Exploratory Analysis of Spending Patterns in Antimicrobial Drugs

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INTRODUCTION

• Healthcare industry is over 3 billion USD and set to double in future – Forbes’
• Analytics is an integral part of its dynamically changing sphere
• Total spending on prescription drugs increased 12.2% to nearly $425 billion in 2015.
DATA

• Dataset obtained from the Cerner database
• Rpt format converted to text to sas7bdat.
• Scope narrowed to Urinary Tract Infection (UTI) patients and antimicrobial drugs Unasyn, Azithromycin, Ampicillin, Zithromax
• Final dataset -10000 observations and 12 variables
EXPLORATORY ANALYSIS

• Amount spent on each drug
EXPLORATORY ANALYSIS

• Frequency of drugs dispensed
EXPLORATORY ANALYSIS

• Frequency of amount spent by males and females
• Frequency of drugs consumed by patients which expired eventually
EXPLORATORY ANALYSIS

• Distribution of healthcare settings
PROCESS FLOW

• Cross Industry Standard Process for Data Mining methodology used
• SAS Enterprise Miner 14.1
MODEL COMPARISON

- Model comparison based on valid misclassification rate
BEST MODEL RESULTS

• Best Model - Decision tree (14% valid misclassification)
• If a patient’s age is greater than 78, paying by Medicaid or Medicare and has been admitted in the emergency room then there is 86% probability that he/she will be readmitted
CONCLUSION

• Females and males under the age group of 56-75 are more prone to having UTI

• Zithromax, being one of the many brands of the generic drug Azithromycin costs 7.16 times more than the generic drug.

• Unasyn, being one of the many brands of the generic drug Ampicillin sulbactam costs 2.56 times more than the generic drug.
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