



CALIFORNIA  
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## **Measuring Up?** End-of-Life Cancer Care in California

August 2013

# **Measuring Up?** End-of-Life Cancer Care in California

*Prepared for*

CALIFORNIA HEALTHCARE FOUNDATION

*by*

Dartmouth Atlas Project and Lown Institute

### **About the Author**

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### **About the Dartmouth Atlas**

For over 20 years, the Dartmouth Atlas researchers have examined variation in care for different types of illnesses and procedures, different populations, and at various stages of life. This report, while similar to earlier reports on care at the end of life, looks specifically at the experiences of cancer patients in California.

### **About the Foundation**

The **California HealthCare Foundation** works as a catalyst to fulfill the promise of better health care for all Californians. We support ideas and innovations that improve quality, increase efficiency, and lower the costs of care. For more information, visit us online at [www.chcf.org](http://www.chcf.org).

# Contents

**2 I. Introduction**

---

**4 II. Cancer Patients' Wishes and the Reality**

---

**7 III. Trends and Variation**

Deaths in Hospital

Hospital Days During the Last Month of Life

Intensive Care Days During the Last Month of Life

Chemotherapy During the Last Two Weeks of Life

Life-Sustaining Treatment in the Last Month of Life

Hospice Days in the Last Month of Life

Enrollment in Hospice in the Last Three Days of Life

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**21 IV. Variation Among California Hospitals**

Deaths in Hospital

Deaths Associated with Admission to Intensive Care

Hospital Days During the Last Six Months of Life

Intensive Care Days During the Last Month of Life

Life-Sustaining Treatment in the Last Month of Life

Hospice Days During the Last Six Months of Life

Patients Enrolled in Hospice in the Last Three Days of Life

Patients Seeing 10 or More Doctors During the Last Six Months of Life

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**25 V. Conclusion**

---

**27 Appendix: Methodology**

---

**30 Endnotes**

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# I. Introduction

*In some California regions, Medicare beneficiaries were 3.5 times more likely to receive advanced life-support interventions during the last month of life.*

THE CARE THAT PEOPLE WITH ADVANCED CANCER receive may be significantly different from the care that cancer patients say they would prefer as they approach death. This report focuses on research on the care delivered to Californians with “poor-prognosis” cancer, or cancer that is advanced and highly likely to lead to death. The results show wide variation from region to region in the state, as well as from hospital to hospital. This variation cannot be explained by differences among patients in terms of age, sex, or race. The report also shows trends in the care of patients with advanced cancer from 2003–07 to 2010.

Over this period, there have been some improvements in the delivery of care that seriously ill cancer patients say they want to receive, and in certain measures of quality for cancer care. For example, patients with advanced cancer were less likely to die in the hospital in 2010 compared to 2003–07, and slightly more likely to receive hospice care.

However, California lags behind the rest of the country in some key measures of quality. Compared to the national average, dying cancer patients in California spent more days in the hospital and were more likely to receive advanced life-support procedures such as endotracheal intubation, feeding tubes, and cardiopulmonary resuscitation in the last month of life. (See “Life-Sustaining Treatments,” page 5.)

In other respects as well, care for cancer patients does not match the care they prefer,<sup>1</sup> and the geographic variation in care across the state is striking. Throughout California, dying cancer patients in the hospital had many more physician visits on average in 2010 than in 2003–07, and they spent more days in an intensive care unit (ICU). In some California regions, Medicare beneficiaries were 2.5 times more likely to receive chemotherapy in the last two weeks of life compared to those living in other parts of the state, and they were 3.5 times more likely to receive advanced life-support interventions during the last month of life. Such aggressive care of the dying has not been found to benefit patients medically and is known to be at odds with the desires of many cancer patients for end-of-life care.

The following are some major findings of the research:

- **California vs. US.** Compared to the country as a whole, California had a higher percentage of cancer patients dying in the hospital in 2010, more ICU days, and a higher percentage of patients who received life-support procedures in the last month of life and chemotherapy in the last two weeks of life. In three-quarters of California regions, the average number of days cancer patients spent in hospice over the last month of life was less than the national average.
- **Variation.** There was wide variation in changes from 2003–07 to 2010 in end-of-life care of cancer patients across California regions and hospitals. For example, some regions saw a steep increase in the percentage of patients receiving life-sustaining procedures in the last month of life, while others saw no change or a decrease.
- **Deaths in hospitals.** In 2010, nearly one-third of Californians with poor-prognosis cancer spent their last days in hospitals and ICUs, a decline of 7% compared with 2003–07 but still 20% higher than the national average.
- **Advanced life support.** More than 10% of Californians with poor-prognosis cancer who were in the last month of life received advanced life-support procedures in 2010.
- **Chemotherapy.** About 6% of cancer patients were given chemotherapy in the last two weeks of life in 2010; in some regions of the state and in some hospitals, the rate exceeded 10%.
- **Hospice.** The percentage of dying cancer patients in California who received hospice care increased slightly between 2003–07 and 2010, but it remained below the national average. The average number of days patients spent in hospice did not change over that period. In some California hospitals, referral to hospice care occurred so close to the day of death that it was unlikely to have provided much assistance or comfort to patients.

## II. Cancer Patients' Wishes and the Reality

EACH YEAR, MORE THAN 144,000 CALIFORNIANS receive a diagnosis of cancer,<sup>2</sup> and for many of them, medical and surgical care leads to long-term remission or cure. But for cancer patients who have aggressive or advanced disease at the time of diagnosis, or who experience a recurrence, cancer is likely to lead to death. Cancer is the second leading cause of death in the state, and most people who die from it are over age 65.<sup>3</sup>

When a cure is unlikely, cancer patients and their families often have strong preferences about where and how they want to be cared for. While some want aggressive treatment in order to gain weeks or days of additional life, many others prefer care that is focused on improving the quality of the time they have left.<sup>4</sup> Often their desire is to be comfortable in familiar surroundings, close to family and friends. The majority of cancer patients want relief from pain and other symptoms associated with advanced cancer and its treatment.<sup>5</sup>

Patients with cancer also want honest conversations with their clinicians.<sup>6</sup> This includes balanced information about the chances their condition will improve or worsen, and the possible benefits and discomforts of various treatment options. Most importantly, they want to be active partners with their clinicians in making decisions about the type of care they want and where they receive it.

The wide gap between the care that patients prefer at the end of life and the care they receive is a problem that has been recognized for many years. The Institute of Medicine's 1997 report, *Approaching Death: Improving Care at the End of Life*, found that for many patients with cancer and other serious

diseases, pain often was not controlled, and many patients received aggressive treatment they did not want.<sup>7</sup> In 2003, the institute released a related report, *Improving Palliative Care for Cancer*, which concluded that at least half of patients who died of cancer suffered needlessly from pain, labored breathing, distress, nausea, confusion, and other physical and psychological conditions that "vastly diminish the quality of their remaining days."<sup>8</sup>

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*At least half of patients who died of cancer suffered needlessly from pain, labored breathing, distress, nausea, and confusion.*

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Patients, their families, and caregivers all suffer when pain and distress are not adequately treated, and the magnitude of this suffering is now being studied.<sup>9–13</sup> In the past decade, clinicians and others who care for patients with cancer have become interested in improving palliative care, which focuses on ensuring that all patients with serious illness (but not necessarily near death) are comfortable, as free from pain as possible, and understand their options for treatment.

Numerous performance metrics for the quality of cancer care have been developed to help clinicians and hospitals improve care. Several of these measurements focus on care for patients who are near the end of life.<sup>14–18</sup> One indication that these quality measures are leading to improvements can

be seen in the increased use of palliative and hospice care across the country, and research suggests that patient preferences for end-of-life care are now being followed more closely, at least among some patient groups.<sup>19–21</sup>

In California and elsewhere, the POLST form (Physician Orders for Life-Sustaining Treatment) is gaining traction. POLST allows patients to indicate the intensity of care they would prefer in the event of serious illness. In California, conversations between physicians and patients can be documented on a POLST form that is honored across settings of care. After two years of implementation in California, 93% of nursing homes had at least one resident with a POLST, and 62% of nursing homes reported that at least half of their residents had one.<sup>22</sup> Over 80% of California hospitals also reported familiarity with and use of POLST in their facilities.<sup>23</sup>

Despite these signs of progress, however, problems remain in aligning cancer care near the end of life with patient wishes. Factors such as age, race, and level of education can affect the likelihood that the treatments patients get are what they want.<sup>24–26</sup> Also, there are still barriers to conversations about end-of-life care between clinicians, patients, and families, including poorly trained physicians and other caregivers, and lack of payment for physicians to spend time in such discussions. The communication that does occur often fails to include accurate information about prognosis and treatment options.<sup>27</sup>

The local medical culture — the attitudes and practices of doctors and other caregivers — is an important factor in the type and intensity of care cancer patients receive. Patients are likely to receive more-aggressive care at the end of life in some regions and some hospitals compared to others.<sup>28,29</sup> Even among the state's leading medical centers, care

### Life-Sustaining Treatments

Several treatments are associated with aggressive end-of-life care: endotracheal intubation, feeding tube placement, and cardiopulmonary resuscitation.

**Endotracheal intubation** involves the insertion of a tube through the mouth into the windpipe to provide oxygen and breathing assistance with a mechanical ventilator. Patients usually need to be sedated as long as they have this breathing tube, and are generally unable to communicate. Because these patients require careful monitoring and nursing care, they usually remain in ICUs. This can be a life-saving procedure for patients who need temporary assistance with breathing. However, for patients near the end of life, intubation rarely leads to the patient being able to breathe again on their own.

**Feeding tube placement** involves the insertion of a tube through the abdomen into the stomach to provide water and nutrition for patients who cannot eat by mouth. It can be left in place for weeks or months. The placement procedure is done by a surgeon with the patient under heavy sedation or anesthesia. For patients who are likely to recover from their disease, a feeding tube can sometimes help them get better sooner. For patients near the end of life, a feeding tube has less-clear benefits, and the patient must be attached to the feeding pump for many hours of the day.

**Cardiopulmonary resuscitation (CPR)** is used to prevent immediate death when a patient's heart stops. Only a tiny percentage of patients with terminal cancer can be successfully resuscitated with CPR, and it can cause injury to elderly patients, including broken ribs. CPR rarely succeeds in prolonging life in a way that allows patients to communicate again with spouses and relatives.

Despite their usefulness in treating less-ill patients, these procedures have limited usefulness for those with poor-prognosis cancer. Patients who are included in the decisionmaking process about their end-of-life care, either before or when they are ill, often decline these procedures.



varies widely, and there is no evidence that treatment patterns follow patient preferences.<sup>30</sup>

These regional and hospital-specific patterns of care are not limited to cancer patients. Medicare beneficiaries with other chronic conditions are likely to receive care that is similarly more or less aggressive in those same regions and hospitals.<sup>31,32</sup> For example, hospitals that provide more-aggressive care to patients dying of heart disease also deliver more-aggressive care to those dying of cancer.

“Supply-sensitive care” also affects decisions made by clinicians caring for cancer patients. The Dartmouth Atlas Project has shown that the local supply of medical resources plays a significant role in determining the amount of care delivered in a region.<sup>33</sup> Patients in regions with more hospital beds and more medical specialists, for example, tend to be admitted more often and to see more specialists than similarly ill patients in regions with a lower supply of these resources. Research has also shown that when ICU beds are readily available, more patients who are less severely ill are admitted to the ICU and stay longer than they might have in a hospital with fewer ICU beds.

Some California hospitals have increased their investment in ICU and other beds, and in physician labor, such as specialists.<sup>34</sup> Future reports on end-of-life care may reveal whether these additional resources influenced aggressiveness of care.

There can be serious consequences when patients’ wishes and actual treatment are misaligned. Some patients fail to receive treatment they want, while many others receive unnecessary or unwanted procedures. This puts them at risk for infection, pain, and time away from loved ones in their final weeks and days.<sup>35,36</sup> Research shows that spending more time in the hospital or ICU does not necessarily lead to better outcomes, such as longer life or less pain.<sup>37–39</sup>

Higher rates of aggressive treatments and hospitalizations also represent a significant financial burden for individual patients and families as well as for society. About one-fourth of all Medicare spending goes to pay for the care of beneficiaries in their last year of life, and much of the growth in Medicare spending in recent decades is the result of the high cost of treating cancer and other serious illnesses.<sup>40,41</sup>

### III. Trends and Variation

FOLLOWING ARE HIGHLIGHTS OF THE DATA showing regional and hospital-specific patterns of care for patients with poor-prognosis cancer. The data are based on California Medicare beneficiaries with severe chronic illness among hospital referral regions (HRRs).

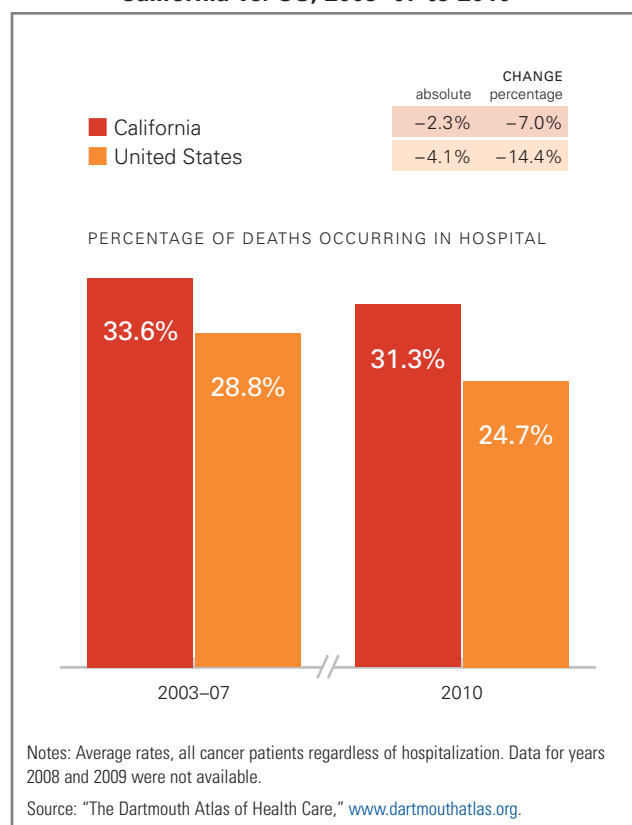
#### Deaths in Hospital

From 2003–07 to 2010, the chances that a California Medicare beneficiary with cancer died in a hospital declined slightly. In 2003–07, 33.6% of such patients died in a hospital; in 2010, the rate dropped to 31.3%, a 7% decline. However, the rate of deaths in the hospital in California remained higher than the US average of 24.7%.

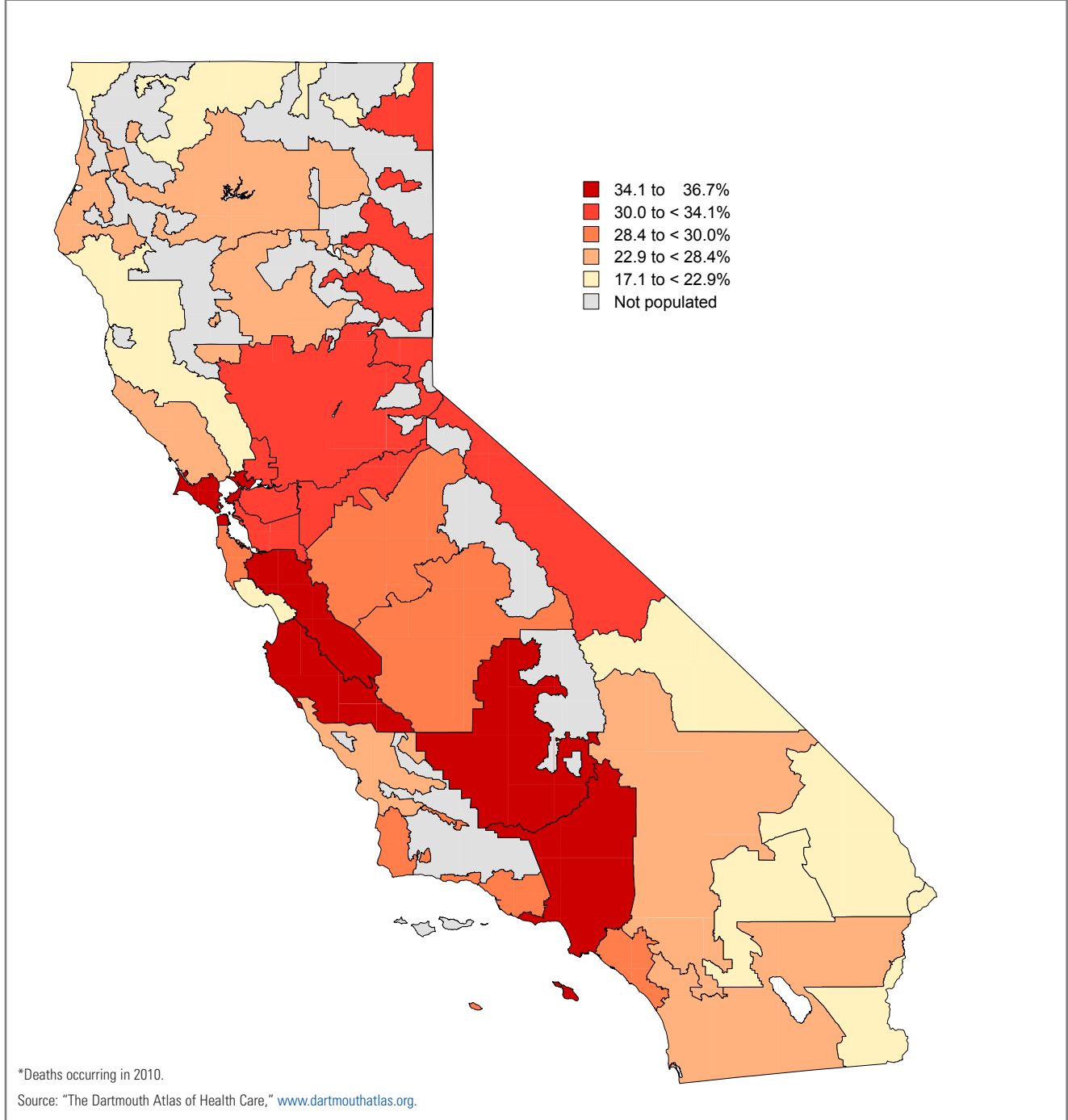
The chances that a California Medicare beneficiary with cancer died in the hospital varied depending upon where the person lived. Most California HRRs saw a drop in the percentage of deaths in the hospital, but the amount of the decline varied widely. Cancer patients in the Santa Cruz area became much less likely to die in hospital; rates of death in the hospital fell 11 percentage points, from the middle of the pack to the lowest rate in the state (19.9%), and Redding and Fresno each fell around 9 percentage points (to 23.2% and 27.9%). Patients in Santa Barbara and Salinas, by contrast, became more likely to die in hospital; in these HRRs, the rate of death in the hospital increased by around 4 percentage points. Salinas is now nearly tied with Los Angeles, long one of the highest HRRs in the country for death in hospital. If the 2003–07 to 2010 trend continued to the present, Salinas would likely have surpassed Los Angeles.

In 2010, the highest rates of death in the hospital were in Los Angeles (36.7%), Salinas (36.1%), and Bakersfield (36.0%); the lowest were in Santa Cruz (19.9%), Napa (22.2%), and Palm Springs/Rancho Mirage (22.3%).

**Figure 1. Medicare Cancer Patients Dying in Hospital, California vs. US, 2003–07 to 2010**



Map 1. Percentage of Medicare Cancer Patients Dying in Hospital, by California HRR, 2010\*



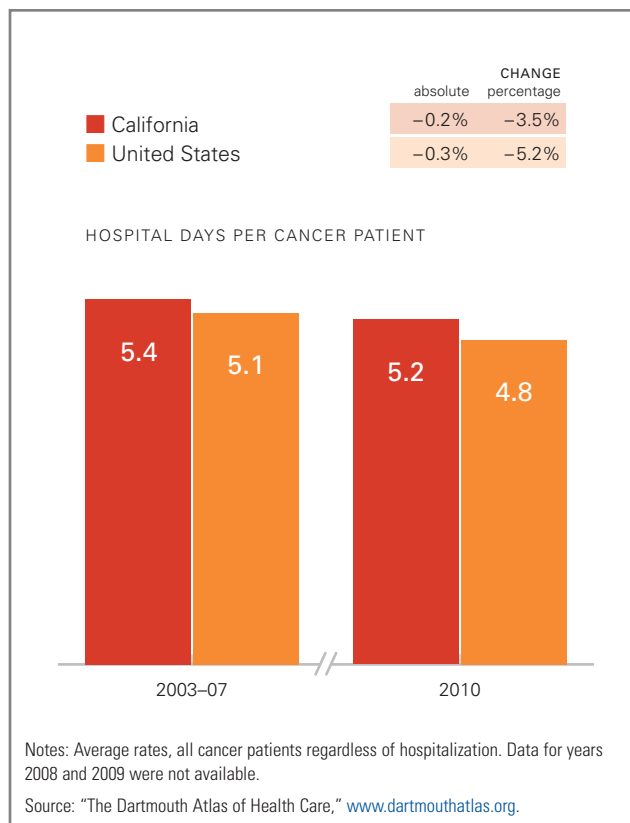
## Hospital Days During the Last Month of Life

The number of days cancer patients spent in the hospital during their last month of life decreased slightly from 2003–07 to 2010, both in California and in the nation as a whole. California’s rate fell from 5.4 days to 5.2; the national rate fell from 5.1 to 4.8 days.

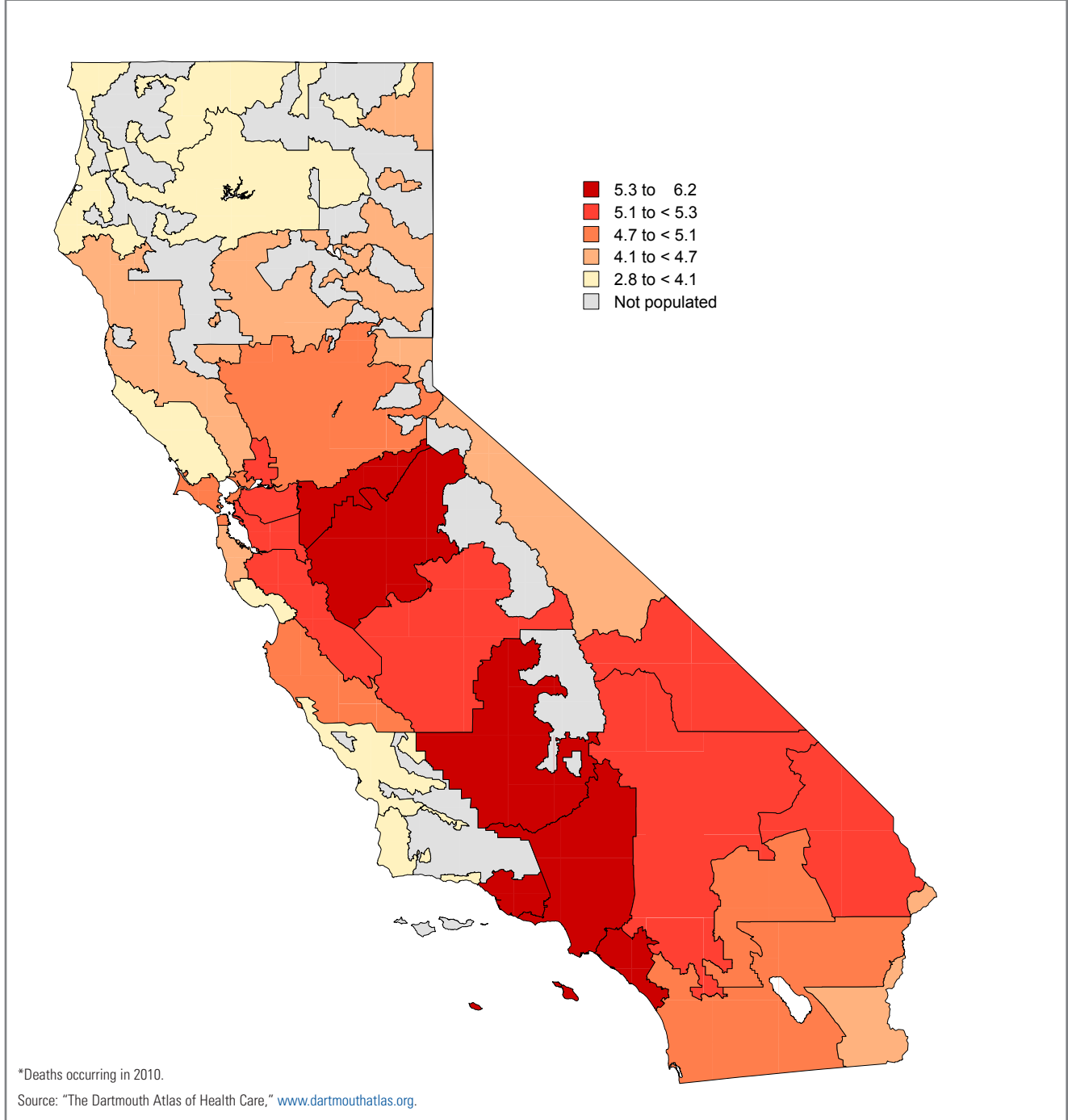
Statewide, the decline was small, and in 2010 there was substantial variation across regions. In 2010, cancer patients in Los Angeles spent an average of 6.1 days in the hospital (roughly 20% of their last month). Cancer patients in Santa Rosa HRR spent only 3.6 days in the hospital in their last month of life, below the national average and about 40% less than patients in Los Angeles. Bakersfield (6.0 days), Stockton (5.7), Ventura (5.6), and Modesto (5.6) had high rates of hospitalization, while San Luis Obispo (3.7 days), Santa Cruz (3.9), and Redding (4.0) were all less than 80% of the state average.

Changes in the number of days cancer patients spent in the hospital ranged from a decrease of nearly a day in Santa Cruz (from 4.8 to 3.9 days) to an increase of a day in Stockton (4.6 to 5.6 days). Santa Rosa, Salinas, and Contra Costa County also had substantial changes, all falling by 7/10 of a day. These numbers represent averages, which means some patients spent considerably more time in the hospital in their last month of life, even in HRRs with the highest rates, while others spent considerably less.

**Figure 2. Hospital Days per Medicare Cancer Patient During Last Month of Life, California vs. US, 2003–07 to 2010**



Map 2. Hospital Days per Medicare Cancer Patient During Last Month of Life, by California HRR, 2010\*



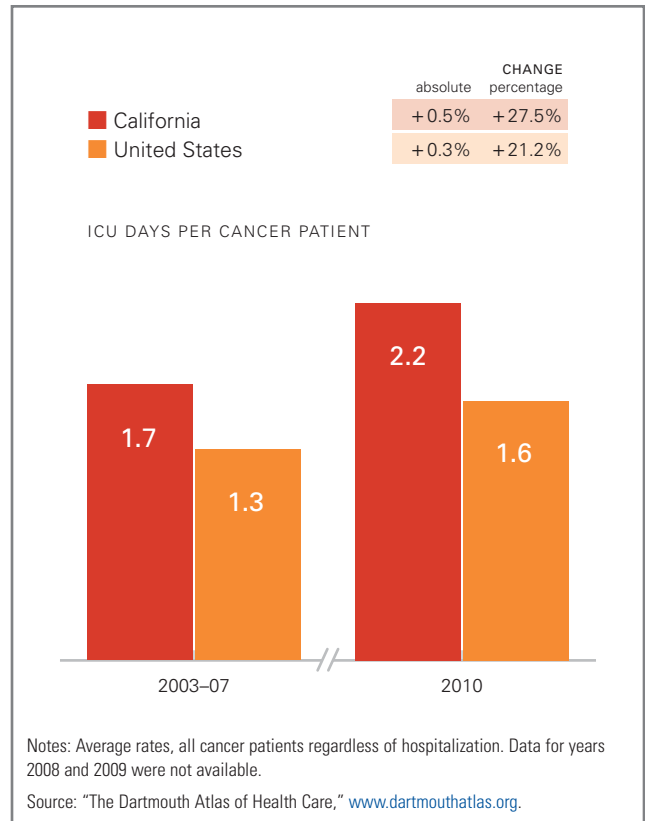
## Intensive Care Days During the Last Month of Life

From 2003–07 to 2010, admissions to the ICU during the last month of life increased substantially even as the rate of deaths in the hospital among California Medicare beneficiaries with cancer, and the number of days they spent in the hospital, declined. Nationwide, the rate at which cancer patients were admitted to intensive care in the last month of life rose from 23.7% to 28.8%; in California, it went from 31.1% to 38.7%.

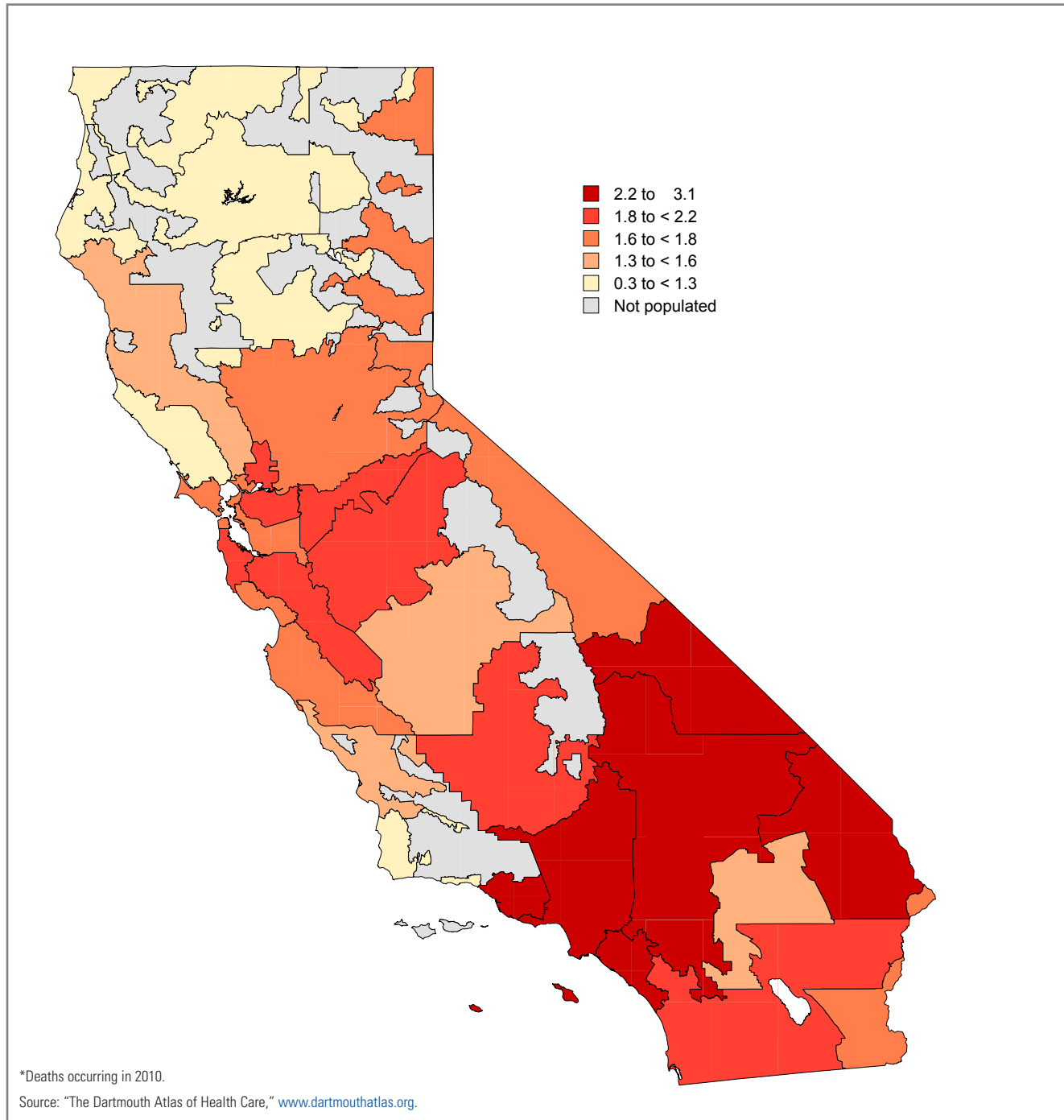
In 2010, California saw some of the highest rates of ICU admissions in the country; in Los Angeles, San Bernardino, Orange County, and San Diego, over 40% of cancer patients were admitted to the ICU in the last month of life. Only five HRRs in the entire state had ICU rates below the national average: Napa (25.9%), Santa Barbara (26.5%), Santa Rosa (27.9%), Chico (28.2%), and Redding (28.7%).

Every HRR in California increased the time dying cancer patients spent in the ICU, but the increases were far from uniform. In the 2003–07 period, Stockton, San Luis Obispo, and Modesto all had rates below the national average. From that period to 2010, the rates of ICU admission in those HRRs increased by 17.3, 14.5, and 13.3 percentage points, respectively. These three HRRs are now in the upper half of the state for ICU admissions. All other HRRs increased their rates by at least 4.4 percentage points except Bakersfield (+1.1 percentage points) and Palm Springs/Rancho Mirage (+2.3 points).

**Figure 3. ICU Days per Medicare Cancer Patient During the Last Month of Life, California vs. US, 2003–07 to 2010**



Map 3. ICU Days per Medicare Cancer Patient During the Last Month of Life, by California HRR, 2010\*



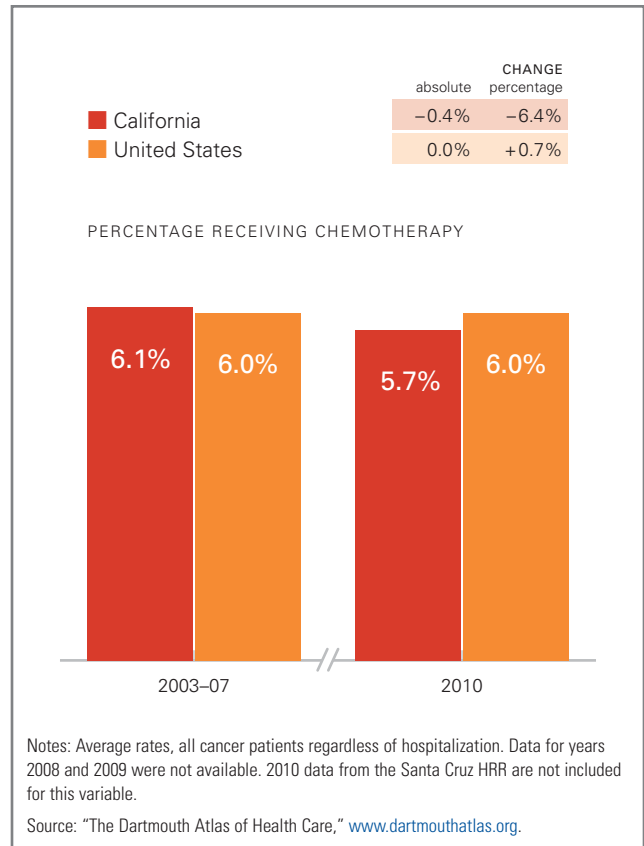
## Chemotherapy During the Last Two Weeks of Life

Nationally, from 2003–07 to 2010, the average rate at which Medicare beneficiaries with cancer received chemotherapy in the last two weeks of their lives held constant at about 6%. During that time, the rate in California declined slightly, from just above the national average (6.1%) to just below it (5.7%).

Despite the slight statewide reduction in late chemotherapy, there was considerable variation in the amount of improvement across California HRRs. Santa Barbara fell from an exceptionally high rate of 10.4% to 5.9% between 2003–07 and 2010, and Fresno saw a similar change, from 9.6% to 6.7%. The three lowest HRRs all had substantial improvements, as well: Modesto went from higher than average to near the lowest, falling from 7.6% to 3.7%; Bakersfield dropped from 5.9% to 3.7%; and Redding fell from 5.4% to 3.3%. In San Luis Obispo HRR, by contrast, about 2 more cancer patients per 100 were given chemotherapy as they approached death. San Jose (+1.7 percentage points) and San Francisco (+1.6) also saw an increase in their rates.

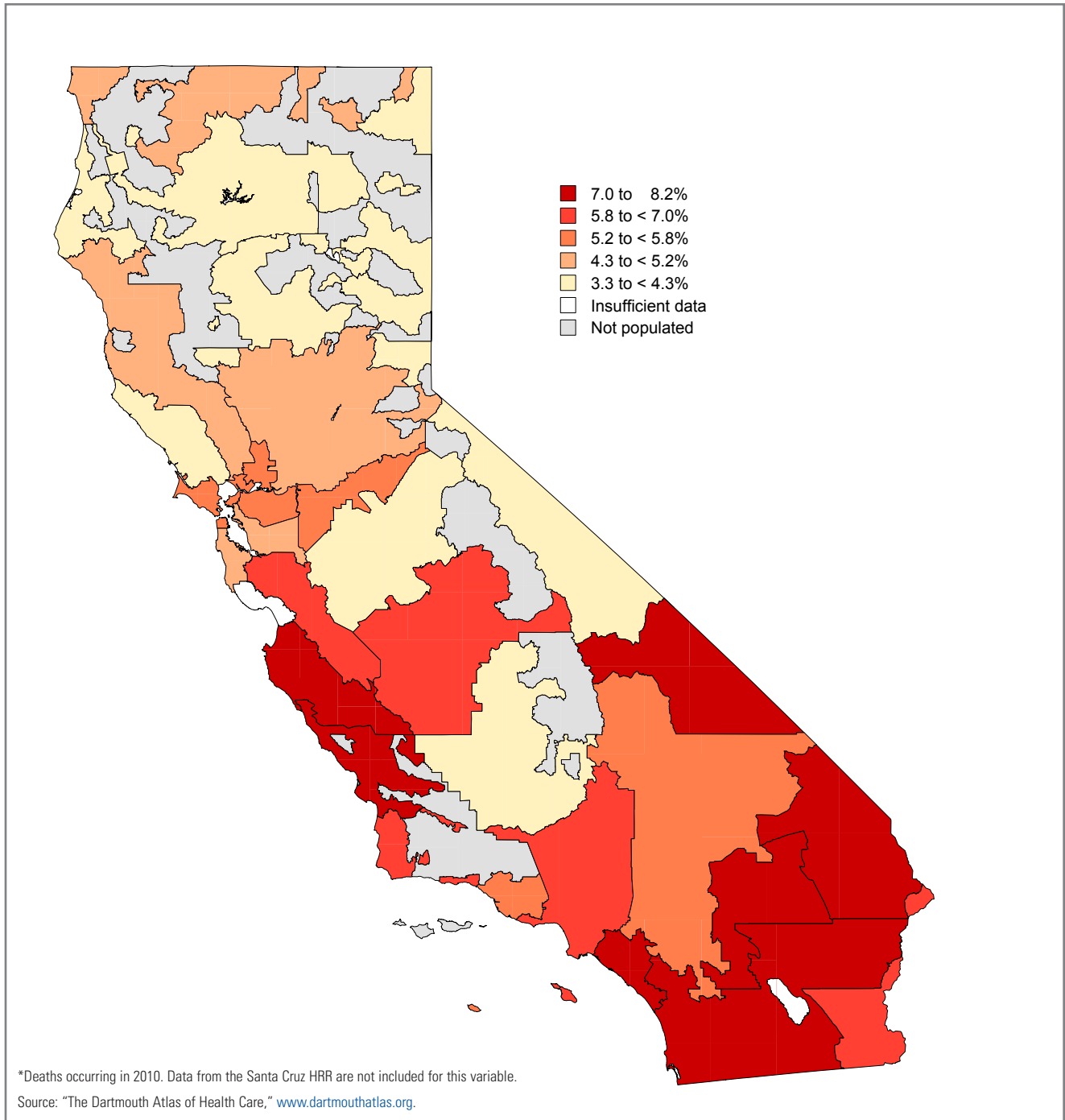
Substantial variation remains across the state. In 2010, patients in Palm Springs/Rancho Mirage were around 2.5 times as likely to get chemotherapy immediately prior to death as those in Redding; in San Luis Obispo (7.3%) patients were nearly twice as likely to receive end-of-life chemotherapy as those in Modesto or Bakersfield (both 3.7%).

**Figure 4. Medicare Cancer Patients Receiving Chemotherapy During the Last Two Weeks of Life, California vs. US, 2003–07 to 2010**





**Map 4. Percentage of Medicare Cancer Patients Receiving Chemotherapy During the Last Two Weeks of Life, by California HRR, 2010\***

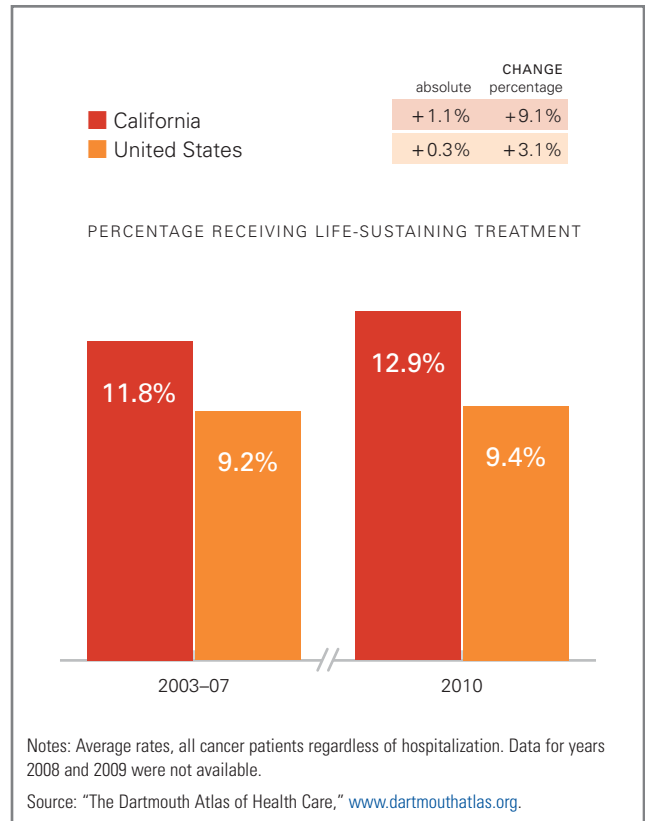


## Life-Sustaining Treatment in the Last Month of Life

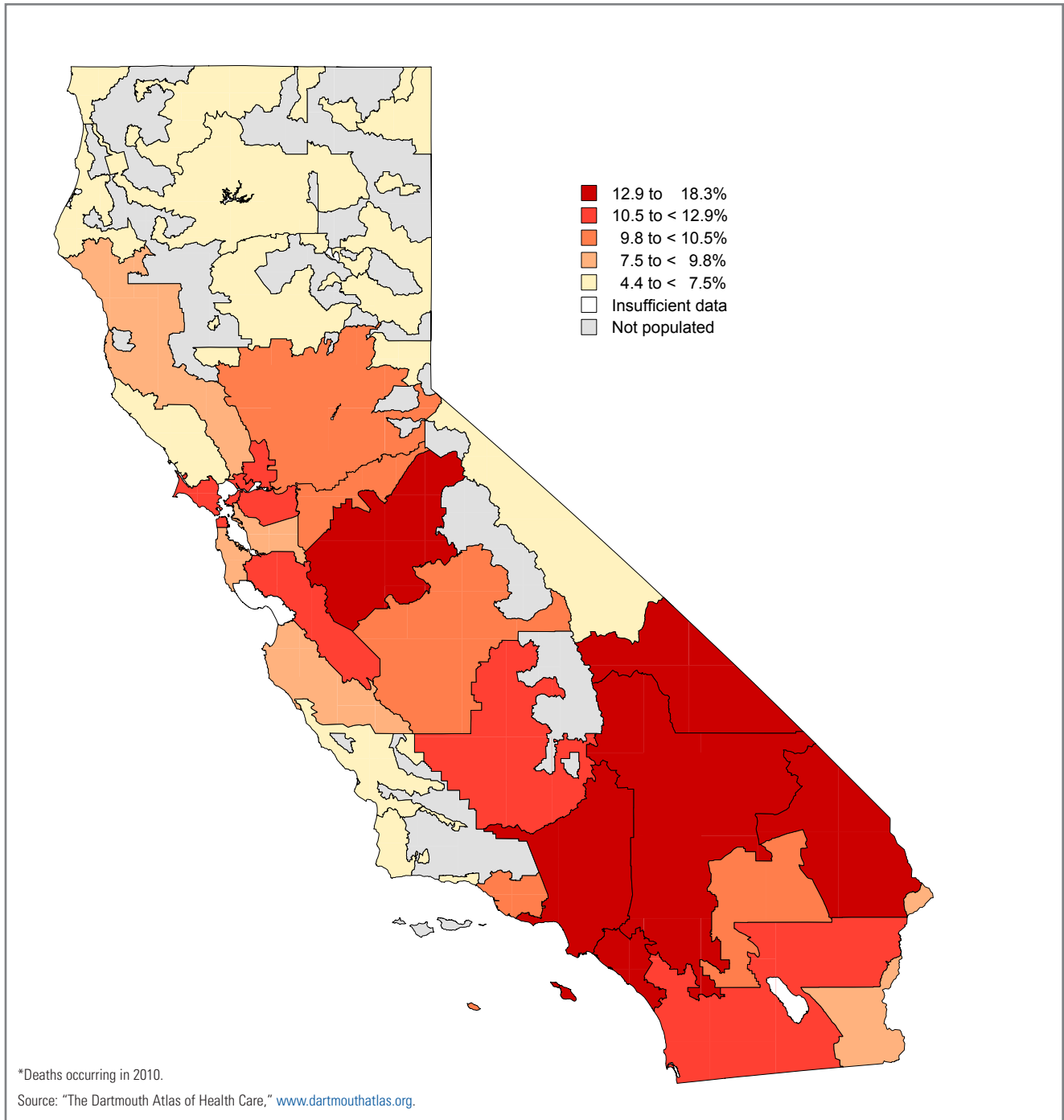
Across the country, the percentage of Medicare beneficiaries with cancer who received life-sustaining treatment (such as endotracheal intubation, feeding tubes, and cardiopulmonary resuscitation) in the last month of life held steady between 2003–07 and 2010 (9.4%), but rose by nearly 10% in California, from 11.8% to 12.9%. Within that overall high rate compared with the rest of the country, there was considerable variation within the state. Between 2003–07 and 2010, use of life-sustaining treatment at the end of life increased by 40% in Modesto (+4.7 percentage points) and San Jose (+3.6 points), while Sacramento (+3.0 points) increased utilization by more than 40%. Such treatment decreased by more than 10% in Fresno (–2.4 percentage points), Orange County (–2.2 points), and San Luis Obispo (–1.3 points).

In 2010, in Los Angeles HRR (18.2%), San Bernardino (15.1%), and Orange County (14.5%), the highest three HRRs, around 1 in 6 to 1 in 7 patients got life-sustaining treatment in their last month of life; in Santa Rosa (5.0%), San Luis Obispo (5.9%), and Chico (6.0%), the lowest HRRs, fewer than 1 in 18 or 20 patients did.

**Figure 5. Medicare Cancer Patients Receiving Life-Sustaining Treatment During the Last Month of Life, California vs. US, 2003–07 to 2010**



**Map 5. Percentage of Medicare Cancer Patients Receiving Life-Sustaining Treatment During the Last Month of Life, by California HRR, 2010\***



## Hospice Days in the Last Month of Life

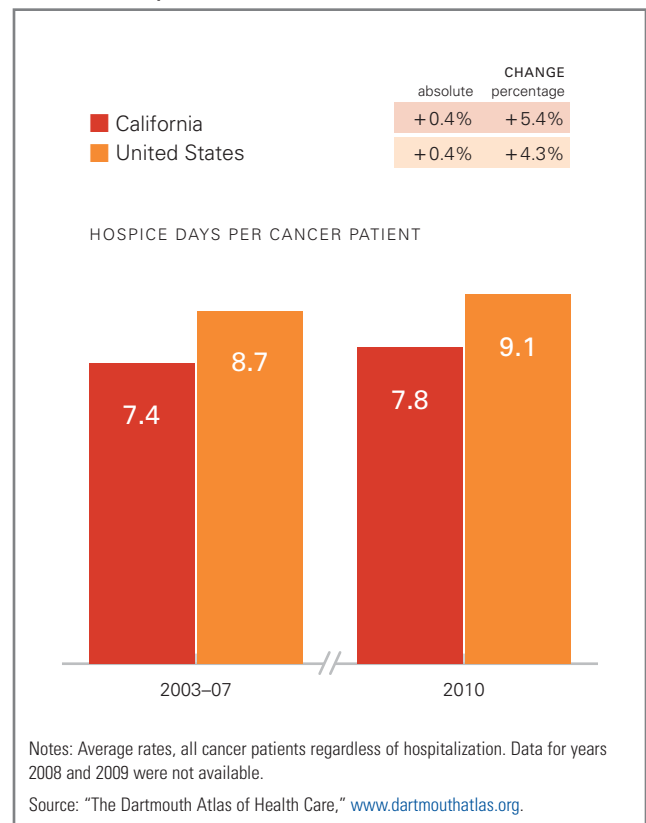
For elderly patients with serious illness and a life expectancy of six months or less, Medicare benefits include hospice services. Hospice care is directed toward comfort and support services rather than curative treatment. Care can be provided in the patient's home, and includes palliative services to control symptoms, and family support prior to and after the death of the patient. Patients choose to enroll in hospice, and they may withdraw from it at any time.

Hospice care has gained increasing recognition as a valuable way to improve the quality of life for patients with poor-prognosis cancer. Still, in many places, the “fight” to cure the patient of cancer or to produce a remission can crowd out discussions with patients and families about the full range of available treatments, including palliative and hospice care. In California, there was a marked degree of variation in the percentage of dying cancer patients who received hospice care in the last month of life. This variation was high across both HRRs and medical centers.

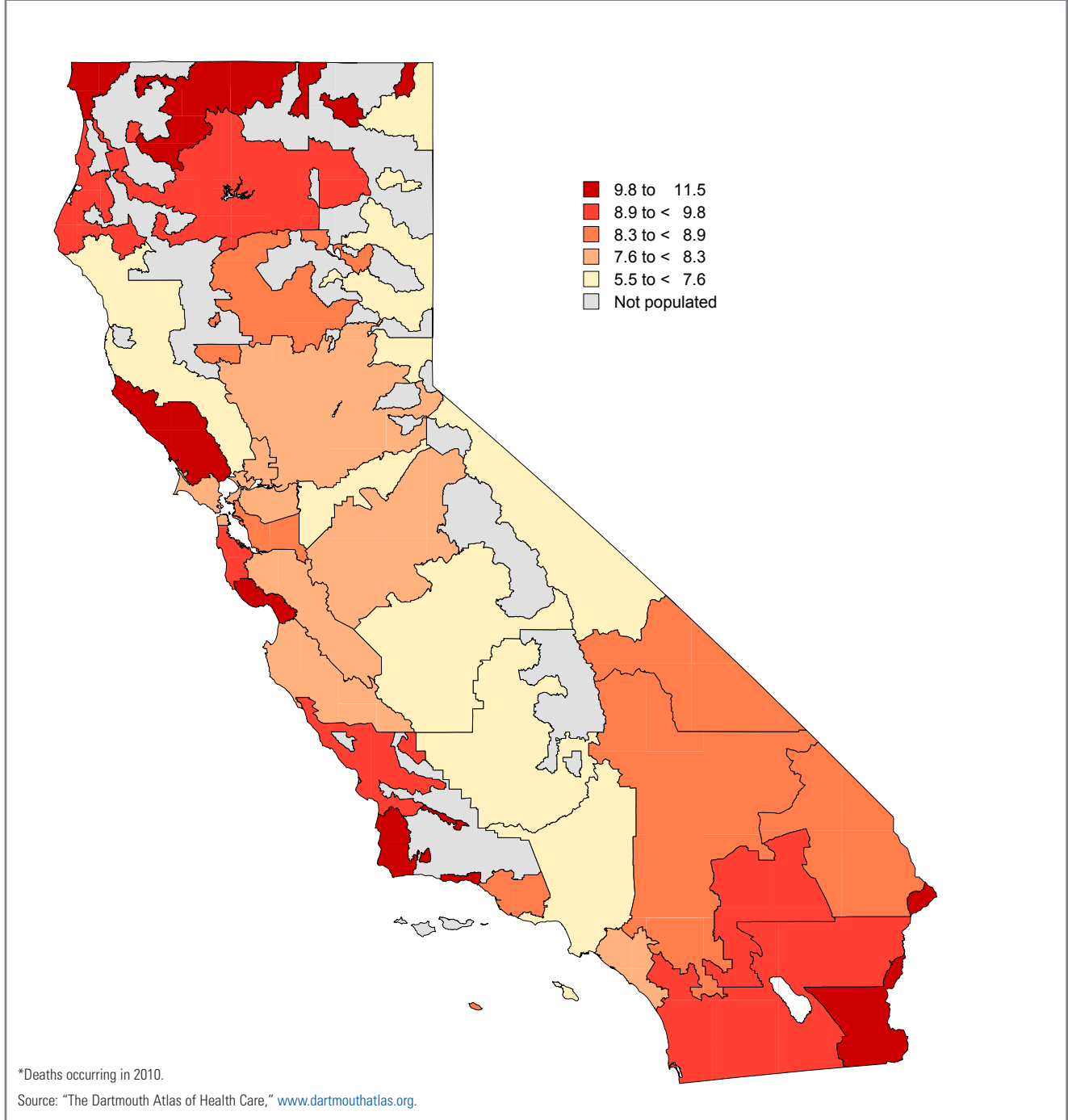
The state continues to lag behind the rest of the country in hospice use, though the number of days Medicare beneficiaries with cancer spend in hospice during their last month of life is increasing. The national average for days cancer patients spent in hospice in their last month was 9.1, up a little less than half a day from the period 2003–07. The California rate was 7.8 days, with the same increase over that time (Figure 6). There were some striking changes across the state in the use of hospice: Santa Cruz HRR added 2.2 days, a 23% increase; Fresno's 1.3-day increase was smaller but also amounted to a 23% increase. Conversely, cancer patients in Stockton and San Luis Obispo HRRs lost two full days — decreases of 18% and 26%, respectively.

In 2010, there was considerable variation across the state: Patients in Santa Cruz spent twice as long (11.4 days) in hospice, on average, as those in Stockton (5.5 days). Patients in Santa Rosa spent just over 10 days in hospice; those in Los Angeles (6.4 days) and Fresno (6.7 days) were in hospice for less than a week.

**Figure 6. Hospice Days per Medicare Cancer Patient During the Last Month of Life, California vs. US, 2003–07 to 2010**



Map 6. Hospice Days per Medicare Cancer Patient During the Last Month of Life, by California HRR, 2010\*



## Enrollment in Hospice in the Last Three Days of Life

The goal of helping cancer patients live out their last weeks and months with as much comfort and function as possible cannot be achieved if patients enter hospice care just before they die. While no one can predict with certainty when a patient with serious illness will die, in some regions and hospitals, a relatively high proportion of cancer patients do not enter hospice until they are within three days of death. These regions and hospitals may have important opportunities to improve the care of patients with poor-prognosis cancer.

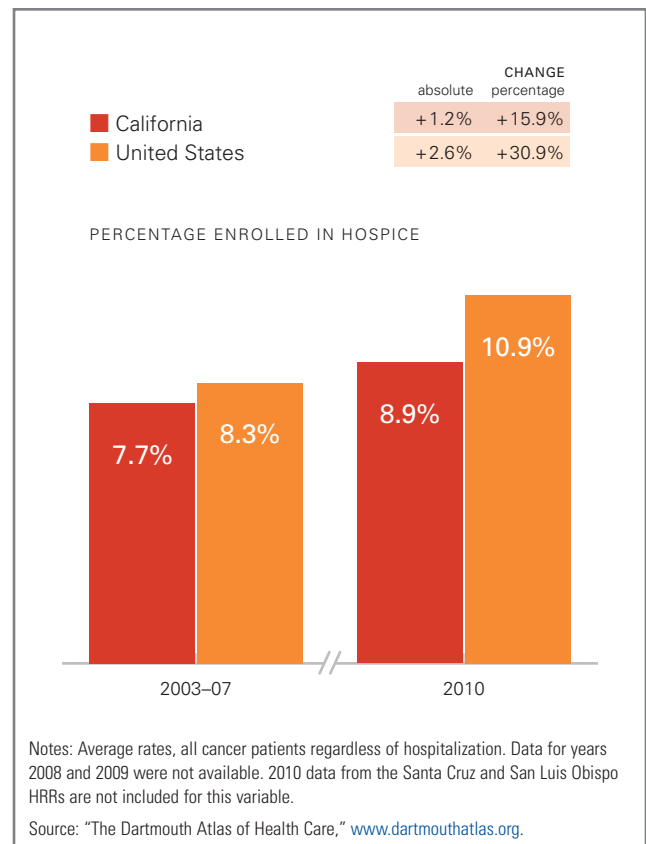
In 2010, late arrivals in hospice (patients who are first enrolled in hospice in the last three days of life) accounted for about 1 in 9 dying cancer patients in the US, and about 1 in 11 in California. Nationwide, from 2003–07 to 2010, late enrollment rose from 8.3% to 10.9%. Over that period, late enrollment rose in California from 7.7% to 8.9%. Several HRRs in the state with the highest rates of late hospice entry in 2010 have seen rapid increases in late enrollment since 2003–07. Most striking is the increase in Stockton: up 6.6 percentage points in that time, more than doubling the percentage of patients entering hospice in their last three days. Other HRRs saw large increases, including Fresno (+4.9 points), Contra Costa County (+4.7 points), Ventura (+4.6 percentage points), and Modesto (+4.0 points). Only two HRRs in the state saw substantial decreases in late hospice entry: San Francisco saw a drop of 1.7 percentage points (a 28% decline), and in Santa Barbara it fell by 2.6 percentage points (34%).

Across the state, there was considerable variation in late hospice enrollment, ranging from 13% of patients in Ventura and Contra Costa County HRRs to 4.3% in San Francisco. Patients in Ventura were about three times as likely as patients in San Francisco to arrive in hospice immediately

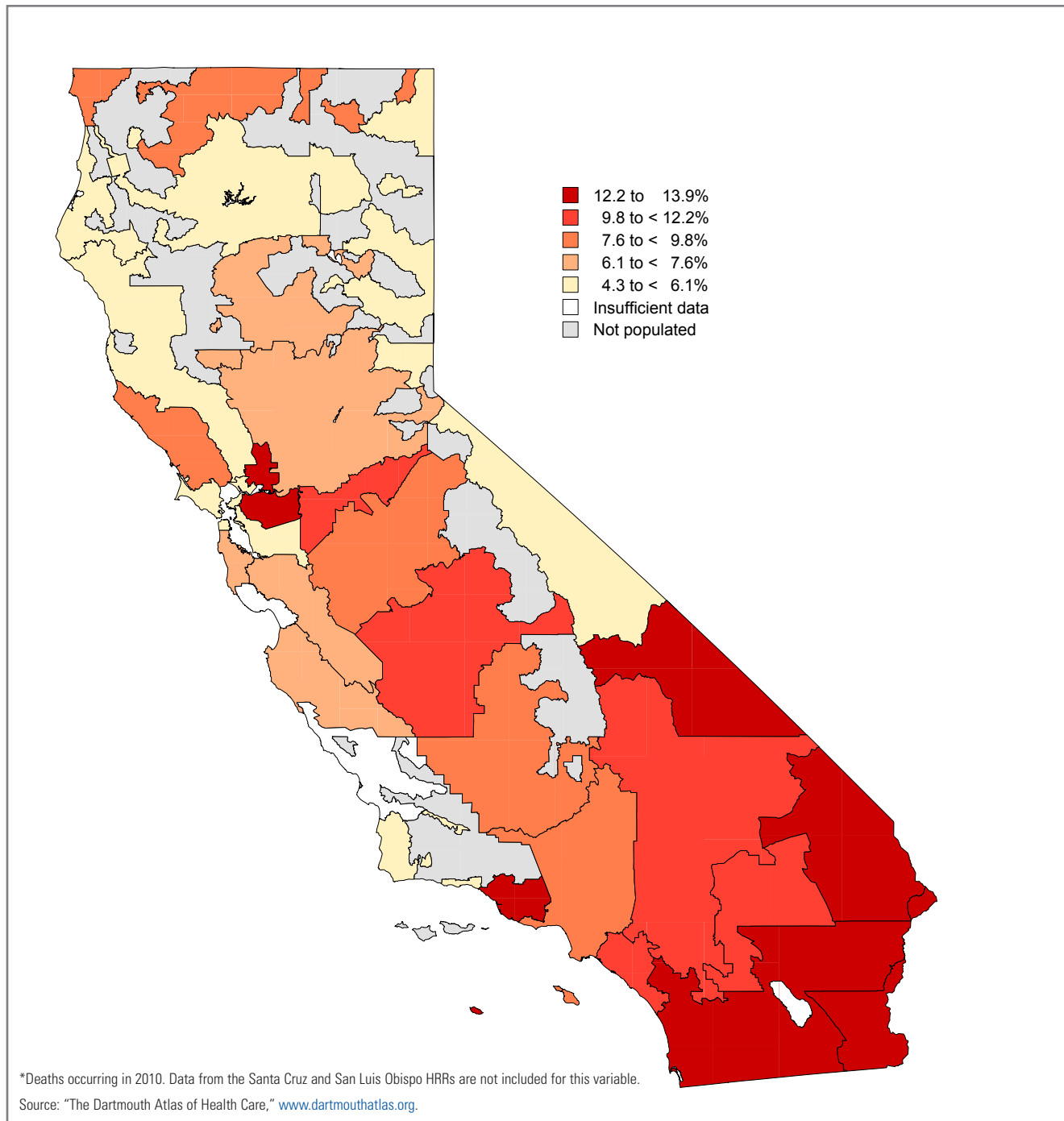
before death, a situation that was also common in San Diego (12.3%) and Stockton (12.2%) but rare in Redding (5.0%) and Santa Barbara (5.1%).

In some HRRs, such as Stockton, where the rate of late enrollment increased more than 117% at the same time that total hospice days at the end of life dropped 26%, the rise in late enrollment may represent a misunderstanding of the purpose of hospice, or a failure to recognize its value for terminally ill patients who have longer to live. In other HRRs, such as Fresno, the rise in late enrollment (83%) may indicate the early stages of a drive to increase hospice enrollment among cancer patients.

**Figure 7. Medicare Cancer Patients Enrolled in Hospice During the Last Three Days of Life, California vs. US, 2003–07 to 2010**



**Map 7. Percentage of Medicare Cancer Patients Enrolled in Hospice During the Last Three Days of Life, by California HRR, 2010\***



## IV. Variation Among California Hospitals

IN ADDITION TO VARYING BY REGION, THE kind and quantity of care that Californians with cancer receive as they approach the end of life also varies from hospital to hospital. For this study, data on end-of-life care delivered to Medicare beneficiaries with cancer was collected at 63 of California's largest hospitals. To be selected, the hospital had to have had at least 80 deaths per year among patients with cancer between 2003–07 and 2010. Many of the hospitals included in this research changed substantially in the intensity of the end-of-life care they provided from 2003–07 to 2010, but not all in the same direction. At some hospitals, the care became more aggressive; for example, patients spent more days in the ICU and fewer days in hospice. At others, patients were more likely to be enrolled in hospice, or the care they received in the hospital was less aggressive.

*Detailed data relevant to the findings in this section are available at [www.chcf.org](http://www.chcf.org).*

### Deaths in Hospital

Between 2003–07 and 2010, about half of the hospitals profiled here saw a decline in the percentage of Medicare beneficiaries with cancer who died in the hospital. Dominican Hospital in Santa Cruz had the largest drop, from 32.8% of patients during 2003–07 to 20.8% in 2010 (a 36.5% decline). Large decreases were also seen at Santa Rosa Medical Center (–12.0 percentage points, or a 35.8% decline) and at Providence St. Joseph Medical Center in Burbank (35.7% decline). The largest increase (55.5%) was found at the University of California, Davis. Mercy San Juan Medical Center in Carmichael saw the next-highest increase (+8.9 percentage points, or 32.5%).

On average, California hospitals started higher than the national average in 2003–07, and some of those that were below the national average have since increased the percentage of deaths in the hospital; at least one, UC Davis, surpassed the national average in 2010.

### Deaths Associated with Admission to Intensive Care

The rate of death associated with admission to intensive care increased at most California hospitals in this study. Between 2003–07 and 2010, the greatest increase was at Mercy Medical Center in Merced, where 14.8% of cancer patients were admitted to the ICU during 2003–07 and 43.1% in 2010, a 191% increase. The rate rose over 99% at St. Joseph Medical Center in Stockton, over 88% at Scripps Mercy Hospital in San Diego, and over 60% at Stanford Hospital and Clinics in Stanford. Only 10 hospitals saw a decrease in ICU admissions. The largest decline was at Providence St. Joseph Medical Center in Burbank, which saw a decrease of nearly 32%, from 52.1% in the 2003–07 period to 35.6% in 2010.

Several hospitals with high rates of hospital deaths that included a stay in the ICU in 2003–07 rose even higher by 2010. Ronald Reagan UCLA Medical Center, which at 41.2% was the second-highest among these hospitals from 2003–07, increased to 58.4% in 2010. Methodist Hospital of Southern California in Arcadia, also high in 2003–07, went up from 43.6% to 64.3% in 2010.



## Hospital Days During the Last Six Months of Life

Although more hospital days in the last month of life is generally associated with more-aggressive cancer care at a regional level, this was not always true for individual hospitals. In some cases, fewer inpatient days may have meant more chemotherapy at the end of life, or a larger proportion of those days being spent in the ICU.

A little more than half of the hospitals in this study decreased the time their patients spent in the hospital at the end of life, although at most the decline was less than two days. Los Robles Hospital and Medical Center in Thousand Oaks cut time in the hospital by 1.7 days, from 5.5 days in 2003–07 to 3.8 in 2010, a drop of more than 30%. John Muir Medical Center Walnut Creek went from 7.4 days, one of the highest in 2003–07, to 5.6 days, cutting days by nearly a quarter. Other hospitals went in the opposite direction. UC Davis Medical Center in Sacramento increased the number of days cancer patients spent in the hospital at the end of life by more than 83%, going from 3.7 days during 2003–07 to 6.8 in 2010. Over the same period Mercy Medical Center in Merced went from 5.0 to 7.3 days, becoming the sixth-highest hospital in the state in 2010. The most inpatient days in 2010 were spent at Glendale Adventist Medical Center in Glendale: 8.2 days, up from 7.3 during 2003–07.

## Intensive Care Days During the Last Month of Life

In most of the nation, the average number of ICU days in the last month of life for cancer patients changed only moderately. But among the California hospitals profiled here, there was wide variation. The average number of days in the ICU declined in only 10 hospitals, and none by more than a fraction of a day. City of Hope-Heilford Hospital in Duarte

and Los Robles Hospital and Medical Center in Thousand Oaks saw the largest declines, more than 46% each; at both institutions, cancer patients spent only 0.7 days in the ICU in 2010. The average number of days in the ICU in 2010 among the hospitals studied was 2.4 days. Providence St. Joseph Medical Center in Burbank saw a decline of 0.9 days, bringing it down from three days between 2003 and 2007 to 2.2 days in 2010.

Most of the hospitals in this study saw an increase in the days dying patients spent in the ICU, and at three of them, the added time amounted to more than two days. Mercy Medical Center in Merced went from 0.5 days, one of the lowest hospitals between 2003 and 2007, to three days in 2010, an increase of nearly 483%. Stanford Hospital and Clinics in Stanford went from 1.3 to 3.7 days (+2.4 days), a 177% increase, while Ronald Reagan UCLA Medical Center in Los Angeles added 2.2 days to reach five days in 2010, becoming the second-highest hospital in the state for ICU days.

## Life-Sustaining Treatment in the Last Month of Life

Only 23 of the hospitals in this study had enough data for 2003–07 to examine the change in the percentage of cancer patients who received life-sustaining treatment, such as endotracheal intubation, feeding tubes, and CPR in the last month of life. Among those 23, fewer than half saw a decline in the percentage of patients who received such treatment. California Pacific Medical Center in San Francisco saw the largest drop, from 14% in 2003–07 to 8.3% in 2010, a decline of nearly 41%. Glendale Adventist Medical Center in Glendale declined nearly 40%, to 16.5% (–10.7 percentage points), while Methodist Hospital of Southern California in Arcadia went to 15.3% in 2010, a decline of 5.5 percentage points (26.5%).

Most of the hospitals in this study increased the percentage of patients receiving life-sustaining treatment during that period. The largest rise was at Ronald Reagan UCLA Medical Center in Los Angeles, which saw nearly a doubling in the percentage of patients, from 10.9% between 2003 and 2007 to 21.7% in 2010. Eisenhower Medical Center in Rancho Mirage had the second-biggest increase, 4.7 percentage points, but it went from below the state average, at 7.3% in 2003–07, to 11.9% in 2010.

### **Hospice Days During the Last Six Months of Life**

More than half of the profiled hospitals increased their provision of hospice care to dying cancer patients during the study period. Community Regional Medical Center in Fresno led this trend with an increase of more than 132%, from 3.1 to 7.3 days per patient, an increase of more than four days. Providence St. Joseph Medical Center in Burbank was second, up three days (81.5%), while Mills-Peninsula Health Services in Burlingame went up 4.4 days, to 11 days in 2010, the highest number among studied hospitals.

More than a dozen hospitals provided less hospice care in 2010 than from 2003 to 2007. UC Davis Medical Center in Sacramento saw the greatest decline, 3.9 days (–40.6%), followed by St. Joseph Medical Center in Stockton, where patients spent nearly two fewer days in hospice (–1.9 days), a decline of nearly 30%. Tri-City Medical Center in Oceanside went from having the highest rate between 2003 and 2007, with 11.3 days, to 8.8 days in 2010, a decline of 21.7%. In 2010, St. Vincent Medical Center in Los Angeles provided the lowest number of hospice days to dying cancer patients, only 3.4 days on average.

### **Patients Enrolled in Hospice in the Last Three Days of Life**

Only 14 hospitals in this study had enough data to show a change in the percentage of patients not enrolled in hospice until their last three days of life; of those hospitals, more than half saw an increase in this measure. In 2010, 15% of dying cancer patients were enrolled in hospice in the last three days of life at Providence St. Joseph Medical Center in Stockton, an increase of 7.9 percentage points (more than 111%). Over 19% of patients were enrolled in their last three days at St. Joseph Hospital in Orange, which saw an increase of 8.3 percentage points compared with 2003–07 (76%). Providence St. Joseph Medical Center in Burbank had the third-highest percentage increase, rising to 15.8% in 2010 for an increase of more than 61% (+6 percentage points). Although there were insufficient data to measure the change, USC University Hospital in Los Angeles had the highest percentage in 2010: 21% of dying cancer patients. USC was also among the lowest in terms of total days patients spent in hospice in 2010.

Several hospitals were able to reduce the percentage of patients who were enrolled in hospice in the last three days of life and increase the total days patients spent in hospice. Sharp Grossmont in La Mesa, at 17%, had the highest percentage of patients admitted to hospice in the last three days of life from 2003 to 2007, and brought that down by 5.4 percentage points in 2010 (a decline of more than 31%). Over that same period, Sharp Grossmont increased the number of days dying patients spent in hospice from 7.4 days on average to 8.5 days, an increase of more than 15%. Cedars-Sinai Medical Center in Los Angeles also reduced the percentage of patients enrolled in the last three days, from 8.3% between 2003 and 2007 to 6.3% in 2010, while

increasing the average time patients spent in hospice to 5.2 days, an increase of more than 19%.

### **Patients Seeing 10 or More Doctors During the Last Six Months of Life**

Data on high numbers of physician encounters in 2003–07 and 2010 are available for 50 California hospitals. Only four of these hospitals reported a decrease in the percentage of cancer patients seeing 10 or more doctors in the last six months of life between 2003–07 and 2010, while the rest increased this rate. Salinas Valley Memorial Hospital in Salinas went from 53.7% during 2003–07 to 43.9% in 2010, a decline of more than 18%. St. Vincent Medical Center in Los Angeles declined nearly 16% to 46.2% in 2010, while Providence St. Joseph Medical Center in Burbank went from 63.2% to 59% (–5%).

The greatest increase was seen at St. Joseph Medical Center in Stockton, which rose from 25.4% to 57.3% in 2010, an increase of nearly 126%. Community Regional Medical Center in Fresno went from 33.3%, one of lowest hospitals during 2003–07, to 71.9% in 2010, putting it fifth-highest among all the hospitals in this study. Sharp Chula Vista Medical Center in Chula Vista rose 28.4 percentage points, to 59.5% in 2010, while Sutter Medical Center in Sacramento went up 25.5 percentage points, to 58.6%.

Five of the state’s academic medical centers increased the percentage of dying patients who saw 10 or more physicians, including UCSF Medical Center in San Francisco; Cedars-Sinai Medical Center and Ronald Reagan UCLA Medical Center, both in Los Angeles; UC Davis Medical Center in Sacramento; and Stanford Hospital and Clinics in Stanford. Data were not available for 2003–07 for other academic medical centers, all of which ranked among the highest in percentage of patients who saw 10 or more doctors in 2010. USC University Hospital in Los Angeles, at 75.4%, had the highest percentage in 2010.

## V. Conclusion

THIS RESEARCH SUGGESTS THAT REGIONS and hospitals where cancer patients are hospitalized more often in the last month of life, receive more-aggressive treatment in their last month, and spend relatively few days in hospice are signs that patients are receiving treatment that they do not want.

The wide variation found in end-of-life cancer care can be explained only partly by patient preferences. Because differences in patients' age, sex, race, income, and illness have been adjusted for, the variation that remains is caused by other factors, such as the availability of medical resources and the practice styles of health systems and clinicians.

The research in this report has important implications for clinicians, hospitals, policymakers, and patients in California. Providers can see how their organizations and regions compare with others, and consider ways to provide less-costly care that is more closely aligned with patient wishes.<sup>42</sup> Policymakers can identify regions and hospitals that are using promising approaches — as well as those that may benefit from more support in improving end-of-life care. Finally, patients can choose their caregivers and their site of care, and make their specific wishes known to their clinicians.

For both patients and caregivers, it is a great challenge when, against all hope and every medical effort, illness worsens and death is imminent. They have been fighting together for a cure — often for months or even years. Moving the discussion toward end-of-life care is uncomfortable. Inability to achieve a cure is often felt to be a failure, and discussions of palliative and hospice care can sometimes be perceived as “giving up” by patients, families, and

### What Should Hospitals Do to Improve Care for Patients at the End of Life?

Fundamental to patient-centered cancer care are health care providers educating patients about their prognoses, eliciting their preferred treatment approaches, and formulating care plans that respect their choices regarding the goals of care. The majority of cancer patients want to be involved in their medical care, but a collusion of silence and health care fragmentation results in far too many patients uninformed of their prognoses and the option of hospice. Many are informed far too late, resulting in hospice referral in the last three days of life. This pattern of care often leaves the dying patient in pain and without the opportunity to say “Goodbye, I love you, please carry on. . . .”

So what should hospitals and academic medical centers do? Be leaders and embrace patient- and family-centered care for all patients, especially those with cancers with poor prognoses. Hospitals should examine their rates of ICU utilization, hospice referral, and other utilization measures and then ask, Do these results reflect a practice of educating patients about their prognoses, eliciting their choices, and forming care plans that respect patients' goals of care? If opportunities to improve are identified, hospitals should work with the local hospice or existing palliative care consult service, and/or start a palliative care consult service, to ensure that the institution is delivering high-quality care. Health care reform presents an important opportunity to restructure health care and transition from serving the needs of institutions to providing care that focuses on patients as well as the family members and friends who care for them.

Source: Joan M. Teno, MD, MS, is a professor of community health and medicine at the Warren Alpert School of Medicine of Brown University and associate medical director of Home and Hospice Care of Rhode Island. The above quote was originally published as part of the Dartmouth Atlas of Health.

clinicians. However, we know that well-informed patients have strong opinions about the care that they want and don't want. It is the responsibility of clinicians and health care systems to help patients understand their options and to articulate their goals.

It may help both patients and clinicians to recognize that achieving both the longest and the most functional life is not a simple choice between curative efforts and palliative or hospice care.<sup>43</sup> Palliative care early in the course of cancer illness can reduce discomfort from both the disease and curative treatments, and also legitimize the discussion of quality of life. For patients with poor-prognosis disease, palliative and hospice care can in fact prolong life, even as they improve its quality.<sup>44-46</sup>

## Appendix: Methodology

### Methods Overview

This report used methods developed specifically for patients with poor-prognosis cancer as well as methods for examining the care received by other chronically ill Medicare beneficiaries at the end of life. A brief discussion of the methods follows; more detailed descriptions can be found in peer-reviewed journal articles.<sup>47,48</sup>

### Databases Used in the Analyses

Datasets used in the report included: the Medicare Denominator file (information about beneficiary enrollment, age, gender, and race); the 20% Carrier file (information about clinician care with patient diagnoses and procedures); the MedPAR file (information about inpatient stays, including ICU use, hospital days, and diagnoses); the Outpatient file (information about facility charges such as outpatient chemotherapy administration); and the Hospice file.

### Study Populations

The researchers identified a 20% sample of all Medicare beneficiaries who died between the ages of 66 and 99 during the period 2003–07. Beneficiaries without continuous Part A and Part B coverage in the last six months of life or who were enrolled in Medicare health maintenance organizations (i.e., Medicare Advantage) were excluded. Decedents who had poor-prognosis cancer diagnoses on at least one hospital claim or at least two clinician visits in the last six months of life were identified.<sup>49</sup> Decedents were then categorized into one of 26 cancer types based on their predominant cancer diagnosis using a modified Clinical Classification Software (CCS) approach.<sup>50</sup>

Cohort members were assigned a CCS cancer category based on their predominant cancer diagnoses. Patients whose predominant ICD-9 codes resulted in assignment to the vaguely defined CCS cancer categories 41–44 were reassigned to more narrowly defined CCS categories if they had one or more cancer diagnosis belonging to a more specific CCS category. For patients without a specific

cancer diagnosis, assignment to a more narrowly defined CCS category was achieved, when possible, by including a broader range of cancer diagnoses (ICD-9 codes 140–208 or 239.0–239.9 excluding V codes). Ties were resolved by assigning the patient to the CCS category corresponding to the diagnosis most proximal to death.

Decedents with hospitalization were assigned to the hospital providing the most cancer care hospitalizations in the last six months of life. These were identified as inpatient stays with a primary diagnosis of cancer (ICD-9 codes 140–209 and 236–239 excluding V codes) or a secondary diagnosis of a poor-prognosis cancer ICD-9 code. Hospitals in this report were restricted to National Cancer Institute (NCI) cancer centers and non-NCI-affiliated academic medical centers (AMCs) using the NCI website member list (confirmed by NCI staff) and the American Association of Medical Colleges Council of Teaching Hospitals and Health Systems 2007 hospital academic affiliation definitions. Hospitals not in NCI or AMC groups were categorized as community hospitals; while not discussed in this report, measures of the care they provided to poor-prognosis cancer patients can be found on the Dartmouth Atlas website ([www.dartmouthatlas.org](http://www.dartmouthatlas.org)).

All cancer decedents were also assigned to the hospital referral region of their residence. Hospital referral regions (n = 306) are geographic markets for tertiary care for Medicare beneficiaries who were defined using information about beneficiaries' travel for cardiothoracic and neurosurgery.

### End-of-Life Care

For each patient, researchers identified hospitalizations, hospital days, intensive care unit (ICU) admissions and days, and the number of physicians providing care. The discharge status of “expired” was used to identify patients who died in the hospital. The number of days of hospice use for each patient was measured, along with the late initiation of hospice service (within three days of death). Specific billing codes (from the MedPAR,

Carrier, and Outpatient files) were used to assess receipt of chemotherapy (administered by a clinician or facility) and three potentially life-sustaining procedures: (1) feeding tube placement, (2) endotracheal intubation, and (3) cardiopulmonary resuscitation.

### Statistical Analyses

Although all of these patients died of serious cancer, groups of patients across hospitals or regions may have differed on other characteristics such as the composition of age, gender, or race. All rates are adjusted with the following patient-level characteristics: age (categorized as 66–69, 70–74, 75–79, 80–84, 85–99), race (Black/non-Black), gender, cancer type, and non-cancer chronic conditions.

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