



# Potential impact of the Affordable Care Act's preventive services provision on breast cancer stage: A preliminary assessment



Abigail Silva<sup>a,\*</sup>, Yamile Molina<sup>b</sup>, Bijou Hunt<sup>c</sup>, Talar Markossian<sup>a</sup>, Nazia Saiyed<sup>c</sup>

<sup>a</sup> Department of Public Health Sciences, Loyola University Stritch School of Medicine, Chicago, IL, United States

<sup>b</sup> Division of Community Health Sciences, University of Illinois School of Public Health, Chicago, IL, United States

<sup>c</sup> Sinai Urban Health Institute, Chicago, IL, United States

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## ABSTRACT

**Introduction:** The Affordable Care Act's (ACA) preventive services provision (PSP) removes copayments for preventive services such as cancer screening. We examined: 1) whether a shift in breast cancer stage occurred, and 2) the impact of the provision on racial/ethnic disparities in stage.

**Materials and methods:** Data from the National Cancer Database were used. The pre- and post-PSP periods were identified as 2007–2009 and 2011–2013, respectively. Proportion differences (PDs) and 95% confidence Intervals (CIs) were calculated.

**Results:** All three racial/ethnic groups experienced a statistically significant shift toward Stage I breast cancer. Pre-PSP, the black:white disparity in Stage I cancer was  $-9.5$  (95% CI:  $-8.9, -10.4$ ) and the Latina:white disparity was  $-5.2$  (95% CI:  $-4.0, -6.1$ ). Post-PSP, the disparities improved slightly.

**Discussion:** Preliminary data suggest that the ACA's PSP may have a meaningful impact on cancer stage overall and by race/ethnicity. However, more time may be needed to see reductions in disparities.

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## 1. Introduction

Breast cancer is the most common cancer among women in the United States (US) with an estimated 252,710 cases to be diagnosed in 2017 [1]. Breast cancers that are diagnosed at an early stage require less invasive treatment and have a very favorable prognosis [1,2]. Although most breast cancers in the US are diagnosed at an early stage, non-Latina black and Latina women are less likely than their non-Latina white counterparts to present at an early stage which may contribute to observed disparities in prognosis [3].

Despite recent controversies, mammography remains the primary tool for detecting breast cancer at earlier stages [4]. The US Preventive Services Task Force (USPSTF) recommends biennial use for women 50–74 years of age [5]. Compared to white women, Latina women are less likely to receive mammograms overall and black women are less likely to receive them at recommended intervals [6,7]. Out of pocket payments for preventive services have been identified as a potential barrier to receiving a screening mammogram [8,9]. Recently, a key provision under the Patient Protection and Affordable Care Act's (ACA) preventive services provision (PSP) has removed this cost barrier.

In order to increase the use of preventive care, the ACA eliminated cost-sharing (e.g. copayment, co-insurance) for preventive services that are strongly recommended by the USPSTF [10]. Beginning in January 1, 2011, Medicare and private health plans could no longer impose cost-sharing for these preventive services. Screening mammograms are among the 45 services covered under this provision. The elimination of cost-sharing may increase the use of screening mammography which could lead to a shift in the proportion of earlier stage breast cancer. Furthermore, the elimination of cost-sharing may help ameliorate racial/ethnic disparities in breast cancer stage because minority women are disproportionately represented among those targeted by such provisions [11].

The present analysis had two objectives. First, we examined whether a shift in breast cancer stage occurred following the implementation of ACA's PSP. Second, we assessed the impact of this provision on racial/ethnic disparities in breast cancer stage.

## 2. Methods

This retrospective study includes patients diagnosed with breast cancer and included in the National Cancer Database (NCDB). Sponsored by the Commission on Cancer of the American College of Surgeons and the American Cancer Society, the NCDB is a nationwide hospital-based cancer database that captures

\* Corresponding author.

E-mail address: [asilva8@luc.edu](mailto:asilva8@luc.edu) (A. Silva).

**Table 1**

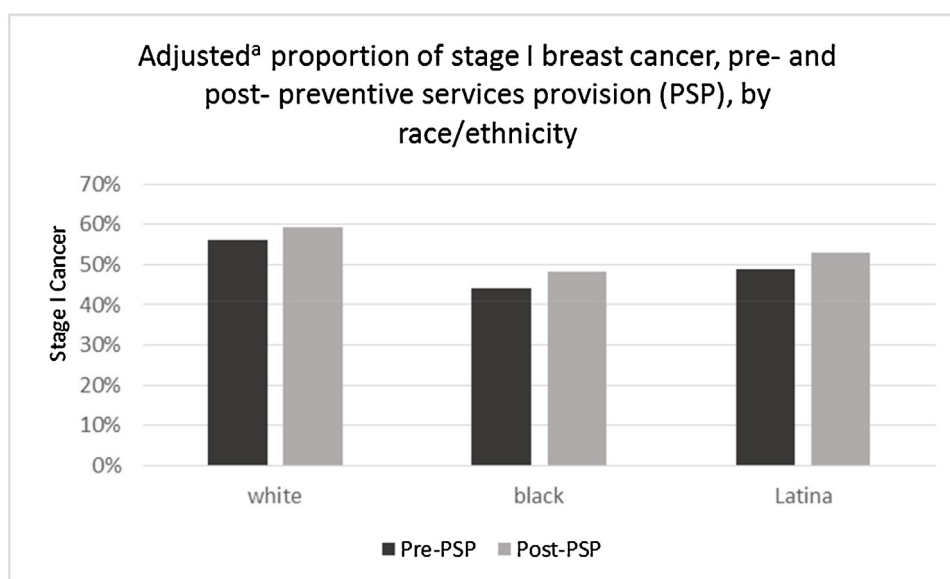
Characteristics of the study population before and after the implementation of the preventive services provision (PSP) of the Affordable Care Act.

	All		white		black		Latina	
	Pre-PSP (n = 211,028), %	Post-PSP (n = 259,437), %	Pre-PSP (n = 181,186), %	Post-PSP (n = 220,664), %	Pre-PSP (n = 21,505), %	Post-PSP (n = 27,965), %	Pre-PSP (n = 8337), %	Post-PSP (n = 10,808), %
Age, y								
50–64	<b>61.4</b>	<b>57.8</b>	<b>61.0</b>	<b>57.2</b>	<b>63.9</b>	<b>62.1</b>	<b>62.8</b>	<b>60.3</b>
65+	<b>38.6</b>	<b>42.2</b>	<b>39.0</b>	<b>42.8</b>	<b>36.1</b>	<b>37.9</b>	<b>37.2</b>	<b>39.7</b>
Health Insurance								
Private	<b>62.8</b>	<b>59.3</b>	<b>63.1</b>	<b>59.6</b>	<b>60.1</b>	<b>56.9</b>	<b>62.9</b>	<b>61.0</b>
Medicare	<b>37.2</b>	<b>40.7</b>	<b>36.9</b>	<b>40.4</b>	<b>39.9</b>	<b>43.1</b>	<b>37.1</b>	<b>39.0</b>
Stage								
I	<b>54.4</b>	<b>58.0</b>	<b>55.9</b>	<b>59.5</b>	<b>44.0</b>	<b>48.4</b>	<b>48.7</b>	<b>53.1</b>
II	<b>30.6</b>	<b>28.6</b>	<b>30.0</b>	<b>27.8</b>	<b>35.2</b>	<b>33.4</b>	<b>33.9</b>	<b>32.2</b>
III	<b>10.6</b>	<b>9.0</b>	<b>10.0</b>	<b>8.5</b>	<b>14.1</b>	<b>12.0</b>	<b>13.2</b>	<b>10.6</b>
IV	<b>4.4</b>	<b>4.4</b>	<b>4.1</b>	<b>4.1</b>	<b>6.7</b>	<b>6.3</b>	<b>4.1</b>	<b>4.1</b>
Income <sup>a</sup>								
<\$38,000	<b>14.4</b>	<b>14.1</b>	<b>11.2</b>	<b>10.8</b>	<b>38.9</b>	<b>37.0</b>	<b>21.7</b>	<b>20.8</b>
\$38,000–\$47,999	<b>21.4</b>	<b>21.0</b>	<b>21.2</b>	<b>20.7</b>	<b>22.5</b>	<b>22.9</b>	<b>22.2</b>	<b>21.9</b>
\$48,000–\$62,999	<b>26.6</b>	<b>27.0</b>	<b>27.3</b>	<b>27.7</b>	<b>20.1</b>	<b>21.1</b>	<b>28.2</b>	<b>28.5</b>
\$63,000+	<b>36.2</b>	<b>37.6</b>	<b>38.9</b>	<b>40.4</b>	<b>17.3</b>	<b>18.8</b>	<b>26.5</b>	<b>28.6</b>
No High School <sup>a</sup>								
> =29%	<b>13.8</b>	<b>13.5</b>	<b>10.6</b>	<b>10.1</b>	<b>31.0</b>	<b>29.9</b>	40.9	41.6
20–28%	<b>23.3</b>	<b>23.4</b>	<b>21.8</b>	<b>21.8</b>	<b>36.3</b>	<b>35.9</b>	23.4	23.4
14–19%	<b>32.9</b>	<b>33.5</b>	<b>34.8</b>	<b>35.3</b>	<b>21.9</b>	<b>23.7</b>	21.5	21.2
<14%	<b>28.6</b>	<b>29.4</b>	<b>31.5</b>	<b>32.5</b>	<b>9.6</b>	<b>10.4</b>	12.9	13.7

Note: Bold figures denote statistically significant changes ( $p < 0.05$ ) between pre- and post-PSP.<sup>a</sup> ZIP code-level income and education levels.

approximately 70% of all newly diagnosed cancers in the US from approximately 1500 hospitals accredited by the Commission on Cancer. Patients were included if they were: non-Latina white (white), non-Latina black (black), or Latina; diagnosed with stage I–IV cancer; ages 50–74; and Medicare- or privately-insured women. The pre- and post- periods of the preventive services provision were identified as 2007–2009 (pre-PSP) and 2011–2013 (post-PSP), respectively. The year 2010 was treated as a washout/phase-in period and was excluded. A pre-post design was used to: 1) examine a shift in the distribution of cancer stage overall and by race/ethnicity; and 2) assess the impact on racial/ethnic disparities in stage.

Logistic regression models of stage I cancer versus all other stages, with model-based standardization (predictive margins), were used to report proportions (P) and estimate differences (PDs) with bias-corrected bootstrapped 95% confidence Intervals (CIs). First, we used the models to obtain estimates of the proportion differences in stage I cancer pre- versus post-PSP, overall and stratified by race/ethnicity. Second, in order to assess the impact of PSP on disparities in stage, models were used to obtain estimates of racial/ethnic differences in the proportion of stage I cancer, stratified by PSP period. Models were adjusted for age, ZIP code-level economic indicators (i.e. median household income, percent with high school education), and insurance type.

**Fig. 1.** Adjusted<sup>a</sup> proportion of stage I breast cancer, pre- and post- preventive services provision (PSP), by race/ethnicity.

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