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Mobile Mammography Outreach in Communities with Unmet Health Needs: Assessment of Appointment Outcomes and Operational Insights from Texas, United States

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ABSTRACT

Mobile mammography outreach was evaluated across different sites and counties in Texas from March 2022 to November 2024. Among 1,295 scheduled appointments during 56 mobile mammogram events, 64.3% were completed, 25.1% were no-shows, and 10.6% were cancelled. Federally qualified health centers accounted for the highest volume (701 schedules, 418 services provided) and the highest share of missed appointments. County-level patterns mirrored overall rates. No significant monthly trends were observed ($p > 0.45$). Qualitative feedback highlighted the role of faith-based outreach in trust building. Embedding services in established workflows and implementing reminder systems and transportation support may enhance uptake and reduce disproportionate outcomes.

Keywords: Community Outreach, Disproportionate Cancer Screening, Federally Qualified Health Centers, Mobile Mammography, No-Show Rates, Screening Uptake, Communities with unmet health needs

INTRODUCTION

Background

Breast cancer screening through mammography is a critical preventive service that reduces mortality by facilitating early detection. However, Communities with unmet health needs – often characterized by socioeconomic, geographic, and systemic challenges – face lower screening rates and higher later-stage diagnoses.^[1,2] Texas, the second most populous state in the U.S., is home to over 30 million residents and is marked by wide geographic and demographic groups. A significant portion of its population live in neighborhoods with unmet health needs, with large segments identifying as Hispanic, Black or African-American, or low-income – groups that historically face structural barriers to preventive care, including mammography services.^[3] These disproportionate outcomes are especially pronounced in communities served by (i) federally qualified health centers (FQHCs), (ii) community-based organizations (CBOs), (iii) faith-based organizations (FBOs), and (iv) university outreach programs at Texas Southern University Breast Cancer Screening and Prevention Center (TSU BCSPC). Public health fieldwork that brings

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mobile mammography to these settings can help close the gap in screening access.

Objectives

This project aimed to (1) quantify screening uptake – measured by patients scheduled, serviced, no-shows, and cancellations – across four aforementioned partners and five counties from March 2022 through November 2024, (2) screening mammogram outcomes-measured by normal versus abnormal results, and (3) identify operational patterns to inform future outreach strategies.

METHODS

Reporting Guideline

This study follows the Strengthening the Reporting of Observational Studies in Epidemiology guidelines for cross-sectional studies.^[4] The project was organized by TSU Breast Cancer Screening and Prevention Center (TSU BCSPC) in collaboration with FQHCs, CBOs, and FBOs, who aimed to increase access to screening mammogram in communities with unmet health needs.

Study Design

A retrospective fieldwork analysis was conducted across four site types (FQHC, CBO, FBO, and TSU) to evaluate appointment outcomes and screening mammogram outcomes through a mobile mammogram unit.

Sampling Strategy

Sites were selected to represent different community settings serving population with unmet health needs. All patients who received a screening mammogram on the mobile unit between March 2022 and November 30, 2024, were included in the study.

Data Collection

Screening data were extracted from organizational records, including appointment dates, site location, patients' county, mammogram results, and outcome counts.

Ethical Considerations

The study was reviewed and approved by the Institutional Review Board of TSU. Informed consent was waived due to the use of de-identified administrative data.

FIELDWORK DESCRIPTION

Setting

Screenings were conducted in four settings: FQHCs, CBOs, FBOs, and the TSU campus in Houston, TX. Community

outreach was essential for engaging participants in this program. Trust-building played a critical role, particularly in faith-based settings where familiarity and endorsement by local leaders boosted turnout.

Participants

Participants included individuals aged 40–75 years residing in various counties, who received screening mammograms through a mobile unit.

Timeline

Fieldwork occurred from March 01, 2022, to November 30, 2024.

Challenges and Adaptations

Operational challenges included variable patient outreach effectiveness and equipment downtime; these were addressed by flexible scheduling and backup mobile units.

RESULTS

Quantitative Results

Between March 2022 and November 2024, 1,295 mammography appointments were scheduled across 56 mobile events serving communities with unmet health needs. Of these, 832 (64.3%) were completed, 325 (25.1%) were no-shows, and 137 (10.6%) were cancelled. One individual was marked as “arrived” but not serviced or cancelled.

FQHCs had the highest volume, with 701 schedules (54.1%) and 418 completions (50.2%), but also the highest share of no-shows (62.5%) and cancellations (59.9%). CBOs followed with 329 schedules and 226 completions, while FBOs and TSU hosted fewer events, with lower but proportional turnout and cancellation patterns [Table 1].

County-level analysis showed Harris County accounted for most activity – 872 schedules (67.3%), 570 completions (68.5%), and the majority of no-shows (68.9%) and cancellations (54.7%). Other contributing counties included Matagorda, Grimes, Wharton, and Walker, each representing <11% of the total volume with similar performance metrics [Table 1].

Time trend analysis across the 33-month study period revealed no statistically significant changes in scheduling, service delivery, no-shows, or cancellations. Although some month-to-month variation was observed, including a peak in August 2022, regression analyses showed flat trends across all four measures ($p > 0.45$ for each) [Figure 1].

Demographic differences were evident between those who were serviced and those who missed appointments [Table 2].

Table 1: Outcomes by site and county.

Site	No. of patients scheduled <i>n</i> =1,295 (%)	No. of patients serviced <i>n</i> =832 (%)	No. of no-shows <i>n</i> =325 (%)	No. of cancellations <i>n</i> =138 (%)
CBO	329 (25.41)	226 (27.16)	64 (19.69)	37 (27.01)
FBO	195 (15.06)	144 (17.31)	39 (12)	11 (8.03)
FHQC	701 (54.13)	418 (50.24)	203 (62.46)	82 (59.85)
TSU	70 (5.41)	44 (5.29)	19 (5.85)	7 (5.11)
County				
Grimes	120 (9.27)	91 (10.94)	26 (8)	3 (2.19)
Harris	872 (67.34)	570 (68.51)	224 (68.92)	75 (54.74)
Matagorda	135 (10.42)	64 (7.69)	42 (12.92)	31 (22.63)
Walker	68 (5.25)	48 (5.77)	13 (4)	7 (5.11)
Wharton	100 (7.72)	59 (7.09)	20 (6.15)	21 (15.33)

FQHC: Federally qualified health center, CBO: Community-based organization, FBO: Faith-based organization, TSU: Texas Southern University. Out of the 1,295 scheduled patients, one was marked as “arrived” but not serviced or canceled.

Table 2: Demographic characteristics of serviced and no-show cases.

Demographic characteristics	Serviced <i>n</i> =832 (%)	No-shows <i>n</i> =325 (%)
Age		
35–39	0.8	0.3
40–49	52.4	56.4
50–64	41.0	40.5
≥65	5.8	2.8
Race/ethnicity		
White	14.7	8.2
Black or African-American	17.7	29.2
Asian	2.2	2.3
American Indian or Alaska Native	0.1	0.6
Hispanic	65.4	59.8
Insurance status		
Insured	13.6	23.8
No insurance	85.3	74.5
Missing	1.1	1.7
Results of the screening		
Benign	83.5	NA
Additional imaging needed	16.5	NA
NA: Not applicable		

The largest age group was 40–49 for both categories. Older adults (65+) comprised the least proportion of no-shows. Black or African-American individuals made up a larger proportion of no-shows (29.2%) than serviced participants (17.7%), while Hispanic and White individuals were the majority among those who completed screenings. Notably, 85.3% of those who were serviced were uninsured, compared to 74.5% of no-shows. Among those who received

screenings, 83.5% had benign results, and 16.5% required follow-up imaging.

Qualitative Insights

Although primarily quantitative, staff feedback indicated that community outreach at FBOs facilitated trust-building among participants. Staff noted that participants were more likely to engage when screenings were hosted by familiar faith leaders or held at trusted community venues, leading to increased comfort and follow-through. One outreach coordinator shared, “When the pastor announced the screening during Sunday service and stood beside us on event day, the turnout was significantly better – we saw new faces who wouldn’t usually attend.”

DISCUSSION

Interpretation

Service rates (84% overall) align with national benchmarks but are lower in FBO settings, possibly due to less formal appointment systems.^[5] Seasonal dips in summer months underscore the need for adaptive scheduling.

Implications and Lessons Learned

Embedding mammography services within established FQHC workflows yielded the highest uptake; replicating similar processes in FBO and TSU settings could improve reach.

Recommendations

Standardize reminder calls and provide transportation vouchers, especially during high drop-off months. Future

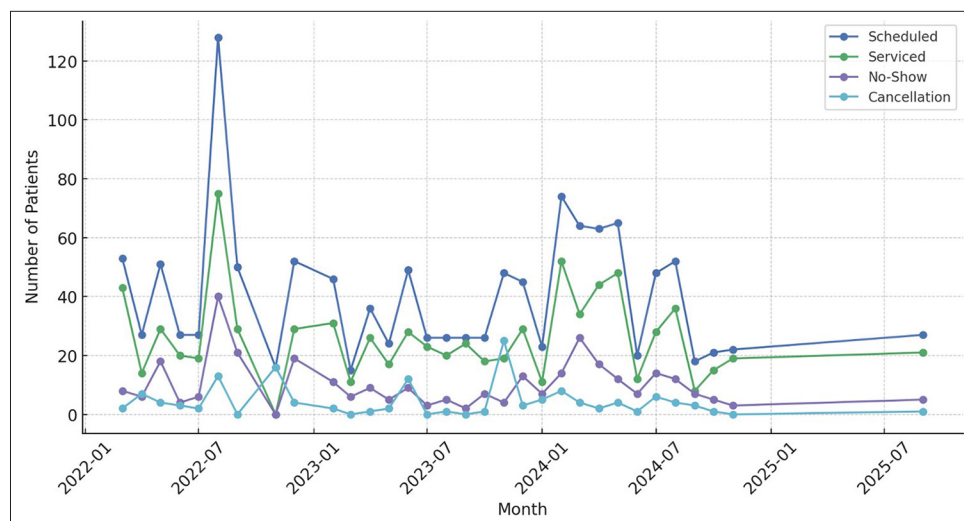


Figure 1: Trends in the monthly mammography screening outcomes (March 2022–November 2024). Scheduled: Slope = -0.32 , $p = 0.474$, Serviced: slope = -0.13 , $p = 0.652$, No-Show: slope = -0.12 , $p = 0.452$, and Cancellation: slope = -0.07 , $p = 0.482$.

research should explore patient engagement strategies tailored to faith-based communities. The coalition was formed by strategically selecting community partners who were already embedded within the target populations. This approach allowed the outreach to leverage trusted community relationships and established infrastructures. While embedding services in FQHC workflows was highly effective, less formal systems at FBO and TSU sites resulted in lower service rates. The lack of significant monthly trend improvements suggests that further interventions are necessary. Key lessons learned include the importance of trust-based partnerships, tailored outreach strategies, logistical flexibility, and supportive interventions such as transportation assistance and reminder calls. These insights can guide similar efforts globally.

CONCLUSION AND GLOBAL HEALTH IMPLICATIONS

This project demonstrates that mobile mammography in partnership with different community organizations can effectively reach women in communities with unmet health needs, though uptake varies by setting. Scaling partnerships with robust scheduling infrastructure and targeted support services could further enhance screening mammograms globally.^[6]

Key Messages

(1) Mobile mammography partnerships with different sites and counties in Texas reached women in communities with unmet health needs effectively – 64% of 1,295 scheduled appointments were completed – highlighting the value of

bringing services into community settings. (2) Attendance varied by partner type and location: FQHCs drove most volume but also the highest no-show rates, while faith-based and university sites saw lower uptake, indicating the need for tailored reminder and support strategies. (3) No significant trends in scheduling or attendance emerged over 33 months, underscoring the importance of flexible outreach (e.g., backup units and adaptive scheduling) and targeted interventions (reminders and transportation vouchers) to sustain screening equity.

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COMPLIANCE WITH ETHICAL STANDARDS

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