Week 8

Healthcare - Persistency of a drug: Group Project

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GitHub Repo Link: https://github.com/JudieChep/Assignments.git

Problem Description

ABC pharma Company is in the pharmaceutical business and has a challenge in determining the persistence of a drug. The company would like to automate the process of identification of persistency since there are several factors that need to be considered to determine this. An insight into which factors affect persistency will be useful in automating this process.

Data Understanding

The data used by ABC has been obtained from the following sources:

- Patient
- Clinical Records
- Medical provider records

Pandas profiling tool was used to understand the data and the following observations were made:

- Total number of records in the dataset-**3424**
- Number of variables-**69**

Variables are grouped by demographics, provider attributes, clinical factors and disease/treatment factor.

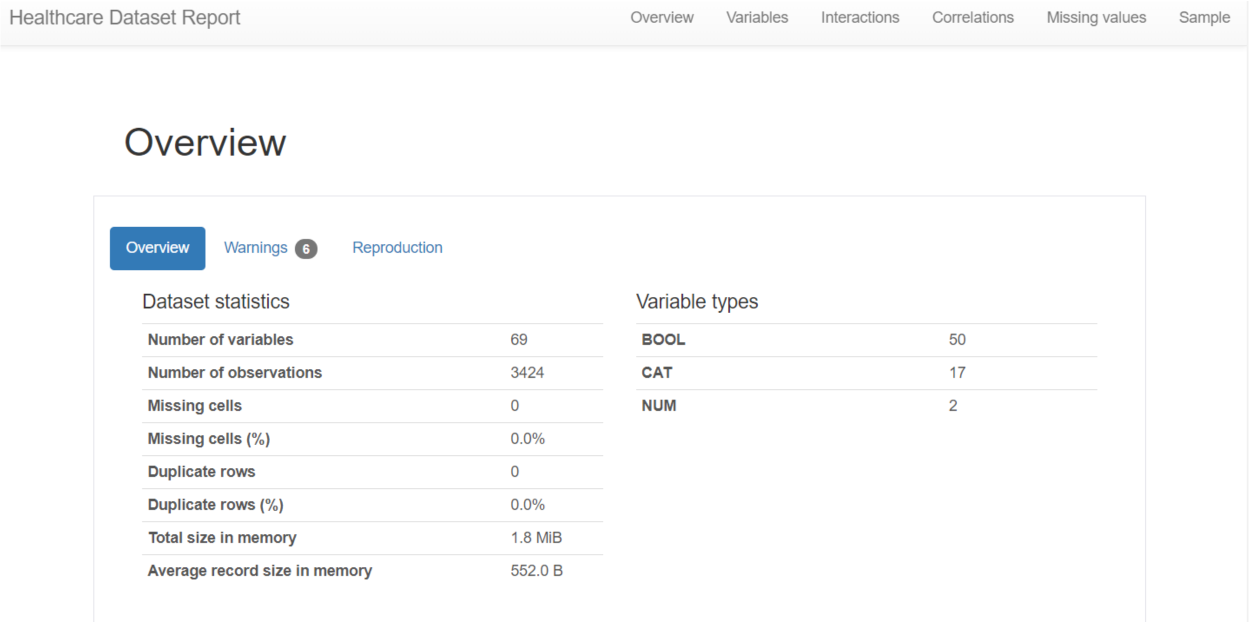
Variable types

Boolean**-50**

Categorical**-17**

Numerical**-2**

The below diagram summarizes the findings:



Overview

Dataset statistics

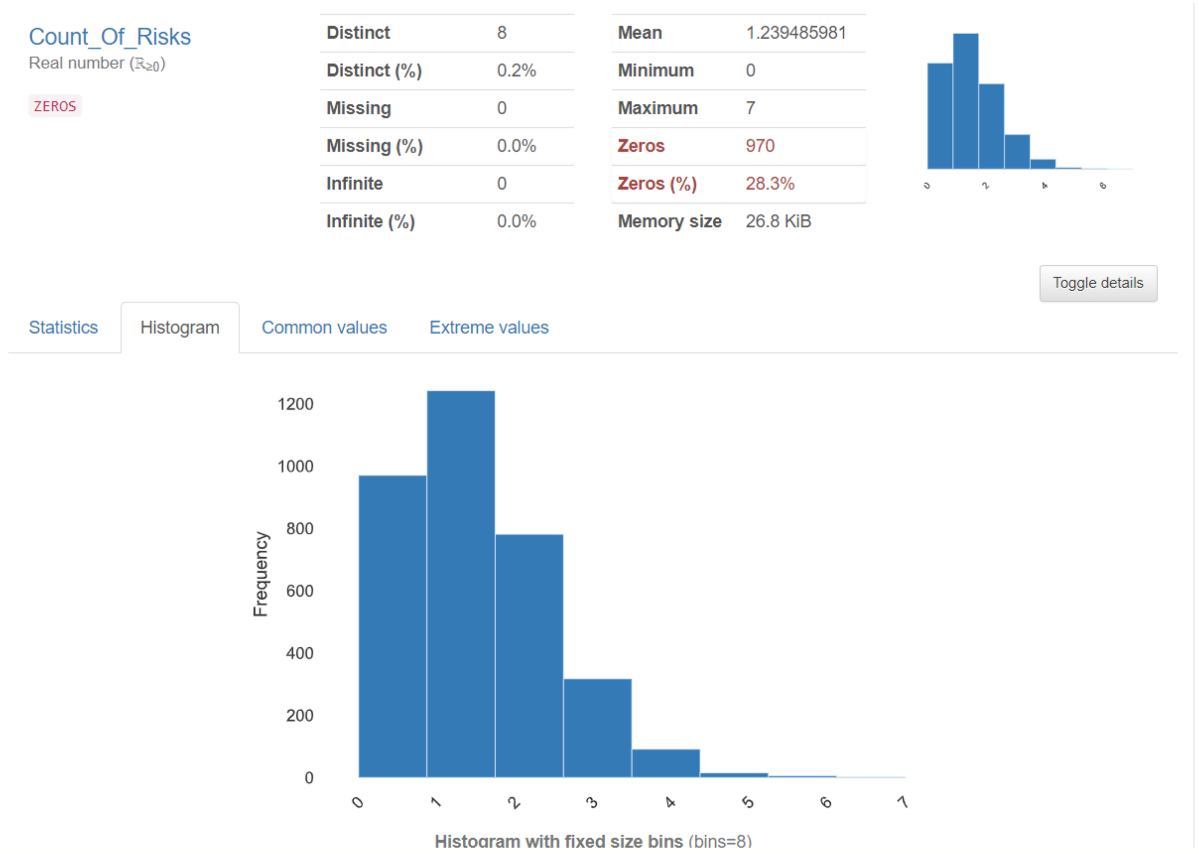
Number of variables	69
Number of observations	3424
Missing cells	0
Missing cells (%)	0.0%
Duplicate rows	0
Duplicate rows (%)	0.0%
Total size in memory	1.8 MiB
Average record size in memory	552.0 B

Variable types

BOOL	50
CAT	17
NUM	2

Problems with the data

There are no missing values or duplicates in the dataset when the pandas profiling report is used to summarize the data. However, there are values recorded as “Unknown”, which will be changed to NA values during data cleaning. For the numerical variables, the values in C*ount _of_Risk* variable are moderately skewed with a skewness of 0.87. The variable also has no outliers, as shown below:



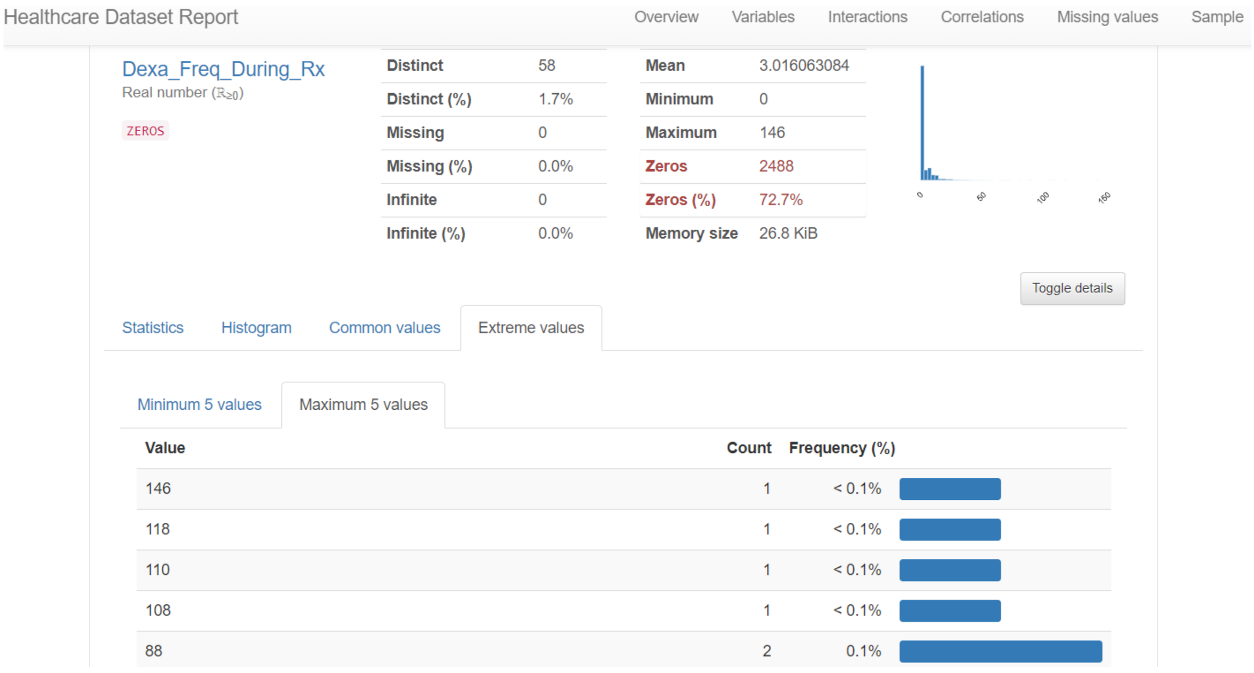
Count_Of_Risks
Real number (ℝ≥0)

ZEROS

Distinct	8	Mean	1.239485981
Distinct (%)	0.2%	Minimum	0
Missing	0	Maximum	7
Missing (%)	0.0%	Zeros	970
Infinite	0	Zeros (%)	28.3%
Infinite (%)	0.0%	Memory size	26.8 KiB

Histogram with fixed size bins (bins=8)

The second numerical variable *Dexa_Freq_During_Rx* is highly skewed with a skewness of 6.8. This means that the data is asymmetrical and needs to be transformed before training the model.



Dexa_Freq_During_Rx
Real number (ℝ≥0)

ZEROS

Distinct	58	Mean	3.016063084
Distinct (%)	1.7%	Minimum	0
Missing	0	Maximum	146
Missing (%)	0.0%	Zeros	2488
Infinite	0	Zeros (%)	72.7%
Infinite (%)	0.0%	Memory size	26.8 KiB

Value	Count	Frequency (%)
146	1	< 0.1%
118	1	< 0.1%
110	1	< 0.1%
108	1	< 0.1%
88	2	0.1%