

The Change of Recommended Age for Mammograms and Female Breast Cancer Survival in the United States

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Objectives

Policy Background

In 2009, the United States Preventive Services Task Force changed the recommended minimum age for mammograms from 40 to 50.

What is this study

This study examines whether this change affects breast cancer survival for women in the United States.

Datasets

- The Surveillance Epidemiology and End Results Program
- Periods: 2000-2018

Sample

- Females
- Breast cancer patients
- Aged 40 and over
- Total: 784136 observations

Methods

Difference-in-difference (DID)

Setting

- Treatment group: women aged 40-49
- Control group: women aged 50 and over
- Treatment time is 2009: Before 2009 both groups were recommended After 2009 the treatment group was no longer recommended

Modelling

$$Survival_{DID} = \beta_0 + \beta_1 Age50 + \beta_2 Year2009 + \beta_3 Age50 * Year2009 + \varepsilon$$

- $Survival_{DID}$: DID in survival months of breast cancer patients
- $Age50$: whether aged 50 and over
- $Year2009$: whether after 2009
- β_1 : the effect of age on survival months
- β_2 : the effect of year on survival months
- β_3 : the effect of the updated recommendation on survival months
- β_0 : the intercept
- ε : the error term

Analysis for subtypes

Including

- 1) infiltrating duct
- 2) lobular
- 3) adenocarcinoma
- 4) ductal
- 5) phyllodes
- 6) medullary
- 7) metaplastic
- 8) Paget
- 9) inflammatory &
- 10) others

Result 1

Main results

Table 1 Results of the updated mammogram recommendation on survival months of breast cancer

Variables	Survival months
DID	10.06*** (0.30)
Observations	784,136
R-squared	0.43

Notes: Robust standard errors are in parentheses. ***, ** and * denote p values <0.01, <0.05 and <0.1 respectively.

- The updated recommendation for mammograms increases 10 survival months for breast cancer patients.

Subtype results

Table 2 Results of the updated mammogram recommendation on survival months of breast cancer subtypes

Variables	(1) Infiltrating Duct	(2) Lobular	(3) Adenocarcinoma	(4) Ductal	(5) Phyllodes
DID	9.44*** (0.32)	10.17*** (1.04)	13.87*** (1.45)	-7.00 (6.04)	5.59 (5.61)
Observations	646,510	71,620	35,955	2,916	1,647
R-squared	0.44	0.44	0.40	0.40	0.47

Variables	(6) Medullary	(7) Metaplastic	(8) Paget	(9) Inflammatory	(10) Others
DID	12.88*** (3.74)	12.86* (6.60)	10.13** (4.64)	5.99 (4.03)	21.38*** (2.69)
Observations	2,879	2,703	2,933	3,893	13,080
R-squared	0.38	0.28	0.32	0.05	0.22

Notes: Robust standard errors are in parentheses. ***, ** and * denote p values <0.01, <0.05 and <0.1 respectively.

Result 2 & Conclusions

Subtype results (continued)

- This updated recommendation increases survival months of breast cancer of infiltrating duct (9.44), lobular (10.17), adenocarcinoma (13.87), medullary (12.88), metaplastic (12.86), Paget (10.13) and others (21.38).
- This change does not affect the survival of breast cancer of ductal, phyllodes and inflammatory.

Conclusions

- The updated age recommendation of mammograms promotes the survival of breast cancer and most of its subtypes.
- This updated age recommendation contributes little to the survival of ductal, phyllodes and inflammatory breast cancers, indicating a limited effect of the update.