Breast cancer survival in Missouri, 2004–2012

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Presenter Disclosures

Chester Schmaltz

(1)   The following personal financial relationships with commercial interests relevant to this presentation existed during the past 12 months:

No relationships to disclose

Background

- The Missouri Cancer Registry (MCR) collects

  - population-based cancer incidence and 1st course treatment data on

  - Missouri residents diagnosed with reportable neoplasms

- Complete survival information with follow-up through 31 December 2015.

Background, cont.

- As a preliminary analysis for a project in collaboration with outside researchers at Johns Hopkins University to incorporate comorbidity information from hospital discharge data, MCR analyzed breast cancer (BC) survival.

Purpose

- To present preliminary results on survival using MCR data.

Methods: case selection

- Selected from the MCR database:

  – women age **18+**

  – diagnosed with **malignant BC**

  – Diagnosed between 1 Jan **2004** and 31 Dec **2012**

  – Resident of **Missouri** at diagnosis

- Cases were **<u>excluded</u>** from the survival analysis that were:

  – diagnosed **after death** (autopsy / death certificate only cases) or

  – a **second or later** tumor.

Methods: Cox PH regression

- Cox (proportional hazards) regression was utilized to model the survival,

  - Measured in months since diagnosis.

- Three end-points for survival were examined:

  - death from any cause,

  - BC death, &

  - non-BC death.

Methods: modelling

- Covariates include

    - age at diagnosis (modeled with splines),

    - year of diagnosis (modeled with splines),

    - race,

    - stage at diagnosis,

    - grade at diagnosis,

    - marital status,

    - histology,

    - Rural-Urban Continuum Code 2003 (RUCC2003),

    - ER/PR status.

Methods: modelling, cont.

- BC-specific survival was additionally analyzed stratified by:

  - race (black, white),

  - residence (metro, non-metro), and

  - age group (18–49, 50–59, 60–69, 70+).
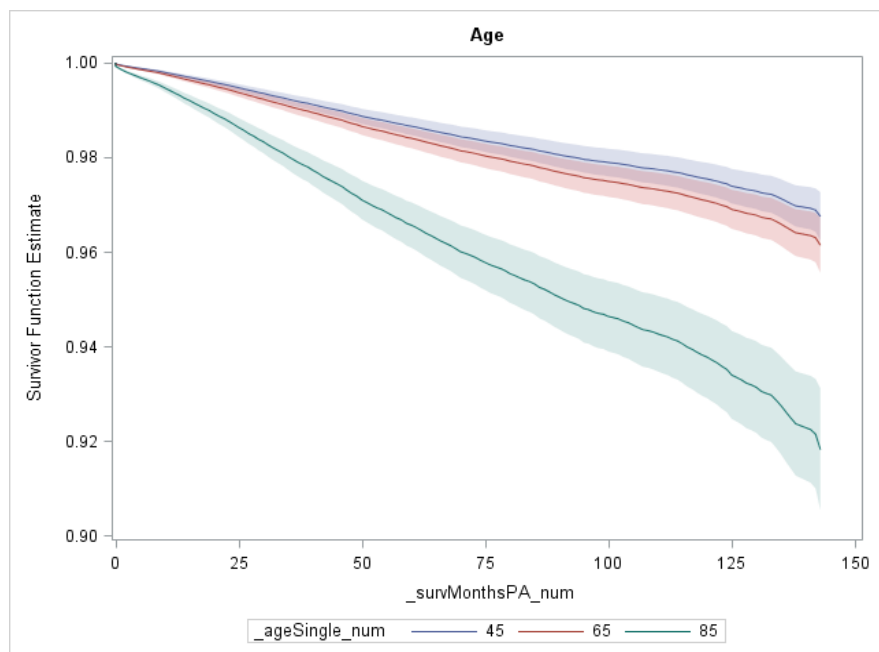
Results: any-cause & BC-specific

- For any-cause and BC-specific survival:

    - age and stage were very important predictors for length of survival;

    - marital status and RUCC2003 were moderately important.

Results: BC-specific
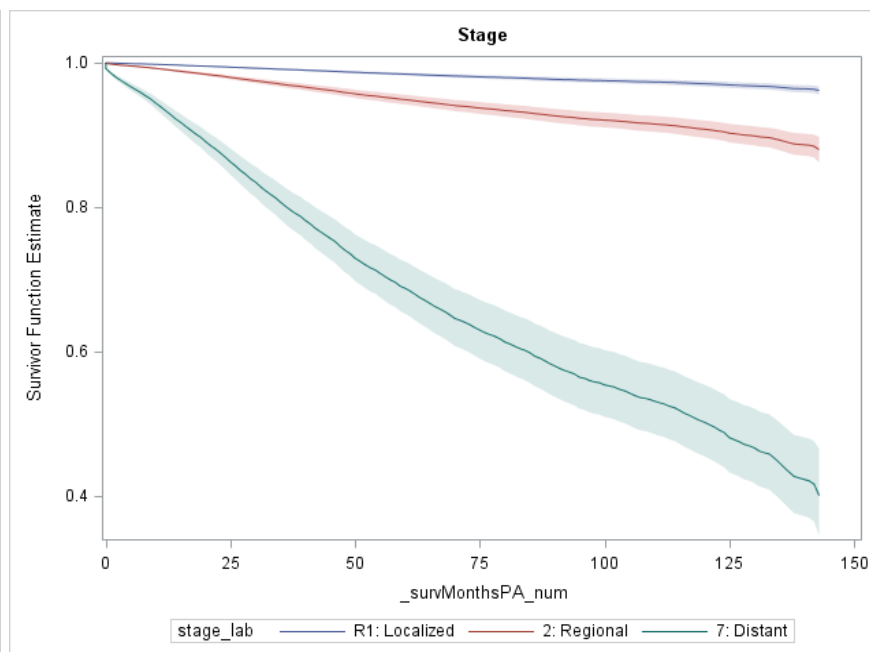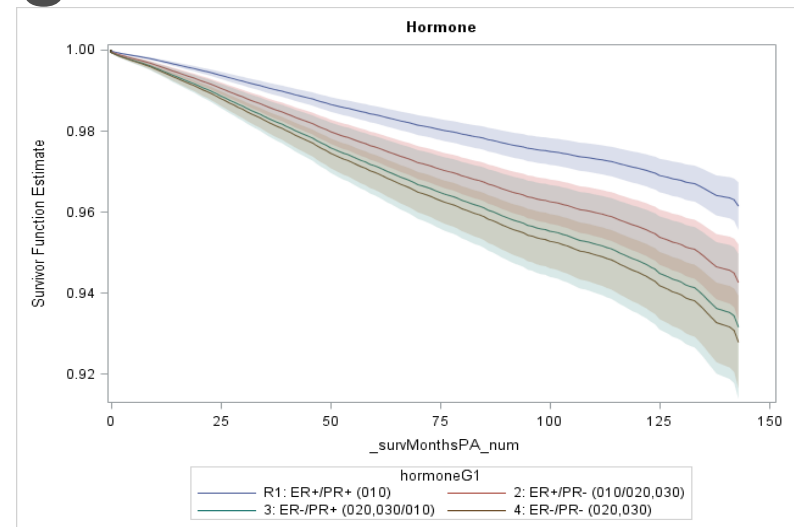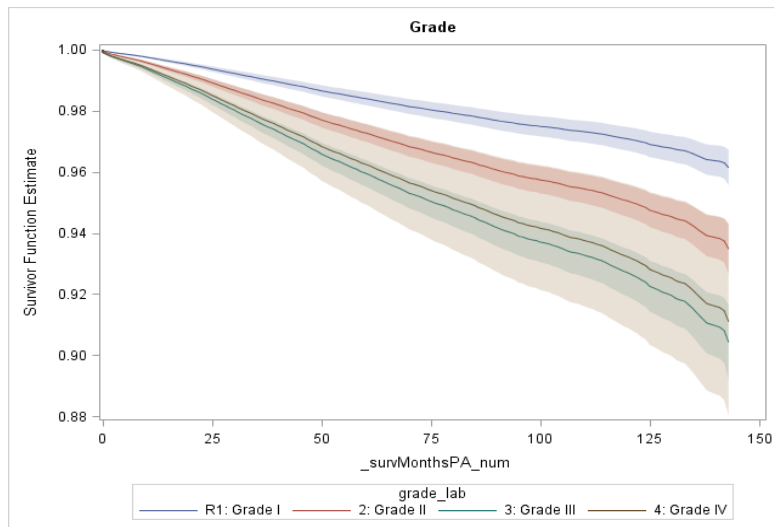

Relative to localized HR (95% CI):
- Regional: 3.3 (3.0, 3.5)
- Distant: 23.3 (21.5, 25.1)

p-values for all factors < .0001, except race (.0005)

Results: BC-specific

- Additionally, for BC-specific survival: low grade and ER+/PR+ status were associated with longer survival.

p-values for all factors < .0001, except race (.0005)

Results: BC-specific

- HR (95% CI) relative to grade I:
  - Grade II: 1.7 (1.5, 1.9)
  - Grade III: 2.6 (2.3, 2.9)
  - Grade IV: 2.4 (1.7, 3.4)

- … relative to ER+/PR+:
  - ER-/PR-:   1.9 (1.8, 2.0)
  - (ER+/ER- & ER-/PR+ smaller HR, but stat. sig. greater than 1.0)

- … relative to married:
  - Not married (incl sep): 1.4 (1.3, 1.5)

- … relative to whites:
  - Black: 1.15 (1.06, 1.24)

p-values for all factors < .0001, except race (.0005)

Results: non-BC

- For non-BC survival, the effect sizes for stage, grade, histology, and ER/PR status were greatly diminished.

  - Not-married effect about same: 1.4 (1.3, 1.5)

  - Black vs white about same: 1.2 (1.1, 1.3)

- HR (95% CI) relative to grade I:

  - *(None statistically significantly different from 1.0, type 3 p-value = .8)*

- … relative to ER+/PR+:

  - *(None statistically significantly different from 1.0; type 3 p-value = .03)*

Results: non-BC

- Type 3 p-values:
  - Age, year of dx, stage, marital status, race: ≤ .0001
  - Histology: .001
  - ER/PR: .03
  - RUCC: .4
  - Grade: .8
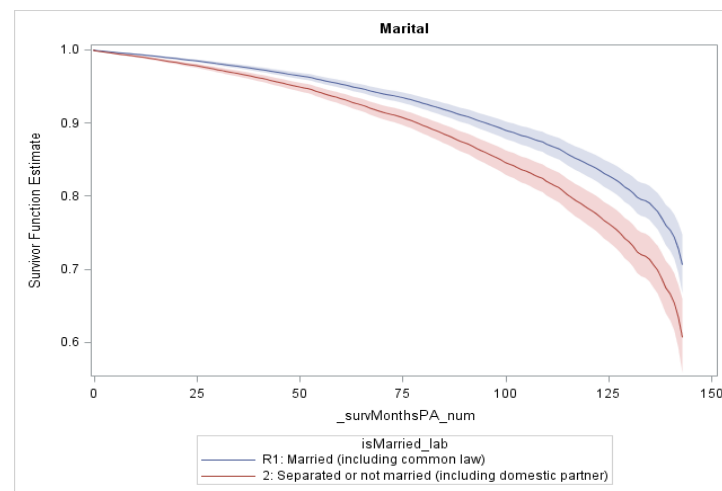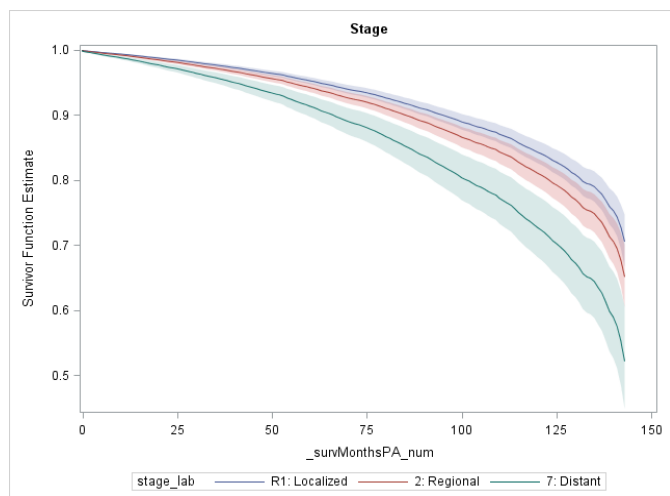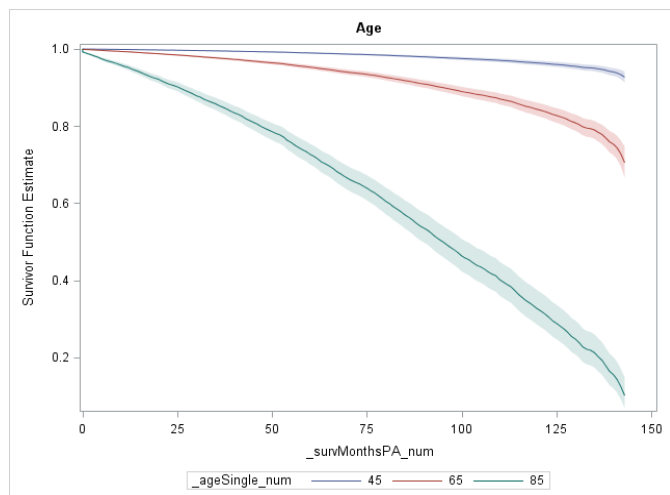
Stratified BC-specific survival

- Each stratified BC-specific analyses by race (black, white), RUCC (metro, non-metro), & age (18–49, 50–59, 60–69, 70+) gave similar* HR estimates for…

  - Stage relative to localized (~3 for regional, ~23 for distant)

  - Grade relative to grade I (~1.7 for grade II, ~2.6 for grade III, ~2.4 for grade IV)

  - Not-married relative to married (~1.4)

  - Receptor status relative to ER+/PR+ (~1.5 for ER+/PR-, ~1.8 for ER-/PR+, ~1.9 for ER-/PR-)

  - Black relative to white (~1.15) (for non-racial stratifications)

* Or didn't differ statistically significantly

Conclusion

- The results of this preliminary analysis:

    – largely cohere with what would have been expected for BC cases;

    – provide a useful baseline in which to compare the results of incorporating comorbid conditions.

Questions?

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