HOSPITAL EMERGENCY ROOM

Analysis of ER waiting times at five hospitals

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AGENDA

- Introduction
- Dashboard
- Observations
- Conclusion
- Contact

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INTRODUCTION

The aim of this project is to find ways to **reduce waiting times** at hospitals emergency room while **ensuring quality of care** provided by doctors and nurses.

Tools used:

- Tableau Public
- GitHub (Click here to view repository)

Dataset from:

- Kaggle

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DASHBOARD

Analysis done for:

- Summary of average waiting times and average patient satisfaction
- Number of Patients visiting each Hospital
- Number of Facilities at each Hospital
- Total wait time based on
  - Time factors
  - Location
  - Urgency levels of cases
  - Ratio of nurse to patients

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OBSERVATION #1

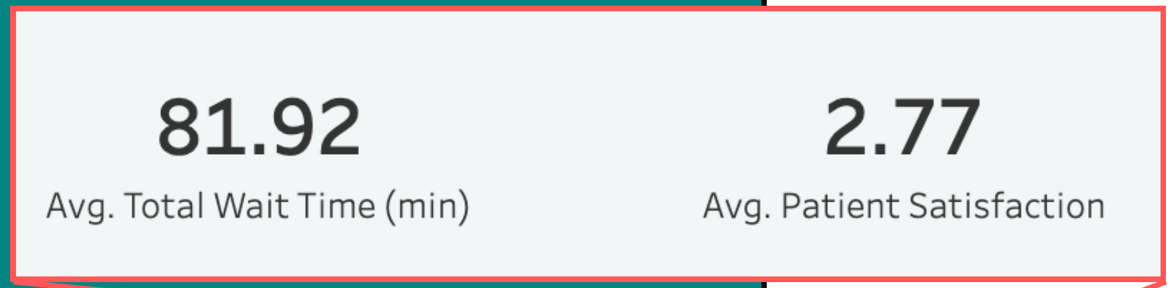
Summary of overall metrics

Average total wait time for the year of 2024 is ***81.92 minutes***

- This is much longer compared to average of wait times of countries like Germany, Sweden, Japan and more[1]

Average Patient Satisfaction is ***2.77***

- Patient Satisfaction ranges from 1 to 5, with 5 being most satisfied
- 2.77 is below 3, which is a neutral number, which signifies many patients are dissatisfied with the wait times



[1] https://doctorsa.com/stories/er-waiting-times/

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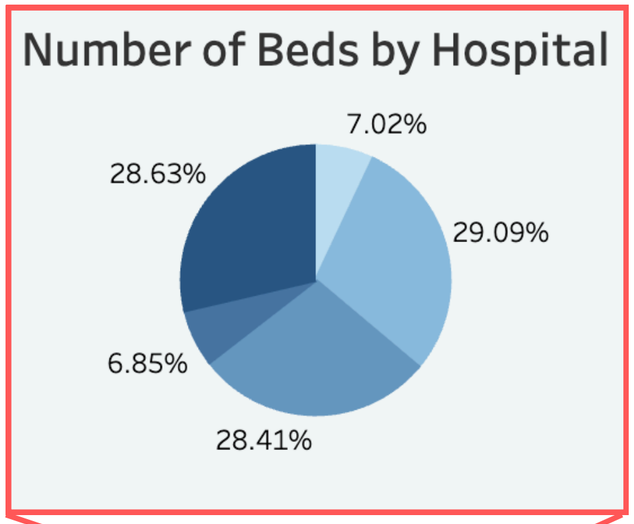

OBSERVATION #2

Comparing Number of Beds per Hospital

Distribution of hospital beds are **not equal**

- Number of beds for *St. Mary's Regional Health* is only **6.85%** of the total number of beds across the five hospitals.
- Number of beds for *Northside Community Hospital is only **7.02%** of the total number of beds across the five hospitals*
- *The number of beds for the other 3 hospitals are relatively the same.*
- The lower amount of beds for the two hospitals might be one of the contributing factors to the long wait time at their ER.
    - The two hospitals can consider procuring more beds to accomodate more patients

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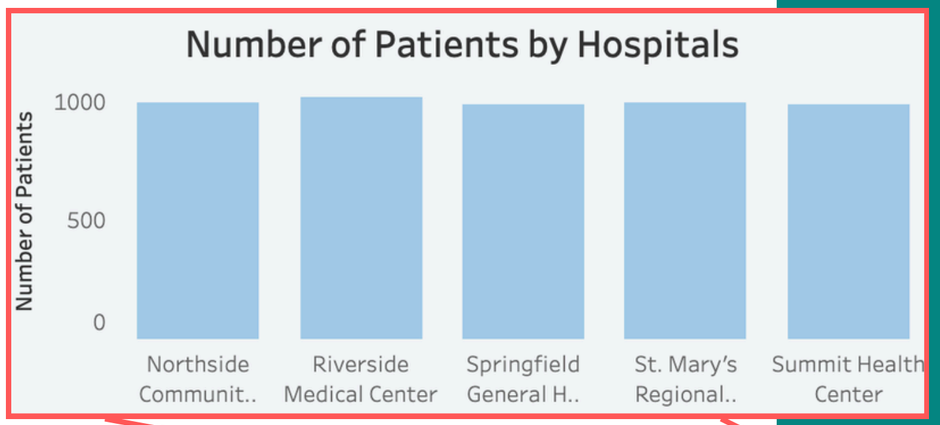

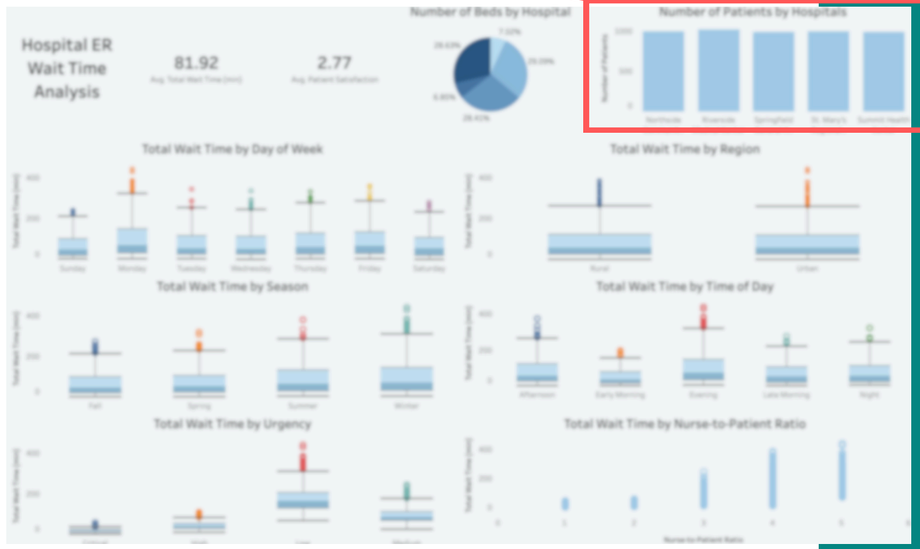

OBSERVATION #3

Comparing Number of Patients per Hospital

Distribution of Patients for each hospital is relatively the same

- This means that the patient load is likely not a contributing factor to the long waiting time because there is not a specific hospital that is completely overwhelmed with patients

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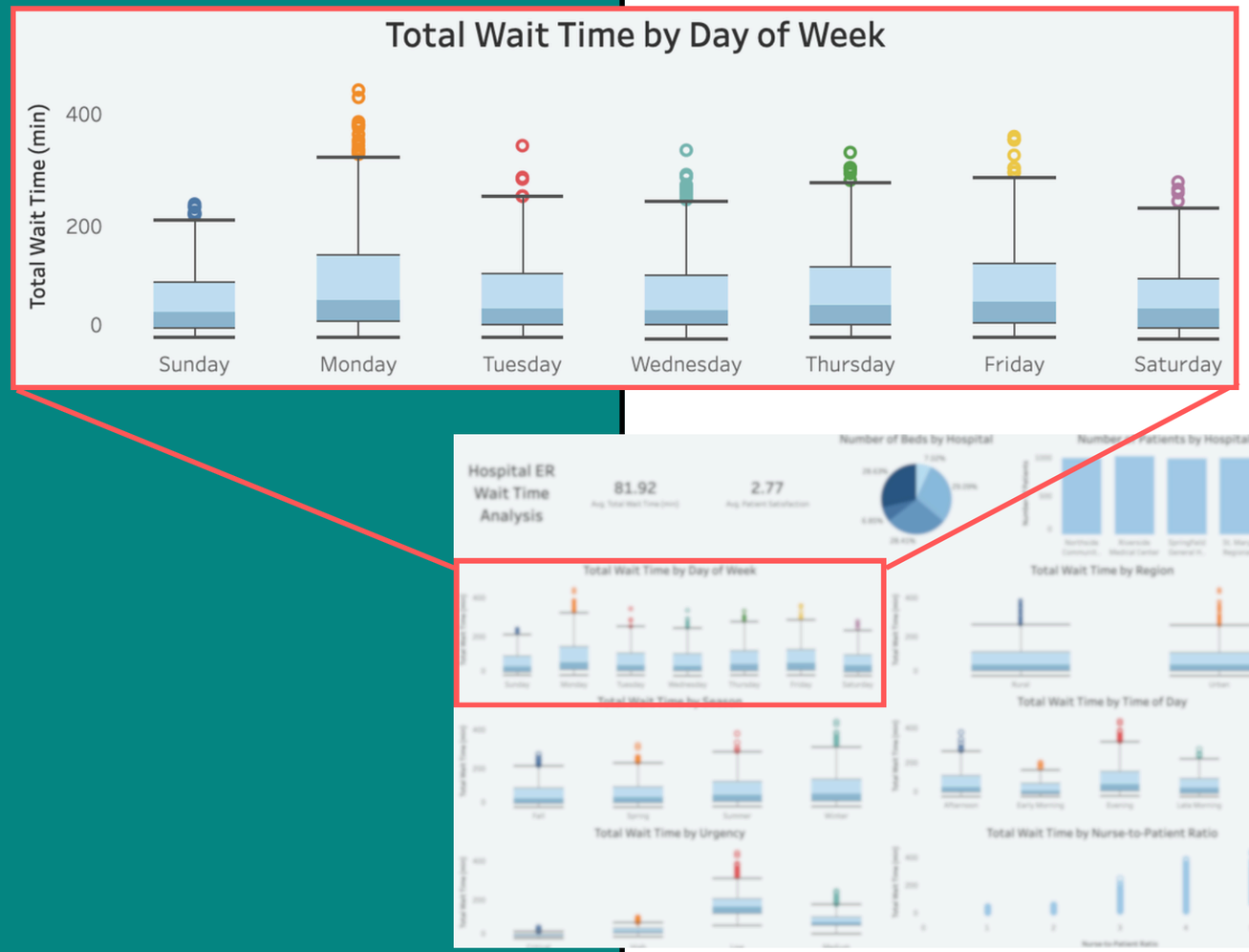
OBSERVATION #4

Comparing Total Wait Time with Day of Week

Monday tends to have the longest wait times and Sunday have the shortest

- Monday, Thursday and Friday tend to have higher waiting times, likely due to more patients visiting on these days
- The hospitals can consider allocating more manpower on those days to cope with higher patient load



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OBSERVATION #5

Comparing Total Wait Time with Region

Total wait time for both rural and urban regions are relatively the same, except for a few outliers

- This shows that resources have been allocated equally to hospitals at both rural and urban regions and there isn't a particular region that is neglected

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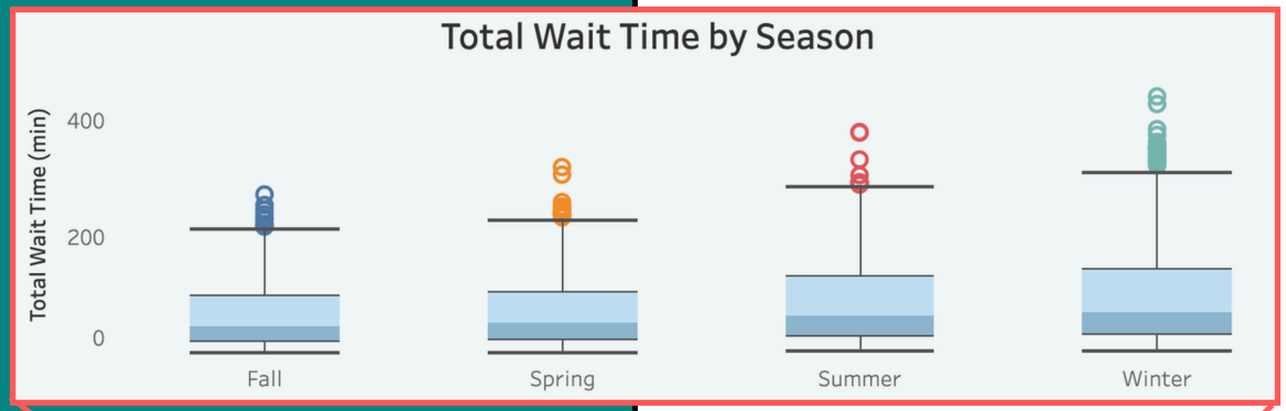
OBSERVATION #6

Comparing Total Wait Time with Season

Summer and Winter tend to have longer wait times compared to fall and spring

- This is likely due to temperatures being more extreme during these two seasons, causing more people to fall ill
- Hospitals can consider increasing manpower per shift during these two seasons, to cope with the increase in patients



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OBSERVATION #7

Comparing Total Wait Time with Time of Day

Total wait time throughout the day is relatively the same, except for early morning and evening times

- Likely due to limited staffing on duty
- Hospitals can consider focusing more manpower during the evenings which tend to be more crowded with patients

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OBSERVATION #8

Comparing Total Wait Time with Urgency Level

The higher the urgency level, the shorter the waiting time

- This is good because this shows that although the general average waiting time is long, the high and critical urgency cases are being dealt with quickly

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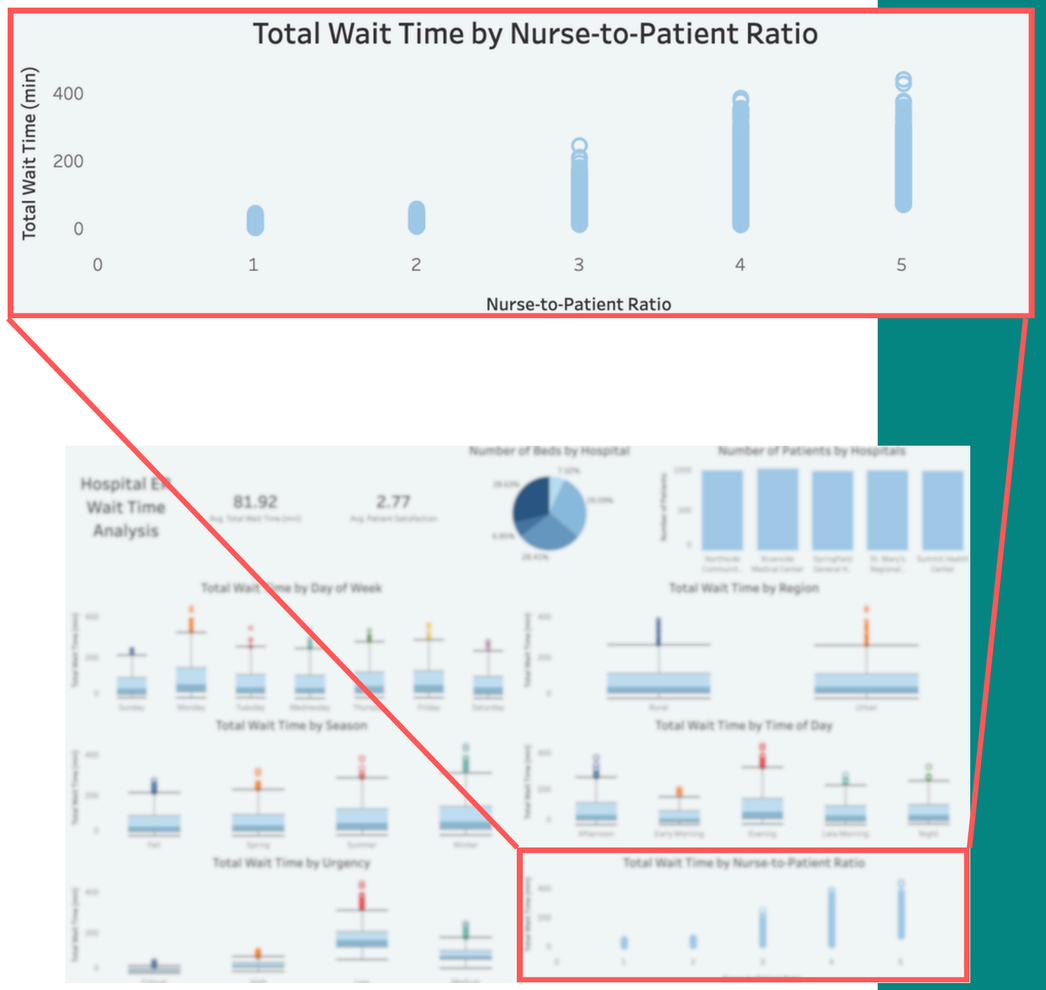

OBSERVATION #9

Comparing Total Wait Time with Nurse-to-Patient Ratio

As the number of patients increases per nurse, the waiting time increases

- For nurse-to-patient ratio, 1 indicates 1 nurse to 1 patient and 5 indicates 1 nurse to 5 patients.
- When the ratio goes to 5, the waiting time can go up to almost 5 times the average waiting time
- The hospitals should try to reduce the nurse-to-patient ratio as much as possible to reduce waiting time and reduce workload on the nurses as well

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CONCLUSION

Hospital facilities

- Ensure that all hospitals have similar and sufficient facilities such as hospital beds to accomodate for more patients

Manpower allocations

- Hospitals can consider increasing manpower during:
  - Mondays, Thursdays and Fridays
  - Summer and Winter
  - Evening periods
- This can reduce nurse-to-patient ratio and reduce waiting time

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