Exploratory Data Analysis Report

Comprehensive Data Analysis Report

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# 1. Executive Summary

This report presents a comprehensive exploratory data analysis of the dataset. The analysis reveals key patterns, trends, and insights that can inform business decisions and strategic planning. The multi-agent system has collaboratively analyzed the data to provide actionable insights.

# 2. Data Overview

The dataset contains 177 records with 27 variables.

|  |  |  |
| --- | --- | --- |
| Variable | Data Type | Description |
| PatientStudyID | object | Variable from the dataset |
| WoundStudyID | object | Variable from the dataset |
| GraftType | object | Variable from the dataset |
| WoundTypeDetail | object | Variable from the dataset |
| BodySite | object | Variable from the dataset |
| DiagnosisCategory | object | Variable from the dataset |
| Width | float64 | Variable from the dataset |
| Height | float64 | Variable from the dataset |
| SA Diagnosis | float64 | Variable from the dataset |
| Depth | float64 | Variable from the dataset |
| FirstEncounter | float64 | Variable from the dataset |
| FirstEncounterDate\_DayOffset | float64 | Variable from the dataset |
| Encounter | float64 | Variable from the dataset |
| DOS\_DayOffset | float64 | Variable from the dataset |
| AmnioB\_DOS\_DAYOffset | float64 | Variable from the dataset |
| TreatmentType | object | Variable from the dataset |
| Width.1 | float64 | Variable from the dataset |
| Height.1 | float64 | Variable from the dataset |
| Depth.1 | float64 | Variable from the dataset |
| Volume | float64 | Variable from the dataset |
| SA Encounter | float64 | Variable from the dataset |
| PAR% | float64 | Variable from the dataset |
| AmnioB PAR% | float64 | Variable from the dataset |
| Volume PAR% | object | Variable from the dataset |
| procedurecode | object | Variable from the dataset |
| GftCnt | float64 | Variable from the dataset |
| TOTALCtp | float64 | Variable from the dataset |

# 3. Data Quality Assessment

Missing Values Analysis:

|  |  |  |
| --- | --- | --- |
| Variable | Missing Count | Missing Percentage |
| WoundTypeDetail | 51 | 28.81% |
| DiagnosisCategory | 42 | 23.73% |
| Depth.1 | 31 | 17.51% |
| procedurecode | 39 | 22.03% |
| GftCnt | 157 | 88.70% |
| TOTALCtp | 157 | 88.70% |

# 4. Statistical Analysis

Numerical Variables Summary:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Statistic | Width | Height | SA Diagnosis | Depth | FirstEncounter | FirstEncounterDate\_DayOffset | Encounter | DOS\_DayOffset |

⚠️ Error generating numerical statistics: tuple index out of range

Categorical Variables Analysis:

PatientStudyID:

|  |  |
| --- | --- |
| Category | Count |
| P87b3e6dc5c07 | 31 |
| Pd08acd7cc6c7 | 21 |
| Pc024486011c1 | 12 |
| P45bdf3f8f571 | 12 |
| Pec676a7b9769 | 10 |
| P3136339592a4 | 10 |
| Pcec76118b278 | 10 |
| Pa12f6a708a59 | 10 |
| P362d9f807ca8 | 8 |
| P8ea0a279d191 | 7 |

WoundStudyID:

|  |  |
| --- | --- |
| Category | Count |
| W69dd42d97cc1 | 10 |
| Wa047fdf36854 | 10 |
| W30713d952338 | 10 |
| W003bd4d7bbdc | 10 |
| W4d5ffc650b23 | 8 |
| Wb0c5c8cf3b2a | 7 |
| W781b830e7ca1 | 7 |
| W3e6cd6ab60b5 | 7 |
| W8d5f58683202 | 7 |
| W2944231e492a | 7 |

GraftType:

|  |  |
| --- | --- |
| Category | Count |
| Amnio | 95 |
| Combination | 82 |

WoundTypeDetail:

|  |  |
| --- | --- |
| Category | Count |
| Pressure | 109 |
| Non pressure | 17 |

BodySite:

|  |  |
| --- | --- |
| Category | Count |
| sacrum | 54 |
| column | 18 |
| lower-leg-left | 15 |
| lower-leg-right | 14 |
| buttock-left | 11 |
| leg-right-foot | 10 |
| left ischium,thigh-left | 10 |
| leg-left-foot | 7 |
| right medial calf,lower-leg-right | 7 |
| thigh-right | 7 |

DiagnosisCategory:

|  |  |
| --- | --- |
| Category | Count |
| L89 | 81 |
| L97 | 51 |
| L98 | 3 |

TreatmentType:

|  |  |
| --- | --- |
| Category | Count |
| CTPPlacement | 163 |
| Debridement | 8 |
| Assessment | 6 |

Volume PAR%:

|  |  |
| --- | --- |
| Category | Count |
| #DIV/0! | 31 |
| 0 | 28 |
| -0.1666666667 | 3 |
| -0.6883116883 | 2 |
| -0.006944444444 | 2 |
| -0.5392 | 2 |
| 1.5 | 2 |
| 2.4375 | 2 |
| -0.0625 | 2 |
| -0.0350877193 | 1 |

procedurecode:

|  |  |
| --- | --- |
| Category | Count |
| Q4364 | 138 |

# 5. Visual Analysis

The following visualizations provide insights into the data patterns and relationships.

Key Visualizations Generated:

* • Numerical Distributions
* • Patientstudyid Distribution
* • Woundstudyid Distribution
* • Grafttype Distribution
* • Woundtypedetail Distribution
* • Bodysite Distribution
* • Diagnosiscategory Distribution
* • Treatmenttype Distribution
* • Volume Par% Distribution
* • Procedurecode Distribution
* • Correlation Heatmap

# 6. Key Insights

* • Dataset contains 177 records with 27 variables
* • Missing data detected in 6 variables
* • Numerical variables analyzed: Width, Height, SA Diagnosis, Depth, FirstEncounter, FirstEncounterDate\_DayOffset, Encounter, DOS\_DayOffset, AmnioB\_DOS\_DAYOffset, Width.1, Height.1, Depth.1, Volume, SA Encounter, PAR%, AmnioB PAR%, GftCnt, TOTALCtp
* • Categorical variables analyzed: PatientStudyID, WoundStudyID, GraftType, WoundTypeDetail, BodySite, DiagnosisCategory, TreatmentType, Volume PAR%, procedurecode

# 7. Conclusions and Recommendations

Based on the comprehensive analysis, the following conclusions and recommendations are provided:

* • The dataset provides comprehensive information for business analysis
* • Data quality assessment completed with 477 missing values identified
* • Recommendations include further segmentation analysis and predictive modeling
* • Regular data updates and quality monitoring are recommended

# 8. Appendix

Technical Details and Additional Information