

# Regional Medicare Expenditures and Survival Among Older Women With Localized Breast Cancer

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# Introdução

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- CA mama – 250.000 mulheres diagnosticadas anualmente nos EUA;
- Tipos de tratamentos adotados difere muito entre as regiões geográficas (assim como os gastos do Medicare);
- Instituições com mais gastos → tecnologias mais novas e caras.

# Pergunta/Objetivo

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Verificar se as beneficiárias do Medicare com câncer de mama não-metastático que vivem em regiões com maiores despesas relacionadas ao câncer tiveram melhor sobrevida.

# Desenho

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- Longitudinal, observacional;
- Coorte retrospectiva;
- Base de dados: Surveillance, Epidemiology, and End Results (SEER-Medicare) - registros representam 28% da população dos EUA;

# Desenho

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## Critérios de inclusão:

- Mulheres,
- beneficiárias do Medicare,
- diagnóstico de CA mama estágios II-III,
- período 2005–2008,
- que passaram por cirurgia (lumpectomia ou mastectomia) dentro de 9 meses do diagnóstico.

## Critérios de exclusão:

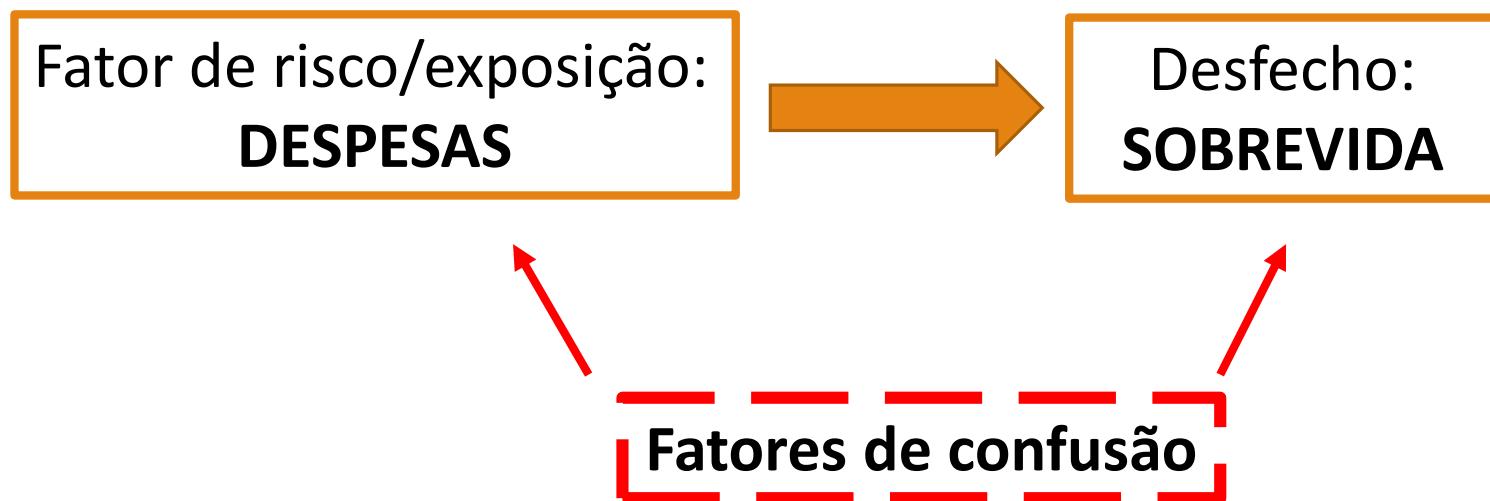
- pacientes com estágio 0, I ou IV;
- diagnóstico prévio com qualquer tipo de câncer (independentemente do local) ou que tenham um segundo câncer (não de mama) em qualquer tempo entre o diagnóstico até 1 ano após a cirurgia.

Para pacientes que tiveram múltiplos diagnósticos de CA mama durante 2005-2008, apenas o primeiro diagnóstico foi incluído na análise.

# Desenho

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- Um estudo anterior estimou o risco-padrão das despesas por paciente do Medicare em câncer de mama para as HRRs (regiões de referência hospitalar).
- Sobrevida analisada em 3 e 5 anos.



# Estatística Descritiva

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Características das pacientes		Classificação da Variável
Idade no Diagnóstico	Faixas etárias	Qualitativa Ordinal
Raça	Branca, Negra, Outra	Qualitativa Nominal
Estado civil	Casada, Não Casada, Desconhecido	Qualitativa Nominal

**TABLE 1.** Sample Characteristics and Bivariate Association With 3- and 5-Year Survival

Patient Characteristics	N (%)	Bivariate Association With Survival			
		% Surviving		% Surviving	
		(3 y)	P*	(5 y)	P*
HRR quintile of risk-standardized per patient Medicare expenditure on initial breast cancer care					
1 (lowest)	1604 (12.7)	79.6	0.08	67.4	0.28
2	2488 (19.7)	80.2		68.8	
3	3324 (26.4)	82.0		70.3	
4	3499 (27.8)	82.3		69.2	
5 (highest)	1695 (13.4)	81.2		68.2	
Age at diagnosis (y)					
67–69	2109 (16.7)	90.1	<0.001	82.7	<0.001
70–74	3136 (24.9)	89.3		80.1	
75–79	3048 (24.2)	83.5		71.6	
80–84	2447 (19.4)	75.4		60.5	
85–94	1870 (14.8)	62.4		42.2	
Race					
White	11,088 (87.9)	81.5	<0.001	69.3	<0.001
Black	1030 (8.2)	77.4		62.4	
Other	492 (3.9)	86.0		77.2	
Marital status					
Married	5046 (40.0)	87.2	<0.001	77.7	<0.001
Not married	7096 (56.3)	77.1		63.1	
Unknown	468 (3.7)	82.5		66.5	

Características das pacientes		Classificação da Variável
Renda	(quintil)	Qualitativa Ordinal
Residência em região metropolitana	S/N	Qualitativa Nominal
Ano de diagnóstico	2005 a 2008	Quantitativa Discreta
Comorbidade	Score Elixhauser	Qualitativa Ordinal
Status de incapacidade	S/N	Qualitativa Nominal
Acesso ao cuidado - Vacinada para influenza	S/N	Qualitativa Nominal
Acesso ao cuidado - APS até 1 ano antes da cirurgia	S/N	Qualitativa Nominal

Median household income					
< \$33,000	2778 (22.0)	78.9	<0.001	65.4	<0.001
\$33,000– \$39,999	1881 (14.9)	79.5		67.0	
\$40,000– \$49,999	2684 (21.3)	80.6		66.9	
\$50,000– \$62,999	2392 (19.0)	82.8		70.5	
≥ \$63,000	2875 (22.8)	84.3		74.6	
Metropolitan area residence					
Yes	10,470 (83.0)	81.9	<0.001	69.7	<0.001
No	2140 (17.0)	78.7		65.9	
Year of diagnosis					
2005	3276 (26.0)	80.2	0.006	67.8	0.10
2006	3181 (25.2)	80.3		68.5	
2007	3167 (25.1)	81.8		69.5	
2008	2986 (23.7)	83.2		70.5	
Comorbidity score					
0	5478 (43.4)	88.1	<0.001	78.7	<0.001
1–2	4838 (38.4)	81.4		68.5	
≥ 3	2294 (18.2)	65.0		47.1	
Disability status					
Not disabled	11,177 (88.6)	84.4	<0.001	72.9	<0.001
Disabled	1433 (11.4)	57.0		38.9	
Prior receipt of flu shot					
No	5273 (41.8)	80.8	0.22	67.8	0.008
Yes	7337 (58.2)	81.7		70.0	
Prior PCP visit					
No	804 (6.4)	77.4	0.003	64.3	0.003
Yes	11,806 (93.6)	81.6		69.4	

Características das pacientes		Classificação da Variável
Tumor - Estágio	II, III	Qualitativa Ordinal
Tumor - tamanho	Faixas	Qualitativa Ordinal
Tumor – lateralidade	D/E	Qualitativa Nominal
Tumor – presença de linfonodo positivo	S/N	Qualitativa Nominal
Tumor – status do receptor hormonal	Negativo, Positivo, desconhecido	Qualitativa Nominal
Tipo de cirurgia	Lumpectomia, mastectomia	Qualitativa Nominal
Radioterapia	S/N	Qualitativa Nominal
Quimioterapia	S/N	Qualitativa Nominal

Cancer stage					
II	9612 (76.2)	84.9	< 0.001	73.9	< 0.001
III	2998 (23.8)	69.9		53.5	
Tumor size (cm)					
< 2	2488 (19.7)	91.0	< 0.001	82.5	< 0.001
2–5	8470 (67.2)	81.4		68.6	
> 5	1436 (11.4)	66.2		50.7	
Unknown	216 (1.7)	68.1		54.6	

*(Continued)*

### Bivariate Association With Survival

Patient Characteristics	N (%)	% Surviving		% Surviving	
		(3 y)	P*	(5 y)	P*
<b>Laterality</b>					
Right-sided	6204 (49.2)	81.8	0.21	69.3	0.57
Left-sided	6406 (50.8)	80.9		68.8	
<b>Positive node(s)</b>					
No	5425 (43.0)	81.6	0.43	69.8	0.11
Yes	7185 (57.0)	81.1		68.5	
<b>Hormone receptor status</b>					
Negative	2291 (18.2)	69.8	<0.001	57.4	<0.001
Positive	9580 (76.0)	84.6		72.4	
Unknown	739 (5.9)	74.4		61.6	
<b>Tumor grade</b>					
1	1876 (14.9)	88.5	<0.001	78.9	<0.001
2	5388 (42.7)	84.9		72.5	
3	4571 (36.3)	74.7		61.7	
4	146 (1.2)	71.2		57.5	
Unknown	629 (5.0)	79.7		65.5	
<b>Type of surgery</b>					
Lumpectomy	5234 (41.5)	86.6	<0.001	76.3	<0.001
Mastectomy	7376 (58.5)	77.6		63.9	
<b>Receipt of radiation therapy</b>					
No	6454 (51.2)	74.7	<0.001	60.3	<0.001
Yes	6156 (48.8)	88.3		78.2	
<b>Receipt of chemotherapy</b>					
No	7960 (63.1)	78.6	<0.001	65.0	<0.001
Yes	4650 (36.9)	85.9		76.0	

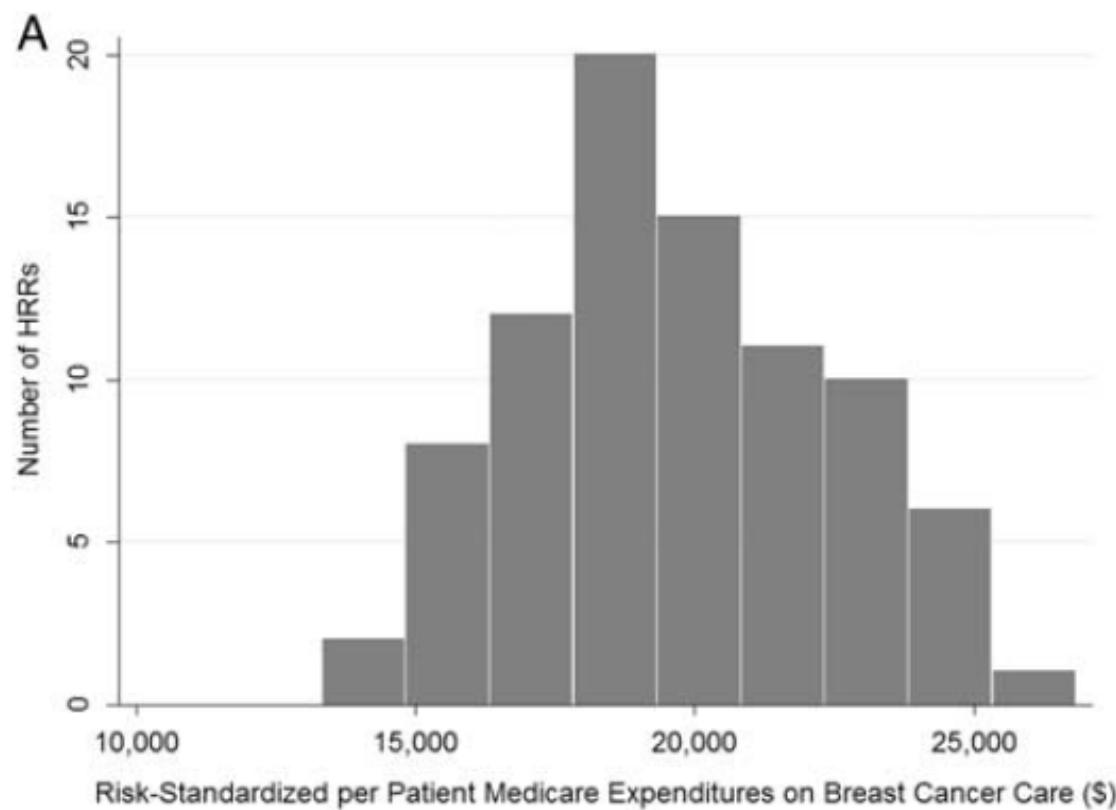
\*P-value based on  $\chi^2$  test of the association between each covariate and survival.  
HRR indicates hospital referral region; PCP, primary care physician.

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# Estatística Descritiva

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**FIGURE 1.** A, Distribution of risk-standardized per patient Medicare expenditure on initial phase of breast cancer care across HRRs. B, Kaplan-Meier curve of survival over time across

# Estatística Descritiva

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**TABLE 2. Use of Breast Cancer Treatment Across Quintiles of HRRs**

<b>Treatment</b>	<b>HRR Quintile of Risk-standardized Per Patient Medicare Expenditure on Initial Breast Cancer Care</b>				
	<b>1 (Lowest)</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5 (Highest)</b>
<b>Surgery (%)</b>					
Lumpectomy	38.2	35.7	45.5	43.6	41.1
Mastectomy	61.9	64.3	54.5	56.4	58.9
<b>Radiation therapy (%)</b>					
Systemic therapy (%)	34.5	36.7	35.8	38.2	39.7

HRR indicates hospital referral region.

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