

Hospital Business Recommendations: Patient Experience and Hospital Burden

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Data

The data is from <https://www.kaggle.com/datasets/blueblushed/hospital-dataset-for-practice/data>

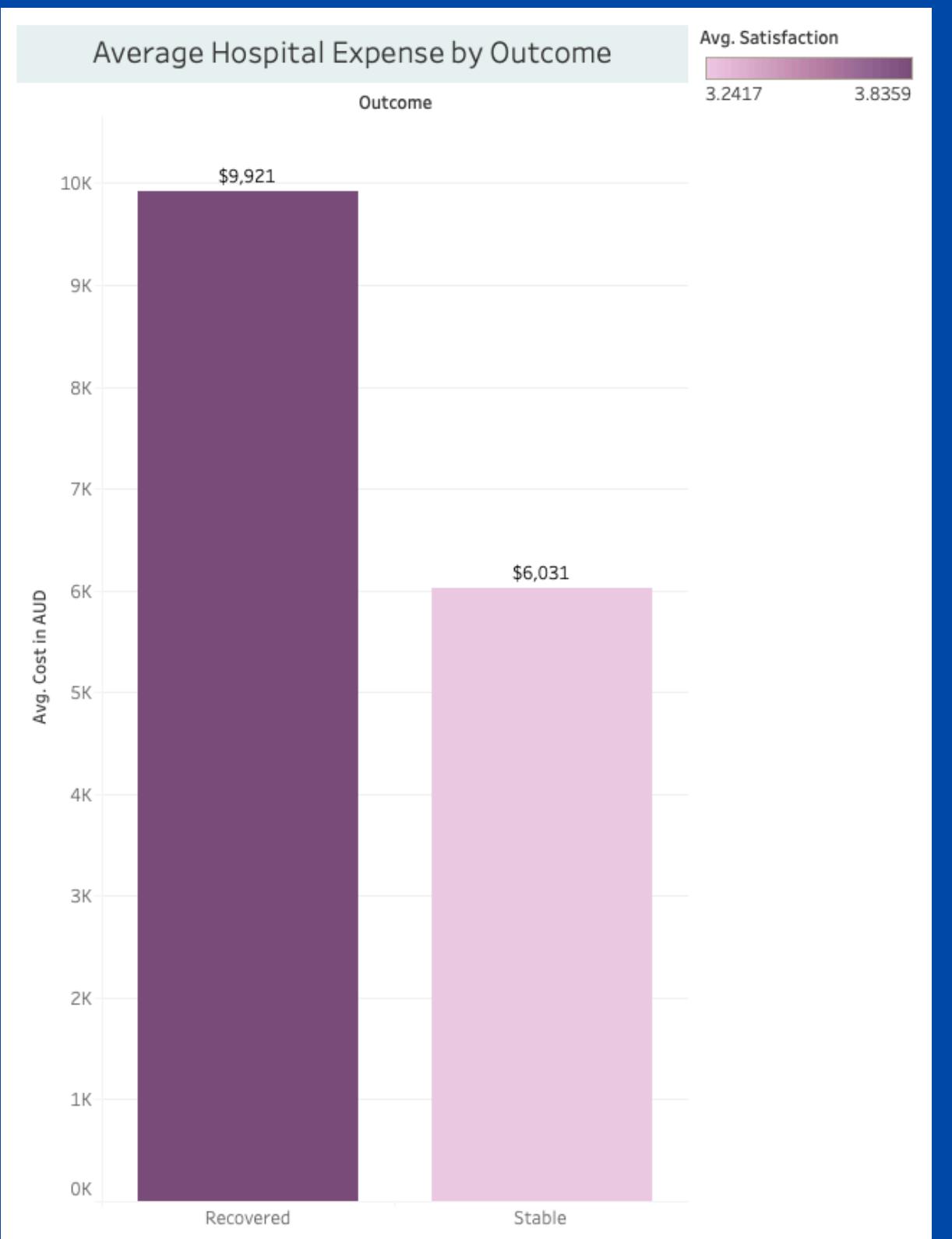
- Patient_ID: Unique identifier assigned to each patient.
- Age: Age of the patient at the time of admission.
- Gender: Patient's gender (e.g., Male or Female).
- Condition: The medical condition diagnosed or treated.
- Procedure: The type of procedure or treatment administered.
- Outcome: Final health outcome at discharge (e.g., Recovered or Stable).
- Length_of_Stay: Number of days the patient stayed in the hospital.
- Cost: Total cost incurred by the hospital for treating the patient.
- Satisfaction: Patient-reported satisfaction score on a scale (1-5).
- Readmission: Indicates whether the patient was readmitted after discharge (Yes or No).

Method

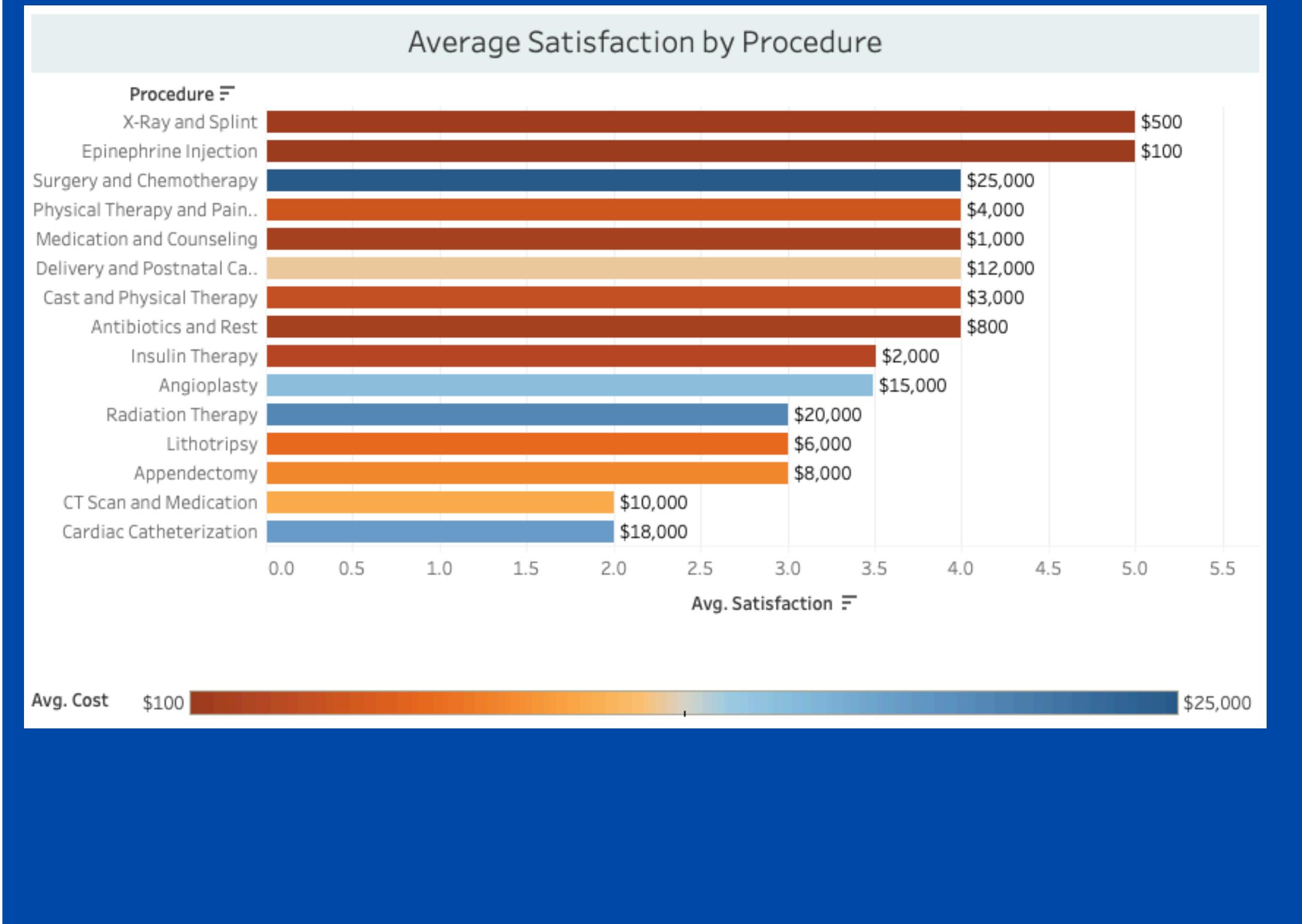
Using correlation matrices to find relationships, and regression analysis to cautiously infer causality

Results

- Patients who were fully recovered are linked to significantly higher hospital expenses compared to those discharged as "stable"

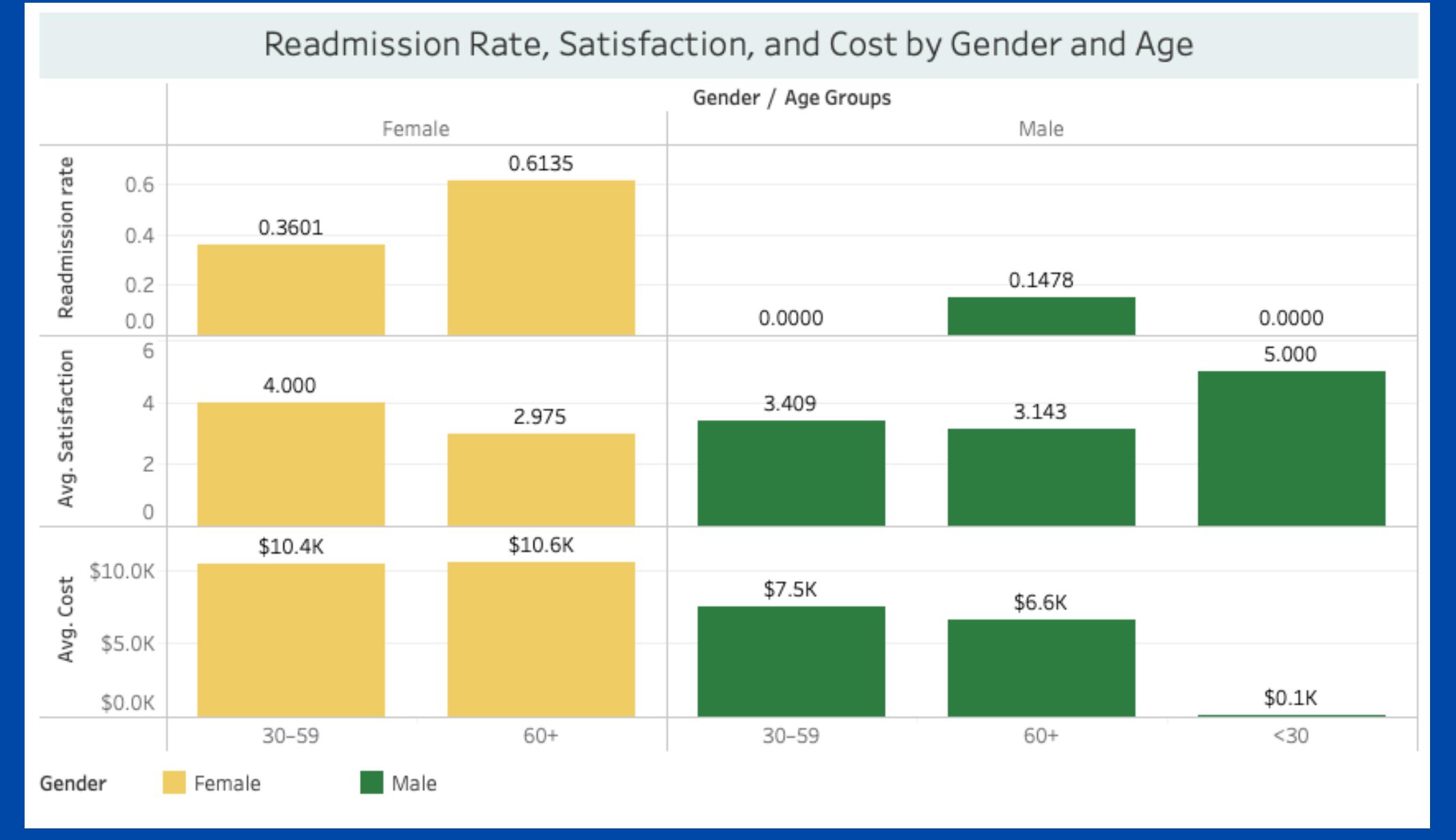


Results



- However, high cost does not always lead to higher satisfaction, especially for complex or invasive procedures.
- Some procedures (e.g., X-Ray and Splint, Epinephrine Injection) had high satisfaction and low cost, while others (e.g., Cardiac Catheterization, CT + Medication) showed low satisfaction despite high cost.
- This disparity highlights opportunities to review and improve care delivery in specific departments.

Results



- Older patients have a higher predicted probability of readmission and tend to incur higher care costs, possibly due to comorbidities or extended recovery periods.
- Female patients reported higher satisfaction, but also incurred higher average hospital costs and showed increased readmission risk.

Recommendations



Optimise care pathways for high-cost (complex) procedures by combining clinical effectiveness with patient satisfaction metrics.

Implement targeted care for older patients to prevent costly readmissions.

Investigate and address care variations by gender to reduce hospital expenses and improve satisfaction.

Standardise and scale best practices from high-satisfaction, low-cost procedures.

Future Steps

- 01** Perform cost-benefit analysis of recovered vs stable outcomes. Recovery is more expensive upfront, but if long-term outcomes are better then the high-cost interventions may be cost-effective after all.
- 02** Use machine learning to group patients by similar patterns in satisfaction, readmission risk, and hospital cost to enable targeted intervention strategies for specific patient groups
- 03** Incorporate time-based dimensions (month of admission, day of discharge) to explore how satisfaction, cost, or readmission fluctuate over time

Thanks

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