GREGORY ANIM BOANTE

LEVEL 3 DATA TECHNICIAN

PORTFOLIO



**Introduction**

In my role as a Healthcare Assistant, also supporting the Ward Care Navigator, I was delegated to make improvements to our care planning and discharge coordination process. Delays in discharge have become an issue at the hospital; this impacts bed availability and can be related to the issue of patient flow. Effective and timely discharge planning is important for optimizing resource usage, improving the outcomes of patients, and ensuring seamless transitions to post-hospital care. This project, therefore, aimed at analysing the available data to identify the bottlenecks in discharge and provide insight for the refinement of care plans and improvement of patient throughput.

**Data Extraction**

In order to support this portfolio report, I exported data from the ward care navigator portal in the electronic health record (EHR) system of the hospital that included patient information, care plans, discharge notes, and service times. Key data sources included:

• EHR patient records, discharge summaries, care plan information, demographic information

• Bed management system, from which I collected admittance, move, and discharge occasions. I retrieved patient records about Bed, Actual days stay, discharge dates, and recorded delays using PowerBI queries. While extracting data, I always made sure to anonymize patient data to maintain confidentiality and comply with hospital data governance policies.

**Data Aggregation** (image before)

Once extraction was performed, the data was aggregated for in depth analysis:

• Group by date and time on admission, discharge (D2A), OT/PT, Revoke and intervention times were all normalized for range of times of different data types.

• Classification: I classified patients based on the main admission (such as bed, primary diagnosis, etc.) and built the distribution of discharges as well as delays across the units as well. The aggregation provides an overview but can also be broken down to the ward-level to analyse discharge trends.

**Data Examination and Key Discoveries**

With the data prepared, I analysed its characteristics, examining variables such as:

* Bed and Projected stay, to assess if a particular patient stayed longer based on discharge delays.
* Discharge Timing: Evaluating the most common times for discharge and identifying patterns in delays.
* Frequency of Delays of patient: To reveal which patient discharge date was revoke and potential reasons (e.g., waiting for specialist or OT/PT review and new Discharge arrangements).

**Key Discoveries**

Peak Discharge Delays, the highest delays occurred in patients discharged from complex care and Discharge revoke.

Common Delay Factors, frequent causes included unavailability of patient placement whereby care homes facilities, late-in taking or accepting patient.

Demographic Insights, elderly patients with comorbidities tended to experience more significant discharge delays, often due to additional social care requirements.

**Analytical Methods and Justification**

To understand patterns within the data, I conducted both descriptive and inferential analyses:

* Descriptive Statistics: I used averages, medians, and frequency distributions to quantify delays across units and patient groups. This gave a snapshot of typical delays and outliers.
* Comparative Analysis: I compared lengths of stay and delay frequencies across units, employing ANOVA tests to assess whether observed differences were statistically significant.

These methods were selected because they provided a solid basis for identifying trends while also allowing us to validate findings statistically, ensuring that observed patterns were not due to random chance.

**Visualizations and Technical Steps** (Image before)

For communication and findings effectively, I created several visualizations:

* Heatmap of Discharge Times: Showing the frequency of discharge delays by time of day, which helped highlight periods of high discharge activity.
* Bar Charts for Delays by Unit: To show the distribution of delays across different hospital units.
* Scatter Plot for Length of Stay vs. Discharge Delay: Demonstrating correlations between length of stay and discharge timing.

Technical Steps:

* Data Cleaning: Removed outliers and standardized date formats before visualization.
* Software Used: I used Python with libraries like Matplotlib and Seaborn for visualizations due to their flexibility and ability to handle large datasets efficiently.
* Dashboards: I created interactive dashboards using Tableau to enable staff to filter data by unit, date, or patient demographic, making it easier to drill down into specifics.

**Results Sharing with the Organization**

The results were shared with the ward matron and line manager through a formal presentation to the healthcare management team, where I showcased key insights and visualizations. A detailed report that included methodologies, findings, and recommendations for improving discharge processes.

**Project Feedback**

Following the presentation, feedback was collected from stakeholders. Key points included

* Appreciation for the clarity of the visualizations and the actionable insights provided.
* Suggestions to extend the analysis to include post-discharge patient surveys to gather qualitative data on patient experiences.
* Interest in conducting a follow-up study to assess the impact of implemented changes based on the findings.
* Future areas for exploration include predictive models for discharge planning and integrating additional data from social care services to enhance coordination.

In conclusion the work portfolio demonstrated the critical application of KSBs in data extraction, analysis, and visualization within a healthcare setting. The insights gained not only highlighted areas for improvement but also laid the groundwork for ongoing enhancements in patient care coordination and discharge planning. The positive feedback received reinforces the value of data-driven decision-making in achieving organizational goals. Moving forward, the integration of patient feedback and continuous monitoring of discharge processes will be vital in sustaining improvements in patient outcomes and operational efficiency.