Patient Experience Analysis

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Introduction.

- Providing high-quality healthcare is essential for improving patient outcomes and satisfaction. Patient feedback serves as a critical tool for identifying areas of improvement and enhancing service delivery.

- This project focuses on analyzing data from the CAHPS survey to explore the key factors influencing patient satisfaction and dissatisfaction. By leveraging advanced data visualization techniques, we aim to uncover patterns, trends, and actionable insights that can guide healthcare providers in refining their practices.

- Ultimately, the goal is to enhance healthcare services, foster a patient-centered environment, and support continuous improvement initiatives for better care experiences.

Objective

What is the focus?

The focus of this project is to enhance healthcare services by analyzing patient satisfaction and experiences using CAHPS survey data. We aim to uncover key patterns and drivers behind patient feedback.

What did we do?

We analyzed CAHPS survey data to explore key factors influencing patient satisfaction and dissatisfaction. Using advanced data visualization techniques, we identified trends, patterns, and actionable insights. Our work focused on understanding multiple dimensions of patient experiences, such as communication, care quality, and accessibility, to provide recommendations for healthcare service improvements.

Why we did?

We initiated this project to emphasize patient-centered healthcare, as patient satisfaction is crucial for improving outcomes and trust. By analyzing CAHPS survey data, we aimed to uncover areas for improvement and provide actionable insights for better care delivery.

Scope.

The project focuses on analyzing patient satisfaction data from the CAHPS survey to evaluate healthcare service quality. By identifying trends, patterns, and key drivers of satisfaction and dissatisfaction, the project aims to:

- Compare healthcare providers based on patient feedback.
- Offer actionable recommendations for improving healthcare services.
- Help patients make informed decisions by highlighting top-performing providers.
- Support healthcare providers in creating a more patient-centered environment.

This analysis ultimately aims to drive continuous improvement in healthcare delivery.

Methodology.

Project Flow Chart

01
Data Collection
Utilized CAHPS survey data for patient satisfaction analysis. Gathered demographic, service type, and provider performance information.

02
Data Preparation
Cleaned data to handle null values and ensure consistency. Standardized data types for compatibility in analysis.

03
Exploratory Data Analysis (EDA)
Analyzed trends across demographics, services, and satisfaction levels. Identified key satisfaction drivers using statistical techniques.

04
Sentiment Analysis
Applied NLP techniques to extract insights from patient feedback. Categorized comments into satisfaction themes (e.g., communication, accessibility).

05
Visualization and Benchmarking
Created dashboards using Power BI to visualize trends and compare providers. Benchmarked provider performance against patient satisfaction metrics.

Visualizations.

PATIENT EXPERIENCE ANALYSIS

NT EXPERIENCE ANALYSIS

- Overview Dashboard
- Patient Satisfaction Scores
- Patient Experience Analysis
- Hospital Types
- Tree Map

Patient Satisfaction Scores

State

All ▾

HCAHPS Measure ID

All ▾

Satisfaction Percentage

34.72

Satisfaction Percentage

HCAHPS Answer Description:
- Yes, staff "did" give patients i...
- Nurses "always" treated the...
- Yes, staff "did" give patients t...
- Doctors "always" treated the...
- Yes, staff "did" give patients i...
- Doctors "always" communica...
- Nurses "always" communicat...
- Doctors "always" listened car...
- Nurses "always" listened care...
- Doctors "always" explained t...
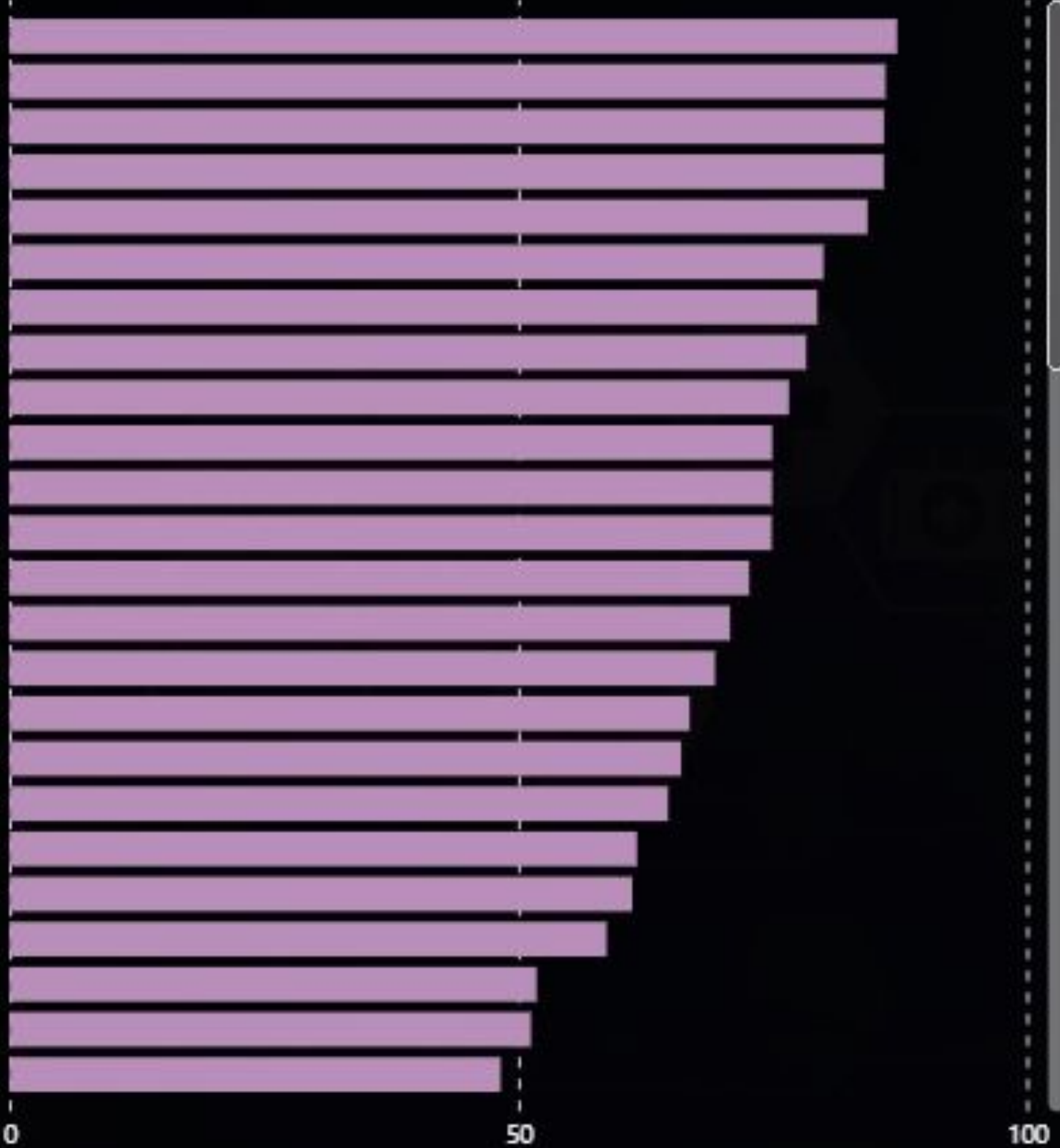- Nurses "always" explained th...
- Staff "always" explained new ...
- Room was "always" clean
- Patients who gave a rating of...
- "YES", patients would definit...
- Patients "always" received ba...
- Patients "always" received he...
- Patients "always" received ca...
- Staff "always" explained
- "Always" quiet at night
- Patients who "Strongly Agre...
- Patients who "Strongly Agre...
- Patients who "Strongly Agre...
- Staff "always" explained poss...

Satisfaction Percentage scale: 0, 50, 100

Hospital overall rating
- 3
- 4
- 2
- 5
- 1

Pie chart values: 0.38K (7.06%), 0.59K (10.93%), 0.76K (14.13%), 3.39K (62.76%)

Gauge value: 5398

Hospital Ownership (Sum of Hospital overall rating)
- Voluntary non-profit - ... : 7.2K
- Proprietary : 3.0K
- Government - Hospital... : 1.5K
- Government - Local : 1.2K
- Voluntary non-profit - ... : 1.2K
- Voluntary non-profit - ... : 0.9K
- Government - State : 0.6K
- Veterans Health Admin... : 0.5K
- Physician : 0.2K
- Government - Federal : 0.1K
- Department of Defense : 0.1K
- Tribal : 0.0K
- : 0.0K

Count of Emergency Services by **Hospital Type**
- Acute Care Hospitals
- Critical Access Hospitals
- Psychiatric
- Acute Care - Veterans Administra...
- Childrens
- Acute Care - Department of Defense

Hospital Types: Mortality, Safety & Readmissions

Hospital Own... ×
Voluntary non-profit - ...

Hospital Type ×

Sum of MORT Group...
32K

Sum of Safety Group...
37K

Sum of READM Group...
51K

Hospital Type	Sum of READM Group Measure Count	Sum of Safety Group Me
Acute Care - Veterans Administration	1463	
Acute Care Hospitals	34452	
Critical Access Hospitals	14806	
Total	**50721**	

Voluntary non-profit - ...
23078

Proprietary
7722

Government - Hospita...
5555

Government - Local
4235

Sum of READM Gro...
50721

Voluntary non-profit ...
3740

Acute Care Hospitals
2959

Critical Access Hospit...
781

Voluntary non-profit - ...
3047

Veterans Health Admi...
1463

Physician
770

● Sum of MORT Group Measure Count ● Sum of READM Group Measure Count ● Sum of Safety Gro...

Hospital Type

Acute Care Hospitals

Critical Access Hospitals

Acute Care - Vet
Administratio
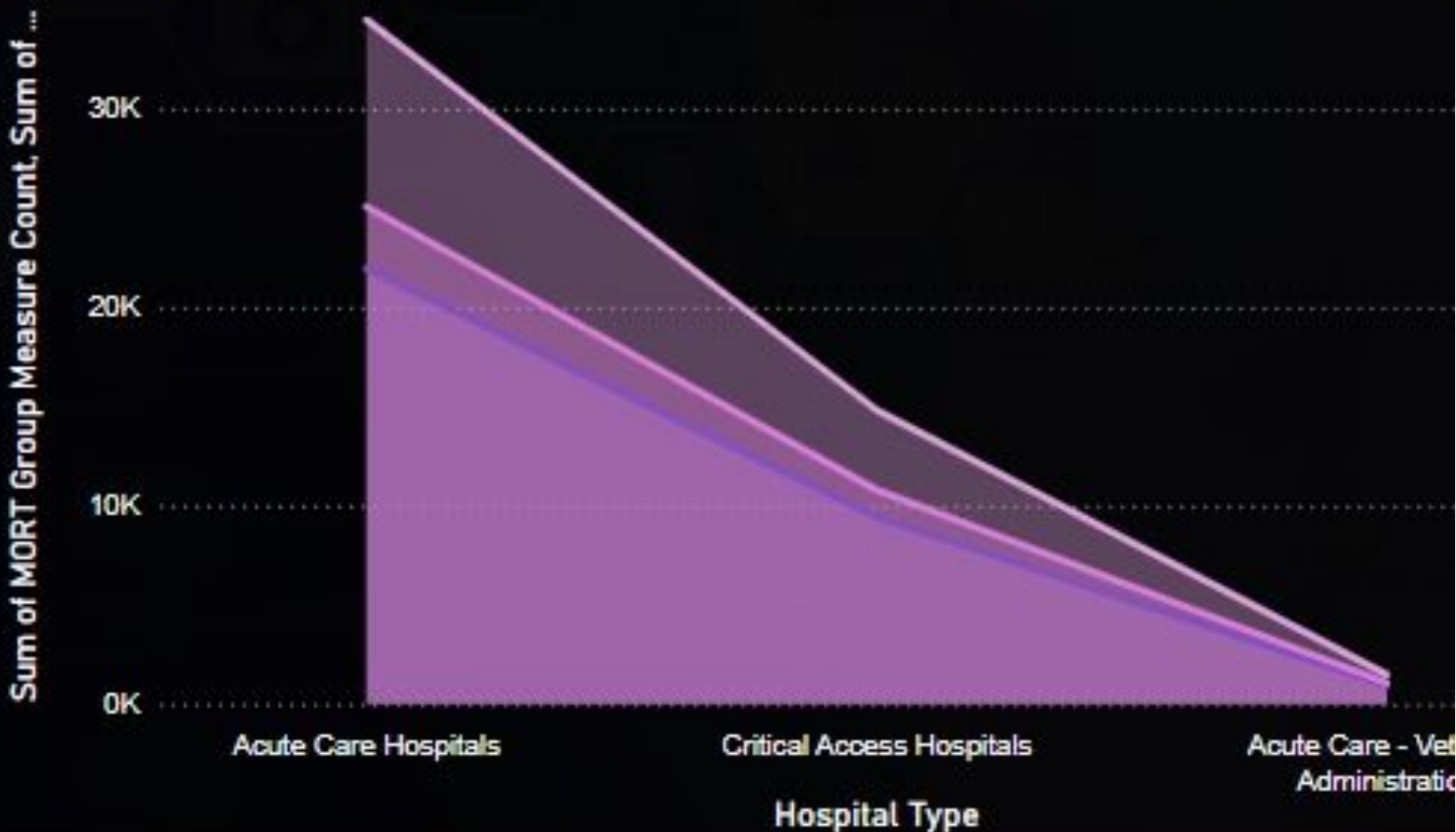
Hospital Type

Hospital Performance Metrics : Mortality, Safety, and Readmissions Analysis

Voluntary non-profit - Private	Voluntary non-profit - Private	Voluntary non-profit - Private
Sum o...		S...
Sum o...		
Sum of Count of READM Measures No Different	Sum of Count of MORT Measures No Different	Sum of Count of Safety Measures No Different
Proprietary	Voluntary no...	Governme...	Proprietary	Voluntary non-...	Governme...	Proprietary	Voluntary non...
S...	Sum of Count ...	Sum of Co...		Sum of Count of...	Sum of Cou	Sum of Count of...
Sum of Count of READM Me...	S...	Sum of ...	Su...	Sum o...	Sum of Count of MORT Measures No ...	Sum of Count of...	Sum of Cou	Sum of Count of Safety Measu...	Sum...	Sum of Coun...
Voluntary non-profit - Other	Government - ...	Go...	Voluntary non-profit - Other	Government - Lo...	Govern	Voluntary non-profit - Other	Government - ...
		Su...	S...		Sum of ...		Su...
					P...		
Sum of Count of READM Mea...	Sum of Count...		Sum of Count of MORT Measures No...	Sum of Count of ...		Sum of Count of Safety Measur...	Sum of Coun...

Innovation

- Leveraged CAHPS survey data to create a comprehensive patient satisfaction framework.

- Designed interactive dashboards to visualize trends and benchmark provider performance.

- Introduced demographic-based insights for personalized healthcare improvements.

- Proposed real-time feedback integration for continuous quality enhancement.

Findings

- Communication and provider responsiveness are primary drivers of satisfaction.

- Wait times significantly impact patient experiences.

- Demographics such as age and gender influence satisfaction levels.

- Specialty care and emergency services exhibit varying satisfaction trends.

- Consistent trends in dissatisfaction across facilities highlight systemic issues.

Impact

- Improved patient satisfaction through actionable insights.

- Enhanced healthcare service quality via feedback-driven recommendations.

- Increased transparency by benchmarking provider performance.

- Empowered patients with data-driven decision-making tools.

- Supported healthcare providers in achieving higher accountability and standards.

- Established a foundation for continuous quality improvement.

Conclusion

- Comprehensive analysis of CAHPS data revealed key factors influencing patient satisfaction.

- Insights from data enable hospitals to enhance service quality, communication, and responsiveness.

- Effective benchmarking across providers fosters accountability and continuous improvement.

Future Work

- Incorporate additional datasets to expand analysis scope (e.g., provider reviews, operational data).

- Enhance predictive modeling to anticipate patient needs and satisfaction trends.

- Develop automated dashboards for real-time satisfaction tracking.

- Integrate advanced NLP techniques for deeper sentiment analysis.

- Explore partnerships with healthcare providers for practical implementation and feedback.