IDB Data Analytics 3.0

Unveiling Success:
A Strategic Analysis of XYZ Medical Solutions' Soaring Sales Since Inception

=> Data Acquisition and Scope

=> Patient Demographics Impacting Sales

=> Unveiling Demand

=> Geographic Insights

=> Charting the Course for Growth

=> Driving Decisions with Data

Statistical Overview

Surgical Total Cost and Profit:

The average surgical total cost is approximately $1166.85, with a minimum cost of $30.80 and a maximum cost of $41421.89. There is high variability in costs.

The average surgical total profit is around $370.44, ranging from a minimum profit of -$36408.89 (indicating a loss) to a maximum profit of $351523.67.(varying profit margins)

ROI (Return on Investment):

The ROI is consistently -100%, suggesting a negative return on investment.This uniformity in ROI may indicate a need for further investigation into the cost structure and revenue generation strategies.

Profit/Gross Margin:

The average profit/gross margin is 161.04%, with a minimum of -158764.48% and a maximum of 948215.13%. So, by factors in following slides we can improve the margin.

Revenue Growth Rate:

The average revenue growth rate is -3.36%, indicating a negative growth trend. The distribution of growth rates displays significant variability, with a wide range from -314303.01% to 767537.78%.

Net Profit (EBITDA):

The average net profit (EBITDA) is -$796.53, indicating an overall loss. The minimum net profit is -$77830.78, and the maximum is $339550.44.

The analysis of patient demographics reveals several key insights that directly impact sales strategies.

1.Age Group Dynamics

- Sales Opportunities in 20-30 Age Group
- Profitability in 90-100 Age Group

2.Gender and Ethnicity Considerations

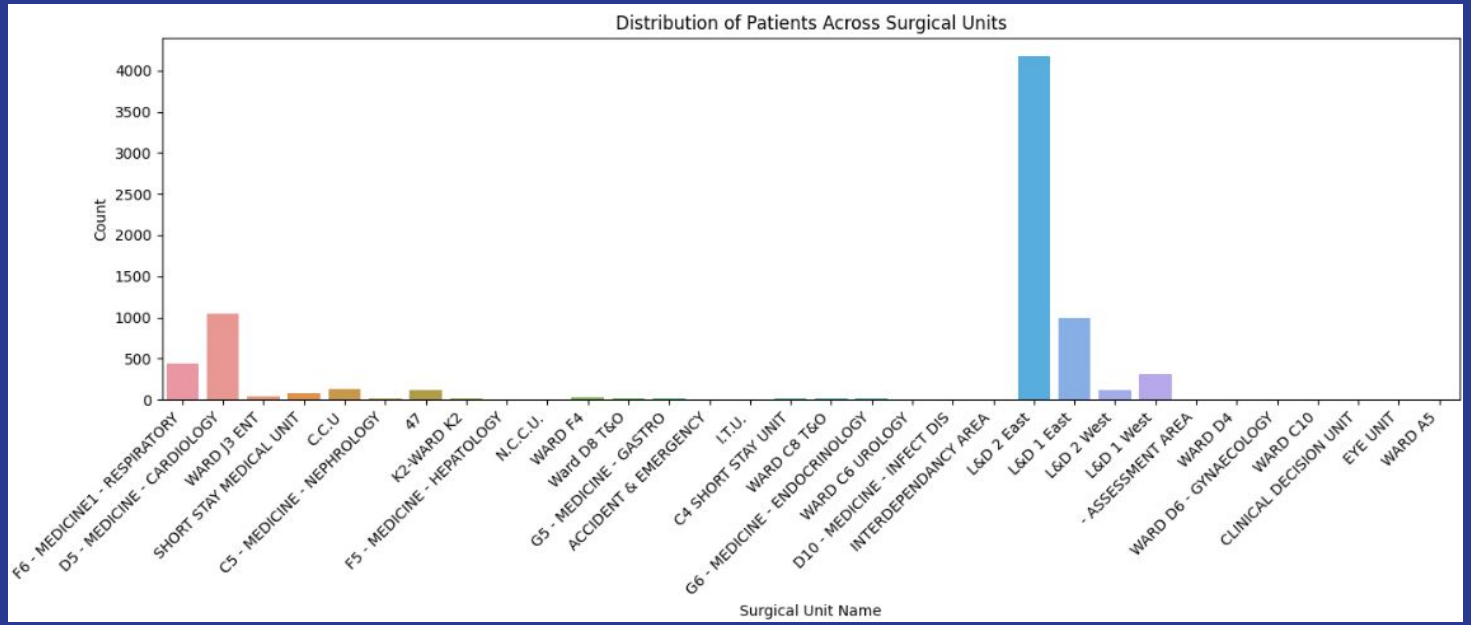
- Gender-Neutral Marketing
- Cultural Sensitivity for Ethnic Groups

3.Regional Dynamics

- Strategic Focus on High-Demand Cities
- Adaptation to Regional Preferences

4.Correlation with Procedure Types

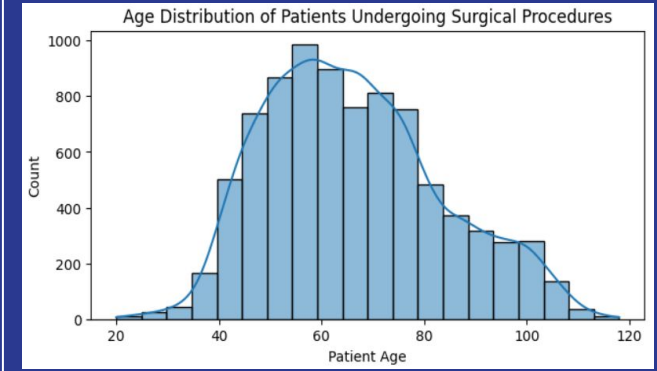
- Procedure-Based Sales Approach



Inference through Analytics:

I. Age Distribution Analysis:

- The age distribution of patients undergoing surgical procedures indicates a prominent **peak between the ages of 50 and 60**, forming a **bell-shaped** curve.

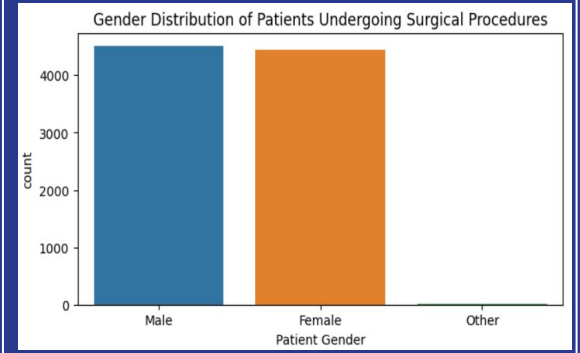


Marketing Insight:

The **concentration of patients in the** presents an opportunity for **targeted marketing towards 50 to 65 age group** this demographic, tailoring communication and promotional efforts to their specific healthcare needs and preferences.

II. Gender Distribution Analysis:

- **No significant gender imbalance in seeking surgical interventions**, indicating that both genders are equally engaged in it.

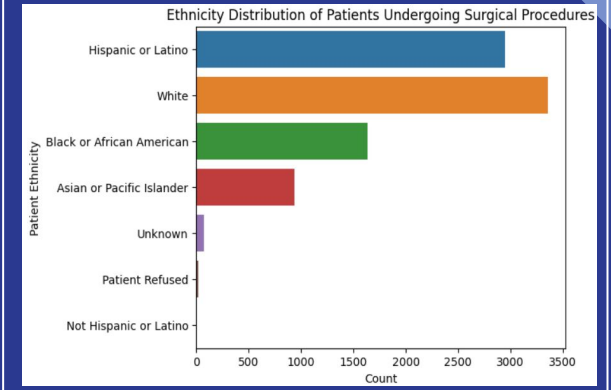


Marketing Insight:

Marketing strategies should be designed to **appeal to both genders** without a specific focus on one over other. **Gender-neutral messaging and promotions** reach broad patient base.

III. Ethnicity Distribution Analysis:

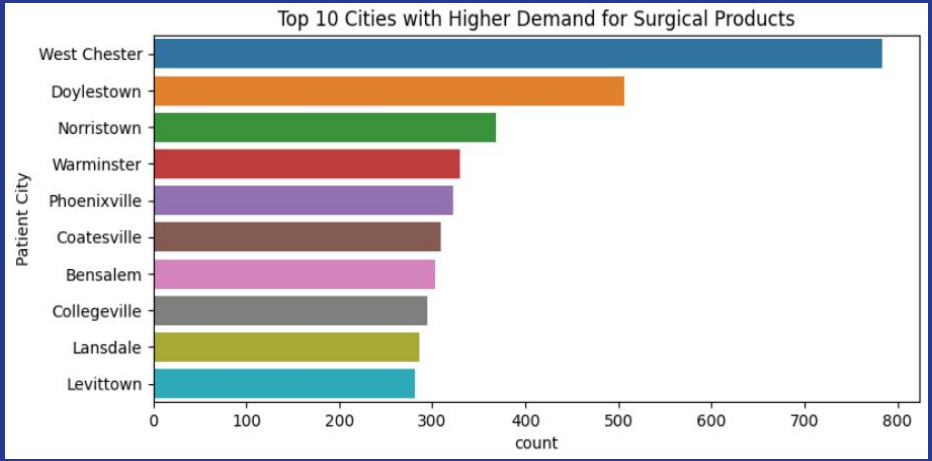
The ethnicity distribution highlights that regularly involved ethnic group is White, followed by Hispanic or Latino.

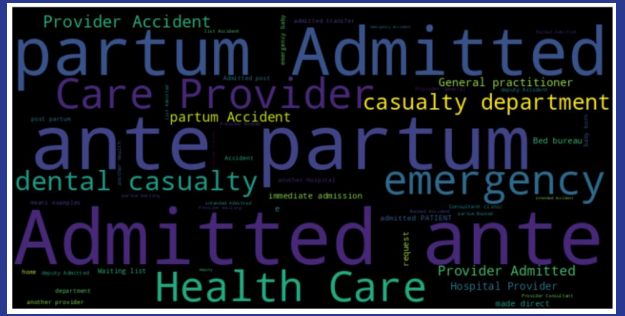


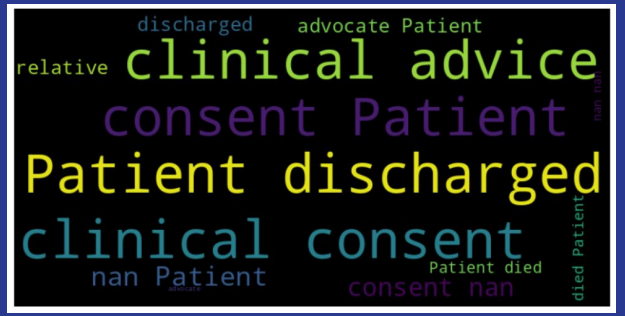
Marketing Insight:

Tailoring marketing materials, **language preferences, and cultural sensitivities** can enhance the effectiveness of outreach to diverse ethnic communities.

Cities and States with Higher Demand







1.Focus on Chester City: Allocate a significant portion of marketing resources to Chester City.

2. Strategic Campaigns for Doylestown: Implement targeted marketing campaigns in Doylestown.

3. Leverage Repeat Occurrences: Identify patterns of repeated occurrences in specific areas within cities. Those factors may have been the reasons that there is high demand in the areas.

***For example**, the Word Cloud of 'Surgery Admission Description' in certain city helps to understand the surgical equipments needed for that region and improves the unit.*

Surgical Economics:

Targeted Marketing:

High Cost, Highest Loss

1. *20-30 Age Group:*

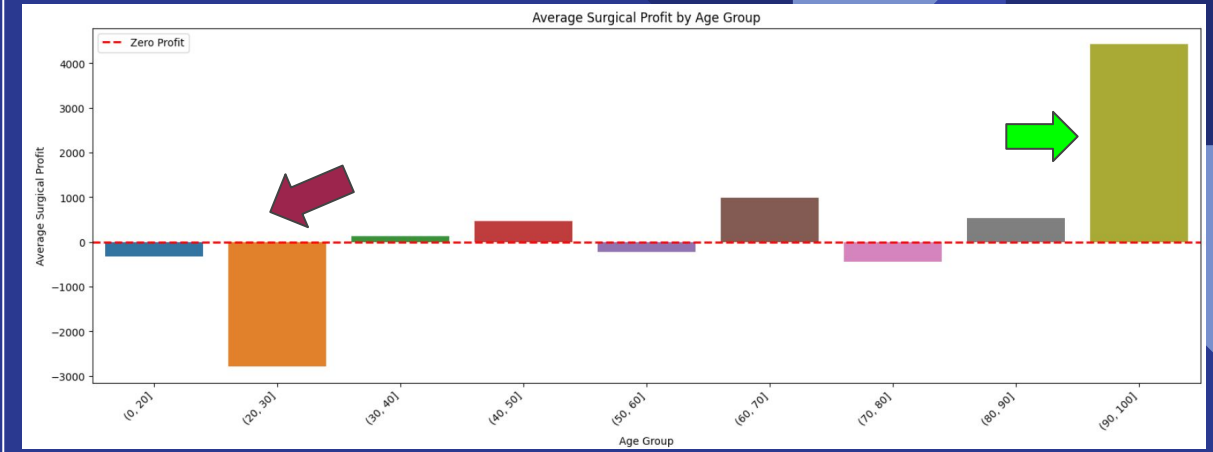
Consider strategies to minimize losses, such as optimizing resource utilization and negotiating cost-effective partnerships.

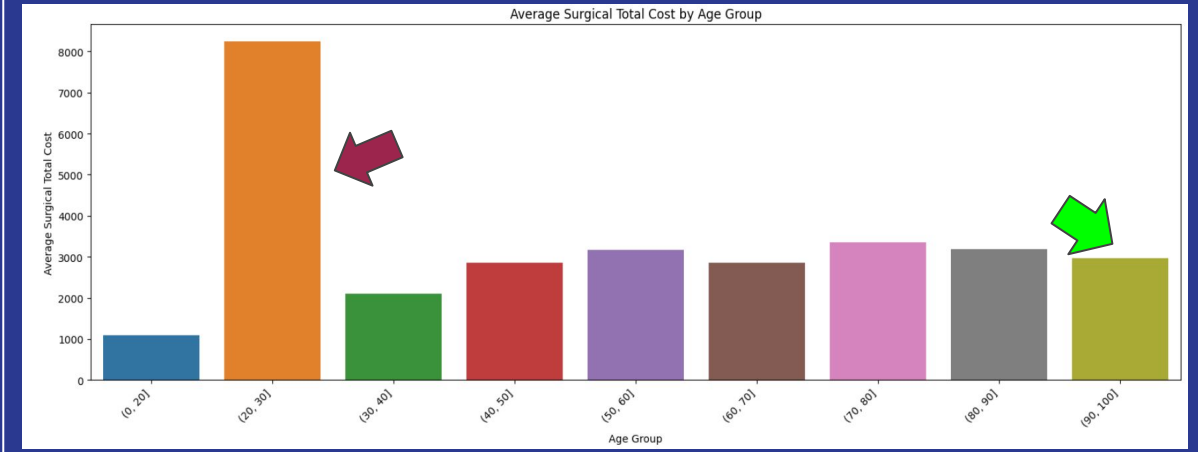
High Profit, Lower Cost

2. *90-100 Age Group:*

Tailor marketing messages for the elderly population, emphasizing specialized care, experienced surgeons, and post-operative support.

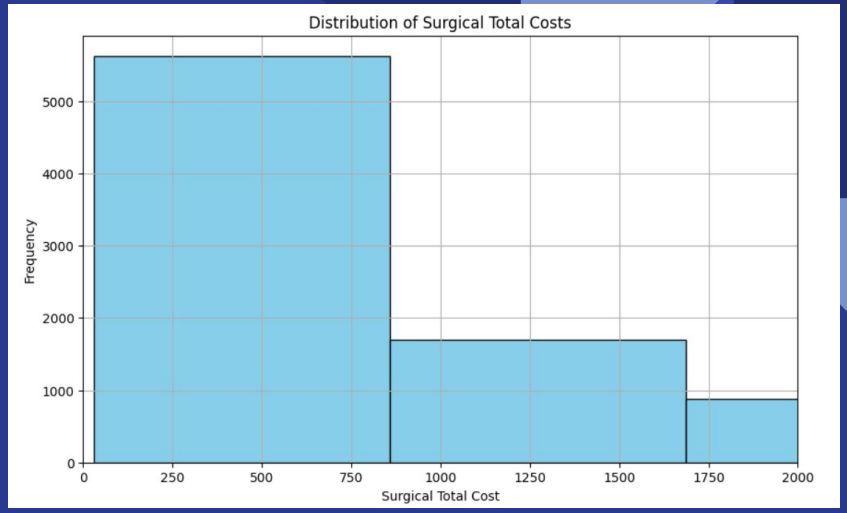
Profit and Loss can occur as we use costly surgical tools and expert doctors for surgeries.

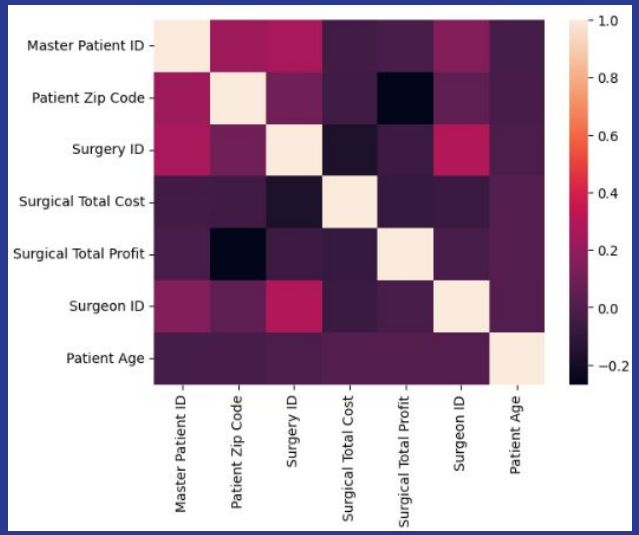


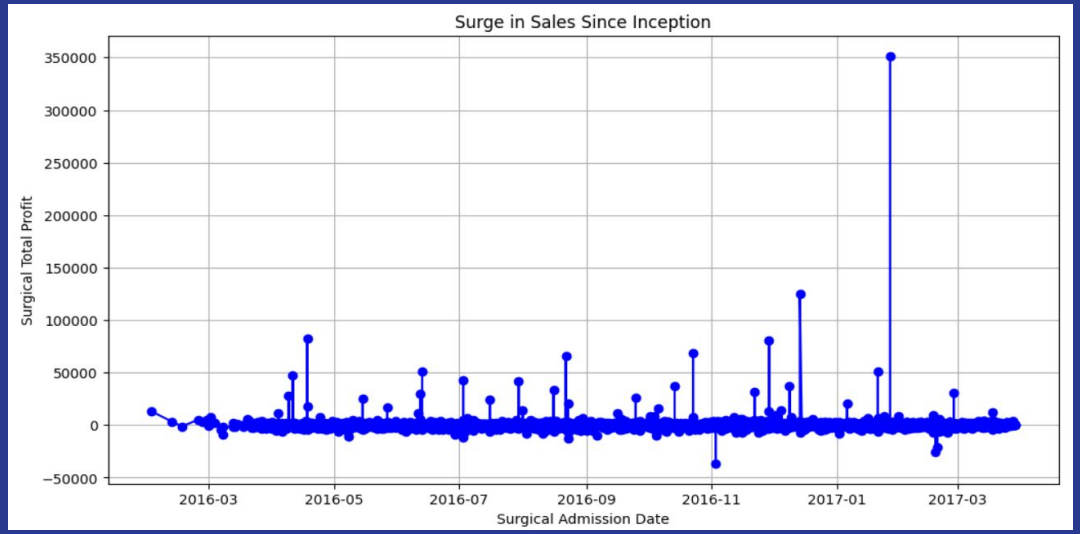


Surgical Sales since Inception

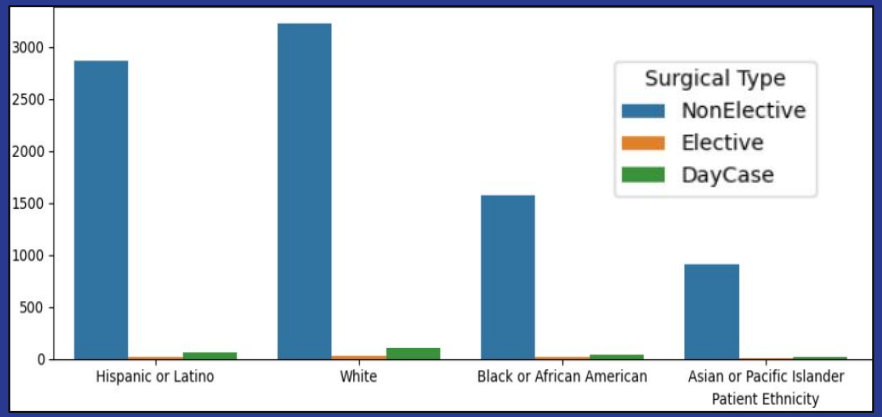
- There's a rise in sales of surgical equipments for patients admitted in 2017-02 like no other duration.
- Analysing the type of patients admitted during this stage will give idea about the reason for increased sales.
- Through following graphs we learn about the distribution of sales and their correlations with surgery type and age







Correlation Between Patient Demographics and Surgical Procedure Types:



The graph indicates a high number of non-elective surgeries (urgent or emergency cases).

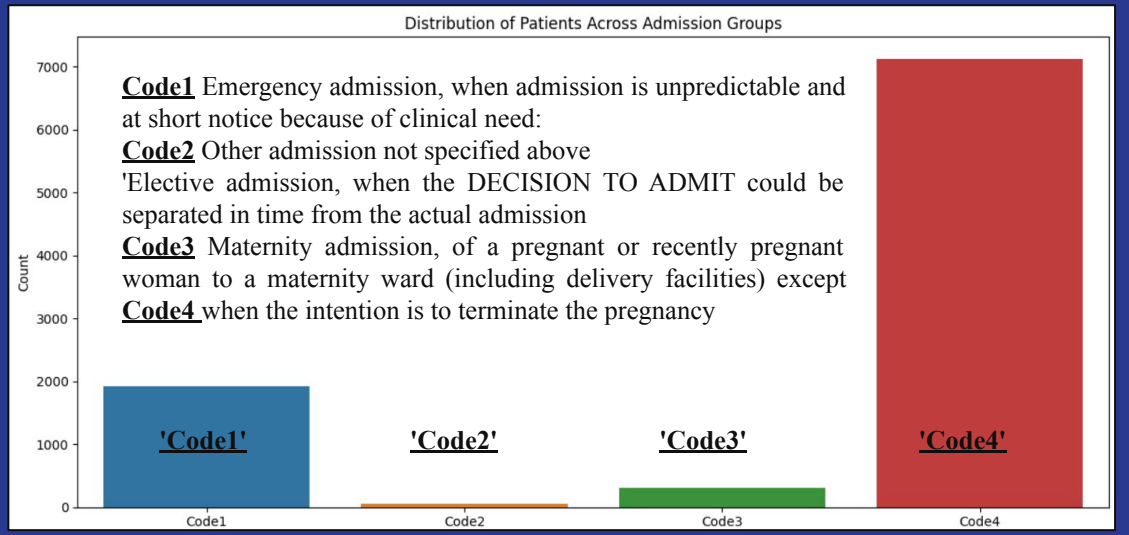
Marketing Insights:

1. ***Immediate Need and Urgency:*** addressing urgent medical conditions.
2. ***Community Awareness:*** raise awareness within the community about the availability of your surgical solutions for emergency cases.
3. ***Emergency Preparedness:*** company's readiness and capacity to handle emergency surgeries.

Procedure-Based Sales Approach:

Potential Promotional Efforts:

- Community Outreach and Education
- Collaboration with Healthcare Providers
- Digital and Traditional Marketing
- Highlight Specialized Services
- Patient Support and Informational Resources



Links and References

Google Drive: https://shorturl.at/lzEP4

Colab: https://rb.gy/zdwqxu

Github: https://github.com/JeninaAngelin/IDB-Analytics-3.0

The visualizations presented and inferred in the slides are detailed in the above notebook. Please look into it to get deeper view of relationship between variables in the data.

Tools used: Tableau, Colab(Matplotlib, Seaborn), Excel