

Quality Assurance Process Affects Breast Cancer Screening Performance

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Introduction

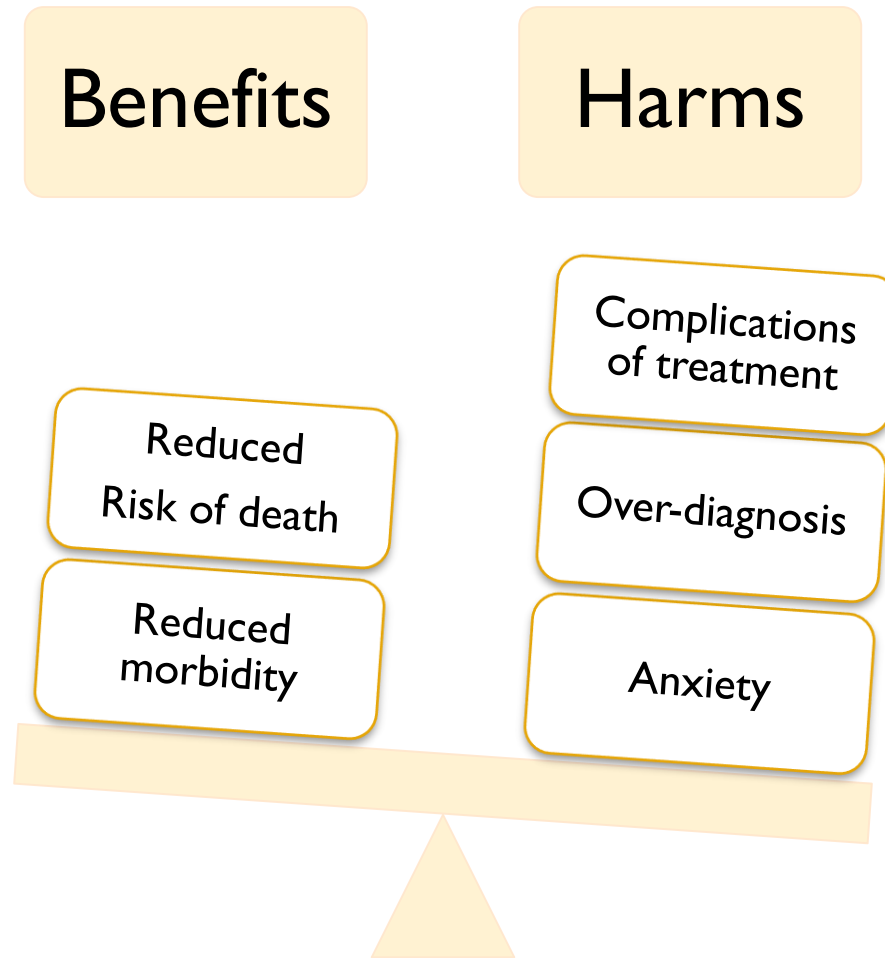


- Mammogram to screen breast cancer started in 1980
- Variable performance

Per 1000 screens

	False positive	Cancer detection
US	~90	4.3
EU	<50	5.0
Canada	~70	4.7

Decision balance



Breast Cancer Screening in Alberta

Alberta Breast Cancer Screening Program (ABCSP)

Started 2008

Screen Test

- Two clinics: Edmonton, Calgary.
- Mobile units visit rural/remote communities
- Interpreted by sessional radiologists in Edmonton

Radiologists in Private Practices

Spread through
province

Research Question

- Does the screening performance differ between the two service providers, namely ST and private practices?

Performance Indicators

Abnormal call rate

Cancer detection rate

False positive rate

Positive predictive value

Post-screen cancer rate

Time to re-screen

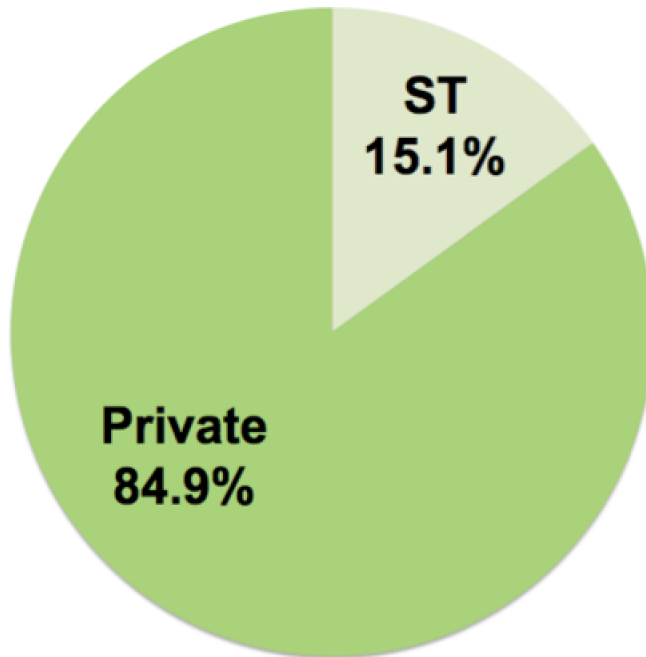
Study Design and Databases

- Databases
 - Screen Test data (ST)
 - Physician claims data (Private)
 - fee-for-service private practice.
 - Alberta Cancer Registry data
 - exclude women with previous breast cancer diagnosis
 - identify cancer diagnosis

Alberta women, 50-69 years of age, screen mammograms in
Study period A: 2006.7.1-2008.6.30 (before ABCSP) or
Study period B: 2008.7.1-2010.6.30 (after ABCSP)

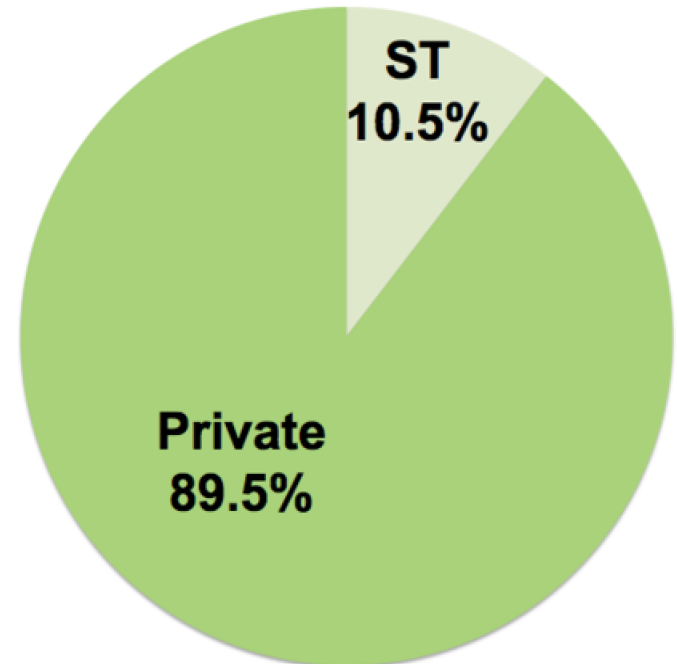
The Screening Population

July 2006 -- June 2008



n=183,704

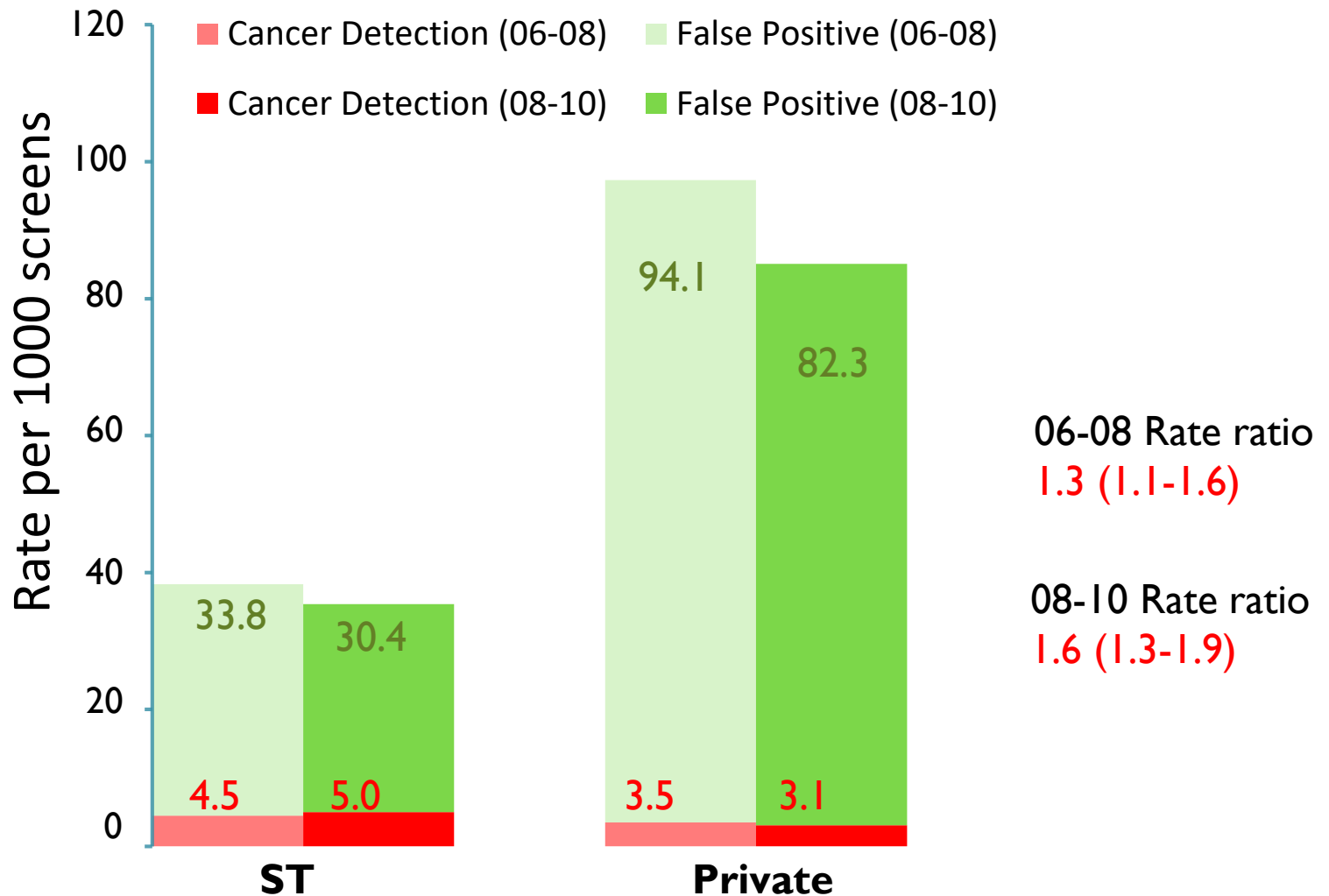
July 2008 -- June 2010



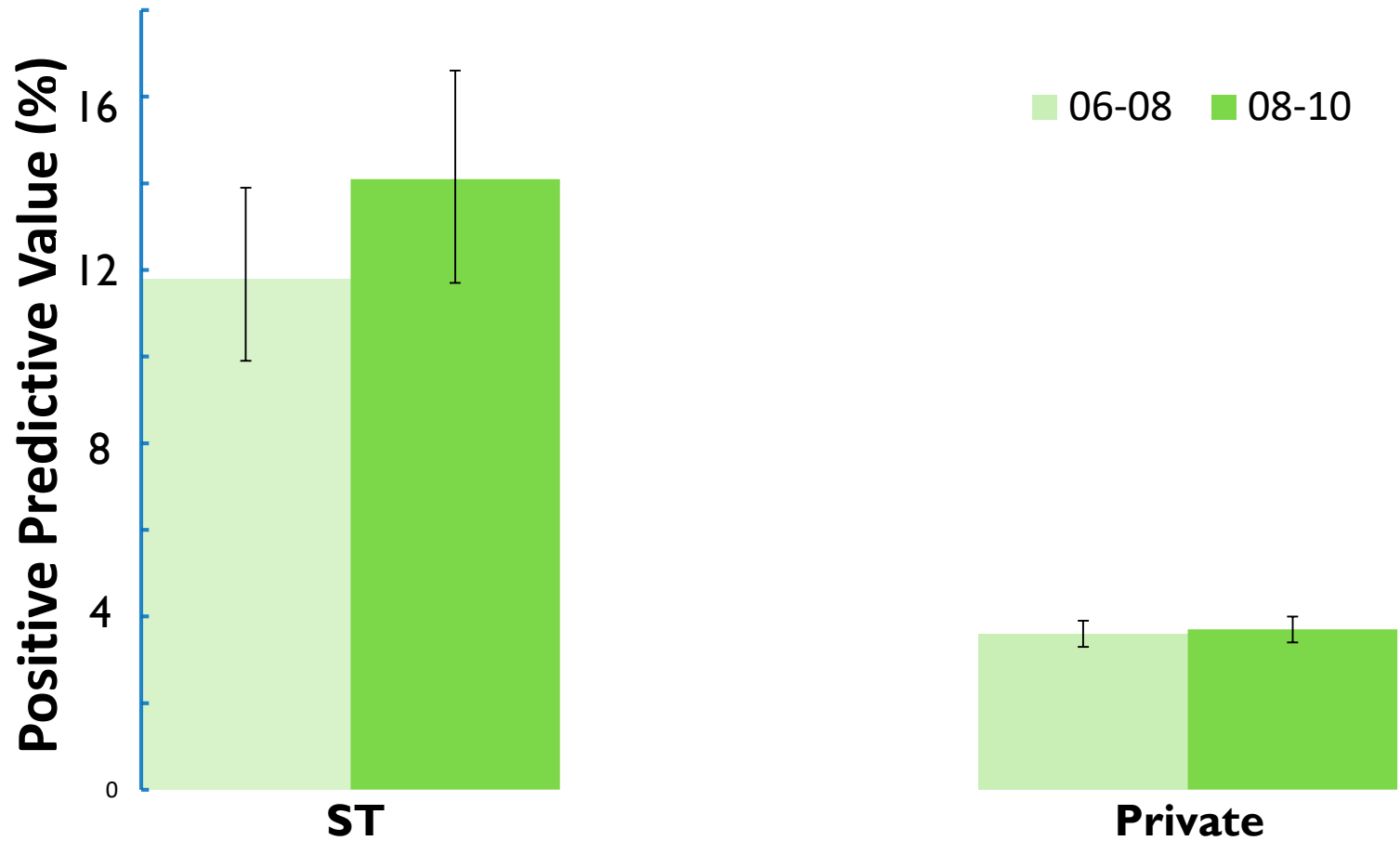
n=206,084

Age distributions in all regions are the same.
Median: 57 years and IQR: 53-62 years

Rates of Abnormal Call, Cancer Detection and False Positive



Positive Predictive Value



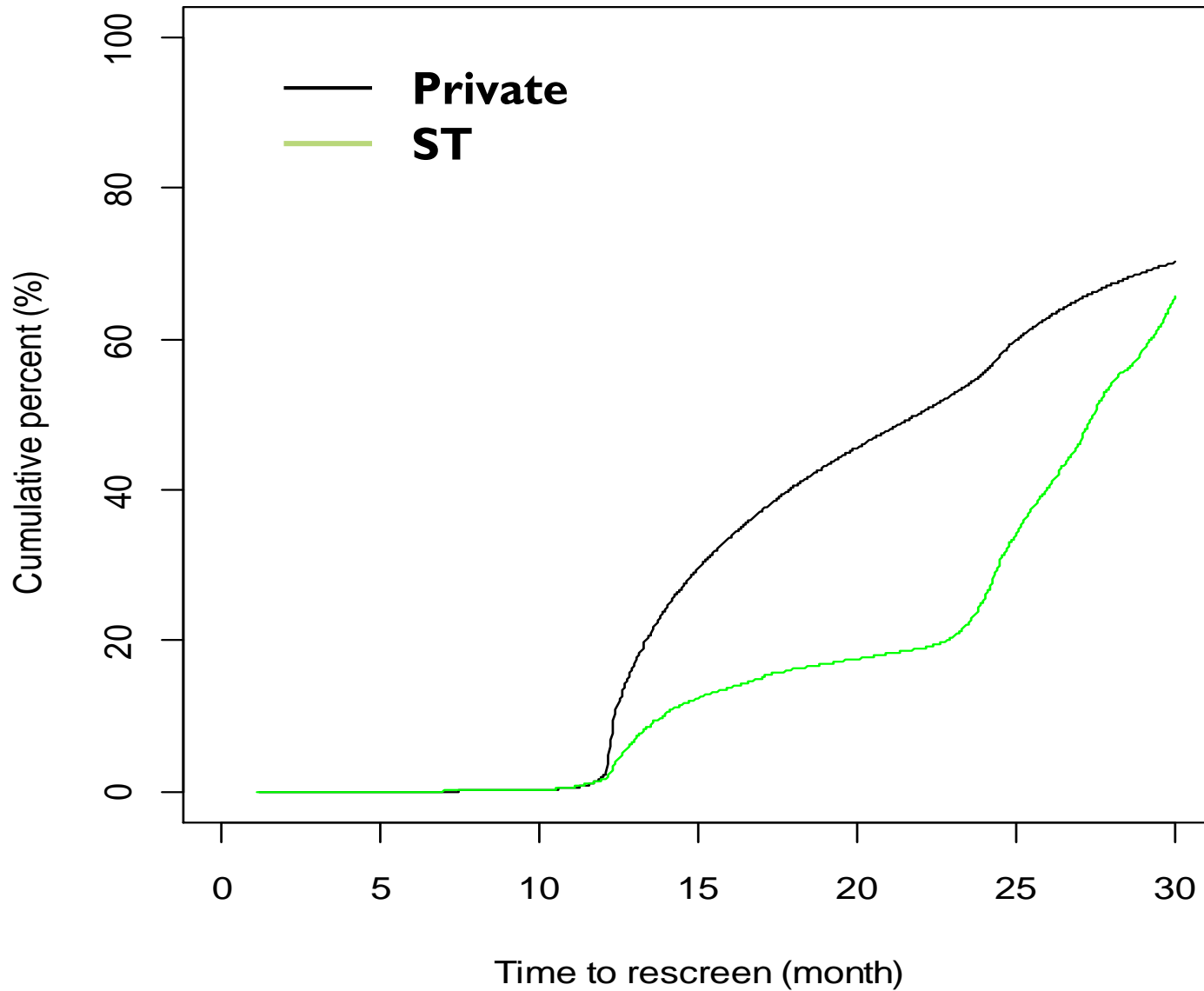
Post-screen Invasive Cancer Rate

After a benign screening episode between 7/2006 and 6/2008, per 10,000 person-years.

Interval	Provider	N*	Rate (95% CI)	Rate ratio (95% CI)	P value
0-24 months	ST	26	5.3 (3.6-7.8)	0.46 (0.31-0.70)	0.0002
	Private	260	11.4 (10.1-12.9)		

* Number of post-screen invasive cancer

Time to Re-screen



Screening Performance Better in ST Comparing to Private Practices

- Lower abnormal calls
- Higher cancer detection
- Lower false positive
- Higher positive predictive value
- Less post-screen invasive cancer
- Longer time to return visits



Discussion

- ST performance similar to the European Union standard.
 - Limit false positives to < 50 per 1000 screens
- Performance in private practices similar to US study reports.

Why? – Quality Assurance

- Screen Test
 - Radiologists interpret screen mammograms in batches
 - Monthly quality assurance meeting to receive recall stats and to review cases together
 - Reading volume >2000/year
- Private practices
 - Management practice varies, may not provide recall stats
 - Many clinics interpret the image right away to decide whether further test is needed
 - Amongst other images
 - Accreditation criteria: reading volume >400/year (in the study period)
 - Some radiologists only started reading after 2004

Recommendations

- Must ensure quality of screen in practice to  benefit and  harm
- Further study of quality assurance is needed in programs across Canada
- Implementation of health technology requires oversight and evaluation

Acknowledgement

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