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## INTRODUCTION

The undue financial burden and stress that patients face related to the cost of cancer care is referred to as financial toxicity or financial hardship

- In 2010, the national expenditure for cancer care in the U.S. was estimated to be \$124.57 billion and is expected to grow to \$157.77 billion by 2020<sup>1,2</sup>
- It is estimated that some cancer survivors spend approximately 20% of their annual income on their medical care<sup>3</sup>
- According to the National Health Interview Survey, more than 2 million U.S. cancer survivors did not receive medical services because of financial concerns between 2003 and 2006<sup>4</sup>
- Patients who file for bankruptcy have higher mortality rates than those who do not<sup>3</sup>
- Rural cancer survivors have higher uninsured and poverty rates compared to urban cancer survivors<sup>4</sup>
- Rural patients face longer travel times to treatment than urban patients<sup>5,6,7</sup>

## OBJECTIVES

To examine geographic and patient factors related to financial hardship among cancer survivors using the 2011 Medical Expenditure Panel Survey (MEPS)

## METHODS

- Data were obtained from 1,492 participants in the 2011 MEPS supplement – The Effects of Cancer and Its Treatment on Finances
- Rural and urban designations were assigned using 2010 metropolitan statistical areas from the U.S. Office of Management and Budget with metropolitan areas defined as urban and micropolitan areas defined as rural
- Four MEPS questions were combined to create a measure of financial hardship resulting from cancer treatment: borrowed money/in debt, filed bankruptcy, made other financial sacrifices, unable to cover medical costs
- Multivariable logistic regression was conducted assessing the association between patient factors and financial hardship including: rural/urban residence, age, education, race, marital status, health insurance, and time since last cancer treatment
- Odds ratios and predicted probabilities with 95% confidence intervals were reported from the final adjusted model
- All analyses were weighted using population weights assigned by the Agency for Healthcare Research and Quality to account for the complex sampling design
- Analyses were performed using SAS software, Version 9.4 (SAS Institute, Cary, NC)

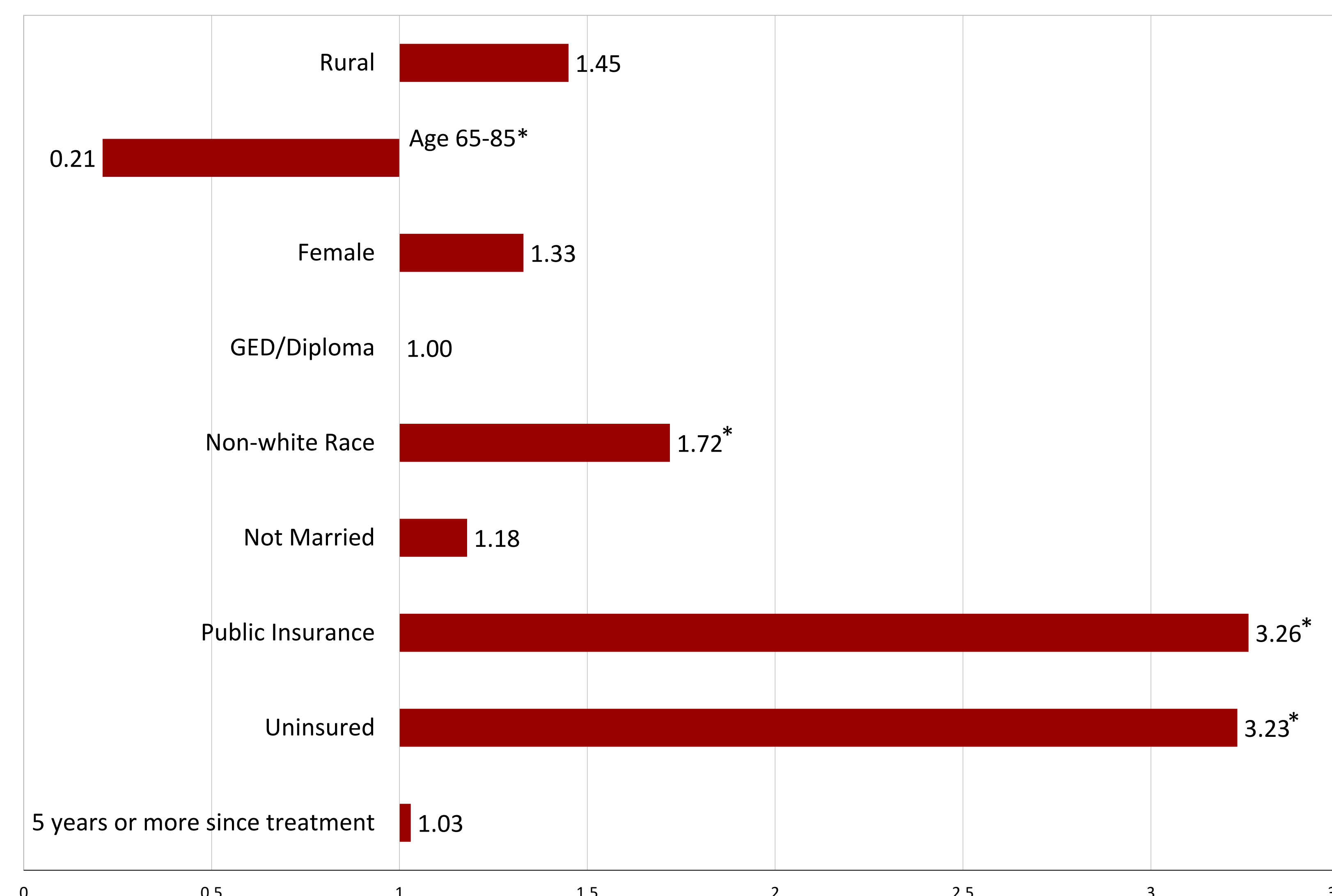
## RESULTS

**Table 1. Rural versus Urban Financial Hardship and Characteristics of Cancer Survivors, MEPS, 2011**

	Rural No. (Weighted %)	Urban No. (Weighted %)	X <sup>2</sup> p-value
Total	275 (100)	1144 (100)	
Financial Hardship	71 (23.9)	225 (17.1)	0.0169*
Age			0.3462
18-64	115 (43.0)	551 (47.2)	
65+	160 (57.0)	593 (52.8)	
Highest Education			0.0148*
GED/Diploma or Less	202 (64.1)	702 (54.9)	
Some College or More	73 (35.9)	439 (45.1)	
Race			0.0141*
White	242 (95.6)	972 (92.2)	
Non-white	33 (4.4)	172 (7.8)	
Marital Status			0.2955
Married	161 (62.9)	630 (58.5)	
Not Married	114 (37.1)	514 (41.5)	
Health Insurance			0.0497*
Private	77 (33.9)	395 (37.4)	
Public	106 (32.7)	339 (23.9)	
Uninsured	92 (33.5)	410 (38.7)	
Time Since Last Treatment			0.4892
Less than 5 Years	96 (34.6)	380 (34.9)	
5 Years or More	135 (49.9)	553 (46.5)	

\*significant at  $\alpha=0.05$

**Figure 1. Adjusted Odds Ratios for Factors Associated with Financial Hardship among Cancer Survivors, MEPS, 2011**



\*significant at  $\alpha=0.05$

- Rural and urban cancer survivors differed by education, race, and health insurance coverage (Table 1)
- A higher proportion of rural cancer survivors reported financial hardship than urban survivors (23.9% vs. 17.1%,  $p=0.02$ ), and after adjusting for covariates, 23.9% of rural cancer survivors reported overall financial hardship compared to 18.5% of their urban counterparts ( $p=0.08$ )
- Younger age, non-white race, and uninsured or public insurance were associated with higher odds of financial hardship (Figure 1)

**Table 2. Predicted Probabilities of Factors Associated with Financial Hardship among Cancer Survivors, MEPS, 2011**

	Predicted Probability	95% CI	Wald F p-value
Age			<.0001*
18-64	26.3%	17.9-36.4%	
65-85	13.6%	8.3-21.4%	
Highest Education			0.9800
GED/Diploma or Less	20.8%	13.7-30.0%	
Some College or More	17.4%	11.2-25.9%	
Race			0.0156*
White	17.8%	11.6-26.2%	
Non-white	30.7%	20.6-42.9%	
Marital Status			0.4243
Married	16.6%	10.7-24.7%	
Not Married	23.3%	15.4-33.3%	
Health Insurance			<.0001*
Private	18.8%	12.4-27.4%	
Public	23.2%	15.5-33.2%	
Uninsured	17.2%	10.9-25.6%	
Time Since Last Treatment			0.8860
Less than 5 years	19.0%	12.3-28.0%	
5 Years or More	20.0%	13.2-28.8%	

\*significant at  $\alpha=0.05$

## CONCLUSIONS

- Rural cancer survivors experienced higher rates of financial hardship compared to those living in urban areas
- Age, race, and health insurance type were significant factors related to financial hardship
- Future interventions should aim to address the financial burden among minority and uninsured cancer survivors

## REFERENCES & ACKNOWLEDGEMENTS

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