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### Awareness Of Racial Disparities Among Breast Cancer Providers

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**AWARENESS OF RACIAL DISPARITIES  
AMONG BREAST CANCER PROVIDERS**

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A Thesis Submitted in  
Candidacy for the Degree  
of Master of Public Health

Yale School of Public Health  
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## ABSTRACT

**Background:** Cancer patients who self-identify as Black and Hispanic are more likely to receive delays in care as compared to their Non-Hispanic White counterparts. Current research suggests that while providers are aware of racial-ethnic disparities in access to treatment at a national-level, they either fail to recognize hospital-level or practice-level disparities (occurring within the provider's own clinical care) or attribute it to patient-level factors. However, this phenomenon of decreased awareness among providers regarding factors specific to them or their hospital/practice is not well understood and has yet to be studied in the oncology space.

**Methods:** We conducted a non-randomized pre-post educational intervention pilot study with 18 breast cancer providers at the Smilow Cancer Center in February 2023. Prior to the educational intervention providers completed an online cross-sectional survey that assessed baseline understanding of disparities at three levels (national-level, within Smilow, and within the provider's own practice also referred to as individual-level). The providers then watched a live data presentation focusing on racial-disparity metrics and completed a post-intervention cross-sectional survey. Differences between pre- and post-intervention survey responses were evaluated with Fisher's exact tests.

**Results:** Among 18 breast cancer providers, awareness of race as a factor in influencing differences in oncological care increased significantly (from 33.3% to 77.8%,  $p = 0.02$ ) pre-to-post intervention at the Smilow-level, but did not change at the national- or individual-level. Providers identified social determinants of health—non-medical factors that have an impact on health, such as housing insecurity, poor employment conditions, and food insecurity—as the

main cause of disparities both nationally and within Smilow. At the individual-level, most providers believed that patient-level factors rather than provider-level factors were driving differences in oncological care metrics and reported that larger systems, such as healthcare or government, were responsible for reducing disparities.

**Conclusion:** In this small pilot study among providers with relatively high awareness of racial/ethnic disparities regarding cancer care at baseline, a brief educational intervention did not increase awareness of national- and individual-level factors, but did increase awareness of Smilow-level factors. As the oncology field is starting to address inequities in care, it is crucial for providers to not only acknowledge existence of these disparities in access to care, but also to establish clinically actionable guidelines to reduce these disparities within their own practice. Future studies should focus on how systemic factors influence oncology care and identify strategies to address these inequities.

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## INTRODUCTION

Recent studies across different cancer types have shown that patients who self-identify as Non-Hispanic Black or Hispanic have increased odds of a treatment delay compared to Non-Hispanic White patients.<sup>1,2</sup> Unlike in the general medicine space, there is a paucity of research surrounding oncological providers' awareness of racial-ethnic disparities in access to cancer treatment. Most of the current oncologic literature focuses on interventions, such as increasing goals-of-care discussions,<sup>3-5</sup> cultural competency training, or simulations.<sup>6</sup> Outside of the oncology setting, studies have shown that although providers are aware of healthcare disparities occurring at a national level, they either fail to recognize disparities occurring within their hospital system or attribute the disparity to patient-level factors rather than provider-level factors. For example, a survey of 172 general surgeons found that while 58.7% acknowledged disparities in healthcare in general, less than one-quarter (24.2%) acknowledged that disparities existed in their hospital/clinic.<sup>7</sup> Additionally, only 11.1% indicate they were aware of racial/ethnic disparities in their practice. Furthermore, a survey administered to 232 Veteran Affairs providers found only one-third believed that racial disparities in quality of care differences were due to provider behavior.<sup>8</sup> Most respondents in this study believed that the disparities could be explained by patient socioeconomic status or patient behavior.

This thesis represents a critical step in the process of eliminating treatment disparities between racial and sociodemographic groups in oncology care. Decreased awareness of disparities among providers can be understood using the "Stages of Change" behavioral model.<sup>9,10</sup> Although this model was originally developed to explain patients going through smoking/alcohol addiction, it can also be applied to providers.<sup>11</sup> According to this model, people progress through five distinct stages:<sup>9,10</sup> precontemplation (person does not yet acknowledge the



issue at hand), contemplation (person acknowledges there is an issue but is not yet ready to make a change), preparation (person acknowledges there is an issue, intending to eventually act), action (behavior change occurs), and maintenance (effort is made to sustain the behavior change).<sup>9,10</sup>

Based on the Stages of Change model, before action can be taken to address behavior change, specifically reducing care differences, it is essential to determine if providers recognize differences exist in time to treatment by racial and sociodemographic factors and if they are aware of how they can change or modify behaviors to address these disparities. Therefore, this thesis was designed with this behavioral model in mind such that we evaluated if providers were aware of the issues, if they could see a pathway to change, and if that change was something they were ready/equipped to do.

To our knowledge, this thesis is the first evaluation of oncology providers' understanding of racial disparities in access to care based on treatment metrics, focusing on time-to-treatment and time-to-first visit via a non-randomized pre-post educational intervention pilot study. We administered a survey at two timepoints (prior to a data presentation about variation in time to treatment metrics within their own practice and shortly following the presentation) to breast cancer providers at Smilow Cancer Hospital at Yale New Haven Health to assess whether awareness of disparities was improved by the short educational data presentation.

Breast cancer providers were chosen for this pilot study since breast cancer is one of the most common cancers and it is a cancer site with providers across Smilow Cancer Hospital's main campus and care centers across the state of Connecticut. Additionally, at a national level there are important treatment and mortality disparities in breast cancer. Although breast cancer mortality rates have improved overall, racial-ethnic disparities have nonetheless increased

throughout the years.<sup>12,13</sup> Black women have a 42% higher mortality rate from breast cancer as compared to Non-Hispanic White women,<sup>14,15</sup> which may reflect a growing disparity in access to appropriate cancer treatment. Research suggests that diagnostic and treatment delays not only add unnecessary stress and burden on patients, but they also decrease survival time.<sup>1,2</sup>

Overall, this pilot study will not only allow us to achieve a more nuanced understanding of awareness of racial-ethnic disparities surrounding access to cancer care, but may also highlight ways to facilitate clinician engagement and potential strategies to address these disparities.

## **MATERIALS AND METHODS**

### **Study Design**

We conducted a non-randomized pre-post educational intervention pilot study that utilized cross-sectional quantitative surveys. The surveys were administered to breast cancer providers via REDCap at the Smilow Cancer Hospital. The study was conducted during a regularly scheduled breast cancer provider meeting and classified as a Quality Improvement project by the Yale Human Investigations Committee and as such did not require informed consent to be obtained.

The pre-intervention survey (**Appendix**) was based on an aggregate of several social determinant surveys.<sup>7,8,16-18</sup> Specifically, providers beliefs about the role of insurance, ability to speak English, education, race, and social determinants (non-medical factors affecting health such as food insecurity, housing, and working conditions) in the differences in oncological care were collected at the Smilow-level and the individual-level. Providers ranked the importance of each factor with a modified 4-point Likert scale (Very unlikely, Somewhat unlikely, Somewhat

likely, Very likely). For national-level factors, providers were asked to select which specific factors from a list contributed to disparities, such as lower general quality of care in minority prevalent settings, availability of doctors, lack of continuity of care, etc. Providers were able to select multiple factors and indicate whether (Yes/No) they contributed to disparities.

After providers completed the pre-intervention survey, a 10-minute data educational presentation was delivered live via Zoom (**Appendix**). The presentation focused on racial-ethnic and sociodemographic disparity metrics in breast cancer in the United States generally, as well as locally at Smilow.

After the data presentation, the same providers were asked to complete a post-intervention survey (**Appendix**). This survey repeated the same questions as the pre-intervention survey with three additional questions: whether the providers were surprised by the results (No, A little, Not Sure, Some, A great Deal); whether there were more or less disparities than expected (Much More, More, Less, More Less); and whether the results were going to affect their practice (Yes, No, Not Sure). In addition, there was an open-ended question to help elucidate potential initiatives providers might take to decrease racial-ethnic disparities in treatment initiation within their own practice.

## **Statistical Analysis**

Descriptive statistics were performed to assess differences in the distribution of responses between the pre- and post-intervention survey data. A two-sided  $p < 0.05$  was considered statistically significant for the Fisher's exact test. Likert-type responses were collapsed and dichotomized into yes (strongly agree, agree) and no (strongly disagree, disagree). Similarly questions where providers had to rank 0-6 with how much they agree (0=Not at All, 6=A great

deal) were trichotomized in agree (4,5,6), disagree (0,1,2) and neutral (3). Due to a limited sample size, we observed nonconvergence of the multivariable model, and thus we were unable to adjust for potentially confounding baseline variables (sex, race-ethnicity, years in practice). Analyses were conducted in R version 4.1.0.

## RESULTS

Of the 23 breast cancer providers who were present at the provider meeting, 18 completed the pre- and post- intervention survey (response rate=78.3%; **Table 1**). The most common reason reported for not participating was being unable to attend the full 1-hour session. Most providers were female (77.8%, n=14), white (83.3%, n=15), and had an average of 15.4 years of experience in clinical care (SD = 10.4). The majority saw more than 15 patients per day (83.3%, n=15) and half (50.0%, n=9) reported that 10-25% of the patients they care for were non-white.

There were little to no changes in beliefs about what contributes to racial/ethnic disparities at a national level after viewing the data presentation (**Table 2**). At the post-intervention survey, over 80% of providers attributed disparities in oncological care to a lack of time or resources to address psychosocial issues, lack of continuity of care, and physician attitudes and beliefs about patients from different racial/ethnic groups.

After the educational presentation, breast cancer providers believed that race contributed significantly more (from 33.3% to 77.8%,  $p = 0.02$ ) to inequities at Smilow than other sociodemographic characteristics compared to the pre-survey timepoint (**Table 3**). Interestingly, although race had the largest change in awareness, it was only the second-most common reason they cited for inequities at Smilow. On the post-intervention survey, nearly 90% of breast cancer

providers believed that non-medical factors, such as food insecurity, housing, and working conditions, contributed the most to healthcare inequities.

There were little to no changes after the intervention in beliefs about what contributes to disparities at an individual level (**Table 4**). At the post-intervention survey, providers were generally split as to whether the ability to speak English, education, and race contributed to disparities at their own practice level. Similar to the Smilow-level trends, over two-thirds of breast cancer providers believed that social determinants were contributing to differences in oncological care.

There was also little to no change in beliefs about provider-level mechanisms in oncological care disparities (**Table 5**). Overall, most disagreed or were neutral about whether provider-level factors contributed to disparities; however, they felt that poor communication by providers could contribute to disparities.

There were some changes in awareness of what patient-level factors contribute to disparities; however, none reached statistical significance (**Table 6**). Most breast cancer providers agreed that patient-level factors contributed to disparities, with patient mistrust in the medical system having the largest increase in awareness (50.0 to 77.8%) on the post-survey, as well as the most common patient-level mechanism overall.

There was little to no change in the understanding of who is responsible for reducing disparities (**Table 7**). Nearly 90% of breast cancer providers believed that the Smilow healthcare system, Smilow providers, and the US government were responsible for reducing racial healthcare disparities.

More than half of the breast cancer providers (55.6%) reported that they were not surprised by the results but were split (51.1%) on whether they were going to discuss social

determinants of health with their patients (**Table 8**). While half of the providers reported there were more disparities than expected, they were also not sure about how the results were going to affect their practice (38.9%).

This uncertainty about changes in their practice was reflected in the post-intervention survey as well. Although several wrote that they were “cognizant” of healthcare inequities, they also believed that the differences stemmed from “confounders”, “societal factors”, or “patient-level” factors that were “outside of [their] control”. These self-reported reactions from the post-intervention survey were also consistent with the individual-level and provider-level results (**Tables 4-6**).

## **DISCUSSION**

Although the majority of Smilow breast cancer providers recognized there were large disparities in access to appropriate cancer care across the United States as well as within Smilow, they did not identify race as a contributing factor within their own individual practice. Furthermore, there were only limited changes pre- to post-intervention; but notably, awareness of racial/ethnic disparities was generally high pre-intervention. Specifically, they ranked social determinants of health (non-medical factors affecting health such as food insecurity, housing, and working conditions) as reasons for disparities at the national level and within Smilow. The fact that social determinants of health was ranked first, suggests that providers are aware that disparities exist in general and take a wholistic approach to treating their patients.<sup>19,20</sup>

When asked about their own role in oncological disparities, there was much variability in responses. Most providers were either neutral or disagreed about any provider-level mechanisms,

overall. In contrast, there was more consensus as to underlying patient-level factors contributing to disparities with more providers selecting patient mistrust in the medical system.

Similar trends of decreased awareness of practice-level differences across a range of healthcare specialties are evident.<sup>7,8,19-28</sup> It is not entirely clear why this phenomenon exists, but some hypotheses have been discussed in the literature. One reason for this lack of awareness stems from providers' mental distress or mental discomfort from the idea that they are contributing to disparities.<sup>20</sup> Second, the idea of assigning blame to patients is consistent with the "not me" phenomenon.<sup>19,20,27,29</sup> Third, physicians may be over-confident and overestimate their abilities to provide equitable care.<sup>23,30,31</sup> Fourth, may be that providers are unable to see it simply because their practice does not include those who self-identify as a minority group.<sup>23</sup> However, this is unlikely given that half of our providers responded that they see at least 10-25% of non-white patients. Finally, providers may not want to acknowledge any differences in their behavior to patients because of conscious/unconscious biases that inherently mirror the general population.<sup>32,33</sup>

It is important to note the limitations of our pilot study. Our survey was not sufficiently powered to identify differences across site location due to the pilot/exploratory nature of the study and we only enrolled providers from one disease team; however, it represents a critical first step that can easily be modified and extended to other cancer disease teams within our institution. Additionally, while the survey was based on an aggregated literature of surveys, it was not standardized, but was tested among a small group of physicians, researchers, and statisticians in our research group. Since our post-intervention survey was administered right after a presentation and only included self-report information, we were not able to assess direct impacts of this pilot study on disparities in care. Nonetheless, our pre-intervention results are

reassuring as awareness was high prior to our pilot education intervention and we saw some improvements in awareness post-intervention. In addition, it is important to look beyond outcome measures and assess process measures in order to understand the impact of a healthcare educational intervention.<sup>34</sup> Finally, only a subset of Smilow providers were surveyed (those specialized in breast cancer) and even in this disease team not all clinicians were represented. Thus, our results may not be representative of other disease-teams at Smilow. However, we included a range of oncology providers (surgeons, radiologists, physician assistants, clinicians) and years of experience to mitigate this concern.

## **FUTURE DIRECTIONS**

Our study suggests that recognizing racial disparities at a broader level does not imply that providers are aware of their own potential role in it. This agrees with the Stages of Change model,<sup>9,10</sup> which argues that depending on the stage in which a provider falls, they may not be prepared to take action. However, it also gives a framework to address the fact that providers can be at all different points in the trajectory of change and that each stage can be addressed. For example, providers in the precontemplation stage could participate in annual meetings evaluating health disparity metrics within their own practice. Additionally, for those in the contemplation and preparation stages, a workflow establishing how to incorporate health disparities and social determinants of health into oncological care discussions could be beneficial.

In the post-intervention survey, providers were split on whether they were going to discuss social determinants of health with their patients. This may be because of pressure to address immediate medical concerns first in narrow appointment slots, difficulty navigating complex discussions about social determinants of health, or even relying on existing methods of



screening for social determinants of health. Additionally, as part of future iterations of this post-intervention survey we plan to include an open-ended question soliciting information on the barriers they face in addressing social determinants of health that contribute to differences in oncologic care. This additional research area was inspired by a post-intervention informal discussion between the research staff and the providers where providers noted the difficulties they experienced when screening their patients for social determinants of health needs. Specifically, many patients who should have screened positive for unmet needs of social determinants of health at Smilow screened negative; possibly due to inaccurate self-report associated with stigma of being flagged or the assistance threshold being too high on the screener.

After providers completed the post-intervention survey, they also discussed their reactions to the Smilow-level time to treatment metrics during the informal discussion. There was a greater amount of engagement from providers when discussing systemic factors influencing differences in oncological care, especially geographic location. Since several presentation slides showed a larger difference in the receipt of hormone therapy by geographic location than by racial ethnicity, many providers appeared reassured that it was systemic factors rather than provider-level factors that contributed to disparity. This line of discussion indicated that we should consider refining the open-ended questions to include their thoughts on what factors should be addressed from those they observe to contribute to differences in oncologic care.

Health equity research in the oncology field has been gaining traction in recent years as providers and public health professionals work together to address social determinants of health. Our research is timely and parallels the development of the “health equity report card” (HERC),

a clinically actionable implementation plan developed by National Comprehensive Cancer Network (NCCN) to reduce disparities in cancer care based on previously identified practice-level barriers.<sup>35</sup> Specifically, HERC includes four domains with targeted recommendations: (1) Community Engagement (provide committee patient advisory committee, educational materials, partnerships with community partners, community health assessments); (2) Accessibility of Care and Social Determinants of Health (facilitate patient transportation, social determinants of health data collection, flexible screening, patient navigators/community health workers, etc.); (3) Addressing Bias in Care Delivery (incorporate disparity/equity frameworks, implement workflow to identify disparities in care, provide annual implicit bias training); and (4) Quality and Comprehensiveness of Care (refer patients to appropriate preventative care services, discuss clinical trial participation). This thesis project contributes to the second domain of HERC at the Smilow-level.

Now, that we have piloted this study design in the breast cancer care team, future directions include administering the survey and data presentation to other disease teams at Smilow to identify other potential barriers for readiness for change. If there are consistent patterns across disease teams, this will also be informative and will allow us to better structure Smilow system-wide interventions. Furthermore, we will also incorporate survey questions that directly map to the Stages of Change model, so we can determine which stage providers are in. Finally, based on the providers' written qualitative responses to our open-ended survey question and the informal oral discussion after the post-intervention survey was collected, we will focus the post-intervention survey more on how systemic factors, such as screening for social determinants of health, influence oncological care.

In conclusion, breast cancer providers awareness of race as a factor in influencing differences in oncological care did not change at either the national-level or practice-level (in the provider's own clinical care) and only increased pre-to-post intervention at the Smilow-level. At the individual-level, providers believed that patient-level factors rather than provider-level factors were underlying the mechanism in differences of oncological care. Overall, providers believed that social determinants of health influenced oncological differences and that larger societal structures, such as healthcare systems and government, were responsible for reducing disparities. Future iterations of this work at Smilow will modify the post-intervention survey to focus on how systemic factors influence oncological care and potential identify strategies to address these inequities.

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**TABLES**

Table 1. Demographic characteristics of breast cancer providers (N=18)

	Overall (N=18)
<b>Ethnicity</b>	
Not Hispanic or Latino	16 (88.9%)
Unknown/Not Reported	2 (11.1%)
<b>Race</b>	
Asian	2 (11.1%)
White	15 (83.3%)
Unknown/Not Reported	1 (5.6%)
<b>Sex</b>	
Female	14 (77.8%)
Male	4 (22.2%)
<b>Years of Experience</b>	
Mean (SD)	15.4 (10.4)
Median [Min, Max]	15.0 [2.00, 35.0]
<b>Patient Volume</b>	
5-10	1 (5.6%)
10-15	2 (11.1%)
15+	15 (83.3%)
<b>Quality Improvement Team</b>	
Yes	2 (11.1%)
No	16 (88.9%)
<b>MPH degree</b>	

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	Overall (N=18)
Yes	3 (16.7%)
No	15 (83.3%)
<b>Patient Racial/Ethnic Background</b>	
Less than 10% non-white	4 (22.2%)
10-25% non-white	9 (50.0%)
Greater than 25% non-white	5 (27.8%)

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Table 2. National-level factors identified as contributing to racial/ethnic disparities pre- and post-intervention

	Pre-Intervention (N=18)	Post-Intervention (N=18)	P-value
<b>Lower general quality of care in minority prevalent settings</b>			
Yes	14 (77.8%)	14 (77.8%)	1
No	4 (22.2%)	4 (22.2%)	
<b>Availability of doctors and hospitals in general</b>			
Yes	12 (66.7%)	10 (55.6%)	0.733
No	6 (33.3%)	8 (44.4%)	
<b>Availability of doctors and hospitals specializing in oncology</b>			
Yes	10 (55.6%)	10 (55.6%)	1
No	8 (44.4%)	8 (44.4%)	
<b>Physician attitudes and beliefs about patients from different racial/ethnic group</b>			
Yes	14 (77.8%)	15 (83.3%)	1
No	4 (22.2%)	3 (16.7%)	
<b>Miscommunication between patient and doctor</b>			
Yes	14 (77.8%)	13 (72.2%)	1
No	4 (22.2%)	5 (27.8%)	

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	Pre-Intervention (N=18)	Post-Intervention (N=18)	P-value
<b>Lack of time or resources to address psychosocial issues</b>			
Yes	14 (77.8%)	15 (83.3%)	1
No	4 (22.2%)	3 (16.7%)	
<b>Lack of continuity of care</b>			
Yes	14 (77.8%)	15 (83.3%)	1
No	4 (22.2%)	3 (16.7%)	

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Table 3. Smilow-level factors identified as contributing to racial/ethnic disparities pre- and post-intervention

	Pre- Intervention (N=18)	Post- Intervention (N=18)	P- value
<b>Type of insurance</b>			
Yes	7 (38.9%)	11 (61.1%)	0.318
No	11 (61.1%)	7 (38.9%)	
<b>Ability to speak English</b>			
Yes	13 (72.2%)	12 (66.7%)	1
No	5 (27.8%)	6 (33.3%)	
<b>Education</b>			
Yes	8 (44.4%)	11 (61.1%)	0.505
No	10 (55.6%)	7 (38.9%)	
<b>Race</b>			
Yes	6 (33.3%)	14 (77.8%)	0.0176
No	12 (66.7%)	4 (22.2%)	
<b>Social Determinants (non-medical factors affecting health such as food insecurity, housing, and working conditions)</b>			
Yes	13 (72.2%)	16 (88.9%)	0.402

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	Pre- Intervention (N=18)	Post- Intervention (N=18)	P- value
No	5 (27.8%)	2 (11.1%)	

---

Table 4. Practice-level factors identified as contributing to racial/ethnic disparities pre- and post-intervention

	Pre- Intervention (N=18)	Post- Intervention (N=18)	P- value
<b>Type of insurance</b>			
Yes	4 (22.2%)	6 (33.3%)	0.711
No	14 (77.8%)	12 (66.7%)	
<b>Ability to speak English</b>			
Yes	6 (33.3%)	9 (50.0%)	0.5
No	12 (66.7%)	9 (50.0%)	
<b>Education</b>			
Yes	6 (33.3%)	8 (44.4%)	0.733
No	12 (66.7%)	10 (55.6%)	
<b>Race</b>			
Yes	5 (27.8%)	8 (44.4%)	0.489
No	13 (72.2%)	10 (55.6%)	
<b>Social Determinants (non-medical factors affecting health such as food insecurity, housing, and working conditions)</b>			
Yes	11 (61.1%)	12 (66.7%)	1

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	Pre- Intervention (N=18)	Post- Intervention (N=18)	P- value
No	7 (38.9%)	6 (33.3%)	

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Table 5. Provider-level factors identified as contributing to racial/ethnic disparities pre- and post-intervention

	Pre-Intervention (N=18)	Post-Intervention (N=18)	P-value
<b>Poor communication by providers</b>			
Agree	4 (22.2%)	7 (38.9%)	0.492
Disagree	9 (50.0%)	6 (33.3%)	
Neutral	5 (27.8%)	5 (27.8%)	
<b>Provider attitudes/beliefs about minority patients</b>			
Agree	3 (16.7%)	5 (27.8%)	0.81
Disagree	11 (61.1%)	10 (55.6%)	
Neutral	4 (22.2%)	3 (16.7%)	
<b>Provider biases in treatment options</b>			
Agree	5 (27.8%)	6 (33.3%)	1
Disagree	9 (50.0%)	9 (50.0%)	
Neutral	4 (22.2%)	3 (16.7%)	
<b>Differences in prescribing of medications</b>			
Agree	4 (22.2%)	4 (22.2%)	0.905
Disagree	10 (55.6%)	8 (44.4%)	

	Pre-Intervention (N=18)	Post-Intervention (N=18)	P-value
Neutral	4 (22.2%)	6 (33.3%)	
<b>Difference in provision of specialty referrals</b>			
Agree	4 (22.2%)	5 (27.8%)	0.265
Disagree	6 (33.3%)	10 (55.6%)	
Neutral	8 (44.4%)	3 (16.7%)	

Table 6. Patient-level factors identified as contributing to racial/ethnic disparities pre- and post-intervention

	Pre-Intervention (N=18)	Post-Intervention (N=18)	P-value
<b>Patient health behaviors (diet, exercise, adherence)</b>			
Agree	12 (66.7%)	13 (72.2%)	1
Disagree	3 (16.7%)	3 (16.7%)	
Neutral	3 (16.7%)	2 (11.1%)	
<b>Patient mistrust in the medical system</b>			
Agree	9 (50.0%)	14 (77.8%)	0.21
Disagree	2 (11.1%)	2 (11.1%)	
Neutral	7 (38.9%)	2 (11.1%)	
<b>Patient misunderstanding of treatment</b>			
Agree	10 (55.6%)	13 (72.2%)	0.118
Disagree	2 (11.1%)	4 (22.2%)	
Neutral	6 (33.3%)	1 (5.6%)	
<b>Patient attitudes/beliefs about provider</b>			
Agree	6 (33.3%)	10 (55.6%)	0.338
Disagree	3 (16.7%)	3 (16.7%)	

	Pre-Intervention (N=18)	Post-Intervention (N=18)	P-value
Neutral	9 (50.0%)	5 (27.8%)	
<b>Patient preferences for type of treatment</b>			
Agree	8 (44.4%)	12 (66.7%)	0.224
Disagree	3 (16.7%)	4 (22.2%)	
Neutral	7 (38.9%)	2 (11.1%)	
<b>Patient uncooperativeness</b>			
Agree	9 (50.0%)	11 (61.1%)	0.253
Disagree	4 (22.2%)	6 (33.3%)	
Neutral	5 (27.8%)	1 (5.6%)	
<b>Poor communication by patients</b>			
Agree	7 (38.9%)	10 (55.6%)	0.224
Disagree	3 (16.7%)	5 (27.8%)	
Neutral	8 (44.4%)	3 (16.7%)	
<b>Patient lack of effort to seek care</b>			
Agree	10 (55.6%)	9 (50.0%)	1
Disagree	6 (33.3%)	6 (33.3%)	
Neutral	2 (11.1%)	3 (16.7%)	

---

	Pre-Intervention (N=18)	Post-Intervention (N=18)	P-value
<b>Patient lack of motivation to adhere to treatment</b>			
Agree	8 (44.4%)	9 (50.0%)	0.827
Disagree	5 (27.8%)	6 (33.3%)	
Neutral	5 (27.8%)	3 (16.7%)	

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Table 7. Individuals/entities identified as responsible for reducing racial/ethnic disparities pre- and post-intervention

	Pre-Intervention (N=18)	Post-Intervention (N=18)	P-value
<b>Smilow health care system is responsible for reducing racial health care disparities</b>			
Agree	16 (88.9%)	16 (88.9%)	1
Disagree	1 (5.6%)	1 (5.6%)	
Neutral	1 (5.6%)	1 (5.6%)	
<b>Smilow providers are responsible for reducing racial health care disparities</b>			
Agree	17 (94.4%)	16 (88.9%)	1
Disagree	1 (5.6%)	1 (5.6%)	
Neutral	0 (0%)	1 (5.6%)	
<b>Smilow patients are responsible for reducing racial health care disparities</b>			
Agree	6 (33.3%)	4 (22.2%)	0.295
Disagree	10 (55.6%)	8 (44.4%)	
Neutral	2 (11.1%)	6 (33.3%)	
<b>US government is responsible for reducing racial health care disparities</b>			
Agree	15 (83.3%)	16 (88.9%)	0.603
Disagree	1 (5.6%)	2 (11.1%)	
Neutral	2 (11.1%)	0 (0%)	

Table 8. Additional questions asked during the post-intervention

	Overall (N=18)
<b>Were you surprised by the results?</b>	
No	10 (55.6%)
A little	4 (22.2%)
Not Sure	0 (0%)
Some	3 (16.7%)
A great deal	1 (5.6%)
<b>Were there more or less disparities than you expected?</b>	
Much More	1 (5.6%)
More	9 (50.0%)
Less	7 (38.9%)
Much less	1 (5.6%)
<b>Are the results going to affect your practice?</b>	
Yes	6 (33.3%)
No	4 (22.2%)
Not Sure	7 (38.9%)
Missing	1 (5.6%)

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	Overall (N=18)
<b>Understanding that disparities are multifactorial, will you be more or less likely to discuss social determinants of health with your patients?</b>	
Yes	11 (61.1%)
No	3 (16.7%)
Not Sure	4 (22.2%)

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# APPENDIX

## Pre-Data Presentation

Please complete the survey below.

Thank you!

Which of the following factors do you think contribute to racial/ethnic disparities in oncological care and outcomes **NATIONALLY** within the US health care system? (NOTE: You may select multiple answers)

- Lower general quality of care in minority prevalent settings
- Availability of doctors and hospitals in general
- Availability of doctors and hospitals specializing in oncology
- Physician attitudes and beliefs about patients from different racial/ethnic group
- Miscommunication between patient and doctor
- Lack of time or resources to address psychosocial issues
- Lack of continuity of care

### At SMILOW, how likely do you think it is that patients with similar conditions receive different oncological care based on:

Type of insurance  Very unlikely  Somewhat unlikely  
 Somewhat likely  Very likely

Ability to speak English  Very unlikely  Somewhat unlikely  
 Somewhat likely  Very likely

Education  Very unlikely  Somewhat unlikely  
 Somewhat likely  Very likely

Race  Very unlikely  Somewhat unlikely  
 Somewhat likely  Very likely

Social Determinants (non-medical factors affecting health such as food insecurity, housing, and working conditions)  Very unlikely  Somewhat unlikely  
 Somewhat likely  Very likely

### Within YOUR OWN PRACTICE, how likely do you think it is that patients with similar conditions receive different oncological care based on:

Type of insurance  Very unlikely  Somewhat unlikely  
 Somewhat likely  Very likely

Ability to speak English  Very unlikely  Somewhat unlikely  
 Somewhat likely  Very likely

Education  Very unlikely  Somewhat unlikely  
 Somewhat likely  Very likely

Race  Very unlikely  Somewhat unlikely  
 Somewhat likely  Very likely

Social Determinants (non-medical factors affecting health such as food insecurity, housing, and working conditions)  Very unlikely  Somewhat unlikely  
 Somewhat likely  Very likely

**Despite better treatment outcomes for cancer patients, racial-ethnic disparities continue to exist. Please rank 0-6 (0=Not at all, 6 = A great deal) with how much you agree with the following statements from what you believe contributes the most to disparities within YOUR OWN PRACTICE.**

**PROVIDER contributors to disparities:**

Poor communication by providers Not at all A great deal  
  
*(Place a mark on the scale above)*

Provider attitudes/beliefs about minority patients Not at all A great deal  
  
*(Place a mark on the scale above)*

Provider biases in treatment options Not at all A great deal  
  
*(Place a mark on the scale above)*

Differences in prescribing of medications Not at all A great deal  
  
*(Place a mark on the scale above)*

Difference in provision of specialty referrals Not at all A great deal  
  
*(Place a mark on the scale above)*

**PATIENT contributors to disparities:**

Patient health behaviors (diet, exercise, adherence) Not at all A great deal  
  
*(Place a mark on the scale above)*

Patient mistrust in the medical system Not at all A great deal  
  
*(Place a mark on the scale above)*

Patient misunderstanding of treatment Not at all A great deal  
  
*(Place a mark on the scale above)*

Patient attitudes/beliefs about provider Not at all A great deal  
  
*(Place a mark on the scale above)*

Patient preferences for type of treatment Not at all A great deal  
  
*(Place a mark on the scale above)*

Patient uncooperativeness Not at all A great deal  
  
*(Place a mark on the scale above)*



## Post-Data Presentation

Please complete the survey below.

Thank you!

### Having been exposed to the time to treat metrics in your practice can you now answer the following?

Which of the following factors do you think contribute to racial/ethnic disparities in oncological care and outcomes **NATIONALLY** within the US health care system?

- Lower general quality of care in minority prevalent settings
- Availability of doctors and hospitals in general
- Availability of doctors and hospitals specializing in oncology
- Physician attitudes and beliefs about patients from different racial/ethnic group
- Miscommunication between patient and doctor
- Lack of time or resources to address psychosocial issues
- Lack of continuity of care

### At SMILOW, how likely do you think it is that patients with similar conditions receive different oncological care based on:

Type of insurance

- Very unlikely    Somewhat unlikely  
 Somewhat likely    Very likely

Ability to speak English

- Very unlikely    Somewhat unlikely  
 Somewhat likely    Very likely

Education

- Very unlikely    Somewhat unlikely  
 Somewhat likely    Very likely

Race

- Very unlikely    Somewhat unlikely  
 Somewhat likely    Very likely

Social Determinants

- Very unlikely    Somewhat unlikely  
 Somewhat likely    Very likely

### Within YOUR OWN PRACTICE, how likely do you think it is that patients with similar conditions receive different oncological care based on:

Type of insurance

- Very unlikely    Somewhat unlikely  
 Somewhat likely    Very likely

Ability to speak English

- Very unlikely    Somewhat unlikely  
 Somewhat likely    Very likely

Education

- Very unlikely    Somewhat unlikely  
 Somewhat likely    Very likely

Race

- Very unlikely    Somewhat unlikely  
 Somewhat likely    Very likely

Social Determinants

- Very unlikely     Somewhat unlikely  
 Somewhat likely     Very likely

**Despite better treatment outcomes for cancer patients, racial-ethnic disparities continue to exist. Please rank 0-6 (0=Not at all, 6 = A great deal) with how much you agree with the following statements from what you believe contributes the most to disparities within YOUR OWN PRACTICE.**

**PROVIDER contributors to disparities:**

Poor communication by providers Not at all A great deal  
  
*(Place a mark on the scale above)*

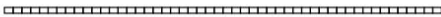
Provider attitudes/beliefs about minority patients Not at all A great deal  
  
*(Place a mark on the scale above)*

Provider biases in treatment options Not at all A great deal  
  
*(Place a mark on the scale above)*

Differences in prescribing of medications Not at all A great deal  
  
*(Place a mark on the scale above)*

Difference in provision of specialty referrals Not at all A great deal  
  
*(Place a mark on the scale above)*

**PATIENT contributors to disparities:**

Patient health behaviors (diet, exercise, adherence) Not at all A great deal  
  
*(Place a mark on the scale above)*

Patient mistrust in the medical system Not at all A great deal  
  
*(Place a mark on the scale above)*

Patient misunderstanding of treatment Not at all A great deal  
  
*(Place a mark on the scale above)*

Patient attitudes/beliefs about provider Not at all A great deal  
  
*(Place a mark on the scale above)*

Patient preferences for type of treatment Not at all A great deal  
  
*(Place a mark on the scale above)*

Patient uncooperativeness	Not at all	A great deal
	(Place a mark on the scale above)	
Poor communication by patients	Not at all	A great deal
	(Place a mark on the scale above)	
Patient lack of effort to seek care	Not at all	A great deal
	(Place a mark on the scale above)	
Patient lack of motivation to adhere to treatment	Not at all	A great deal
	(Place a mark on the scale above)	

**Responsibility for Reducing Health Care disparities / Interventions:**

Smilow health care system is responsible for reducing racial health care disparities	Not at all	A great deal
	(Place a mark on the scale above)	
Smilow providers are responsible for reducing racial health care disparities	Not at all	A great deal
	(Place a mark on the scale above)	
Smilow patients are responsible for reducing racial health care disparities	Not at all	A great deal
	(Place a mark on the scale above)	
US government is responsible for reducing racial health care disparities	Not at all	A great deal
	(Place a mark on the scale above)	

Were you surprised by the results?

- No
- A little
- Not sure
- Some
- A great deal

Were there more or less disparities than you expected?

- Much More
- More
- Less
- Much less

Are the results going to affect your practice?

- Yes
- No
- Not Sure

If so, how?

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If no or not sure, why?

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Understanding that disparities are multifactorial, will you be more or less likely to discuss social determinants of health with your patients?

- Yes
- No
- Not Sure



# Treatment Differences by Sociodemographic Factors Among Breast Cancer Patients

February 22, 2023

## INTRODUCTION

- **Aim:** Investigate how local health disparity data impact clinician perceptions
- **Goal:** Drive meaningful conversations & actionable change



## OVERVIEW

- Consent / Survey (10 min)
- Data Presentation (15 min)
- Follow Up Survey (10 min)
- Discussion (20 min)

## BASELINE SURVEY

- Please scan the QR code with your phone camera
- Alternatively, you can copy and paste this link:  
<https://redcap.research.yale.edu/surveys/?s=JJTMLMD8A3PNYPDW>



Please STOP after completing the baseline survey



## NATIONAL INEQUITIES IN TREATMENT

Among women diagnosed with Stage 1 breast cancer in the National Cancer Database (NCDB), Black women had longer time to treatment across all metrics

Days	White	Black	Extra Days
Time to treatment	28.1	35.5	7.4
Time to surgery	28.8	35.2	7.8
Time to chemotherapy	75.4	88.1	12.7
Time to radiation therapy	99.1	131.3	32.2
Time to hormone therapy	126.5	152.1	25.6

Hoppe et al. 2019



## NATIONAL INEQUITIES IN TREATMENT

Among women diagnosed with Stage 1 breast cancer in the National Cancer Database (NCDB), Black women had longer time to treatment across all metrics

Days	White	Black	Extra Days
Time to treatment	28.1	35.5	<b>7.4</b>
Time to surgery	28.8	35.2	<b>7.8</b>
Time to chemotherapy	75.4	88.1	<b>12.7</b>
Time to radiation therapy	99.1	131.3	<b>32.2</b>
Time to hormone therapy	126.5	152.1	<b>25.6</b>

Hoppe et al. 2019

## NATIONAL INEQUITIES IN TREATMENT

Among women diagnosed with early stage Breast cancer in Medicare, delays were more prevalent among urban patients **(2.5%)** than rural patients **(1.9%)**

Zipkin et al. 2022

## TREATMENT METRICS

YNHH Tumor Registry	Radiation Therapy	Radiation therapy administered within 1 year of diagnosis for women under age 70 receiving breast conserving surgery
	Hormone Therapy	Tamoxifen or third generation aromatase inhibitor is recommended or administered within 1 year of diagnosis for women with AJCC T1cNOMO or stage IB-III hormone receptor positive breast cancer
Flatiron Measure	Time from first visit to first IV antineoplastic administration	Days from first office visit at the cancer center to the <u>first</u> IV antineoplastic administration.
	Time from first visit to first interventional surgery	Days from first office visit at the cancer center to the <u>first</u> interventional surgery.
	Time from first visit to first radiation therapy	Days from first office visit at the cancer center to the <u>first</u> radiation therapy

## + SOCIODEMOGRAPHIC CHARACTERISTICS

YNHH Tumor Registry	Geographic Location	Wealthy vs. Urban Core region
+ YNHH Tumor Registry	Median Income	Grouped in 4 quartiles based on the zip code the patient lived (America Community Survey (ACS))
+ YNHH Tumor Registry and Flatiron Measure	Race/Ethnicity	EPIC defined categories

## + POPULATION

1. All cancer patients seen at at Smilow from 2018-2022
2. Patients aged  $\geq 18$  with breast cancer diagnosed 2016-2019



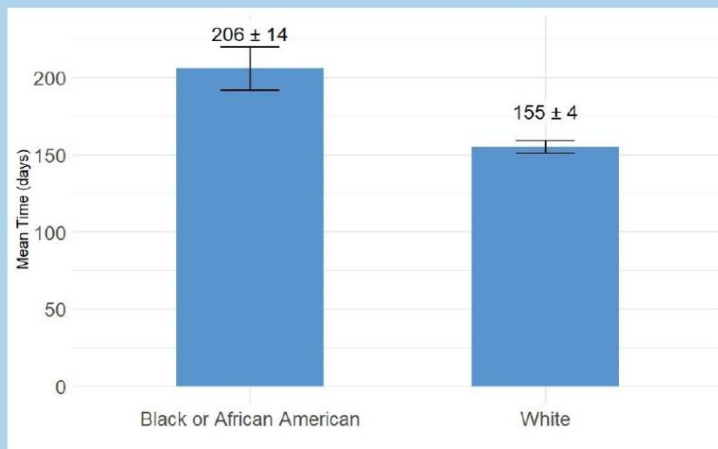


# POPULATION

1. All cancer patients seen at at Smilow from 2018-2022
2. Patients aged  $\geq 18$  with breast cancer diagnosed 2016-2019



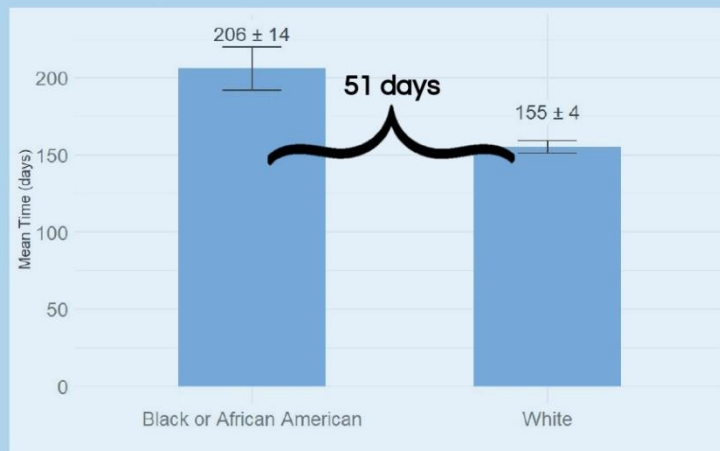
# TIME TO INTERVENTIONAL SURGERY AMONG ALL SMILOW PATIENTS



Flatiron 2018-2022

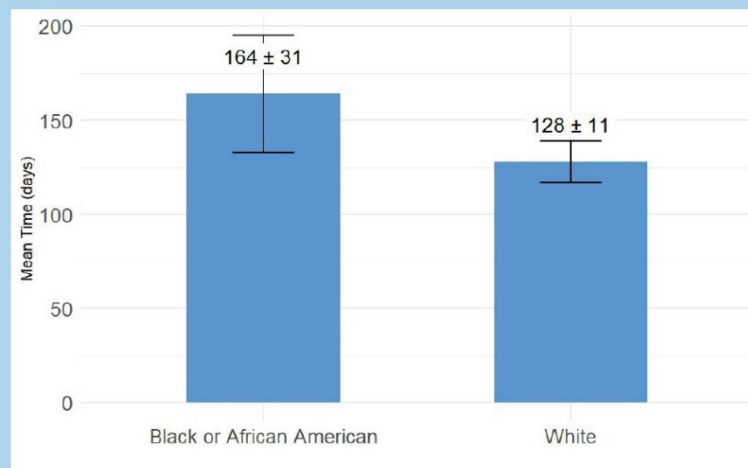


## TIME TO INTERVENTIONAL SURGERY AMONG ALL SMILOW PATIENTS



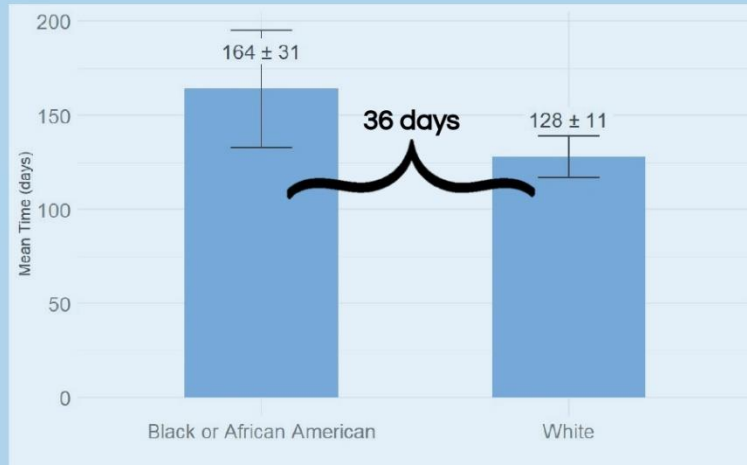
Flatiron 2018-2022

## TIME TO RADIATION THERAPY AMONG ALL SMILOW PATIENTS



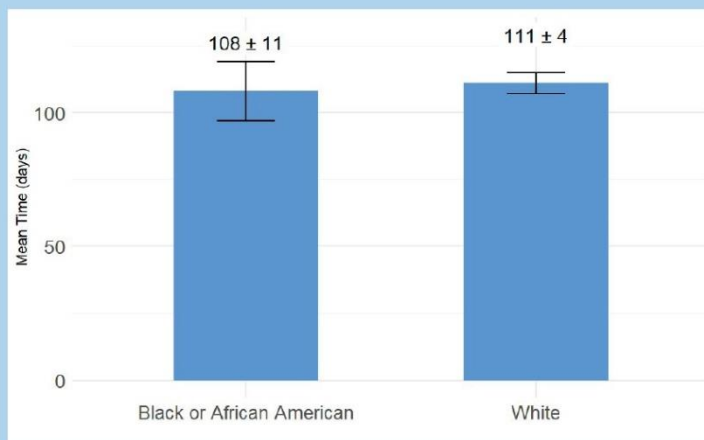
Flatiron 2018-2022

## TIME TO RADIATION THERAPY AMONG ALL SMILOW PATIENTS



Flatiron 2018-2022

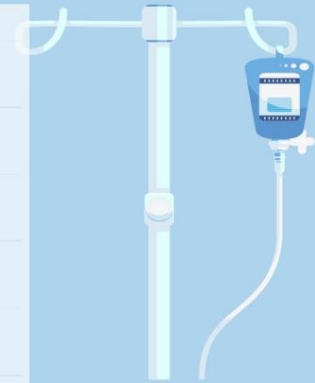
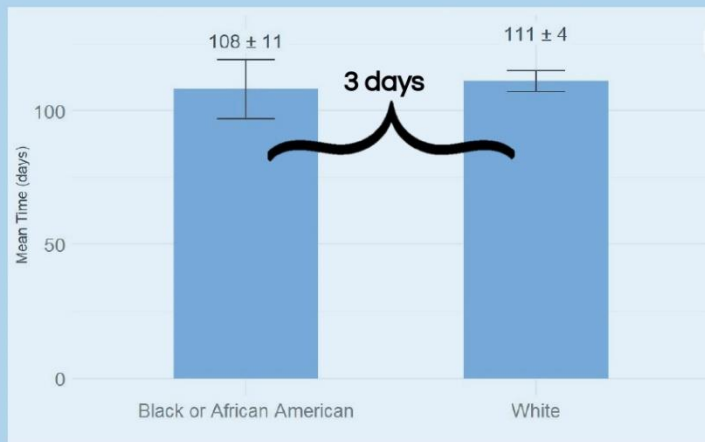
## TIME TO IV ANTINEOPLASTICS AMONG ALL SMILOW PATIENTS



Flatiron 2018-2022



## TIME TO IV ANTINEOPLASTICS AMONG ALL SMILOW PATIENTS



Flatiron 2018-2022

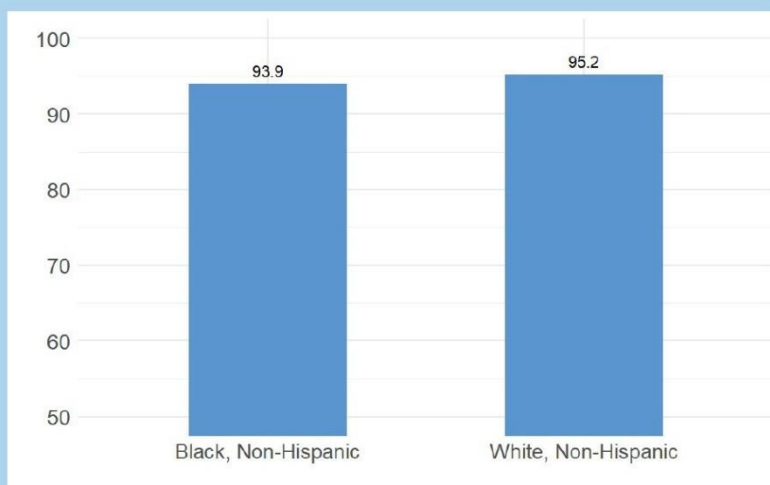
## POPULATION

1. All cancer patients seen at at Smilow from 2018-2022
2. Patients aged  $\geq 18$  with breast cancer diagnosed 2016-2019



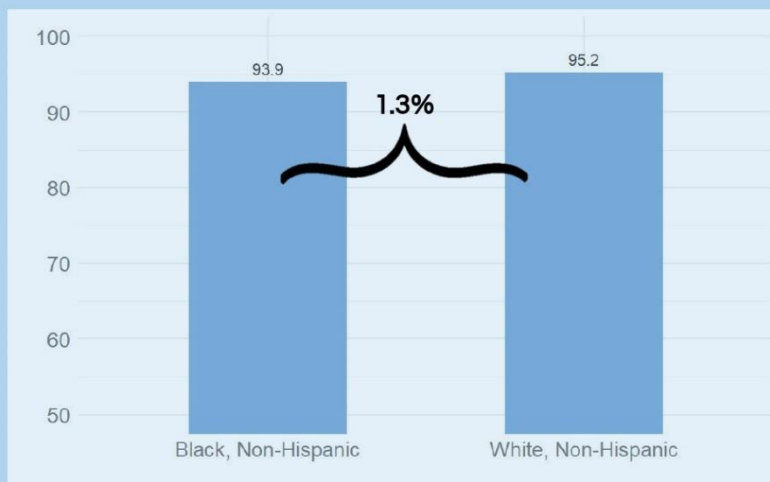
## BY RACE

## RADIATION THERAPY AMONG BREAST CANCER PATIENTS



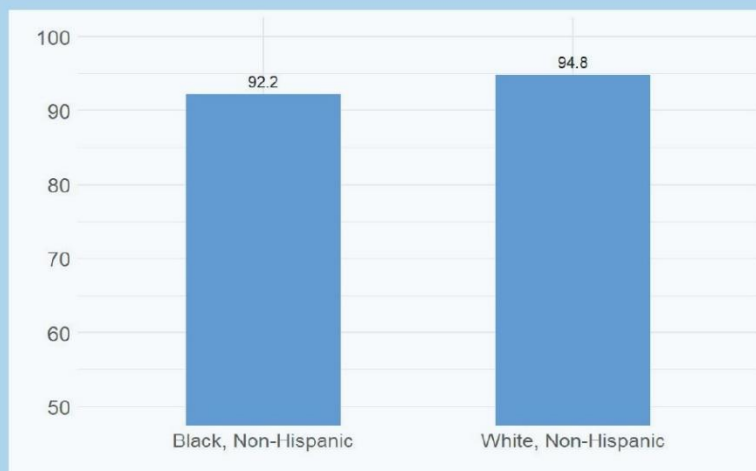
YNHH Tumor Registry  
2016-2019

## RADIATION THERAPY AMONG BREAST CANCER PATIENTS



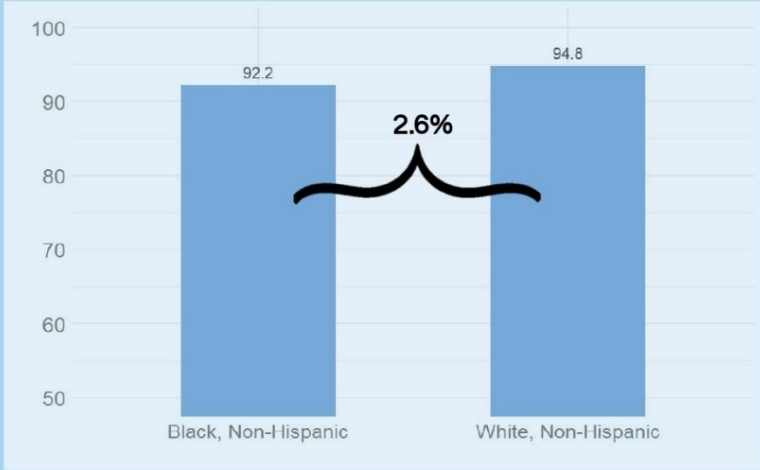
YNHH Tumor Registry  
2016-2019

## HORMONE THERAPY AMONG BREAST CANCER PATIENTS



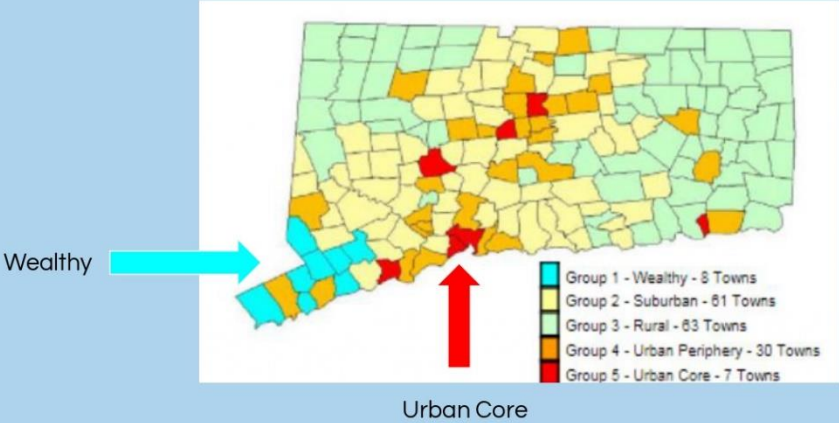
YNHH Tumor Registry  
2016-2019

# HORMONE THERAPY AMONG BREAST CANCER PATIENTS



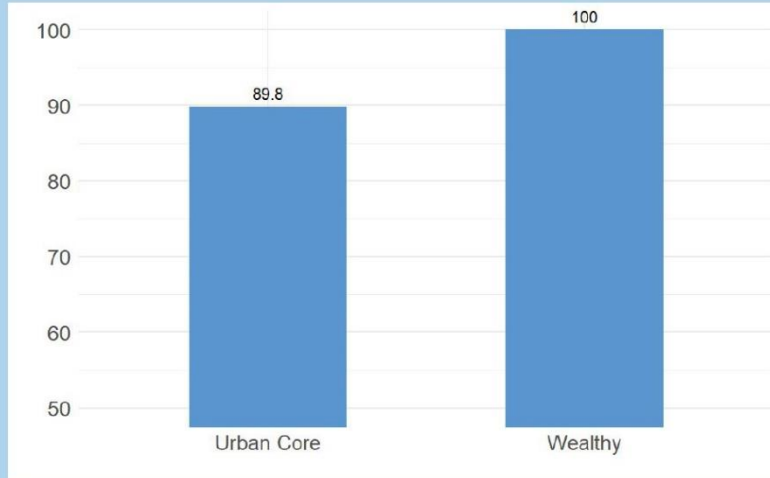
YNHH Tumor Registry  
2016-2019

# BY GEOGRAPHIC LOCATION



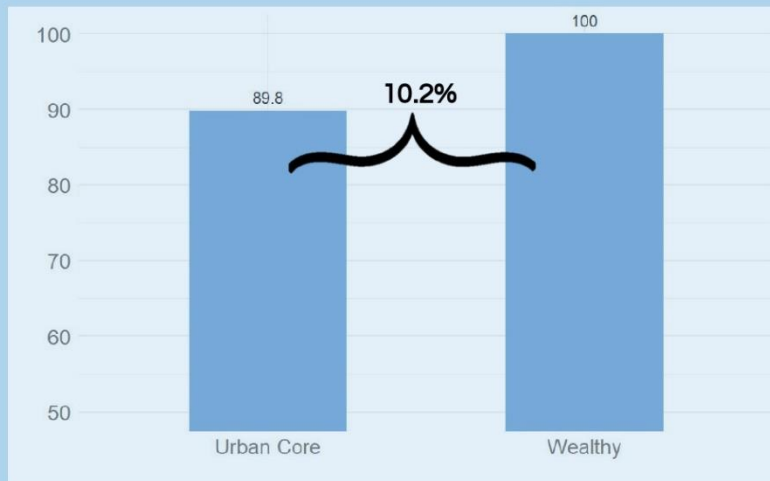
DataHaven

## RADIATION THERAPY AMONG BREAST CANCER PATIENTS



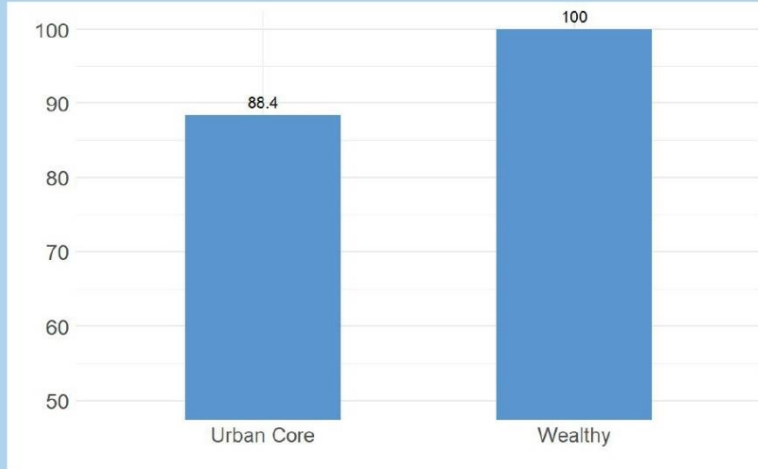
YNHH Tumor Registry  
2016-2019

## RADIATION THERAPY AMONG BREAST CANCER PATIENTS



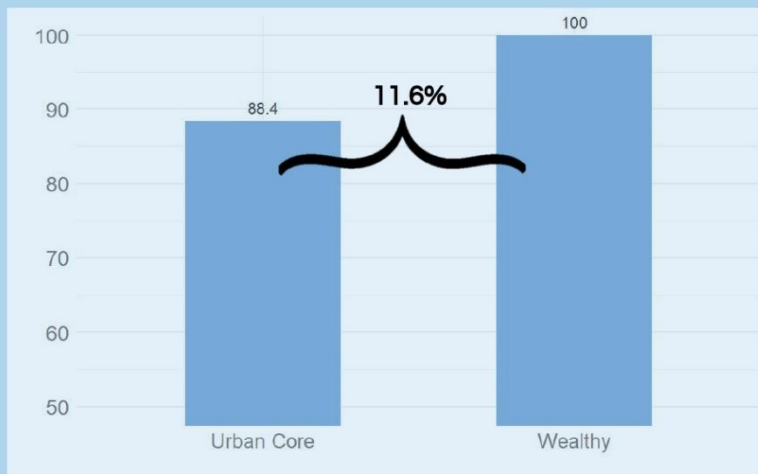
YNHH Tumor Registry  
2016-2019

# HORMONE THERAPY AMONG BREAST CANCER PATIENTS



YNHH Tumor Registry  
2016-2019

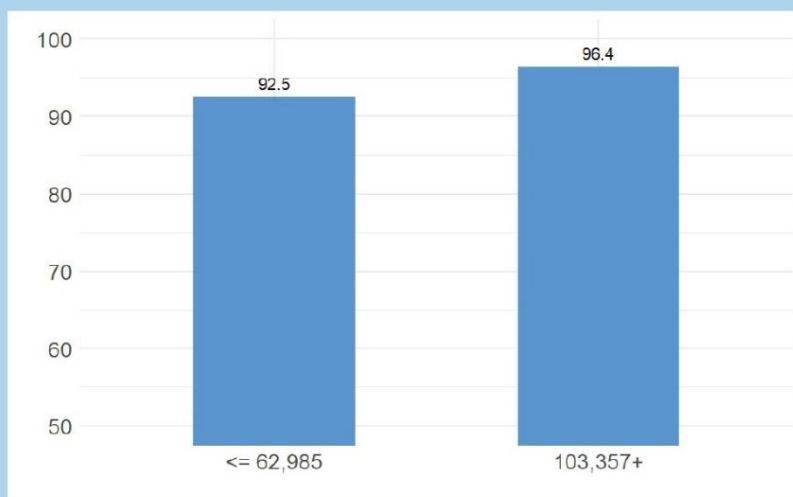
# HORMONE THERAPY AMONG BREAST CANCER PATIENTS



YNHH Tumor Registry  
2016-2019

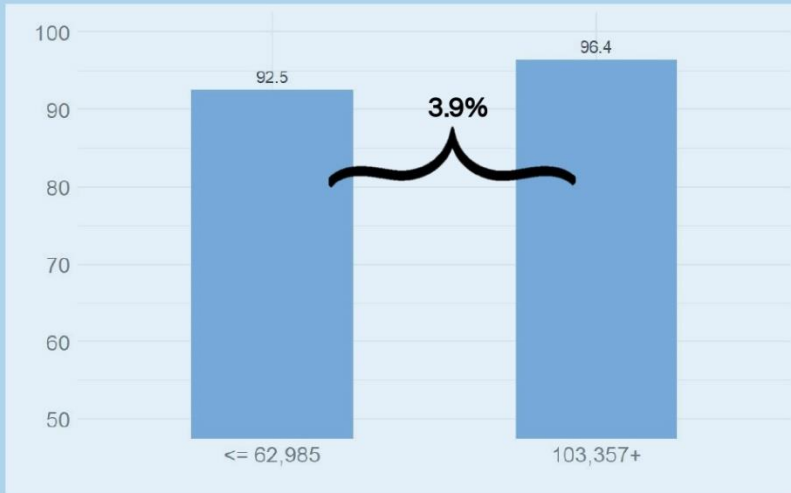
## BY MEDIAN INCOME

## RADIATION THERAPY AMONG BREAST CANCER PATIENTS



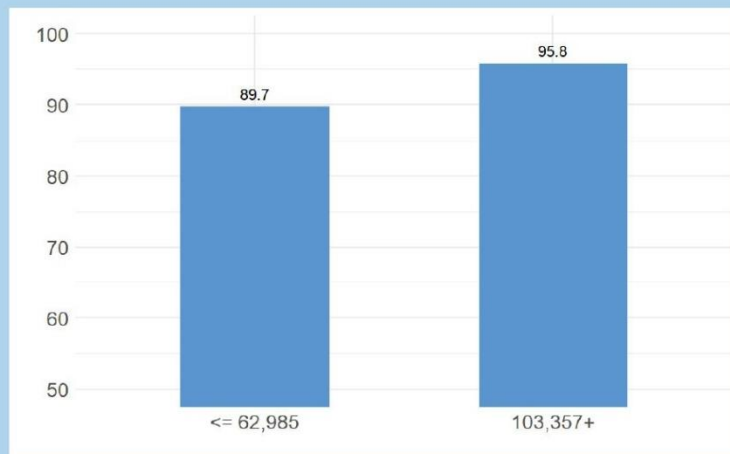
YNHH Tumor Registry  
2016-2019

## RADIATION THERAPY AMONG BREAST CANCER PATIENTS



YNHH Tumor Registry  
2016-2019

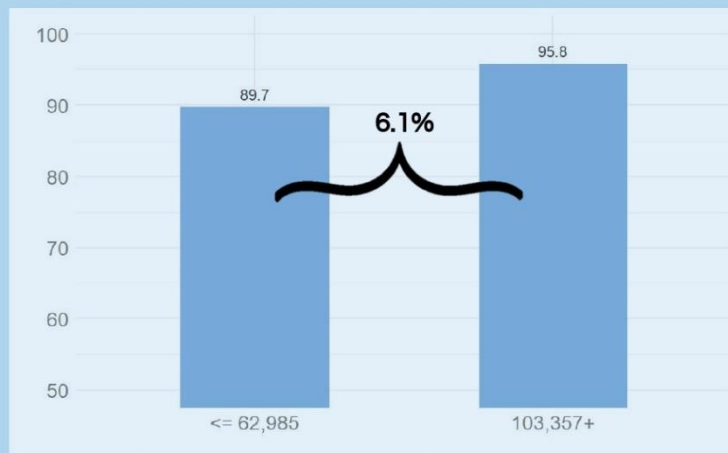
## HORMONE THERAPY AMONG BREAST CANCER PATIENTS



YNHH Tumor Registry  
2016-2019



## HORMONE THERAPY AMONG BREAST CANCER PATIENTS



YNHH Tumor Registry  
2016-2019

## SUMMARY

At the Smilow level, patients who self-identified as Black had the longest time to treatment for most metrics

## SUMMARY

At the Smilow level, patients who self-identified as Black had the longest time to treatment for most metrics



At the breast team level, patients from urban, lowest median income, and who self-identify as Black had the lowest prevalence for receipt of treatment within 1-year of diagnosis

## Follow-Up Survey

Please continue where you left off

# DISCUSSION



# REFERENCES

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Schermerhorn, M. C., Grunwald, M. W., O'Donoghue, C. M., Rao, R. D. & Becerra, A. Z. Factors Mediating Racial/Ethnic Disparities in Delayed Treatment of Breast Cancer. *Ann Surg Oncol* (2022) doi:10.1245/s10434-022-12001-5.

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[https://seer.cancer.gov/archive/csr/1975\\_2014/](https://seer.cancer.gov/archive/csr/1975_2014/).

# APPENDIX

## YNHH TUMOR REGISTRY SAMPLE SIZE

Year	n
2016	1130
2017	1088
2018	1083
2019	544

## FLATIRON DATA DICTIONARY

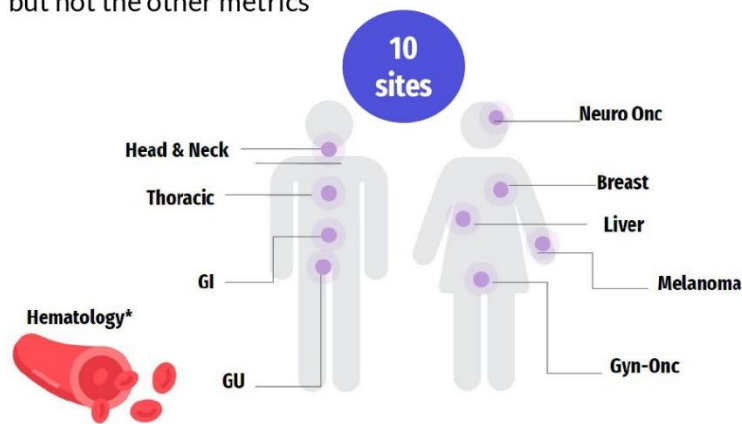
Time from first visit to first IV antineoplastic administration	Days from first office visit at the cancer center to the <u>first</u> IV antineoplastic administration.
Time from first visit to first interventional surgery	Days from first office visit at the cancer center to the <u>first</u> interventional surgery.
Time from first visit to first radiation therapy	Days from first office visit at the cancer center to the <u>first</u> radiation therapy

# FLATIRON DATA DICTIONARY

All Smilow Patients	Includes all cancer types from academic and community centers at Smilow. Breakdown on next slide.
Race	EPIC-defined categories. "Other" category includes: "American Indian or Alaska Native", "Asian", "Native Hawaiian or Other Pacific Islander", "Race unknown or uncoded", "Person declined to answer race or ethnicity", "Other Race"
Time Period	2018-2022

## SMILOW ACADEMIC SITES

- 10 academic sites
  - Hematology included only in time to IV antineoplastic administration but not the other metrics



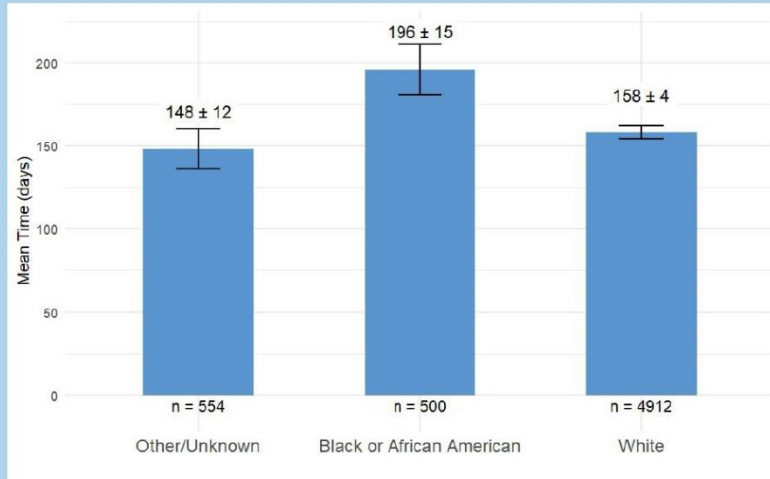
# SMILOW COMMUNITY SITES

- 10 community sites (technically 12 because Fairfield/Trumbull and Guildford/OCB are combined)



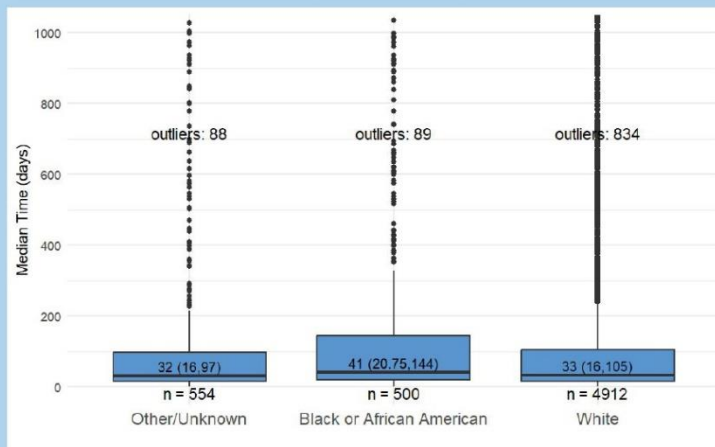
ALL SMILOW PATIENTS

## TIME TO INTERVENTIONAL SURGERY AMONG ALL SMILOW PATIENTS



Flatiron 2018-2022

## TIME TO INTERVENTIONAL SURGERY AMONG ALL SMILOW PATIENTS



Flatiron 2018-2022



## TIME TO INTERVENTIONAL SURGERY SAMPLE SIZE BY ACADEMIC SITE

	site	count
1	Breast	1163
2	GU	960
3	Melanoma	833
4	Head & Neck	601
5	Thoracic	586
6	Gyn Onc	445
7	GI	376
8	Liver	86
9	Neuro Onc	78



Flatiron 2018-2022

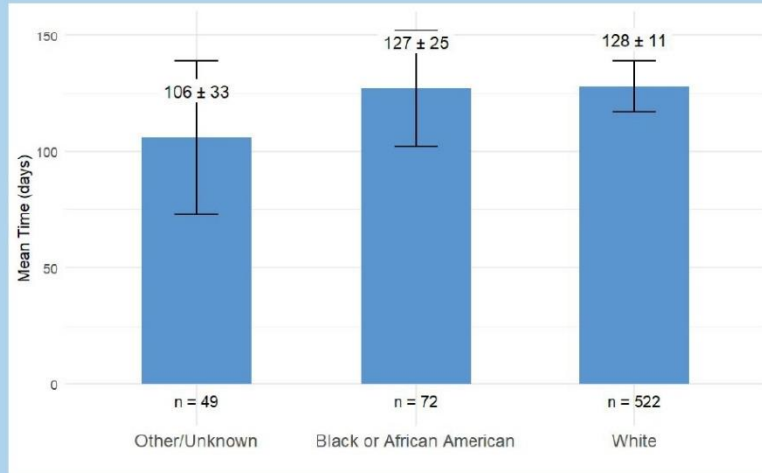
## TIME TO INTERVENTIONAL SURGERY SAMPLE SIZE BY ACADEMIC SITE

	site	count
10	Fairfield/Trumbull	266
11	Waterford	157
12	Guilford	107
13	Waterbury	93
14	Orange	54
15	North Haven	51
16	Torrington	38
17	Greenwich	27
18	Derby	26
19	Westerly	19



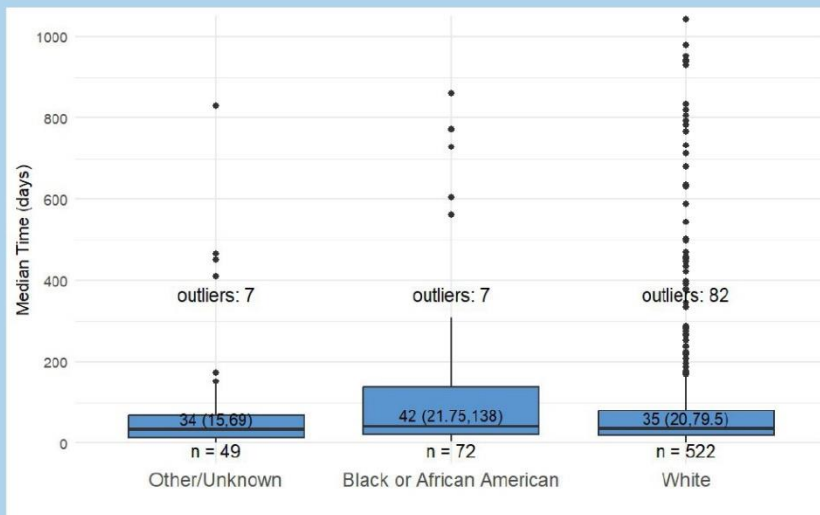
Flatiron 2018-2022

# TIME TO RADIATION THERAPY AMONG ALL SMILOW PATIENTS



Flatiron 2018-2022

# TIME TO RADIATION THERAPY AMONG ALL SMILOW PATIENTS



Flatiron 2018-2022

## TIME TO RADIATION THERAPY SAMPLE SIZE BY ACADEMIC SITE

	site	count
1	Breast	139
2	Thoracic	98
3	GU	82
4	Head & Neck	81
5	GI	65
6	Neuro Onc	21
7	Gyn Onc	20
8	Melanoma	10



Flatiron 2018-2022

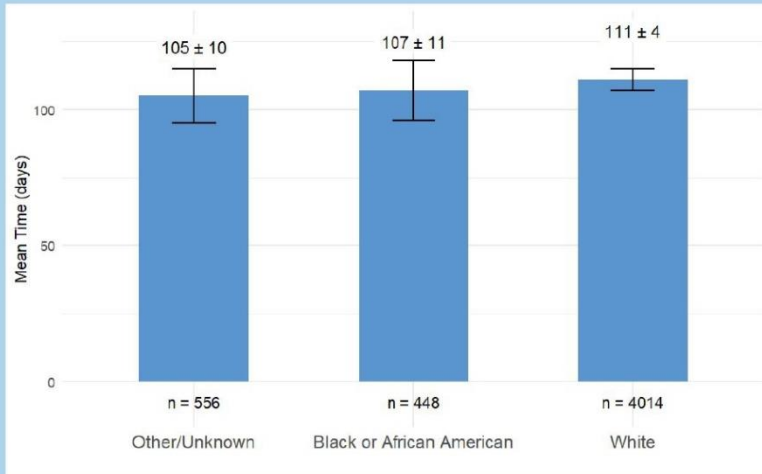
## TIME TO RADIATION THERAPY SAMPLE SIZE BY COMMUNITY SITE

	site	count
9	Guilford	52
10	Orange	27
11	North Haven	22
12	Fairfield/Trumbull	13
13	Waterford	6
14	Waterbury	4
15	Derby	2
16	Torrington	1



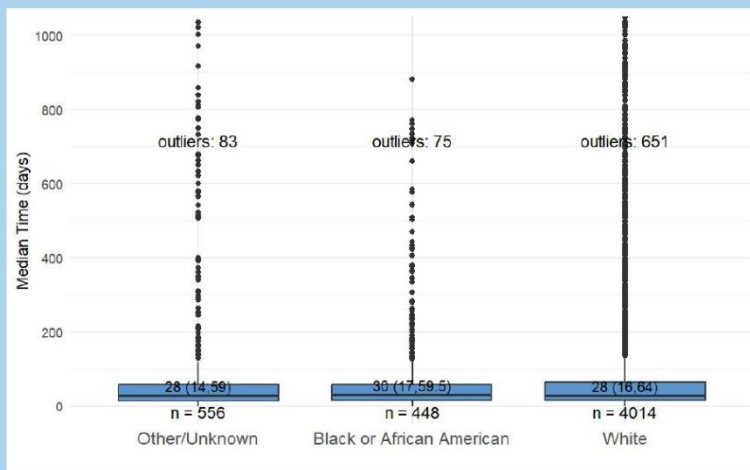
Flatiron 2018-2022

# TIME TO IV ANTINEOPLASTICS AMONG ALL SMILOW PATIENTS



Flatiron 2018-2022

# TIME TO IV ANTINEOPLASTICS AMONG ALL SMILOW PATIENTS



Flatiron 2018-2022

## TIME TO IV ANTINEOPLASTICS SAMPLE SIZE BY ACADEMIC SITE

	site	count
1	GI	548
2	Thoracic	454
3	Hematology	445
4	Head & Neck	403
5	Breast	311
6	Gyn Onc	225
7	GU	165
8	Melanoma	158
9	Neuro Onc	31
10	Liver	14



Flatiron 2018-2022

## TIME TO IV ANTINEOPLASTICS SAMPLE SIZE BY COMMUNITY SITE

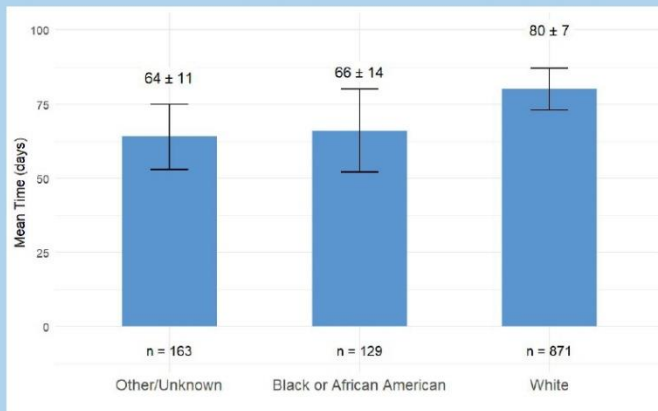
	site	count
11	Waterbury	596
12	Fairfield/Trumbull	496
13	Torrington	348
14	Waterford	198
15	Derby	194
16	Guilford	164
17	North Haven	130
18	Orange	70
19	Greenwich	41
20	Westerly	27



Flatiron 2018-2022

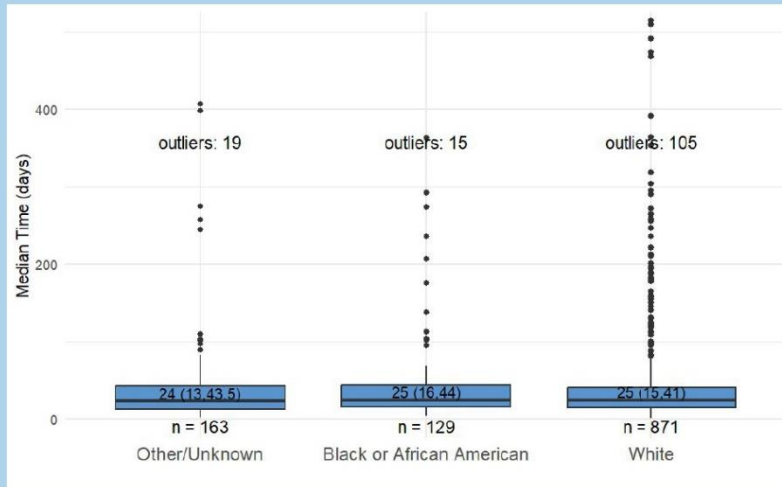
## BREAST CANCER PATIENTS

## TIME TO INTERVENTIONAL SURGERY AMONG BREAST CANCER PATIENTS



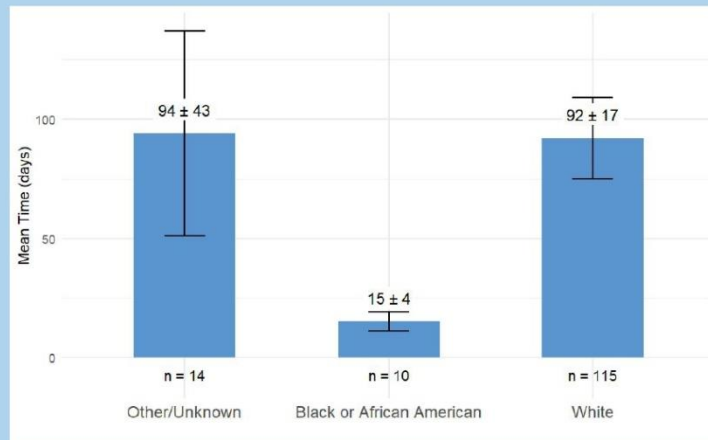
Flatiron 2018-2022

## TIME TO INTERVENTIONAL SURGERY AMONG BREAST CANCER PATIENTS



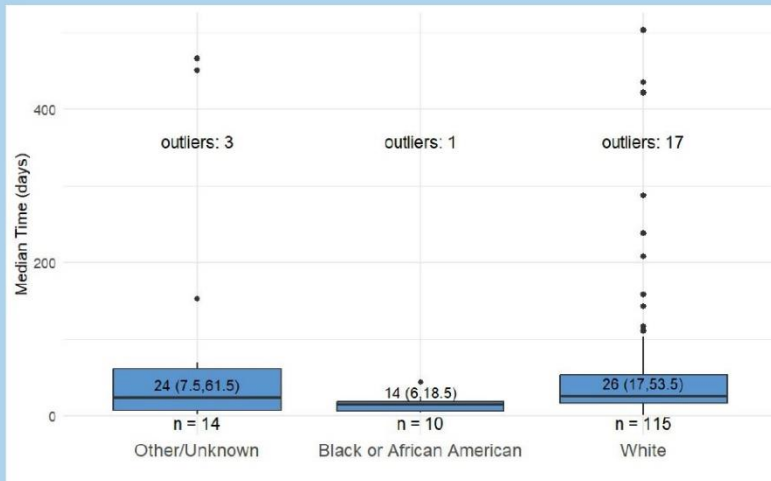
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## TIME TO RADIATION THERAPY AMONG BREAST CANCER PATIENTS



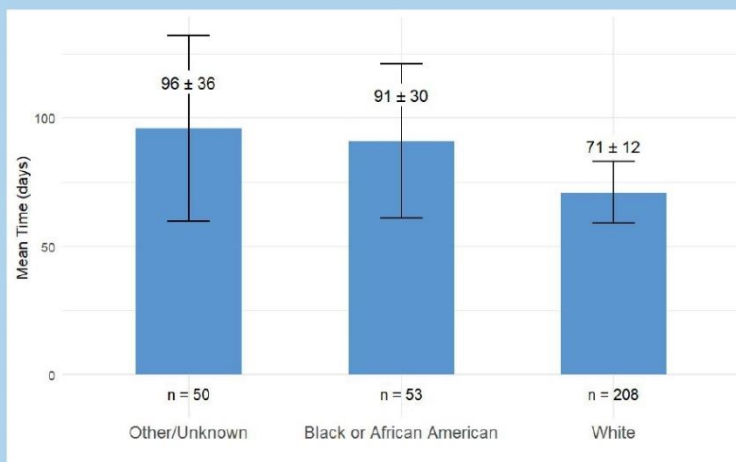
Flatiron 2018-2022

## TIME TO RADIATION THERAPY AMONG BREAST CANCER PATIENTS



Flatiron 2018-2022

## TIME TO IV ANTINEOPLASTICS AMONG BREAST CANCER PATIENTS



Flatiron 2018-2022