SBI BREAST IMAGING SYMPOSIUM
APRIL 16-19, 2026
SEATTLE, WA

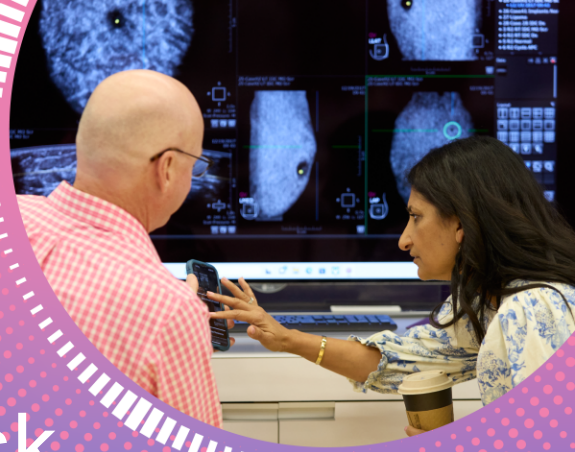


Image-based Breast Cancer Risk estimation across breast density and cancer invasiveness in screening mammography

Svati Singla Long, MD

Disclosure Slide

Medical consultant for Therapixel

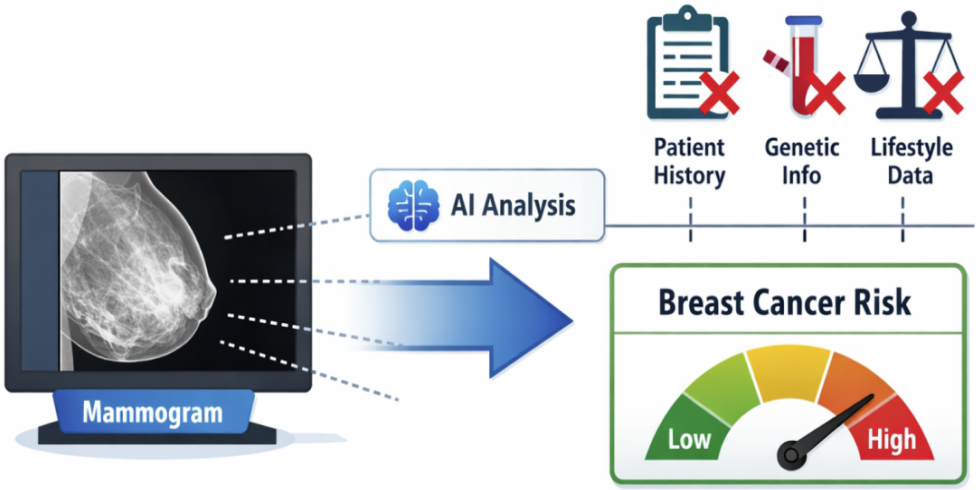
Clinical Need and Objective

CLINICAL NEED:

- Current risk models are **inaccurate** and often miss at-risk patients
- **AI models show promise:**
  - Detect **predictive imaging features** and patterns of mammographic images
  - Potential to improve early cancer detection.

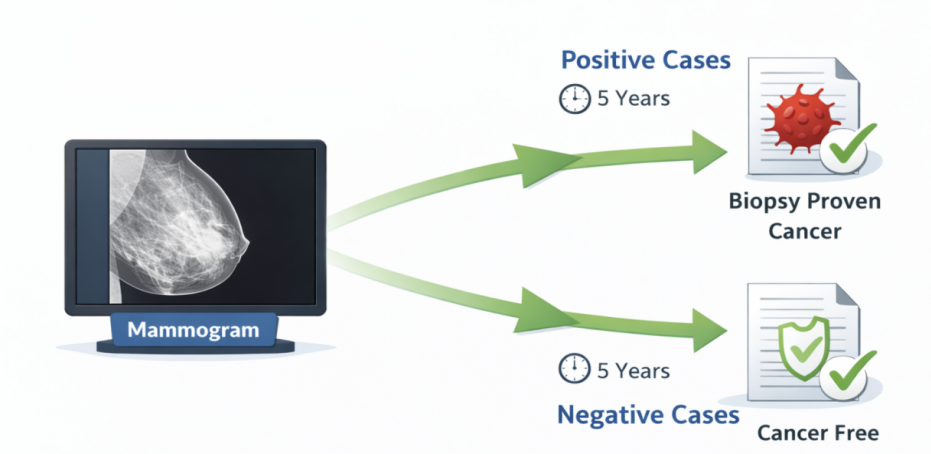
OBJECTIVE:

- Measure an AI model's performance in predicting **5-year breast cancer risk** across breast densities, age, and cancer invasiveness.



Materials and Methods

- Retrospective evaluation using screening cohorts from **11 US** and **EU** centers
- 2D mammograms including **FFDM and 2DSM**
- Inclusion:
  - **POSITIVE**: Biopsy-confirmed cancer within 5 years (n=**9,952)**
  - **NEGATIVE**: 5 years cancer-free for (n= **83,961)**



Materials and Methods

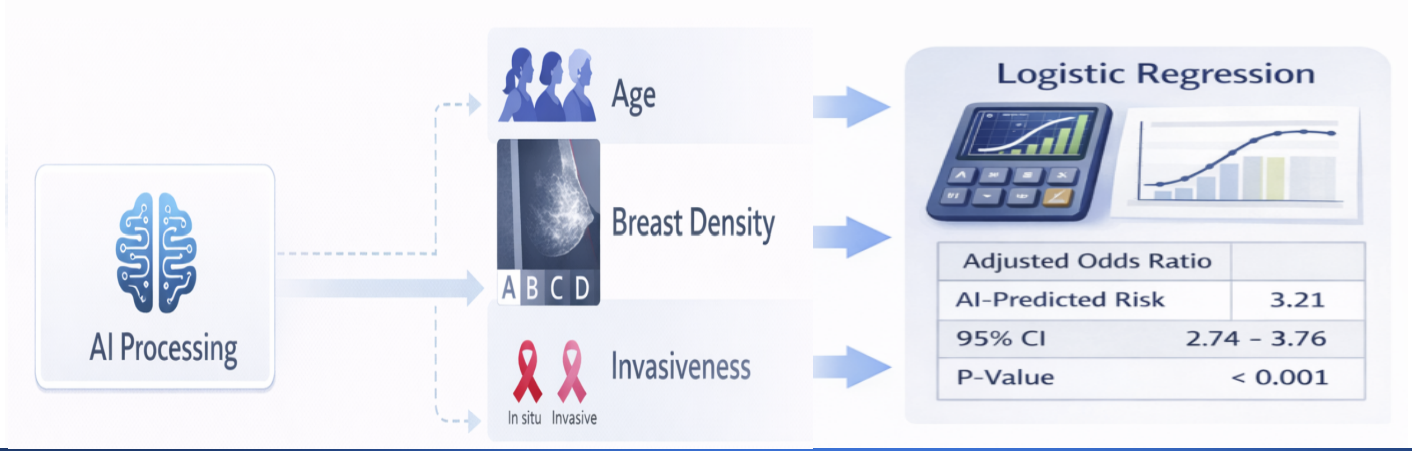
AI model and Risk categorization

- The AI system used in this evaluation is manufactured by **Therapixel** and not yet commercially available.
- The AI model generated cumulative risk scores categorized as **Low, Average, Intermediate, High, and Highest**.

Materials and Methods

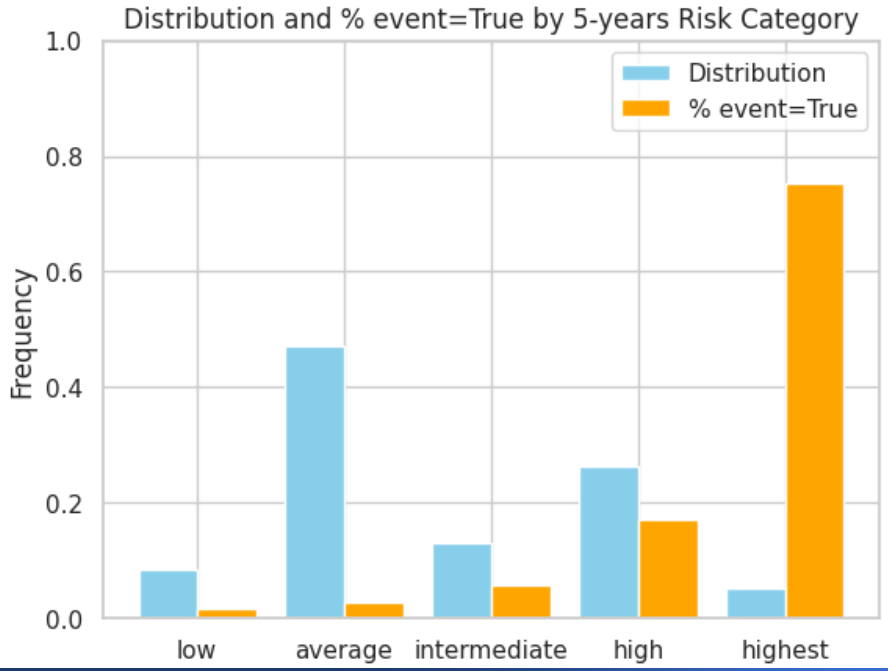
Stratification and Statistical modeling

- Data was stratified by age, breast density (**A/B/C/D**), and cancer invasiveness (**invasive vs. *in situ***).
- Multivariable logistic regression to link AI predictions to actual cancer probability, adjusting for age, density, and cancer invasiveness



Results

Overall Discriminatory Performance



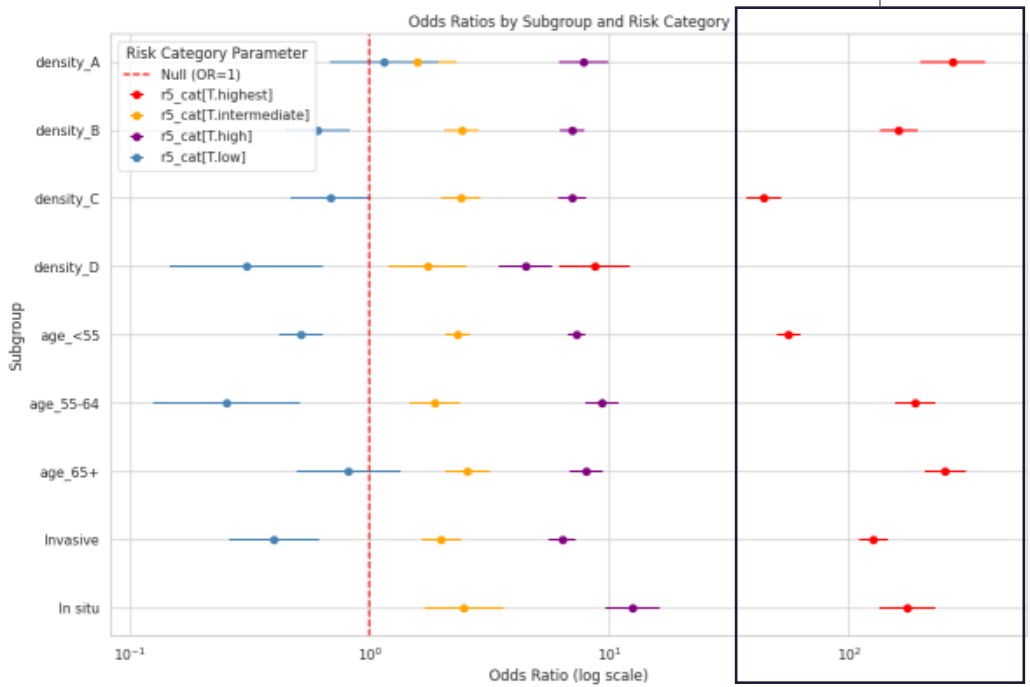
The AI model showed strong discriminatory performance with **increasing odds ratios across risk categories**, indicating effective stratification.

Odds Ratios (vs average):

- **Low**: OR=0.55, 95% CI=(0.46, 0.67)
- **Intermediate**: OR=2.12, 95% CI=(1.93, 2.33)
- **High**: OR=7.23, 95% CI=(6.77, 7.72)
- **Highest: OR=105.17**, 95% CI=(96.46, 114.67)

Results

Robustness across subgroups



"Highest risk" consistently shifts **far right across almost all variables.**

- Consistent risk stratification across all patient subgroups.
- Performance is robust across **density, age, and invasiveness.**
- Reliable risk assessment for diverse populations.

Results

Performance by invasiveness

In Situ Disease

The Odds Ratios (ORs) were:

- Low = 0.007
- Intermediate = 2.46
- High = 12.47
- Highest = **174.82**

The model can identify preinvasive lesions with substantial risk separation, aiding with **early detection.**

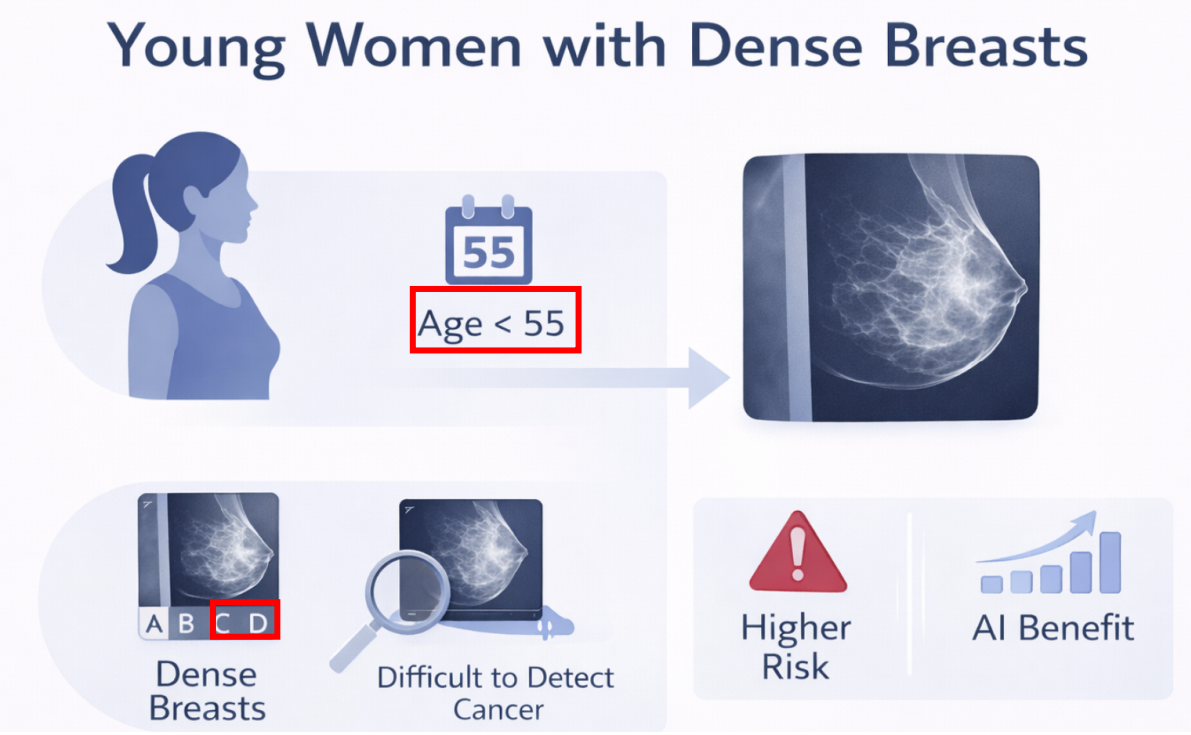
Invasive Disease

The Odds Ratios (ORs) were:

- Low = 0.39
- Intermediate = 1.98
- High = 6.37
- **Highest = 126.29**

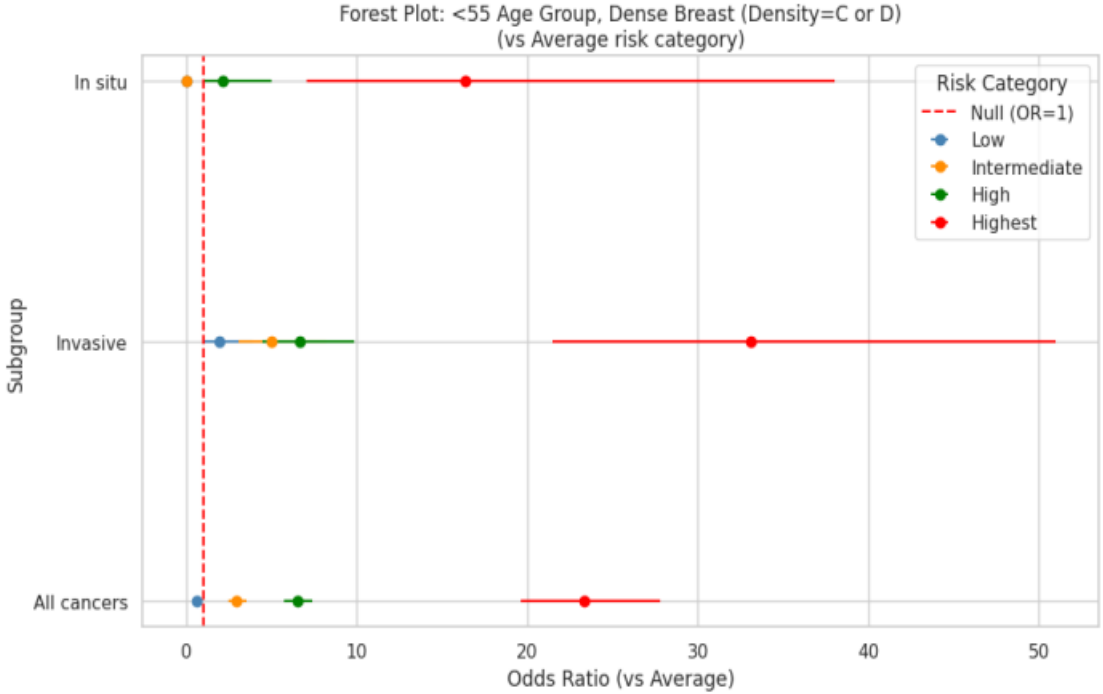
This demonstrates the model's predictive power for **invasive malignancies**.

Ultimate Mammography Stress Test



Results

Deep Dive Analysis: Invasive *and in-situ* disease in younger women



- Accurately predicts risk in women **under 55 with dense breasts**
- Maintains high predictive power for both **invasive and pre-invasive (*in situ*)** cancers
- **"Highest" risk category** shows **massive odds ratios** (up to ~35x vs average) across the board.

Conclusions and Clinical relevance

- **Robust Performance:**
- The AI model reliably predicts **both invasive and *in situ*** breast cancers across **all age and breast density subgroups**.

- **Personalized Risk, Individualized Care**:
- Accurate, image-derived risk estimates enables **individualized, tailored screening strategies**, guiding targeted supplemental imaging for higher-risk patients
- No added work on staff to extract personal and family histories, which are often inaccurate anyways.

Thank you!