

The Link Between Hormone Use and Breast Density

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Abstract

Purpose To investigate the link between dense breasts and hormone use.

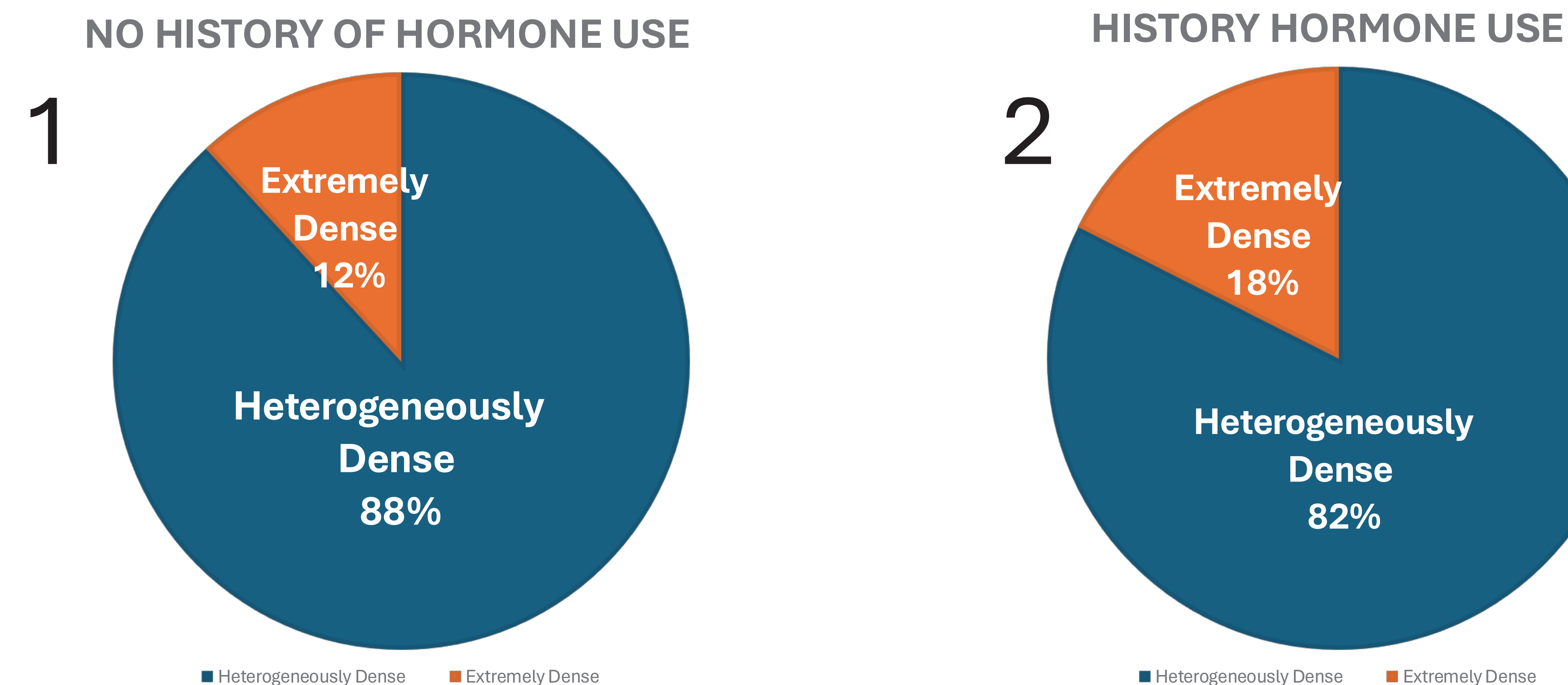
Methods This study provides a perspective from a mammography technologist on breast density and its implications for patients. Data from a dataset of 500 mammography patients, dated 2017, was obtained from The Cancer Imaging Archive, in association with the National Institutes of Health and the National Cancer Institute, to perform this study. The dataset includes breast density ratings and patients' history of hormone use.

The dataset lists various hormone-related medications, including birth control pills, intrauterine devices (IUDs), estrogen replacement therapy, progesterone or estrogen creams, levothyroxine (used for thyroid disorders), raloxifene (an osteoporosis medication), infertility drugs, in vitro fertilization (IVF) treatments, and tamoxifen (a chemotherapy drug commonly prescribed for breast cancer patients for 5–10 years post-lumpectomy or mastectomy), among others. Additionally, breast cancer risk factors from the American Cancer Society (ACS) were reviewed to provide context for the findings.

Results The percent differences for C density is 50.6%, and D density is 65.8% from the numbers in Figure 3. Figures 1 and 2 demonstrate the likelihood that women who take hormones will have dense breasts. Mammography remains the gold standard for diagnosing dense breast tissue and detecting breast cancer.

Conclusion There is an increased risk of developing more dense breast tissue when a woman uses hormone medication, be it birth control or hormone replacement therapy. The American Cancer Society (ACS) states that 1 in 8 women in the U.S. will develop breast cancer. Furthermore, ACS states that the denser a woman's breasts are, the greater the chance they have of developing breast cancer. This means that the reading radiologist has a higher probability of missing the cancer the first time. These women already have an increased risk of developing breast cancer due to the fibrous tissue as seen in the right side of Figure 4. Fibrous breast tissue is hard to x-ray because of the denseness of it and shows up whiter (less x-rays penetrate the breast to produce the image), as seen in the far-right side of Figure 5, thus making it difficult for interpreting radiologists to find cancer. Given these implications, further research is necessary to fully assess the associated risks and improve screening strategies for women with dense breast tissue.

Keywords Breast density * Breast cancer * Mammography density * Hormone usage * Women's Health



Figures 1 and 2. Comprised of the women who reported no history of hormone use, separated as BI-RADS C (the blue) and D (the orange). Comstock, C. E., Gatsonis, C., Newstead, G. M., Snyder, B. S., Gareen, I. F., Bergin, J. T., Rahbar, H., Sung, J. S., Jacobs, C., Harvey, J. A., Nicholson, M. H., Ward, R. C., Holt, J., Prather, A., Miller, K. D., Schnall, M. D., & Kuhl, C. K. (2023). *Abbreviated Breast MRI and Digital Tomosynthesis Mammography in Screening Women With Dense Breasts (EA1141) (Version 1) [dataset]*. The Cancer Imaging Archive. <https://doi.org/10.7937/2BAS-HR33>

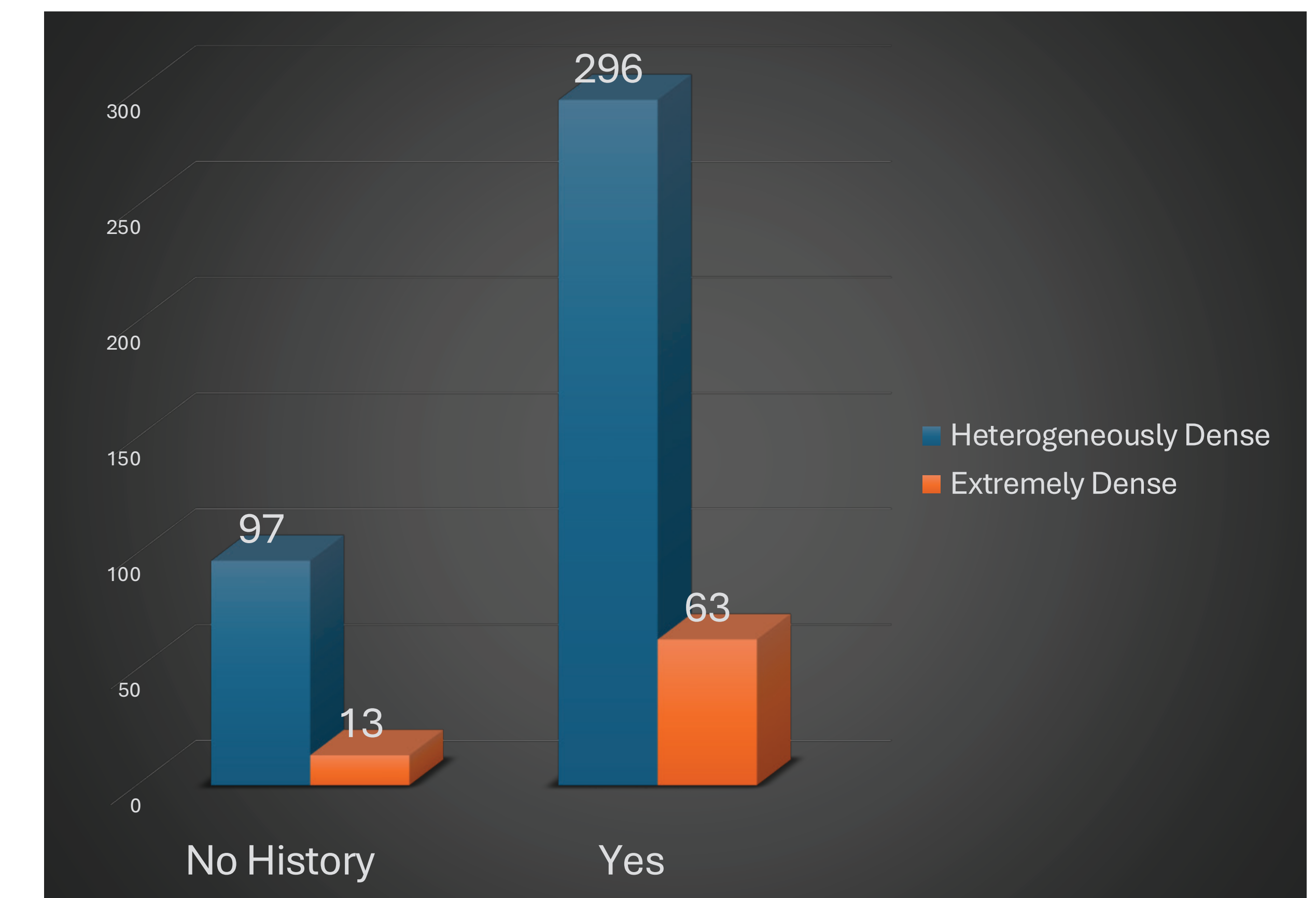


Figure 3. The "Big Picture" includes specific numbers of reported use and nonuse. *Abbreviated Breast MRI and Digital Tomosynthesis Mammography in Screening Women With Dense Breasts (EA1141) (Version 1) [dataset]*. The Cancer Imaging Archive. <https://doi.org/10.7937/2BAS-HR33>

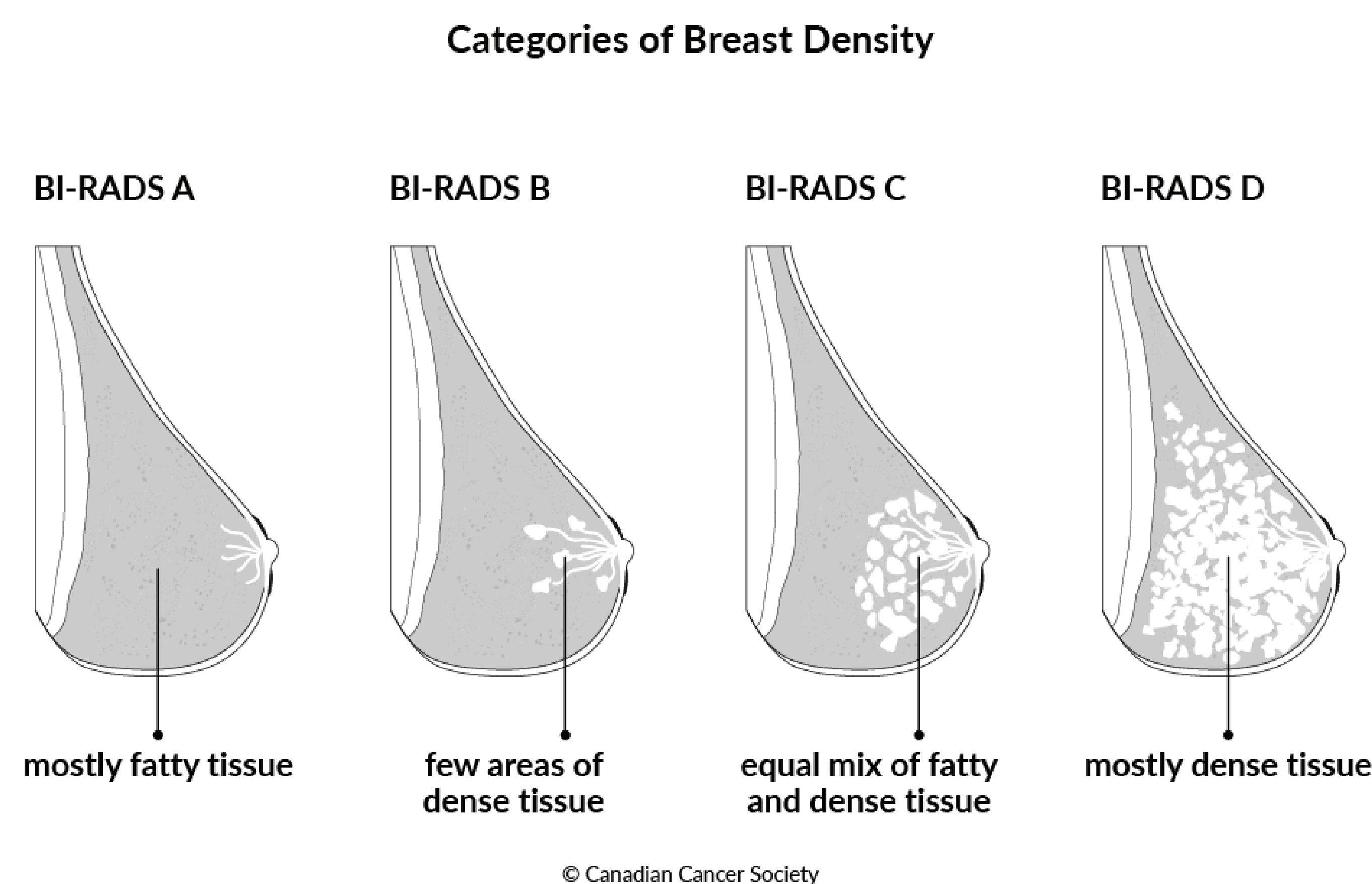


Figure 4. The categories of all breast densities with anatomy. Credit for image <https://cancer.ca/en/treatments/tests-and-procedures/mammography/breast-density> From the Canadian Cancer Society.

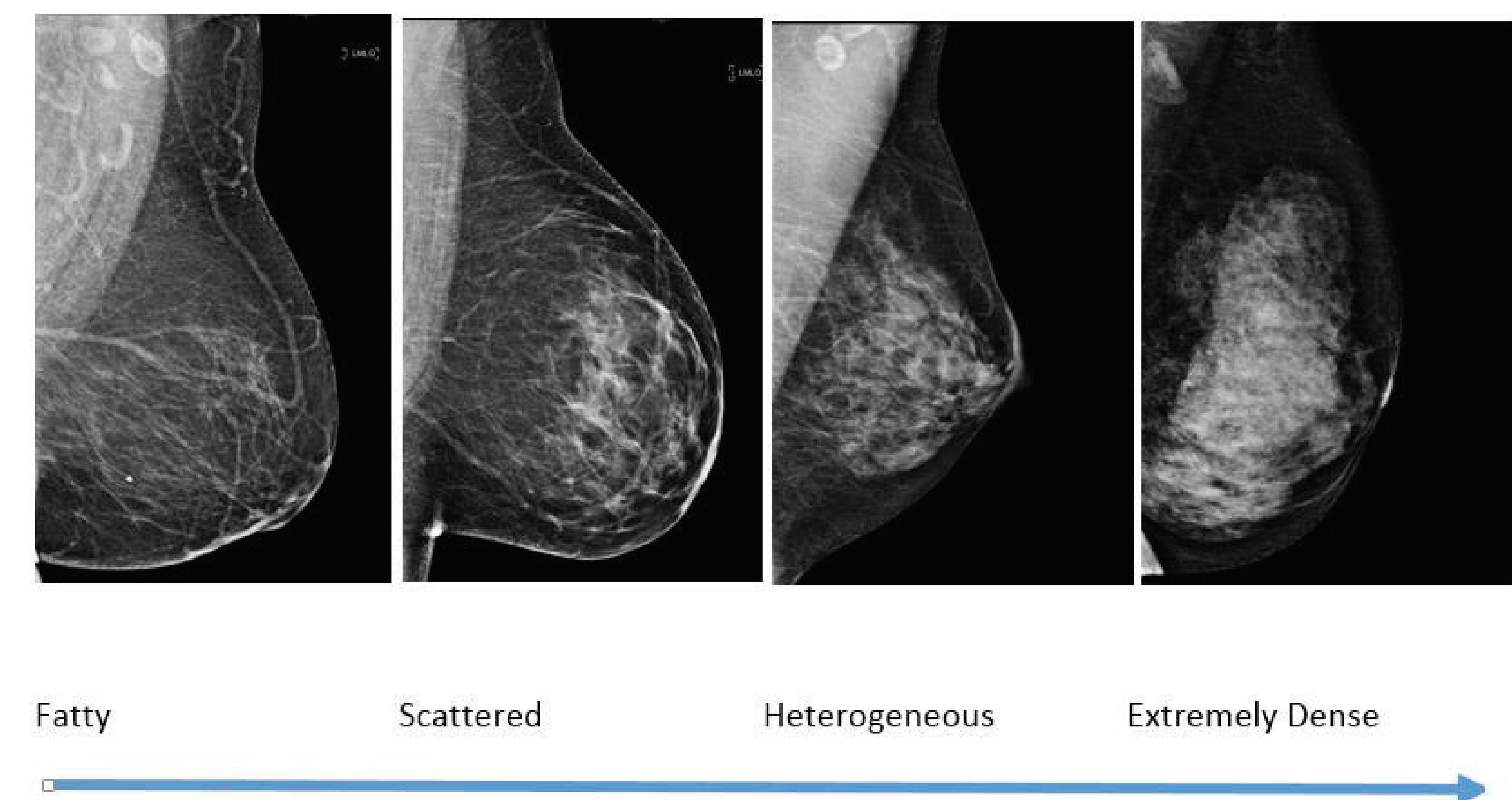


Figure 5. 2-D Digital mammogram images with various breast densities. The whiter the breast in the image, the more fibroglandular tissue it has, and it is harder to find breast cancer. Credit for image <https://www.cancer.northwestern.edu/types-of-cancer/breast/breast-density.html> Robert H. Lurie Comprehensive Cancer Center of Northwestern University.

What does this mean?!

As demonstrated, the chances of having a higher level of breast density is when the person takes hormone medications like birth control, estrogen for the menopausal, progesterone, and other hormone replacement therapies.

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