

## INTRODUCTION

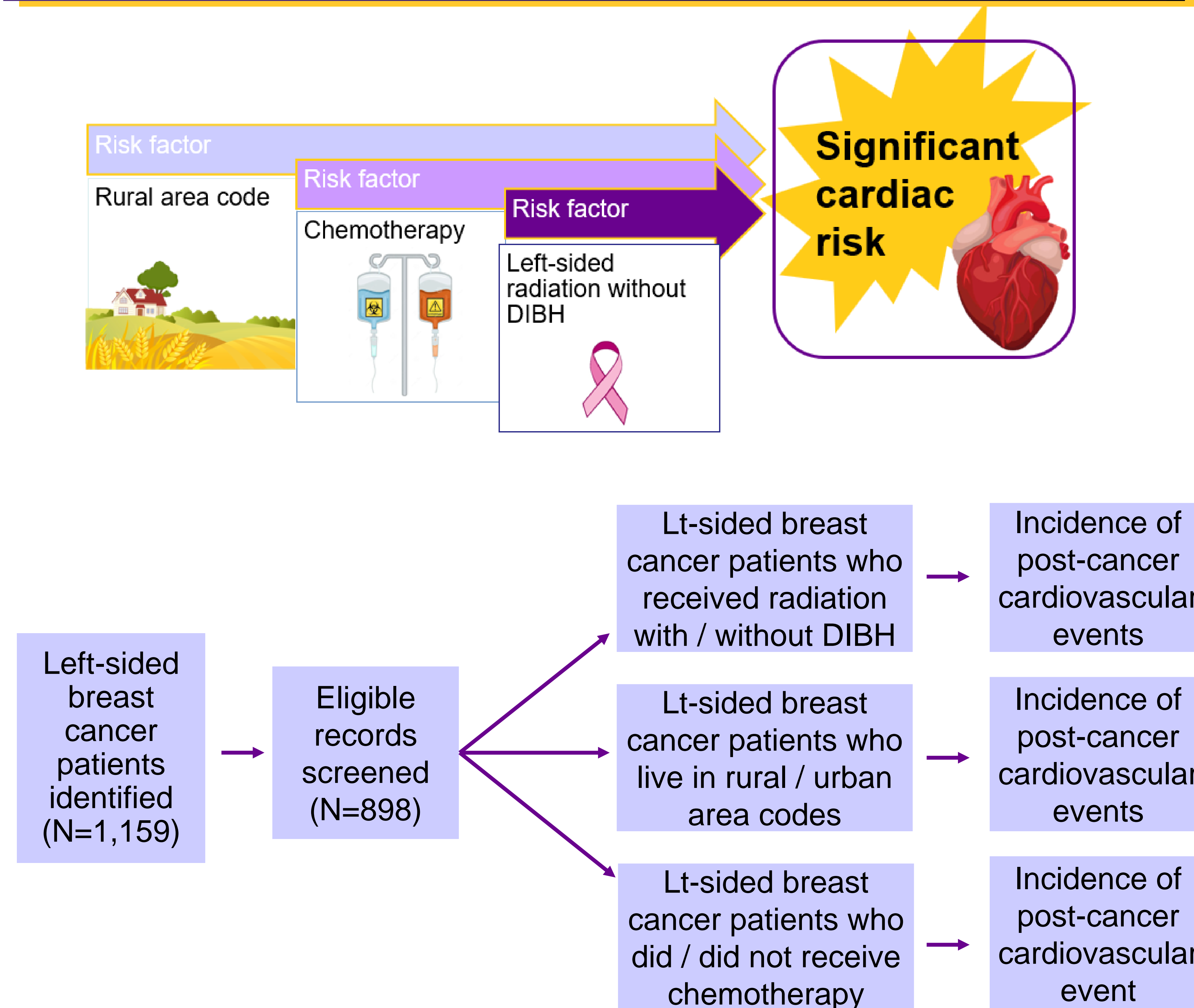
Breast cancer is the second most common cancer in women in the United States. With advances in radiation therapy and other treatments during the past decades, the mortality rate has declined significantly. However, in treatment of left-sided breast cancer, the heart is at risk of exposure to harmful radiation, which can cause damage and lead to conditions like cardiovascular disease (CVD) and myocardial infarction (MI).

Using a technique called “deep inspiratory breath hold” (DIBH) helps to move the heart away from the breast to reduce the radiation exposure during treatment. However, some women are not able to use this technique due to physical or anatomical limitations, or due to the radiation method that is used in certain cases. Although radiation therapy has decreased mortality rates and allowed survivors to have a longer life expectancy, it is important to investigate cardiac side effects that may threaten the quality of life for long-term survivors.

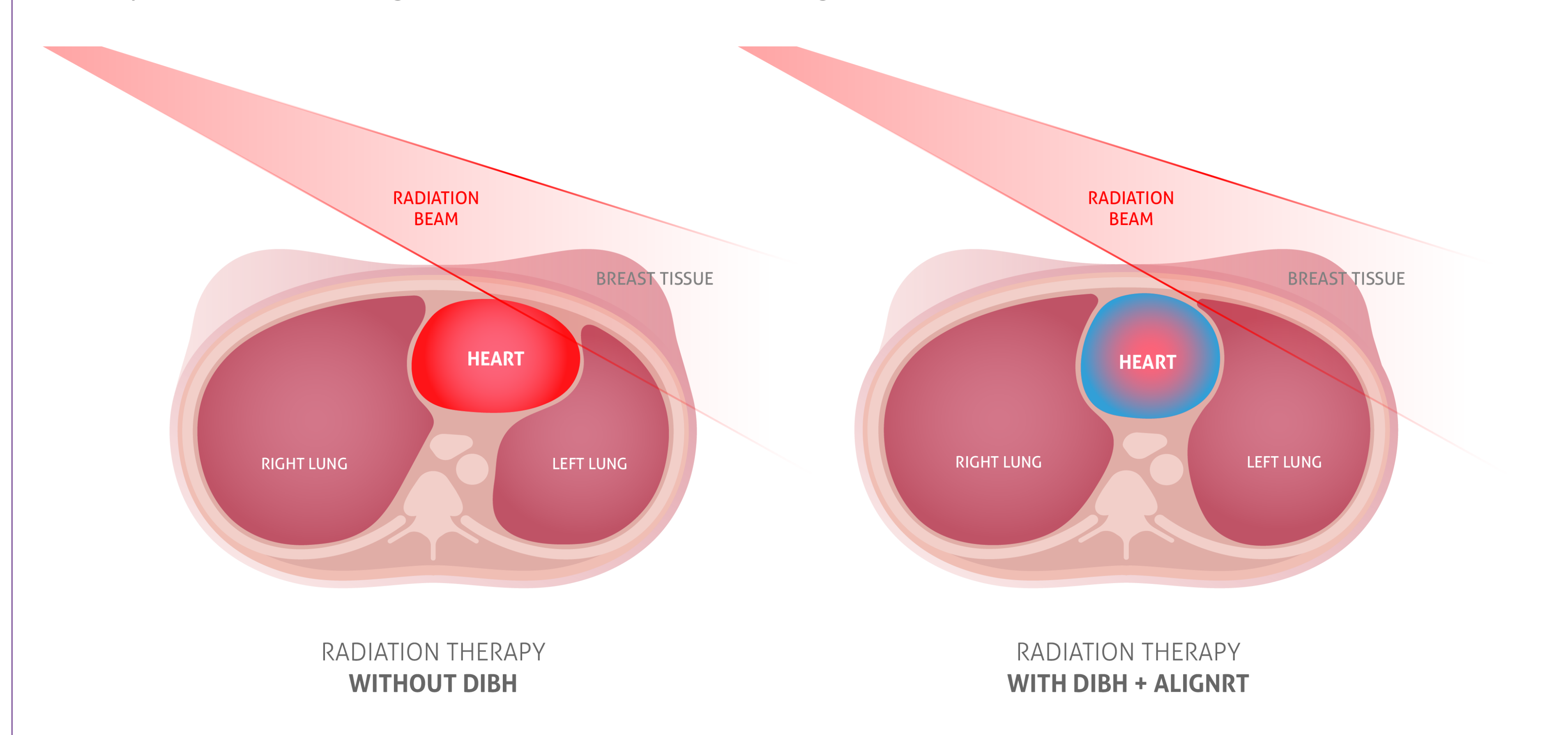
## MATERIALS & METHODS

Retrospective data was collected concerning the therapeutic techniques used on left-sided breast cancer patients who received radiation treatment at ECU Health Cancer Tower between the years 2014 to 2022. Patients were chart-reviewed to screen for cardiac conditions and events that arose since the radiation treatment. Information about specific cardiac risk factors and whether the patient lived in a rural or urban area was also collected.

## PREDICTED RESULTS



The importance of using DIBH is shown in the image below:



## DISCUSSION

According to the CDC, rural Americans are more likely to die from various diseases, including heart disease and cancer, than their urban counterparts. This disparity is contributed to by various factors, including food deserts, longer distances to follow up care, poor health education, and physician shortages in rural areas. Because of these factors, we expect to see that rural patients have a higher incidence of cardiovascular events than urban patients when controlling for DIBH use, and that the highest incidence of cardiovascular events occurs in patients who are from rural areas, receive chemotherapy (which is cardiotoxic), and undergo radiation without use of DIBH.

## REFERENCES

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