

**Rural-Urban Differences in Costs of End-of-Life Care for in the last six months of life among patients with breast, lung, or colorectal cancer...**

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At the Heart of Public Health Policy



# End of Life Care

- End of life care is a concern for caregivers, patients, and policymakers alike
- Two pronged concern: patient preferences and costs associated with care
- Wide variations in service utilization during the last six to twelve months of life (Goodman et al, 2004; Shugarman et al, 2009).



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# Variations may be due to:

- Resource Availability (distance) (Morden et al, 2012; Robinson et al, 2009)
- Hospital Type and Service Intensity (Barnato et al, 2007)
- Patient Characteristics (Shugarman et al, 2009)
  - Gender, Race, Age
- Personal Preferences (Goodman et al, 2004)



# Why care about the last six months of life?

- Most significant time when patients are likely to benefit from palliative care
- Barriers remain for Medicare beneficiaries who may wish to use hospice
- Access limited for rural beneficiaries



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# Why care about the last six months of life?

- Cancer care intensity varies greatly
- Limited research on differences in Medicare expenditures of beneficiaries with cancer in the last six months of life, the most costly time for Medicare beneficiaries



# Types of expenditures considered

Use of claims analysis..

- Inpatient
- Outpatient
- Physician
- Home Health
- Hospice
- Skilled Nursing Facility



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# Handling cost data

		Overall		Breast Cancer	
		Rural	Urban	Rural	Urban
Total Medicare expenditures	Median <sup>a</sup>	22,549	26,504	21,839	25,698
	Mean <sup>a</sup>	31,305	37,408	29,768	35,238
Inpatient	% Nonzero expenditures <sup>b</sup>	77.0	80.3	79.1	79.2
	Median <sup>a</sup>	16,395	19,592	14,766	18,382
	Mean <sup>a</sup>	24,764	30,739	21,824	28,738



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# But...

- Geographic variation in Medicare payment
- Need to adjust for that
- Other cofounders: age, gender, race, dual eligibility, region, and categories of the number of hospice beds per one thousand residents by county.



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# Handling cost data

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Highly skewed

May have many zero's and many large expenditures

Can use log-transformation to normalize and account for skewed data



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# Breast Cancer

	Estimate	Cost Ratio <sup>†</sup>
Intercept	8.79 <sup>‡</sup>	
Rural	-0.09 <sup>‡</sup>	0.91
Chronic Conditions		
No conditions	Referent	
One to two conditions	0.09	1.09
Three to four conditions	0.17	1.19
Five or more conditions	0.34 <sup>‡</sup>	1.41
Inpatient	1.27 <sup>‡</sup>	3.56
Outpatient	0.38 <sup>‡</sup>	1.46
Physician	0.10	1.11
SNF	0.58 <sup>‡</sup>	1.79
Home Health	0.27	1.31
Hospice	0.01	1.01



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# Takeaways

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Rural cancer patients in our study were found to cost less than their urban counterparts

Use less inpatient care, physician services, and home health.

More use of outpatient care and skilled nursing, however, suggesting disparities in access to oncology specialists and hospice at the end of life.



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