

Background

Early detection is critical in the fight against breast cancer, which is:

- The **most common cancer** among women.
- The **second leading cause of cancer-related death** after lung cancer.
- Affecting approximately **1 in 8 women** who will develop it in their lifetime, with 1 in 39 dying from it (American Cancer Society data).
- Parkland Health, a large public health system, observes a rate of **late-stage breast cancer diagnoses more than double the national average**.
- This alarming statistic underscores an urgent need to develop new approaches for **increasing screening compliance** among the patient population.

Objective: Conduct a data analysis of mammogram screening appointments to understand drivers behind missed appointments and inform better patient outreach.

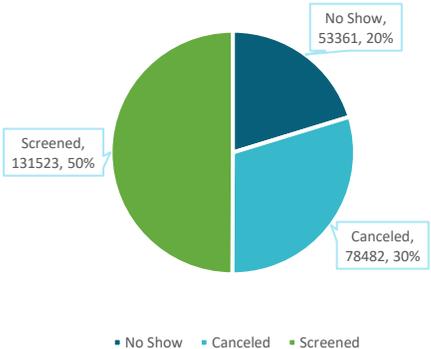
Methods

- Analysis focused on **263,366 screening appointments** from **87,306 unique patients**.
- Data spanned from January 1, 2021, to July 9, 2025, included EHR data- demographics, appointment history (past no-shows, lead time to appointment, preferred day/time and recent behavior)
- Community Vulnerability Compass (CVC) and Know Thy Patient (KTP) leveraged for care utilization and access patterns.
- Variables engineered capturing historical behaviors, non-medical drivers of health and utilization factors
- XGBoost classifier trained and model performance evaluated
- Feature importance assessed using gain

Conclusion and Future Direction

- The data presents a **clear opportunity to intervene** and re-engage patients at risk of not completing their screening.
- Insights will be leveraged to **tailor outreach** to encourage eligible women to attend and improve adherence to care.
- We are currently **developing predictive models** to anticipate and prevent no-shows.
- Successful intervention is expected to lead to **earlier diagnoses and significantly better health outcomes** for our patients.

Mammogram Appointment Adherence



- Overall, only **50% of patients completed their scheduled mammogram**.
- **Nearly 60% of patients who no-showed did not return** for a rescheduled screening appointment.
- For those who did reschedule, the **median time to screening was 5.5 months** after the initial missed appointment.
- **No-show rates show specific trends:** they increase throughout the day and decrease throughout the week.

Breast Cancer Screening Adherence: Identifying Opportunities for Intervention

Critical factors uncovered from the data that affect **No-Shows** for screening **mammograms** include previous appointment non-adherence, **first time screenings**, afternoon appointments, and a preferred language of Spanish.

Percentage of No-Show Appointments by Day of Week and Time of Day



Variable Feature Importance

