Data Overview & KPI Definitions

ℹ️ DATA OVERVIEW

• Dataset: Diabetic Patient Hospital Encounters
• Source: Hospital administrative records
• Total Records: ~100,000 encounters
• Grain: One row represents one hospital encounter
• Time Aspect: Encounter-level data (no time series trend)
• Objective: Analyze readmissions and identify risk drivers
• Note: Dataset does not contain continuous time series, hence analysis focuses on distribution and risk patterns rather than trends

📊 KPI DEFINITIONS

• **Total Encounters**
Number of hospital visits recorded in the dataset

• **Unique Patients**
Count of distinct patients across all encounters

• **Readmission Rate %**
Percentage of hospital encounters that resulted in a readmission (Calculated at encounter level; includes both <30 and >30 day readmissions)

• **30-Day Readmission %**
Percentage of hospital encounters where patients were readmitted within 30 days of discharge

• **High-Risk Patients**
Patients readmitted within 30 days

DATA MODEL STRUCTURE

• Fact Table: Hospital encounters (encounter-level)
• Dimension Tables:
  – Admission Type
  – Admission Source
  – Discharge Disposition
• Patient tracking enabled using patient_nbr
• Star schema with single-direction relationships
• Patient-level analysis enabled through patient_nbr, allowing identification of repeat encounters

DATA ASSUMPTIONS & LIMITATIONS ⚠️

• Some categorical fields contain 'Unknown' values
• Administrative discharge types are included
• Analysis is encounter-based, not patient lifecycle-based
• Results are directional and for analytical insights only

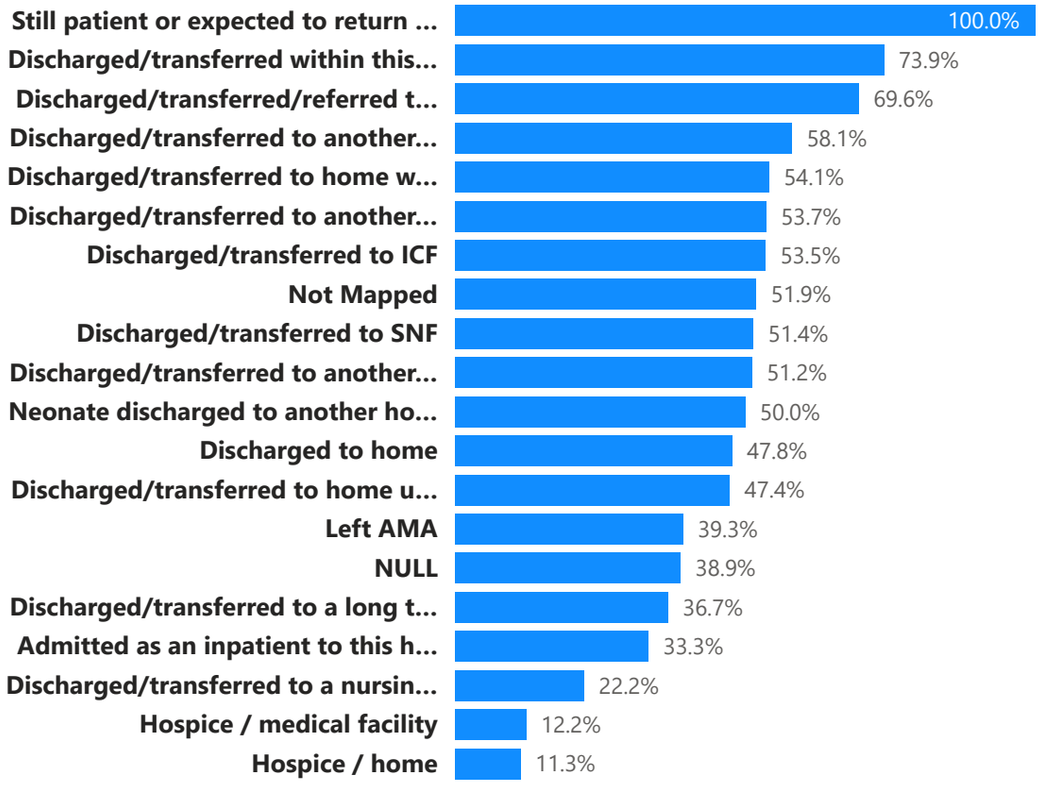
INTENDED USE

• Designed for hospital leadership and quality teams
• Supports identification of high-risk segments and operational drivers of readmissions
• Intended for analytical decision support, not clinical diagnosis

“Hospital Performance – Executive Overview”

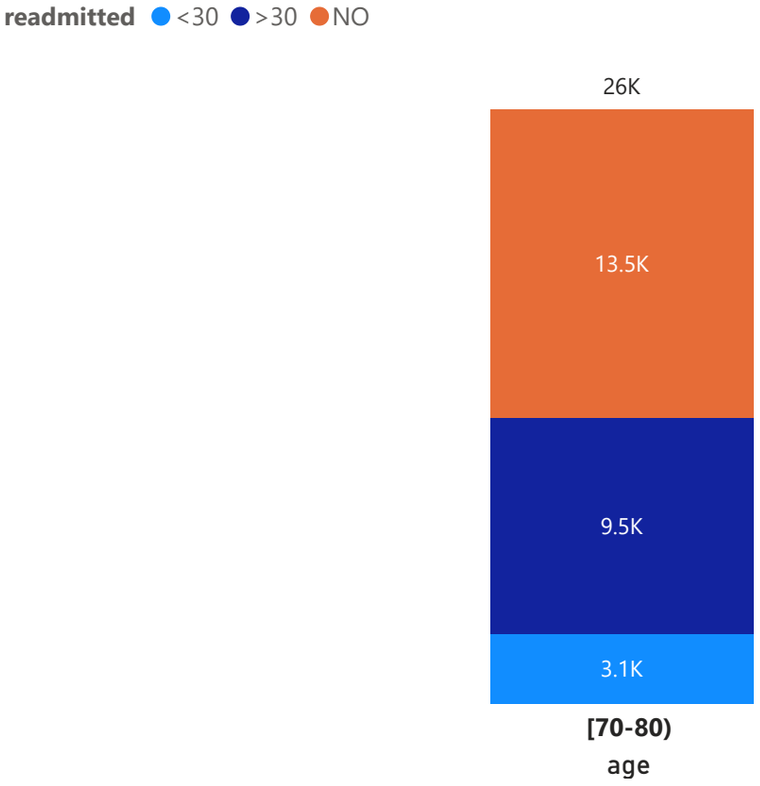
Total Encounter's	Unique Patients	Readmission Rate %	30 Day Readmission %	Average Length of Stays
26K	19K	48.1%	11.8%	4.59

Readmission Rate by Discharge Disposition



- **Elderly patients show higher readmission risk**
- **Certain discharge types drive early readmissions**
- **Targeted discharge planning can reduce risk**

Readmission by Age Group



Age	Gender	Admission Types
☐ [0-10)	☐ Female	☐ Elective
☐ [10-20)	☐ Male	☐ Emergency
☐ [20-30)	☐ Unknown/Invalid	☐ Newborn

Patient Volume & Demographics

Total Encounters	Unique Patients	Average Encounter Per Patients
102K	72K	1.42

Age

- [ ] Female
- [ ] Male
- [ ] Unknown/Inva...

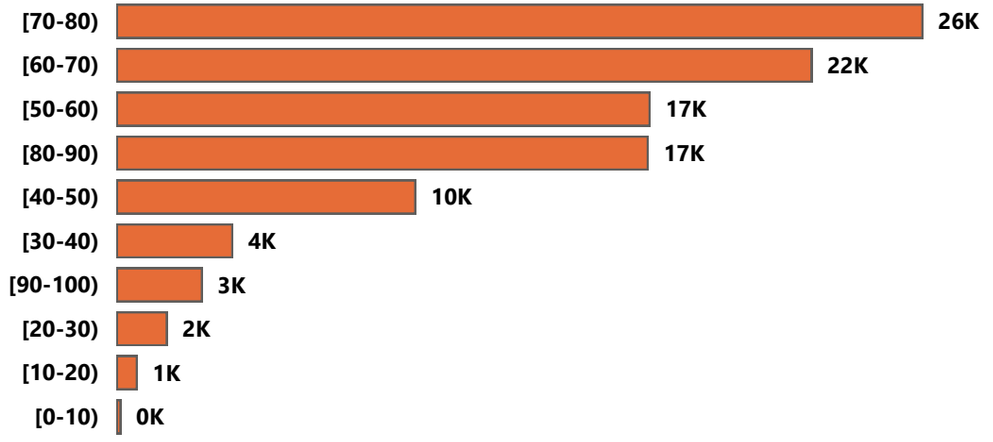
Age

- [ ] [0-10)
- [ ] [10-20)
- [ ] [20-30)

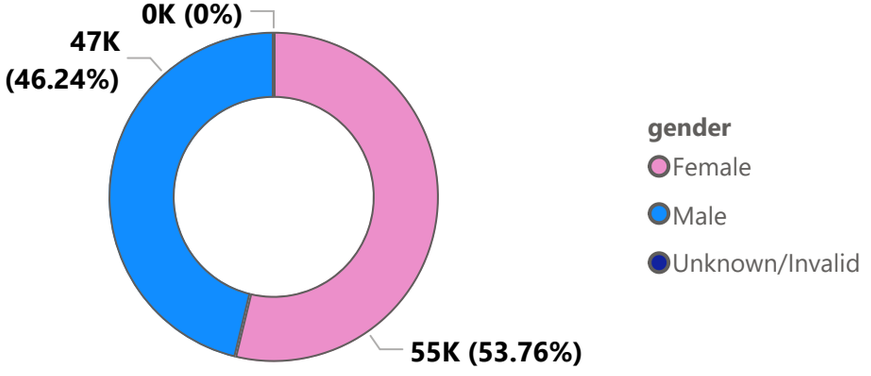
Admission Type

- [ ] Elective
- [ ] Emergency
- [ ] Newborn

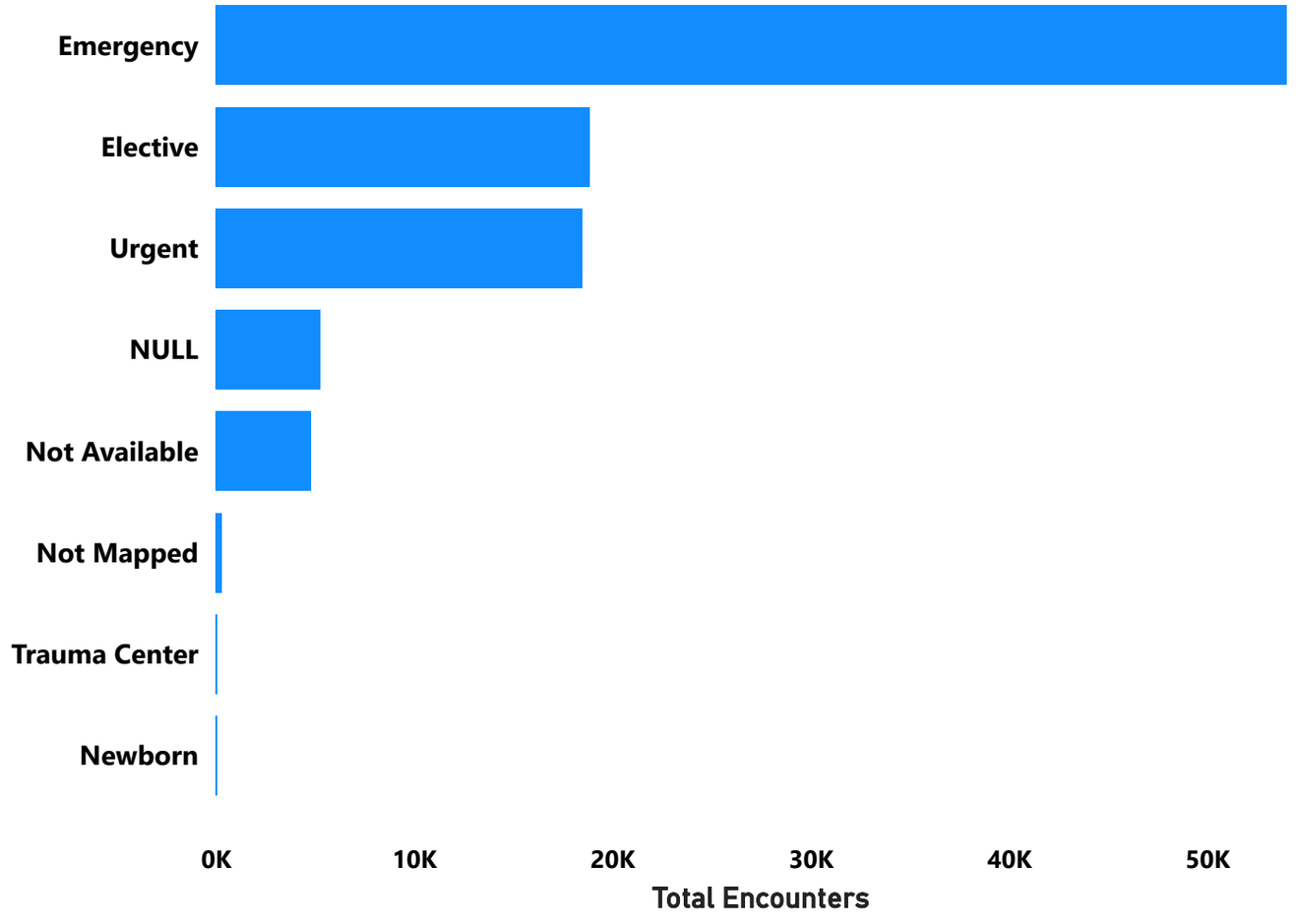
Encounters by Age Group



Encounters by Gender



Encounters by Admission Type

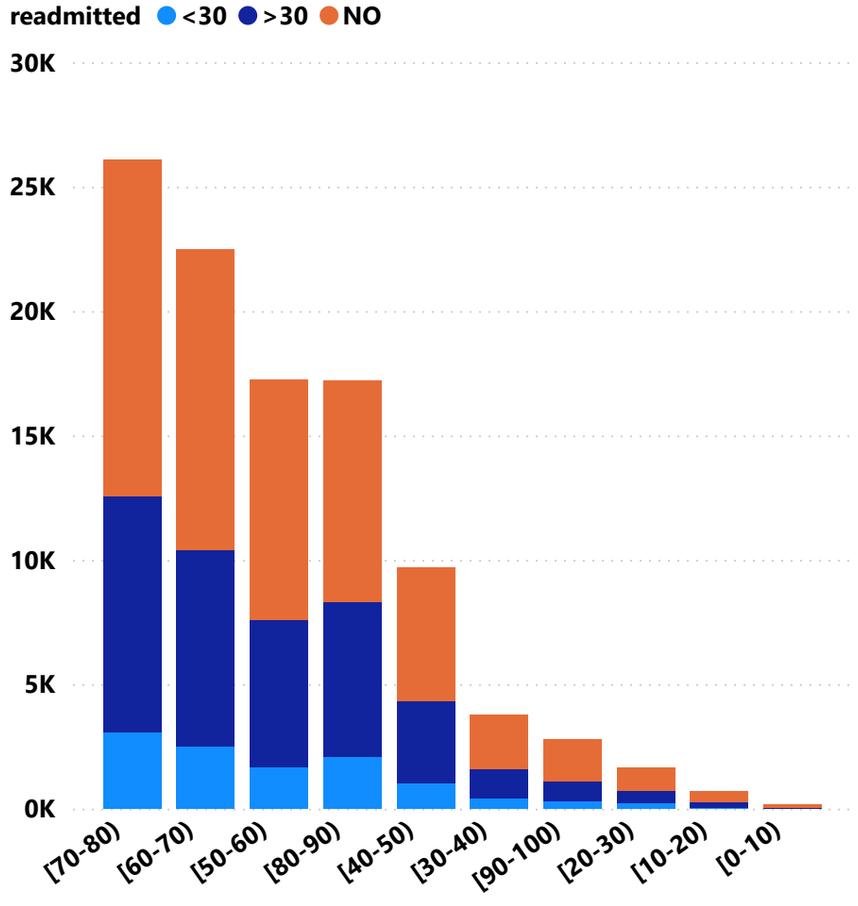


“Readmission Analysis & Risk Drivers”

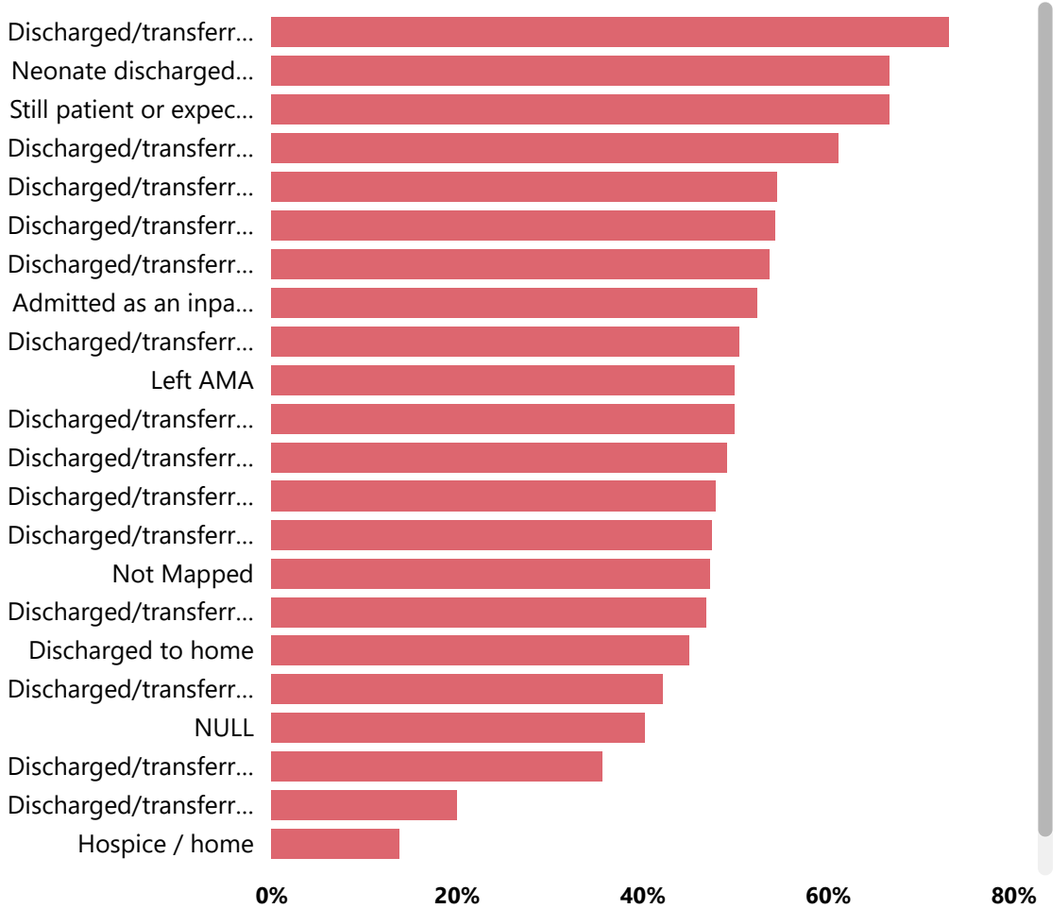
Readmission Rate %	30 Day Readmission %	High Risk Rate %
46.1%	11.2%	11.2%

Readmissions by Gender

Readmission by Age Group



Readmission Rate by Discharge Disposition



Admission Type

Elective	Not Mapped
Emergency	NULL
Newborn	Trauma Center
Not Available	Urgent

Age

- [ ] Female
- [ ] Male
- [ ] Unknown/Invalid

Age

- [ ] [0-10)
- [ ] [10-20)
- [ ] [20-30)

“Treatment Patterns & Risk Indicators”

Insulin Usage %	Avg Medications	Avg Emergency Visits
53.4%	16.02	0.20

Age

- [ ] [0-10)
- [ ] [10-20)
- [ ] [20-30)

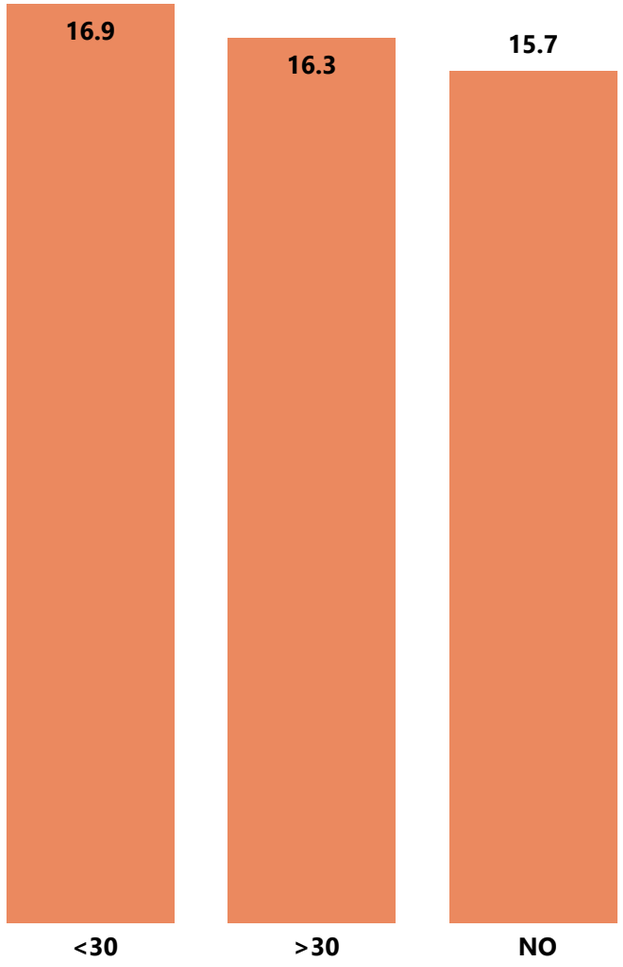
Gender

- [ ] Female
- [ ] Male
- [ ] Unknown/Invalid

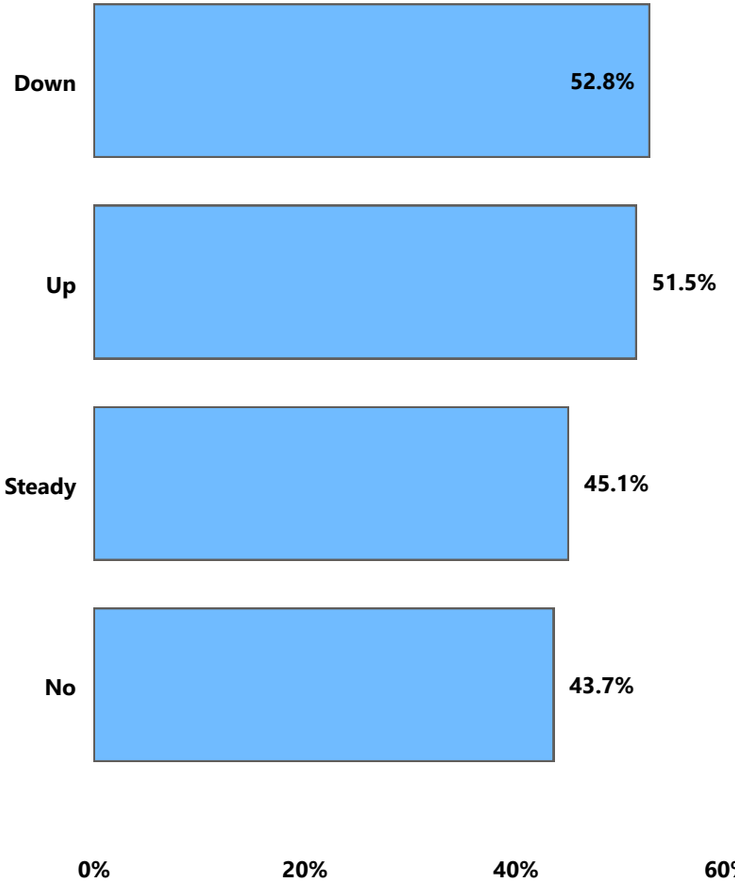
Admission Type

- [ ] Elective
- [ ] Emergency
- [ ] Newborn

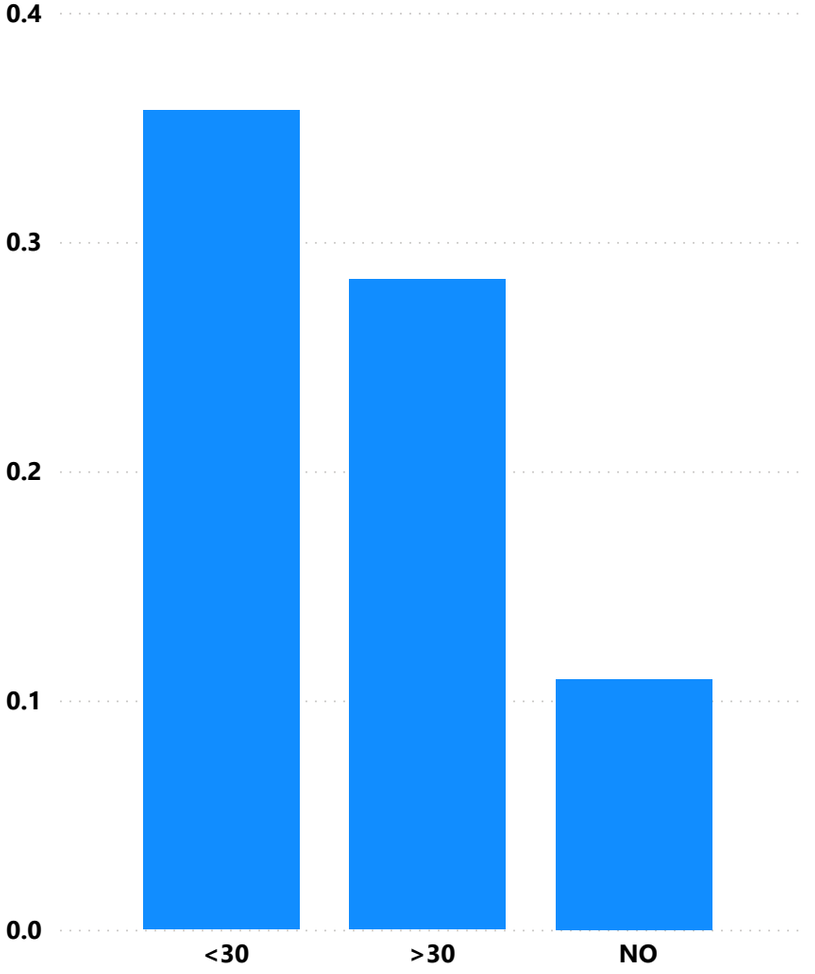
Avg Medications by Readmission Status



Readmission Rate % by insulin



Avg Emergency Visits by Readmission Status



INSIGHT 1

• Elderly patients (60+) account for the highest share of readmissions

INSIGHT 2

• Certain discharge dispositions show consistently high 30-day readmission rates

INSIGHT 3

• Patients with higher medication complexity and insulin usage are more likely to be readmitted

BUSINESS IMPACT

• Increased operational burden on hospitals
• Higher cost of care due to repeat admissions
• Indicates gaps in post-discharge planning

RECOMMENDATIONS

• Strengthen post-discharge follow-up for high-risk discharge types
• Prioritize elderly patients for transitional care programs
• Review medication complexity before discharge