



Equity in cancer control

A view from many
perspectives

ARCC, Vancouver, 2013



A thought...

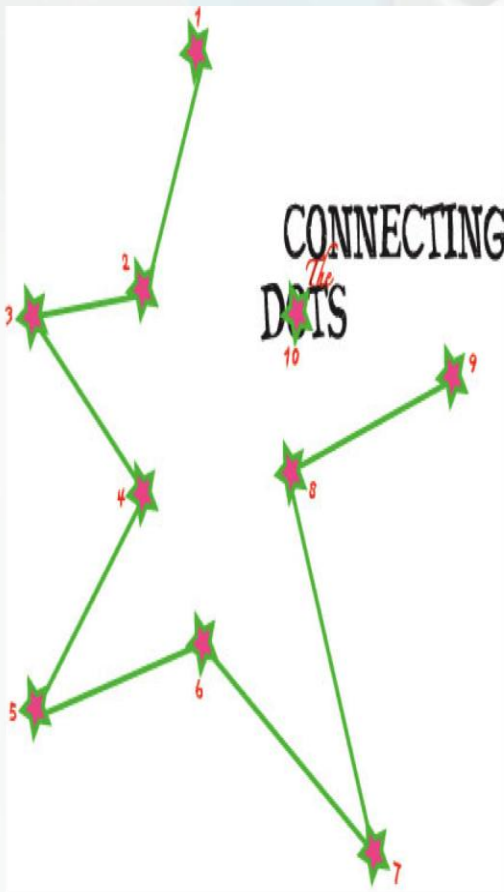
“Analysis and comparison are the midwives of improvement”

Roy Romanow, Linda Silas, and Steven Lewis,

The Globe and Mail (Jan 16, 2012)

Identification of future routes





Four examples:

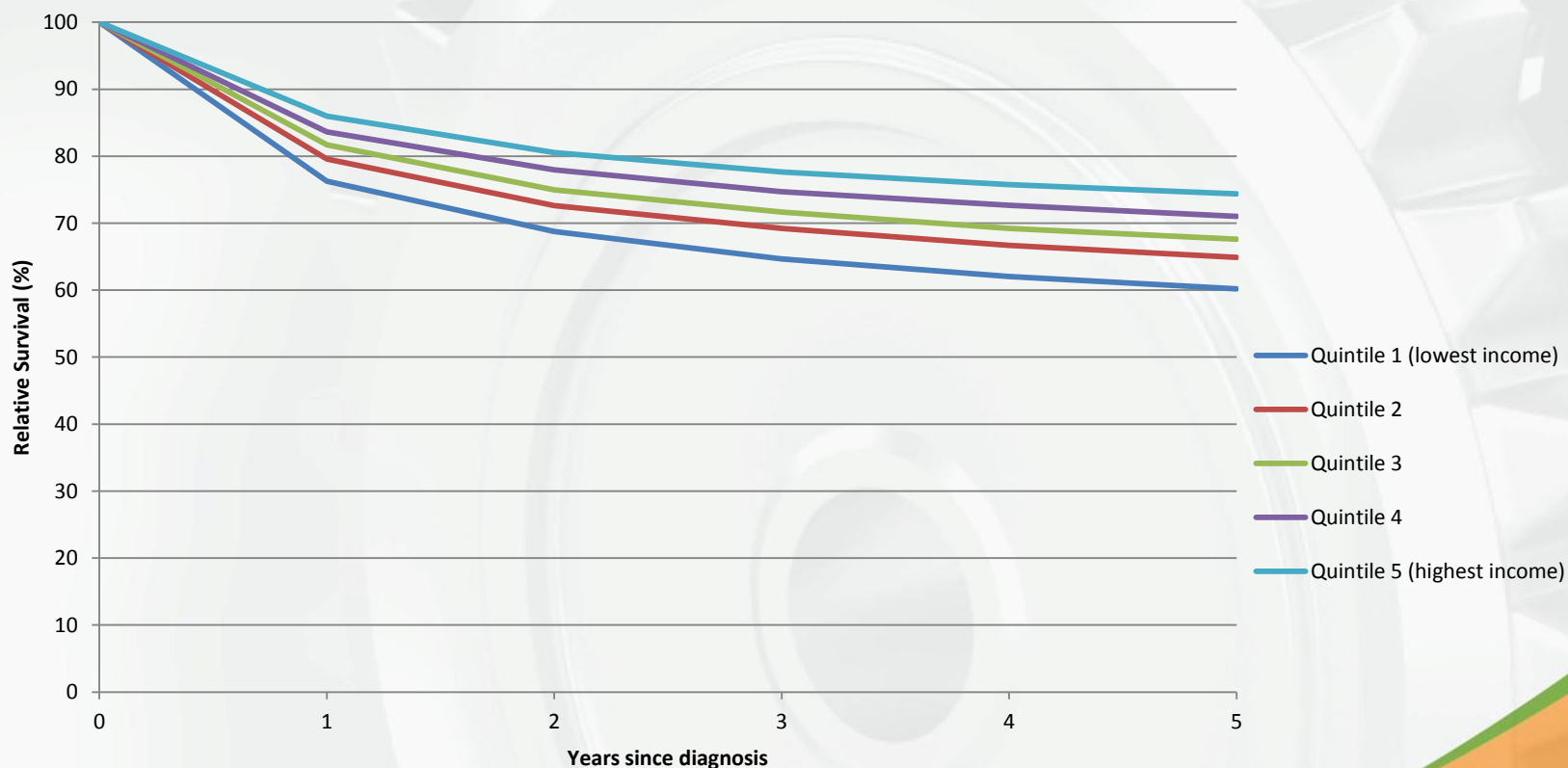
- Income and cancer survival
- Special populations
- Geographic mortality patterns
- Age and equity in care

Cancer survival

- Most survival data in population cancer data is now relative survival data
- Period survival analysis has moved field forward and has provided more up-to-date data
- Question: Does cancer survival vary by income level in Canada?

Original look at relative survival by SES

Age standardized Relative Survival Ratios - Urban Canada
for all cancers, 2004-2006, (unadjusted)



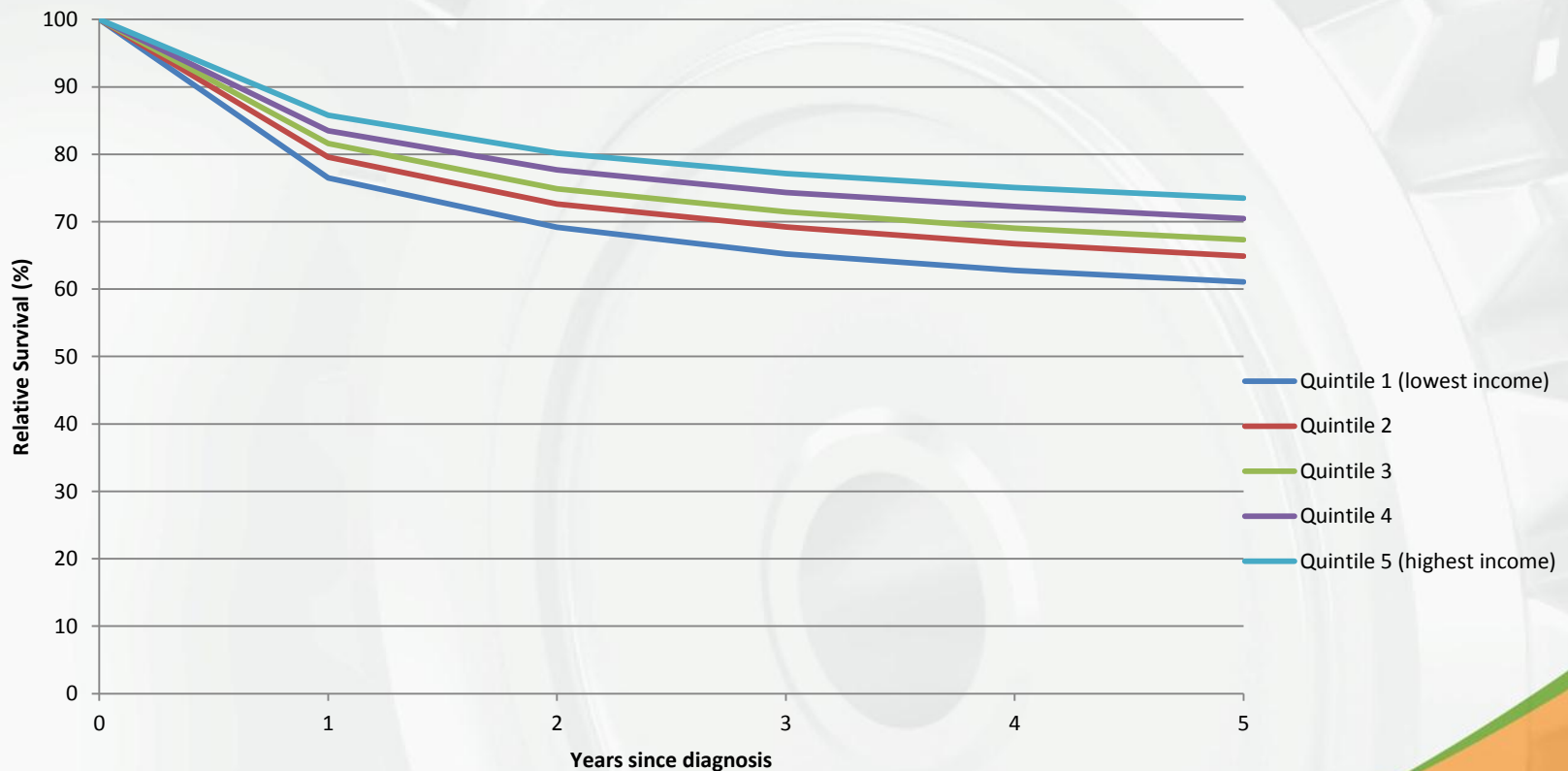
Absolute difference between quintile 1 and 5 is 14.2%

What is the question we are trying to answer?

- In relative survival, it compares the survival of a patient with a cancer diagnosis with a similar person without a cancer diagnosis
 - Usually adjusted for age, sex, province
- If we compare each income quintile with the total population, rather than its own income quintile, we are including effects of different distributions of all of the other causes of death that may vary across income quintile

Using quintile specific background rates

Age standardized Relative Survival Ratios - Urban Canada
All cancers, 2004-2006, (adjusted for background mortality)



Absolute difference between quintiles 1 and 5 is 12.5%

Why only urban data?

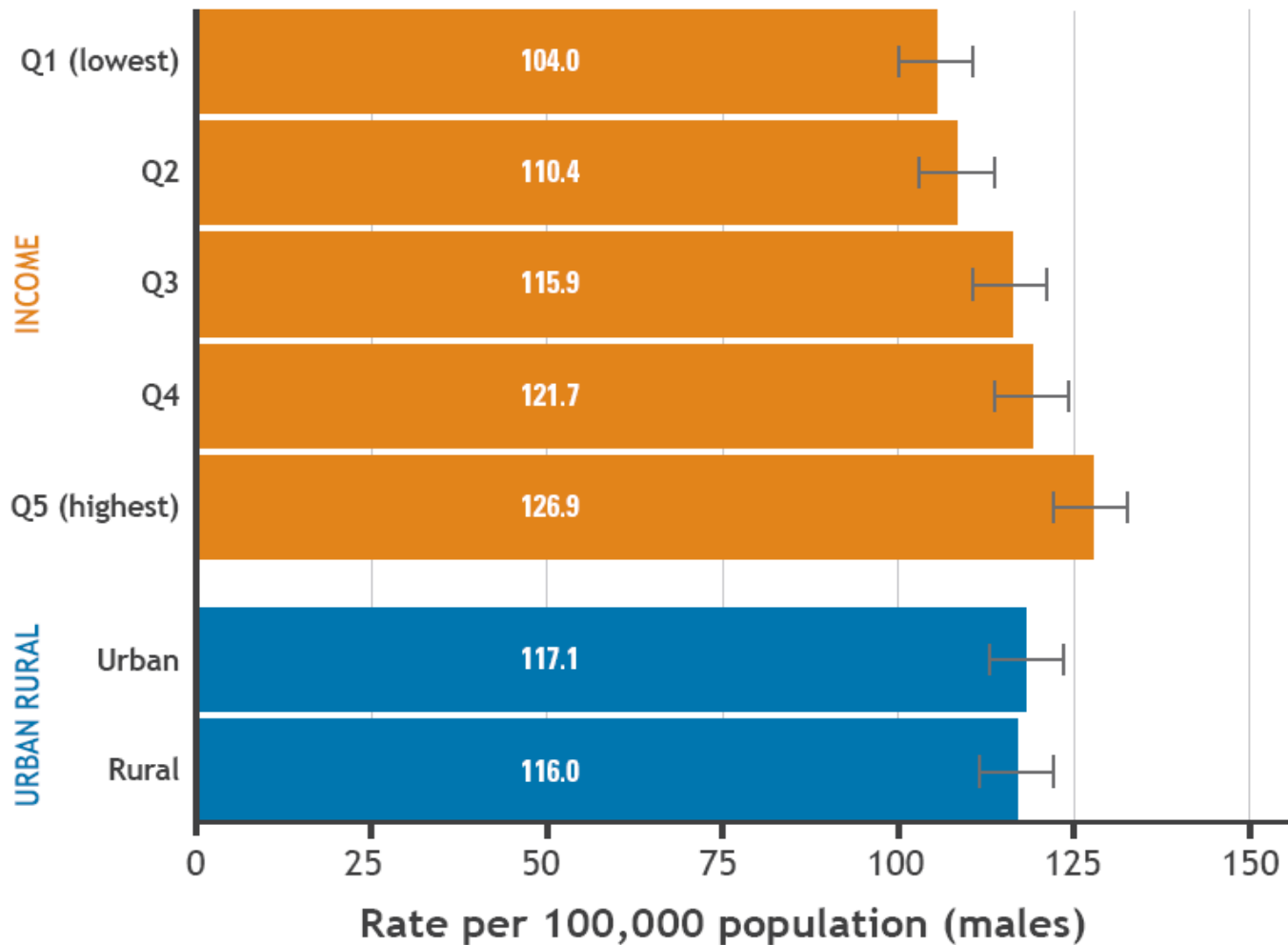
- Need to have life tables constructed for the reference populations; at present, income quintile-specific life tables only available in Canada for urban populations



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Age standardized incidence rates, prostate cancer

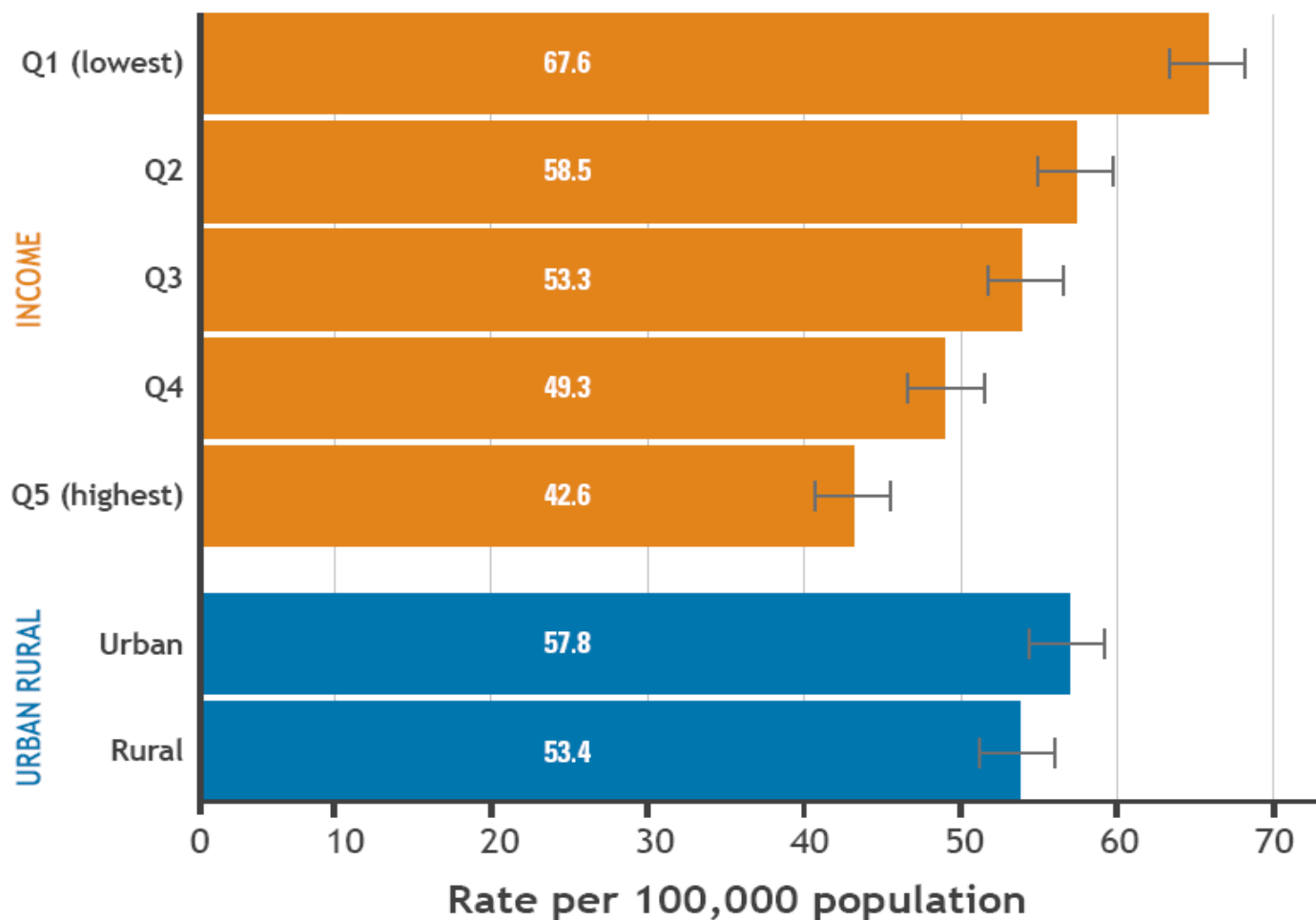
By income quintile and urban/rural area, Canada, 2005



Note: 95% confidence intervals are indicated on figure
Data Sources: Statistics Canada, Canadian Cancer Registry

Age standardized incidence rates, lung cancer

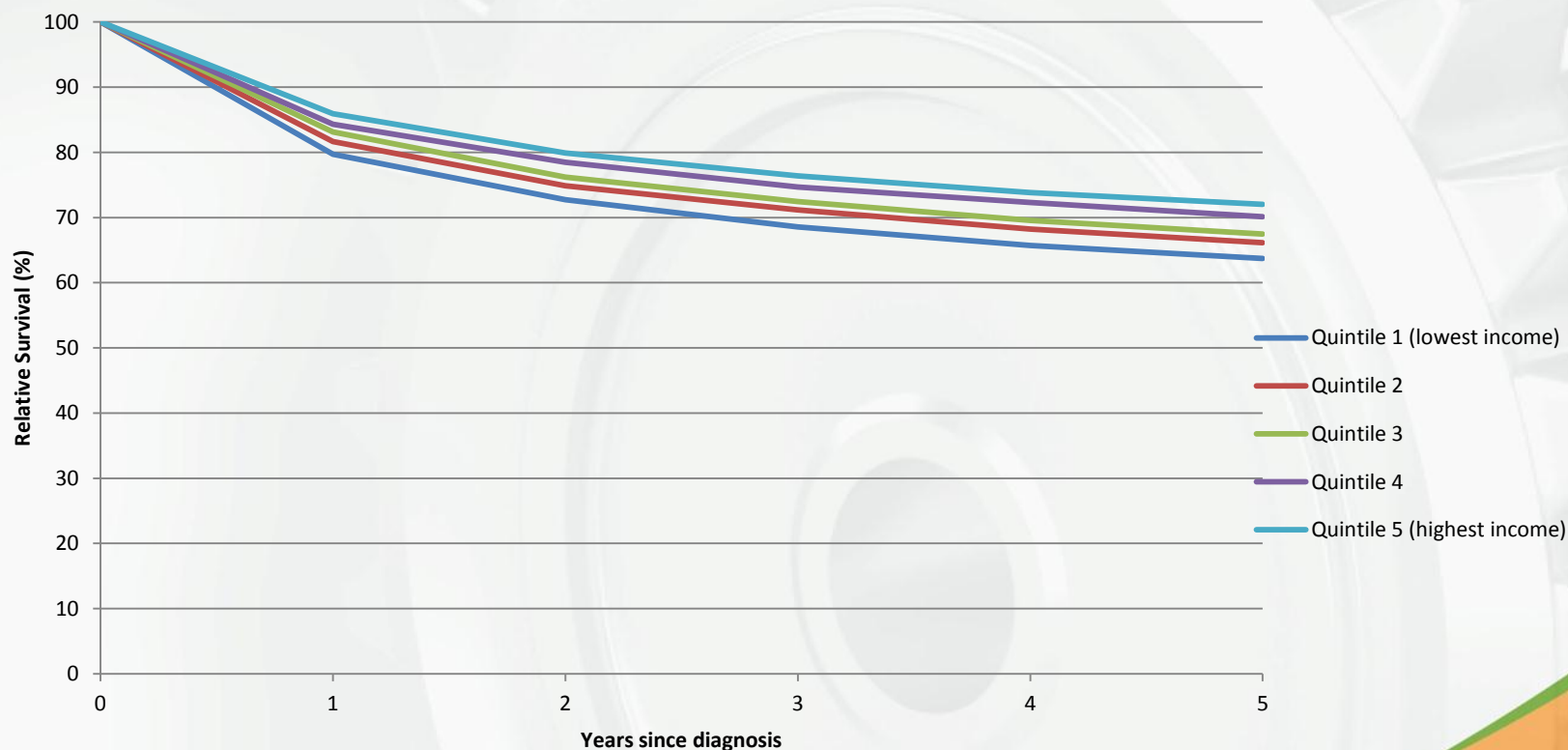
By income quintile and urban/rural area, Canada, 2005



Note: 95% confidence intervals are indicated on figure
Data Sources: Statistics Canada, Canadian Community Health Survey

Removing lung and prostate cancer from the totals

Age standardized Relative Survival Ratios - Urban Canada
All cancers excl lung & prostate, 2004-2006,
(adjusted for background mortality)



Absolute difference between quintile 1 and 5 is 8.3%

In future analyses:

- Stage-specific/site-specific survival by quintile
 - difference at 5 years is 8.3%, but by 1 year the difference is already 6.3% -- so is stage at diagnosis part of the problem?
 - Is part of the differential cancer treatment-related?
 - Is part of the differential due to treatment of co-morbidities

In order to change the picture, we need careful work to disentangle the proximate causes

Special populations

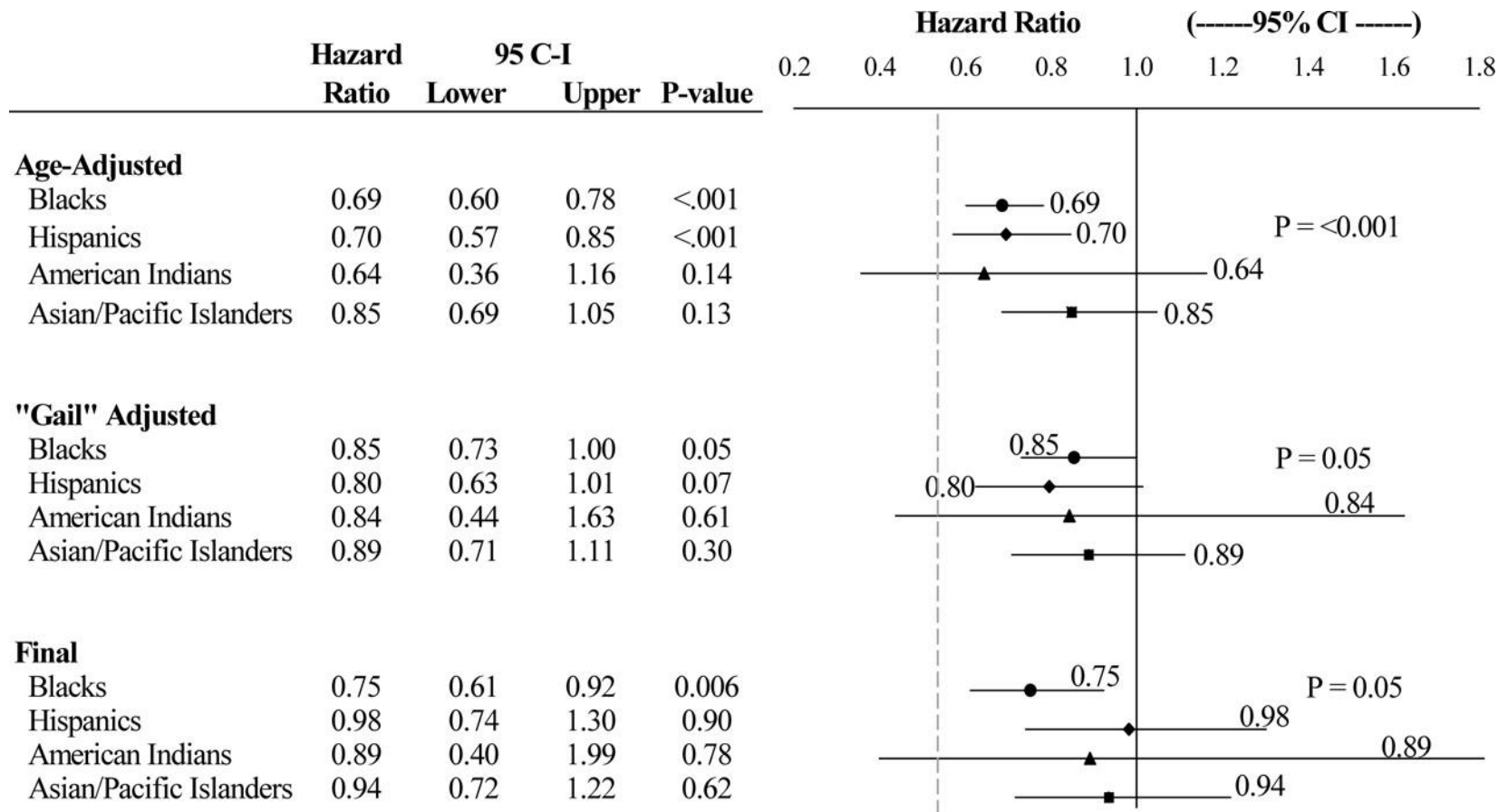
- What is the experience of First Nations people, recent immigrants, those living in remote areas?

Canada is surprisingly limited in ability to study these questions easily

- American health records commonly record information on racial groups, which has allowed different patterns of disease to be addressed



Hazard ratios and P values of invasive breast cancer incidence by race/ethnicity after adjusting for breast cancer risk factors and other covariates.

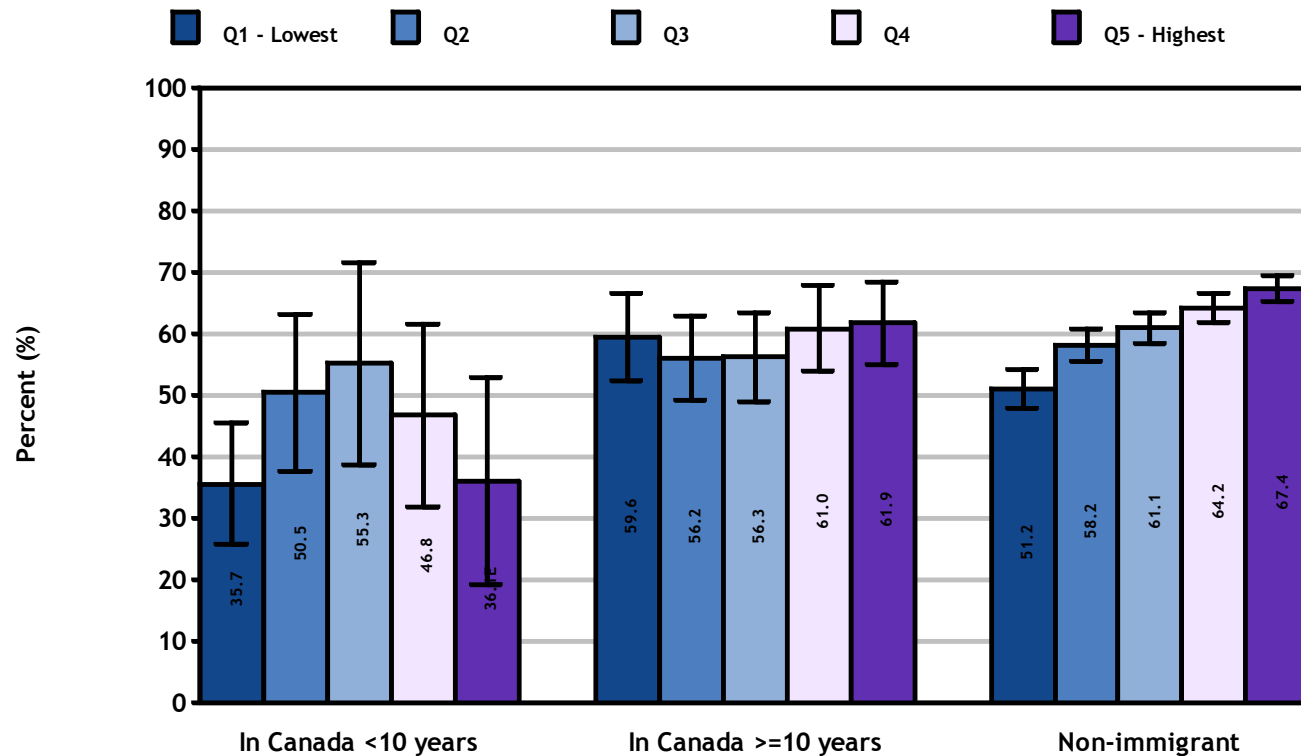


Chlebowski R T et al. JNCI J Natl Cancer Inst 2005;97:439-448

What do we know?

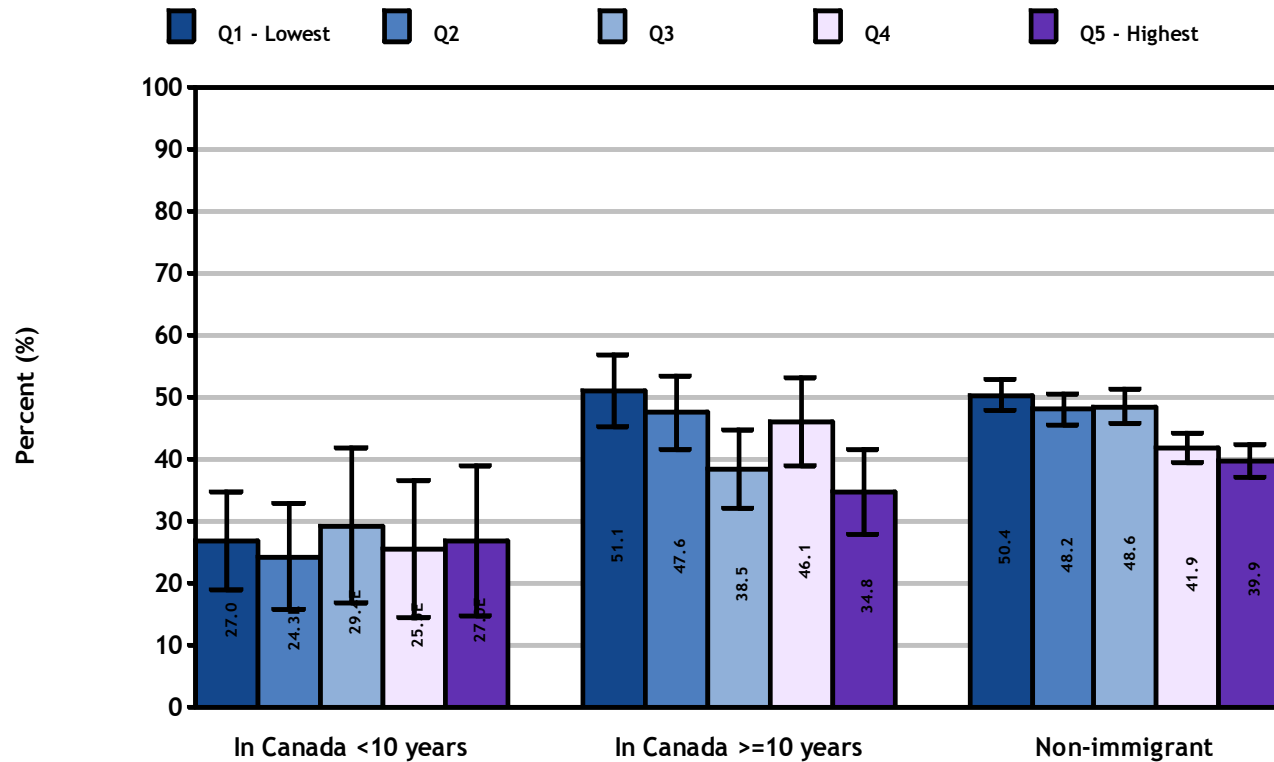
- Many studies and program results show lower uptake of screening among recent immigrants and First Nations people (?Inuit/Metis)
- Patterns for cancers in First Nations people appear to be changing – no population-based data yet
- Recent immigrants have substantially lower cancer risk than the general population, although elevated for liver cancer (McDermott et al, J Imm. Minority Health 2011)
- Stay tuned for more info.....

Percentage of population (age ≥ 18, male) classified as overweight or obese, by length of time (years) in Canada since immigration and income quintile, Canada – CCHS 2011



E Interpret with caution due to a large amount of variability in the estimate
 95% confidence intervals are indicated on figure
 Data source: Statistics Canada, Canadian Community Health Survey

Percentage of population (age ≥ 18, female) classified as overweight or obese, by length of time (years) in Canada since immigration and income quintile, Canada – CCHS 2011



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 Data source: Statistics Canada, Canadian Community Health Survey

Just a thought....

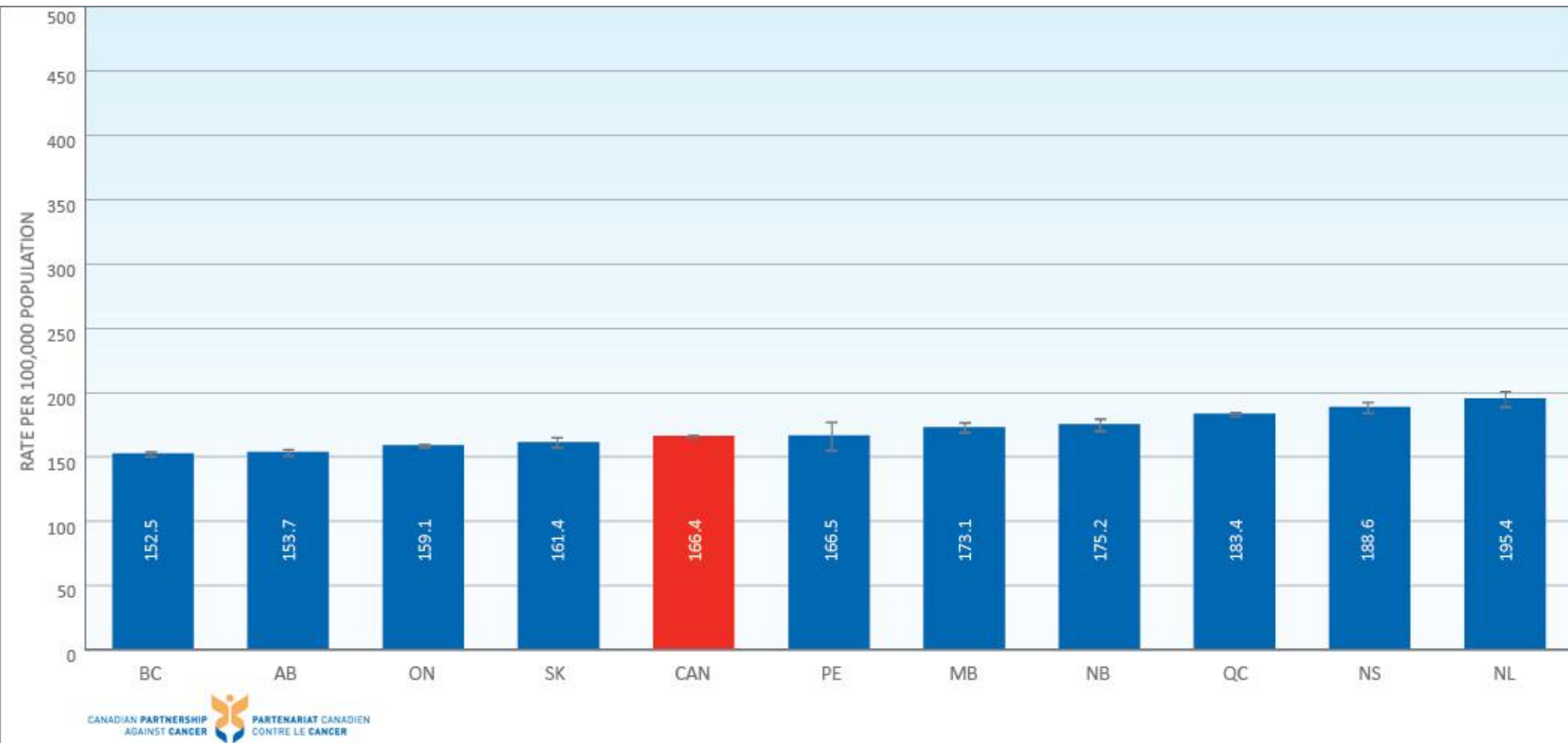


- What could we learn from recent immigrants that could both protect them from adoption of host population risk behaviours, and perhaps have the host population adopt their behaviours?

Overall Mortality: Geographic Patterns

Age-standardized mortality rates-all cancers

BY PROVINCE, 2005-2007

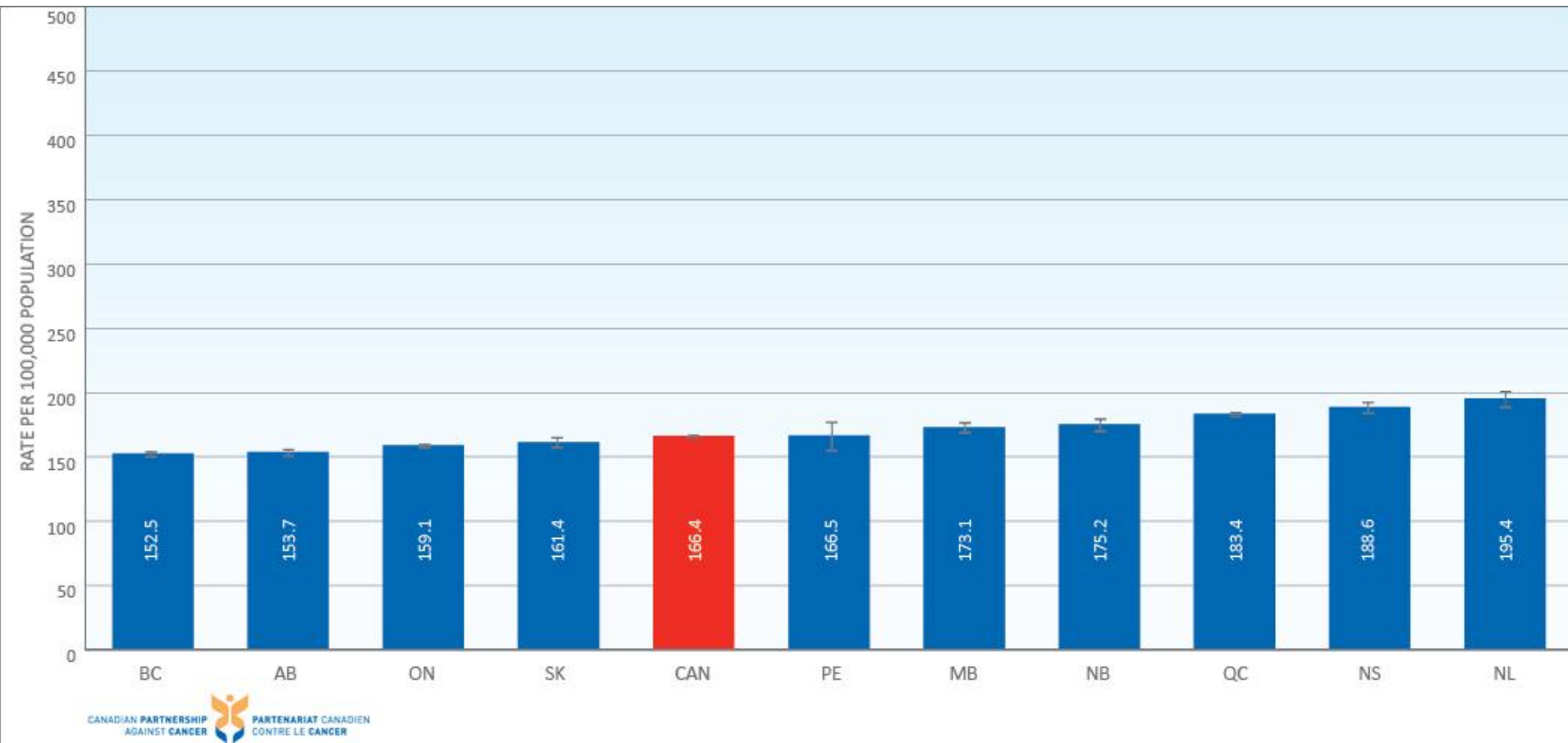


95% confidence intervals are indicated on figure.

Data source: Statistics Canada, Vital Statistics Death Database

Age-standardized mortality rates-all cancers

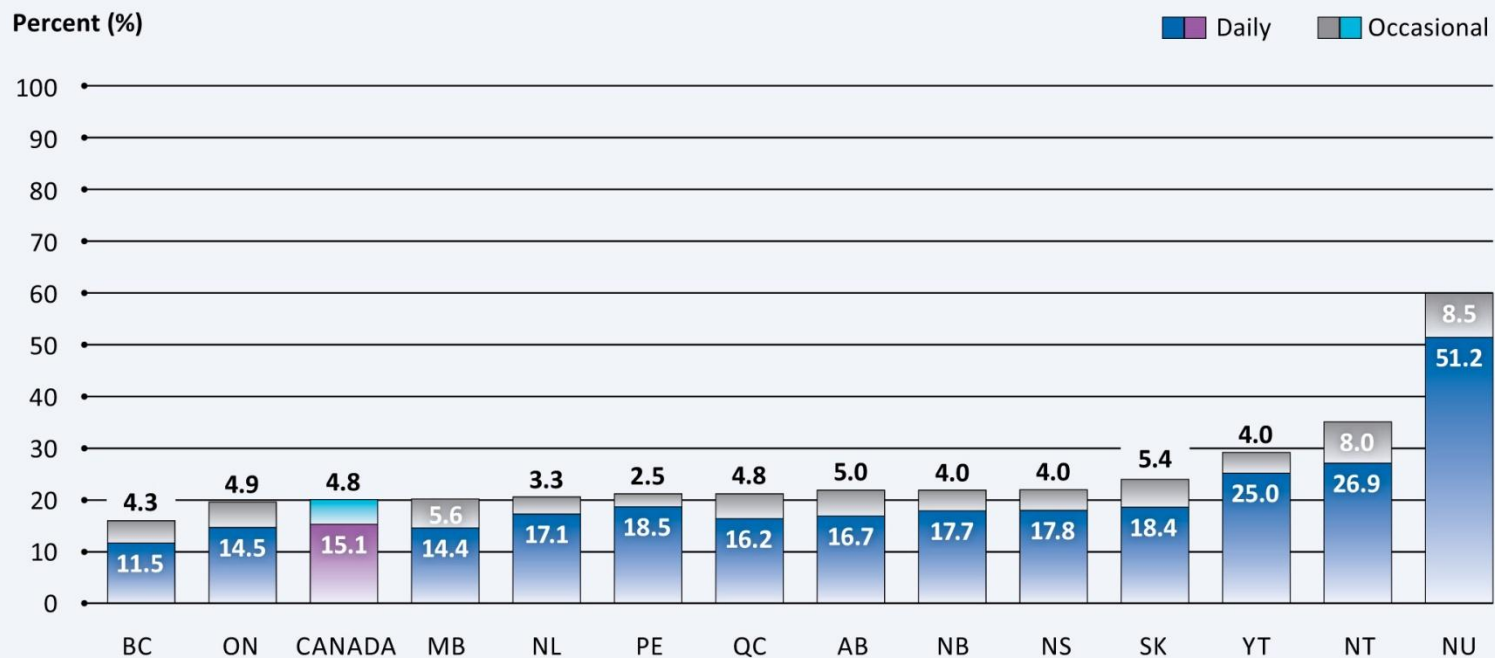
BY PROVINCE, 2005-2007



95% confidence intervals are indicated on figure.

Data source: Statistics Canada, Vital Statistics Death Database

Percentage of population (age ≥ 12) reporting daily or occasional smoking, by province/territory – CCHS 2011



Data source: Statistics Canada, Canadian Community Health Survey.

Estimated prevalence of obesity in Canadian adults by province (2000-2011)*

2000



* Adults with BMI ≥ 30 kg/m² in each province as calculated from the self-reported height and weight surveys conducted by the CCHS and corrected to account for misreporting of height and weight.

Data Source: Gotay, C., Katzmarzyk, P., Janssen, I., Dawson, M., Aminoltejari, K., Bartley, L. (2013). Updating the Canadian obesity maps: An epidemic in progress. Canadian Journal of Public Health, 104(1). Retrieved from <http://journal.cpha.ca/index.php/cjph/article/view/3513>

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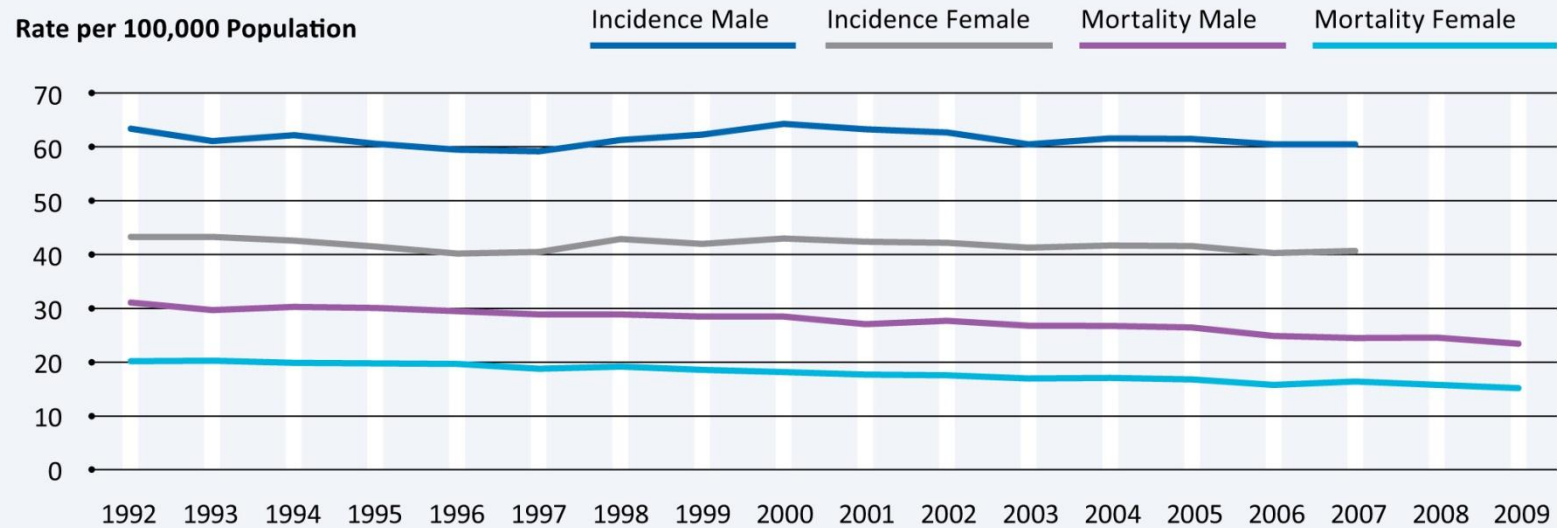
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Obesity and cancer

- There is good data from older cohort studies that obesity is linked to several cancers – colorectal, uterine, post-menopausal breast...
- So how do we explain these patterns.....



Age-standardized incidence and mortality rates of colorectal cancer by sex, Canada – 1992 to 2007



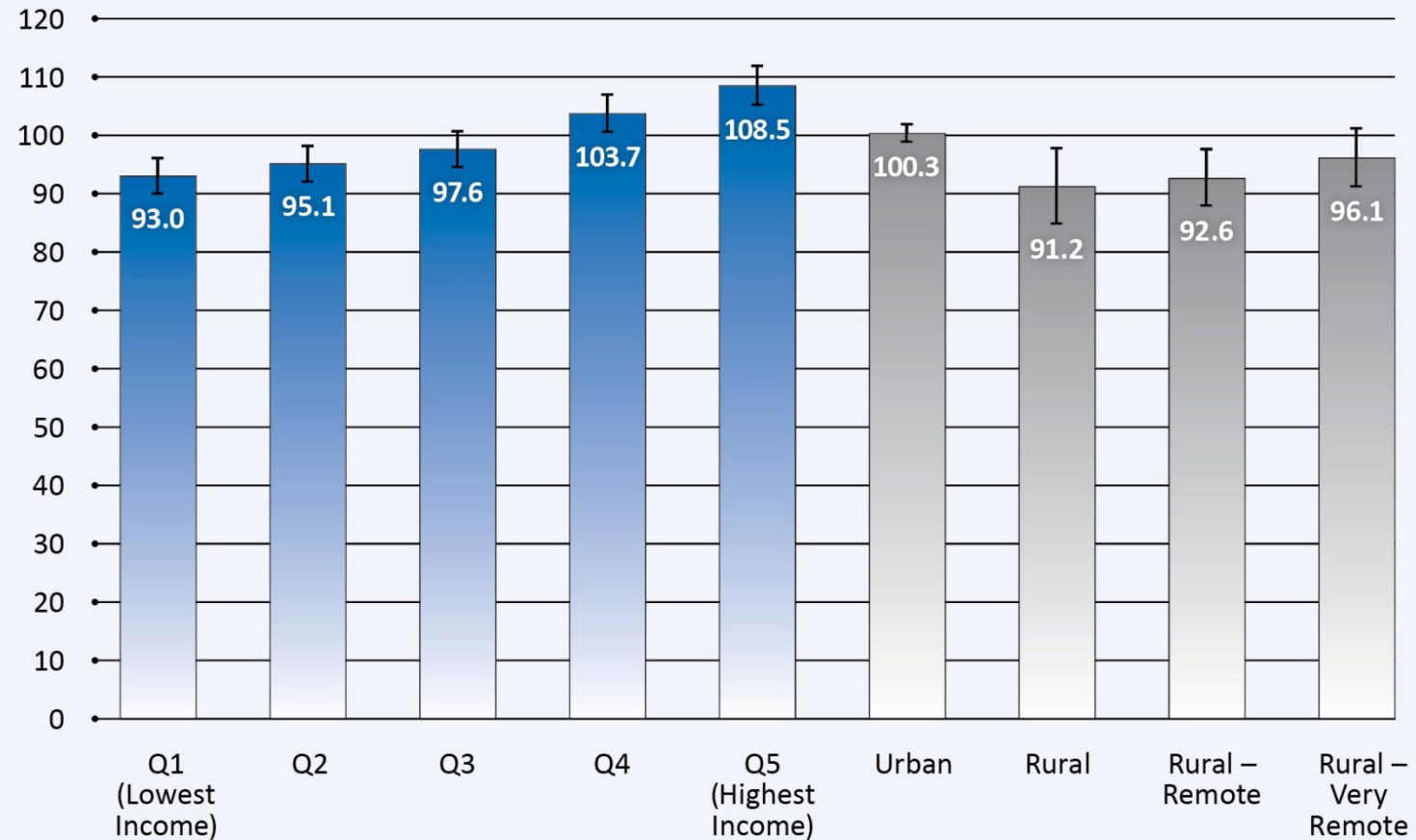
Data Source: Statistics Canada, Canadian Cancer Registry.



Age-standardized incidence rates of breast cancer, by income quintile and geography, Canada – 2007

Rate per 100,000 Population

■ Income ■ Geography



95% confidence intervals are indicated on figure.

Data source: Statistics Canada – Canadian Cancer Registry.

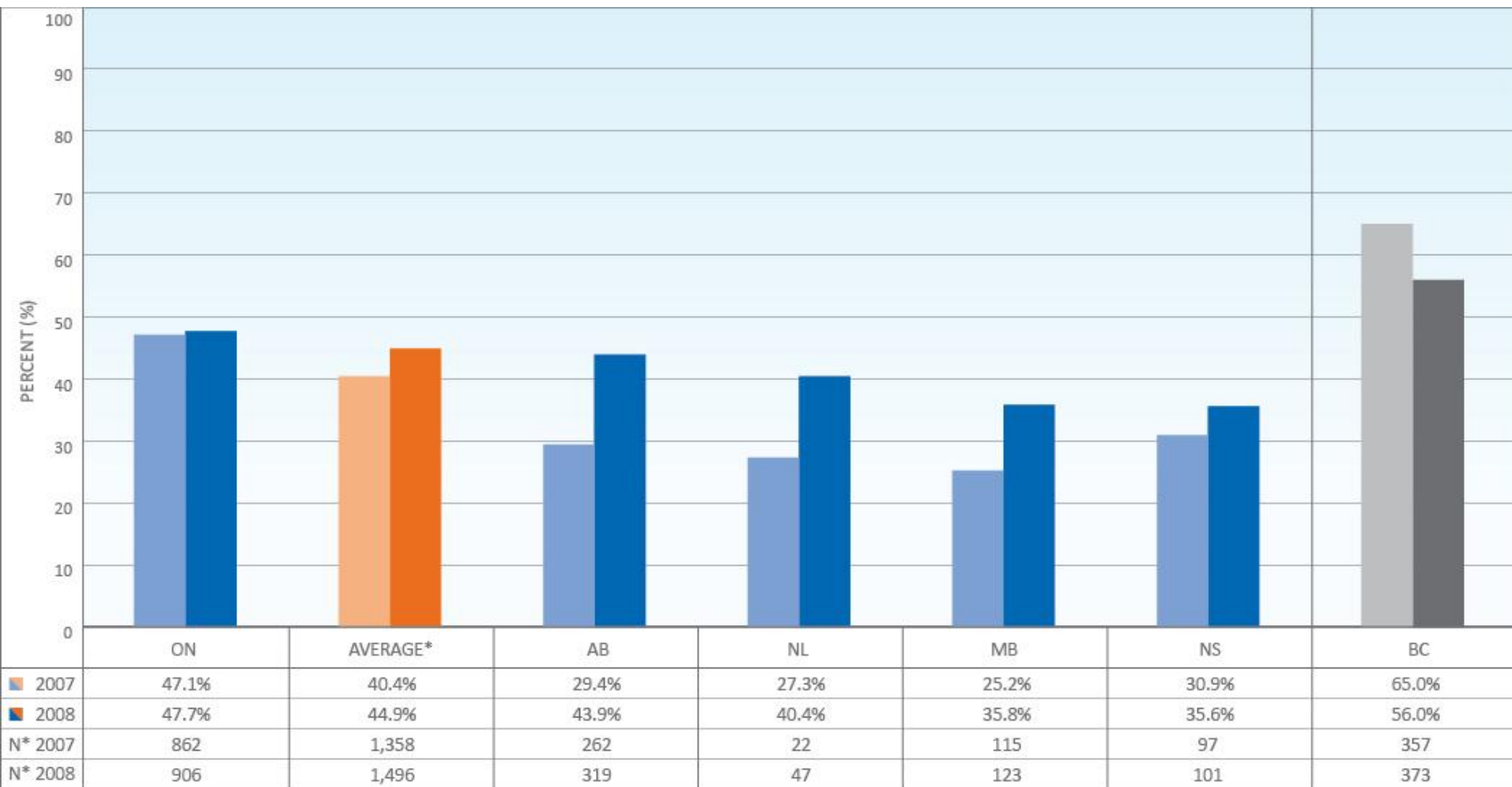
East-west gradient

- There is probably much more work that needs to be done to explain differences
- “Lifestyle” factors undoubtedly play a role, but an effort to look at population attributable risk for differences would likely uncover other modifiable factors



Age and Equity In Care

Stage II or III Rectal Cancer Patients Receiving RT Preceding Resection



BC data include only cases referred to the cancer centres

PE data suppressed due to small numbers

* Average includes AB, MB, NL, NS, ON

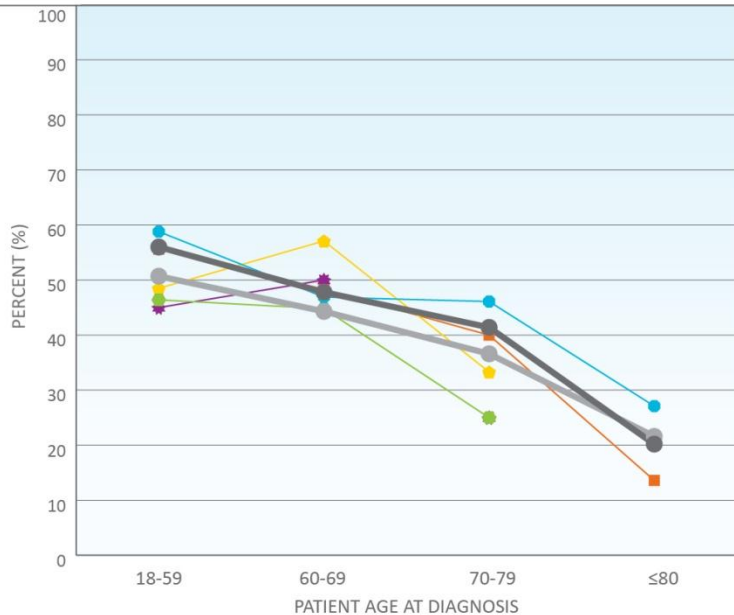
Data source: Provincial cancer agencies

Stage II or III Rectal Cancer Patients Receiving RT Preceding Resection

FIGURE 47

Percentage of stage II or III rectal cancer patients receiving radiation therapy preceding surgical resection

RADIATION THERAPY STARTED UP TO 120 DAYS BEFORE SURGERY, BY PROVINCE AND AGE—PATIENTS DIAGNOSED IN 2008



Some data suppressed due to small numbers

*Average includes AB, MB, NL, NS, ON

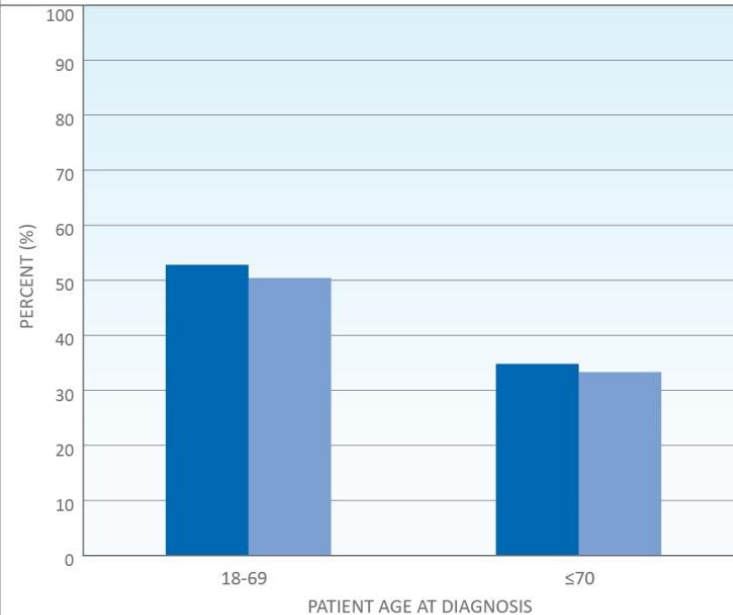
Provinces that did not submit data for both 2007 and 2008 were excluded from the Average*

Data source: Provincial cancer agencies

FIGURE 48

Percentage of stage II or III rectal cancer patients receiving radiation therapy preceding surgical resection

BY SEX AND AGE, CANADA—PATIENTS DIAGNOSED IN 2008



Average of provinces that submitted comparable data (includes AB, MB, NL, NS, ON)

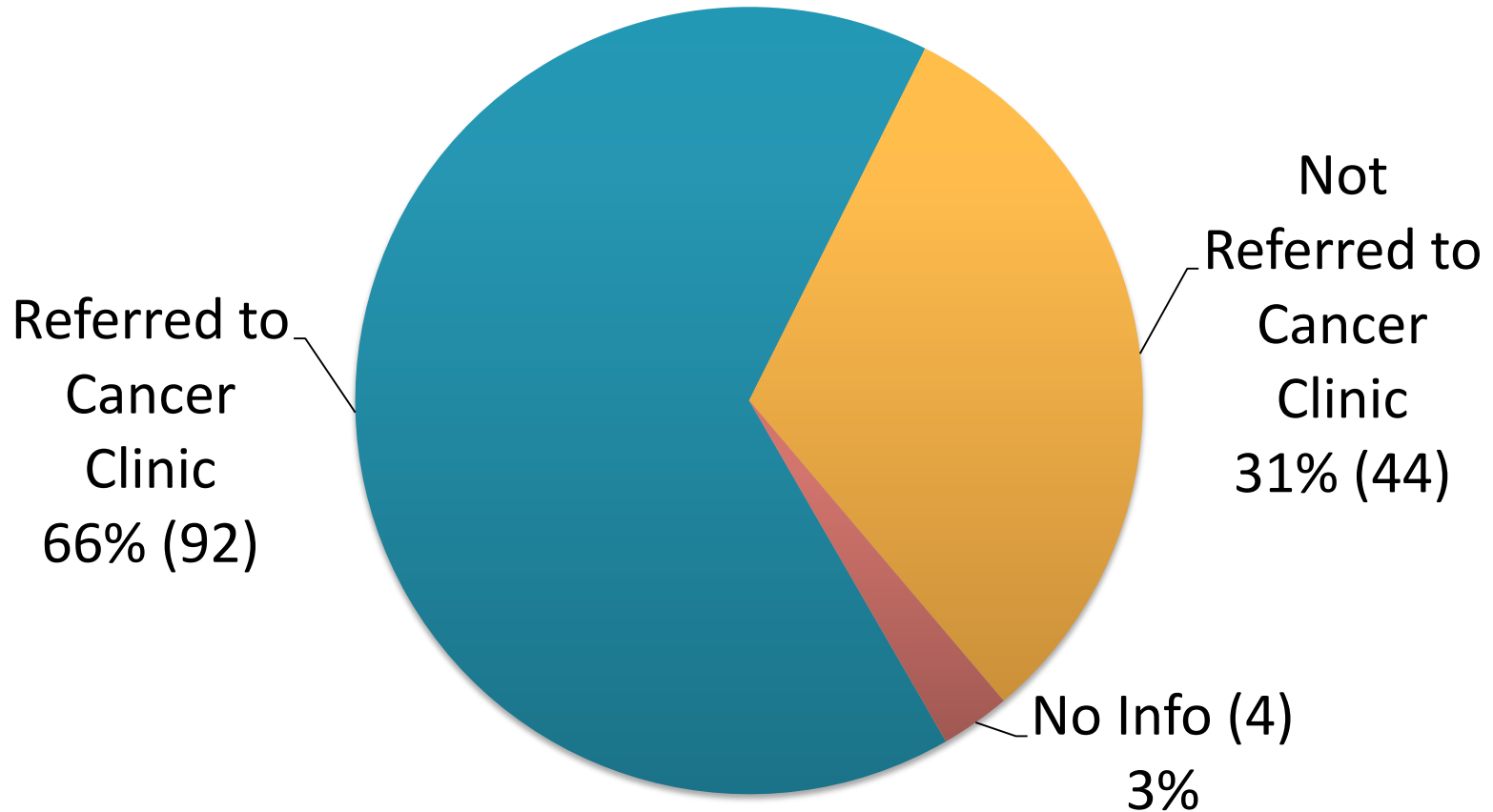
Data source: Provincial cancer agencies

Retrospective Chart Review

- 5 Provinces participating: AB, SK, MB, NL, PE
- Abstractors: provincial tumor registrars supported by radiation oncologist
- Random sample of ~400 charts reviewed for patients diagnosed in 2008
- Data collected on documented reasons for referral and treatment decisions

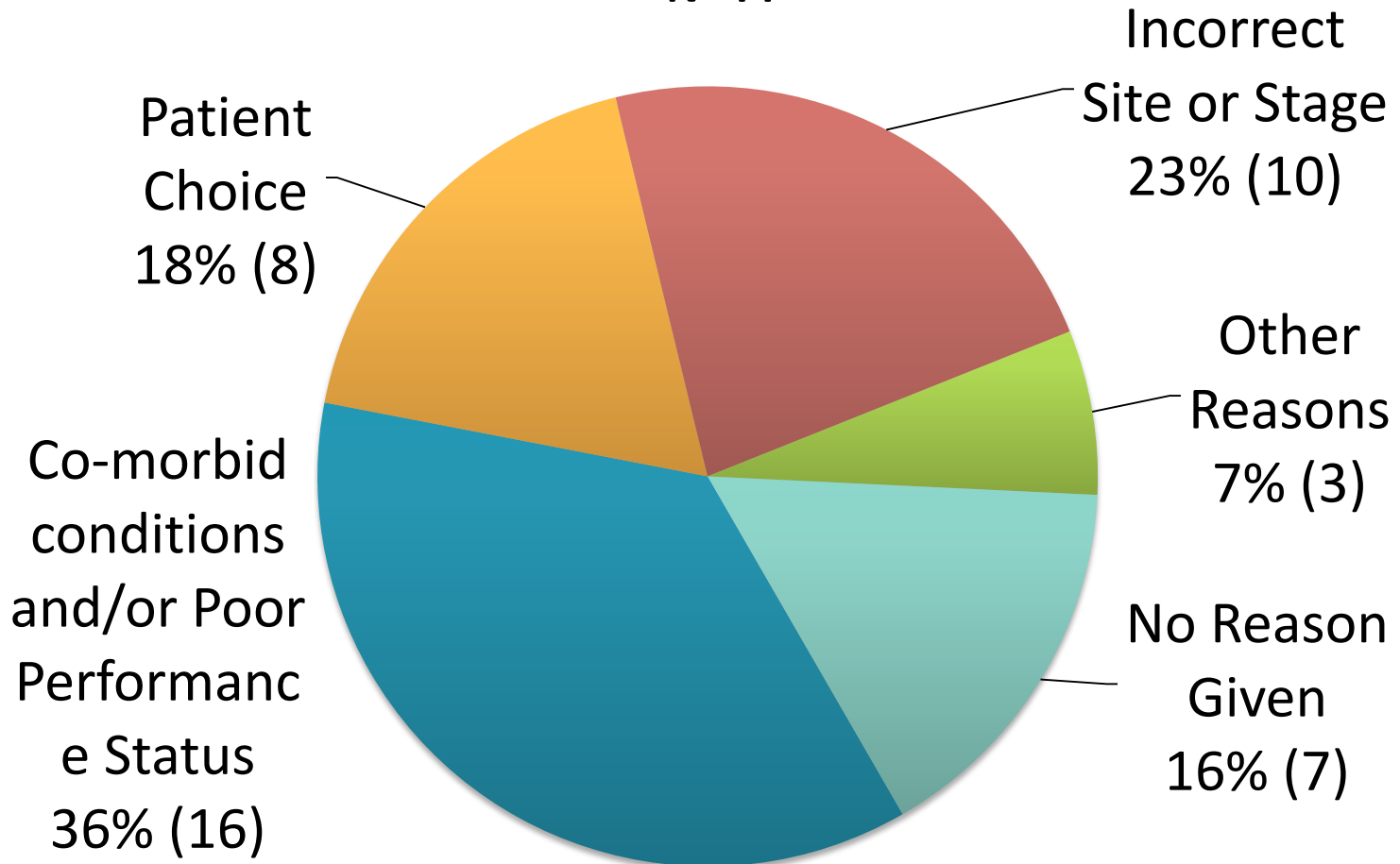
Treatment/Referral Rationale

**% of Non-Treated Cases Referred to a Cancer Clinic
by Surgeon
N=140**



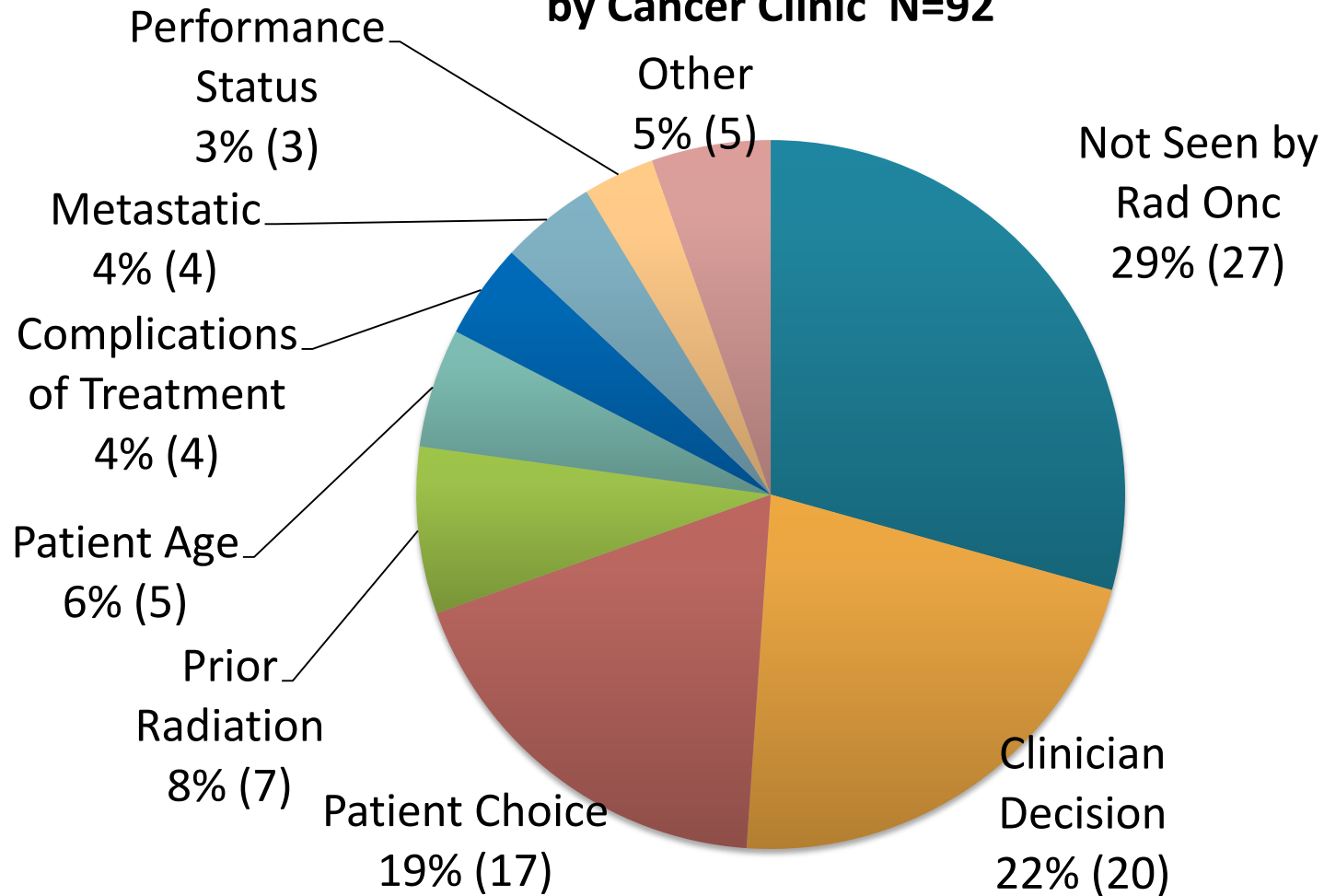
Treatment/Referral Rationale

Reasons Documented for Non Referral to a Cancer Clinic
N=44



Treatment/Referral Rationale

Reasons Documented for No Radiation Treatment by Cancer Clinic N=92



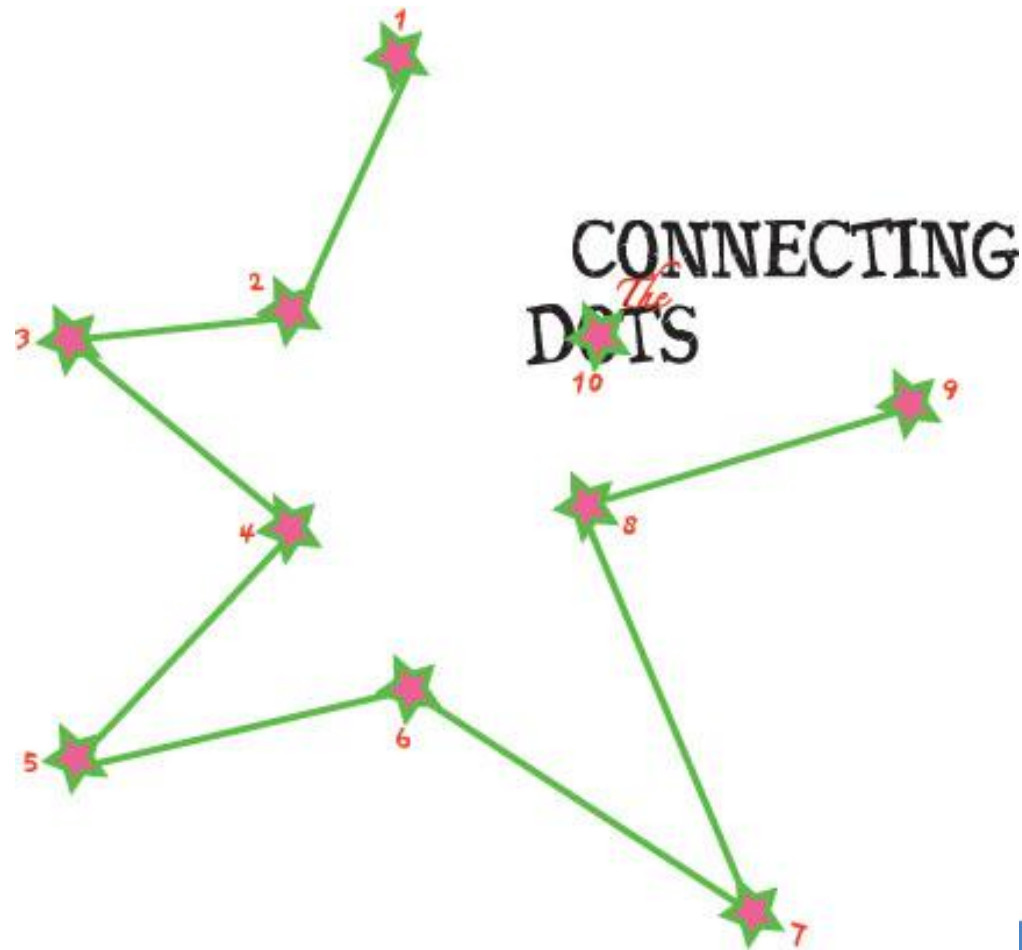
For future

- Need to disentangle age, comorbidity, and perceived augmentation of life span in treatment decisions



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We need to ask the questions that will address inequities, not merely describe them



Thank you!



- Thanks to Rami Rahal, Julie Klein-Geltink and SP team, and to all of the partners in registries, agencies, and other experts and national partners who guide the report and make it possible

