



*The Colorado Center for
Hospice & Palliative Care*

Colorado Hospice & Palliative Care

In Colorado:

- ◆ Colorado's 83 hospices serve more than half of all dying Coloradans¹.
- ◆ Colorado hospices serve every Colorado County.
- ◆ Hospice care saves money.
 - A 2013 Mount Sinai study² found savings up to \$6,430 per Medicare beneficiary enrolled in hospice versus non-hospice controls.
 - A 2011 Duke University study³ indicated hospice saves Medicare more than \$11,300 per Medicare hospice beneficiary who died in hospice versus the hospital setting.
- ◆ Colorado hospices seek earlier referrals from other healthcare organizations. While the Medicare Hospice Benefit is designed for at least the last six-months of life, half of Coloradans admitted to hospice die in less than one month. Colorado hospice's median length of stay is 29 days.
- ◆ The Colorado Center for Hospice & Palliative Care works collaboratively with several organizations to advance quality and access to palliative care and hospice services for all Coloradans. Additional information regarding the Center can be found at www.ColoradoHospice.org.

¹ Hospice utilization rates calculated by Hospice Analytics using current 2012 Medicare files.

² Kelley AS, Deb P, Du Q, Aldridge Carlson MD, Morrison RS. Hospice Enrollment Saves Money for Medicare and Improves Care Quality Across a Number of Different Lengths-of-Stay. Health Affairs 2013;32:3.

³ Abernethy AP, Kassner CT, Whitten E, Bull J, Taylor DH. Death Service Ratio: A Measure of Hospice Utilization and Cost Impact. J Pain Symptom Manage 2011; 41(#6 June):e5-6.



What is Hospice Care?

- ◆ Hospice provides compassionate and comprehensive care when there is no cure – addressing physical, psychological, and spiritual needs for seriously ill people and for those who love them.
- ◆ Hospice accepts death as a natural part of life, seeking to neither hasten nor prolong the dying process – but to ensure the highest quality of life for all remaining days.
- ◆ An interdisciplinary team approach that provides support for seriously ill people and those who love them before, during, and after the dying process.
- ◆ The vast majority of hospice care is financed through the Medicare and Medicaid Hospice Benefits.

What is Palliative Care?

- ◆ Palliative care is an extension of hospice principles to a broader population that could benefit from receiving this type of care earlier in their illness. Ideally, palliative care segues into hospice care as the illness progresses.
- ◆ Palliative care is the active, interdisciplinary comfort care of individuals whose condition may not be responsive to curative treatment. It seeks to achieve the best quality of life as determined by each patient and family. Palliative care focuses on aggressive control of pain and other physical symptoms, and on patient / family emotional, social, and spiritual priorities.
- ◆ The care is adapted into the setting of where it is provided.



Hospice and Palliative Care Comparison⁴

Question	Palliative Care	Hospice Care
Who can receive this care?	Anyone with a serious illness, regardless of life expectancy, can receive palliative care	Someone with an illness with a life expectancy measured in months not years
Can I continue to receive treatments to cure my illness?	You may receive palliative care and curative care at the same time	Treatments and medicines aimed at relieving symptoms are provided by hospice
Does Medicare pay?	Some treatments and medications may be covered	Medicare pays all charges related to hospice
Does Medicaid pay?	Some treatments and medications may be covered	In 49 states, Medicaid pays all charges related to hospice
Does private insurance pay?	Some treatments and medications may be covered	Most insurance plans have a hospice benefit
Is this a package deal?	No, there is no 'palliative care' package, the services are flexible and based on the patient's needs	Medicare and Medicaid hospice benefits are package deals
How long can I receive care?	This will depend upon your care needs, and the coverage you have through Medicare, Medicaid or private insurance	As long as you meet the hospice's criteria of an illness with a life expectancy of months not years
What organization provides these services?	Hospitals Hospices Nursing Facilities Health Care Clinics	Hospice organizations Hospice programs based out of a hospital Other health care organizations
Where are services provided?	Home Assisted living facility Nursing facility Hospital	Usually, wherever the patient resides, in their home, assisted living facility, nursing facility, or hospital. Some hospices have facilities where people can live, like a hospice residence, or receive care for short-term reasons, such as acute pain or symptom management.
Who provides these services?	It varies. However usually there is a team including doctors, nurses, social workers and chaplains, similar to the hospice team.	A team – doctor, nurse, social worker, chaplain, volunteer, home health aide and others.
Do they offer expert end-of-life care?	This varies, be sure to ask	Yes, staff are experts in end-of-life care

⁴ From Caring Connections website accessed 1/5/14, used with permission (number of state with Medicaid updated; [http://www.caringinfo.org/files/public/brochures/What is Palliative Care Brochure.pdf](http://www.caringinfo.org/files/public/brochures/What%20is%20Palliative%20Care%20Brochure.pdf)).



*The Colorado Center for
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The State of Hospice and Palliative Care in Colorado
presented to
Public Health Care & Human Service Committee
January 14, 2014

Presentation given by Beth Davis & Edie Busam
The Colorado Center for Hospice and Palliative Care

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Data Preparation - Cordt Kassner - [www. Hospiceanalytics.com](http://www.Hospiceanalytics.com)



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Hospices Need your Help!

Support for state supplemental only general funding in this year to offset the Medicare / Federal issues from FY2013

Support of new legislation that would continue to augment hospice funding until there is a change at the Federal Level which is being worked on now.

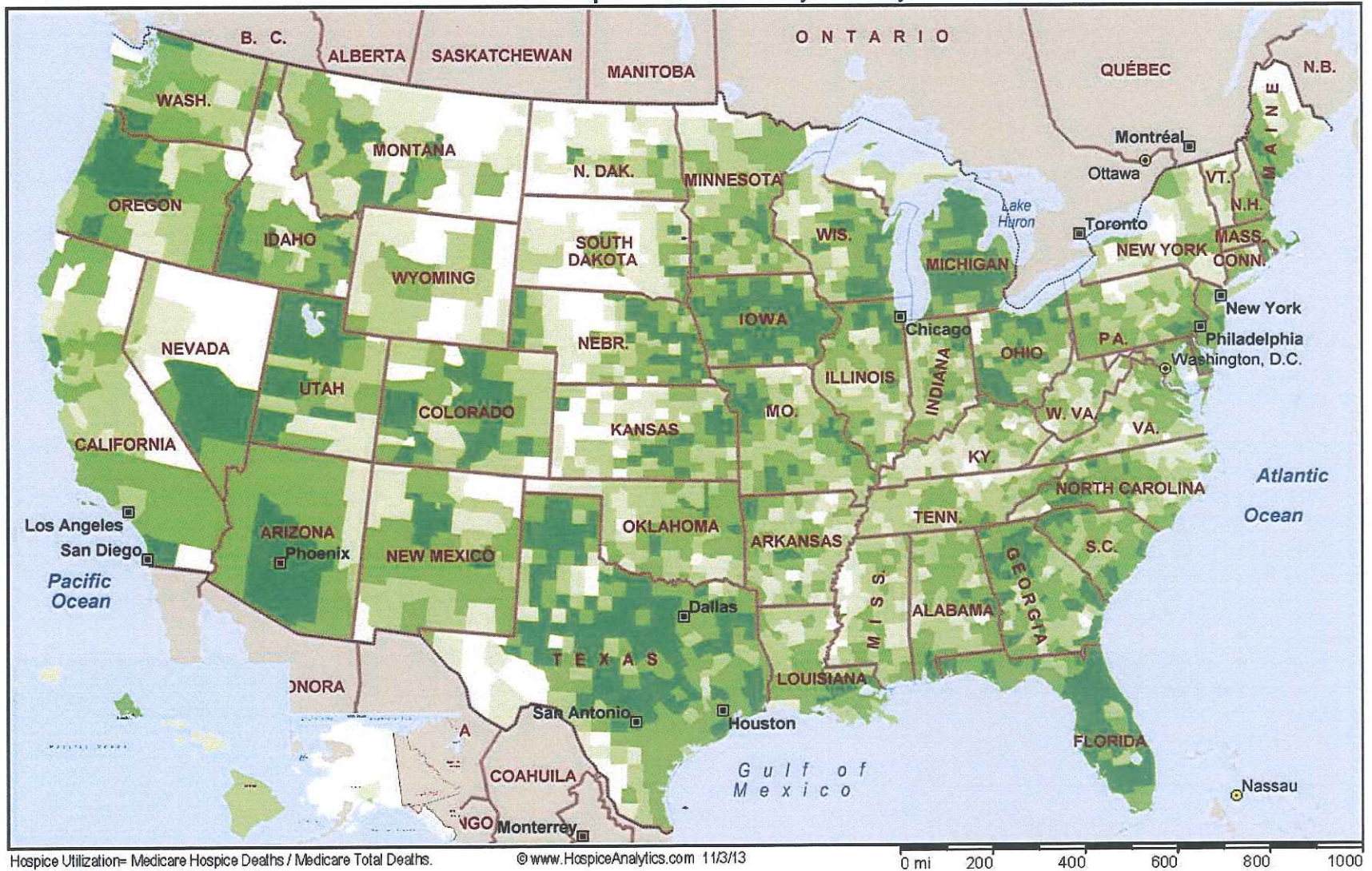
General Assembly resolution sent our Colorado Congressional Delegation to work to propose changes in the failure to thrive diagnosis and to assist with delivery in critical access areas!

General Assembly resolution to our Colorado Congressional Delegation to allow for a change in signature authority in hospice in rural areas for admission.

2012 Medicare Hospice Utilization by County

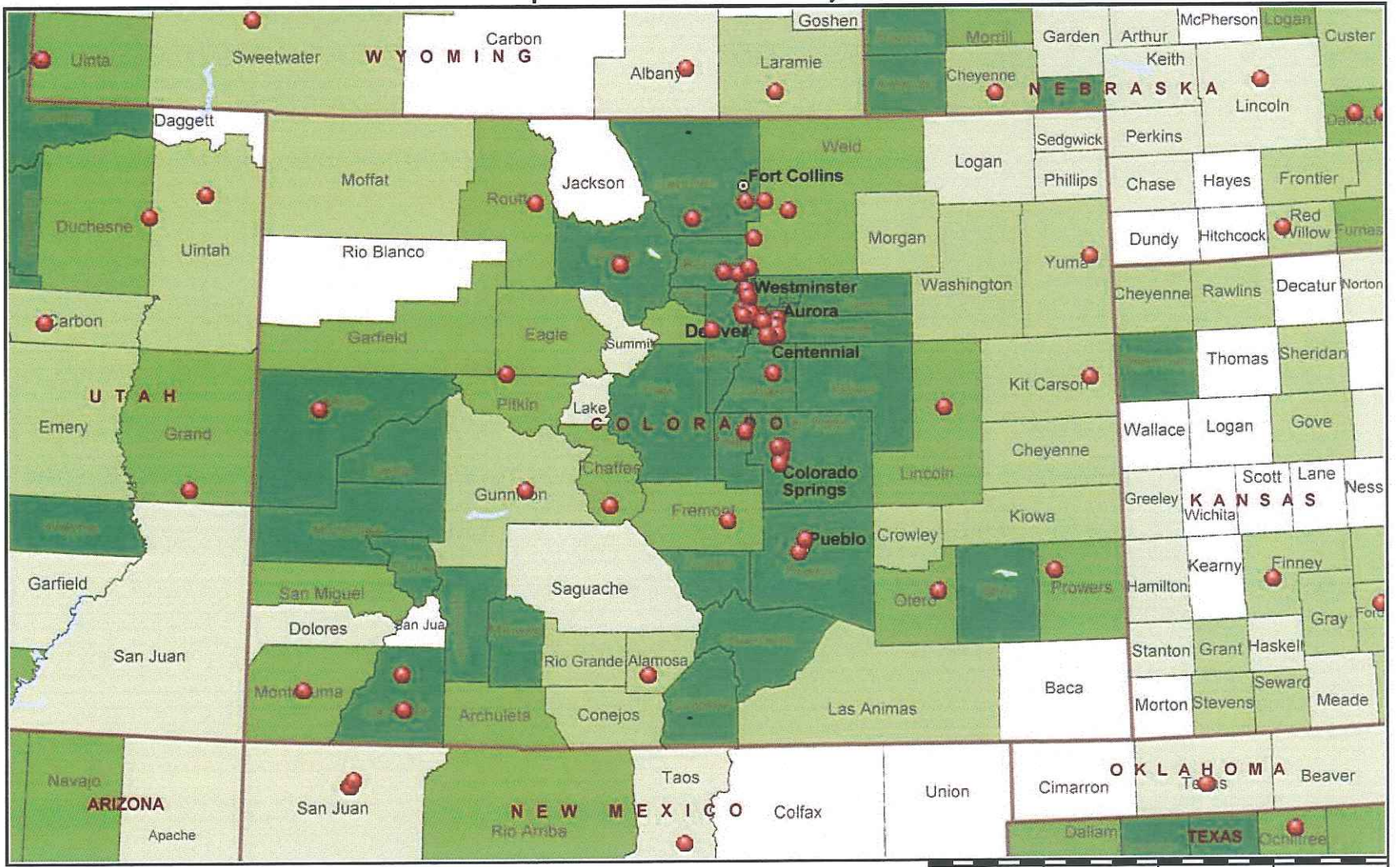
2012 Medicare Hospice Utilization by County

- >50%
- 40-49...
- 30-39...
- 20-29...
- <20%



2012 Medicare Hospice Utilization x County - Colorado

- Pushpins**
● Hospices
- 2012 Medicare Hospice Utilization by County**
- >50%
 - 40-49%
 - 30-39%
 - 20-29%
 - <20%

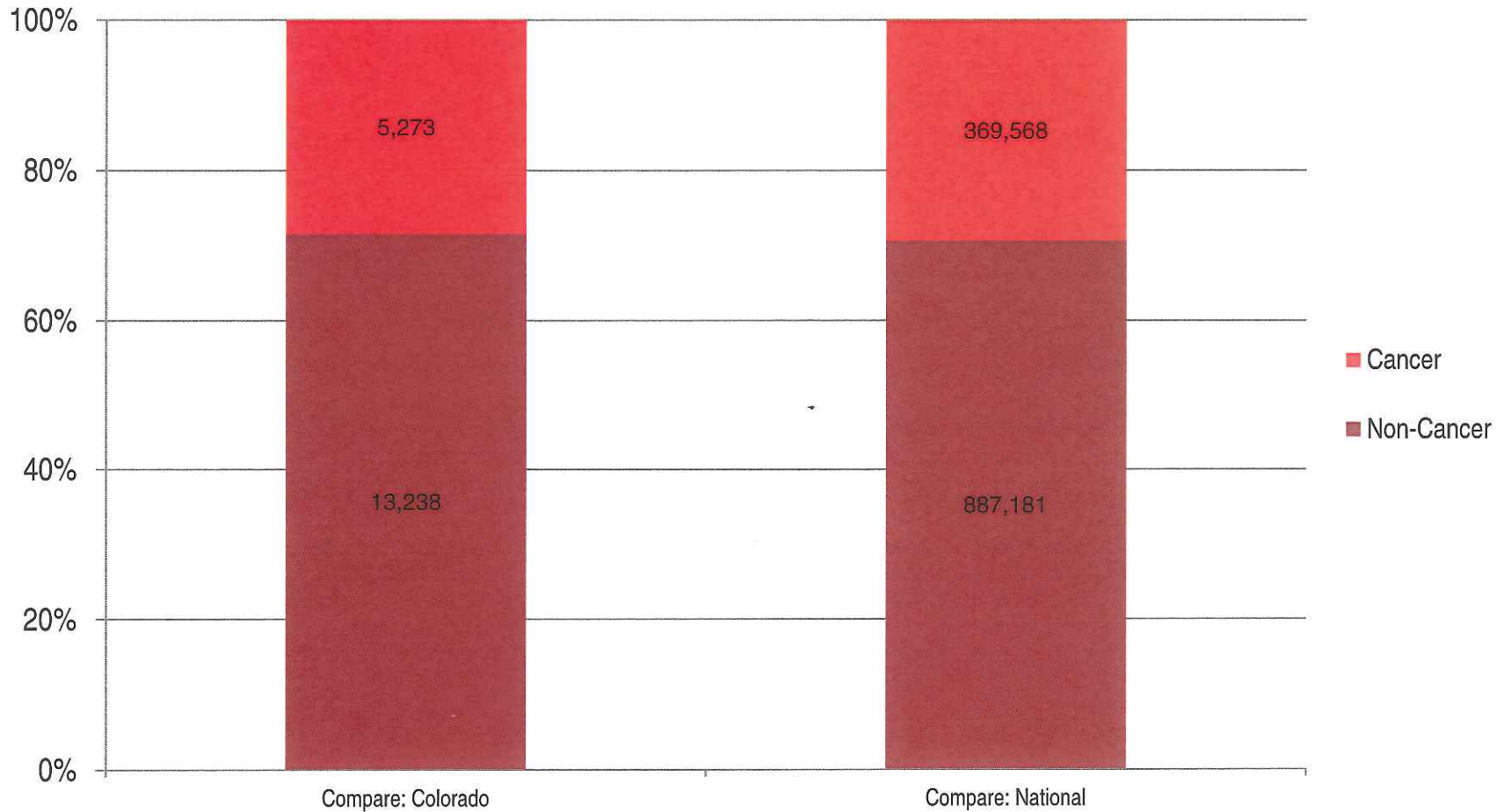


Hospice Utilization= Medicare Hospice Deaths / Medicare Total Deaths. © www.HospiceAnalytics.com 1/6/14 0 mi 50 100 150 200

2012 Demographics & Hospice Utilization

	Colorado	National
Population	5,187,582	313,878,238
Total Deaths	32,355	2,512,991
Medicare Beneficiaries	724,854	52,209,911
Medicare Beneficiary Deaths	25,516	2,022,574
Medicare Hospice Beneficiary Admissions	18,512 73% of Medicare deaths	1,257,735 62% of Medicare deaths
Medicare Hospice Beneficiary Deaths	13,296 52.1% of Medicare deaths	897,379 44.4% of Medicare deaths
Medicare Hospice Total Days of Care	1,369,437 Days	89,817,308 Days
Medicare Hospice Mean Days / Beneficiary	74 Days	71 Days
Medicare Hospice Median Days / Beneficiary	29 Days	25 Days
Medicare Hospice Total Payments	\$232,302,254	\$14,882,743,293
Medicare Hospice Mean Payment / Beneficiary	\$12,549	\$11,842

2012 Medicare Hospice Beneficiaries Cancer / Non-Cancer In ANY Diagnosis Field

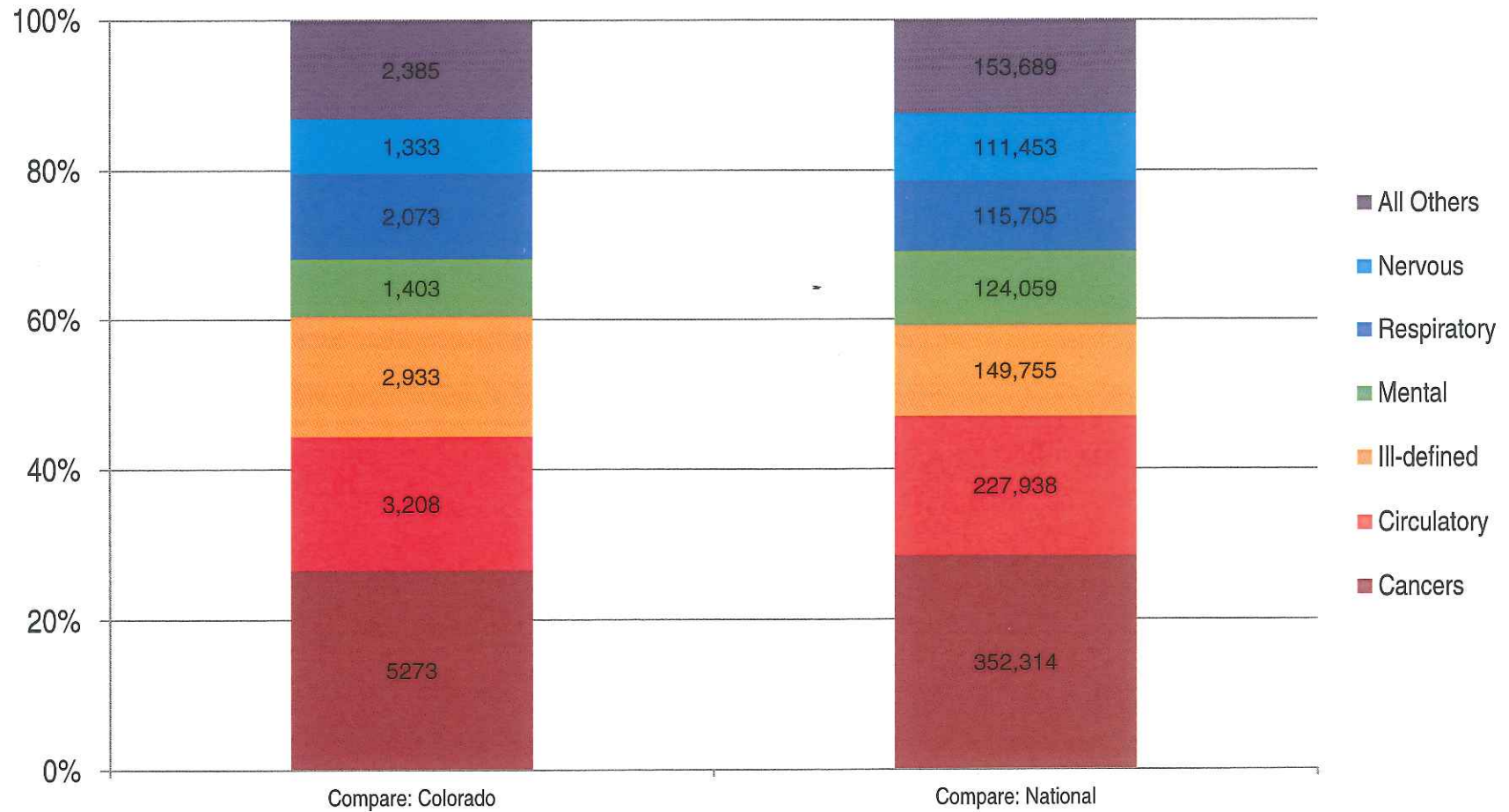


▶ Note: Your state=28% cancer diagnoses compared to national=29%.

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2012 Medicare Hospice Beneficiaries

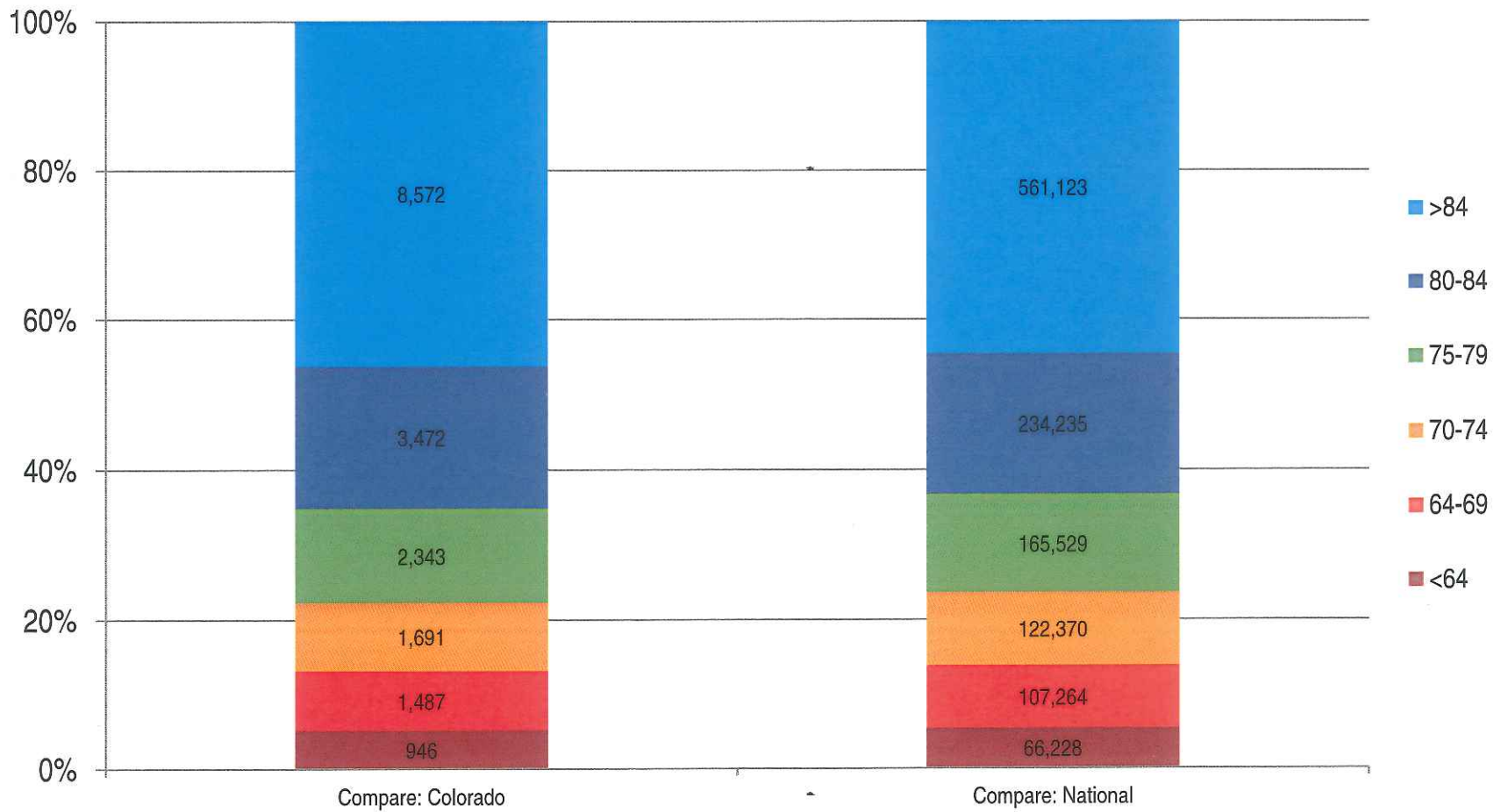
Top Six ICD-9 PRIMARY Diagnoses (out of 19 categories)



► Note: Your state=16% ill-defined diagnoses compared to national=12%.

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2012 Medicare Hospice Beneficiaries Age Categories

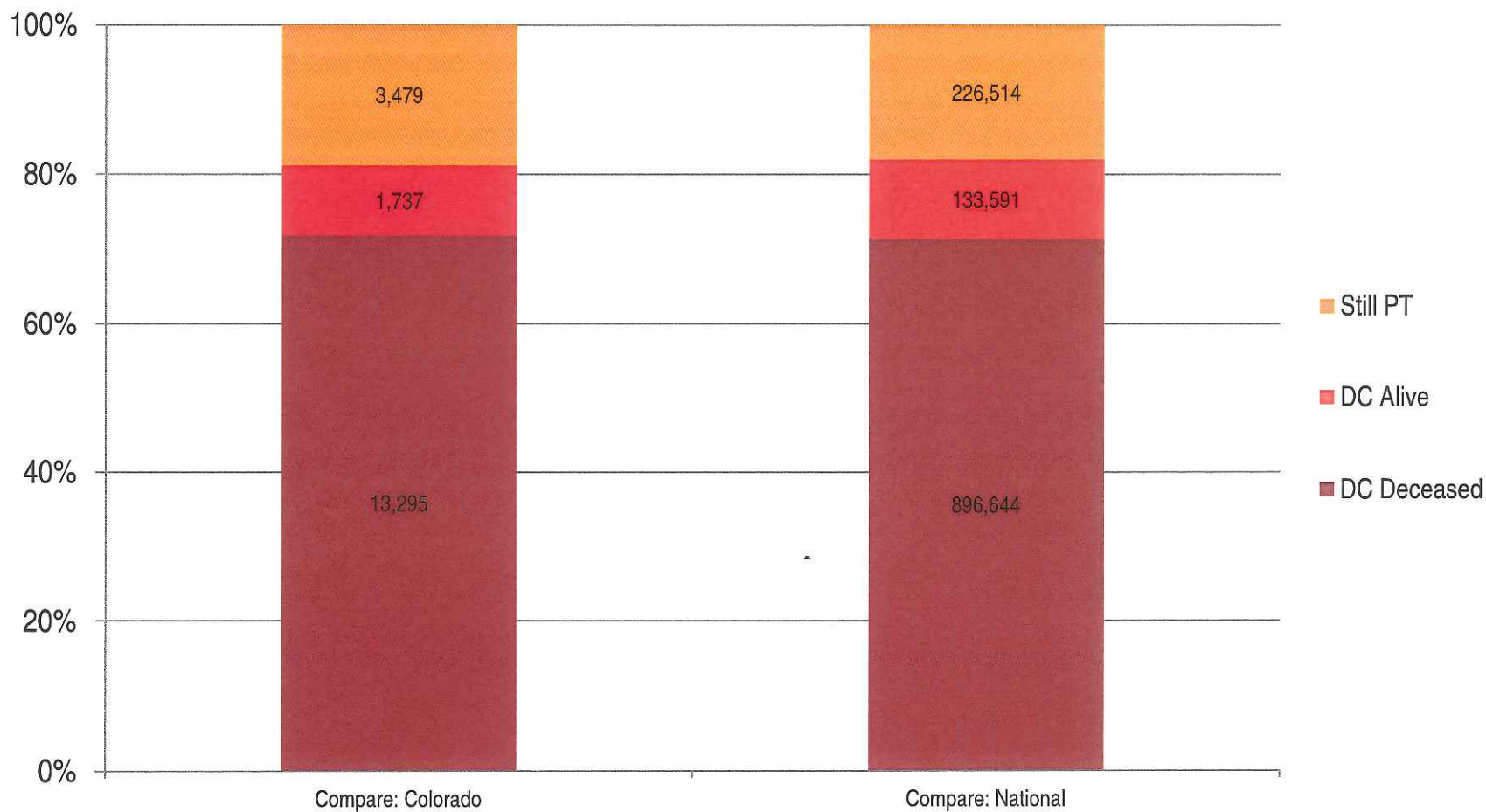




Child Life Limiting Illness Waiver

- ▶ Program Description
- ▶ Task force with COCHP members have completed drafts of rules that will be implemented by CDPHE
- ▶ Estimated time of Implementation

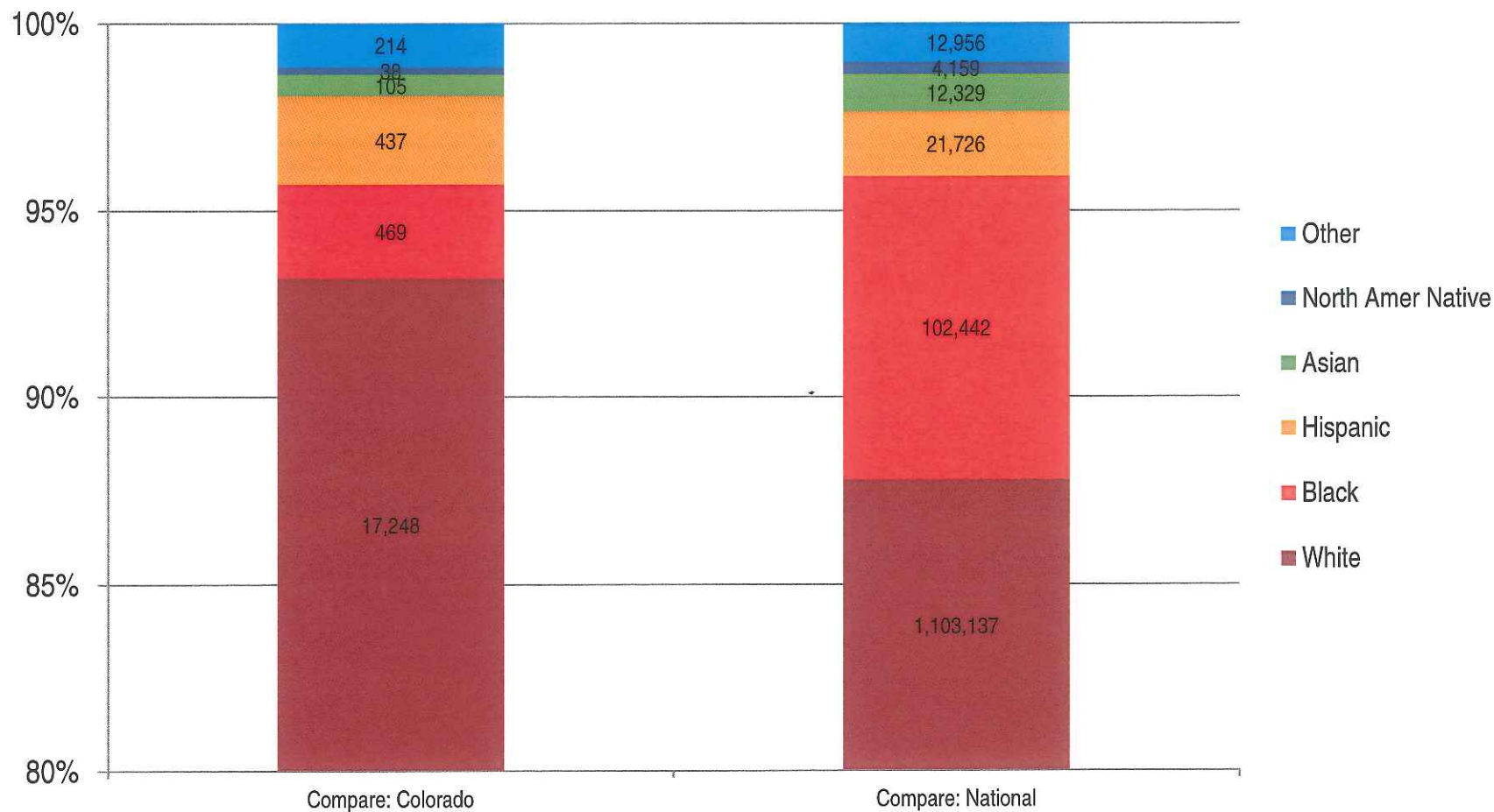
2012 Medicare Hospice Beneficiaries Status at Discharge



▶ **Note:** Your state=12% discharged alive compared to national=13%.

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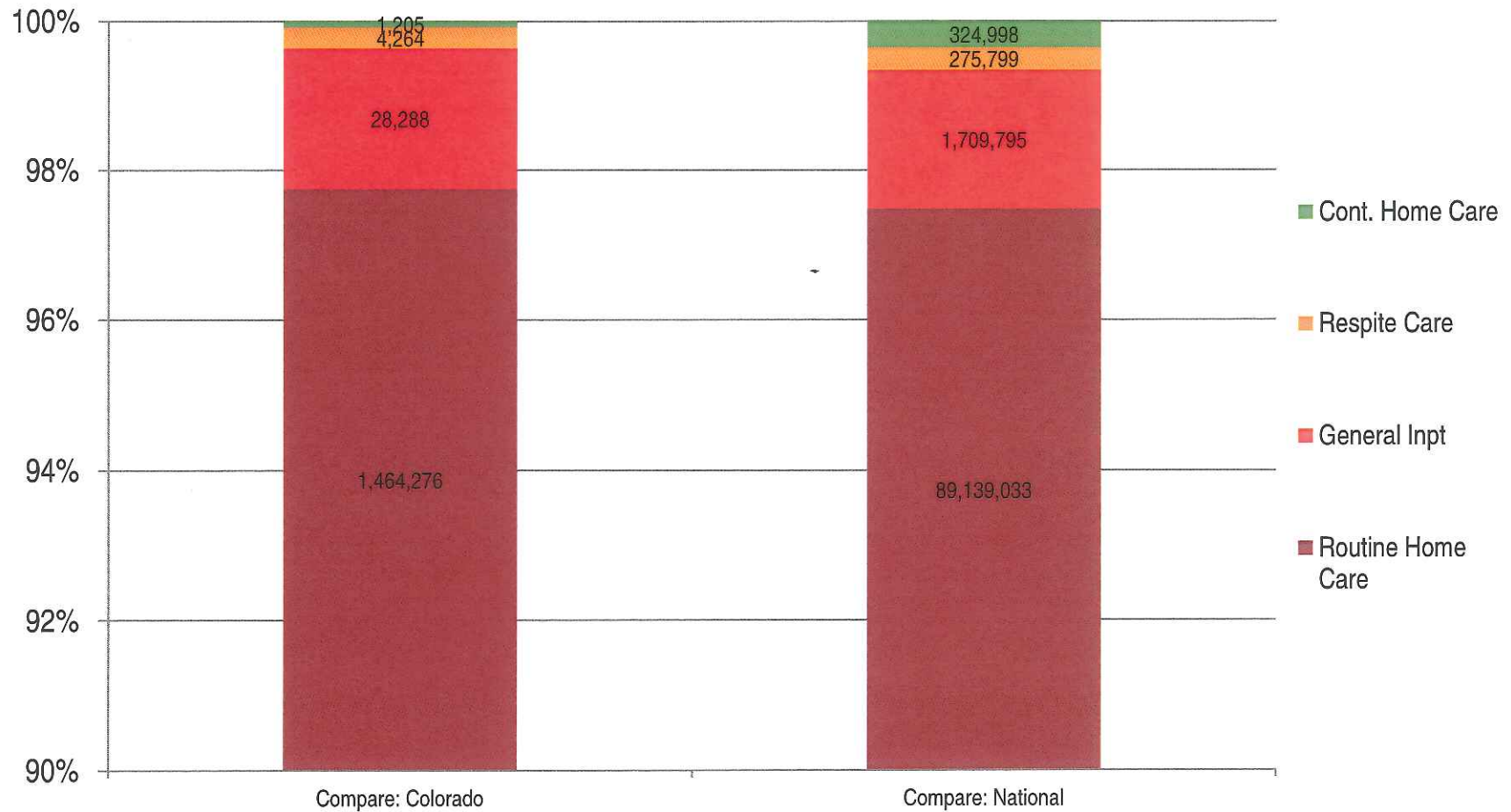
2012 Medicare Hospice Beneficiaries Race



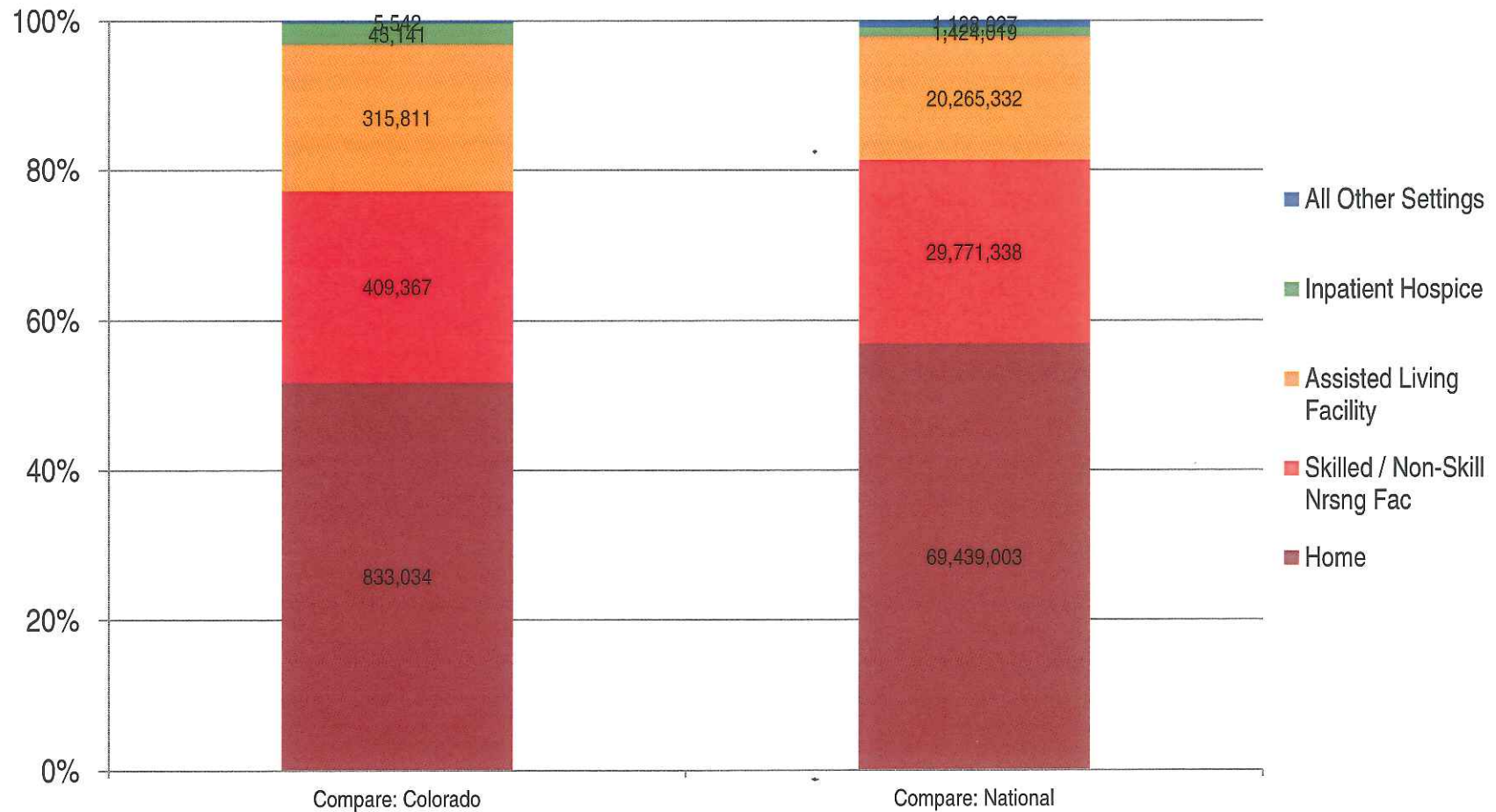
▶ **Note:** Your state= 7% minority beneficiaries compared to national=12%.

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2012 Medicare Hospice Beneficiaries Levels of Care (days)



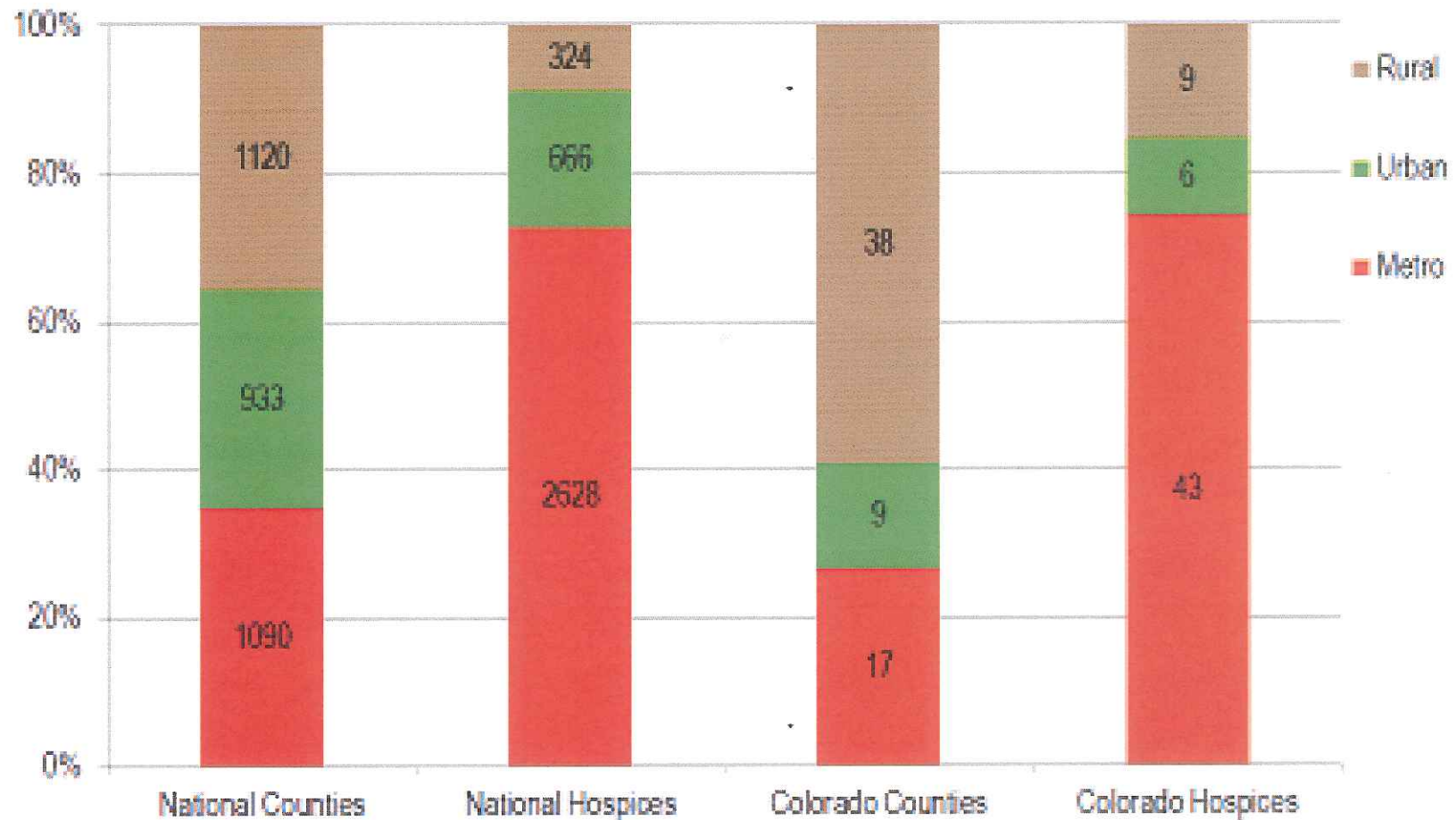
2012 Medicare Hospice Beneficiaries Locations of Care (days)



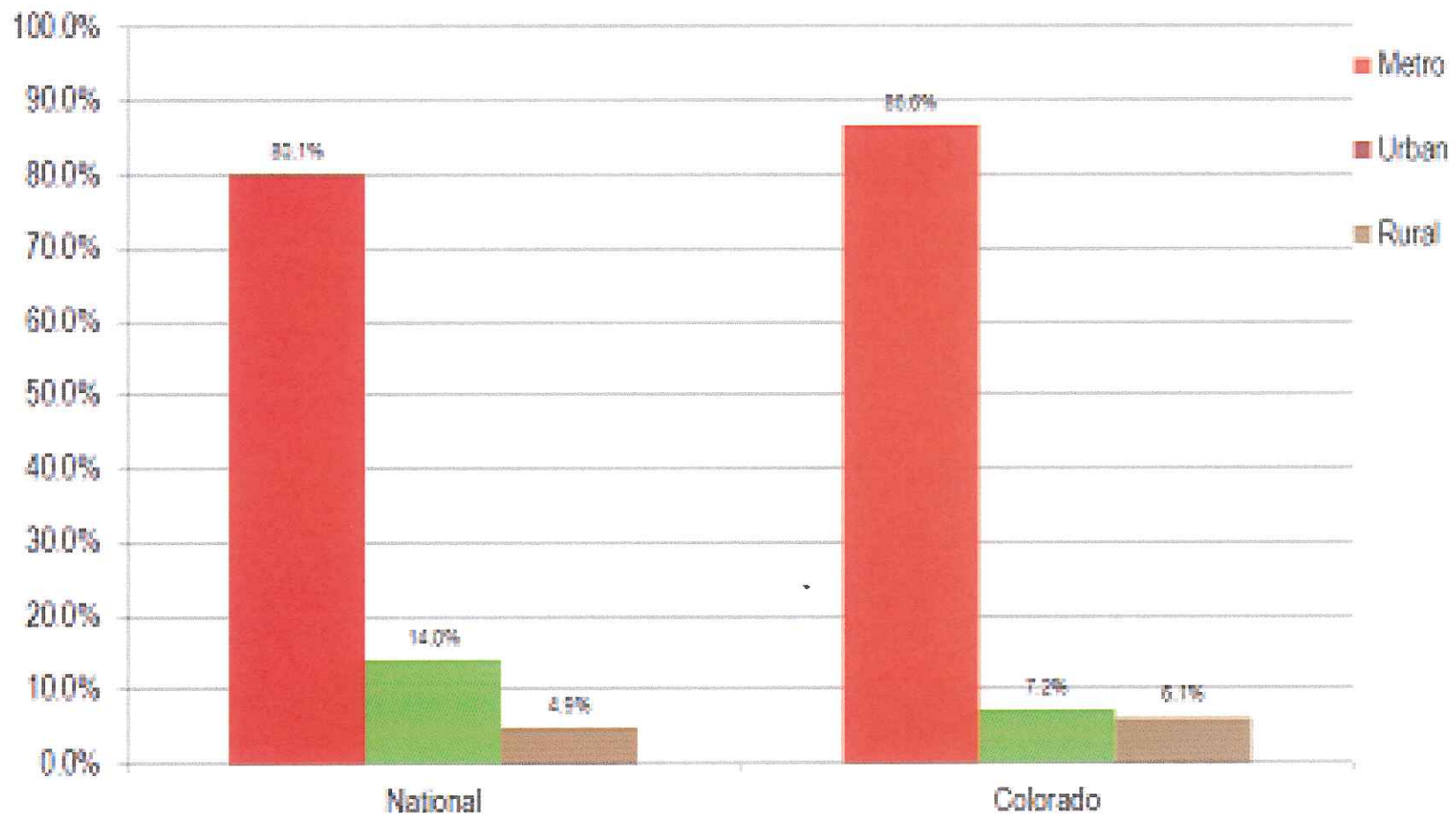
▶ **Note:** Your state=25% care in nursing facilities compared to national=24%.

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Percentage of 2012 Medicare Certified Hospices Located in Metropolitan, Urban, and Rural Counties

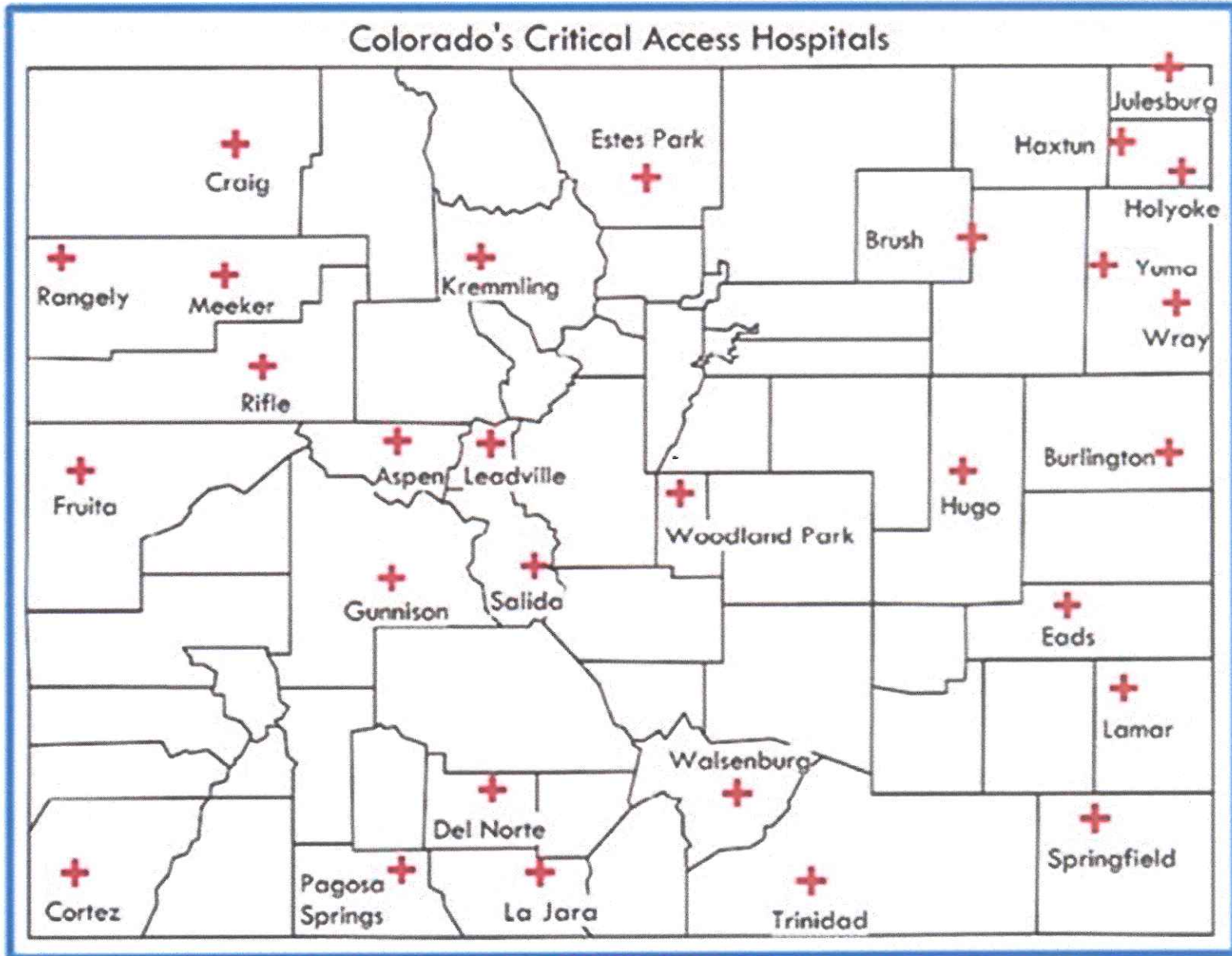


Percentage of 2012 Medicare Hospice Utilization by Beneficiaries Residing in Metropolitan, Urban, and Rural Counties



Rural Health Care Practitioner Limitation

While RHC practitioners are eligible to furnish and bill for hospice services when they are not working at the RHC, they cannot furnish and bill for hospice services as an RHC practitioner because RHCs are not authorized to be attending physicians for hospice





Challenges Facing Rural Hospices

- Large Service Area / Exorbitant Windshield Time
- Lack 24 hr. Pharmacies or Durable Medical Equipment Delivery
- Rulemaking Lacks Rural / Frontier Perspective
- Finite Resources
- Interdisciplinary Team may include farm, ranch or crop planning
- Aging Workforce – Limited Qualified Personnel
- Reimbursement Lower than Urban
- Multi-dimensional Community Resource
- No Anonymity – Calls to Staff's Homes
- Accessibility of Caregivers
- Limited Educational Opportunities
- Traveling Physicians Unfamiliar With Patients and/or Hospice
- Rulemaking Lacks Rural / Frontier Perspective
- Limited Snowplows N-S HWYs 7p -7a – Dirt Roads



Challenges Facing Hospices

Federal Regulatory Scrutiny

Face to Face Visits

Long Length of Stay Patients

Skilled Nursing Facility Based Patients

Elimination of Death Diagnosis Codes

Declining Length of Stay

Emergency death care

Viability of small/medium Not – For – Profit

Volunteer Impact – No Reimbursement

Recruitment Challenge

Volunteers

Qualified Personnel

Access to Caregivers



Challenges Facing Hospices

REIMBURSEMENT CUTS

Budget Neutrality Adjustment Factor resulting in a 4.2 % reduction

Productivity Cut of 3% -result in 11.8% over ten years

Sequestration 2%

Hospice is Medicare-centric, what Medicare does, significantly impacts hospice operations



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Opportunities For Hospices

Innovate with Current Colorado Medicaid expansion and Dually-Eligible projects:

ACC, ACO, RCCOS

Demonstrate Value

Care Coordination systems

Evidence-based clinical programs

Explore risk-sharing with other providers utilizing value based methodology

Telehealth



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Thank you!

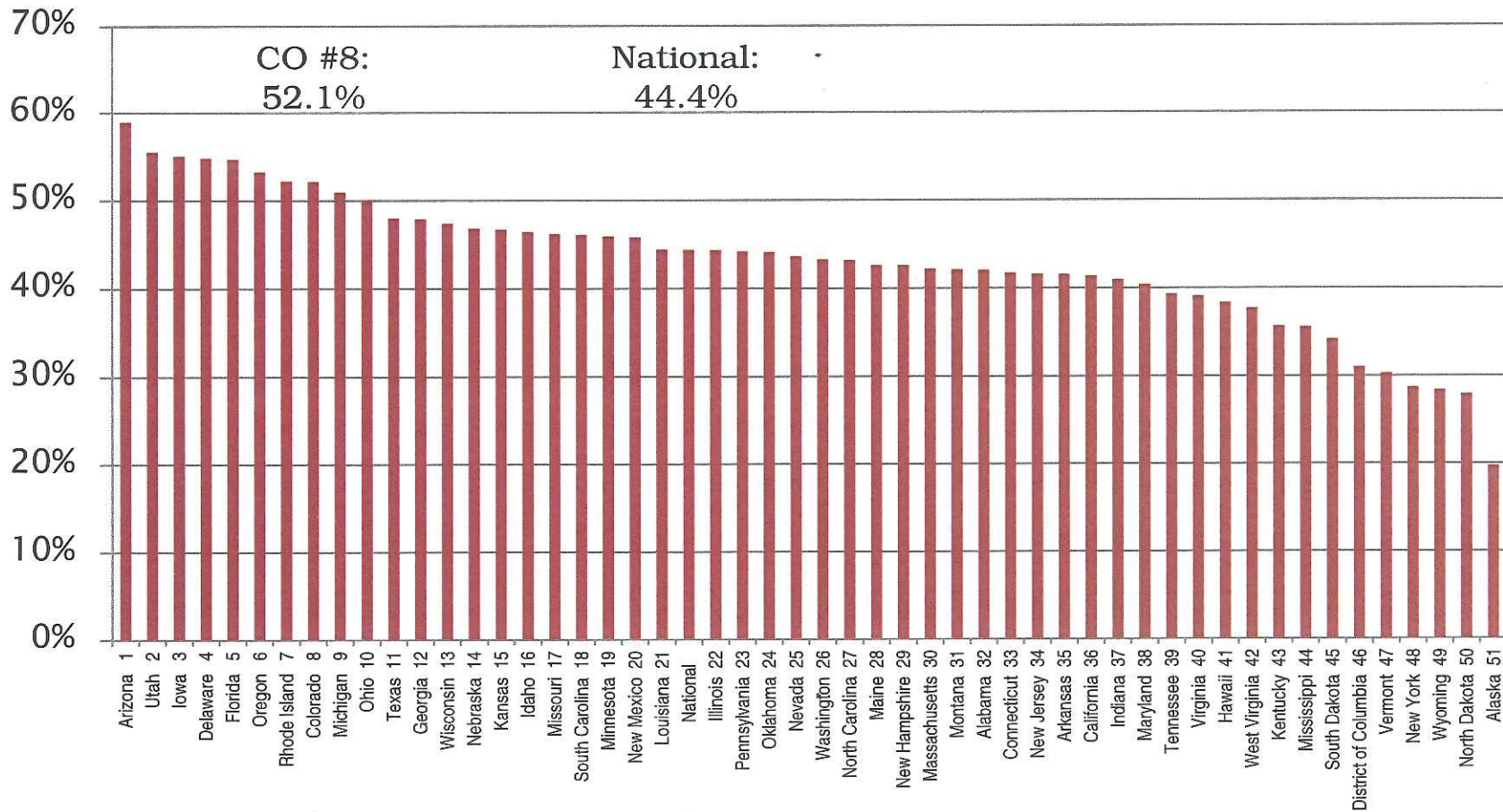
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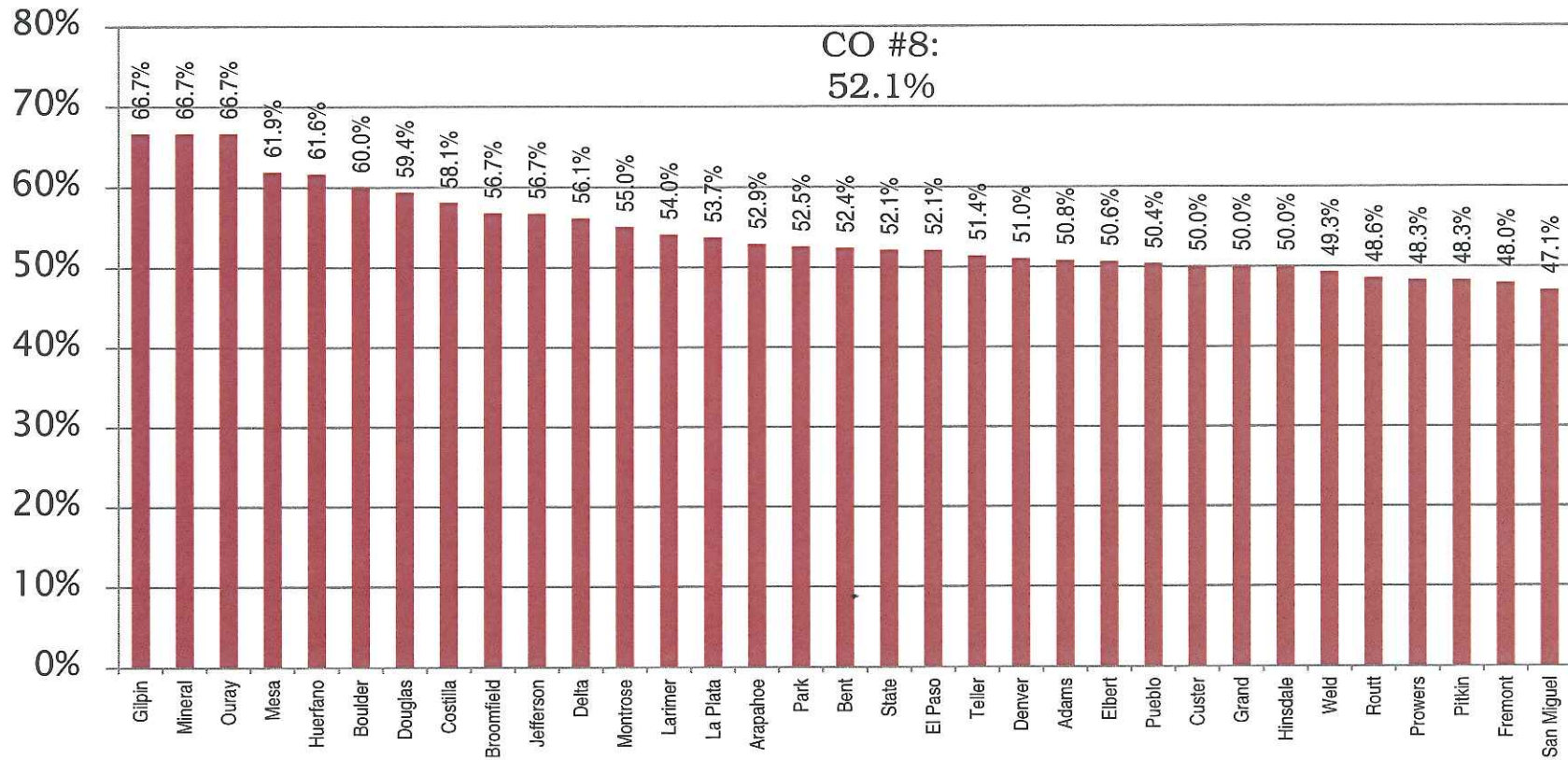
Edie Busam – Ebusam@Aponte-busam.com

2012 Hospice Utilization (Medicare Hospice Deaths / Total Medicare Deaths)



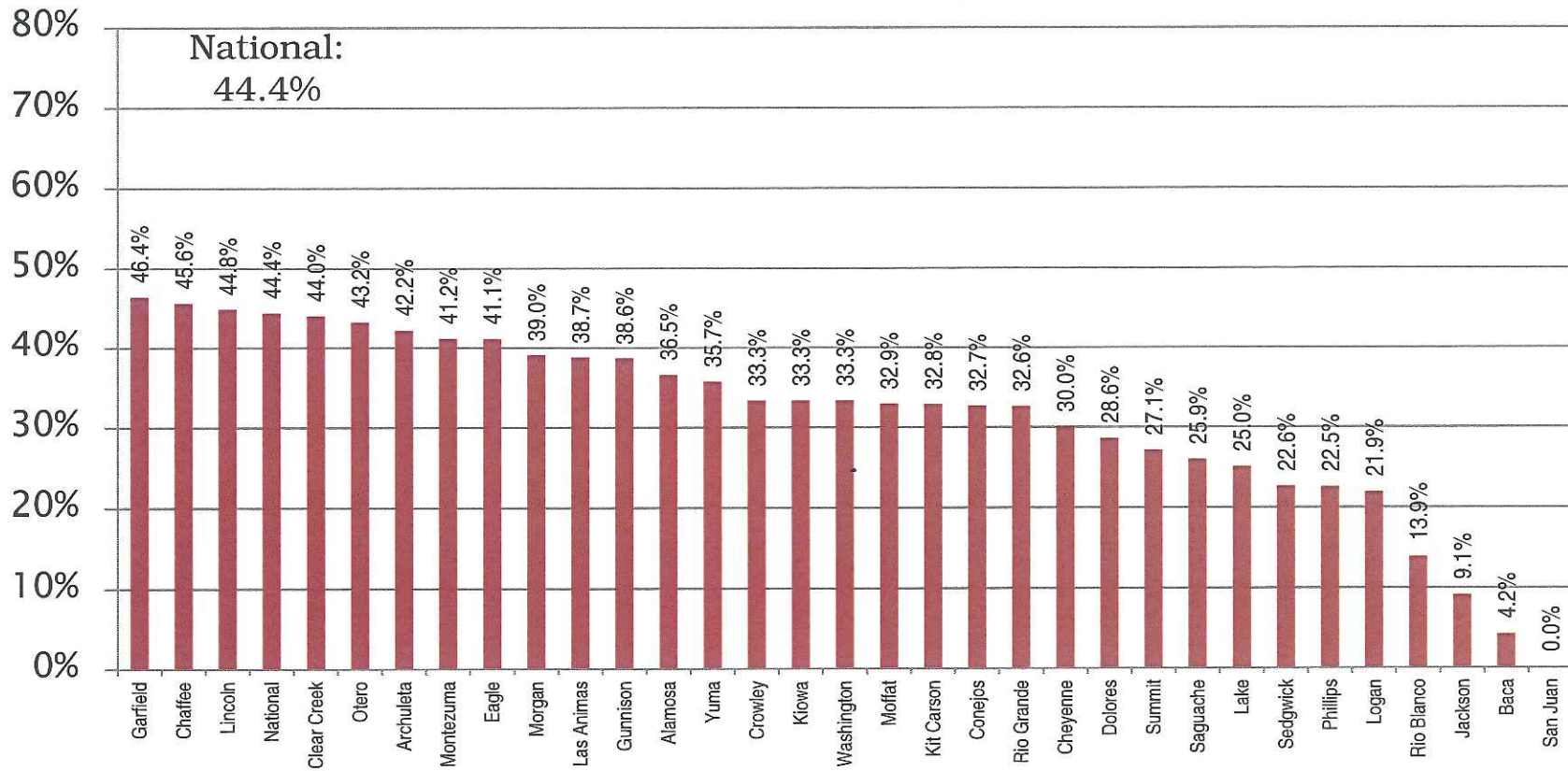
2012 Hospice Utilization x County – CO (slide 1/2)

(Medicare Hospice Deaths / Total Medicare Deaths)



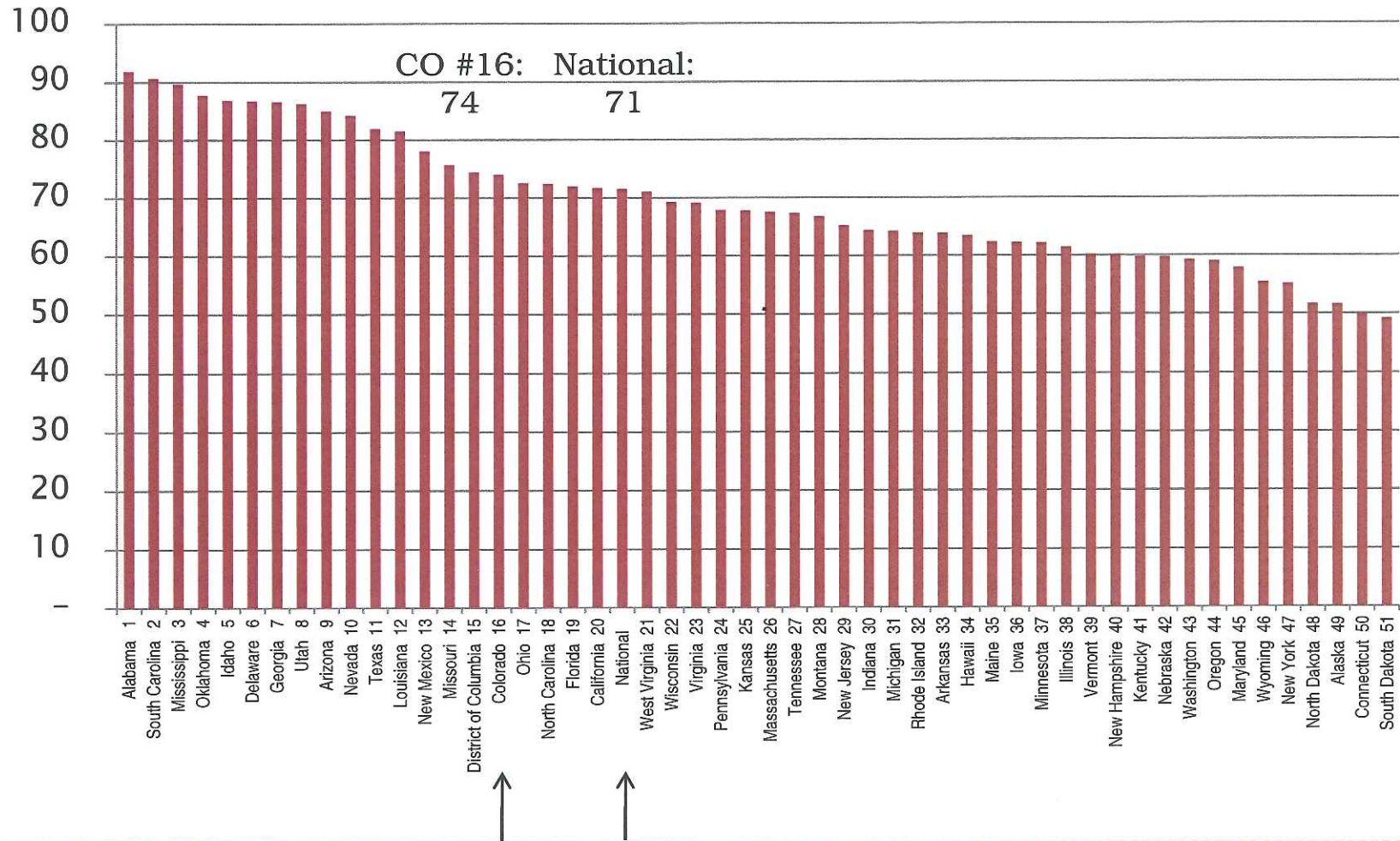
2012 Hospice Utilization x County – CO (slide 2/2)

(Medicare Hospice Deaths / Total Medicare Deaths)

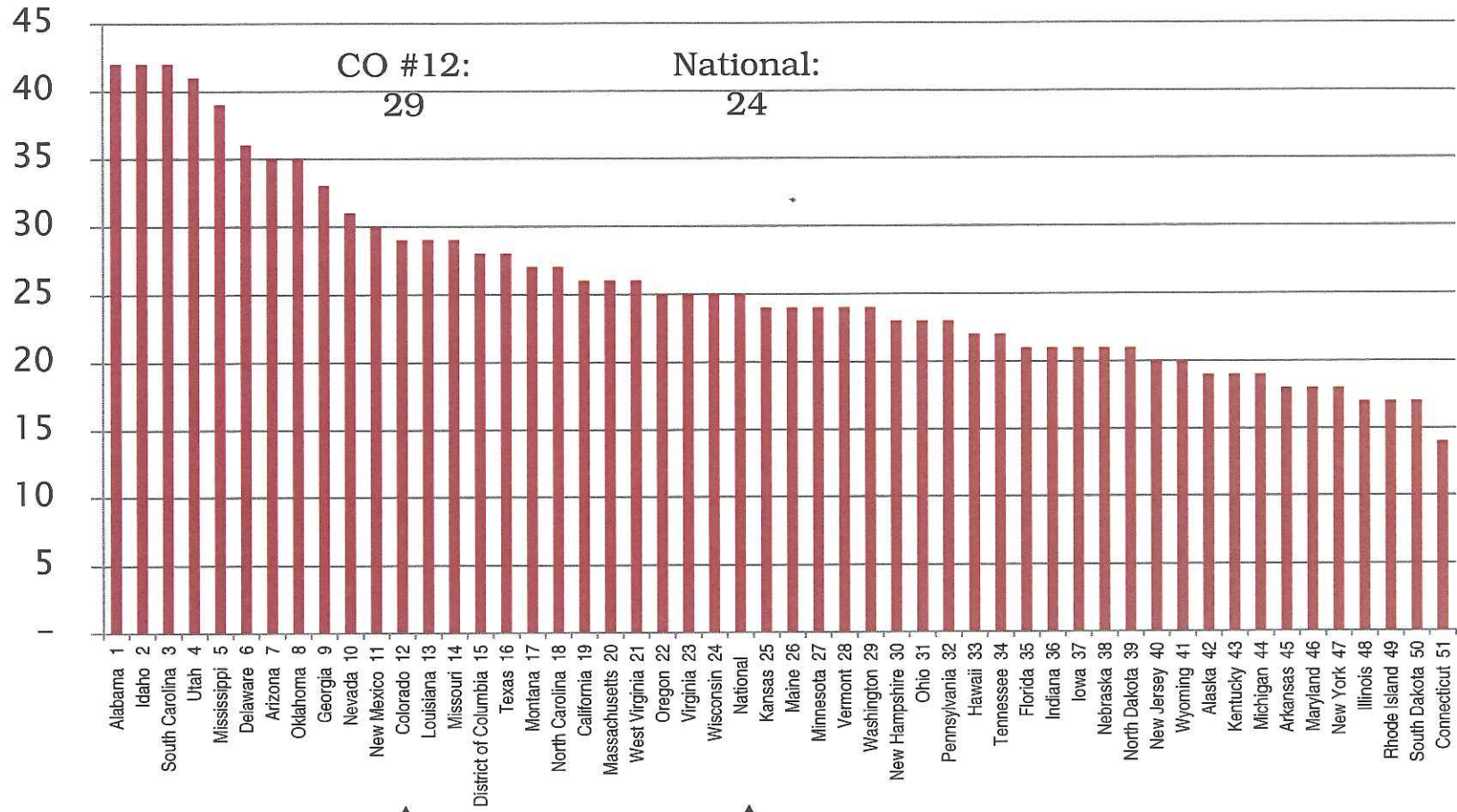


Possible reporting errors

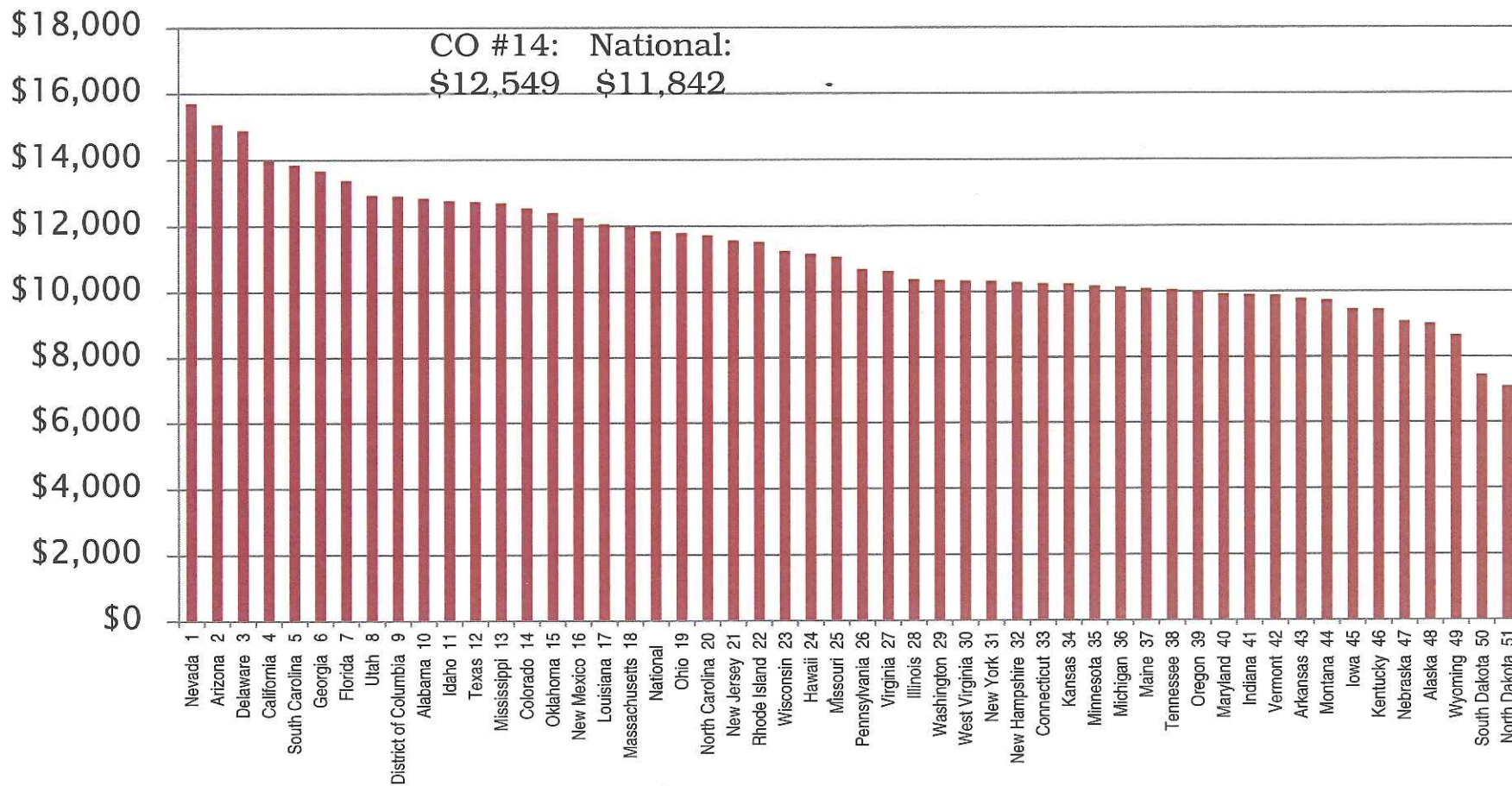
2012 Medicare Hospice Mean Days of Care / Beneficiary



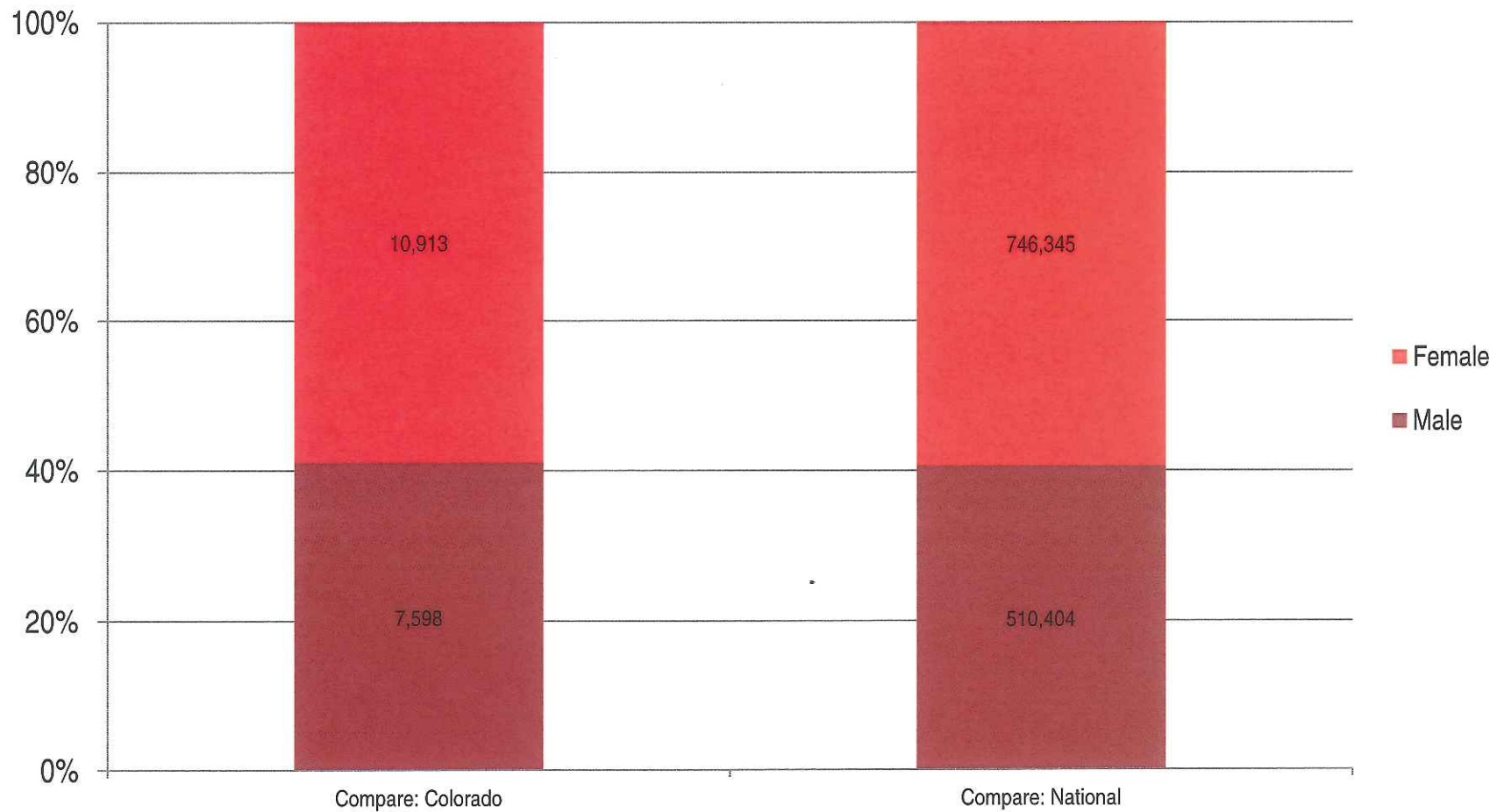
2012 Medicare Hospice Median Days of Care / Beneficiary



2012 Mean Medicare Hospice Payments / Beneficiary



2012 Medicare Hospice Beneficiaries Gender



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THE CARE SPAN

Hospice Enrollment Saves Money For Medicare And Improves Care Quality Across A Number Of Different Lengths-Of-Stay

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R. Sean Morrison is a tenured professor in the Brookdale Department of Geriatrics and Palliative Medicine, Icahn School of Medicine at Mount Sinai; the director of the school's Hertzberg Palliative Care Institute; and the Herman Merkin Professor of Palliative Care.

ABSTRACT Despite its demonstrated potential to both improve quality of care and lower costs, the Medicare hospice benefit has been seen as producing savings only for patients enrolled 53–105 days before death. Using data from the Health and Retirement Study, 2002–08, and individual Medicare claims, and overcoming limitations of previous work, we found \$2,561 in savings to Medicare for each patient enrolled in hospice 53–105 days before death, compared to a matched, nonhospice control. Even higher savings were seen, however, with more common, shorter enrollment periods: \$2,650, \$5,040, and \$6,430 per patient enrolled 1–7, 8–14, and 15–30 days prior to death, respectively. Within all periods examined, hospice patients also had significantly lower rates of hospital service use and in-hospital death than matched controls. Instead of attempting to limit Medicare hospice participation, the Centers for Medicare and Medicaid Services should focus on ensuring the timely enrollment of qualified patients who desire the benefit.

As of 2012, 5 percent of the most seriously ill Americans accounted for more than 50 percent of health care spending, with most costs incurred in the last year of life as a result of hospital-based treatment.^{1–3} Despite those high and escalating health care costs, numerous studies demonstrate that seriously ill patients and their families receive suboptimal care, characterized by untreated pain and physical symptoms, spiritual and emotional distress, high family caregiving burdens, and unnecessary or unwanted treatments inconsistent with their previously stated wishes and goals for care.^{4–11}

Hospice has been shown to greatly improve the quality of care for patients and their families near the end of life. Under Medicare Part A, the hospice benefit covers palliative care services delivered by a team of professionals, including

physicians, nurses, social workers, chaplains, home health aides, and volunteers, to dying patients—that is, patients with a life expectancy of six months or less—who are willing to forgo curative treatments.¹²

Studies have consistently demonstrated that hospice is associated with reductions in symptom distress, improved outcomes for caregivers, and high patient and family satisfaction.^{8,13–15} Recent evidence also indicates that continuous hospice use reduces the use of hospital-based services—including emergency department visits and intensive care unit stays—and the likelihood of death in the hospital.¹⁶

The number of hospices has increased rapidly over the past twenty years, making hospice programs available to almost all eligible Americans.¹⁷ Medicare hospice spending has risen considerably with the growth and development of new hospice programs, particularly in

the for-profit sector, and the resulting rise in the number of patients accessing the hospice benefit.^{18,19}

This increase in spending has led the Centers for Medicare and Medicaid Services to explore methods of containing Medicare hospice spending, such as through payment reform or investigation of hospices with long lengths-of-stay.²⁰ What is not known, however, is how the length of hospice enrollment relates to overall Medicare spending at the end of life—including what periods of enrollment might decrease net Medicare costs as compared to usual care and, if they do, by how much.

The length of hospice enrollment that might achieve the greatest cost savings to Medicare is the subject of considerable debate. Some scholars have argued that beneficiaries must be enrolled in hospice longer than current practice to achieve financial savings under Medicare.^{21–23} Others have found that longer hospice length-of-stay is associated with higher Medicare spending—particularly for those with noncancer diagnoses.²⁴

In the largest and most rigorous study to date, Donald Taylor and colleagues observed that hospice enrollment 53–105 days before death maximized Medicare savings compared to usual nonhospice care.²³ However, this study has been criticized for its inability to control for factors not present in Medicare claims that are known to be associated with higher costs, such as patients' functional status.²⁵

Another criticism cited notable differences between the hospice and control groups: Hospice users had greater costs in the period preceding hospice enrollment compared with their matched controls.²⁵ Such limitations cast doubt on the validity of the reported findings regarding both the timing of hospice enrollment to maximize savings and the magnitude of those savings.

Health care reform in the past decade has sharpened the focus on increasing the value of health care and on forging effective policy to guide that process. A clearer understanding of the value of existing Medicare programs thus is required. In this study we aimed to better understand the value of Medicare hospice by examining the relationship between length of hospice enrollment and overall Medicare costs.

Specifically, we compared Medicare costs for patients receiving hospice care to those of patients not receiving hospice care across four different periods of hospice enrollment: 1–7, 8–14, and 15–30 days before death, the most common enrollment periods, and 53–105 days before death. In addition, we investigated both the source of hospice-related savings, if any, such

as decreased hospital admissions and fewer hospital and intensive care unit days, and the impact of hospice on selected measures of quality of care at the end of life, including thirty-day re-admission rates and in-hospital death rates.

We used the rich survey data from the Health and Retirement Study, in combination with individual Medicare claims, and adjusted for previously unmeasured factors known to influence costs, such as functional status and social characteristics. These analyses revealed that net savings to Medicare are not limited to hospice enrollment 53–105 days prior to death but are also observed across the most common enrollment periods: 1–7, 8–14, and 15–30 days before death.

Study Data And Methods

We examined data from the Health and Retirement Study, a longitudinal survey administered to a nationally representative cohort of adults over age fifty. Serial interviews are conducted every two years and include information on participants' demographic, economic, social, and functional characteristics. Each interview cycle, participants who died since the last interview are identified, and dates of death are drawn from the National Death Index. More than 80 percent of participants provided authorization to merge their survey data with Medicare claims,^{26,27} a necessary step in the present analysis.

SAMPLE We sampled all survey participants who died during 2002–08. We included those age sixty-five or older who had continuous Medicare Parts A and B coverage for twelve months prior to death, while excluding those enrolled with Medicare managed care (for whom claims data were therefore incomplete). This methodology yielded a final sample of 3,069 people, both enrolled and not enrolled in Medicare hospice prior to death.

For the analyses of each enrollment period, we also excluded those who enrolled in hospice prior to the study outcome period (7, 14, 30, and 105 days, respectively) and those whose final predeath interview took place within the study period.

MEASURES We categorized periods of enrollment in Medicare hospice before death based on the number of days prior to death that enrollment occurred, as follows: 53–105 days (the period expected to maximize reduction in Medicare spending),²³ 15–30 days, 8–14 days, and 1–7 days. For each period, the primary outcome was total Medicare spending measured from the beginning of the enrollment period to death.

We adjusted expenditures for inflation (2008

dollars) and for geographic differences in Medicare prices. We also examined six other measures of care utilization: hospital admissions, hospital and intensive care unit days, intensive care unit admission (any or none), thirty-day hospital readmission (any or none), and in-hospital death.

We selected independent variables based on our conceptual framework, "Determinants of Treatment Intensity for Patients with Serious Illness," which postulates that treatment intensity is influenced by both regional and patient or family determinants.²⁸ We selected variables that could serve as empirical measures of each construct in the conceptual model: age; sex; race or ethnicity; education; net worth; marital status; insurance coverage; functional status; residential status; medical conditions; and regional supply of hospital beds, specialist physicians, and local hospital care intensity.

Variables were drawn from Health and Retirement Study data, individual Medicare claims, and the *Dartmouth Atlas of Health Care*.²⁹ Additional details are provided in the online Appendix.³⁰

STATISTICAL ANALYSES We employed doubly robust methods combining propensity score matching and regression adjustment.³¹ We first determined hospice enrollment in relation to date of death from individual Medicare hospice claims. For each enrollment period, we then developed propensity scores for hospice and non-hospice patients to estimate each subject's likelihood of hospice enrollment during the specified period.

We used logistic regression to estimate the likelihood of hospice enrollment using all of the independent variables, described above, that may be associated with treatment intensity. Additionally, we included as a covariate the number of hospital days prior to the target hospice enrollment period up to six months before death, to account for prior utilization as a predictor of subsequent utilization.

We then matched hospice enrollees to one or many nonhospice controls within ± 0.02 of the standard deviation of the propensity scores. Unmatched subjects were excluded. This procedure was completed for each enrollment period, resulting in the following sample sizes: 1,801 (1–7 days), 1,506 (8–14 days), 1,749 (15–30 days), and 1,492 (53–105 days).

We examined bivariate comparisons of unadjusted measures of spending and use, as well as patient characteristics, using the matched, weighted samples. We then conducted multivariable regressions for each of the outcome measures, once again adjusting for all independent variables.

Following the estimation of each fully adjusted regression, we examined the adjusted means, including 95 percent confidence intervals, and incremental effects in outcomes between groups of hospice enrollees and matched nonhospice controls. Additional details are provided in the online Appendix.³⁰ Analyses were conducted using the statistical analysis software Stata, version 11.

LIMITATIONS Three study limitations are worth noting. First, the data are retrospective, following back from date of death—that is, we employed a mortality follow-back design. This retrospective approach artificially removed the prognostic uncertainty faced by patients and physicians when making treatment decisions. The mortality follow-back design and our inability to randomly assign patients to treatment groups may therefore have biased the results.

However, by using detailed survey data, propensity score matching procedures, and multivariable regression to adjust the results, we minimized the effect of this bias more than could have been achieved through the use of administrative claims data alone.

Second, we were unable to factor into the analysis direct measures of individual preferences and goals of care. We did, however, adjust for all available characteristics known to be potentially associated with treatment preferences, such as education, race, and debility.

Third, we were not able to fully assess quality of care, which, in combination with cost, determines value. We included among our secondary outcomes two markers of potentially low-quality care: thirty-day hospital readmission and in-hospital death. In addition, many prior studies have demonstrated high quality of and satisfaction with hospice and palliative care.^{8,13–15,32–36}

Study Results

SUBJECT CHARACTERISTICS Among the 3,069 subjects, 1,064 (35 percent) were enrolled in hospice prior to death. The mean hospice length-of-stay was 49 days (median 16 days, range 1–362 days). Patient and regional characteristics of subjects are reported in Appendix Exhibit 1.³⁰ Subjects' mean age at death was eighty-three years. Subjects were predominantly non-Hispanic white (80 percent), female (56 percent), covered by supplemental private insurance (50 percent), and educated through high school or beyond (58 percent). Fifty-eight percent reported needing no assistance with basic activities of daily living leading up to the study period, while 21 percent resided in a nursing home. Twenty-three percent were eligible for both Medicare and Medicaid.

HOSPICE ENROLLMENT FOR 53–105 DAYS

Eighty-eight (70 percent) subjects enrolled in hospice for 53–105 days prior to death were matched to 1,404 decedents not enrolled in hospice for 53 days or more prior to death. There were no significant differences in patient or regional characteristics between the two groups (Appendix Exhibit 2).³⁰

In fully adjusted analyses of outcomes spanning the last 105 days of life, subjects enrolled in hospice for 53–105 days prior to death had significantly lower mean total Medicare expenditures than matched controls (\$22,083 versus \$24,644, $p < 0.01$) (Exhibit 1). Hospice enrollees during this period also had fewer hospital admissions, intensive care unit admissions, hospital days, thirty-day hospital readmissions, and in-hospital deaths (all $p < 0.01$) compared to nonhospice enrollees. Differences between the groups' total intensive care unit days were not significant in the fully adjusted model ($p = 0.11$). Additional details are provided in Appendix Exhibit 3.³⁰

HOSPICE ENROLLMENT FOR 15–30 DAYS One hundred thirty-three (80 percent) subjects enrolled in hospice for 15–30 days prior to death were matched to 1,616 decedents not enrolled in hospice for 15 days or more prior to death. There were no significant differences in patient or regional characteristics between the two groups (Appendix Exhibit 4).³⁰

In fully adjusted analysis of outcomes spanning the last thirty days of life, subjects enrolled in hospice for fifteen to thirty days prior to death had significantly lower average total Medicare expenditures than matched controls (\$10,383 versus \$16,814, $p < 0.01$) (Exhibit 1). Those enrolled in hospice during this period also had fewer hospital admissions, intensive care unit admissions, hospital days, intensive care unit days, thirty-day hospital readmissions, and in-hospital deaths (all $p < 0.05$). Additional details are provided in Appendix Exhibit 5.³⁰

HOSPICE ENROLLMENT FOR 8–14 DAYS Ninety (70 percent) subjects enrolled in hospice for 8–14 days prior to death were matched to 1,416 decedents not enrolled in hospice for 8 days or more days prior to death. Again, we found no significant differences in patient or regional characteristics between the two groups (Appendix Exhibit 6).³⁰

In fully adjusted analysis of outcomes spanning the last fourteen days of life, subjects enrolled in hospice for eight to fourteen days prior to death had significantly lower average total Medicare expenditures than matched controls (\$5,698 versus \$10,738, $p < 0.01$) (Exhibit 1). Once again, we found that those enrolled in hospice during this period also had fewer hospital

admissions, intensive care unit admission, hospital days, and in-hospital deaths (all $p < 0.01$).

The hospice group had fewer intensive care unit days than the nonhospice group, but this difference did not reach statistical significance ($p = 0.11$). Additional details are provided in Appendix Exhibit 7.³⁰

HOSPICE ENROLLMENT FOR 1–7 DAYS Three hundred eight (80 percent) subjects enrolled in hospice for 1–7 days prior to death were matched to 1,493 decedents not enrolled in hospice for 7 days or more prior to death. There were no significant differences in patient or regional characteristics between the two groups (Appendix Exhibit 8).³⁰

In fully adjusted analysis of outcomes spanning the last seven days of life, subjects enrolled in hospice for one to seven days prior to death had significantly lower average total Medicare expenditures than matched controls (\$4,806 versus \$7,457, $p < 0.01$) (Exhibit 1). Consistent with those patterns observed in other enrollment periods, those enrolled in hospice during this period also had fewer hospital admissions, intensive care unit admissions, hospital days, intensive care unit days, and in-hospital deaths (all $p < 0.01$).

COMPARING OUTCOMES ACROSS HOSPICE ENROLLMENT PERIODS Exhibits 2–4 compare the incremental effects in outcomes between subjects enrolled in hospice and nonhospice matched controls across the study periods. The adjusted savings in total Medicare spending ranged from \$2,561 for those enrolled 53–105 days prior to death to \$6,430 for those enrolled 15–30 days (Exhibit 2).

The adjusted decrease in total hospital days ranged from 9.0 for those enrolled 53–105 days prior to death to 0.9 for those enrolled 1–7 days, and the decrease in intensive care unit days ranged from 4.9 for those enrolled 53–105 days to 0.5 days for those enrolled 1–7 days (Exhibit 3). The adjusted reduction in in-hospital deaths was similar across groups, and the adjusted reductions in intensive care unit admissions and thirty-day hospital readmissions were largest for those enrolled for 53–105 days (Exhibit 4).

Discussion

Medicare costs for patients enrolled in hospice were significantly lower than those of nonhospice enrollees across all periods studied: 1–7 days, 8–14 days, and 15–30 days, the most common enrollment periods prior to death, as well as 53–105 days, the period previously shown to maximize Medicare savings.²³

In addition, reductions in the use of hospital

EXHIBIT 1

Health Care Use At The End Of Life For Subjects Enrolled In Hospice And Matched Nonhospice Controls

Measure of use	Hospice group, adjusted means	Propensity score matched controls, adjusted means
TOTAL MEDICARE EXPENDITURES, 2008 US DOLLARS		
Last 105 days ^a	22,083	24,644 ^b
Last 30 days ^c	10,383	16,814 ^b
Last 14 days ^d	5,698	10,738 ^b
Last 7 days ^e	4,806	7,457 ^b
TOTAL HOSPITAL DAYS		
Last 105 days ^a	3.50	12.50 ^b
Last 30 days ^c	1.60	5.70 ^b
Last 14 days ^d	0.19	4.36 ^b
Last 7 days ^e	0.29	1.20 ^b
TOTAL HOSPITAL ADMISSIONS		
Last 105 days ^a	0.58	1.22 ^b
Last 30 days ^c	0.34	0.74 ^b
Last 14 days ^d	0.08	0.48 ^b
Last 7 days ^e	0.12	0.35 ^b
TOTAL ICU DAYS		
Last 105 days ^a	0.71	5.65
Last 30 days ^c	0.31	2.91 ^f
Last 14 days ^d	0.03	1.61
Last 7 days ^e	0.08	0.57 ^b
PROPORTION WITH ICU ADMISSION		
Last 105 days ^a	0.15 ^g	0.37 ^b
Last 30 days ^c	0.10	0.31 ^b
Last 14 days ^d	0.02	0.23 ^b
Last 7 days ^e	0.05	0.15 ^b
PROPORTION WITH 30-DAY HOSPITAL READMISSION		
Last 105 days ^a	0.11	0.26 ^b
Last 30 days ^c	0.02	0.12 ^b
PROPORTION DYING IN THE HOSPITAL		
Last 105 days ^a	0.02	0.42 ^b
Last 30 days ^c	0.06	0.44 ^b
Last 14 days ^d	0.09	0.48 ^b
Last 7 days ^e	0.15	0.53 ^b

SOURCE Authors' analysis of Health and Retirement Study data linked to Medicare claims. **NOTES** Sample sizes vary across periods of enrollment. For enrollment 53–105 days before death: hospice patients, $n = 88$; matched controls, $n = 1,404$. For enrollment 15–30 days before death: hospice patients, $n = 133$; matched controls, $n = 1,616$. For enrollment 8–14 days before death: hospice patients, $n = 90$; matched controls, $n = 1,416$. For enrollment 1–7 days before death: hospice patients, $n = 308$; matched controls, $n = 1,493$. Multivariable regression models adjusted for age; sex; race/ethnicity; education; net worth; marital status; insurance coverage; functional status; residential status; medical conditions; and regional supply of hospital beds, specialist physicians, and local hospital care intensity. 95 percent confidence intervals for all estimates are available in the online Appendix (see Note 30 in text). ICU is intensive care unit. ^aHospice enrollment 53–105 days before death. ^bDifference between hospice and control groups statistically significant at $p < 0.01$. ^cHospice enrollment 15–30 days before death. ^dHospice enrollment 8–14 days before death. ^eHospice enrollment 1–7 days before death. ^fDifference between hospice and control groups statistically significant at $p < 0.05$.

services at the end of life both contribute to these savings and potentially improve quality of care and patients' quality of life. Specifically, hospice enrollment was associated with significant reductions in hospital and intensive care unit admissions, hospital days, and rates of thirty-day

hospital readmission and in-hospital death.

EVIDENCE OF MEDICARE SAVINGS Our results not only are consistent with prior studies for Medicare spending, but they also strengthen this evidence by replicating the results within a sample more thoroughly matched for individual health, functional, and social characteristics, as well as regional factors. Finding no difference between the hospice and control groups' pre-enrollment health care use is evidence of this improved match, as compared to prior work.²³

Specifically, Taylor and colleagues reported a maximum reduction in Medicare spending among patients enrolled in hospice for 53–105 days prior to death.²³ We found Medicare savings among this group, too, but we also found a similar level of savings among those enrolled for 1–7 days and increased savings among those enrolled for 8–30 days prior to death. Furthermore, we demonstrated parallel reductions in hospital and intensive care unit use, hospital readmissions, and in-hospital death.

INCREASING VALUE THROUGH MEDICARE HOSPICE These findings, albeit limited to enrollment up to 105 days, are of particular importance because they suggest that investment in the Medicare hospice benefit translates into savings overall for the Medicare system. For example, if 1,000 additional beneficiaries enrolled in hospice for 15–30 days prior to death, Medicare could save more than \$6.4 million, while those beneficiaries would be spared 4,100 hospital days. Alternatively, if 1,000 additional beneficiaries enrolled in hospice for 53–105 days before death, the overall savings to Medicare would exceed \$2.5 million.

Although our findings suggest that hospice enrollment results in savings to the Medicare program across a number of different lengths-of-stay, this work also highlights several areas for future research.

First, because of the limitations of our data set, we were unable to precisely determine the point at which hospice approaches usual care in terms of costs. Future studies will be needed to address this question.

Second, our data were also not able to identify the differential effects of hospice on specific diagnoses. This is of particular importance given the recent growth of for-profit hospices, which typically enroll more patients with noncancer diagnoses (and longer average lengths-of-stay) compared to not-for-profit programs.

We found that net Medicare savings for patients with longer lengths-of-stay are lower because of the per diem cost of hospice services. However, we note that if 1,000 additional beneficiaries enrolled in hospice for 53–105 days before death, these beneficiaries could avoid 9,000

hospital days at the end of life. Indeed, our findings suggest that substantial reduction in hospital days—a primary goal of health care reform—is achieved regardless of the length of hospice enrollment.

Finally, our findings cannot be extrapolated to novel models of health care delivery or reimbursement, such as the integration of hospice programs into accountable care organizations or graded per diem payment systems, higher reimbursement for earlier and later days of enrollment, and lower reimbursement for the middle days.^{20,37} The ability of these models to achieve savings while maintaining or improving quality is unclear and must be evaluated.

BARRIERS TO TIMELY HOSPICE ENROLLMENT

Our results, when taken together with those of prior studies, suggest that hospice increases value by improving quality and reducing costs for Medicare beneficiaries at the end of life. Yet aggressive efforts to curtail Medicare hospice spending, including the Office of Inspector General's investigation of hospices that enroll patients with late-stage diseases but unpredictable prognoses, are ongoing.

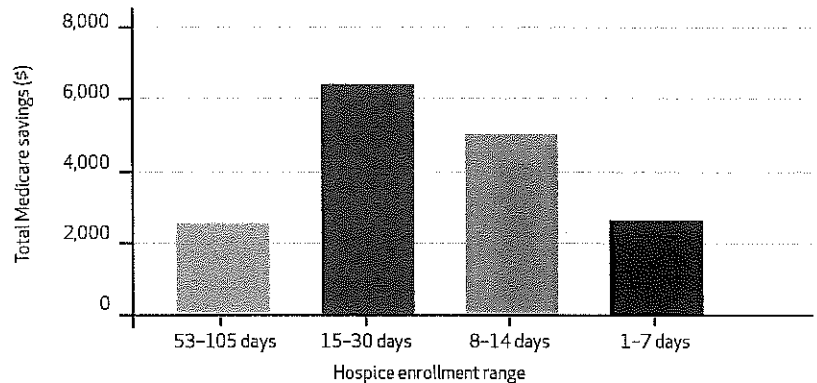
Our findings suggest that these efforts may be misguided. Indeed, this study reveals that savings are present for both cancer patients and noncancer patients and that reductions in the use of hospital services and numbers of hospital days, hospital admissions, and hospital deaths appear to grow as the period of hospice enrollment lengthens within the observed study period (up to 105 days). These outcomes not only are less costly but also have all been associated with higher quality of care and increased concordance with patients' preferences.

Although sample-size limitations prevented us from examining enrollment beyond 105 days, the trend in our data and the projections by Taylor and colleagues support the idea that efforts to curtail hospice enrollment may actually increase use and spending overall. Instead of working to reduce Medicare hospice spending and creating a regulatory environment that discourages continued growth in hospice enrollment, the Centers for Medicare and Medicaid Services should focus on ensuring that patients' preferences are elicited earlier in the course of their diseases and that those who want hospice care receive timely referral.

An additional barrier to timely hospice referral may be limited knowledge or misconceptions regarding hospice and palliative care.³⁸ In particular, the hospice requirement to forgo curative treatments—even if they might not be beneficial—may be difficult for patients and families to accept or prompt fears of health care rationing. Because some treatments may be used for

EXHIBIT 2

Incremental Savings In Medicare Expenditures, By Various Lengths Of Hospice Enrollment Before Death With Matched Nonhospice Controls



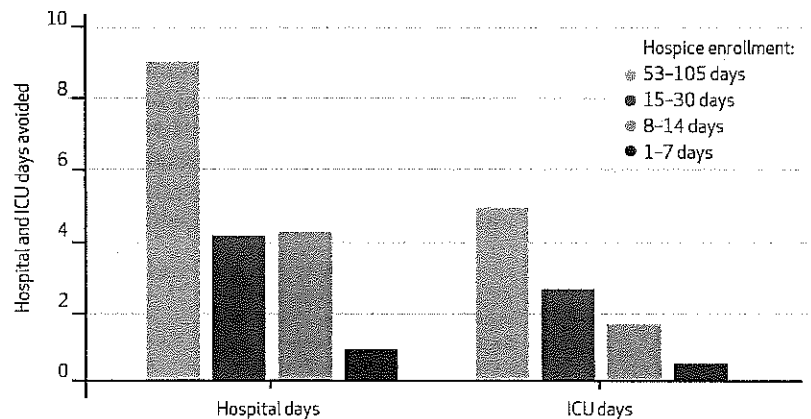
SOURCE Authors' analysis of Health and Retirement Study data linked to Medicare claims. NOTE Total savings to Medicare denote the incremental difference in Medicare spending between hospice and nonhospice groups.

both curative and palliative purposes, this regulation and the variability with which hospice providers interpret it may also cause clinicians to be uncertain about hospice eligibility.³⁹

Several recent state and federal policy initiatives are designed to promote patient-centered care, specifically by increasing palliative care education among all health professionals and requiring that clinicians apprise patients of palliative treatment options early in the course of a serious illness.⁴⁰⁻⁴² Such efforts to elucidate patients' preferences and values early may increase timely referral to hospice.

EXHIBIT 3

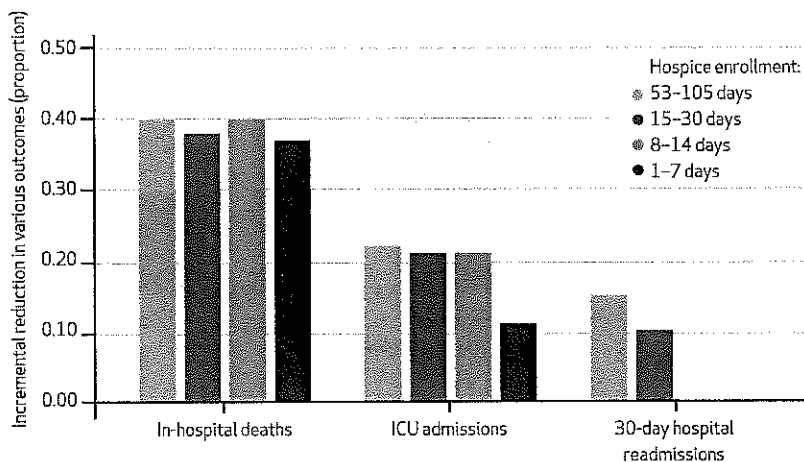
Incremental Reductions In Hospital Days And Intensive Care Unit Days, By Various Lengths Of Hospice Enrollment Before Death With Matched Nonhospice Controls



SOURCE Authors' analysis of Health and Retirement Study data linked to Medicare claims. NOTE Hospital and intensive care unit (ICU) days avoided is expressed as the incremental effect in days between hospice and nonhospice groups.

EXHIBIT 4

Incremental Reductions In Hospital Deaths, Intensive Care Unit Admissions, And Thirty-Day Readmissions, By Various Lengths Of Hospice Enrollment Before Death With Matched Nonhospice Controls



SOURCE Authors' analysis of Health and Retirement Study data linked to Medicare claims. **NOTES** Incremental reduction in various outcomes (in-hospital deaths, ICU admissions, and thirty-day hospital readmissions) is expressed as the incremental effect in proportion between hospice and nonhospice groups. ICU is intensive care unit.

Finally, highly specialized and fragmented care may also present a barrier to hospice access, particularly for patients with the most complex and highest-cost illnesses: those 5 percent of patients, many in their last year of life, who account for nearly half of the nation's health care spending.¹⁻³ Not only is care for this group characterized by costly hospital-based treatment, but it is also often highly fragmented and of poor quality, particularly among those who are dually eligible for Medicare and Medicaid.⁴³ Although many demonstration projects seek to address this concern,⁴³ few target this population's need for assistance in identifying individualized goals of care and developing comprehensive treatment plans to achieve those goals.

One such comprehensive treatment approach might be the enhancement of formal partnerships between hospital palliative care teams and hospice. Evidence from existing models that incorporate hospital palliative care services demonstrates improvement in quality indicators,

heightened patient and family satisfaction, reduced hospital use, and increased rates of hospice referral.⁴⁴ These benefits may be even more substantial if formal relationships between established palliative care teams and community hospice programs were developed in order to offer a bridge to timely hospice enrollment.

Conclusion

Hospice enrollment during the longer period of 53-105 days prior to death and the most common period within 30 days prior to death lowers Medicare expenditures, rates of hospital and intensive care unit use, 30-day hospital readmissions, and in-hospital death. Building upon prior studies of hospice and palliative care that have demonstrated higher quality and improved patient and family satisfaction,^{8,13-15,32-36} this finding suggests that hospice and palliative care are critical components in achieving greater value through health care reform: namely, improved quality and reduced costs.

Medicare should thus seek to expand access to hospice services so that hospice can contribute to its full potential to the overall value of care. To do so, substantial barriers to timely hospice enrollment must be overcome. The Centers for Medicare and Medicaid Services should abandon efforts to reduce Medicare hospice spending and delay hospice enrollment and should instead focus on ensuring that people who want hospice care receive timely referral.

Within the current Medicare hospice benefit, several approaches may expand access and increase appropriate and timely referral to hospice. These approaches include formalized partnerships between hospital palliative care programs and community hospice programs and the promotion of patient-centered care by educating patients, families, and physicians about the availability and benefits of hospice and palliative care services.

Finally, ongoing demonstration projects and novel models of health care delivery and reimbursement should place a high priority on the rigorous evaluation of hospice service use and its impact on the value of care. ■

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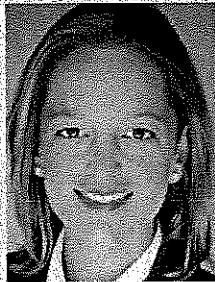
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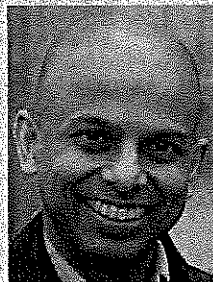
Amy S. Kelley is an assistant professor in the Brookdale Department of Geriatrics and Palliative Medicine, Icahn School of Medicine at Mount Sinai.

In this month's *Health Affairs*, Amy Kelley and coauthors report on their study examining Medicare costs for hospice patients enrolled for different lengths-of-stay, ranging from 1 day to 105 days. Using data from the Health and Retirement Study and individual Medicare claims, they found savings for Medicare across all lengths-of-stay examined. Hospice patients also had less hospital use than matched controls, and thus a higher quality of life. The authors argue that instead of attempting to limit Medicare hospice participation for fear of not seeing savings, the Centers for Medicare and Medicaid Services should focus on ensuring the timely enrollment of qualified patients who desire the benefit.

Kelley is an assistant professor in the Brookdale Department of Geriatrics and Palliative Medicine, Icahn School of Medicine at Mount Sinai, and is a board-certified

physician in internal medicine, geriatric medicine, and palliative medicine. Her research focuses on improving the quality of care for older adults with serious medical illness. She is particularly interested in regional practice variations and the relationship between patient characteristics and treatment intensity.

In 2012 Kelley was selected for the Paul B. Beeson Career Development Award in Aging Research from the National Institute on Aging and won the American Geriatrics Society's best paper award in geriatrics research. Kelley earned a master's degree in health services from the University of California, Los Angeles, and a medical degree from Cornell University.



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Partha Deb is a professor and director of graduate studies in the Department of Economics at Hunter College and a professor at

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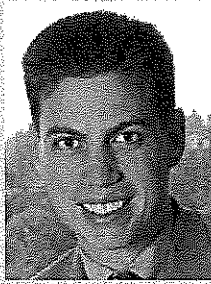
statistics from the University of Chicago.



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Death Service Ratio: A Measure of Hospice Utilization and Cost Impact

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To the Editor:

In October 2007, Taylor et al.¹ published compelling data showing that use of hospice care reduces United States Medicare expenditures at the end of life. In a case-control study of a sample of Medicare decedents (1993-2003), the authors compared 1819 hospice decedents with 3638 matched controls. Hospice use reduced Medicare program expenditures after the initiation of hospice by an average of \$2309 per hospice user (\$7318 for hospice users vs. \$9627 for controls; $P < 0.001$). For cancer, maximum savings of \$7000 occurred with a length of stay (LOS) in hospice between 60 and 100 days; for other primary conditions, maximum savings of \$3500 occurred with a LOS of 50-110 days.¹ Thus, cost savings were maximized with much longer periods of hospice use than is common among Medicare beneficiaries (median LOS of 16 days in not-for-profit, and 20 days in for-profit hospices).²

Examining Medicare expenditures in North Carolina for patients receiving hospice care vs. not served by hospice, we have obtained results that are consistent in showing that hospice use appears to lessen overall health care spending near the end of life. We acknowledge that these are preliminary analyses; we did not match hospice decedents with those nonhospice decedents who are most similar, as our goal here was to simply describe unadjusted Medicare cost differences in North Carolina. Likewise, a limitation of this initial exploration is that our analyses included only patients who died; we did not examine costs incurred by hospice patients who did not die.

Using 2008 data from the Centers for Medicare and Medicaid Services (CMS) Standard Analytic Files, Limited Data Sets for Hospice, Hospitals, Home Health Agencies, and Skilled Nursing Facilities (SNFs), we compared total Medicare expenditures for all Medicare beneficiaries who died under the care of one of these provider types. In North Carolina, average costs to Medicare for patients who died with a history of the following types of service use were hospice, \$19,249; home health agency, \$19,810; SNF, \$25,842; hospital, \$30,603; and multiple settings, \$30,732 vs. not receiving

care from any service, \$6853. Notably, a North Carolina patient receiving end-of-life care through hospice received \$11,354 less in care paid for by Medicare than did a patient receiving hospital-based care.

Clearly, hospice utilization exerts a strong force on health care system costs. How can we examine and monitor hospice utilization and impact? We propose "death service ratio" (DSR) as a simple measure of hospice use for this purpose. Calculated as a percentage – the numerator being deaths in a defined area or population served by hospice and the denominator being all deaths in that area/population – DSR serves as an indicator of hospice utilization in a region and, therefore, as an indirect indicator for impact of hospice on health care costs. We explicitly acknowledge that DSR is a crude indicator, as it does not accommodate for hospice LOS, patient complexity, or other important factors; but, in its simplicity, DSR allows regional monitoring of hospice utilization that can be linked to health system costs.

Using DSR as a primary measure, we recently completed a study of the impact of philanthropic funding for hospice services on hospice utilization and costs. In North Carolina counties receiving grants for hospice development through a large foundation (The Duke Endowment, Charlotte, NC), the DSR was 40% as compared with that of 30% in counties not funded by the foundation. Here, DSR was calculated as the number of Medicare beneficiaries in North Carolina who died under hospice care (numerator) over the total number of Medicare beneficiary deaths in North Carolina (denominator). Calculation of the DSR allowed for informative comparisons across service areas. Per patient hospital costs were similar between grant-funded and unfunded counties (\$30,822 vs. \$30,375; difference of \$447). Per patient hospice rates were also similar (\$19,258 vs. \$19,234; difference of \$24). However, looking more closely at the highest DSR counties, we found that, in the 10% of counties with highest DSR compared with all counties, per patient hospice costs were higher (mean \$8063 vs. \$7031; difference of \$1032) but hospital costs were lower (mean \$24,567 vs. \$27,632; difference of -\$3065). On balance, in counties with higher use of hospice, the use of hospital care was reduced; this observation is consistent with a hypothesis that increased hospice use reduces overall Medicare costs at the end of life. Further, we found evidence that external grant funding to support the development of hospice and palliative care was related to increase in hospice use, which correlated with the cost savings observed in these counties.

These analyses demonstrate that DSR can serve as a useful marker of hospice utilization and financial impact at the local level, leading to valuable insights about the relationship between use and costs within a regional population. We are currently examining DSR by county in North Carolina to understand trends in care, distribution of available services (including hospice and

palliative care), and impact of bridging community-based palliative care programs; results will likely be useful for workforce planning.

As a measure, DSR could be further developed as an indicator of access and impact, but certain steps must first be taken. These include exploration of the relationship between change in DSR and change in quality of care; determination of whether or not results generated in North Carolina are generalizable to other areas of the United States or the country as a whole; development of quality-of-care benchmarks followed by studies exploring methods for improving performance against those benchmarks; and standardization of what is encompassed by "hospice" care, as well as by its overarching discipline, "palliative care," to enable cleaner analyses.

From a policy standpoint, it is most important to consider hospice expenditures in the context of the "systemic cost" of end-of-life care, that is, the total cost of care from all care settings for the patient who dies on a specific service (especially important given the crossover of patients from one setting to another, making clear distinctions of hospice and nonhospice problematic). Hospice comprises only a fraction of total Medicare costs; as a proportion of total Medicare expenditures in 2008, hospice accounted for 8% (\$11.1 billion), hospitals for 71% (\$113 billion), and SNFs for 13% (\$23 billion). Aggregate cost analyses support continued and substantial Medicare spending on hospice care, both to enhance end-of-life experiences for patients and their loved ones and make end-of-life care more affordable. DSR offers a simple and pragmatic measure for monitoring hospice utilization, tying change in utilization to cost reduction/increase, and, with further development, monitoring quality of care, access, disparities, and performance against national benchmarks. With this motivation, we plan to further study and strengthen DSR as a measure.

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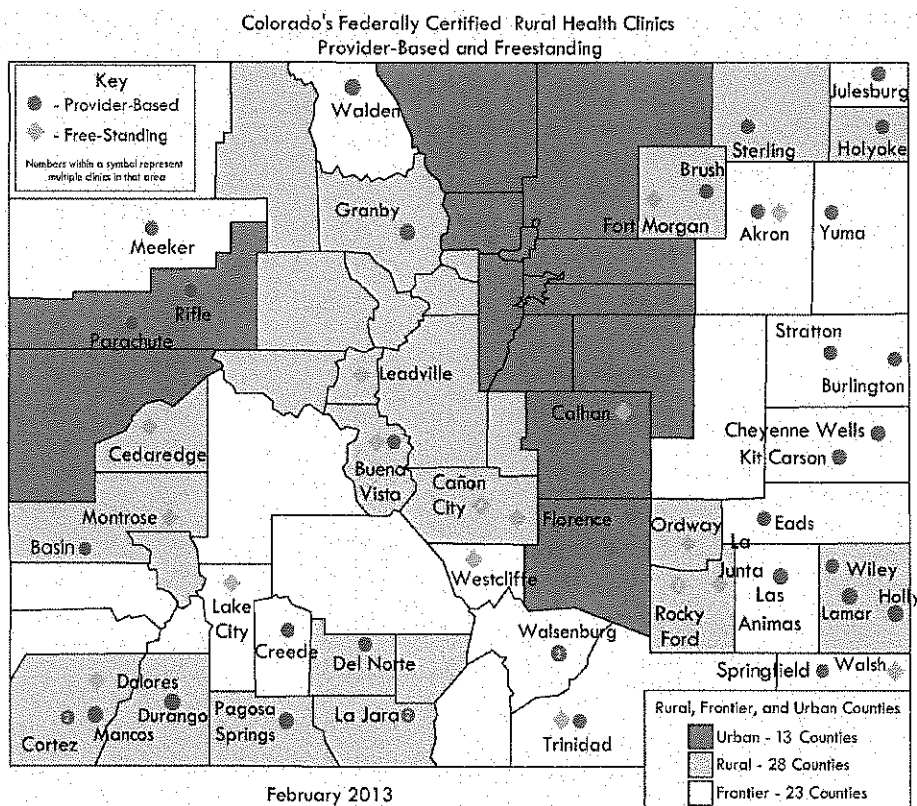
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Colorado Rural Health Clinics

The list shows the name of the clinic, its city location, as well as whether it is provider-based or independent. "Provider-based" RHCs are affiliated with a parent entity which is typically a rural hospital or hospital system. To qualify as a provider-based RHC an established relationship must exist between the RHC and the affiliated provider.

"Independent" RHCs are free-standing clinics, owned and operated as a single entity.



Northeastern Colorado Rural Health Clinic Physician Referral Sources for the Hospice of the Plains service area.

- Akron Clinic (Akron) - Provider-Based
- Brush Family Medicine (Brush) - Provider-Based
- Family Care Clinic (Sterling) - Provider-Based
- Family Practice of Holyoke (Holyoke) - Provider-Based
- Fort Morgan Pediatric Clinic (Fort Morgan) - Independent
- Kit Carson Clinic (Kit Carson) - Provider-Based
- Parke Health Clinic (Burlington) - Provider-Based
- Stratton Medical Clinic (Stratton) - Provider-Based
- Valley Medical Clinic (Julesburg) - Provider-Based
- Washington County Clinic (Akron) - Independent
- Yuma Clinic (Yuma) - Provider-Based