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Article

Cost-Sharing and Out-of-Pocket Cost for Women Who Received MRI for Breast Cancer Screening

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Abstract

Background: The financial protection of the prevention provision of the Affordable Care Act (ACA) doesn't apply to breast MRI but only to mammography for breast cancer screening. The purpose of the study is to examine the financial burden among women who received breast magnetic resonance imaging (MRI) for screening. **Methods:** This observational study used the Marketscan database. Women who underwent breast MRI between 2009 and 2017 and had screening mammography within 6 months of the MRI were included. We compared the time trend of the proportion of zero cost-share for women undergoing screening mammography and that for MRI. We quantified out-of-pocket (OOP) costs as the sum of copayment, coinsurance, and deductible and defined zero cost-share as having no OOP cost. We conducted multivariable logistic regression and 2-part model to examine factors associated with zero cost-share and OOP costs of MRI, respectively. **Results:** During the study period, 16 341 women had a screening breast MRI. The proportion of screening MRI claims with zero cost-share decreased from 43.1% (2009) to 26.2% (2017). The adjusted mean OOP cost for women in high-deductible plans was more than twice the cost for their counterparts ($549 vs $251; 2-sided $P < .001$). Women who resided in the South in the post–Affordable Care Act era were less likely to have zero cost-share and paid higher OOP costs for screening MRI. **Conclusions:** Many women are subject to high financial burden when receiving MRI for breast cancer screening. Those enrolled in high-deductible plans and who reside in the South are especially vulnerable financially.

ARTICLE

The prevention provision of the Affordable Care Act (ACA) mandates private insurance plans to waive cost-sharing for preventive services with grade A or B recommendations from the US Preventive Services Task Force (USPSTF) (1). Three breast cancer-related preventive services covered under the ACA are mammography screening for women aged 40 years and older, genetic screening and counseling, and preventive medication, for women at high risk for breast cancer (1). Studies examining women's financial burden for breast cancer screening before and after the implementation of the ACA have found a substantial reduction in out-of-pocket (OOP) expense and a marked increase in the proportion of women with zero cost-share associated with their screening mammography service (2-4).

Mammography is a gold standard for breast cancer screening and is an adequate screening technology for most women; however, for women at higher risk of breast cancer, other more sensitive tests are often needed. As a screening technology, magnetic resonance imaging (MRI) has higher sensitivity than screening mammography (5,6)—a test characteristically critically important for women at high risk for breast cancer. As such, several professional societies have recommended augmenting screening mammography with MRI for women at high risk for breast cancer (7-13). For example, the American Cancer Society (ACS) recommends an annual breast MRI in its 2007 guideline for high-risk women, defined as women with lifetime risk of breast cancer 20%-25% or greater (9). Breast MRI has also been recommended by the International Late Effects of Childhood Cancer Guideline Harmonization Group for women who had radiotherapy to the chest area prior to the age of 30 years (11).

Notably, the preventive provision under the ACA does not include screening breast MRI for these high-risk women as a covered service. Previous modeling studies have noted that the cost of breast MRI was 5-10 times higher than the cost of screening mammography (14,15). Although the cost of MRI for payers has reduced over time, the Medicare reimbursement rate for computer-aided detection MRI in 2020 ($403.84) is still nearly 3

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times higher than that for screening mammography ($139.31) even after the Deficit Reduction Act took effect in 2007 (16). As a result, women who undergo breast MRI can incur high financial burden.

This study examined the OOP expenses and the proportion of zero cost-share associated with breast MRI for screening.

Methods

Data Source

The study cohort was extracted from the 2008-2017 IBM MarketScan Research Databases (IBM, Ann Arbor, MI). The databases contain de-identified claims from large employers and health plans across the United States who provide private health-care coverage for employees, their spouses, and dependents. These data include enrollment records and health insurance claims of inpatient services, outpatient visits, and outpatient prescription drugs. The University of Texas MD Anderson Cancer Center's institutional review board exempted this study for use of de-identified data.

Study Population

We applied the following algorithm step by step (see Figure 1) to identify patients with breast MRI for screening purposes. First, we identified women with claims indicating the receipt of any breast MRI at outpatient settings between January 1, 2008, and June 30, 2017. Further, we defined the first date of bilateral breast MRI between 2009 and June 2017 as the index MRI. We excluded patients who had any breast MRI within a year before the index MRI. Next, we required continuous enrollment, including a 12-month washout period before the index MRI and 6 months after. Additionally, we excluded women with claims indicating breast cancer diagnosis or the receipt of diagnostic mammography (2D or 3D) during the 12-month lookback period. Furthermore, we restricted the study cohort to women who received screening mammography within 6 months before or after the index MRI. Next, we ruled out the possibility that breast MRI may be related to managing breast implants, cancer surveillance, or diagnostic imaging by excluding women with such billing codes. Lastly, we excluded women with invalid cost data or missing insurance and geographic information. Current Procedural Terminology (CPT) , International Classification of Diseases (ICD)-9, and ICD-10 diagnosis and procedure codes used to identify the study cohort are listed in Supplementary Table 1 (available online).

Out-of-Pocket Costs and Zero Cost-Sharing

We quantified OOP costs as the sum of copayment, coinsurance, and deductible. We defined zero cost-share as having zero OOP payment associated with a designated claim for either screening mammography or breast MRI. All OOP costs were standardized to 2019 dollars using consumer price index for medical care (17-19).

High-Deductible Health Insurance Plans

The Marketscan database collects information on the type of health insurance plans. Of those, 2 are high-deductible plans: the consumer-driven health plan and the high-deductible health plan. Consumer-driven health plan is a type of preferred provider organization plan with a relatively higher deductible than other preferred provider organization plans, whereas the high-deductible health plan is a statutory high-deductible health plan that requires enrollees to set up a health savings account (20). We dichotomized insurance plans into high-deductible (HD) vs non-HD plans.

Statistical Analysis

We calculated, by calendar year, the proportion of claims for screening mammography and for breast MRI with zero OOP costs. We then compared the time trend of zero cost-share for each screening modality using the Cochran-Armitage trend test (21). Bivariate associations between patients' characteristics and zero cost-share were assessed using the Pearson χ^2 test.

We used multivariable logistic regression to examine factors associated with zero cost-share for breast MRI. To account for the moderate proportion of MRIs with zero OOP costs, we employed a 2-part model to estimate factors associated with the OOP costs of MRI screening (22,23). The 2-part model consisted of a logistic regression to model the probability of observing a positive value of the outcomes variable (ie, OOP cost in our study), followed by a generalized linear model with a Gamma family and a log-link function for OOP costs conditional on having positive OOP costs. In addition to the binary variable indicating whether a woman was enrolled in a HD plan, covariates in the multivariable analyses included patients' age category (20-39, 40-49, or 50-64 years of age), metropolitan statistical area, census divisions, and whether the MRI took place before or after the ACA.

To explore the impact of including only the first 6 months of data to observe MRI use in 2017 (because of the need to leave 6 months after the index MRI to observe screening mammography), we conducted a sensitivity analysis that excluded patients who had the index MRI in 2017. Another sensitivity analysis included a subgroup of women with claims that suggested they were likely at high risk for breast cancer, including those with a family history of breast or ovarian cancer, genetic susceptibility to breast or ovarian cancer, or Hodgkin disease (9) (Supplementary Table 1, available online).

All analyses were conducted using SAS version 9.4 (SAS Institute, Cary, NC) and STATA 15.0 (StataCorp LLC, Collage station, TX). All statistical tests were 2-sided, and a P value of less than .05 was considered statistically significant.

Results

Descriptive Statistics of the Study Cohort

Of the 16 341 women with breast MRI for screening purposes during the study period, 36.3% (n = 5935) had zero cost-share. Of the study cohort, 11% had HD insurance plans, and nearly half were 50 year of age and older (Table 1). Average OOP cost per breast MRI was $282 (median = $86, standard deviation = $468) (Table 2).

The Trend of Zero Cost-Share for Screening Mammography and Breast MRI

For screening mammography, the percentage of zero cost-share increased over time: 81.9% in 2009, 91.3% in 2011 (immediately after ACA enactment), and 96.8% in 2017 (Figure 2). The opposite trend was observed for breast MRI. The percentage of zero cost-share for MRI was 43.1%, 38.5%, and 26.2% in 2009, 2011, and

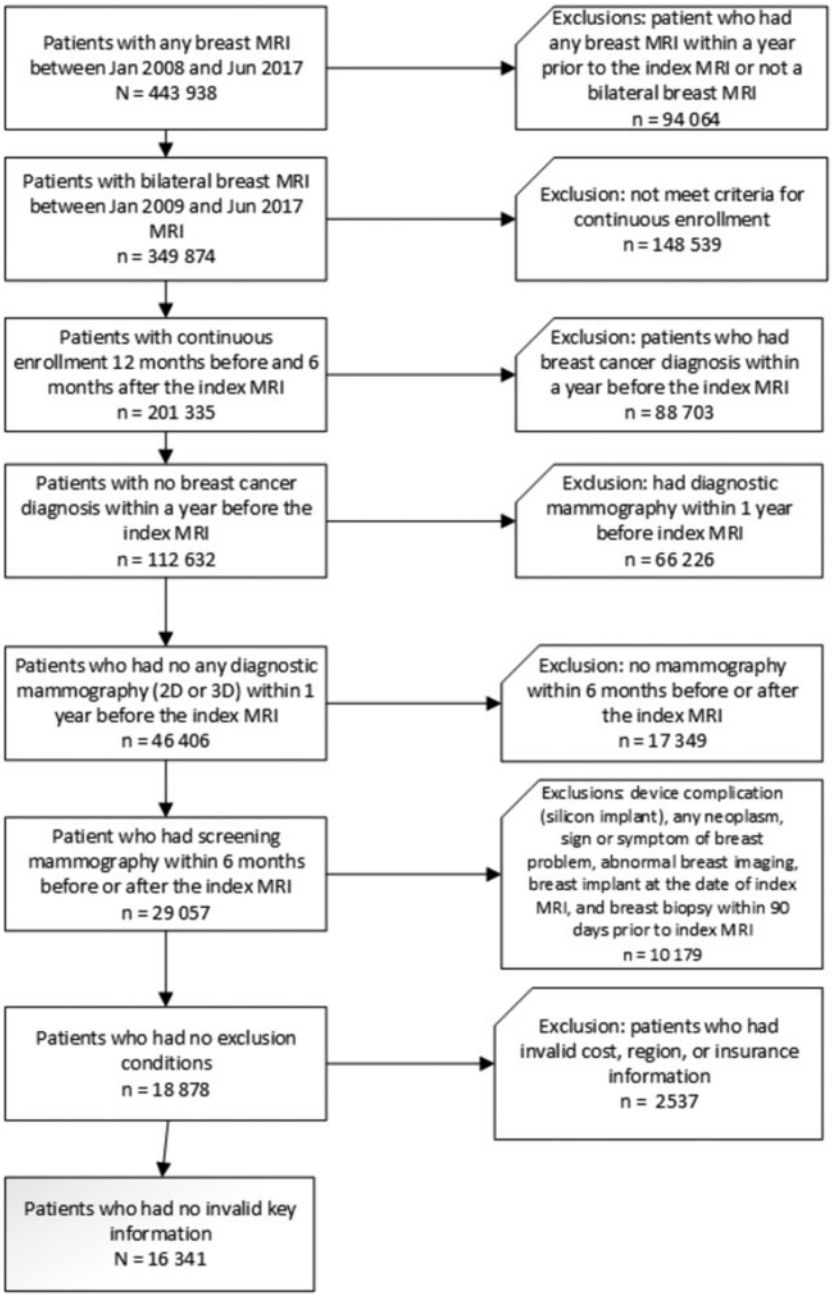

Figure 1. Cohort selection. MRI = magnetic resonance imaging.

2017, respectively. Results from Cochrane-Armitage trend test showed the observed time trends of zero cost-share for screening mammography and breast MRI were statistically significant (both $P < .001$).

Factors Associated With Zero Cost-Share for MRI

Results from multivariable logistic regressions show that women with HD plans were less likely (odds ratio [OR] = 0.66, 95% confidence interval [CI] = 0.59 to 0.74) to have zero cost-share for their screening MRI than those not enrolled in HD plans (Table 3). Likewise, women who resided in nonmetropolitan statistical areas were less likely to have zero cost-share for screening MRI (OR = 0.76, 95% CI = 0.67 to 0.86). In addition, after ACA enactment, women were less likely to have zero cost-share for screening MRI in most divisions except South Atlantic and Mountain areas (Table 3, Figure 3). In New England and Pacific divisions, more than 36.3% of women who underwent screening MRI paid zero OOP costs for their MRI. Meanwhile, among census divisions with less generous coverage post-ACA era, mostly in the south region (South Atlantic, East South [ES] Central, and West South [WS] Central) and Mountain division, less than 30% of women paid zero OOP cost for the screening MRI (Figure 3).

Out-of-Pocket Costs for Screening MRI

Results from our 2-part model in Table 3 show that OOP cost was statistically significantly higher for women with HD plans

Table 1. Out-of-pocket costs (unadjusted) for breast MRI screening by subgroups[a]

Covariate	No. of cases (%)	Zero cost-share, %	Had HD plan, %
Total	16 341	36.3	
Age, y			
20-39	2033 (12.4)	37.1	11.8
40-49	6114 (37.4)	36.1	11.7
50-64	8194 (50.1)	36.6	9.5
HD plan			
No	14 614 (89.4)	37.4	—
Yes	1727 (10.6)	27.6	—
Metropolitan statistical area			
No	1507 (9.2)	29.7	8.8
Yes	14 834 (90. 8)	37.0	10.8
Division			
New England	1597 (9.8)	54.2	11.4
Mid-Atlantic	2924 (17. 9)	39.2	8.7
EN Central	2590 (15.9)	36.8	11.5
WN Central	736 (4.5)	36.4	17.4
South Atlantic	2691 (16.5)	29.2	11.1
ES Central	1082 (6.6)	30.3	9.5
WS Central	1312 (8.0)	26.8	7.1
Mountain	927 (5. 7)	24.7	15.4
Pacific	2482 (15.2)	40.6	9.2
Post ACA era			
No (years 2009 and 2010)	4715 (28.9)	43.0	5.5
Yes (year 2011 and after)	11 626 (71.2)	33.6	12.6

[a]ACA = Affordable Care Act; EN = East North; ES = East South; HD = high-deductible; MRI = magnetic resonance imaging; WN = West North; WS = West South.

(the difference in OOP for women with HD vs non-HD plans = $298, 95% CI = $257 to $339; 2-sided $P < .001$). The adjusted OOP costs for women in HD plans were more than twice higher than the adjusted OOP costs for those in non-HD plans (adjusted OOP costs = $549 vs $251; 2-sided $P < .001$). Table 3 and Figure 4 also show that OOP costs of MRI screening post-ACA were statistically significantly higher (all 2-sided $P < .05$) than pre-ACA in most divisions except West North Central and Mountain divisions. Information synthesized across divisions (Figure 4) shows that south regions, including WS Central, South Atlantic, and ES Central, covered the top 3 adjusted mean OOP costs for screening MRI after the ACA was enacted ($419, $358, and $327, respectively).

Sensitivity Analysis

To test the robustness of our findings, we conducted 2 sensitivity analyses: one excluded patients who had MRI for breast cancer screening in 2017 (15 716 cases) and the other included a subgroup of high-risk women with diagnosis codes matching the high-risk groups defined in the ACS guideline (10 831 cases). Findings of the trends of zero cost-share and the impact of HD plans on the likelihood of having zero cost-share and OOP costs, as well as patterns of geographic variations, were similar to those in the main analyses for both sensitivity analyses (Figure 2; Supplementary Tables 2 and 3, available online).

Discussion

This study examined the financial burden for women who underwent breast MRI—a screening practice recommended by several professional societies for women at high risk for breast cancer. Using a large, national, private insurance claims database, we estimated the OOP costs associated with breast MRI and compared the trend of zero cost-share for MRI with that for screening mammography before and after the ACA came into effect in 2011. We also identified factors associated with zero cost-share and OOP expense.

We found that although the proportion of zero cost-share for screening mammography increased over time following the ACA, an opposite trend was observed for breast MRI, with nearly 17% more women having OOP costs in 2017 compared with 2009. The divergent trend of zero cost-share for screening mammography and MRI reflects that the financial protection from the prevention provision of the ACA was not extended to screening MRI. Notably, the USPSTF breast cancer screening recommendations are only applicable to women at average risk. The USPSTF does not address high-risk populations and has not previously evaluated the potential harms and benefits of screening breast MRI among women at high risk for breast cancer. Thus, the ACA does not include coverage for a very vulnerable population. In our study, 25% of women paid $376 or more for a breast MRI—an amount not readily available to many families. According to a 2017 report from the Federal Reserve on the economic well-being of US households, 40% of American families cannot cover an unexpected expense of $400 or more (24). With an increasing use of screening MRI documented in a recent study (25), a growing number of women would face OOP costs of breast MRIs.

Given the high costs of MRI, women who enroll in HD plans are more susceptible to high OOP costs when undergoing breast cancer screening with MRI. Indeed, our analysis found that compared with women in non-HD plans, those with HD plans not only were statistically significantly less likely to have zero cost-share for their screening MRI but also incurred higher OOP costs for the MRI (Figure 5). In addition, the trend of decreasing proportion of women with zero cost-share for screening MRI

Table 2. Out-of-pocket costs (unadjusted) for breast MRI screening by subgroups[a]

	All cases				Women with cost-share for breast MRI screening			
Covariate	Mean (SD)	P25	Median	P75	Mean (SD)	P25	Median	P75
Total	$282 ($468)	$0	$86	$376	$443 ($523)	$105	$270	$590
Age, y								
20-39	$307 ($520)	$0	$92	$390	$488 ($584)	$115	$291	$633
40-49	$295 ($486)	$0	$88	$395	$461 ($540)	$105	$283	$618
50-64	$266 ($440)	$0	$82	$358	$418 ($491)	$102	$259	$560
HD plan								
No	$251 ($419)	$0	$63	$345	$401 ($469)	$98	$254	$544
Yes	$545 ($717)	$0	$232	$890	$752 ($744)	$182	$497	$1109
Metropolitan statistical area								
No	$358 ($505)	$0	$178	$511	$510 ($535)	$145	$353	$661
Yes	$274 ($464)	$0	$73	$360	$435 ($521)	$100	$261	$581
Division								
New England	$250 ($512)	$0	$0	$306	$546 ($640)	$130	$344	$678
Mid-Atlantic	$164 ($377)	$0	$22	$116	$269 ($454)	$22	$65	$324
EN Central	$311 ($474)	$0	$138	$426	$492 ($517)	$155	$320	$641
WN Central	$344 ($564)	$0	$102	$461	$541 ($628)	$132	$317	$759
South Atlantic	$340 ($505)	$0	$160	$466	$480 ($540)	$130	$295	$638
ES Central	$298 ($365)	$0	$136	$501	$428 ($368)	$127	$331	$603
WS Central	$372 ($538)	$0	$195	$502	$508 ($571)	$156	$322	$671
Mountain	$306 ($452)	$3	$145	$405	$407 ($481)	$118	$242	$557
Pacific	$267 ($435)	$0	$87	$380	$450 ($486)	$133	$305	$593
Post ACA era								
No (years 2009 and 2010)	$242 ($422)	$0	$50	$322	$424 ($485)	$123	$280	$536
Yes (year 2011 and after)	$298 ($485)	$0	$96	$404	$449 ($535)	$98	$267	$609

[a]ACA = Affordable Care Act; EN = East North; ES = East South; HD = high-deductible; MRI = magnetic resonance imaging; P25 = 25th percentile; P75 = 75th percentile; WN = West North; WS = West South.

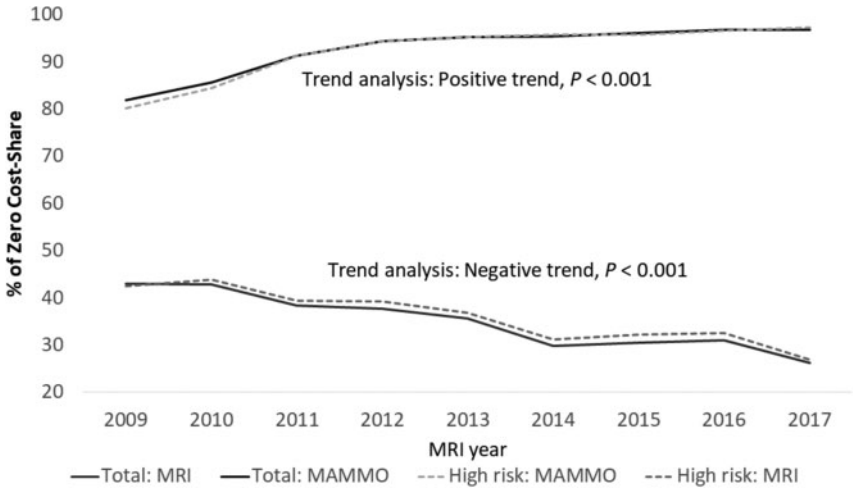

Figure 2. Trends of zero cost-share by screening procedure 2009-2017. Cochran-Armitage trend test was used to calculate the *P* values (2-sided). MAMMO = mammography; MRI = magnetic resonance imaging.

coincides with the trend of growing enrollment in HD plans. The share of employees covered by HD plans increased rapidly in the past decade (26,27). Similarly, our study found that the proportion of women in HD plans increased from 4% in 2009 to 22% in 2017 (Figure 5). This rising trend of HD plan enrollment suggests that, without policy actions to extend the prevention provision of the ACA to individuals at high risk for cancers, more women are likely to experience financial burden from screening MRI in the future.

An example of how OOP costs for screening breast MRI can impact outcomes is the plight of women who were treated for a pediatric cancer with radiotherapy to the chest area. They have a risk that is equivalent to that of women with a *BRCA*-1 mutation, whereby 30% have been diagnosed with breast cancer by age 50 years (28). A recent modeling study using 2 Cancer Intervention and Surveillance Modeling Network models and data from the Childhood Cancer Survivor Study suggests that early initiation of annual breast cancer screening with MRI

Table 3. Logistic regression for zero cost-share and 2-part model for out-of-pocket costs for breast MRI

	Logistic regression model		2-part model	
	Dependent variable: zero cost-share [1] vs non-zero cost-share [0]		Dependent variable: out-of-pocket costs	
Covariates	OR (95% CI)	P[a]	Coefficient (95% CI)	P[b]
Age, y				
20-39	1.04 (0.93 to 1.15)	.51	31.61 (7.54 to 55.67)	.01
40-49	0.97 (0.91 to 1.04)	.44	23.30 (7.72 to 38.89)	.003
50-60	1.00 (Referent)		0.00 (Referent)	
High deductible plan				
Yes	0.66 (0.59 to 0.74)	<.001	297.81 (257.11 to 338.50)	<.001
No	1.00 (Referent)		0.00 (Referent)	
Metropolitan statistical area				
Yes	1.00 (Referent)		0.00 (Referent)	
No	0.76 (0.67 to 0.86)	<.001	72.48 (43.33 to 101.64)	<.001
Division				
New England, pre-ACA	1.00 (Referent)		0.00 (Referent)	
New England, post ACA	0.65 (0.53 to 0.79)	<.001	70.41 (23.44 to 117.38)	.003
Mid-Atlantic, pre ACA	0.71 (0.58 to 0.89)	.002	−40.71(-81.77 to 0.34)	.05
Mid-Atlantic, post-ACA	0.34 (0.28 to 0.40)	<.001	−26.30 (-62.55 to 9.96)	.16
EN Central, pre-ACA	0.44 (0.36 to 0.54)	<.001	93.89 (45.45 to 142.33)	<.001
EN Central, post-ACA	0.35 (0.29 to 0.42)	<.001	128.21 (85.91 to 170.51)	<.001
WN Central, pre ACA	0.49 (0.36 to 0.67)	<.001	180.00 (84.91 to 275.08)	<.001
WN Central, post-ACA	0.35 (0.27 to 0.45)	<.001	107.15 (52.65 to 161.65)	<.001
South Atlantic, pre-ACA	0.28 (0.22 to 0.34)	<.001	113.47 (64.81 to 162.12)	<.001
South Atlantic, post-ACA	0.26 (0.22 to 0.32)	<.001	166.09 (123.80 to 208.38)	<.001
ES Central, pre-ACA	0.46 (0.34 to 0.61)	<.001	41.78 (-16.58 to 100.14)	.16
ES Central, Post-ACA	0.24 (0.19 to 0.30)	<.001	134.94 (85.90 to 183.98)	<.001
WS Central, pre-ACA	0.29 (0.22 to 0.37)	<.001	139.95 (79.86 to 200.03)	<.001
WS Central, post-ACA	0.21 (0.17 to 0.26)	<.001	226.86 (173.15 to 280.57)	<.001
Mountain, pre-ACA	0.27 (0.19 to 0.37)	<.001	103.38 (35.46 to 171.30)	.003
Mountain, post-ACA	0.20 (0.16 to 0.25)	<.001	112.24 (64.38 to 160.10)	<.001
Pacific, pre-ACA	0.52 (0.41 to 0.65)	<.001	29.32 (-17.69 to 76.32)	.22
Pacific, post-ACA	0.40 (0.34 to 0.49)	<.001	96.55 (55.44 to 137.66)	<.001

[a]The OR, 95% CI, and *P* value (2-sided) were calculated using multivariate logistic regression model. ACA = Affordable Care Act; CI = confidence interval; EN = East North; ES = East South; HD = high-deductible; MRI = magnetic resonance imaging; OR = odds ratio; pre-ACA = year 2009 and 2010; post-ACA = year 2011 and after; WN = West North; WS = West South.

[b]The coefficient, 95% CI, and *P* value (2-sided) were calculated using 2-part model.

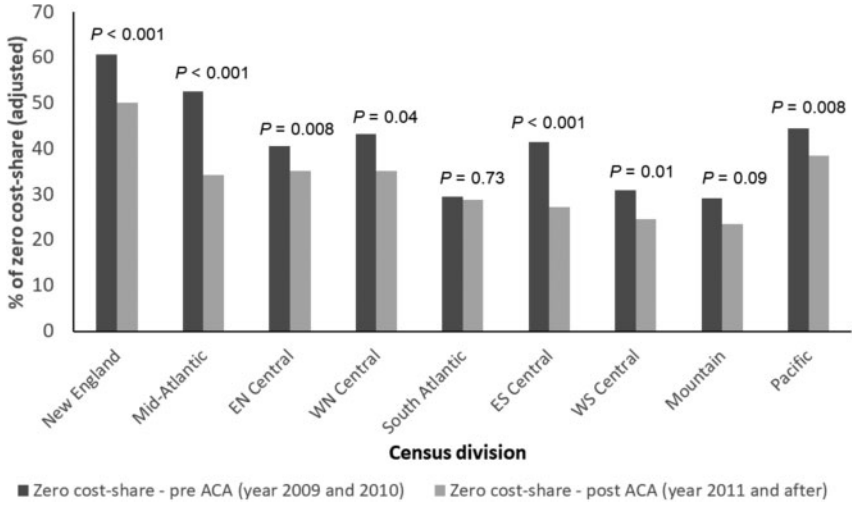

Figure 3. MRI zero cost-share by census division and pre-post ACA era. The 2-sided Wald test was used to calculate the *P* values. ACA = Affordable Care Act; EN = East North; ES = East South; MRI = magnetic resonance imaging; WN = West North; WS = West South.

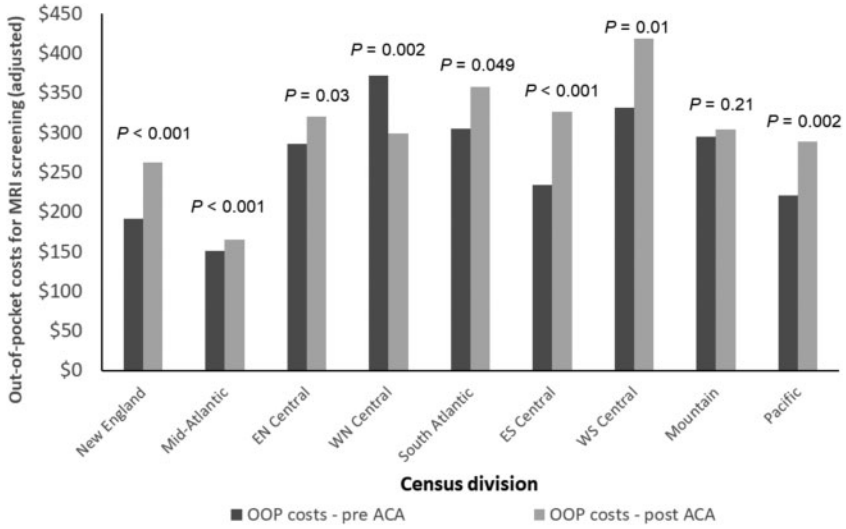

Figure 4. Out-of-pocket costs for MRI screening by division and pre-post ACA era. The 2-sided Wald test was used to calculate the *P* values. ACA = Affordable Care Act; EN = East North; ES = East South; MRI = magnetic resonance imaging; OOP = out-of-pocket; WN = West North; WS = West South.

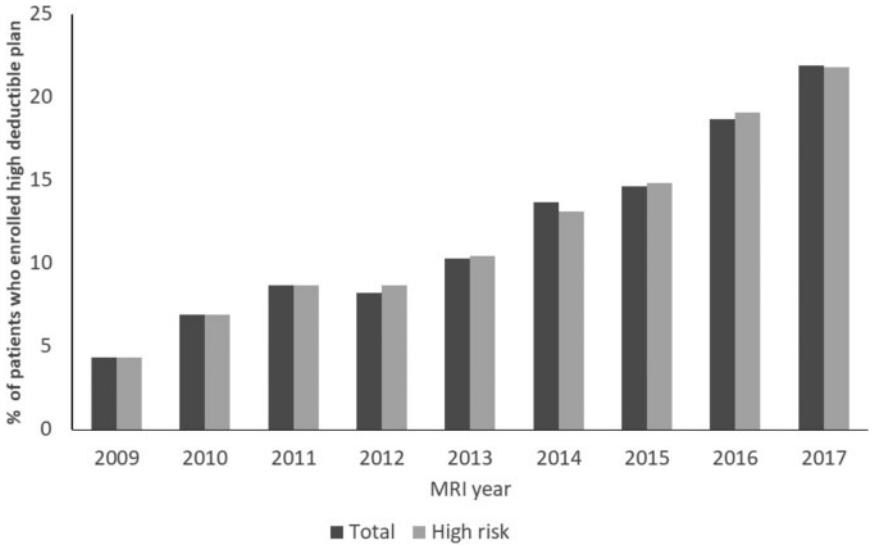

Figure 5. Trends of patients who enrolled high deductible plans, 2009-2017. MRI = magnetic resonance imaging.

might reduce breast cancer mortality by half or more (29). Research has found cost to be a major barrier to this screening modality among this high-risk population (30,31); thus, OOP costs of breast MRI may negatively impact the longevity of these women.

We observed geographic variations in zero cost-share and OOP costs of MRI. Overall, the financial burden of screening MRI appeared to be lower for women residing in the northeast region (New England, Mid Atlantic) and higher for those in the south region (South Atlantic, ES Central, and WS Central). This is likely driven by differences in insurance coverage and generosity by health insurance plans, as well as cancer policies across states. Variations in insurance coverage of breast MRI has prompted organizations such as the ACS and Susan G. Komen Foundation to urge consumers to confirm the coverage policy with their insurance company prior to scheduling their breast MRI (32,33). States including Connecticut (in 2012) (34,35), New York (2017) (36,37), and Illinois (2018) (38) mandated insurance to cover screening MRI, with limited ($20) or zero OOP payment (NY and IL), for high-risk women per the ACS guidelines. New Jersey (2014) (39) and Pennsylvania (2020) (40) require insurance coverage of breast MRI for high-risk women but do not explicitly put a cap on OOP payment. Policies to increase coverage and decrease financial burdens associated with MRI screening should be explored and implemented in other states.

A Breast Cancer Surveillance Consortium study reported that 83% of women who received screening MRIs did not meet the threshold of more than a 20% lifetime risk in professional guidelines, and 35.5% of women who received screening MRIs were considered at low-to-average breast cancer risk (41). The same study also noted a higher likelihood of using screening MRI among women with dense breasts, whose MRI use was recommended by the American College of Radiology (12). Although assessing the appropriateness of screening MRI use is beyond

the scope of this study as claims data lack detailed clinical information to make such assessment, the high proportion of breast MRIs requiring cost-share observed here highlights 2 prevention provisions in need of policy attentions. First, as a screening modality for high-risk women, MRI should receive the same financial protection ACA offers to screening mammography for average-risk women. Second, even if breast MRI is used as a follow-up test after positive results from screening mammography, policy makers should consider extending the financial protection to the entire screening process rather than just the initial screening test. Similar action is recommended for colorectal cancer screening to protect individuals from incurring unexpected high OOP costs of follow-up colonoscopies for those who choose cheaper fecal occult blood testing as the initial test (42).

This study has limitations. First, the study cohort was women with private insurance. The patterns of cost-share and OOP costs observed in this study cannot be generalized to women with public insurance or without insurance. Second, the proportion of women with HD plans in our study may be underreported because medium or small firms are underrepresented in Marketscan data, and women working for these firms are more likely to have HD plans (43). Third, we could not definitively identify women at high risk for breast cancer from claims data. We included a sensitivity analysis that relied on ICD diagnosis codes to identify a subset of women likely meeting the definition of high risk per ACS guidelines. Findings from the sensitivity analysis showed similar patterns of OOP costs for screening MRI as the full study cohort. Fourth, the existing CPT code does not differentiate between MRI as a screening vs diagnostic test. We developed an algorithm to carefully rule out breast MRI use for nonscreening purposes, such as to detect complications associated with breast implants. Further, we required women in the study cohort to have claims indicating screening mammography within 6 months of the index MRI to enhance the sensitivity of our algorithm of identifying screening MRI. Nevertheless, we may have misclassified some diagnostic MRI as screening MRI. Lastly, the MarketScan database does not provide information on race and ethnicity and socioeconomic status. Although previous research of screening mammography has shown that women in different income classes and racial groups have benefited equally from the financial protection provided by the ACA prevention provision (3), we were not able to investigate whether the lack of protection from the ACA for screening MRI may worsen the racial and socioeconomic status disparities in breast cancer screening among high-risk women.

In summary, many women at high risk for breast cancer are subject to high OOP costs for screening MRI because the financial protection under the prevention provision of the ACA only applies to screening mammography. Women in high-deductible plans, and those who reside in the South, are especially vulnerable financially.

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Data Availability

The raw/processed data required to reproduce the above findings cannot be shared at this time due to the data underlying this article were provided by the IBM MarketScan Research Database under license and data use agreement.

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