Development of Methods to Evaluate the Pre-Diagnostic Breast Cancer Patient Trajectory Linking Existing Population-Level Databases

Marcy Winget, PhD

Alberta Health Services, University of Alberta

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Outline

- Objectives

- Data

- Results

- Discussion

Objective

- Developing and validating algorithm for identifying patient presentation through symptom or screening

- Understand the patterns diagnostic imaging utilization for breast cancer patients

- Feasibility of using physician billing data to assess these care patterns

- Assess the time from presentation to diagnosis

Inclusion Criteria

- Female patients diagnosed with first ever invasive breast cancer in Alberta, 2007-2010

- Residents in Alberta at diagnosis

- Histologic confirmation on breast cancer

- At least one diagnostic imaging one-year prior to breast cancer diagnose date

Data Sources

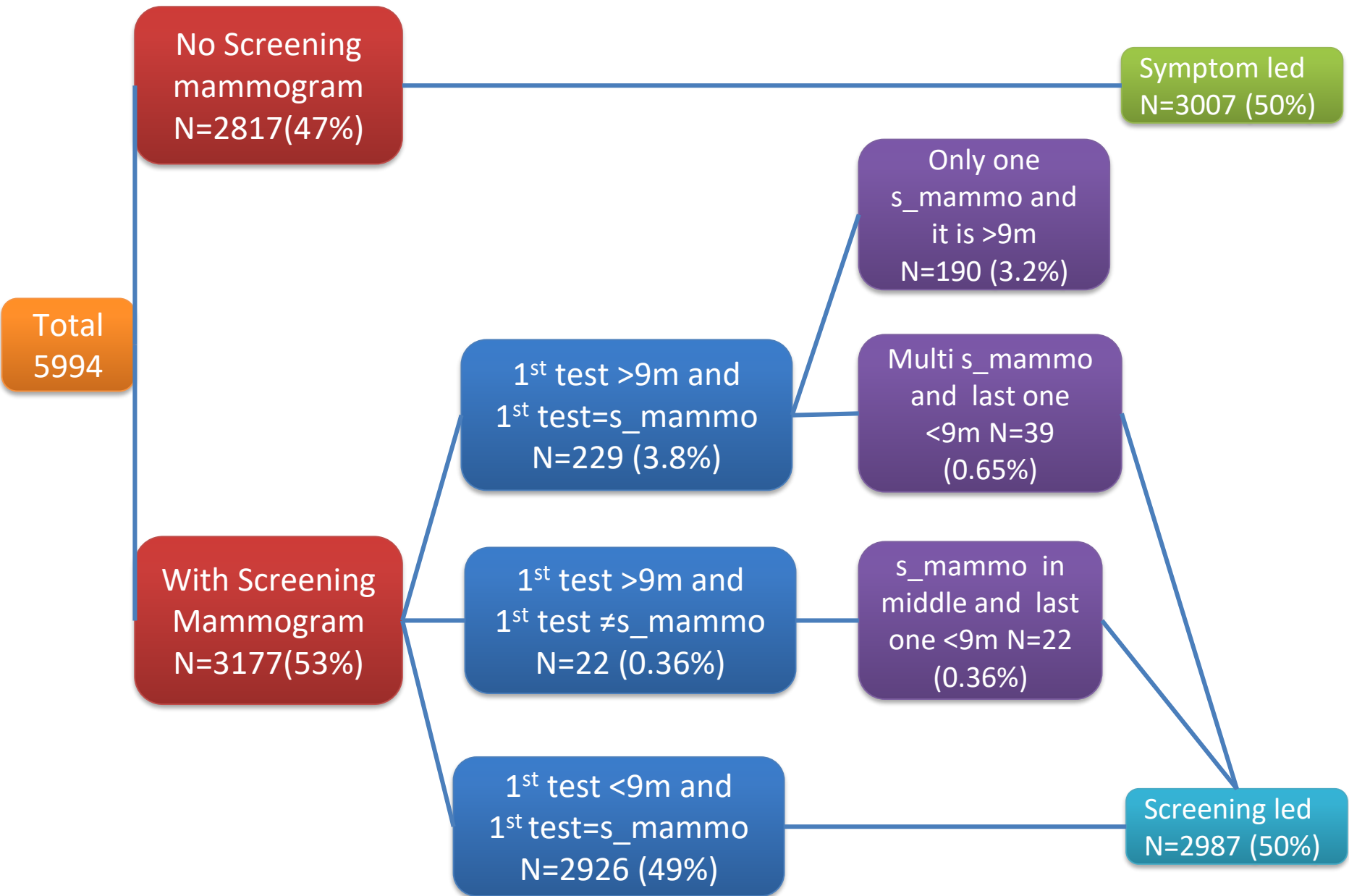| Alberta Cancer Registry	Alberta Breast Screening Program(2006-2010)	Alberta Society of Radiologists (ASR 2006-2010)	Physician Claim Data (Billing)
•Patient ID •Demographics •Tumor details •Identify cohorts	• Patient ID • Dates/results of <u>screening</u> mammogram • Dates/results of subsequent diagnostic imaging	• Patient ID • Dates/results of all <u>screening</u> and <u>diagnostic</u> mammogram, biopsies	• Patient ID • Diagnosis procedures • Anonymized physician ID • Visit Date
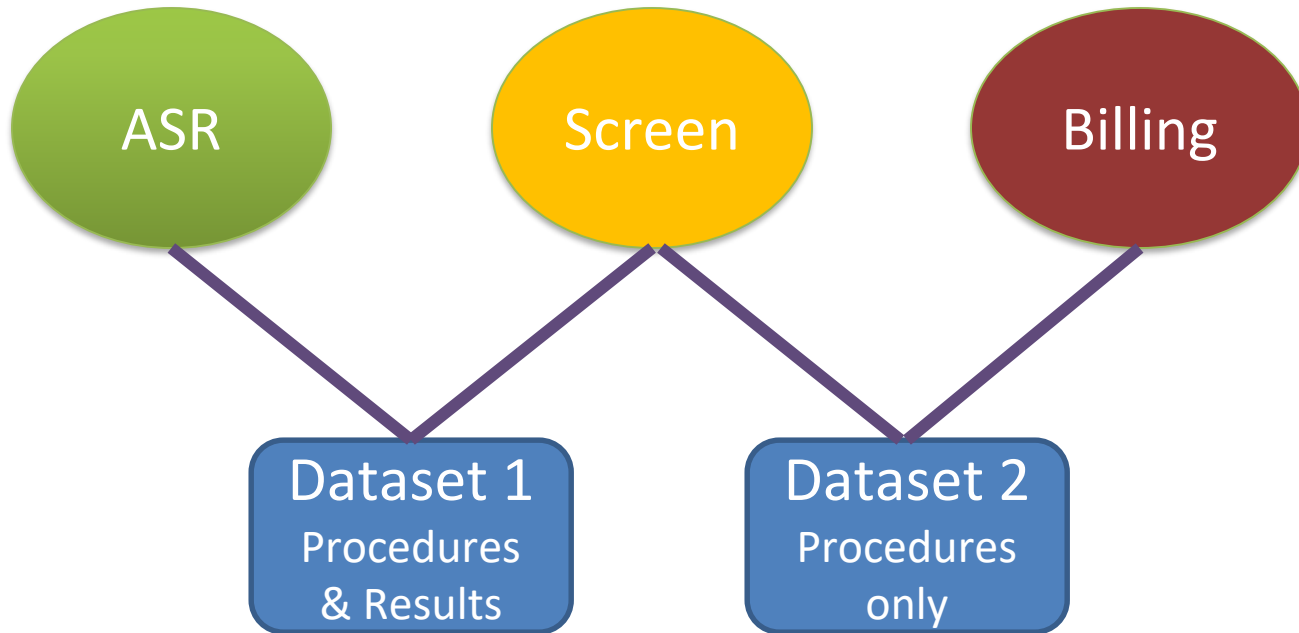
- Separate 1000 patients for testing purpose
- Remaining 5994 patients in the training data pool for algorithm development
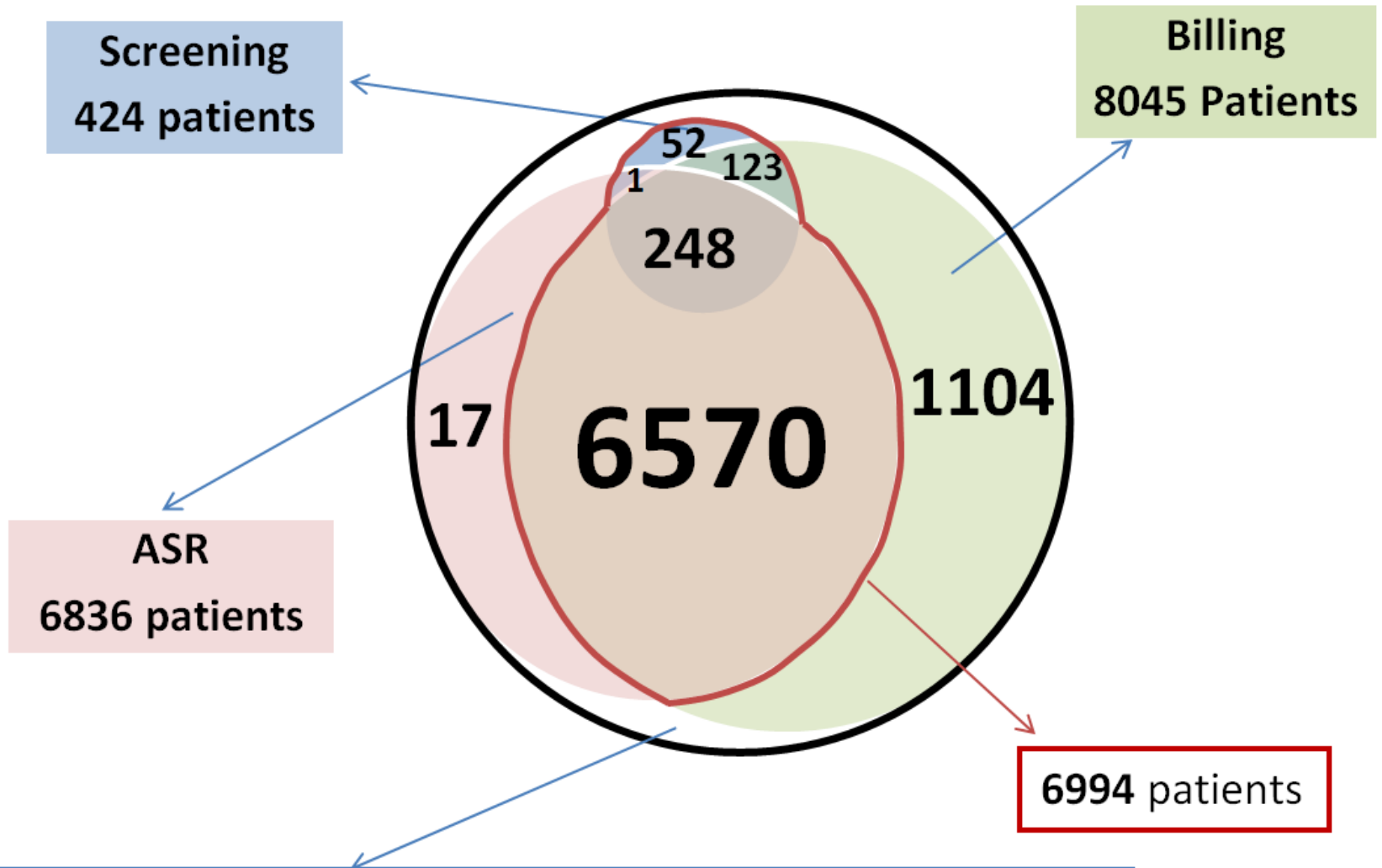
Algorithm flow chart for dataset I

Algorithm flow chart for dataset II

Total 5994

No Screening mammogram N=2817(47%)

Symptom led N=3007 (50%)

With Screening Mammogram N=3177(53%)

1st test >9m and 1st test=s_mammo N=229 (3.8%)

Only one s_mammo and it is >9m N=190 (3.2%)

Multi s_mammo and last one <9m N=39 (0.65%)

1st test >9m and 1st test ≠s_mammo N=22 (0.36%)

s_mammo in middle and last one <9m N=22 (0.36%)

1st test <9m and 1st test=s_mammo N=2926 (49%)

Screening led N=2987 (50%)
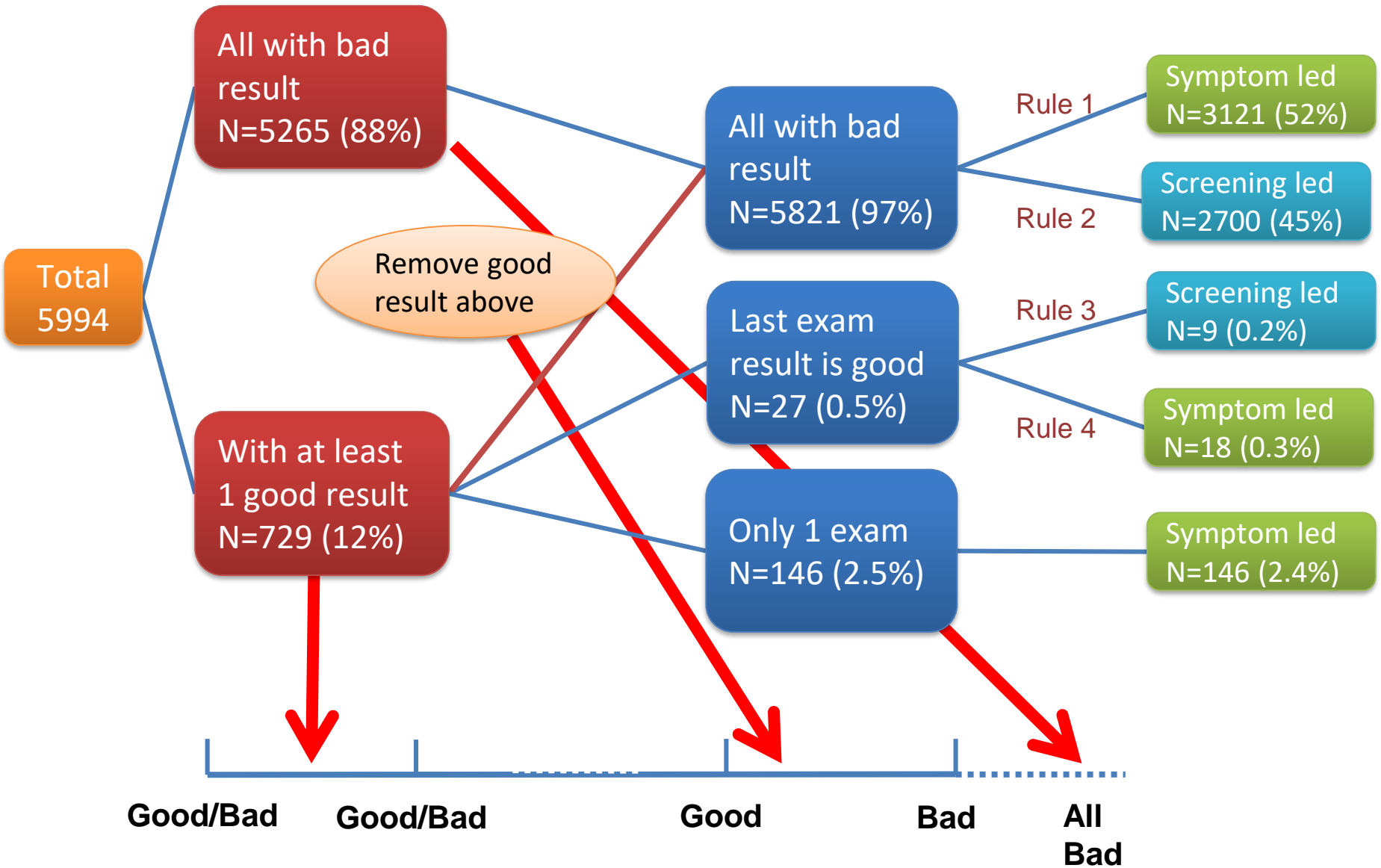
Venn Diagram for datasets

Screening
424 patients

Billing
8045 Patients

52
1
123
248
17
6570
1104

ASR
6836 patients

6994 patients

264 patients could not be found in any of the three datasets
8379 Patients in total

Results

Billing data & Screening data		ASR data & Screening data		
		Screening led	Symptom led	Total
	Screening led	2591	396	2987
	Symptom led	118	2889	3007
	Total	2709	3285	5994

Screening Mammo<9 months but had good results

N=25,Scr. mammo>9 months, but negative results

N=93,Showed up as diag. mammo, but screening led in ASR
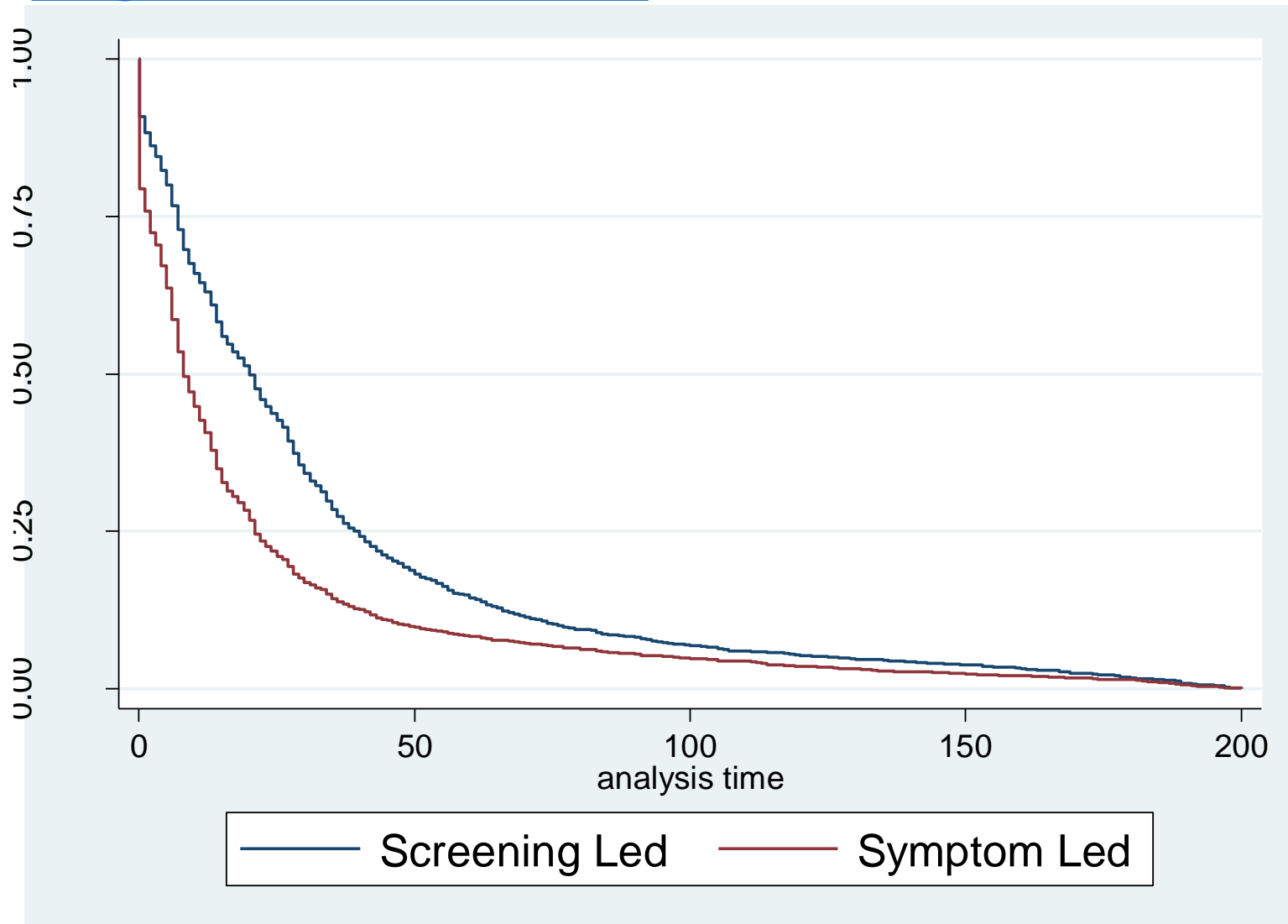
Concordance: 91%
Dis-concordance: 9%

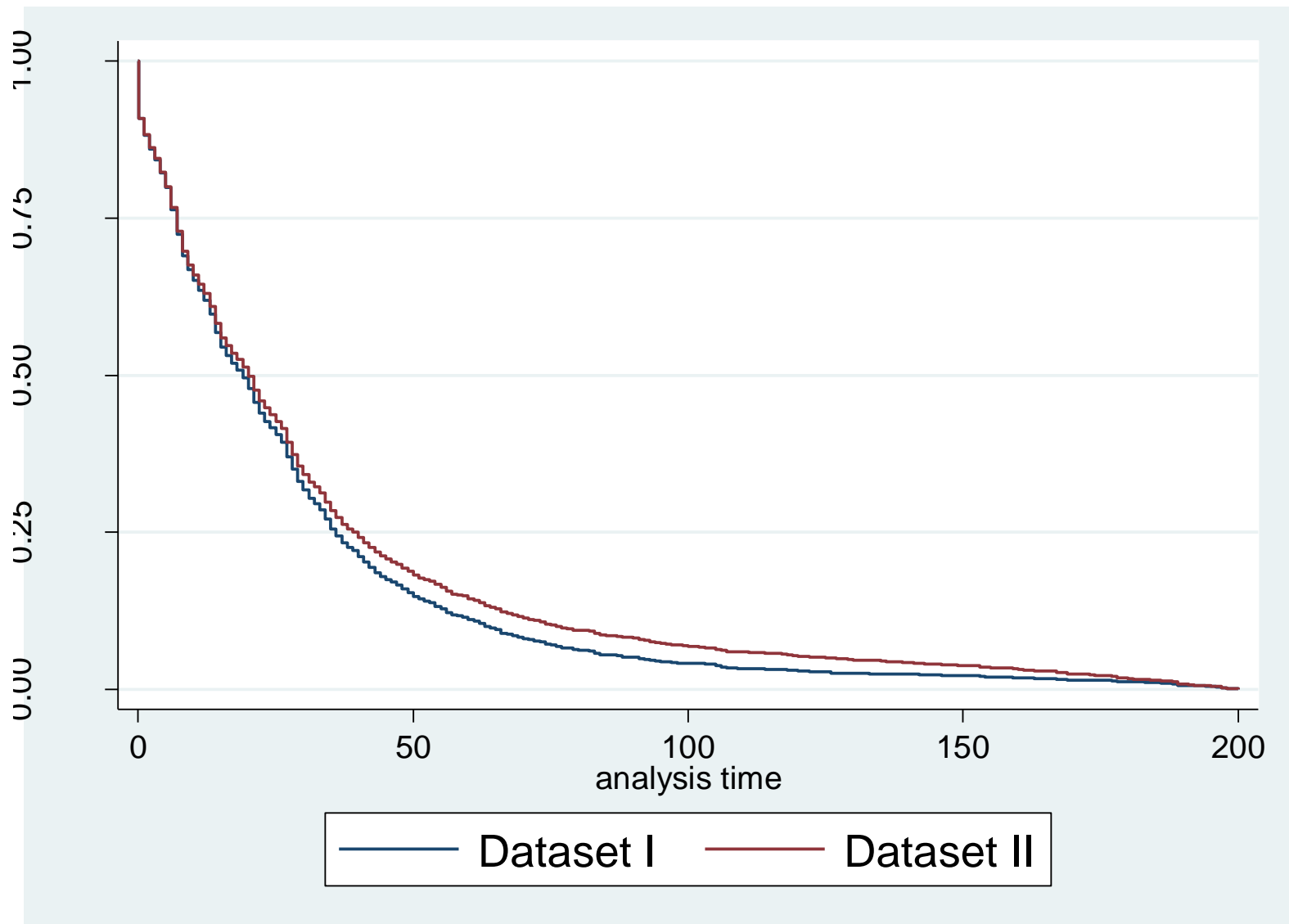# Frequency of diagnostic imaging in dataset I & dataset II
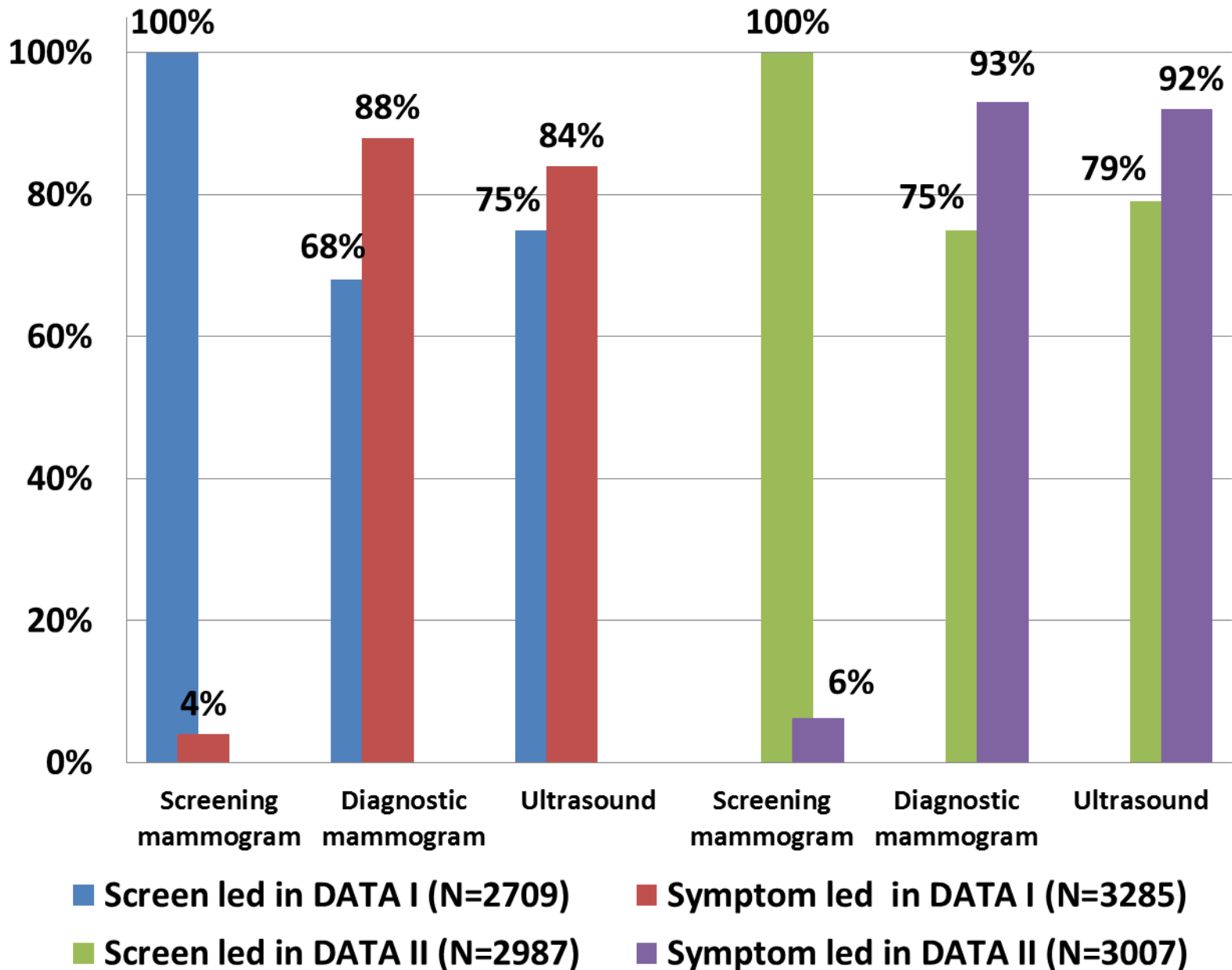
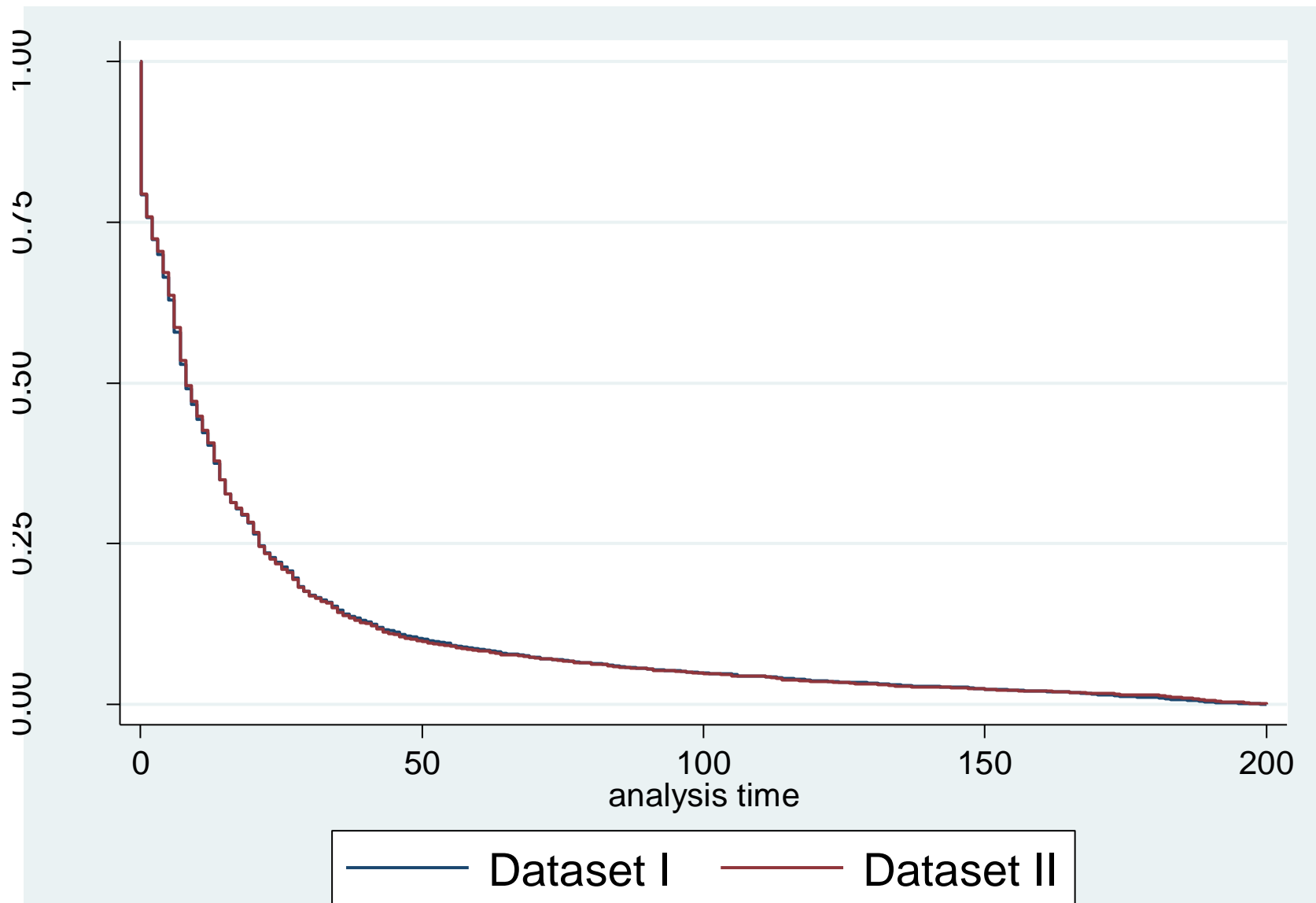# Kaplan - Meier curve for time from first relevant test to diagnosis in dataset I **
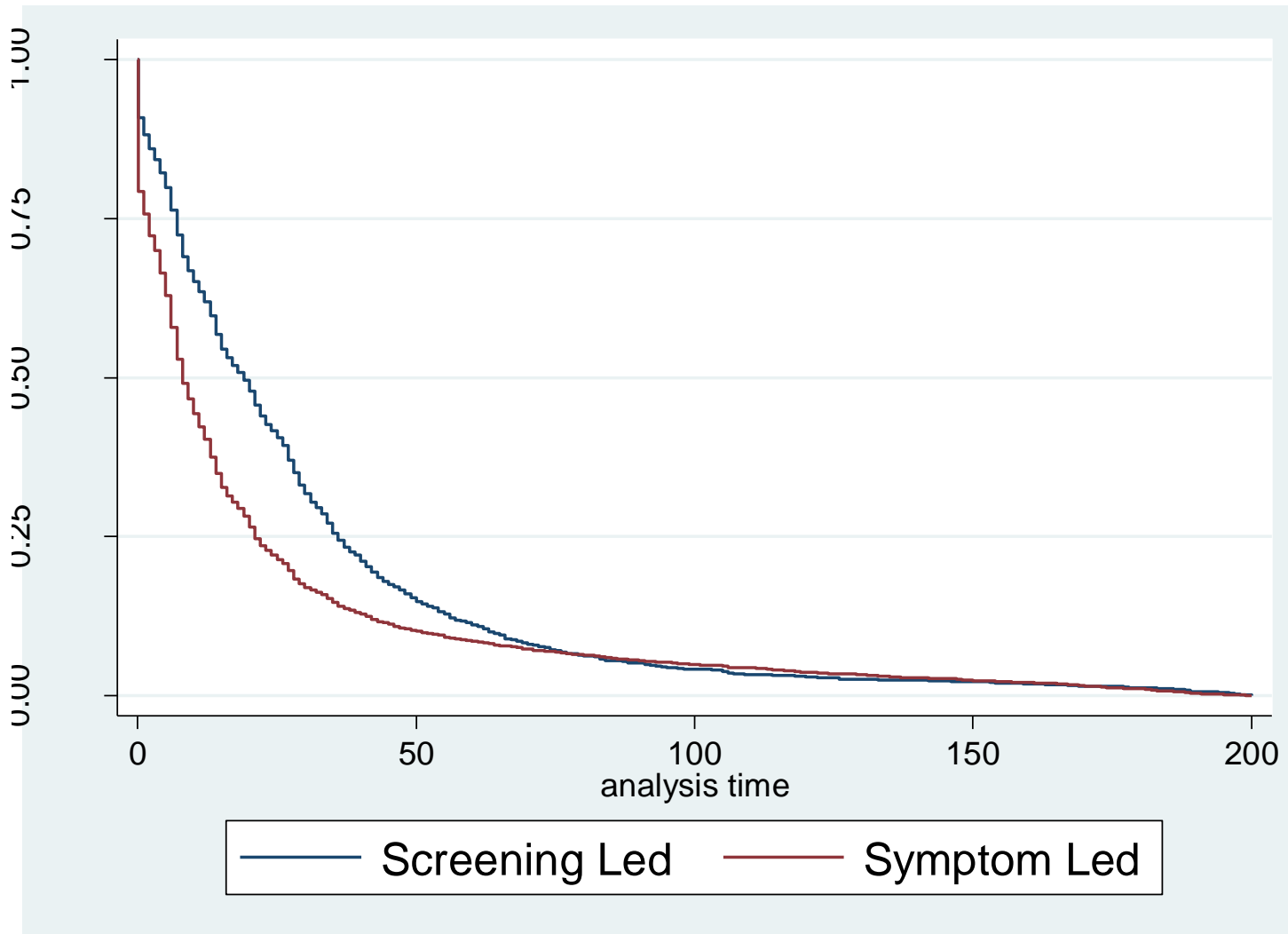
Kaplan - Meier curve for time from first relevant test to diagnosis in dataset II **

Kaplan - Meier curve for time from first relevant test to diagnosis in dataset I & II : Screening Led patients only **

Kaplan - Meier curve for time from first relevant test to diagnosis in dataset I & II : Symptom Led patients only

Discussion