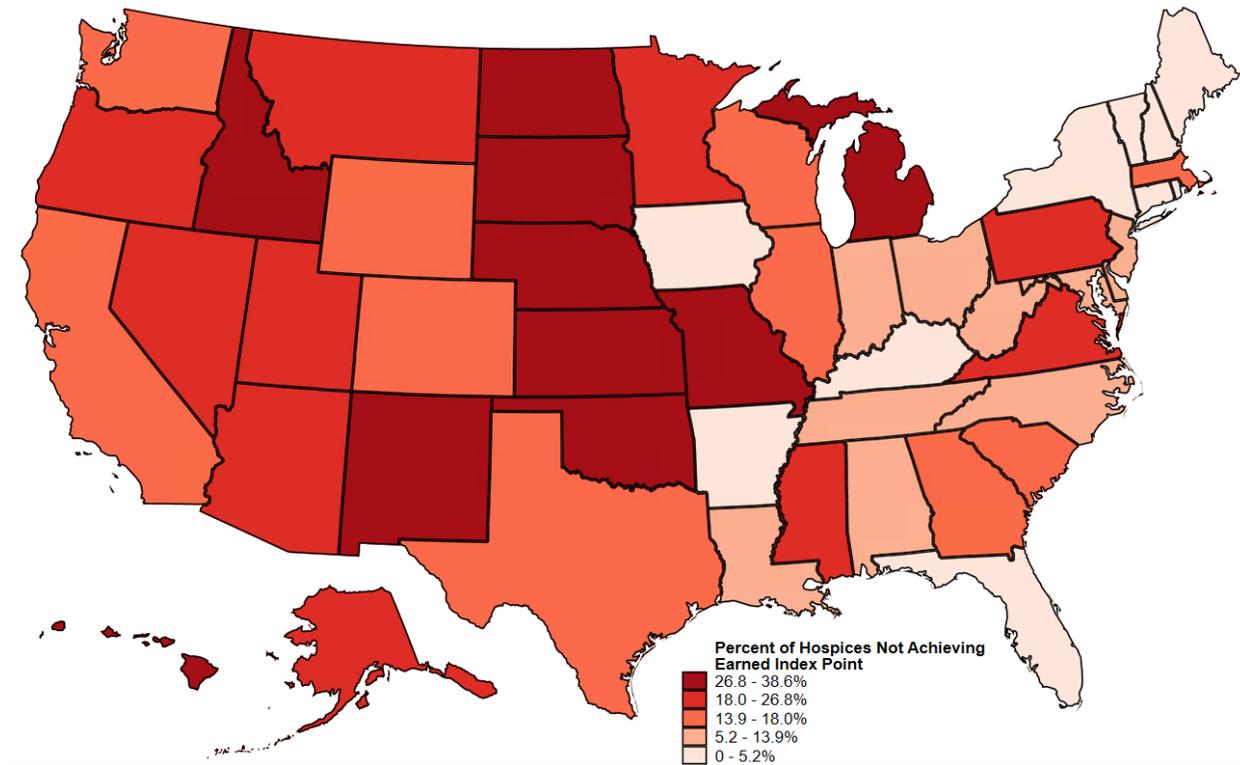
Appendix C: Supplemental Hospice Care Index Indicator Nationwide Heat Maps

Each indicator subsection throughout **Section 4** includes an analysis of regional trends. In this appendix, geographical trends are provided at the state-level, and depicted using heat maps. A map is displayed for each indicator in five shades of red, with ten states being assigned to each shade (for the fifty states total). Darker shades indicate a higher percentage of hospices in that state not achieving a point for that indicator. The precise percentage range across the ten states in that range are displayed in the legend at the bottom of the exhibit.

C.1 CHC or GIP Provided

The map below (**Exhibit C.1**) highlights the states with the greatest proportion of hospices not providing any CHC or GIP care. Such hospices are less prevalent in eastern states, and more prevalent west of the Mississippi River.

Exhibit C.1: Percentage of Hospices Providing No CHC or GIP Levels of Care Service Days by State

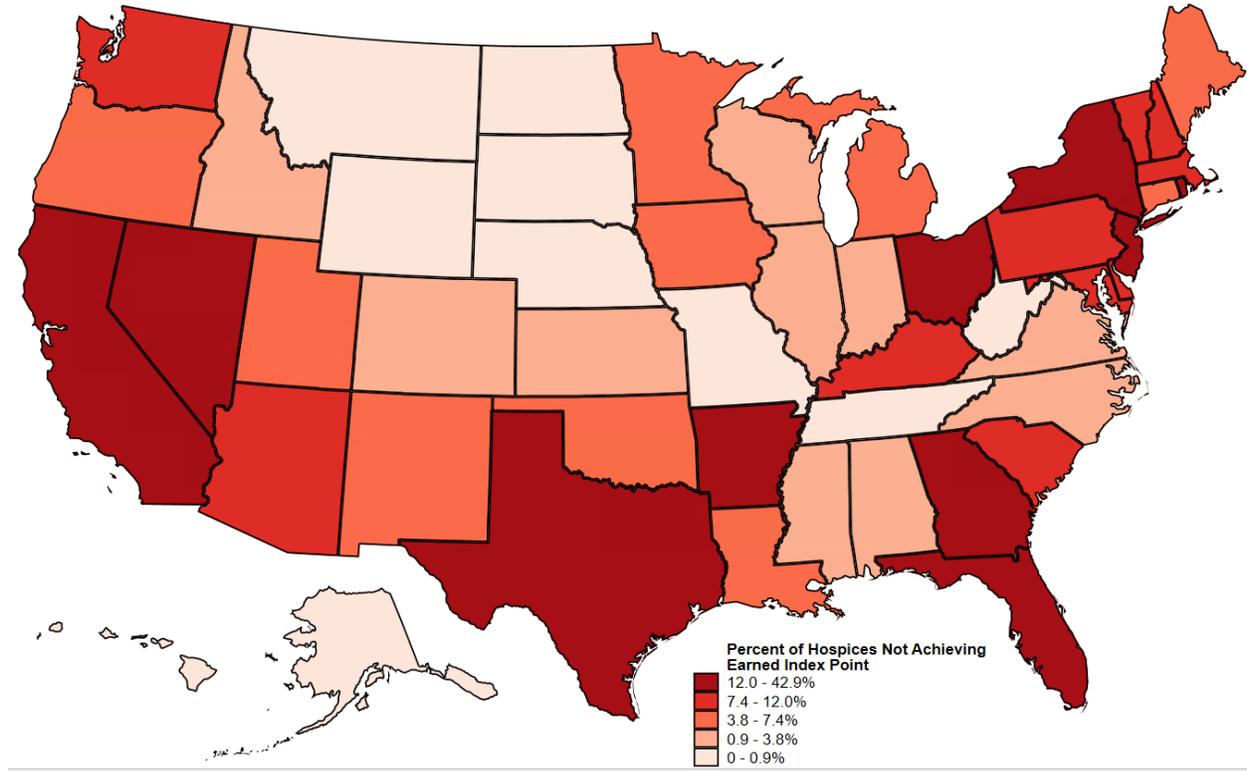


Note: Abt Associates analysis of 100% Medicare claims, Federal Fiscal Year 2019 - 2021.

C.2 Gaps in Skilled Nursing Visits

The map below (**Exhibit C.2**) highlights the states with the highest percentage of not meeting the earned index point criterion. This appears more common outside the upper midwestern states.

Exhibit C.2: Percentage of Hospices in the Top Decile of Gaps in Skilled Nursing Visits Greater than Seven Days by State

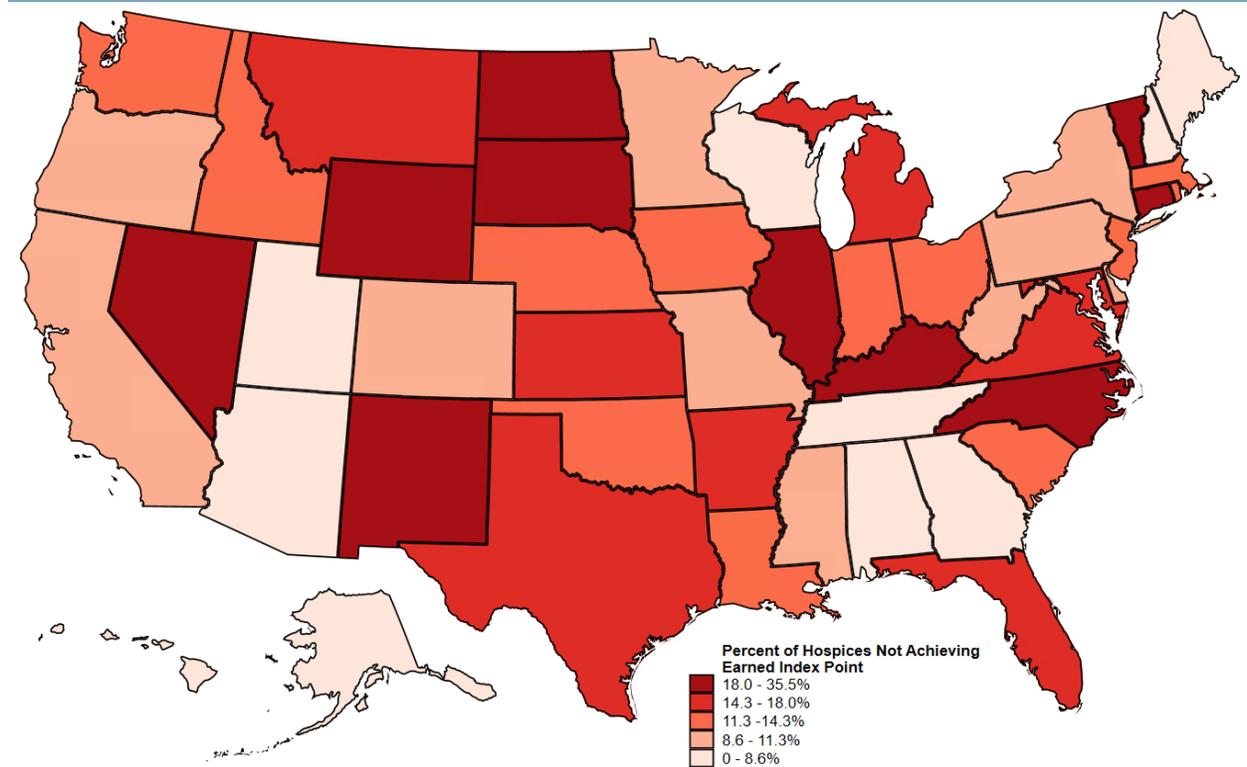


Note: Abt Associates analysis of 100% Medicare claims, Federal Fiscal Year 2019 - 2021.

C.3 Early Live Discharges

The map below (**Exhibit C.3**) highlights the states with the highest percentage of hospices not meeting the earned index point criterion. There does not appear to be a clear geographical pattern to the distribution of these hospices.

Exhibit C.3: Percentage of Hospices in the Top Decile of Early Live Discharges (Live Discharges Within the First Seven Days of Hospice) by State

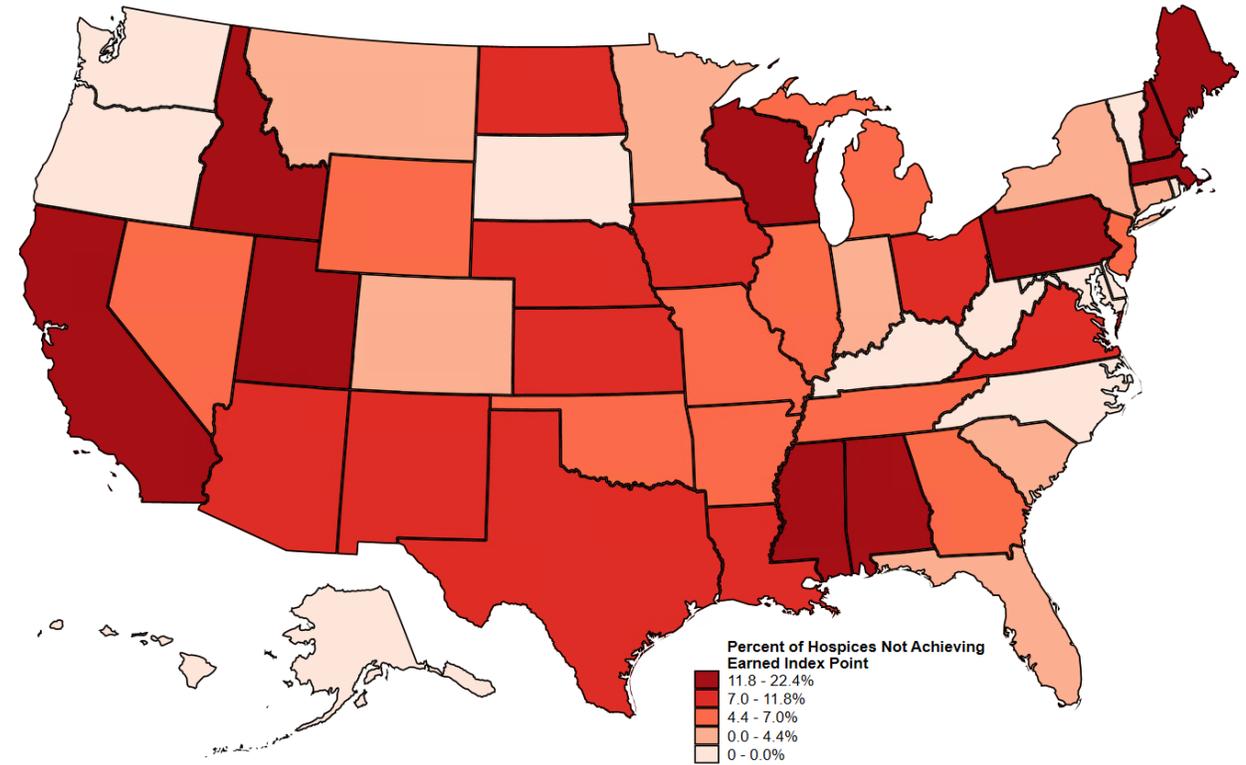


Note: Abt Associates analysis of 100% Medicare claims, Federal Fiscal Year 2019 - 2021.

C.4 Late Live Discharges

The map below (**Exhibit C.4**) highlights the states with the highest percentage of hospices not meeting the earned index point criterion. There does not appear to be a clear geographical pattern to the distribution of these hospices.

Exhibit C.4: Percentage of Hospices in the Top Decile of Late Live Discharges (Live Discharges on or After 180 Days of Election) by State

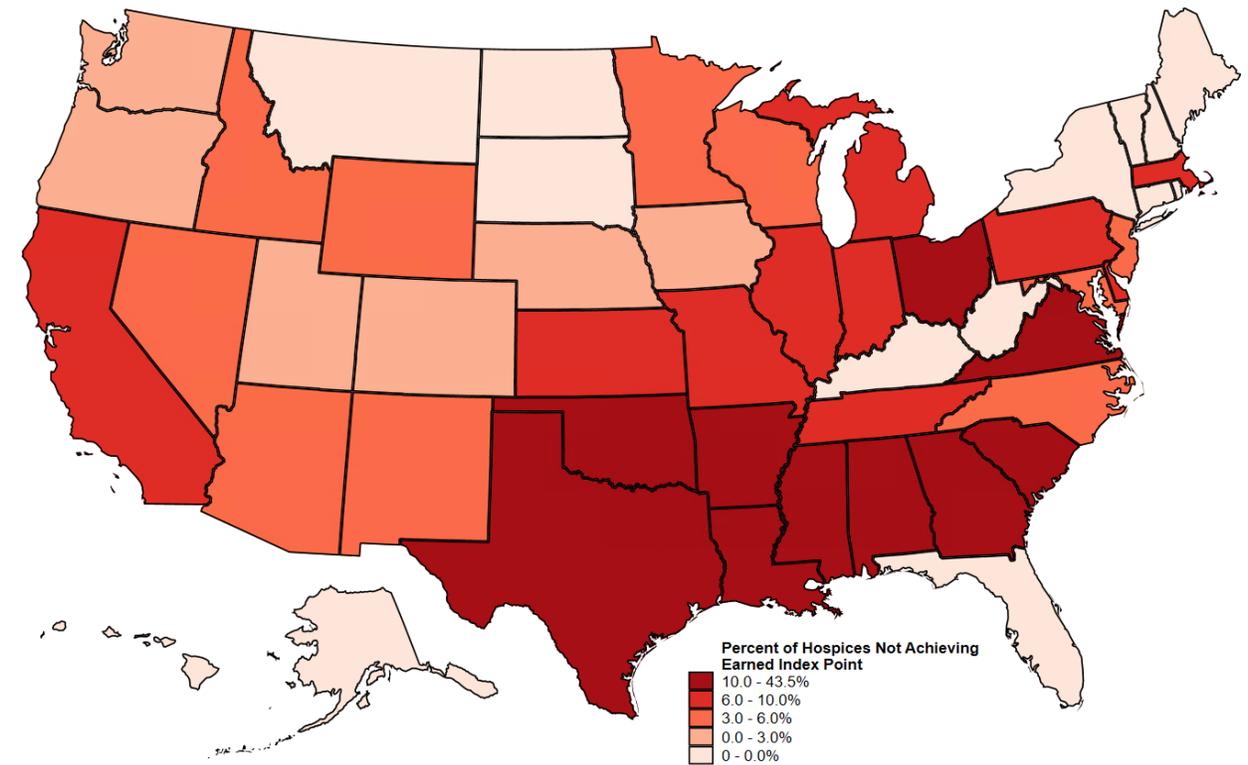


Note: Abt Associates analysis of 100% Medicare claims, Federal Fiscal Year 2019 - 2021.

C.5 Burdensome Transitions (Type 1) - Live Discharges from Hospice Followed by Hospitalization and Subsequent Hospice Readmission

The map below (**Exhibit C.5**) highlights states with high percentages of hospices in the top decile of Type 1 burdensome transitions. Higher rates are strongly concentrated in the South (with the exception of Florida).

Exhibit C.5: Percentage of Hospices in the Top Decile of Type 1 Burdensome Transitions by State

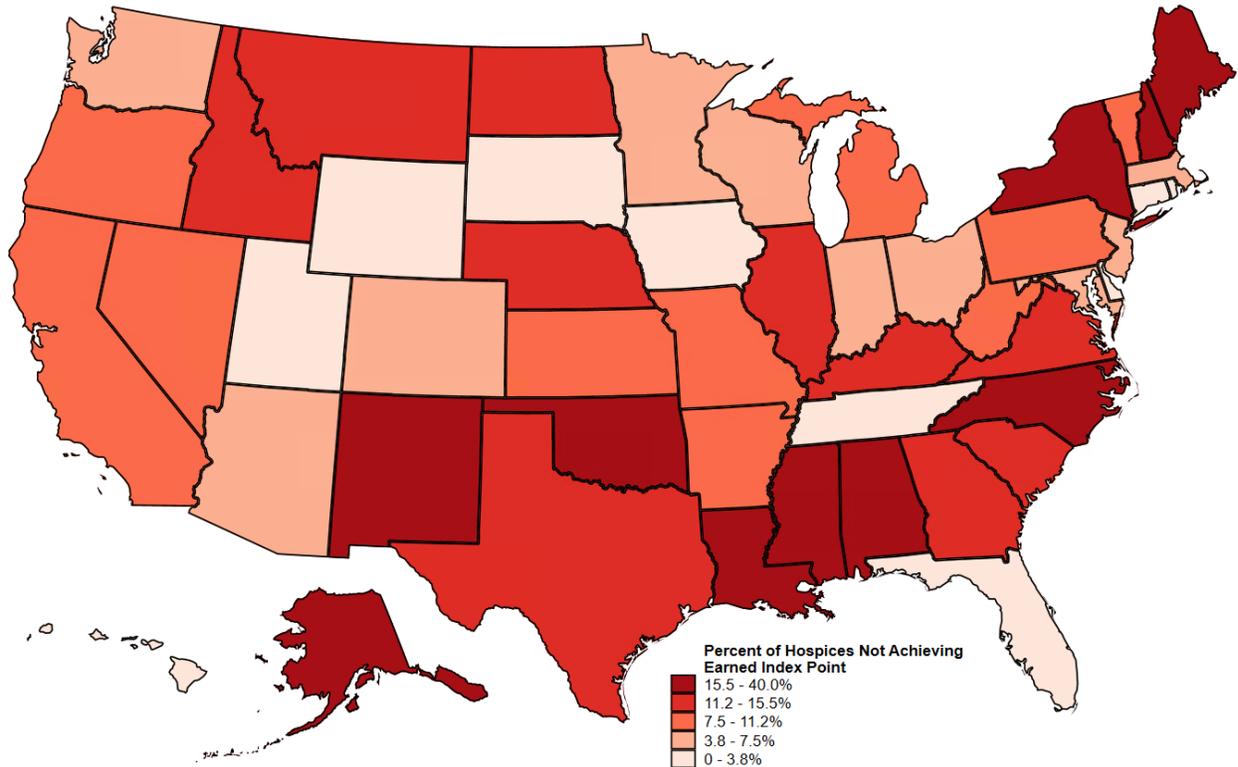


Note: Abt Associates analysis of 100% Medicare claims, Federal Fiscal Year 2019 - 2021.

C.6 Burdensome Transitions (Type 2) – Live Discharges from Hospice Followed by Hospitalization with the Patient Dying in the Hospital

The map below (**Exhibit C.6**) highlights states with high percentages of hospices in the top decile of Type 2 burdensome transitions. Higher rates appear more concentrated in the South, although some states with the highest rates are outside of the South.

Exhibit C.6: Percentage of Hospices in the Top Decile of Type 2 Burdensome Transitions by State

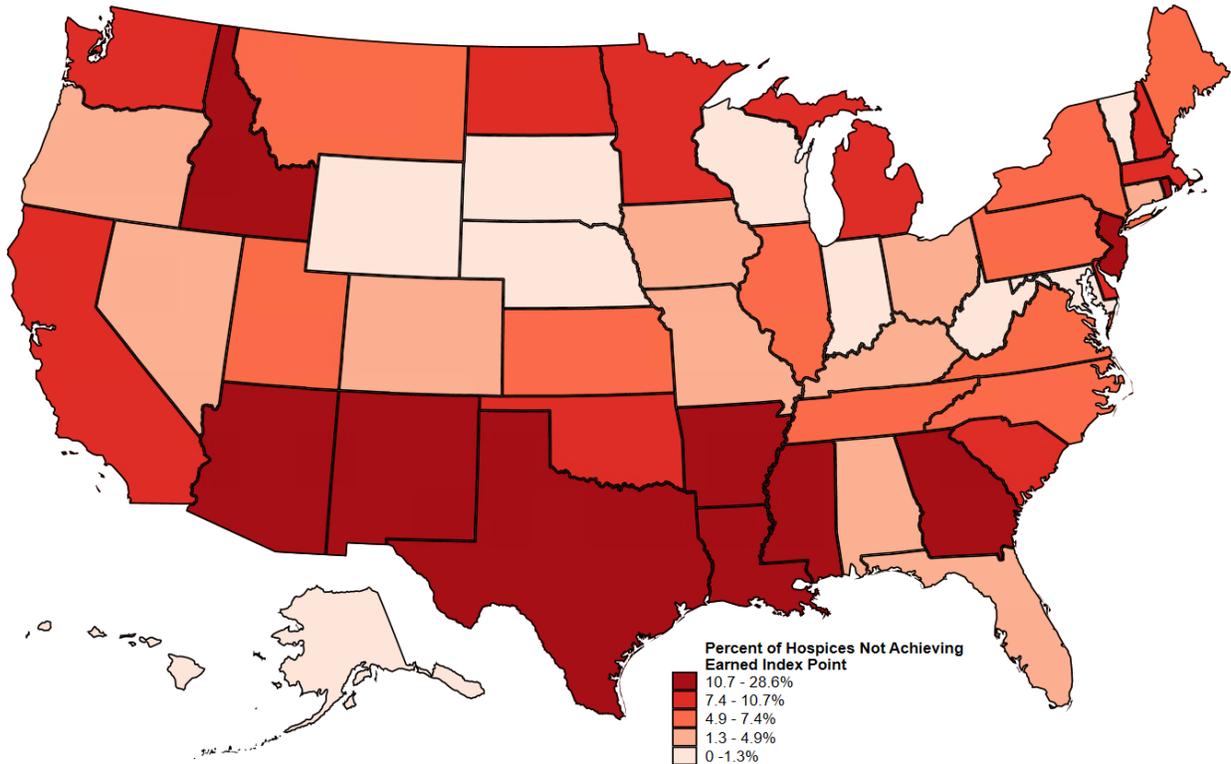


Note: Abt Associates analysis of 100% Medicare claims, Federal Fiscal Year 2019 - 2021.

C.8 Skilled Nursing Care Minutes per Routine Home Care (RHC) day

The map below (**Exhibit C.8**) highlights the states with the highest percentage of hospices not meeting the earned index point criterion. There does not appear to be a clear geographical pattern although there is a cluster of states in the south with higher percentages of hospices that did not achieve an earned index point.

Exhibit C.8: Percentage of Hospices in the Bottom Decile of Skilled Nursing Care Minutes per RHC Day by State

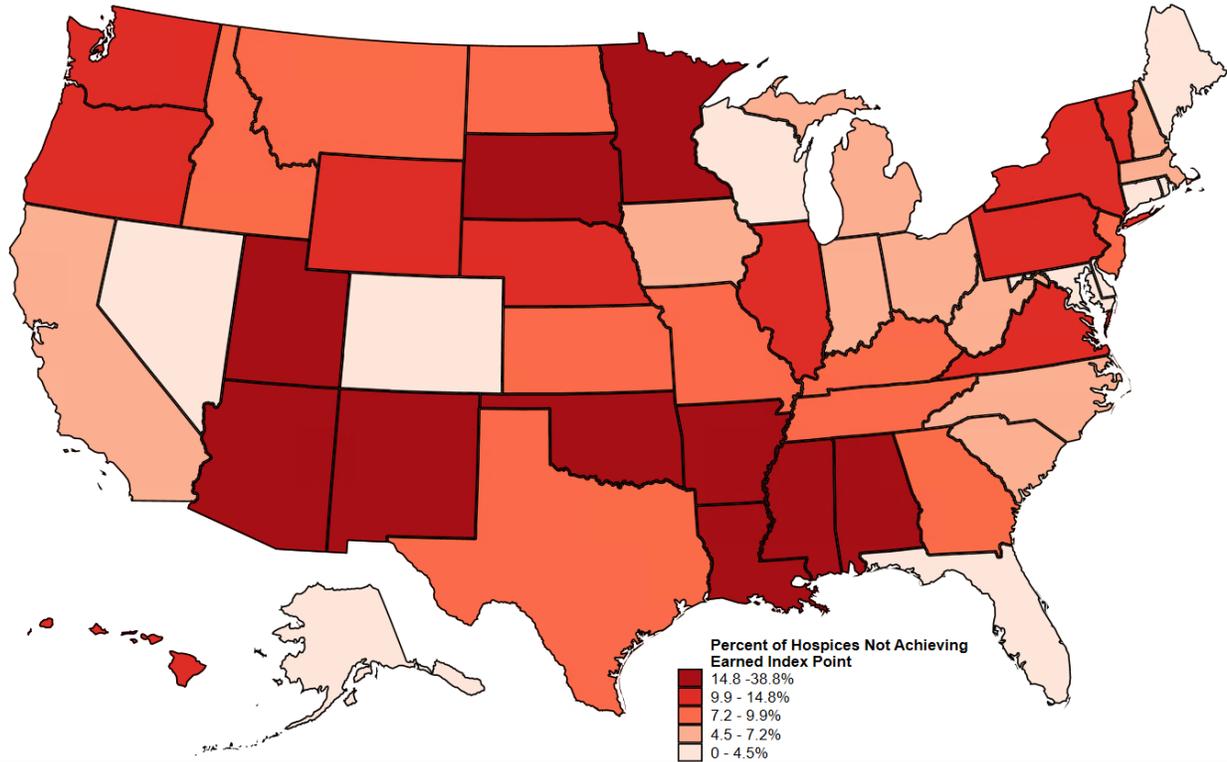


Note: Abt Associates analysis of 100% Medicare claims, Federal Fiscal Year 2019 - 2021.

C.9. Skilled Nursing Minutes on Weekend RHC Days

The map below (**Exhibit C.9**) highlights states with low percentages of skilled nursing minutes during the weekend and does not suggest that percentages are geographically concentrated.

Exhibit C.9: Percentage of Hospices in the Bottom Decile of Skilled Nursing Minutes on Weekend RHC Days by State



Note: Abt Associates analysis of 100% Medicare claims, Federal Fiscal Year 2019 - 2021.

Appendix D: Correlations Between Hospice Care Index Indicators

The CHC/GIP provision, visits on weekend, visits near death, skilled nurse minutes per RHC day, and gaps in skilled nursing visits indicators were the most common indicators to have not received HCI points among the lowest scoring hospices, as displayed in **Exhibit D.1**. For each of the ten indicators in the HCI, the exhibit indicates the percentage of hospices earning points, at each indicator score. Among hospices with HCI scores of 10, a perfect score, the rate of hospice achieving points is as expected 100 percent for each indicator. Among hospices with a HCI score of 9, 82.3 percent of hospices received a point for the CHC/GIP indicator, 94.2 percent of hospices received a point for the nursing visit gap indicator, etc. Among the hospices with the lowest HCI scores (of 7 or less), only 54.5 percent of hospices earned a point for the CHC/GIP indicator, and 53.6 percent for the visits at the end-of-life indicator.

Exhibit D.1: Rates of Hospices Achieving Index Earned Points by Hospice Care Index Score and Indicator, FY 2019-2021

Hospice Care Index Claims-Based Indicator	HCI Score=10	HCI Score=9	HCI Score=8	HCI Score=7 (or less)
CHC or GIP provided	100.0%	82.3%	62.3%	54.5%
Gaps in skilled nursing visits	100.0%	94.2%	84.9%	53.6%
Early live discharges	100.0%	82.3%	77.5%	81.8%
Late live discharges	100.0%	89.9%	79.6%	68.7%
Burdensome transitions (Type 1)	100.0%	86.8%	80.1%	73.8%
Burdensome transitions (Type 2)	100.0%	88.8%	77.4%	72.3%
Per-beneficiary Medicare spending	100.0%	91.1%	82.6%	62.9%
Skilled nurse minutes per RHC day	100.0%	95.6%	86.8%	55.3%
Skilled nurse minutes on weekend RHC Days	100.0%	92.6%	83.8%	66.9%
Visits near death	100.0%	96.4%	85.3%	55.4%

Note: Abt Associates analysis of 100% Medicare claims, Federal Fiscal Year 2019 – 2021. Type 1 burdensome transitions are live discharges from hospice followed by hospitalization followed by hospice readmission; type 2 burdensome transitions are live discharges from hospice followed by hospitalization with the patient dying in the hospital.

If hospices fail to achieve an HCI point for one indicator, they may be less likely to achieve a point in another indicator as well, as shown in **Exhibit D.2**. Among those hospices failing to achieve a point for each row’s indicator, the percentages indicate how many hospices also failed to simultaneously achieve a point for the column indicator. For example, among the hospices failing to earn a point for the CHC/GIP service indicator, 12.1% also failed to achieve a point for the nursing gaps indicator, 15.1% failed to achieve a point for the early live discharge indicator, etc. Note there is often greater likelihood when two indicators share topics. For instance, if a hospice fails to earn an HCI point for the nursing gaps indicator, it is more likely to also fail to earn a point for the nursing minutes per day indicator (in 46.9% of cases) than the early live discharge indicator (failing in 7.8% of cases).

Appendix D: Correlations Between Indicators

Exhibit D.2: Likelihood of Other Hospice Care Index Indicators Failing to Achieve Points, FY 2019-2021

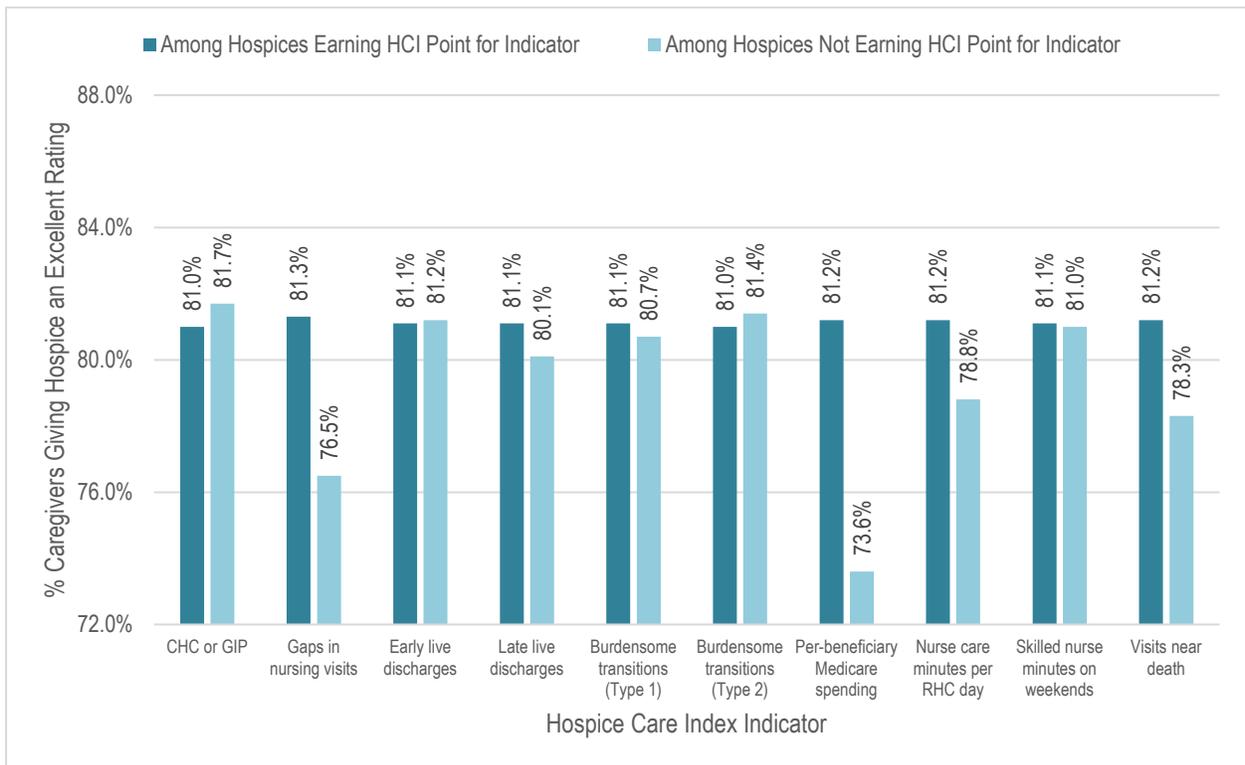
	The percentages indicate the number of instances where the hospice failed to earn a Hospice Care Index Point for the row indicator and also failed to earn a point for the column indicator									
	CHC or GIP provided	Gaps in skilled nursing visits	Early live discharges	Late live discharges	Burdensome transitions (Type 1)	Burdensome transitions (Type 2)	Per-beneficiary Medicare	Skilled Nurse care minutes per RHC day	Skilled Nurse minutes on weekends	Visits near death
CHC or GIP provided		12.1%	15.1%	15.7%	12.6%	14.7%	12.4%	13.7%	17.2%	14.4%
Gaps in skilled nursing visits	20.2%		7.8%	17.0%	12.4%	11.6%	29.0%	46.9%	12.4%	38.1%
Early live discharges	23.3%	7.2%		2.5%	12.7%	14.5%	2.1%	8.7%	9.4%	7.8%
Late live discharges	26.0%	16.9%	2.7%		6.7%	8.2%	34.0%	14.4%	15.4%	18.2%
Burdensome transitions (Type 1)	20.6%	12.2%	13.5%	6.6%		19.3%	6.8%	14.4%	14.6%	6.9%
Burdensome transitions (Type 2)	24.1%	11.4%	15.3%	8.0%	19.2%		9.9%	11.8%	14.2%	10.8%
Per-beneficiary Medicare spending	20.8%	29.0%	2.3%	34.1%	6.9%	10.1%		17.1%	10.9%	28.2%
Nurse care minutes per RHC day	25.2%	51.6%	10.3%	16.0%	16.2%	13.3%	18.9%		19.2%	36.6%
Skilled nurse minutes on weekends	32.5%	14.0%	11.4%	17.4%	16.8%	16.3%	12.3%	19.6%		19.8%
Visits near death	26.3%	42.0%	9.3%	20.2%	7.9%	12.3%	30.8%	36.7%	19.6%	

Note: Abt Associates analysis of 100% Medicare claims, Federal Fiscal Year 2019 - 2021. Type 1 burdensome transitions are live discharges from hospice followed by hospitalization followed by hospice readmission; type 2 burdensome transitions are live discharges from hospice followed by hospitalization with the patient dying in the hospital.

Appendix E: Hospice Care Index Indicators' Relationships to CAHPS® Hospice Outcome Scores

The overall HCI score produces hospice ratings consistent with CAHPS® Hospice ratings, as shown by **Exhibit 4.1.4** of **Section 4.1.2**. That is, on average, hospices with higher HCI scores have better CAHPS® Hospice outcome scores. Several of the individual indicators also demonstrate strong relationships with CAHPS® Hospice outcome scores, as shown in **Exhibit E.1** and **Exhibit E.2**. Both figures are structured similarly. There are ten bar groups, one for each of the HCI's claims-based indicators. The darker bar in the grouping represents CAHPS® Hospice ratings among hospices that earned an HCI point for that indicator, and the lighter bar represents CAHPS® Hospice ratings among hospices that did not earn an HCI point for that indicator.⁸⁰ **Exhibit E.1** depicts the percentage of caregivers giving the hospice an excellent rating (a 9 or 10 on a 10 scale) and **Exhibit E.2** depicts the percentage of caregivers reporting they would “definitely” recommend the hospice.

Exhibit E.1: Percentage of Caregivers Rating Hospices a 9 or 10 out of 10 (CAHPS® Hospice Outcome) by Hospice Care Index Earned Index Point Criterion Status of Hospice Among all Claims-Based Indicators



Note: Abt Associates analysis of 100% Medicare claims and hospice-level Consumer Assessment of Healthcare Providers and Systems® Hospice survey scores, Federal Fiscal Year 2019 - 2021.

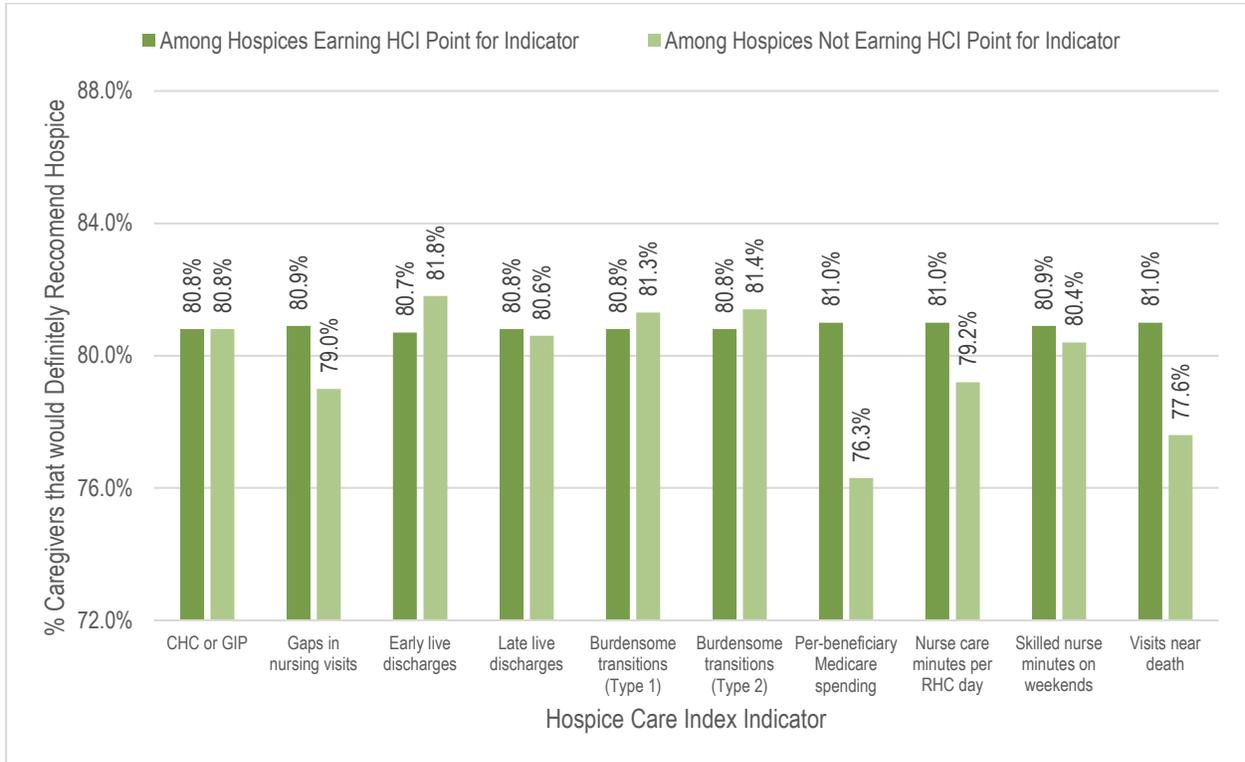
In both **Exhibit E.1** (above) and **Exhibit E.2** (below), the same four claims-based indicators have strong correlations with CAHPS® Hospice outcomes: the indicators for gaps in skilled nursing visits greater than seven days, nurse minutes per RHC day, Medicare spending per beneficiary, and professional visits at the

⁸⁰ For a reminder on HCI scoring methodology, the reader can refer to **Section 2.3** for an overview and **Section 3.2** for a numerical example.

Appendix E: Hospice Care Index Indicators' Relationships to CAHPS® Hospice Outcome Scores

end of life. For each of these indicators, the average CAHPS® Hospice outcome rating is higher among the hospices that did earn an HCI point compared to the hospices that did not earn an HCI point. For example, among the hospices that did earn a point for the Medicare spending per beneficiary indicator, 81.2% of caregivers rated those hospices a 9 or 10 out of 10. Among the hospices that did not earn a point towards the HCI for Medicare per beneficiary spending, only 73.6% of caregivers rated those hospices a 9 or 10 out of 10 (a 7.6 percentage point difference).

Exhibit E.2: Percentage of Caregivers Reporting They Would Definitely Recommend the Hospice (CAHPS® Hospice Outcome) by Hospice Care Index Earned Index Point Criterion Status of Hospice among all Claims-Based Indicators



Note: Abt Associates analysis of 100% Medicare claims and hospice-level Consumer Assessment of Healthcare Providers and Systems® Hospice survey scores, Federal Fiscal Year 2019 - 2021. CHC=continuous home care. GIP=general inpatient. RHC=routine home care. Type 1 burdensome transitions are live discharge from hospice followed by hospitalization followed by hospice readmission; type 2 burdensome transitions are live discharge from hospice followed by hospitalization with the patient dying in the hospital.