Hospital Length of Stay Model Analysis

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Summary

Predict the length of stay for patients in the hospital

Important Features:
- Disposition
- Diagnosis
- Procedure

Outline

- Business Problem

- Data Understanding

- Limitations

- Features

- Model/Evaluation

- Conclusion

- Next Steps

Business Understanding

- Healthcare Hospital Chain; improve resource allocation and patient care

- Goal: predict patients length of stay

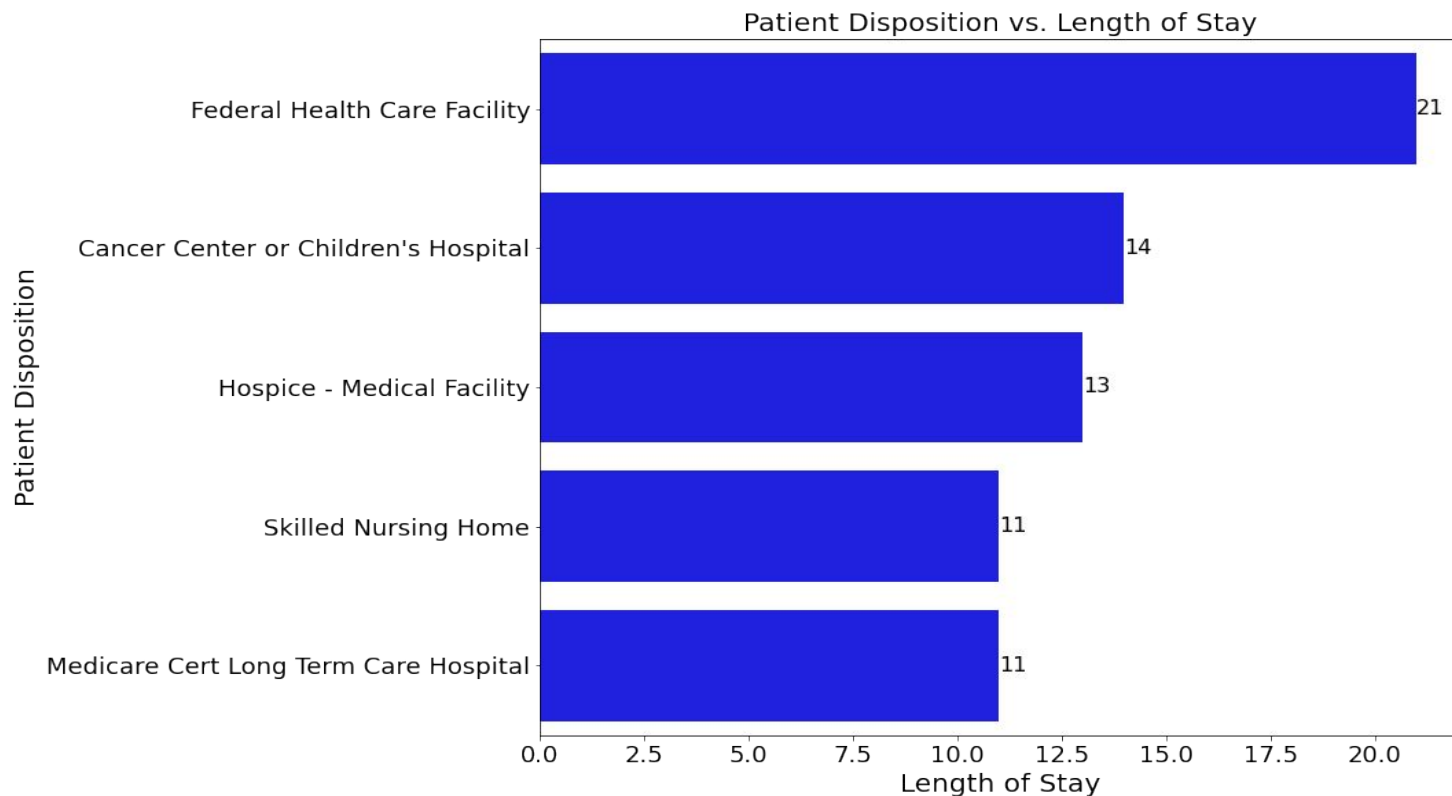- Increased knowledge → better healthcare management → overall growth

Data Understanding

- New York, Brooklyn, inpatient discharge data
- "The Statewide Planning and Research Cooperative System (SPARCS) Inpatient De-identified dataset. From patient characteristics such as age group, gender, race and ethnicity to diagnoses, treatments, services and charges."
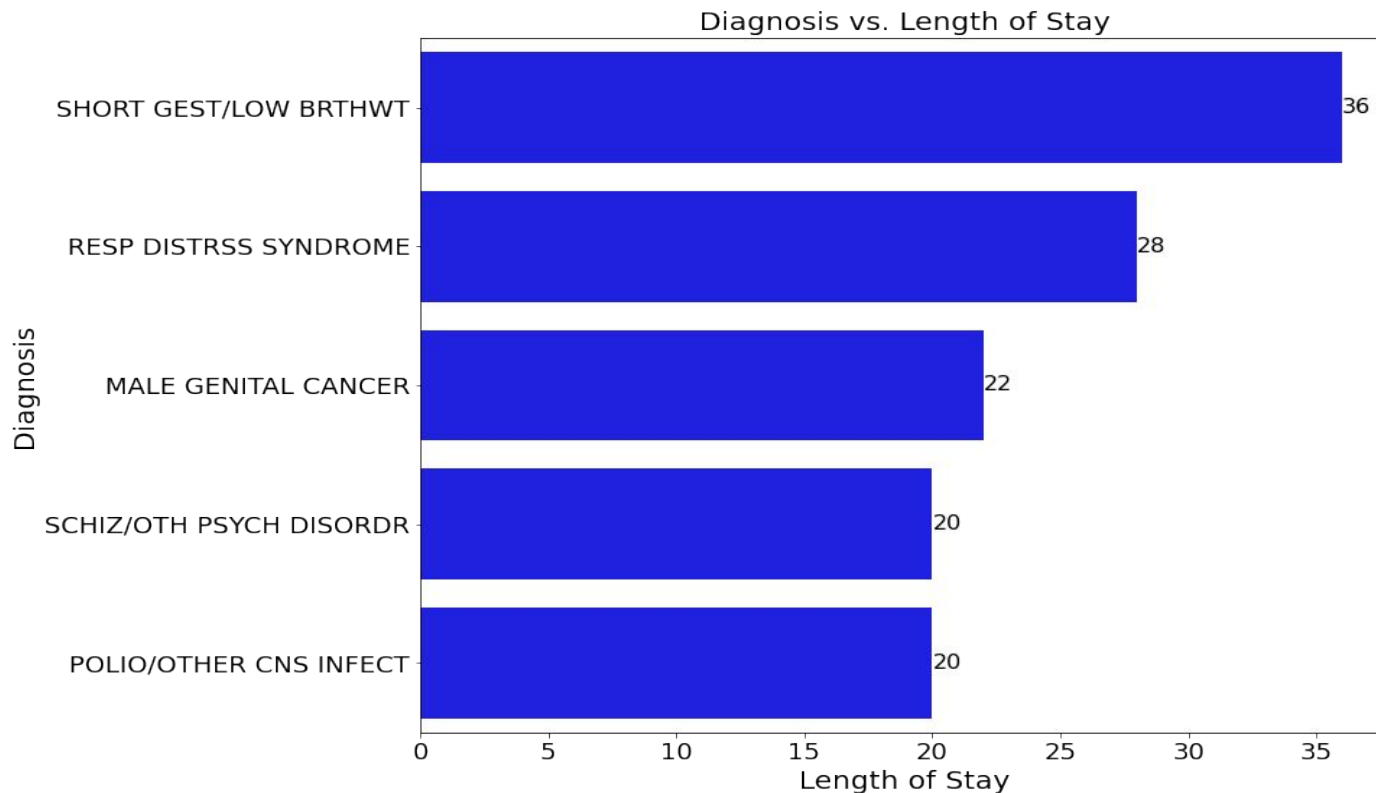- 300,000 rows and 38 columns

Limitations

- Account for all patient data
- Account for every length of stay
- Reproducibility:
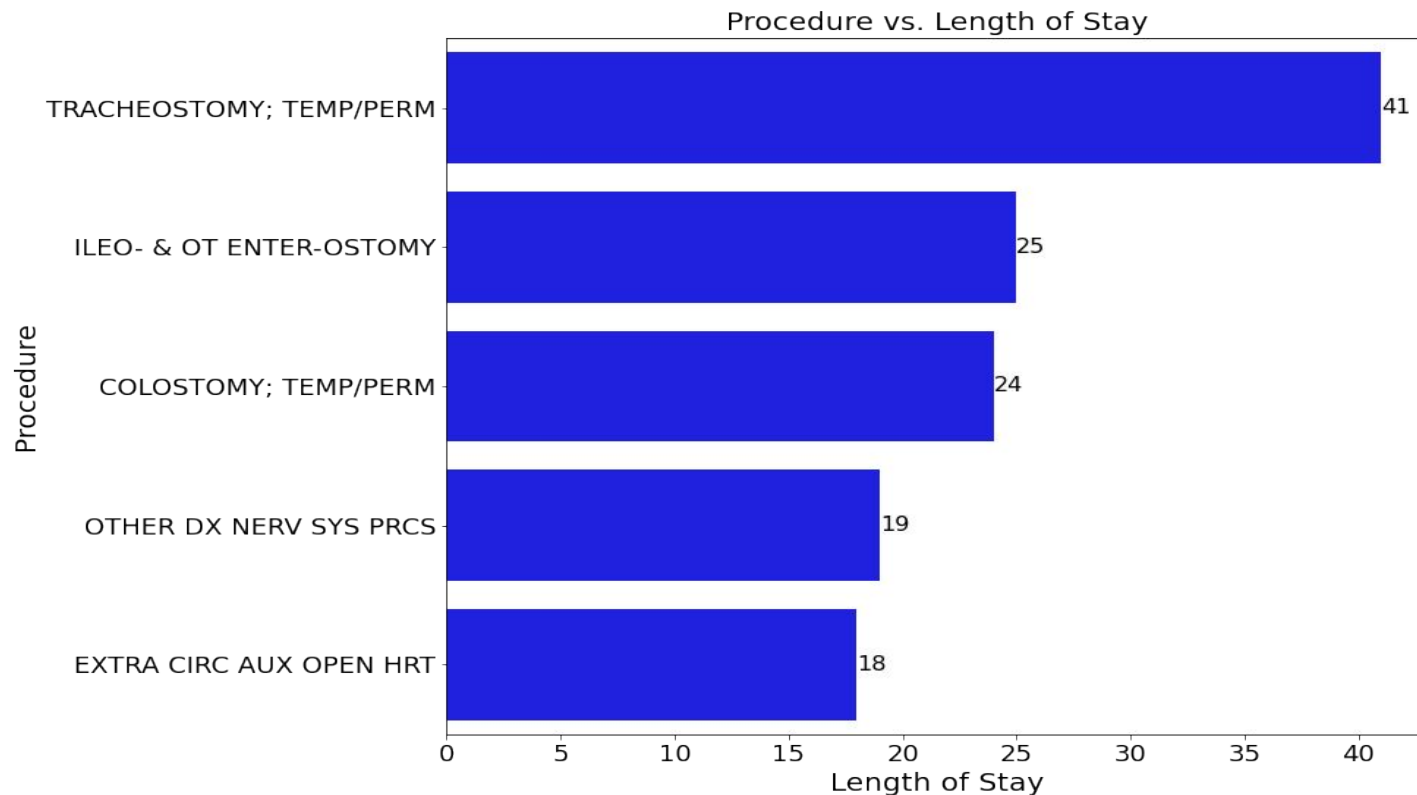 - One county, one city

- Patterns/trends
- Data Enrichment

Feature 1: Disposition vs. Length of stay

Feature 2: Diagnosis vs. Length of Stay

Feature 3: Procedure vs. Length of Stay

Procedure vs. Length of Stay

Model/Evaluation

- Model = ~74

- Error = 4.35 days

- Reproducibility

Conclusion

- Predict length of stay for patients

- Increased knowledge → better healthcare management→ company growth

- Three features:

  - Disposition, Diagnosis, Procedure

- Model = ~74

Next Steps

- Data Enrichment

- Gather patient data

  - Different counties

  - Different states

  - Different sized facilities

- More reliable/accurate model

Questions

Thank you!

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