



Expanding After-hours Access for Echocardiography Services

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Project Background

The Department of Cardiovascular Diseases (CVD) at Mayo Clinic Arizona (MCA) provides a full-range of echocardiography services to the greater Phoenix-metro area. Echocardiograms are complex 80 minute appoints in which a specially trained cardiac sonographer takes multiple ultrasound images of the heart. These images are interpreted by an echo-trained cardiologist to determine overall cardiac function.

Overall demand for echocardiograms at MCA has steadily increased by six percent on average per year over the last five years while the physical footprint of the hospital Echo Lab has remained unchanged. It is common practice for outpatient echo labs to only operate during normal business hours. Due to space constraints the Echo Lab provided limited after-hour outpatient echo services until 7:00 pm on weekdays.

With the increasing dynamic of patient consumerism as well as the growing demand for after-hours services, CVD practice leadership hypothesized that an expanded after-hours outpatient delivery model could help meet the increasing demand of working patients and allow the Echo Lab to better utilize their fixed capital assets and increase access.

Objectives

To pilot expanded after-hours hospital outpatient echocardiography services while achieving the following objectives:

- Increase volumes and capacity for hospital-based outpatient echocardiograms
- Increasing access for patients while maintaining or improve payer mix
- Achieve a favorable financial impact

Planning

Planning: Planning was conducted by the Echo Lab Leadership Team which consisted of physician leadership, administration, and supervisors of the sonographer and nursing staff. After-hours services were defined as any appointment slot scheduled after 4:00 pm. CVD leadership received approval to hire three incremental FTE sonographer staff. With the additional staff the Echo Lab leadership team projected that they could increase after-hours outpatient echo capacity by 225%. This could be done by increasing the number of 4:00 pm and 5:20 pm appointment slots and adding new 6:40 pm appointment slots Monday – Friday. This would extend hospital-based outpatient operations until 9:00 pm.

Research Methods

Stakeholder Engagement: Multiple stakeholder engagement meetings were held with echocardiography cardiologists and sonographer staff to inform them of the new late shift staffing model. Based on echo cardiologists' input a new late shift was created to cover the hours of 1:00 pm – 9:00 pm late shift and was combined with nightly call assignments. This required an additional 0.5 FTE of a cardiologist.

Financial Effect Analysis: Prior to implementation, a FEA (an acronym for Financial Effect Analysis) of the proposed pilot was completed based on a sensitivity analysis for different fill rate scenarios to determine financial viability. Achieving a 50% fill rate was determined to be the minimum threshold for success.

Implementation

Change Management Tools: Change management tools such as ADKAR (an acronym for Awareness, Desire, Knowledge, Ability, and Reinforcement) were needed to ensure the success of the proposed pilot. Physician and sonographer staff members were informed of the new shift six months in advance.

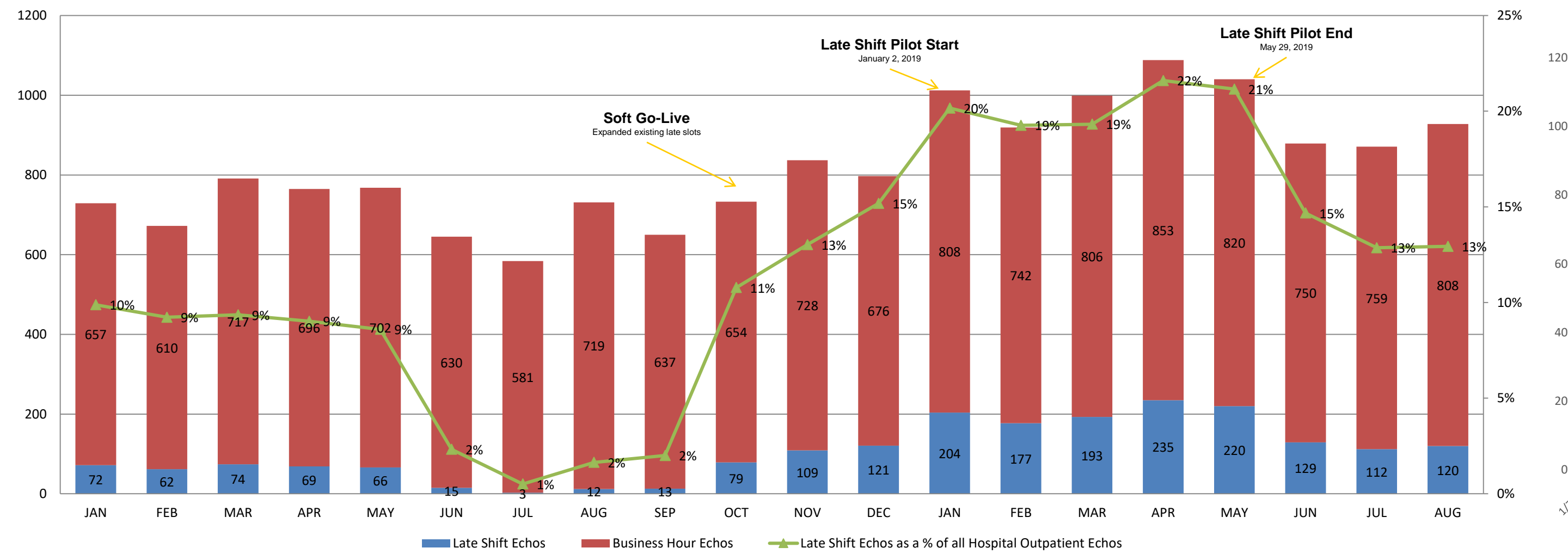
Interventions Implemented: A soft go-live of the pilot was started in October 2018 in which the number of 4:00 pm and 5:20 pm slots were increased. Full implementation of the 6:40 pm slots and the new coverage hours started January 2, 2019 and lasted through May 31, 2019. Fill rates were tracked daily by the Echo Lab supervisor and volumes and demographic information was captured in the Echo Information Management System (EIMS) database.

Expanded Hours Schedule:

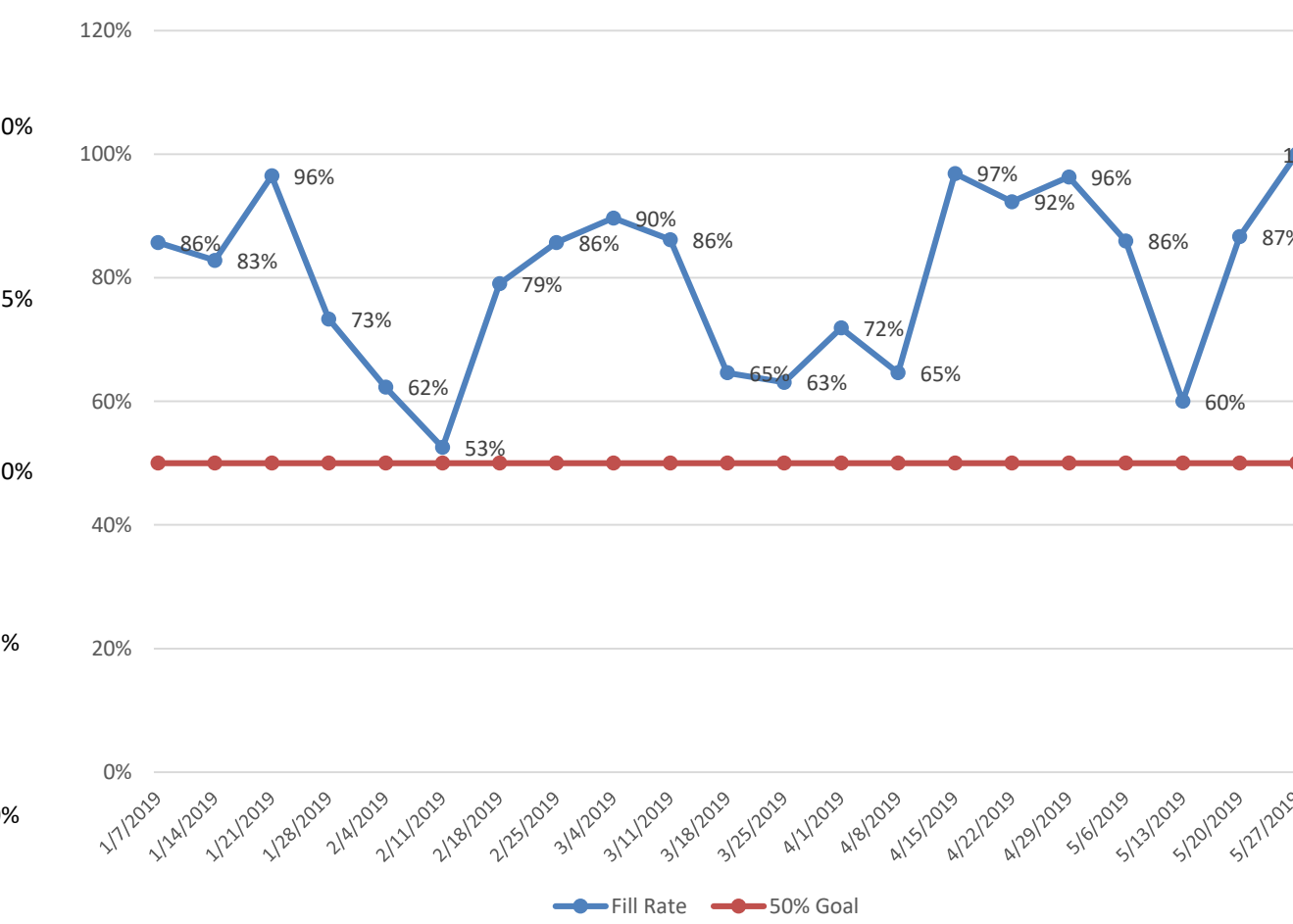
Physician Coverage	Room 1	Room 2	Room 3	Room 4	Room 5	Room 6	Room 7	Room 8
2:40 PM	TTE	TTE	TTE	TTE	TTE	TTE	Stress	Dobutamine
3:00 PM								
3:20 PM								
3:40 PM								
4:00 PM	TTE	TTE	TTE					
4:20 PM	TTE	TTE	TTE		TTE	TTE		
4:40 PM								
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Pre-intervention After-hour TTE Slots
 Pilot Expanded After-hours TTE Slots

Results: Overall Hospital Outpatient Echo Volume



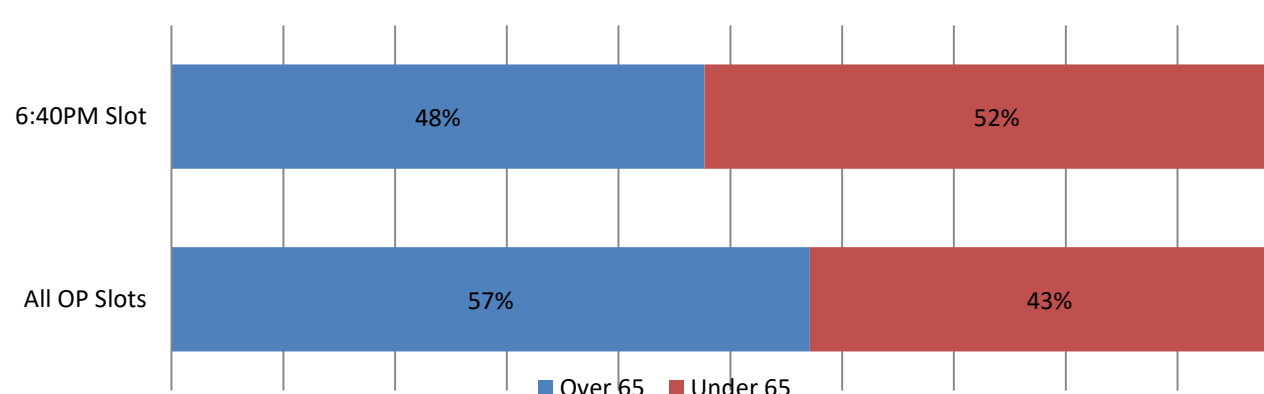
After-hours Pilot Appointment Weekly Fill Rates



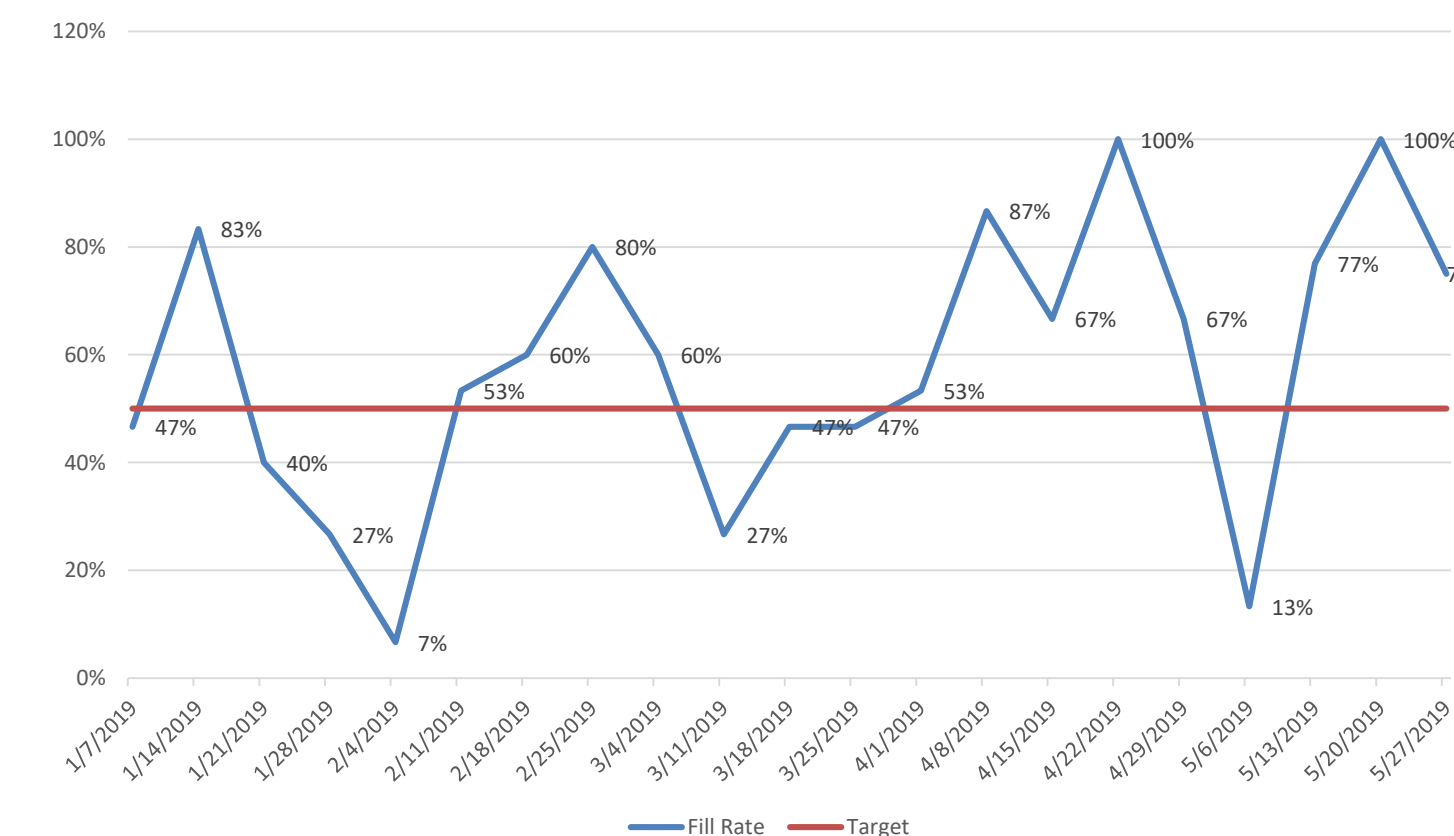
Results: 6:40 PM Appointments

New Late Appointment: EIMS data was analyzed to assess the patient demographics for patients scheduled in the 6:40 pm slots and compared to all hospital outpatient appointment times. Additional analysis was completed on weekly fill rates and fill rates by day of the week to determine if project met the 50 percent target.

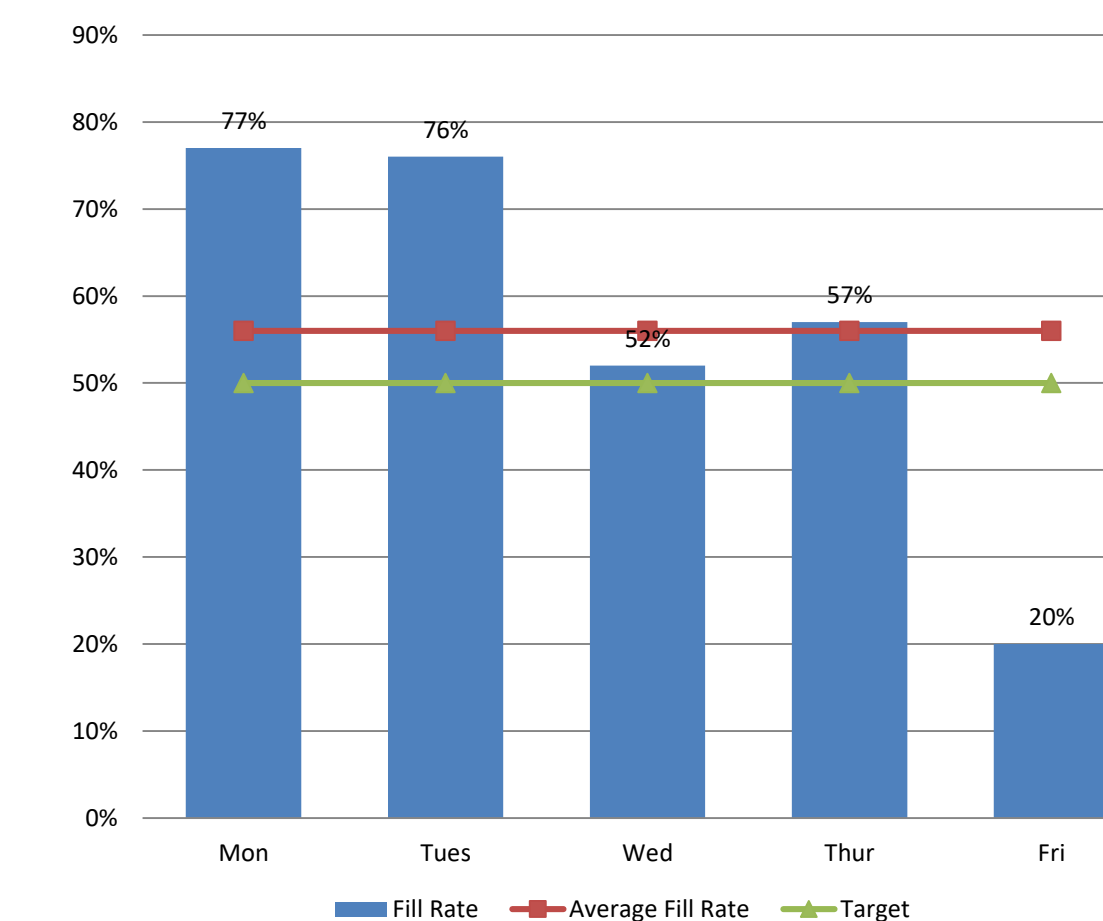
Age Distribution by Appointment Slot Time



6:40 PM Appointment Weekly Fill Rates



Weekday Fill Rate: 6:40 PM Slot



Findings

The pilot achieved or exceeded many operational and financial targets.

Increased Volume:

- After-hours echos increased by 679 (198% increase)
- Total hospital-outpatient echo volumes increased 36%

Appointment Fill Rate:

- Overall after-hour appointment utilization rate: 80%
- 6:40 pm appointment utilization rate: 56%
- 6:40 pm appointment demand varied by weekday
- The appointment utilization rates for Fridays were less than the 50% threshold and were subsequently discontinued

Patient Demographics:

- Non-government patients accounted for 50.1% of all pilot patients compared to 44.0% for all echo patients
- 52% of 6:40 pm patients were under the age of 65 compared with only 43% for all other echo patients

Gross Revenue:

- Late shift echos accounted for 27% of gross hospital Echo Lab revenue
- The after-hour echos accounted for 75% of the total increase in gross revenue for the MCA Echo Lab by October 2019

Conclusions

- The success of this pilot confirmed that there is patient-consumer demand for after-hours echocardiography services.
- The expanded after-hours model was reinitiated in September 2019 and continued year-round in 2020.