

Development of a Census Driven Equation to predict Non-billable "Cross-cover" Work Done During Nocturnist shifts, to predict staffing

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BACKGROUND

- The staffing of nocturnists overnight has become increasingly more standard over the last few decades. Workload parameters of nocturnists have been overlooked.
- A study in 2019 demonstrated that physicians were less likely to agree that they could provide safe care if they had more than five admissions per night (Atlas, 2021).
- More guidance is needed to optimize patient safety and assess physician efficiency at night. Currently there is no guidance on the appropriate need to staff nocturnists as well as how it impacts hiring and standardizing care for patients during this time.

METHODS

- June 2022 to September 2022
- Medical students shadowed hospitalists for six-hour blocks on varying nights during the cross-cover time.
- Attending physician were timed at the start of any cross-cover activity to when they were done with the work.
- Along with the duration of the cross-cover work, the medical student's documentation included the patient identifier, bedside visits, labs ordered, documentation associated and if it had any interruptions on a current admission or another cross-cover.
- With the data provided, a linear regression equation model was built which predicts time needed for cross-cover based AM Census.

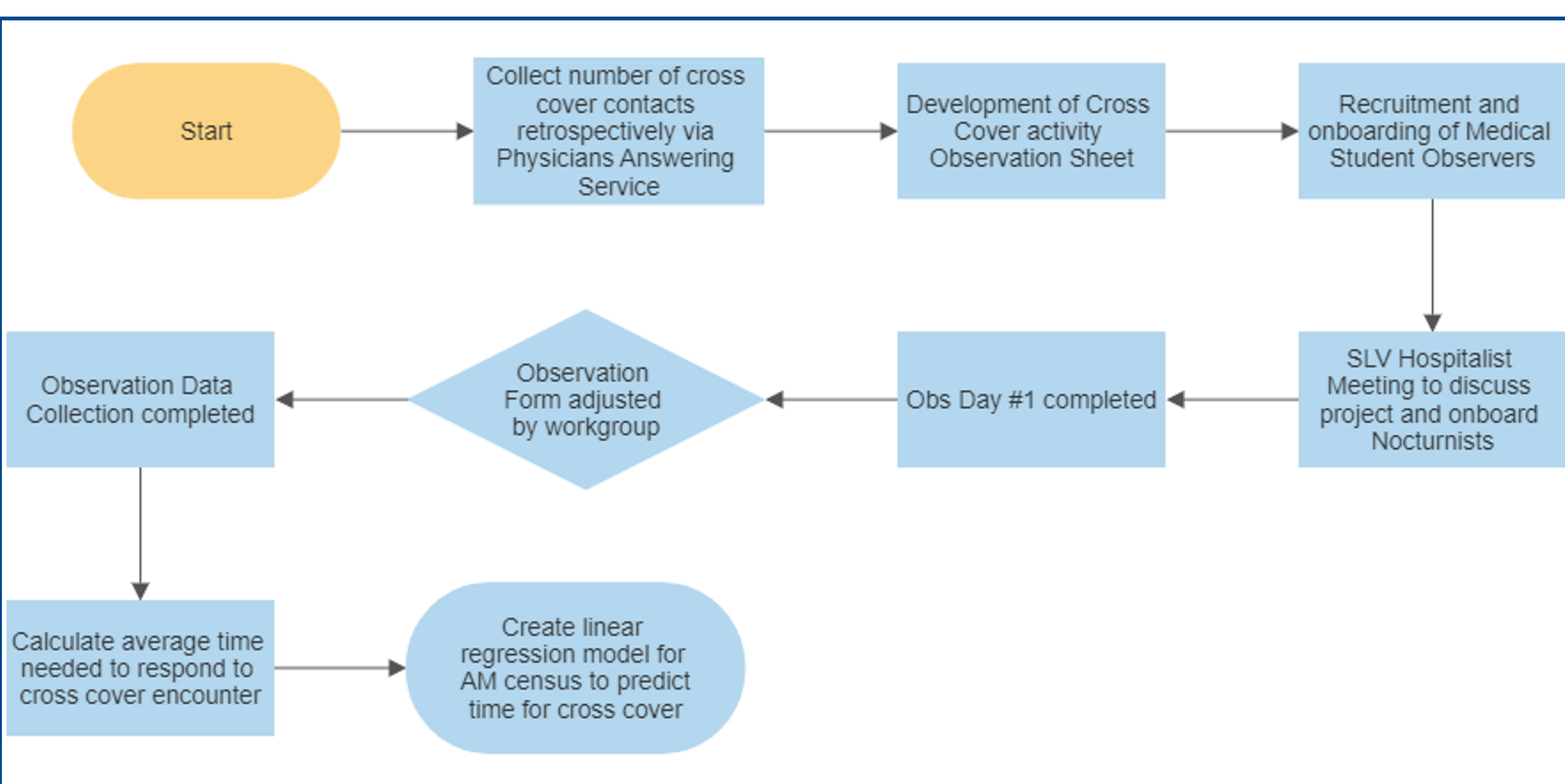
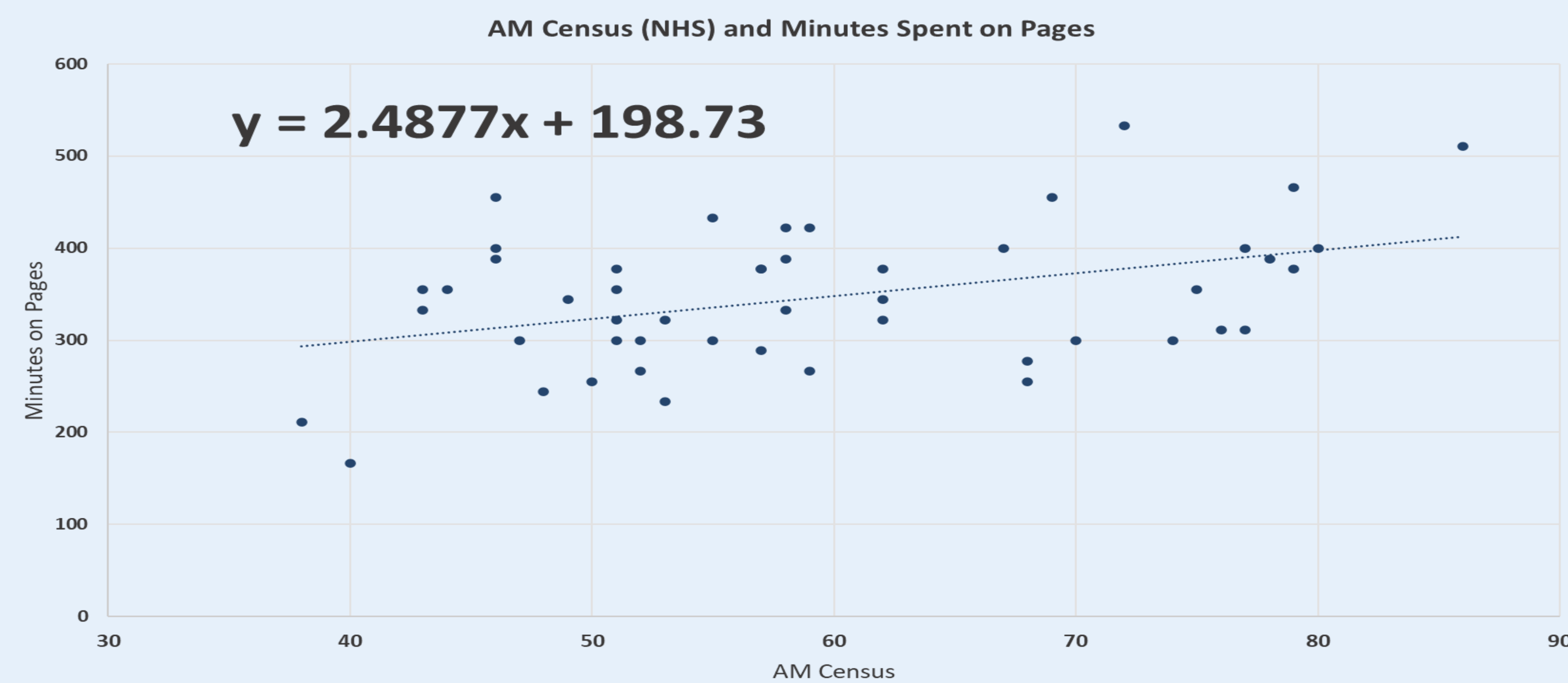


FIGURE 1
STUDY DESIGN

GRAPH 1

AM PATIENT CENSUS VS. TIME SPENT ANSWERING PAGES



FINDINGS

- From the Physicians Answering Service, the average number of pages in a 12-hour cross-cover shift was 32.2
- The amount of time for cross-cover was highly variable with a max of 185 minutes and a minimum of 1 minute.
- The average time per cross-cover came out to 11 minutes
- Using the equation, $y = 2.4877x + 198.73$, an estimation of the total annual hours dedicated to cross cover was 2885 hours, which amounts to the salary of 1.4 FTE.

Cross Cover Encounters	Bedside visit	Orders placed	Interrupted Admission	Interrupted other Cross Cover
124	4	39	19	8

Average Time per cross cover encounter	Max Time	Min Time
11 min	185 minutes	1 min

FIGURE 2

OBSERVATIONAL DATA COLLECTED OVER 48 HOURS

CONCLUSION

The quantifiable workload contributed to cross-cover should be taken into consideration when determining appropriate staffing needs. This study aimed to quantify the total workload contributable to cross-cover work. With the data collected, we were able to estimate the total hours contributed annually and in relation to what it might look like as a full-time employee's salary. An estimation tool was created to display how patient census impacts the time spent answering pages. This tool was created with the aim of improving the creation of more appropriate hospitalist team building. Further application of this tool to all teams that design physician coverage at night will support the necessary non-billable cross-cover work.

References:
1. PMID: 34030568 (Atlas)
2. PMID: 32160480 (Bates)

TABLE 1

ANNUALIZED NON-BILLABLE VS BILLABLE PATIENT ENCOUNTERS

	Cross Cover Encounters	Night Shift Admissions	ICU transfers and Follow-up Encounters
Number/year	11,717	4,213	730
Annualized wRVU	0	13,259	0
Annualized Professional Billing Charges	0	\$554,540	0