



University of Kentucky  
UKnowledge

---

DNP Projects

College of Nursing

---

2022

## Evaluation of a Process Change on Mammography Screening Rates in a Family and Community Medicine Clinic

Christina Rademaker  
cfrade12@gmail.com

[Right click to open a feedback form in a new tab to let us know how this document benefits you.](#)

### Recommended Citation

Rademaker, Christina, "Evaluation of a Process Change on Mammography Screening Rates in a Family and Community Medicine Clinic" (2022). *DNP Projects*. 382.  
[https://uknowledge.uky.edu/dnp\\_etds/382](https://uknowledge.uky.edu/dnp_etds/382)

This Practice Inquiry Project is brought to you for free and open access by the College of Nursing at UKnowledge. It has been accepted for inclusion in DNP Projects by an authorized administrator of UKnowledge. For more information, please contact [UKnowledge@lsv.uky.edu](mailto:UKnowledge@lsv.uky.edu).

Evaluation of a Process Change on Mammography Screening Rates in a Family and Community  
Medicine Clinic

Submitted in Partial Fulfillment of the Requirements for the Degree of Doctor of Nursing  
Practice at the University of Kentucky

By

Christina Rademaker DNP, BSN, RN

Louisville, KY

2022

## Abstract

**Background and Significance:** Breast cancer is the 2<sup>nd</sup> leading cause of cancer death among women worldwide. Mammography is a screening approach used in the detection of breast cancer and proven to help reduce mortality. Only 72.8% of eligible American women have been screened for breast cancer within the past 2 years. One urban family and community medicine clinic (FCM) fell below the national average with a rate of 60.9%; as a result, they implemented an evidence-based strategy to improve mammography rates within the clinic.

**Purpose:** The purpose of this study was to evaluate the implementation of a telephone outreach with direct scheduling intervention within the FCM Clinic and Women's Health (WH) Clinic.

**Methods:** The study design was a descriptive study with a comparison group to evaluate a process change in ordering and scheduling mammograms. A chart audit and a perceived barriers survey was conducted at the FCM Clinic and the WH Clinic, the comparison group.

**Results:** A total of 200 patients (100 pre, 100 post) were analyzed at the FCM and WH Clinic. There was a non-significant increase in mammography completion at the FCM Clinic from 20% (n = 10) pre- to 32% (n = 16) post-intervention. There was a significant increase (p = 0.04) in mammography completion at the WH Clinic from 66% (n = 33) pre- to 84% (n = 42) post-intervention. Providers' perceptions of barriers to mammography completion were time constraints and fear of mammography-related pain.

**Conclusion:** Telephone outreach with direct scheduling was found to be an effective method for increasing mammography rates. However, the addition of a proactive approach to ordering and scheduling mammograms could increase rates to meet or exceed the quality measure target.

*Keywords:* mammography, breast cancer screening, telephone outreach

## **Acknowledgements**

I would like to express my sincere gratitude to several people that have helped me complete this project and support my efforts to obtain a DNP. I would first like to recognize my advisor, Dr. Elizabeth Tovar, for being a role model and mentor throughout my doctoral journey. Thank you for the countless hours spent helping me complete this project. Thank you to my committee members who have shared their expertise with me and given me guidance. Thank you to my clinical mentors, Dr. Deidra Beshear and Jessica Sass, who met with me and allowed me to be a part of this quality improvement initiative. I would also like to thank Dr. Amanda Wiggins at the College of Nursing for her help with the data analysis for this project. Thank you to my cohort classmates, especially Brittany Pittman Hardcorn, who helped me keep it together during these last three years. A special thanks belongs to my amazing family and friends, who have supported my endeavors to obtain my degree. I truly could not have completed this journey without them.

**Table of Contents**

Abstract.....2

Acknowledgements.....3

Background and Significance.....7

    Problem Statement.....7

    Context, Scope, and Consequences of the Problem.....7

    Current Evidence-Based Interventions.....9

Purpose/Objectives.....9

Theoretical Framework.....10

Review of the Literature.....11

    Review, Analysis, and Synthesis of Evidence.....11

    Gaps in Practice.....14

Methods.....14

    Design.....14

Setting.....15

    Agency Description.....15

    Agency's Mission and Goals .....15

    Description of Stakeholders.....16

Facilitators and Barriers to Implementation .....	16
Sample.....	16
Procedure.....	17
IRB Approval.....	17
Evidence-based Intervention.....	17
Measures and Instruments.....	18
Data Collection.....	19
Data Analysis.....	20
Results.....	21
Sample Characteristics.....	21
Addressed Mammography Screenings.....	21
Ordered Mammography Screenings.....	22
Completed Mammography Screenings.....	23
Qualtrics Survey Results.....	23
Discussion.....	24
Implications for Practice, Education, Policy, and Research.....	27
Limitations.....	28
Conclusions.....	28

References.....	30
Tables.....	35
Table 1. Demographic Summary of Patients.....	35
Table 2. Mammography Screening Outcomes by Clinic.....	36
Table 3. Perceived Barriers Survey Responses by Clinic.....	37
Table 4. Perceived Barriers Survey Responses at the FCM Clinic.....	38
Table 5. Perceived Barriers Survey Responses at the WH Clinic.....	39
Table 6. Providers' Perceptions by Clinic.....	40
Appendices.....	41
Appendix A. Perceived Barriers Survey.....	41

# **Evaluation of a Process Change on Mammography Screening Rates in a Family and Community Medicine Clinic**

## **Background and Significance**

### **Problem Statement**

Breast cancer is the second leading cause of cancer death among women worldwide (Sun et al., 2017). Over 1.5 million women are diagnosed with breast cancer every year throughout the world (Sun et al., 2017). Mammography is a widely used screening approach in the detection of breast cancer and proven to help reduce mortality (Sun et al., 2017). However, only 72.8% of American women aged 50-74 years have been screened for breast cancer within the past two years (NCI, 2020). The Family and Community Medicine (FCM) Clinic is below this national average. The clinic's overall performance for breast cancer screening was 60.9% for the May 2021 Monthly Quality Report, which is below the quality measure target of  $\geq 75\%$  (UKHC, 2021).

### **Context, Scope, and Consequences of the Problem**

Breast cancer is the most diagnosed cancer among American women (Momenimovahed & Salehiniya, 2019). The total annual medical cost of breast cancer care in the United States is \$16.5 billion dollars (Mariotto et al., 2011). In America, it is estimated that 30% of all new cancer cases among women are breast cancer (Siegel et al., 2017). Numerous risk factors such as sex, age, estrogen, family history, gene mutations and unhealthy lifestyle can increase the possibility of developing breast cancer (Sun et al., 2017). Early detection is the key to positive outcomes. Ninety percent of breast cancer deaths are caused by tumor metastases, thus early detection truly becomes imperative for survival in many cases (Sun et al., 2017).



Multiple organizations have varying practice guidelines for mammography screening including the American Cancer Society, the American College of Obstetricians and Gynecologists, and the U.S. Preventative Services Task Force (USPSTF). The USPSTF practice guideline was used for this study since it was the guideline used for quality improvement throughout the enterprise. The USPSTF recommends screening with mammography once every two years for women aged 50 to 74 years with average risk (USPSTF, 2020). Without the prompt screening approach of mammography, breast cancer can quickly progress leading to a poorer prognosis for the patient. Only 72.8% of eligible American women have been screened for breast cancer within the past two years (NIH, 2018).

The FCM Clinic is below this national average and is trending down for mammography screening completion. For this reason, the FCM Clinic was chosen for evaluation of a new process for ordering and scheduling mammography screenings, which was implemented throughout the enterprise. In the same academic health center, there is another primary care clinic that has exceeded this quality measure target at 87.3% compared to 60.9% at the FCM Clinic for the May 2021 Monthly Quality Report (UKHC, 2021). Some changes were needed in the FCM Clinic to achieve the quality measure target of  $\geq 75\%$  (UKHC, 2021).

The previous process at the FCM Clinic before the new EMR system initiation included providing a postcard during the visit with the telephone number to schedule the mammography screening. The patient then had to call the Breast Care Center to schedule their mammography appointment. The previous process at the Women's Health Clinic included providing patients with the telephone number to schedule their mammography appointment. Additionally, the patients at the Women's Health Clinic had the option to schedule their mammography screening on the same day they had scheduled their annual wellness visit.

## **Current Evidence-Based Interventions**

The new evidence-based strategy implemented at the FCM Clinic to order and schedule mammography screening is a telephone outreach with direct scheduling intervention. This intervention has been initiated within the enterprise causing the process of ordering and scheduling mammography screenings to change. It started prior to this quality improvement initiative in June of 2021. Telephone outreach with direct scheduling was found to be effective in various settings, supporting its use at the FCM Clinic (Luckmann et al., 2017; Nanda et al., 2020; Philips et al., 2015; Luckmann et al., 2019). The telephone outreach with direct scheduling intervention was carried out by the Breast Care Center. The providers at the clinics placed an order for mammography screening and the Breast Care Center would reach out to the patient and schedule their appointment.

### **Purpose/ Objectives**

The purpose of this project was to evaluate the implementation of a telephone outreach with direct scheduling intervention within the FCM and Women's Health Clinic. The specific aims of the project included:

- Describe the facilitators and barriers to mammography screening completion
- Evaluate changes in ordering and screening completion after the initiation of the telephone outreach and direct scheduling intervention
- Compare the FCM Clinic to another primary care clinic that has met the quality measure target for mammography screening

## Theoretical Framework

The theoretical framework that was used for this project was the Health Belief Model (HBM). It was developed in the early 1950s by social scientists at the U.S. Public Health Service to understand the failure of people to adopt disease prevention strategies or screening tests for the early detection of disease (Janz & Becker, 1984). The six constructs of the HBM include: perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cue to action, and self-efficacy.

Perceived susceptibility is the assessment of an individual's belief that they are at risk to a health condition. This component may contain two elements: first, that the individual's opinions about contracting a health condition are realistically possible for them, and second, the individual's acceptance of the diagnosis in the absence of all symptoms (Hartman, 2002). For example, a woman's belief that she may develop breast cancer is a realistic possibility. However, if they do not believe they are at risk, they are less likely to complete mammography screening.

Perceived severity addresses the seriousness of a health condition. For instance, in most cases of cancer, individuals view the condition as very serious. This may influence whether a woman chooses to complete mammography screening.

Perceived benefits relate to the acceptance of an individual's susceptibility to a serious condition, which leads to a behavior. The behavioral action depends upon the individual's beliefs about the effectiveness of reducing the threat or the seriousness of disease (Hartman, 2002). For example, an individual may have a mammogram to decrease the chances of the cancer metastasizing.

Perceived barriers are the individual's opinion of the cost of the behavioral action. These may be negative psychological or tangible aspects as a result of the health action. For instance, an individual could perceive going in for a mammogram as costly, time consuming, and painful. Perceived barriers were further assessed in this study through the survey completed by the providers at the FCM Clinic and Women's Health Clinic.

Cue to action is the stimulus needed to trigger the decision-making process to accept a recommended health action (Janz & Becker, 1984). These cues to action may be external or internal stimuli. The telephone calls from the Breast Care Center were the cue to action needed to trigger the patient to schedule their mammography appointment.

Self-efficacy refers to a person's confidence in his or her ability to successfully perform a behavior (Hartman, 2002). Lack of self-efficacy can be viewed as a perceived barrier to following through with an advised behavioral action. In this case, the skills needed to carry out mammography screening are minimal. This theoretical framework was used to maximize mammography screening rates among the target population. By assessing providers' perceptions of patients' perceived barriers and incorporating a cue to action for mammography scheduling, this study used the HBM to help maximize mammography screening rates at the FCM and Women's Health Clinic.

## **Review of the Literature**

### **Review, Analysis, and Synthesis of Evidence**

For this study the PICO question was, "In women between 50 and 74 years, how does a telephone outreach with direct scheduling intervention, compared to usual care, affect the number of women who receive mammography screening?". The databases used to search for

evidence included CINAHL, MEDLINE, and Cochrane Library. The search terms were “breast cancer screening”, “mammography”, “telephone outreach”, and “strategies to increase mammography rates”. Inclusion criteria included studies in English-speaking countries, published in English, peer-reviewed, and within the last 10 years. The exclusion criteria were studies that did not specifically address telephone outreach as an intervention. There was a total of 18 studies that met inclusion criteria; once exclusion criteria were applied, 15 studies remained.

Of the 15 studies reviewed, 12 were randomized controlled trials and 3 were quality improvement studies. Determining the most effective way to reach women to schedule mammography screening remains an urgent yet unfinished task. The desired state is to have increased mammography usage among eligible women, yet rates of screening remain below national target measures (NIH, 2018). A review of the literature revealed leading interventions for mammography screening adherence including written reminders, automated phone calls, tailored telephone counseling, and telephone outreach with direct scheduling.

Reminding women to schedule a mammography appointment with tailored telephone counseling proved to be efficacious (Beauchamp et al., 2020; Kiran et al., 2018; Hegenscheid et al., 2011; Chambers et al., 2016; Highfield et al., 2015). Reminders play an important role in promoting adherence to mammography screening recommendations. Compared to usual care, tailored telephone counseling was more effective than tailored print communications at promoting mammography screening completion among women who were nonadherent (NCI, 2020; Fortuna et al., 2013; Kiran et al., 2018). Written reminders followed by barrier-specific telephone counseling for non-responders improved screening mammography attendance rates (Hegenscheid et al., 2011). A brief telephone coaching that involves flexibility to tailor messages

according to pertinent psychosocial and structural factors may facilitate improved adherence (Sheppard et al., 2013; Hegenscheid et al., 2011). Tailored interventions were most effective at increasing mammography screening intentions when they included a provider recommendation and message features were personalized according to Health Belief Model variables (i.e., barriers, benefits, self-efficacy, and risk) (Jensen et al., 2012).

Telephone outreach with direct scheduling can increase mammography adherence in a previously nonadherent population by making the screening appointment while the patient is on the phone (Luckmann et al., 2017; Nanda et al., 2020; Philips et al., 2015; Luckmann et al., 2019). Patients may have viewed the process as more convenient than scheduling the mammogram themselves because the navigator streamlined the process. A simple reminder call can increase mammography adherence even when baseline adherence is high (Luckmann et al., 2019). Telephone outreach and direct scheduling by primary care practices is an effective strategy for increasing mammography screening among women nonadherent to written outreach (Payton et al., 2015; Philips et al., 2011).

Other leading interventions in the review included written reminders, automated phone calls, and prompts. Some studies found that letters, automated phone calls, and prompts did not improve breast cancer screenings rates (Hendren et al., 2013; Champion et al., 2016). However, each had relatively low screening rates among usual care patients, making the results most applicable to practices with low baseline rates of cancer screening. Given this evidence, letters, automated phone calls, and prompts were not supported for the process change in the project setting.

There was extensive evidence to support the use of various interventions for mammography adherence. Some limitations in the studies included small sample sizes, relatively

low baseline mammography rates, and poor generalizability. Many studies were unable to assess cost of the program, patient satisfaction, or provider satisfaction; all of which are crucial to sustainability of such programs. The literature review showed strong support for the use of tailored telephone counseling and telephone outreach with direct scheduling.

### **Gaps in Practice**

Screening for breast cancer is a key strategy towards reducing mortality and morbidity, yet rates of screening remain below national targets (NIH, 2018). Without prompt screening, breast cancer can quickly progress leading to a poorer prognosis for the patient. The FCM Clinic's overall performance for breast cancer screening is below the national average at 60.9% for the May 2021 Monthly Quality Report (UKHC, 2021). The target for this quality measure at the FCM Clinic is  $\geq 75\%$ . The gap in practice included a lack of breast cancer screenings completed. This gap was addressed by the implementation of telephone outreach and direct scheduling by the Breast Care Center within the enterprise. The literature review strongly supported this intervention. Telephone outreach and direct scheduling can improve this target measure by increasing mammography screening among women not responsive to written or verbal reminders.

## **Methods**

### **Design**

The design of the study was a descriptive study with a comparison group to evaluate the impact of a telephone outreach with direct scheduling intervention on ordering and scheduling mammography screenings. The intervention started in June of 2021 at both the FCM and Women's Health Clinic. The Women's Health Clinic was used as the comparison group. A pre-

and post-implementation chart review was completed to evaluate the impact of the new process change on the mammography screening rates in the FCM Clinic compared to the Women's Health Clinic.

## **Setting**

### **Agency Description**

The telephone outreach with direct scheduling intervention occurred at a Family and Community Medicine Clinic (FCM) and Women's Health Clinic in central Kentucky. The FCM Clinic offers primary care, preventive services, and continuity of care for all ages. It serves a diverse population including individuals of low socioeconomic status. Each provider sees approximately 20 patients per day. The Women's Health Clinic was the comparison group used to evaluate the impact of a telephone outreach with direct scheduling intervention on ordering and scheduling mammography screenings. They provide comprehensive primary care services for women during all stages of life. Their well women clinic allows women to receive all annual exams and tests at one convenient appointment. Their overall performance for breast cancer screening was above the enterprise goal of  $\geq 75\%$  at 87.3% compared to 60.9% at the FCM Clinic for the May 2021 Monthly Quality Report (UKHC, 2021).

### **Agency's Mission and Goals**

The values of the enterprise are diversity, innovation, respect, compassion, and teamwork; all of which help guide the behaviors and clinical decision making to provide the best patient-centered care possible. The enterprise is committed to the pillars of academic health care—research, education, and clinical care. They support the organization's education and research needs by offering cutting edge services on par with the nation's best providers. The



agency's mission and values align with the goal of this project, which is to embrace continual learning and improvement to drive positive change. Improving mammography screening was a goal of the entire healthcare organization and was selected as one of six quality measures for the clinic to focus on improving. The ultimate goal is to increase mammography screening rates at the FCM Clinic to greater than or equal to 75% to reach the quality measure target.

### **Description of Stakeholders**

Stakeholders can help facilitate or hinder project initiation, production, and/or completion. The stakeholders of this project included the Breast Care Center staff, providers at the FCM and Women's Health Clinic, patients/family members, nurses, and medical assistants. Other stakeholders included the clinic directors and the director of population health for the enterprise.

### **Facilitators and Barriers to Implementation**

Stakeholder motivations may act as facilitators or barriers. These motivations include patient care, finances, process efficiency, staff satisfaction, or staff recognitions (Silver et al., 2016). Some potential site-specific facilitators include a desire for improved patient care and the current implementation of a well-developed quality improvement (QI) program at this clinic. The clinic is constantly reaching to achieve identified target measures. There is tracking and auditing being completed on these quality measures. A barrier to implementation is provider refusal to participate in the study.

### **Sample**

There were two sample groups including patients indirectly through chart audits and providers at the FCM and Women's Health Clinic. The first sample used for the chart review

were women aged 50 to 74 that met USPSTF criteria for average risk at the FCM Clinic and Women's Health Clinic who have not completed their routine mammography screening in the past 2 years. Only annual and chronic follow-up visits were included for chart review while acute visits were excluded. The exclusion criteria were men of all ages and women outside this age range. The total number of participants were 200 women of all ethnic backgrounds ranging from 50-74 years with average risk of breast cancer.

The second sample used for the barrier survey were providers in the FCM Clinic and Women's Health Clinic in central Kentucky. They were chosen based on if they were providers (MDs, DOs, APRNs) who were involved with scheduling and/or ordering mammography screenings. The exclusion criteria were individuals who were not involved in scheduling and/or ordering mammography screenings. The total number of participants were 13 men and women of all ethnic backgrounds.

## **Procedure**

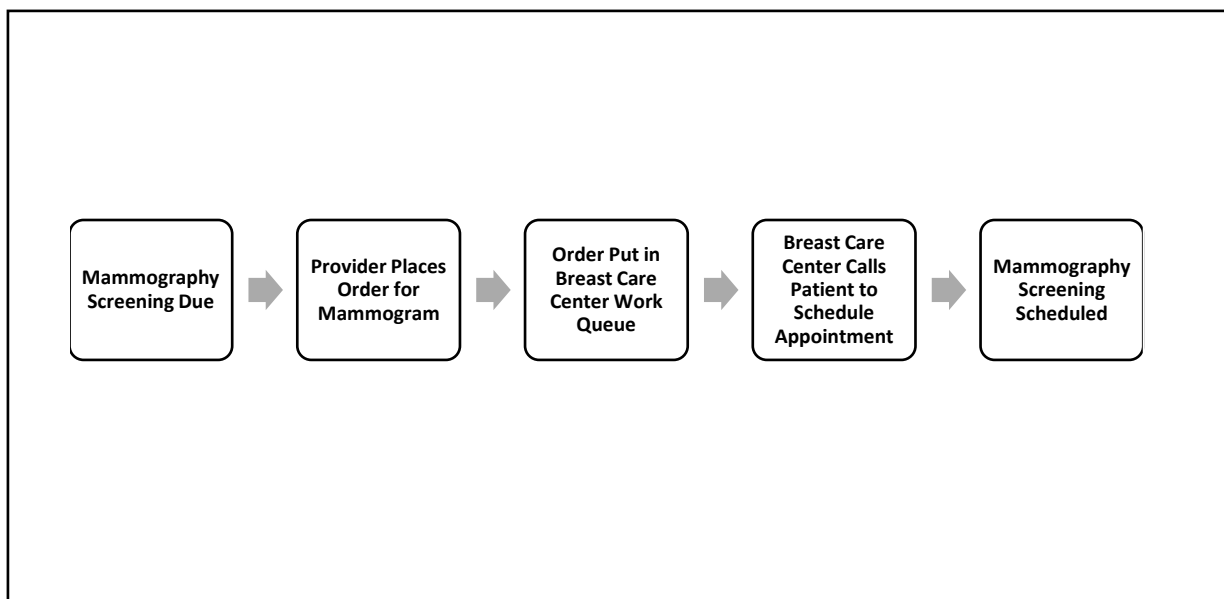
### **IRB Approval**

Expedited approval was obtained from the University of Kentucky Institutional Review Board.

### **Evidence-Based Intervention**

Telephone outreach and direct scheduling was the evidence-based intervention implemented by the Breast Care Center. It has the potential to improve mammography screening target measures that are in place at the FCM Clinic and Women's Health Clinic. A new EMR system was initiated in June of 2021 within the enterprise causing the process of ordering and scheduling mammography screenings to change. This process change was started prior to this

study. The new EMR system allows providers to order the routine mammography screening for their patients. Once the mammogram is ordered, it is added to the work queue for the Breast Care Center. The staff at the Breast Care Center then calls the patient and schedules the mammography appointment. There was no tailored telephone counseling completed during the telephone call. The process map (see Figure 1) illustrates the new process for ordering and scheduling mammography screenings at the FCM Clinic and Women’s Health Clinic.



**Figure 1: Process Map for Ordering and Scheduling Mammography Screenings**

### **Measures and Instruments**

A chart review of a random sample of females ages 50 to 74 years with average risk of breast cancer who had not completed their routine mammography screening in the past 2 years was completed. The chart review was conducted to assess whether mammography screening was addressed, ordered, and completed before and after the new EMR system initiation. The demographic data included age and race. Rates of addressed mammography screening were confirmed by reviewing visit notes. If mammography screening was not documented in the visit

note, then it was not deemed as addressed. A mammography order had to be placed at the time of the scheduled appointment to be considered ordered in this study. Mammography screenings had to be performed within 3 months of the scheduled appointment in order to be considered completed for this study.

A voluntary survey (see Appendix A) was completed by the providers at the FCM Clinic and Women's Health Clinic. The survey was developed by the principal investigator to assess the process and providers' perception of barriers to mammography screening completion before and after the new process change. There were 9 survey questions based on the Health Belief Model. The respondents were asked to rate selected reasons women do not get a mammogram to assess their perceptions of common barriers to completing mammography screening including fear of cost, being too busy, fear of mammogram-related pain, lack of transportation, provider not able to schedule mammogram, not being able to get time off work, fear of getting bad news, not knowing they needed a mammogram, lack of childcare, and not having health insurance. These common barriers were rated using the 5-point Likert scale from Strongly Disagree to Strongly Agree. Other questions included were 3 agree/disagree questions and 5 yes/no questions evaluating the old and new process for mammography completion.

### **Data Collection**

The study was conducted from November of 2021 until February of 2022. There was an initial meeting with the stakeholders of each clinic to discuss the overall process of ordering and scheduling mammography screenings before the new EMR system was initiated. A chart review was completed to identify participants at the FCM Clinic and Women's Health Clinic. The dates of service for the chart review were from 6-1-21 to 2-28-22. The chart review was completed by accessing the patients' charts manually through the EMR system. The chart review was

conducted on patient charts 4 months before and 4 months after the new process change occurred. The charts that were reviewed were patients scheduled in the clinics during February of 2021 and October of 2021. Fifty patient charts were reviewed from the FCM Clinic and fifty patient charts from the Women's Health Clinic before the process change occurred in February of 2021. A chart review was also completed with fifty patient charts from each clinic after the new process change had been implemented in October of 2021. The chart review was completed by the principal investigator. The data collected from these chart reviews included demographic data and whether a mammogram was addressed, ordered, and completed.

A Qualtrics survey was completed by the providers through electronic mail. The principal investigator emailed the cover letter and the link for the Qualtrics survey to clinical mentors and leaders from each site, so they could distribute them to the providers at the clinics. Completion of the voluntary survey indicated consent. The survey was emailed once in November of 2021 and then again in December of 2021.

### **Data Analysis**

Descriptive statistics (mean, standard deviation, and frequency distribution) were used to summarize patient characteristics. The two-sample t-test or chi-square test of association was used to assess differences in pre and post sample demographics. Rates of addressed, ordered, and completed mammography screenings were compared pre and post for each clinic using the chi-square test of association. All analyses were completed with the assistance of a statistician conducted using SPSS, version 28, with an alpha level of .05.

## Results

### Sample Characteristics

At the FCM Clinic, a total of 100 patients (50 pre- and 50 post-intervention) were analyzed and met inclusion criteria. Sample characteristics including age and race/ethnicity are reported in Table 1. At the FCM Clinic, mean ages for the pre- and post-intervention were 60.1 years (SD = 6.7) and 61.3 years (SD = 5.6;  $p = 0.76$ ; See Table 1). The majority of the sample group at the FCM Clinic pre-intervention was White ( $n = 37$ ; 74%), with African American as the other prominent race ( $n = 10$ ; 20%); the same predominant races were in the post-intervention group (58% White, 30% African American;  $p = 0.26$ ; see Table 1).

At the Women's Health Clinic, a total of 100 patients (50 pre- and 50 post-intervention) were analyzed and met inclusion criteria. Sample characteristics including age and race/ethnicity were collected and reported in Table 1. At the Women's Health Clinic, mean ages for the pre- and post-intervention were 61.1 years (SD = 6.5) and 62 years (SD = 6.5;  $p = 0.47$ ; See Table 1). The majority of the sample group at the Women's Health Clinic pre-intervention was White ( $n = 41$ ; 82%), with African American as the other prominent race ( $n = 8$ ; 16%); the same predominant races were in the post-intervention group (86% White, 10% African American;  $p = 0.63$ ; see Table 1). Among each clinic, there was no significant difference in demographic profiles of patients included in the pre- and post-intervention groups.

### Addressed Mammography Screenings

At the FCM Clinic, 100 patient charts (50 pre- and 50 post-intervention) were reviewed to determine the distribution of addressed mammography screenings. In the pre-intervention sample, 50% ( $n = 25$ ) of participants had mammography screening addressed, compared to 64%

(n = 32) in the post-intervention group. However, this difference was not statistically significant (p = 0.16; see Table 2).

At the Women's Health Clinic, 100 patient charts (50 pre- and 50 post-intervention) were also reviewed to determine the distribution of addressed mammography screenings. Pre- and post-intervention findings were the same with 88% (n = 44) of participants who had mammography screening addressed (p = 1.00; see Table 2).

### **Ordered Mammography Screenings**

At the FCM Clinic, less than half (n = 22; 44%) of the women pre-intervention who were due for mammography screening had a mammography order placed during their routine visit. Post-intervention the percentage of women who obtained mammography orders decreased to 32% (n = 16). However, this difference was not statistically significant (p = 0.22; see Table 2).

At the Women's Health Clinic, less than one-quarter (n = 11, 22%) of the pre-intervention sample due for mammography screening had a mammography order placed during their routine visit. Post-intervention the percentage of women who obtained mammography orders decreased to 8% (n = 4). There was a significant decrease in ordered mammography screenings from pre- to post-intervention at the Women's Health Clinic (p = 0.05; see Table 2). However, previously ordered mammograms were not considered in this total. The percentage of previously ordered mammography screenings increased from 44% (n = 22) pre-intervention to 78% (n = 39) post-intervention; this increase could have accounted for the decrease in mammography orders from pre- to post-intervention because they were ordered prior to the appointment day.

## Completed Mammography Screenings

There was an increase of mammography screening completion at the FCM Clinic from 20% (n = 10) pre-intervention to 32% (n = 16) post-intervention. However, this increase was not statistically significant ( $p = 0.17$ ; see Table 2). There was also an increase of mammography screening completion at the Women's Health Clinic from 66% (n = 33) pre-intervention to 84% (n = 42) post-intervention, which did result in a statistically significant increase ( $p = 0.04$ ; see Table 2).

## Qualtrics Survey Results

A total of 13 providers participated in the perceived barriers survey at the FCM Clinic (n = 8) and Women's Health Clinic (n = 5). Providers' perception of barriers for mammography completion were assessed using the 5-point Likert Scale. At the FCM Clinic, the most agreed upon barriers were being too busy ( $M = 4.13$ ,  $SD = 0.60$ ; see Table 3) and fear of mammography-related pain ( $M = 4.13$ ,  $SD = 0.60$ ; see Table 3). At the Women's Health Clinic, the most agreed upon barriers were being too busy ( $M = 4.20$ ,  $SD = 0.40$ ; see Table 3) and not being able to get time off work ( $M = 3.60$ ,  $SD = 0.80$ ; see Table 3).

At the Women's Health Clinic, 80% (n = 4; see Table 5) agreed to strongly agreed that the new process in scheduling a mammogram will increase mammography rates, while at the FCM Clinic only 50% (n = 4; see Table 4) agreed to strongly agreed. Of the providers at the Women's Health Clinic, 60% (n = 3; see Table 5) disagreed to strongly disagreed that the old process for scheduling a mammogram worked effectively. Whereas at the FCM Clinic, 50% (n = 4; See Table 4) disagreed to strongly disagreed that the old process for scheduling a mammogram worked effectively. At the Women's Health Clinic, 80% (n = 4; see Table 5) of



providers agreed to strongly agreed that the patient prefers the mammography appointment being scheduled for them, while at the FCM Clinic only 37.5% (n = 3; see Table 4) agreed to strongly agreed. In summary, the Women's Health Clinic providers were more strongly in favor of the new process with the majority agreeing that the patient preferred the mammography appointment being scheduled for them.

The providers at each clinic were asked whether they addressed and ordered mammography screening when it was due. At the FCM Clinic, all (n = 8) of the providers reported that they addressed mammography screening when it was due. However, only 87.5% (n = 7) of providers at the FCM Clinic reported that they ordered mammography screening when it was due. At the Women's Health Clinic, all (n = 5) of the providers reported that they addressed mammography screening, but only 60% (n = 3) ordered mammography screening when it was due. Of the providers, 37.5% (n = 3) at the FCM Clinic and 20% (n = 1) at the Women's Health Clinic reported that there are problems with the new process of ordering mammography screenings. These problems included confusion with the new process and inconsistency in the practice guideline used for mammography screening. Furthermore, 25% (n = 2) of providers at the FCM Clinic and 60% (n = 3) at the Women's Health Clinic had suggestions on how to improve the new process. These suggestions included clarifying screening recommendations and having a designated team to call and schedule mammography screenings.

## **Discussion**

The goal of this project was to evaluate a telephone outreach with direct scheduling intervention as part of efforts to achieve the ultimate goal of improved mammography rates within the FCM Clinic. The results illustrated some known and new information about this population. Similar to the literature, the results from this study support that mammography

screening rates can be increased with telephone outreach and direct scheduling (Luckmann et al., 2017; Nanda et al., 2020; Philips et al., 2015; Luckmann et al., 2019). Tailored telephone counseling has the potential to improve mammography rates even more. It is counseling tailored for each individual to promote adherence to recommended screening guidelines (Jensen et al., 2012). Research supports the use of tailored telephone calls to help address perceived barriers to completing mammography screening (Beauchamp et al., 2020; Kiran et al., 2018; Hegenscheid et al., 2011; Chambers et al., 2016; Highfield et al., 2015). Tailored interventions were most effective at increasing mammography screening intentions when they included a provider recommendation and message features that were personalized according to HBM variables (i.e., barriers, benefits, self-efficacy, and risk) (Jensen et al., 2012). While tailored telephone counseling may have been considered a better intervention, it is more resource intensive requiring trained individuals to complete the telephone calls for the education and coaching, which may not be practical in every setting. Future studies should explore the use of tailored compared to non-tailored interventions for increasing mammography screening rates.

In this study, the rate of completed mammography screenings increased at each clinic; however, the rate of ordered mammography screenings decreased after the implementation of the telephone outreach with direct scheduling intervention. It suggests that some providers may not be following the new process. Instead, it appears that some providers were following the old process of providing a telephone number for scheduling mammography screening. Re-educating on the new process change as well as a focus group to better understand provider knowledge and practices may be beneficial within the clinic. At the Women's Health Clinic, the decrease in ordered mammography screenings could be further explained by the increase in well-woman visits from pre- to post-intervention. For the well-woman visit, the mammography screening was

previously ordered and thus not included in the rate of mammography screenings ordered the day of the appointment.

The new process is different between the FCM Clinic and the Women's Health Clinic. This could have helped the Women's Health Clinic do even better in mammography screening completion than the FCM Clinic. The Women's Health Clinic targets a proactive approach to ordering and scheduling mammography screening. They aim to have mammograms scheduled in advance so patients can get it completed the same day as their well-woman visit. If it is not scheduled in advance, then they will follow the reactive approach of the FCM Clinic by ordering the mammography screening the day of the appointment for completion later. By scheduling mammography screening the same day of the appointment, the Women's Health Clinic is able to encourage adherence to recommended guidelines. It was found that of the woman who had previously scheduled mammograms, all of them completed it. At the FCM Clinic, they only have a reactive approach to ordering and scheduling mammography screenings. They schedule mammography screening at the time of the appointment when it is due. Incorporating a proactive approach to ordering and scheduling mammography screening at the FCM Clinic has the potential to increase mammography screening rates to meet or exceed target measures.

While telephone outreach with direct scheduling was found to be a better process than before, there are still opportunities for improvement. Providers at each clinic agreed that the new process for ordering and scheduling mammography screening needs improvement. Many of which had suggestions on how to improve this process. These suggestions included clarifying screening recommendations and having a designated Comprehensive Quality Strategy (CQS) team to call and schedule mammography screenings when they are due. This CQS team could be trained to educate and coach the patients during the telephone calls. The literature suggests that

provider satisfaction with telephone outreach and direct scheduling needs further investigation. Further research could include a focus group aimed at identifying measures to improve this new process for ordering and completing mammography screening along with evaluating provider satisfaction of the new process.

Overall, telephone outreach with direct scheduling utilized in this study did appear to be an effective method of improving mammography screening rates in the FCM and Women's Health Clinic. These findings can be used to help make recommendations for practice, education, policy, and future research.

### **Implications for Practice, Education, Policy, and Research**

This study has highlighted several implications for practice and future research. Low rates of ordered mammography screenings suggest non-adherence to the new process. Recommendations for practice in the FCM and Women's Health Clinic include reinforcing education on the new process and clarifying the mammography screening guideline used for quality improvement at each clinic. Telephone outreach with direct scheduling was found to be effective at improving mammography screening rates in each clinic but tailored telephone counseling has the potential to improve these rates even more. More research needs to be completed on tailored telephone counseling to determine if barriers to mammography screening completion can be overcome using this intervention. Additionally, a more proactive approach to ordering and scheduling mammography screening is recommended at the FCM Clinic. By scheduling the mammogram in advance, it can be completed the same day as the annual wellness visit. The proactive approach implemented at the Women's Health Clinic is likely why their mammography completion rates are better and above target measures. A focus group at each clinic to discuss facilitators and barriers to mammography screening completion along with

provider satisfaction of the new process is suggested. Future research could include evaluation of patients' perceived barriers to compare to providers' perceptions. If they are not aligned, then providers are not able to address barriers of the patients to promote mammography screening adherence.

### **Limitations**

Several limitations were identified in this study. One limitation of this study included a small sample size for the perceived barriers survey. A small sample size limits generalizability of the findings. Several factors influenced mammography screening rates during the study, which could have impacted the results. For example, external mammograms from the old EMR system did not migrate to the new EMR system and mammography screening from outside facilities was not captured in the data. During the time of this study, a public health crisis was occurring so preventative health screenings were being missed. Radiology volumes dropped drastically during the early weeks of the pandemic, with the most dramatic reductions in screening mammography which came to a near complete halt for a few weeks in most places (Freer, 2021).

### **Conclusion**

The purpose of this study was to evaluate the implementation of a telephone outreach with direct scheduling intervention. Telephone outreach with direct scheduling was found to be an effective method for increasing mammography screenings. However, there are still opportunities for improvement at the FCM Clinic. Incorporating a proactive approach to ordering and scheduling mammography screening has the potential to increase mammography screening rates even more. By scheduling the mammography screening in advance, it can be completed the

same day as the annual wellness visit. Based on the findings of this study, mammography screening rates would be expected to improve overtime with adherence to the new process.

## References

- Beauchamp, A., Mohebbi, M., Cooper, A., Pridmore, V., Livingston, P., Scanlon, M., Davis, M., O'Hara, J., & Osborne, R. (2020). The impact of translated reminder letters and phone calls on mammography screening booking rates: Two randomised controlled trials. *PloS one*, *15*(1), e0226610. <https://doi.org/10.1371/journal.pone.0226610>
- Blumen, H., Fitch, K., & Polkus, V. (2016). Comparison of Treatment Costs for Breast Cancer, by Tumor Stage and Type of Service. *American health & drug benefits*, *9*(1), 23–32.
- Bonnel, W. D. P. D. R. N., & Smith, K. D. P. D. R. N. (2017). *Proposal Writing for Clinical Nursing and DNP Projects, Second Edition*. New York: Springer Publishing Company.
- Chambers, J. A., O'Carroll, R. E., Cook, A., Cavanagh, J., Archibald, D., & Millar, R. (2014). A pilot telephone intervention to increase uptake of breast cancer screening in socially deprived areas in Scotland (TELBRECS): study protocol for a randomised controlled trial. *BMC public health*, *14*, 824. <https://doi.org/10.1186/1471-2458-14-824>
- Champion, V. L., Rawl, S. M., Bourff, S. A., Champion, K. M., Smith, L. G., Buchanan, A. H., Fish, L. J., Monahan, P. O., Stump, T. E., Springston, J. K., Gathirua-Mwangi, W. G., & Skinner, C. S. (2016). Randomized trial of DVD, telephone, and usual care for increasing mammography adherence. *Journal of health psychology*, *21*(6), 916–926. <https://doi.org/10.1177/1359105314542817>
- Costanza, M. E., Luckmann, R., White, M. J., Rosal, M. C., Cranos, C., Reed, G., Clark, R., Sama, S., & Yood, R. (2011). Design and methods for a randomized clinical trial comparing three outreach efforts to improve screening mammography adherence. *BMC health services research*, *11*, 145. <https://doi.org/10.1186/1472-6963-11-145>
- Drabkin, M. J., Lobel, S., Kanth, N., Martynov, A., Hunt, H. W., 3rd, Guerrero, D., Fogel, J., Grechanik, A., Mancuso, C. D., & Lev, S. (2019). Telephone reminders reduce no-shows: A quality initiative at a breast imaging center. *Clinical imaging*, *54*, 108–111. <https://doi.org/10.1016/j.clinimag.2018.12.007>
- Fortuna, R. J., Idris, A., Winters, P., Humiston, S. G., Scofield, S., Hendren, S., Ford, P., Li, S.

- X., & Fiscella, K. (2014). Get screened: a randomized trial of the incremental benefits of reminders, recall, and outreach on cancer screening. *Journal of general internal medicine*, 29(1), 90–97. <https://doi.org/10.1007/s11606-013-2586-y>
- Freer P. E. (2021). The Impact of the COVID-19 Pandemic on Breast Imaging. *Radiologic clinics of North America*, 59(1), 1–11. <https://doi.org/10.1016/j.rcl.2020.09.008>
- Gangnon, R. E., Sprague, B. L., Stout, N. K., Alagoz, O., Weedon-Fekjær, H., Holford, T. R., & Trentham-Dietz, A. (2015). The contribution of mammography screening to breast cancer incidence trends in the United States: an updated age-period-cohort model. *Cancer epidemiology, biomarkers & prevention : a publication of the American Association for Cancer Research, cosponsored by the American Society of Preventive Oncology*, 24(6), 905–912. <https://doi.org/10.1158/1055-9965.EPI-14-1286>
- Hartman, K. (2002). Health belief model and its application to mammography screening in a k-12 school district employee wellness program. Scholarworks. Retrieved from <https://scholarworks.montana.edu/xmlui/bitstream/handle/1/8225/31762103599849.pdf;sequence=1>
- Hegenscheid, K., Hoffmann, W., Fochler, S., Domin, M., Weiss, S., Hartmann, B., Bick, U., & Hosten, N. (2011). Telephone counseling and attendance in a national mammography-screening program a randomized controlled trial. *American journal of preventive medicine*, 41(4), 421–427. <https://doi.org/10.1016/j.amepre.2011.06.040>
- Hendren, S., Winters, P., Humiston, S., Idris, A., Li, S. X., Ford, P., Specht, R., Marcus, S., Mendoza, M., & Fiscella, K. (2014). Randomized, controlled trial of a multimodal intervention to improve cancer screening rates in a safety-net primary care practice. *Journal of general internal medicine*, 29(1), 41–49. <https://doi.org/10.1007/s11606-013-2506-1>
- Highfield, L., Hartman, M. A., Bartholomew, L. K., Balihe, P., & Ausborn, V. A. (2015). Evaluation of the Effectiveness and Implementation of an Adapted Evidence-Based Mammography Intervention for African American Women. *BioMed research international*, 2015, 240240. <https://doi.org/10.1155/2015/240240>
- Janz, N.K., & Becker, M.H. (1984). The Health Belief Model: a decade later. *Health education*



- quarterly, 11(1), 1-47. <http://doi.org/10.1177/109019818401100101>
- Jensen, J. D., King, A. J., Carcioppolo, N., & Davis, L. (2012). Why are Tailored Messages More Effective? A Multiple Mediation Analysis of a Breast Cancer Screening Intervention. *The Journal of communication, 62*(5), 851–868.  
<https://doi.org/10.1111/j.1460-2466.2012.01668.x>
- Kiran, T., Davie, S., Moineddin, R., & Lofters, A. (2018). Mailed Letter Versus Phone Call to Increase Uptake of Cancer Screening: A Pragmatic, Randomized Trial. *31*(6), 857-868.  
doi:10.3122/jabfm.2018.06.170369 %J The Journal of the American Board of Family Medicine
- Lauver D. (1992). A theory of care-seeking behavior. *Image--the journal of nursing scholarship, 24*(4), 281–287. <https://doi.org/10.1111/j.1547-5069.1992.tb00734.x>
- Lawal, O., Murphy, F., Hogg, P., & Nightingale, J. (2017). Health Behavioural Theories and Their Application to Women's Participation in Mammography Screening. *Journal of medical imaging and radiation sciences, 48*(2), 122–127.  
<https://doi.org/10.1016/j.jmir.2016.12.002>
- Luckmann, R., Costanza, M. E., White, M. J., Frisard, C. F., Rosal, M., Sama, S., Landry, M. R., & Yood, R. (2019). A 4-year randomized trial comparing three outreach interventions to promote screening mammograms. *Translational behavioral medicine, 9*(2), 328–335.  
<https://doi.org/10.1093/tbm/iby031>
- Luckmann, R., White, M. J., Costanza, M. E., Frisard, C. F., Cranos, C., Sama, S., & Yood, R. (2017). Implementation and process evaluation of three interventions to promote screening mammograms delivered for 4 years in a large primary care population. *Translational behavioral medicine, 7*(3), 547–556.  
<https://doi.org/10.1007/s13142-017-0497-x>
- Mandelblatt, J. S., Stout, N. K., Schechter, C. B., van den Broek, J. J., Miglioretti, D. L., Krapcho, M., Trentham-Dietz, A., Munoz, D., Lee, S. J., Berry, D. A., van Ravesteyn, N. T., Alagoz, O., Kerlikowske, K., Tosteson, A. N., Near, A. M., Hoeffken, A., Chang, Y., Heijnsdijk, E. A., Chisholm, G., Huang, X., ... Cronin, K. A. (2016). Collaborative

- Modeling of the Benefits and Harms Associated With Different U.S. Breast Cancer Screening Strategies. *Annals of internal medicine*, 164(4), 215–225.  
<https://doi.org/10.7326/M15-1536>
- Mariotto, A. B., Yabroff, K. R., Shao, Y., Feuer, E. J., & Brown, M. L. (2011). Projections of the cost of cancer care in the United States: 2010-2020. *Journal of the National Cancer Institute*, 103(2), 117–128. <https://doi.org/10.1093/jnci/djq495>
- Momenimovahed, Z., & Salehiniya, H. (2019). Epidemiological characteristics of and risk factors for breast cancer in the world. *Breast cancer (Dove Medical Press)*, 11, 151–164.  
<https://doi.org/10.2147/BCTT.S176070>
- Nanda, A.D., Mann, M.P., Cheng, AL. *et al.* (2020). Impact of Phone-Call and Access-Enhancing Intervention on Mammography Uptake among Primary Care Patients at an Urban Safety- Net Hospital: A Randomized Controlled Study. *Ann Surg Oncol* 27, 4643–4649. <https://doi.org/10.1245/s10434-020-08884-x>
- National Cancer Institute. (2019). Surveillance, Epidemiology, and End Results Program website. Cancer Stat Facts: Female Breast Cancer.  
<https://seer.cancer.gov/statfacts/html/breast.html.external icon>
- Payton, C. A., Sarfaty, M., Beckett, S., Campos, C., & Hilbert, K. (2015). Does telephone scheduling assistance increase mammography screening adherence?. *The American journal of managed care*, 21(11), e618–e622.
- Phillips, C. E., Rothstein, J. D., Beaver, K., Sherman, B. J., Freund, K. M., & Battaglia, T. A. (2011). Patient navigation to increase mammography screening among inner city women. *Journal of general internal medicine*, 26(2), 123–129.  
<https://doi.org/10.1007/s11606-010-1527-2>
- Phillips, L., Hendren, S., Humiston, S., Winters, P., & Fiscella, K. (2015). Improving breast and colon cancer screening rates: a comparison of letters, automated phone calls, or both. *Journal of the American Board of Family Medicine : JABFM*, 28(1), 46–54.  
<https://doi.org/10.3122/jabfm.2015.01.140174>
- Sheppard, V. B., Huei-yu Wang, J., Eng-Wong, J., Martin, S. H., Hurtado-de-Mendoza, A., &

- Luta, G. (2013). Promoting mammography adherence in underserved women: the telephone coaching adherence study. *Contemporary clinical trials*, 35(1), 35–42. <https://doi.org/10.1016/j.cct.2013.02.005>
- Siegel, R. L., Miller, K. D., & Jemal, A. (2017). Cancer Statistics, 2017. *CA: a cancer journal for clinicians*, 67(1), 7–30. <https://doi.org/10.3322/caac.21387>
- Silver, S. A., Harel, Z., McQuillan, R., Weizman, A. V., Thomas, A., Chertow, G. M., Nesrallah, G., Bell, C. M., & Chan, C. T. (2016). How to Begin a Quality Improvement Project. *Clinical journal of the American Society of Nephrology : CJASN*, 11(5), 893–900. <https://doi.org/10.2215/CJN.11491015>
- Skinner, C. S., Buchanan, A., Champion, V., Monahan, P., Rawl, S., Springston, J., Qianqian, Z., & Bourff, S. (2011). Process outcomes from a randomized controlled trial comparing tailored mammography interventions delivered via telephone vs. DVD. *Patient education and counseling*, 85(2), 308–312. <https://doi.org/10.1016/j.pec.2010.10.024>
- Sun, Y. S., Zhao, Z., Yang, Z. N., Xu, F., Lu, H. J., Zhu, Z. Y., Shi, W., Jiang, J., Yao, P. P., & Zhu, H. P. (2017). Risk Factors and Preventions of Breast Cancer. *International journal of biological sciences*, 13(11), 1387–1397. <https://doi.org/10.7150/ijbs.21635>
- Taplin, S. H., Barlow, W. E., Ludman, E., MacLehos, R., Meyer, D. M., Seger, D., Herta, D., Chin, C., & Curry, S. (2000). Testing reminder and motivational telephone calls to increase screening mammography: a randomized study. *Journal of the National Cancer Institute*, 92(3), 233–242. <https://doi.org/10.1093/jnci/92.3.233>
- United States Preventative Services Taskforce (USPSTF). (2020). Recommendation Topics. <https://www.uspreventiveservicestaskforce.org/Page/Name/recommendations>.
- University of Kentucky Health Care (UKHC). (2020). *Family & Community Medicine – Turfland Monthly Quality Report*
- U.S. Department of Health and Human Services. (2020). National Cancer Institute (NCI). National Institutes of Health. <https://www.nih.gov/about-nih/what-we-do/nih-almanac/national-cancer-institute-nci>.

## Tables

**Table 1.** *Demographic Summary of Patients (N=200)*

	FCM Clinic			Women's Health Clinic		
	Pre (n=50)	Post (n=50)	<i>p</i>	Pre (n=50)	Post (n=50)	<i>p</i>
Age, mean (SD)	60.1 (6.7)	61.3 (5.6)	.76	61.1 (6.5)	62.0 (6.5)	.47
Race, n (%)			.26			.63
African American	10 (20.0)	15 (30)		8 (16)	5 (10)	
Asian	2 (4)	3 (6)		1 (2)	1 (2)	
Hispanic	1 (2)	3 (6)		0 (0)	0 (0)	
Other	0 (0)	0 (0)		0 (0)	1 (2)	
White	37 (74)	29 (58)		41 (82)	43 (86)	

**Table 2.** *Mammography Screening Outcomes by Clinic and Comparison Over Time*

	FCM Clinic			Women's Health Clinic		
	Pre (n=50) % yes	Post (n=50) % yes	<i>p</i>	Pre (n=50) % yes	Post (n=50) % yes	<i>p</i>
Addressed	50	64	.16	88	88	1.00
Ordered	44	32	.22	22	8	.05
Completed	20	32	.17	66	84	.04

**Table 3.** *Perceived Barriers Survey Responses by Clinic (N=13)*

	FCM Clinic (N = 8)	Women's Health Clinic (N = 5)
	Mean (SD)	Mean (SD)
Fear of cost	2.63 (1.11)	2.00 (0.00)
Being too busy	4.13 (0.60)	4.20 (0.40)
Fear of mammogram-related pain	4.13 (0.60)	3.40 (0.49)
Lack of transportation	3.13 (0.78)	3.20 (0.75)
Provider not able to schedule mammogram	3.13 (1.54)	3.20 (1.17)
Not being able to get time off work	3.75 (0.97)	3.60 (0.80)
Fear of getting bad news	3.13 (0.93)	3.40 (0.49)
Not knowing they needed a mammogram	3.75 (0.83)	3.00 (0.89)
Lack of childcare	3.13 (1.17)	2.20 (0.75)
Not having health insurance	3.00 (1.22)	2.80 (0.75)

**Table 4.** *Perceived Barriers Survey Responses at the FCM Clinic (N=8)*

	Strongly Disagree <i>n</i> (%)	Disagree <i>n</i> (%)	Neutral <i>n</i> (%)	Agree <i>n</i> (%)	Strongly Agree <i>n</i> (%)
The new process in scheduling a mammogram will increase mammography rates	0 (0)	1 (12.5)	3 (37.5)	2 (25)	2 (25)
The old process for scheduling a mammogram worked effectively	2 (25)	2 (25)	2 (25)	1 (12.5)	1 (12.5)
The patients prefer the mammography appointment being scheduled for them	0 (0)	2 (25)	3 (37.5)	1 (12.5)	2 (25)

**Table 5.** *Perceived Barriers Survey Responses at the Women’s Health (WH) Clinic (N=5)*

	Strongly Disagree <i>n</i> (%)	Disagree <i>n</i> (%)	Neutral <i>n</i> (%)	Agree <i>n</i> (%)	Strongly Agree <i>n</i> (%)
The new process in scheduling a mammogram will increase mammography rates	0 (0)	1 (20)	0 (0)	3 (60)	1 (20)
The old process for scheduling a mammogram worked effectively	1 (20)	2 (40)	2 (40)	0 (0)	0 (0)
The patients prefer the mammography appointment being scheduled for them	0 (0)	0 (0)	1 (20)	3 (60)	1 (20)



**Table 6.** *Providers' Perceptions by Clinic (N=13)*

	FCM Clinic (N = 8) <i>n</i> (% yes)	Women's Health Clinic (N = 5) <i>n</i> (% yes)
Addressed/documented mammography screening	8 (100)	5 (100)
Ordered mammography screening	7 (87.5)	3 (60)
Problems with the new process	3 (37.5)	1 (20)
Suggestions on how to improve new process	2 (25)	3 (60)

## Appendices

### Appendix A: *Perceived Barriers Survey*

#### Mammography Perceived Barriers Survey

##### Part A

##### 1.) "What are the reasons women do not get a mammogram?"

<b>Fear of cost</b>	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
<b>Being too busy</b>	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
<b>Fear of mammogram-related pain</b>	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
<b>Lack of transportation</b>	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
<b>Provider not able to schedule mammogram</b>	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
<b>Not being able to get time off work</b>	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
<b>Fear of getting bad news</b>	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
<b>Not knowing they needed a mammogram</b>	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
<b>Lack of childcare</b>	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
<b>Not having health insurance</b>	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

##### Part B

Using the Likert scale choose whether you agree/disagree with the statement provided.

2.) The new process change (breast cancer center schedules mammography appointment) in scheduling a mammogram will increase mammography rates.

Strongly Disagree      Disagree      Neutral      Agree      Strongly Agree

Why? \_\_\_\_\_

3.) The old process (patient must schedule appointment) for scheduling a mammogram worked effectively.

Strongly Disagree      Disagree      Neutral      Agree      Strongly Agree

Why? \_\_\_\_\_

4.) The patient prefers the mammography appointment being scheduled for them.

Strongly Disagree      Disagree      Neutral      Agree      Strongly Agree

Why? \_\_\_\_\_

Circle yes or no to answer the questions provided and explain why.

5.) Do you normally address/document when a mammogram is due?

Yes      No

Why? \_\_\_\_\_

6.) Do you normally order a mammogram when it is due?

Yes      No

Why? \_\_\_\_\_

7.) Do you provide the postcard to schedule a mammography appointment to the patient?

Yes            No

Why? \_\_\_\_\_

8.) Are there any problems with the new process change (provider orders and breast cancer center schedules mammography appointment)?

Yes            No

Why? \_\_\_\_\_

9.) Do you have any suggestions on how to improve this new process change (providers order and breast cancer center schedules mammography appointment)?

Yes            No

Why? \_\_\_\_\_