ePoster

A-345

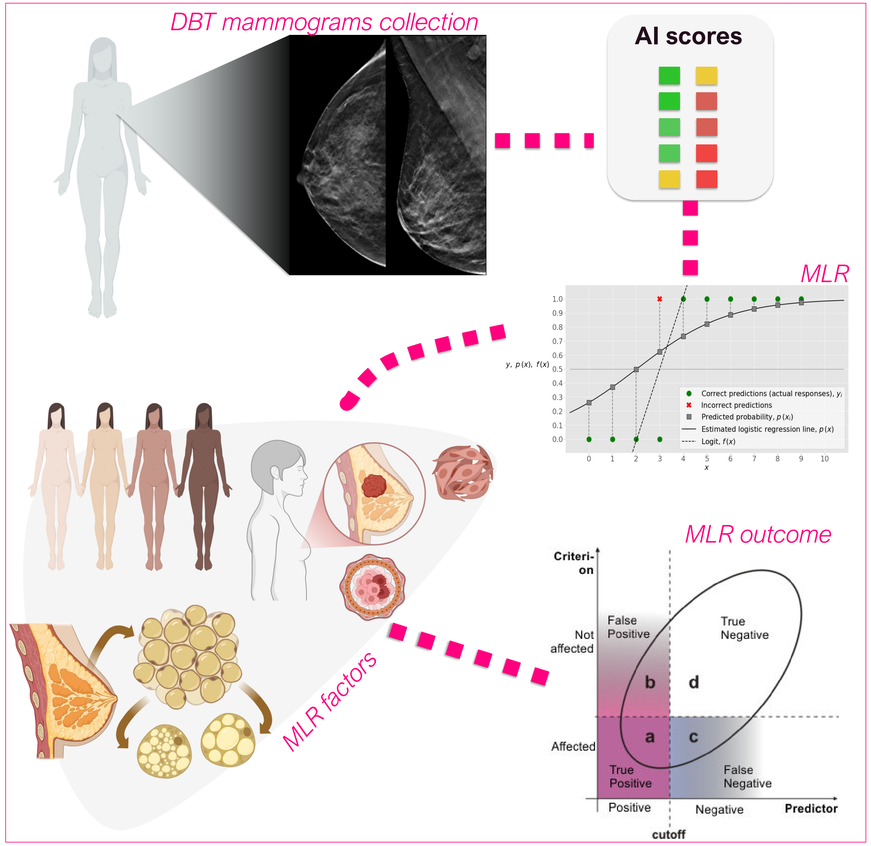
Influence of breast density, race and cancer-type on AI Digital Breast Tomosynthesis (DBT) interpretation

Pacilè, S., Lalli, G., Louis, T., Fillard, P.
Therapixel

Introduction

AI-based breast cancer detection in DBT may be influenced by patient characteristics such as race, histology, and breast density; understanding these effects ensures transparent evaluation of AI performance.

Figure 1



Variable	N	Odds ratio	p
Breast density			
A	70	Reference	
B	453	1.17 (0.39, 5.04)	0.80
C	392	2.29 (0.79, 9.69)	0.18
D	62	5.46 (1.62, 24.97)	0.01
Race			
white	544	Reference	
black	177	1.25 (0.66, 2.29)	0.47
Hispanic	207	0.75 (0.37, 1.43)	0.40
asian	49	1.40 (0.46, 3.48)	0.50
Cancer type			
Invasive	634	Reference	
In Situ	315	1.22 (0.73, 2.00)	0.45
Other Malignancies	28	1.57 (0.36, 4.91)	0.48

0.5 1 2 5 10 20

Multivariable logistic regression (MLR) showing adjusted odds ratios for AI false negatives by breast density, race, and cancer histology. The reference categories are *density* **A**, *race* **white**, and **invasive** cancer *histology*. **Values >1 indicate higher odds of false negatives.**

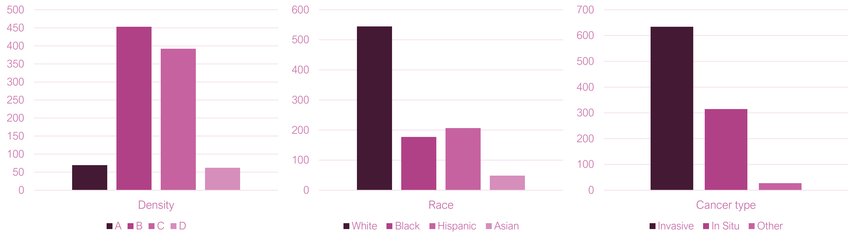
Significance was observed only for extremely dense breasts (**D**).

Methods

A retrospective cohort of **977 mammograms of biopsy-confirmed cancers** (2015–2023) was analyzed; AI malignancy scores (1–10) were tested against patient race, cancer histology, and breast density using multivariable logistic regression (MLR). The study workflow as described in *Figure 1* proceeds as follows: DBT examinations scored by AI; MLR assessed associations between patient/tumor factors and the likelihood of AI false negatives.

Results

False negatives were not associated with race or histology but were more likely in high dense breasts C and D compared to A.



Conclusion

Patient racial characteristics and histologic type of cancer show no measurable influence on cancer detection capability, while extremely high density remains a critical limitation.

Clinical relevance statement: Understanding algorithm-specific biases is essential to ensure transparency, reliability, and equitable AI deployment in breast cancer screening.