



Patterns and recent trends in mastectomy and breast conserving surgery for women with early-stage breast tumors in Missouri: An update and further investigation



CL Schmaltz, PhD^{1,2}; J Jackson-Thompson, MSPH, PhD^{1,2,3}; J Du, PhD^{1,4}; B Francis, MEd, CTR^{1,2}

¹ Missouri Cancer Registry and Research Center (MCR-ARC);

² University of Missouri-Columbia (MU), School of Medicine, Dept. of Health Management & Informatics;

³ MU Informatics Institute, Columbia, Missouri;

⁴ University of Missouri-Columbia (MU), College of Arts & Sciences, Dept. of Statistics

1. Background

❖ Most females age 18–64 diagnosed with an early-stage breast tumor in Missouri, 2008–2015, were surgically treated with either total (simple) mastectomy (TM), modified radical mastectomy (MRM), or breast conserving surgery (BCS).

❖ Last year, the Missouri Cancer Registry examined demographic differences between females receiving these treatments and noted a slight decrease in the % of cases getting BCS since 2008 with an increase in TM (& TM+MRM).

2. Purpose

❖ To continue monitoring trends in the surgical treatment of early-stage breast cancer in Missouri and describe the patterns by demographics & tumor characteristics.

3a. Methods: selection

❖ The “BCS” measure from the NCDB CP3R was adapted to central cancer registry data (consolidated records) along with corresponding measures for mastectomy.

- ❖ Derived AJCC
- ❖ "RX Summ--Surg Prim Site" (item 1290) rather than the facility-specific "RX Hosp--Surg Prim Site" (item 670)
- ❖ Some conditions ignored:
 - ❖ Clinical vs pathological stage
 - ❖ Surgery “at this facility”

❖ Of those meeting eligibility selection & received surgical treatment:

- ❖ Who received surgery *other than* BCS (codes 20–24)?
- ❖ Different numerator criteria, categorized into:
 - ❖ Total mastectomy (codes 40–49, 75)
 - ❖ Modified Radical Mastectomy (codes 50–59, 63)
 - ❖ (other)

- ❖ Age <65 (since primary payer was of interest).
- ❖ White & black only (due to small numbers for other races).

3b. Methods: analysis

❖ Logistic regression was used to analyze surgical trends among females with early-stage breast tumors (AJCC stage 0, I or II) while controlling for selected demographics.

❖ These surgical treatments were compared in terms of:

- ❖ Survival (all-cause), controlling for selected demographics.
- ❖ Days between diagnosis & treatment.

4. Results

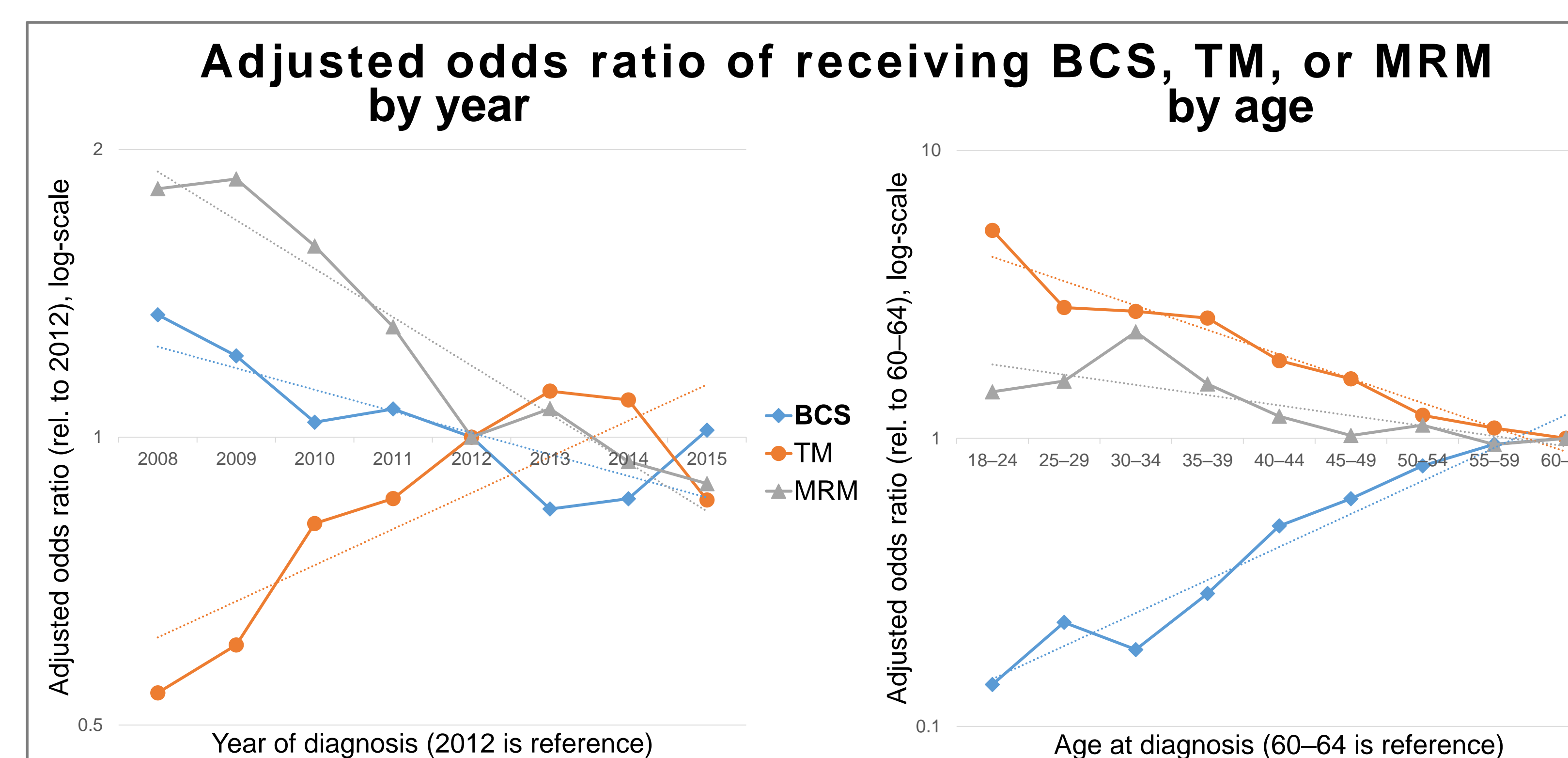
❖ **BCS more likely** among (Odds ratio [95% CI]):

- ❖ **Blacks** vs whites: 1.5 (1.3, 1.7)
- ❖ **Earlier** stages:
 - ❖ Stage 0 vs II: 2.4 (2.2, 2.7)
 - ❖ Stage I vs II: 2.4 (2.2, 2.5)
- ❖ PR+ tumors vs PR-(& borderline): 1.3 (1.2, 1.4)
 - ❖ (ER status insig.)
- ❖ **Private insurance** vs Medicaid: 1.2 (1.1, 1.4)
- ❖ **Earlier years** of diagnosis (see left plot below)
- ❖ **Older** females (see right plot below)

❖ **Survival higher** among (Hazard ratio [95% CI]):

(smaller hazard is better)

- ❖ **BCS** vs MRM: 0.75 (0.61, 0.93)
 - ❖ (BCS vs TM & BCS vs TM+MRM had similar survival)
- ❖ **Earlier** stages:
 - ❖ Stage 0 vs II: 0.31 (0.23, 0.43)
 - ❖ Stage I vs II: 0.47 (0.39, 0.57)
- ❖ ER+/PR+ tumors (borderline grouped with negative):
 - ❖ ... vs ER+/PR-: 0.54 (0.42, 0.69)
 - ❖ ... vs ER-/PR+: 0.43 (0.25, 0.74)
 - ❖ ... vs ER-/PR-: 0.44 (0.37, 0.53)
- ❖ **Shorter** time to surgery :
 - ❖ HR for a 30-day decrease: 0.96 (0.92, 0.998)
- ❖ Females with **private insurance**:
 - ❖ ... vs uninsured: 0.4 (0.26, 0.61)
 - ❖ ... vs Medicaid: 0.4 (0.32, 0.49)
 - ❖ ... vs other insurance: 0.36 (0.27, 0.47)
 - ❖ ... vs insured, no specifics: 0.58 (0.43, 0.77)
- ❖ **Older** females generally had higher survival (but survival was very high among all selected patients who have early-stage tumors).



Logistic model also adjusted for geographical region & histologic group; Cox PH regression model also adjusted for geographical region, histologic group, & year of diagnosis.

5. Discussion

❖ These data provide quantitative population-based data on the surgical treatment for females diagnosed with early-stage breast tumors in Missouri.

❖ Trends and sociodemographic patterns may help inform patients & health professionals in Missouri by providing broad information on treatment options being utilized.

6. Contact

For more information about this project, contact:

Chester Lee Schmaltz, PhD
Senior Statistician,
MCR-ARC, Health Management & Informatics
SchmaltzC@Missouri.edu
573-882-7775, <http://mcr.umh.edu>

Revisions since presenting

- rev09, 2018-06-28:
 - Corrected the horizontal axes on the plots, had been mislabeled as 1, 2, 3,
- rev08:
 - Presented at the 2018 NAACCR conference in Pittsburgh, PA in June 2018.