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# Addressing Racial Disparities in Breast Cancer Treatment Delays: An Application of Group Model Building (GMB)

Faustine Williams

*East Tennessee State University, williamsf2@etsu.edu*

Nancy Zoellner

*Social System Design Lab*

Maisha Flannel

*Saint Louis City Department of Health*

L. Noel

*NYU Silver School of Social Work*

J. Habif

*Social System Design Lab*

*See next page for additional authors*

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**Creator(s)**

Faustine Williams, Nancy Zoellner, Maisha Flannel, L. Noel, J. Habif, P. Hovmand, and Sarah Gehlert

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Williams F<sup>1</sup>; Zoellner N<sup>2</sup>; Flannel M<sup>3</sup>; Noel L<sup>4</sup>; Habif Jnr D<sup>2</sup>; Hovmand P<sup>2</sup>; Gehlert S<sup>5</sup>

College of Public Health, East Tennessee State University<sup>1</sup>; Social System Design Lab<sup>2</sup>; Saint Louis City Department of Health<sup>3</sup>; NYU Silver School of Social Work<sup>4</sup>; Brown School of Social Work, Washington University in Saint Louis<sup>5</sup>

## Introduction

- Breast cancer (BC) remains the most commonly diagnosed cancer among United States (US) women, and the second most common cause of death among women after lung cancer.
- Black women are 42% more likely to die from BC than white women.
- In St. Louis, Missouri, BC trends are similar to patterns seen throughout the US.
- However, there is great regional variation in mortality. Women residing in North St. Louis, a predominately black community, experience the highest rates of mortality.

## Objective

- To examine social, and environmental factors that cause women with suspicious mammograms not to seek treatment.

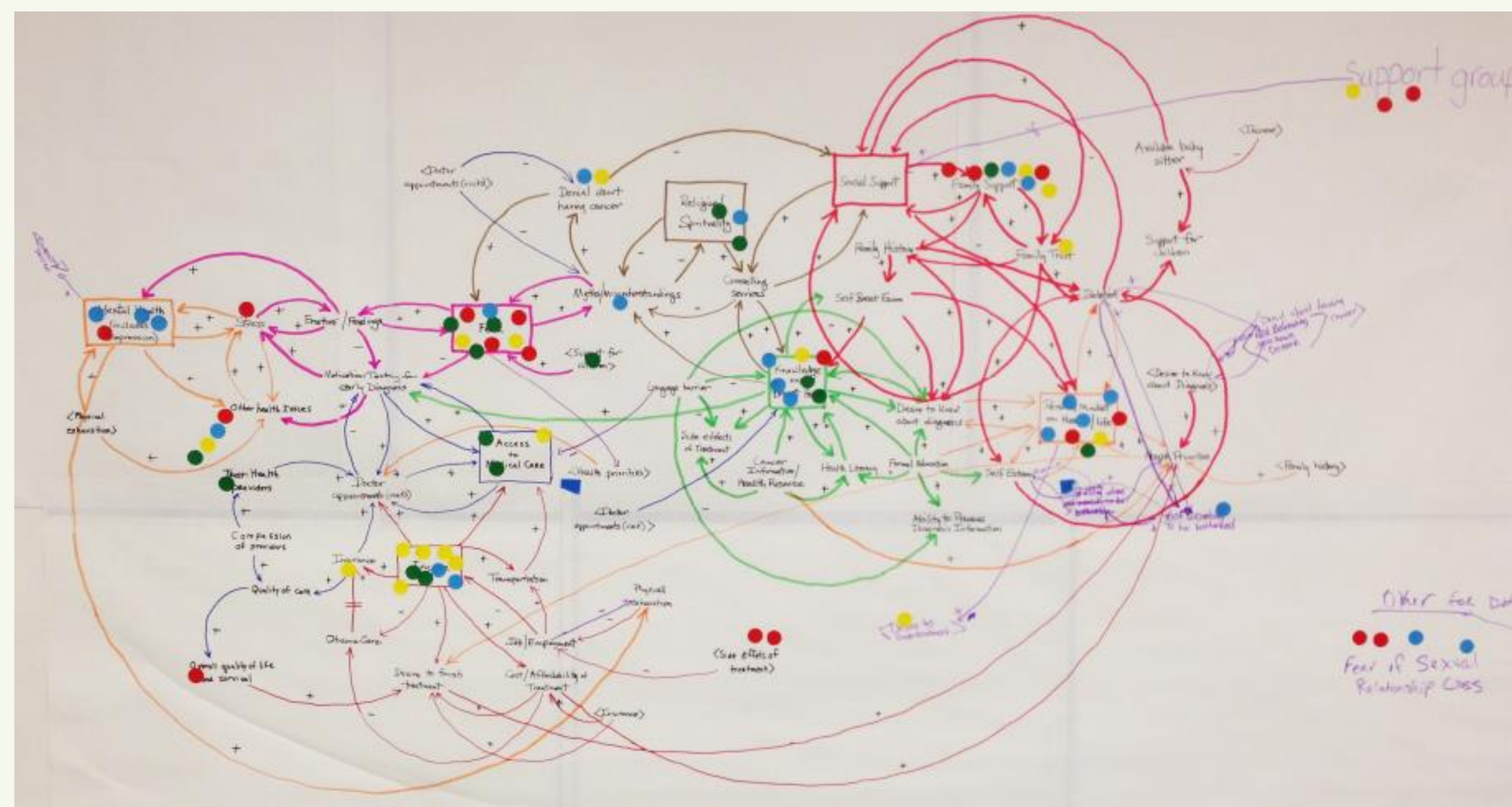
## Approach & Methods

- **Approach:** To effectively unpack the complex dynamics responsible for the widening BC disparities gap between black women, and white women in St. Louis, a system dynamics group model building (GMB) method was used.
  - GMB is an approach for visualizing the endogenous (feedback) sources driving observed dynamic behavior, in this case delays in BC treatment for black women.
- **Core Modeling Team (CMT):** A five member CMT comprised of faculty from Washington University School of Medicine, Brown School Social Systems Design Lab, and St. Louis City Department of Health affiliates were responsible for planning, and facilitating the GMB workshops as well as recruited eligible women for the study.
- **Eligibility Criteria:** (1) Women or family members who experienced a disparity in BC diagnosis or treatment, in addition to (2) healthcare workers or volunteers working with this population.

- **Sample:** Thirty-four women participated in the workshop, representing two stakeholder groups:
  - **Black women from the community** (BC survivors, family, and caregivers from the northern St. Louis area).
  - **Community support members** (navigators, research coordinators, city workers, and volunteers) working with communities on women's health issues.
- **The Process:** Three 2-hour sessions were conducted:
  - Black women from the community (n=28)
  - Community support members (n=6)
  - The two groups combined (n=34).
- **Session Objective:** The objective of sessions 1 and 2 was to elicit factors contributing to BC diagnosis as well as treatment delays, and develop a dynamic hypothesis to explain the disparities in the form of a causal loop diagram (CLD). In the third session participants evaluated the synthesized CLD, and identified places to intervene in the system.

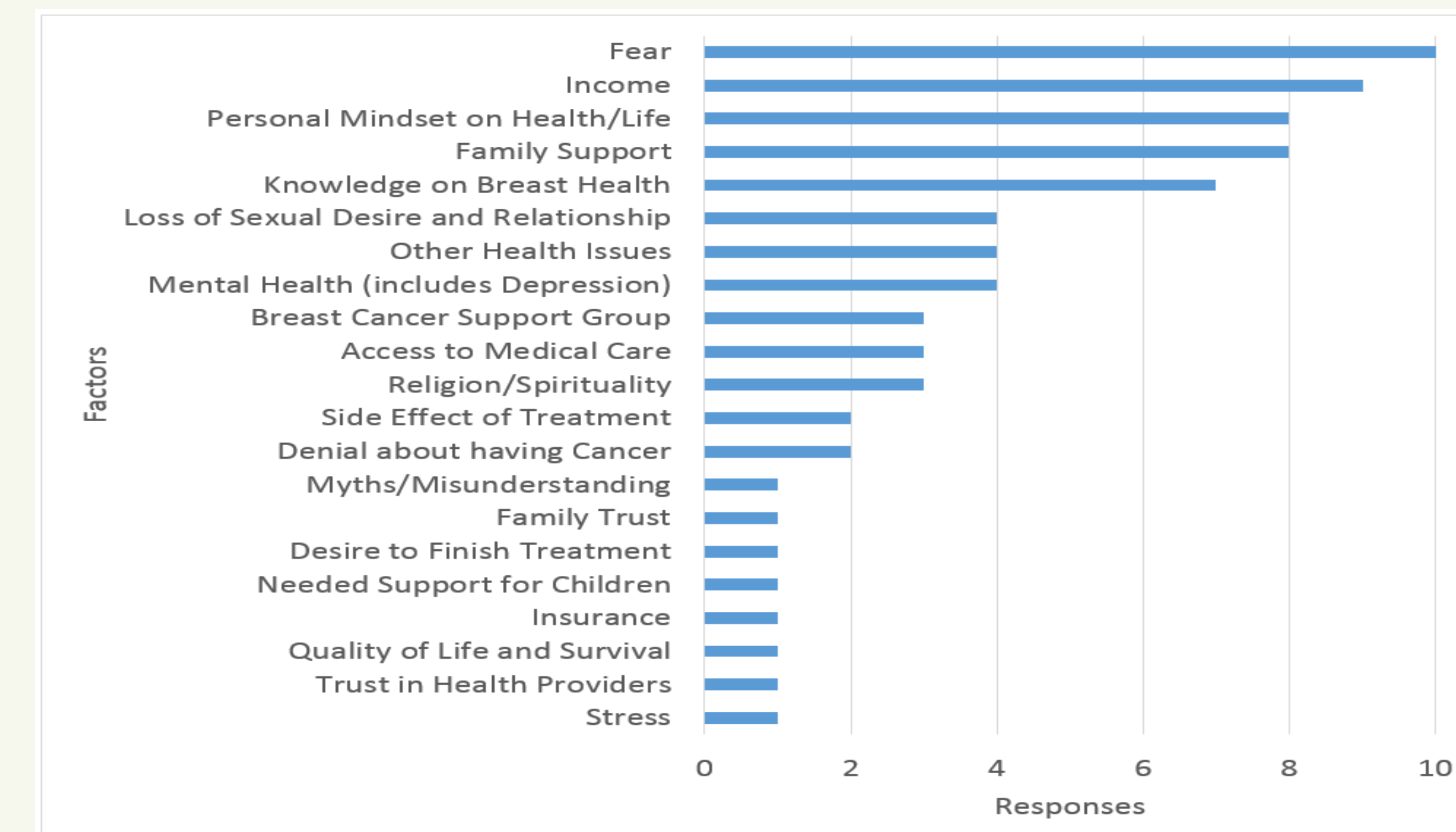
## Results

Image 1. CLD showing factors identified by participants to be contributing to BC treatment delay in St. Louis



- The CLD built by the women included 8 subsystems including: mental health, fear, access to healthcare, income, religion/spirituality, social support, knowledge on breast health, and personal mindset on health/life.
- The subsystems are causally-linked, and include feedback loops, providing explanations for trends in BC treatment delays in St. Louis.

Figure 1. Ranking of factors by "dots" of importance and intervention



- Figure 1 illustrates places in the system that were of greatest concern to participants, and where they want to see interventions added to reduce BC treatment disparities between black, and white women in St. Louis.
- The women also identified a set of recommendations for action based on the CLD structure. This includes formation of a community-based action group on women's health education in St. Louis, design, in addition to implementation of strategies to train patient navigators, as well as other healthcare professionals on the best way(s) to address women's fear of cancer at the time of diagnosis.

## Conclusions

- Most commonly reported factors of treatment delays in the scientific literature are those related to socioeconomic status. This work reveals new insights showing that these disparities are due to the interplay of numerous factors working together.
- Findings also suggest that developing effective interventions for complex problems like treatment delays require true stakeholder engagement.

## Acknowledgement

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