

# Hospitalizations among Breast Cancer Survivors in British Columbia

British Columbia Breast Cancer Survivor Study

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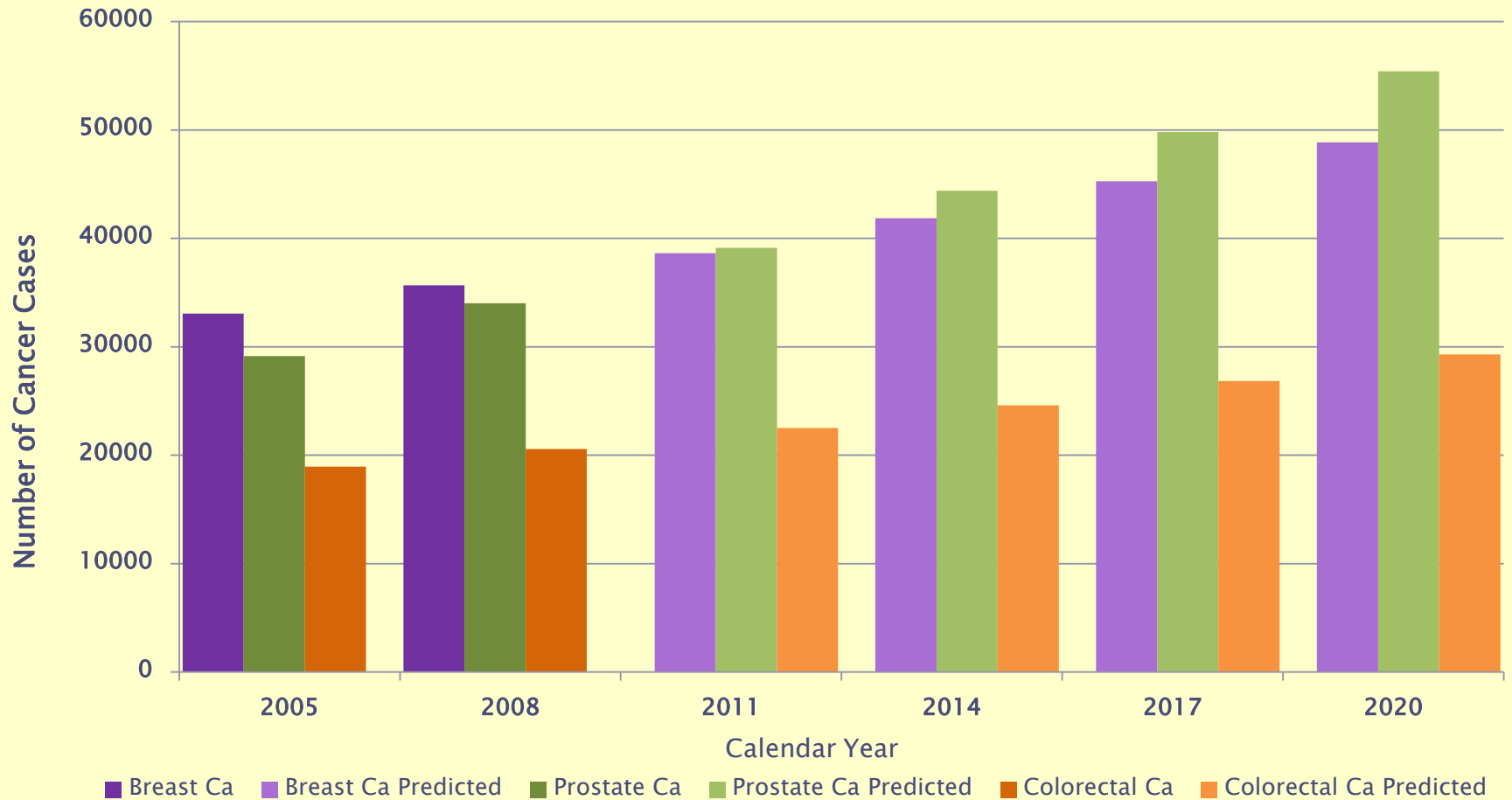
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# Cancers of Highest Prevalence in BC



# Background

- ▶ Survivors face ongoing risks due to late effects
  - require hospitalization for a variety of reasons following diagnosis and treatment
  - these negative health outcomes are significant not only to survivors themselves, but also within the broader context of health care access and resources
- ▶ Need high quality evidence to identify needs and patterns of care in relation to these risks
- ▶ Population-based study, with person-specific longitudinal validated data on risk factors and outcomes

# Objectives

This population-based study explores long-term hospitalizations among three-year breast cancer survivors in British Columbia:

- ▶ Describes characteristics of extent and patterns of hospitalization;
- ▶ Compares utilization to that of the general population;
- ▶ Examines factors affecting risks

# Study Group

- ▶ **Breast Cancer Survivor Cohort (N = 15,042)**
  - Identified from BC Cancer Registry
  - Women diagnosed with breast cancer aged 18 years and over, as BC residents, from 1989–2002
  - Survived at least 3 years post–diagnosis; followed until end 2008 or death
  - Linked to provincial clinical data
- ▶ **Comparison Group (N = 30,084)**
  - BC's health insurance plan Client registry
  - Matched by birth year

Subject records were linked to provincial administrative hospitalization records from 2006 to 2008

# Methods

## Outcome Measures (Characteristics of hospitalization)

- ▶ Probability of hospitalization
- ▶ Number of hospital admissions
- ▶ Length of stay: total number of days that one spent in hospital

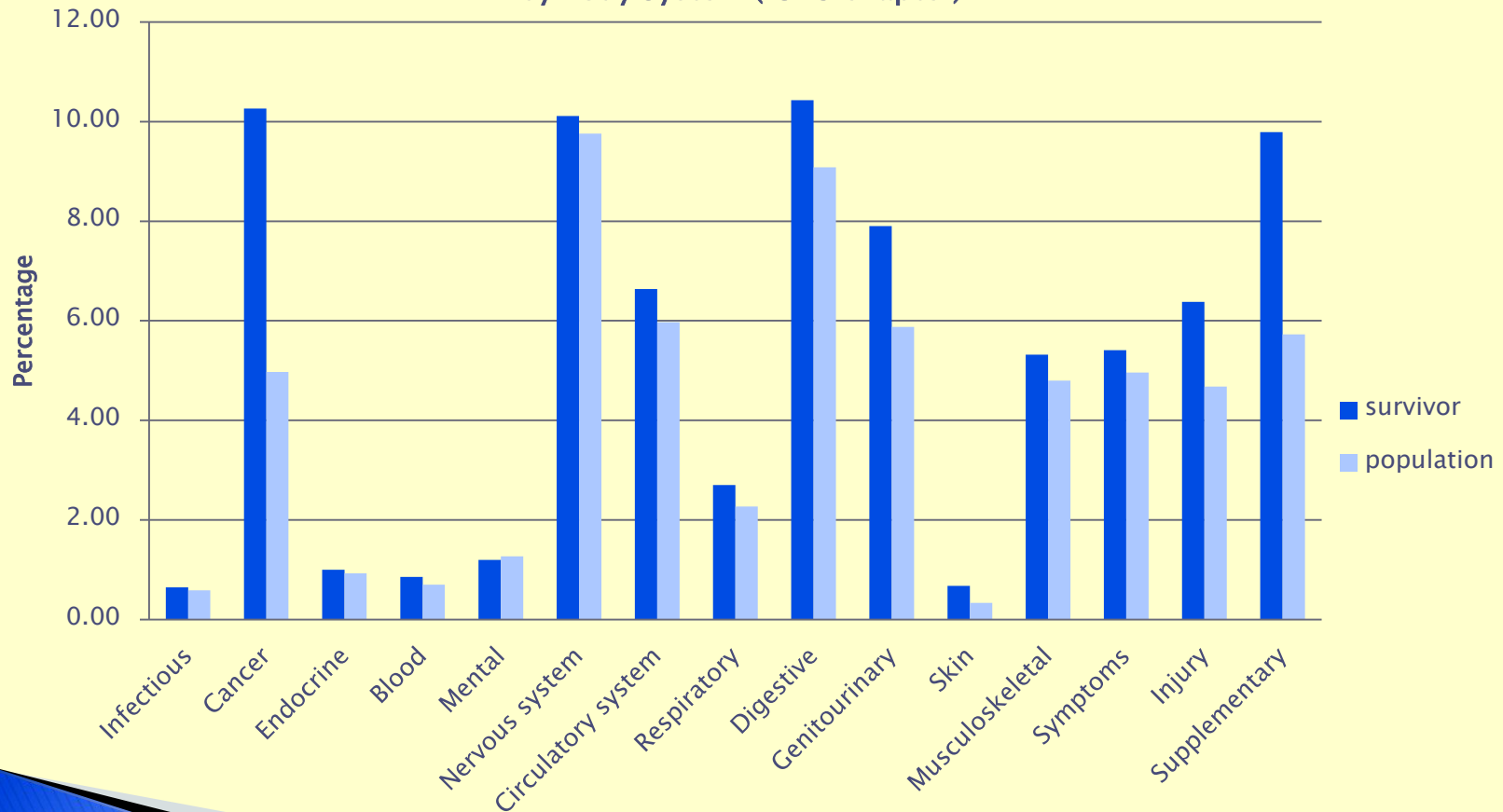
## Potential Modifying Factors

- ▶ **Socio-demographic**  
Attained age, SES, urban/rural residential status
- ▶ **Health system**  
Region of health care delivery
- ▶ **Clinical**  
Age at diagnosis, calendar period of diagnosis, stage at diagnosis, treatment, recurrence, second cancer

# Results

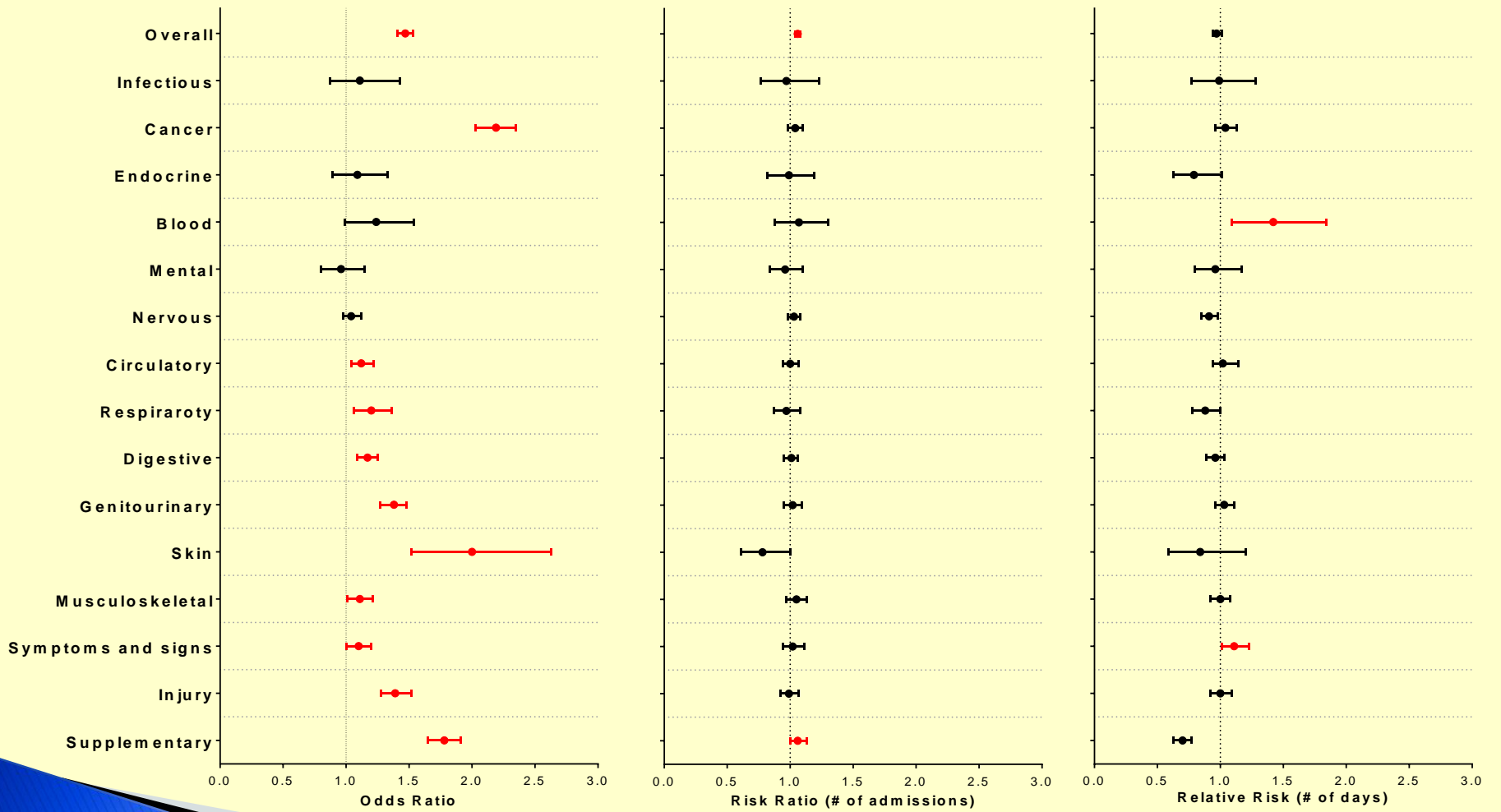
Overall: 50% of survivors vs. 40.7% of population sample

Percentage of Hospitalized Survivors and Population Sample  
by Body System (ICD9 chapter)



# Results

Hospitalizations compared to the population sample

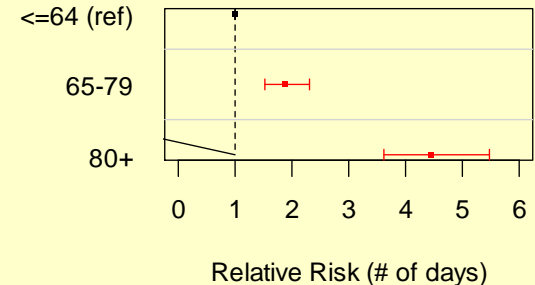
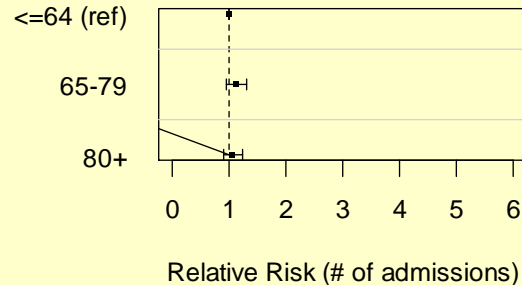
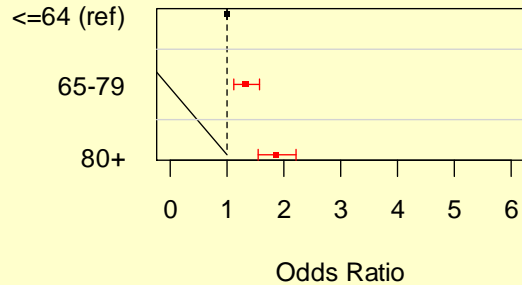


\*OR and RR adjusted.



# Results

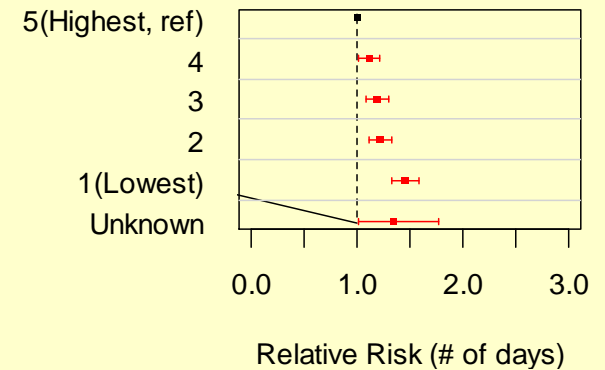
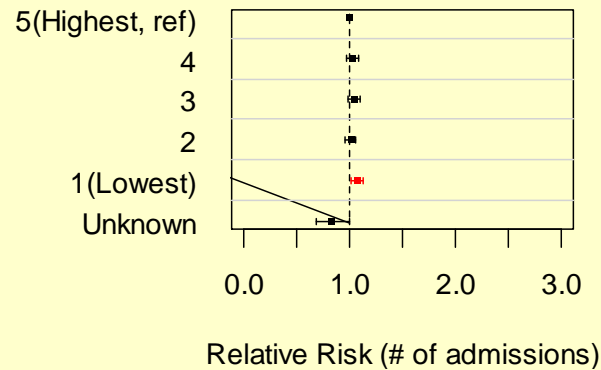
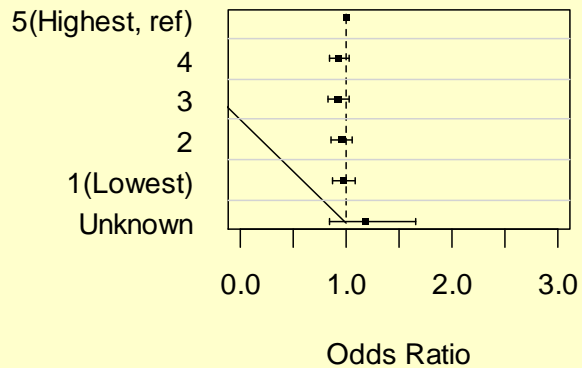
## Risk factors - attained age



- ▶ Older survivors had a significantly higher risk of hospitalization for a variety of reasons
  - Nervous
  - Circulatory
  - Respiratory
  - Digestive
  - Musculoskeletal
  - Symptoms, signs and ill-defined conditions

# Results

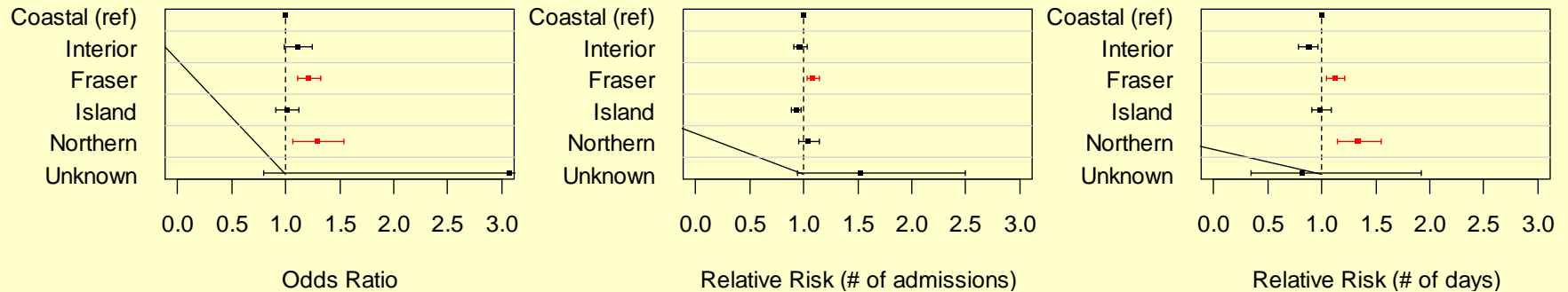
## Risk factors - SES



- ▶ Socioeconomic disadvantage was associated with increased length of stay among hospitalized survivors
  - Digestive
  - Musculoskeletal

# Results

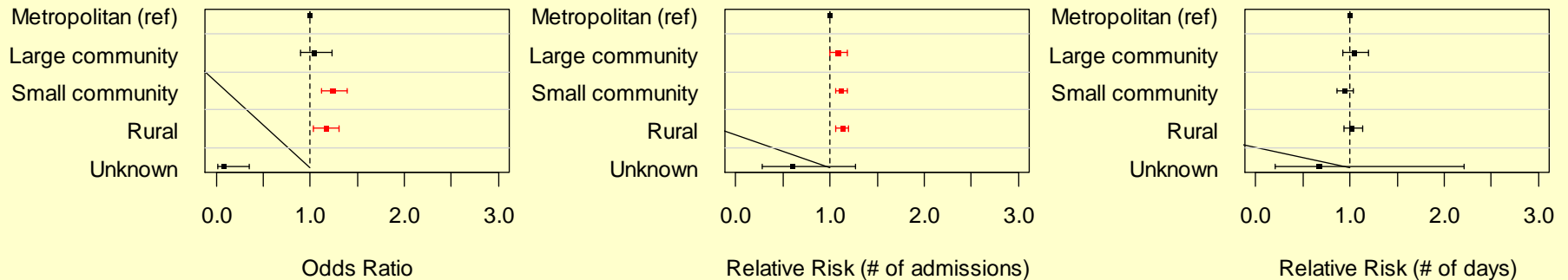
## Risk factors - Region of Residence



- ▶ Survivors who lived in Fraser and Northern Health Authorities showed an increased risk of hospitalization, with more frequent admissions and longer length of stay, compared to those who lived in Vancouver Coastal Health

# Results

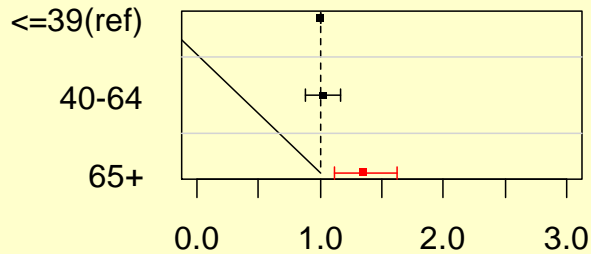
Risk factors - Urban/rural status



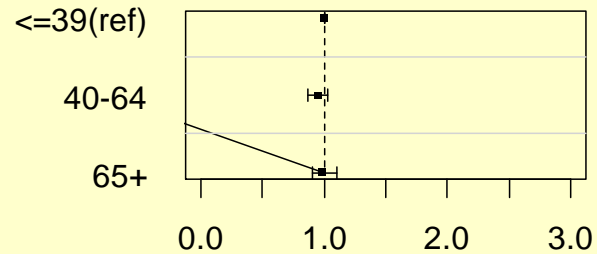
- ▶ Those who lived in smaller communities also had a higher risk of hospitalization and more admissions.

# Results

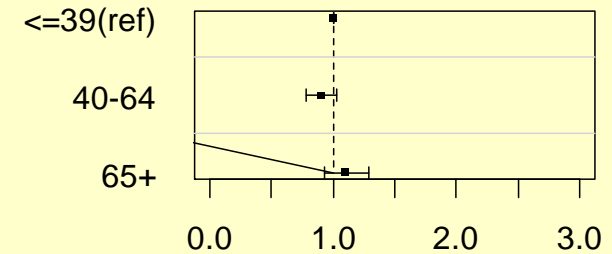
Risk factors - Age at diagnosis



Odds Ratio



Relative Risk (# of admissions)

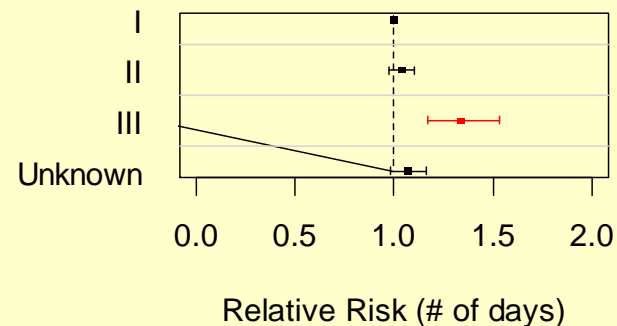
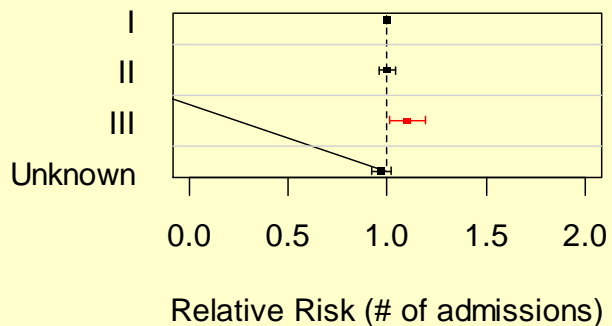
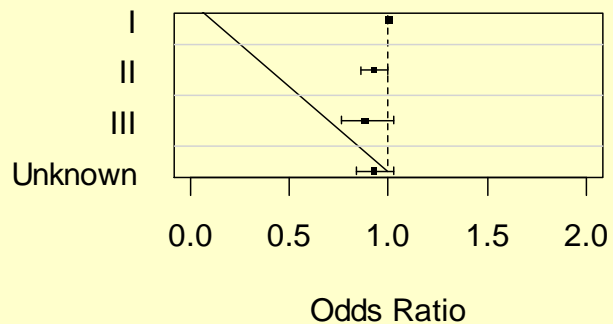


Relative Risk (# of days)

- ▶ Survivors diagnosed at older age at higher risk of hospitalization nervous system and sense organs, compared to those diagnosed under age 40.

# Results

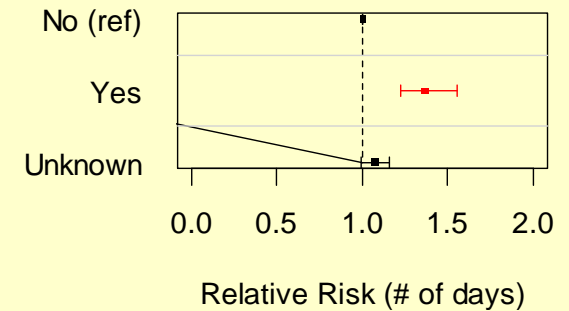
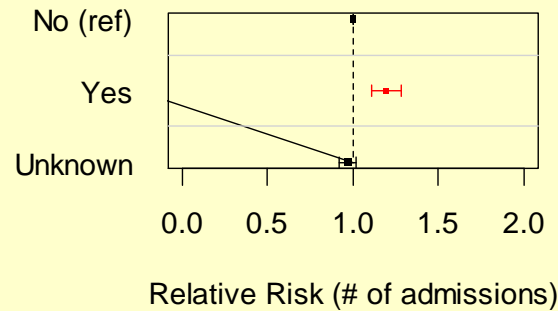
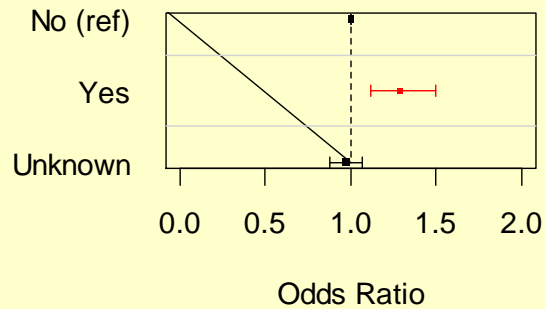
Risk factors - Stage



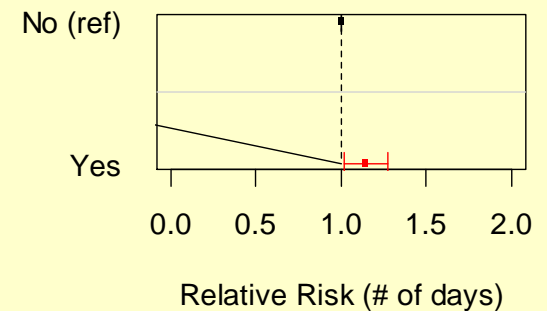
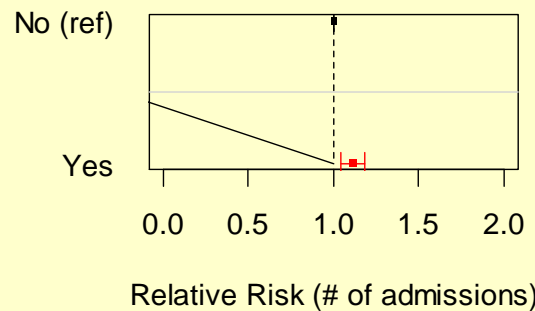
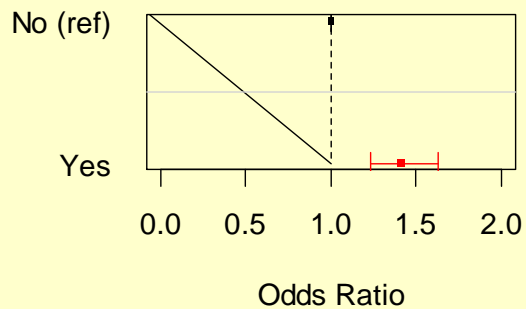
- ▶ Survivors diagnosed at the most advanced stage showed a longer length of stay in hospital.
  - Cancer related

# Results

Risk factors - Relapse status



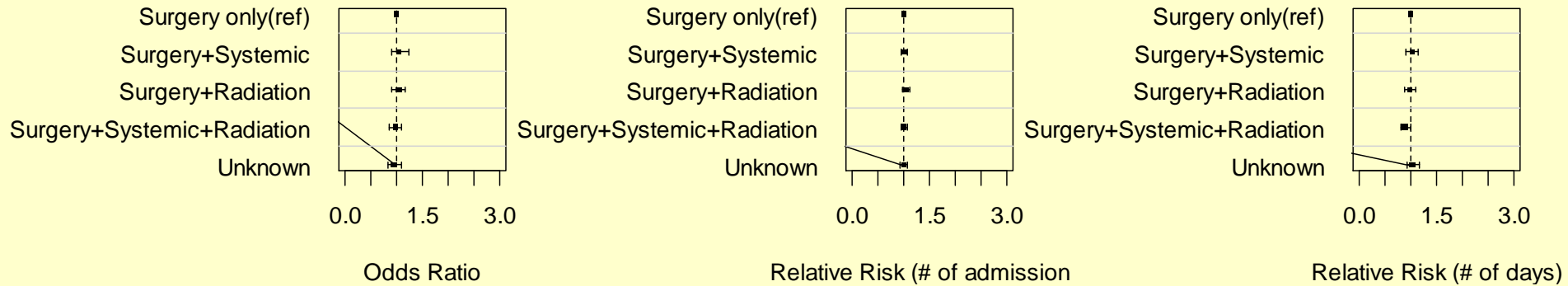
Risk factors - Second cancer



- ▶ Presence of relapse or second cancer increased risk of hospitalization significantly.

# Results

Risk factors - Treatment



- ▶ No significant differences were observed among different treatment modalities.



# Summary

- ▶ Main reasons:
  - Cancer
  - Nervous system
  - Digestive system
  - Circulatory system
  - Injury
- ▶ Compared to general population:
  - Higher risk of hospitalization for many causes
- ▶ Risk factors:
  - Age; urban/rural status; socioeconomic status
  - Relapse; second cancer; stage

# Conclusions

- ▶ Higher odds of hospitalization and more admissions; late effects
- ▶ Urban/rural residential status, region of residence, and SES affected some characteristics of hospitalization
- ▶ The increased risk of hospitalization among some patient subgroups highlights the importance of risk-based follow-up care for these survivors to reduce preventable hospitalizations.

# Acknowledgements

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Thanks for your attention!

