Patterns and recent trends in mastectomy and breast conserving surgery for women with early-stage breast tumors in Missouri

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Collaborators

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Background

❖ Origin: an assessment by the Missouri Department of Health and Senior Services (DHSS) & Dept. Social Services on the costs of breast cancer for the Medicaid population.

  ❖ Linkage with Missouri's Medicaid data.

  ❖ NCDB's CP3R measures came up.

❖ Here we focus on CP3R's BCS measure adapted to CCR data items for all Missouri cases.

Purpose

❖ To examine recent trends in the surgical treatment of early-stage breast cancer in Missouri and describe the patterns by sociodemographics and tumor characteristics.

Methods – BCS measure

❖ The "BCS" measure from the NCDB CP3R was adapted to central cancer registry data 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"

❖ Age 18–64

Methods – BCS measure

Case Eligibility Criteria			
Diagram Reference	**Assessment**	**FORDS Item**	**FORDS Codes**
1	Diagnosis of breast cancer	Primary Site	C50.0, C50.1, C50.2, C50.3, C50.4, C50.5, C50.6, C50.8, C50.9
2	Exclude manually censored cases	*Exclusion* *(This is a user field in CP³R, it is not a FORDS item)*	Exclude: 80 - Patient enrolled in a clinical trial that directly impacts delivery of the standard of care 90 – Patient refusal
3	Female patients only	Sex	2
4	Adult patient at diagnosis	Age at Diagnosis	≥ 018 and <65
5	First or only diagnosis of malignant or non-malignant neoplasm	Sequence Number	00 or 01
6	Tumors which can be staged, according to the AJCC 7th Ed. *(Excluding rare tumors:* *8940 - Mixed tumor, malignant, NOS* *8950 - Mullerian mixed tumor* *8980 – Carcinosarcoma* *8981 - Carcinosarcoma, embryonal)*	Histology	8000-8576, 8941-8949
7	In Situ and Invasive tumors	Behavior Code	2, 3
8	AJCC clinical stage 0, I, or II breast cancer	Clinical T	Clinical T = Blank, Pathologic T = pIS, Clinical N = (c0,c0I-,c0I+,c0M-,c0M+), and Clinical Stage Group = 0 **OR** Clinical T = (pIS,c1MI,c1,c1A,c1B,c1C), Clinical N = (c0,c0I-,c0I+,c0M-,c0M+) **OR** Clinical T = (c0,c1MI,c1,c1A,c1B,c1C), Clinical N =c1MI **OR** Clinical T = (c2,c3), Clinical N = (c0,c0I-,c0I+,c0M-,c0M+) **OR** Clinical T = (c0, c1MI, c1, c1A, c1B, c1C, c2), Clinical N = (c1,c1A,c1B,c1C)
		Pathologic T	
		Clinical N	
		Clinical M	≠(c1,p1)
		Pathologic M	≠(c1,p1)
		Clinical Stage Group	≠3, 3A, 3B, 3C, 4

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Methods – BCS measure

9	All or part of the first course of treatment was performed at the reporting facility	Class of Case	10-22
10	Surgically Treated Mastectomy and BCS Cases	Surgical Procedure of the Primary Site at this facility	20-80

Numerator Criteria			
Diagram Reference	**Assessment**	**FORDS Item**	**FORDS Codes**
11	Administration of Breast conservation surgery	Surgical Procedure of the Primary Site at this facility	20 - 24

Methods – other measures

❖ Of those meeting the eligibility selection (early stage, *etc.*) and received surgical treatment:

　❖ Who received surgery other than BCS?

　❖ Different numerator criteria, categorized into

　　❖ Total Mastectomy

　　❖ Modified Radical Mastectomy

　　❖ (other)

Methods – regression

❖ Logistic regression was used to analyze the trends in:
  ❖ BCS,
  ❖ TM,
  ❖ MRM, &
  ❖ combined TM+MRM
❖ Over the years 2008–2014 among white & black women age 18–64 with early-stage breast tumors (AJCC stage 0, I, or II)

Methods – covariates

❖ Year of diagnosis

 ❖ As categorical & then,

 ❖ As numeric (linear time trend for log-odds)

❖ Age (in 9 groups of mostly 5-year spans),

❖ Race (white & black only),

❖ Geographical region,

❖ Primary payer, &

❖ Stage.

Results

❖ Selected cases (white & black women age 18–64 with early-stage breast tumors, 2008–2014):

   ❖ 10,438

❖ BCS: 6,058 (58%)

❖ TM: 2,947 (28%)

❖ MRM: 1,274 (12%)

❖ (other):   159   (2%)

Results – BCS

❖ Statistically significant (p < 0.0001):
   ❖ Year of diagnosis
      ❖ Categorical: generally decreasing over time
      ❖ Numeric: decreasing linear trend
   ❖ Age (decreasing by age)
   ❖ Race (lower for whites)
   ❖ Region
   ❖ Stage (lower for later stage)
❖ Primary payer (p = 0.0565)
   ❖ Highest for private insurance

Results – Total Mastectomy

❖ Statistically significant (p < 0.0001)

    ❖ Year of diagnosis

        ❖ Categorical: generally **increasing** over time

        ❖ Numeric: **increasing** linear trend

    ❖ Age (**increasing** by age)

    ❖ Race (**higher** for whites)

    ❖ Region

    ❖ Stage

❖ Primary payer (p = 0.0681)

    ❖ **Lowest** for private insurance
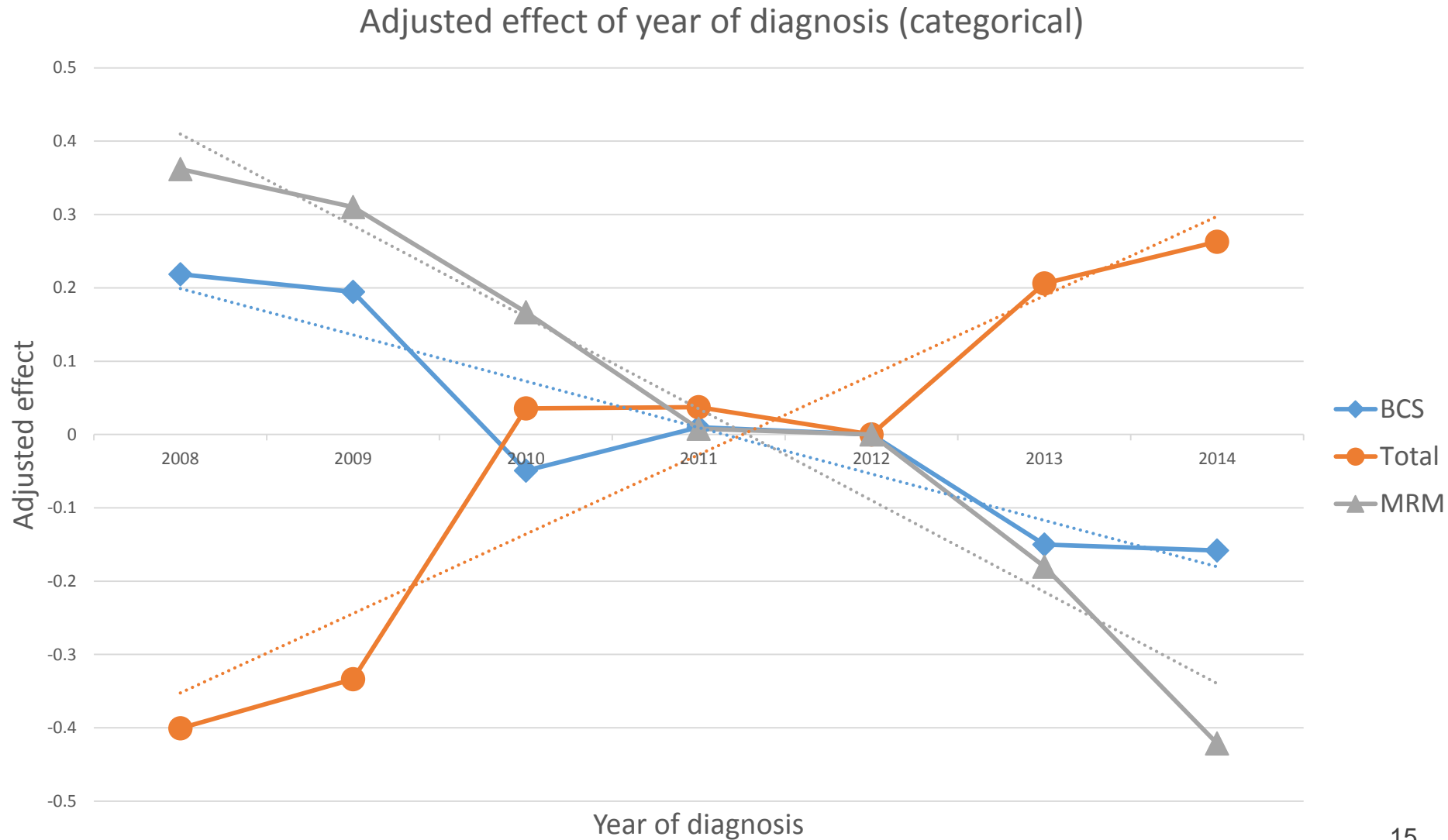
Differences from BCS in **red bold**

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Results – Modified Radical Mastectomy

❖ Statistically significant (p < 0.0001)

  ❖ Year of diagnosis

    ❖ Categorical: generally decreasing over time

    ❖ Numeric: decreasing over time

  ❖ Age (**increasing** by age)

  ❖ Race (**higher** for whites)

  ❖ Region

  ❖ Stage (lower for later stage)

  ❖ Primary payer

> Differences from BCS in **red bold**

Results – year effects: BCS, Total, & MRM

Adjusted effect of year of diagnosis (categorical)

Results – TM+MRM

❖ Statistically significant (p < 0.0001)

   ❖ Year of diagnosis

      ❖ Categorical: **increasing** over time

      ❖ Numeric: **increasing** over time

   ❖ Age (**increasing** by age)

   ❖ Race (**higher** for whites)

   ❖ Region

   ❖ Stage (lower for later stage)

   ❖ Primary payer (**lowest** for private insurance)

Differences from BCS in **red bold**

Results – year effects:
BCS vs Total + MRM

Adjusted effect of year of diagnosis (categorical)
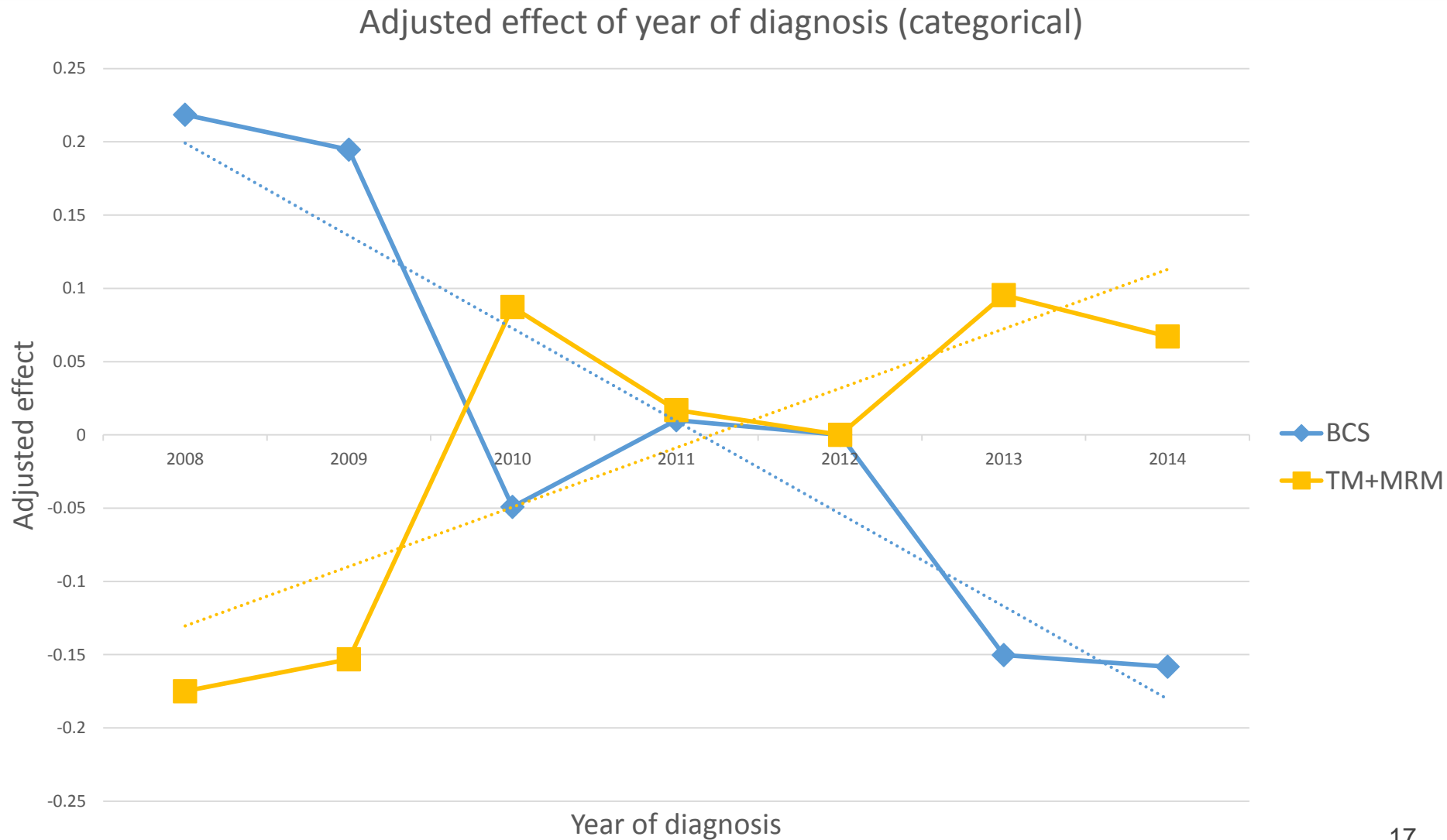
Results – summary

❖ Time trends

  ❖ The percentage of cases receiving **BCS** had **decreased**

    ❖ Controlling for the selected demographics & tumor characteristics.

  ❖ The percent receiving **TM** had **increased**.

  ❖ The percent receiving MRM had gone down, but when added with TM then the combined percentage receiving mastectomy (TM+MRM) had increased.

Results – summary (cont.)

❖ Whites had a **lower** odds of **BCS** than blacks, higher odds for both TM & MRM.

❖ Younger women were **less likely** to receive **BCS** and more likely to receive TM.

Discussion

❖ BCS is less invasive than TM and MRM and may be a reasonable treatment for some women with early-stage tumors;

❖ However, the percentage of cases receiving BCS had decreasing over 2008–2014 along with an increase in TM.

Discussion – limitations

❖ Accuracy of surgery coding

 ❖ QA identified cases with codes for total mastectomy that should have been coded as '30' (Subcutaneous mastectomy)

  ❖ Relatively few cases (135) had code '30': grouping with TM had little impact.

 ❖ TM & MRM may not be accurately distinguished from each other

Discussion – future directions

❖ **Survival outcomes**

❖ (Longer-term) Linkages to validate surgery information

  ❖ MCR has previously participated in a linkage with Medicaid claims

Discussion – conclusion

❖ These data provide quantitative population-based data on the surgical treatment for women 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.

Contact & acknowledgments

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Revisions since presenting

❖ rev02, 2017-06-26:

   ❖ Slide #3 ("Background"): "[…] costs of breast cancer screening […]" had "screening" deleted.

❖ "rev01" (named as "1330_Thursday_5E_Picuris_CLSchmaltz_No.pptx"):

   ❖ Presented at the 2017 NAACCR conference in Albuquerque, NM on 22 June 2017.