BAN 210 Final Project

BREAST CANCER DATA EXPLORATORY ANALYSIS

Submitted By:
Mitali Maheshwari

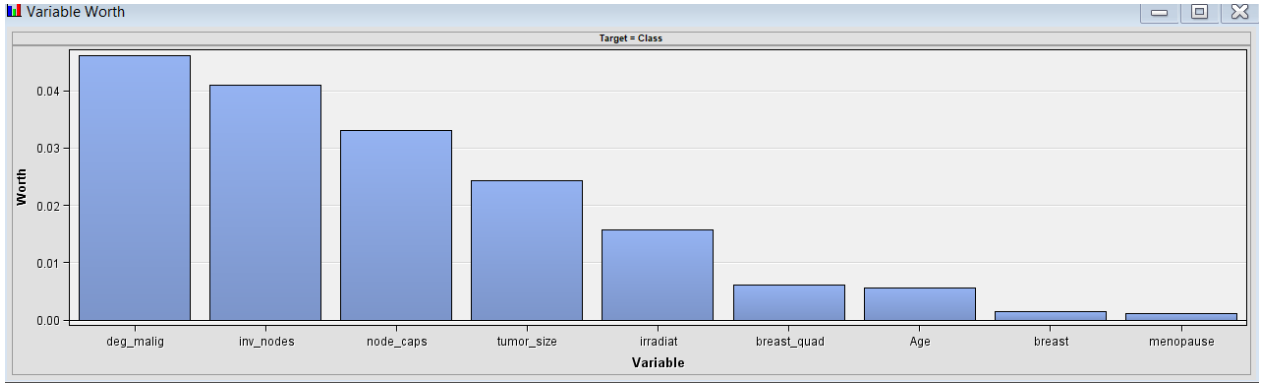
Objective

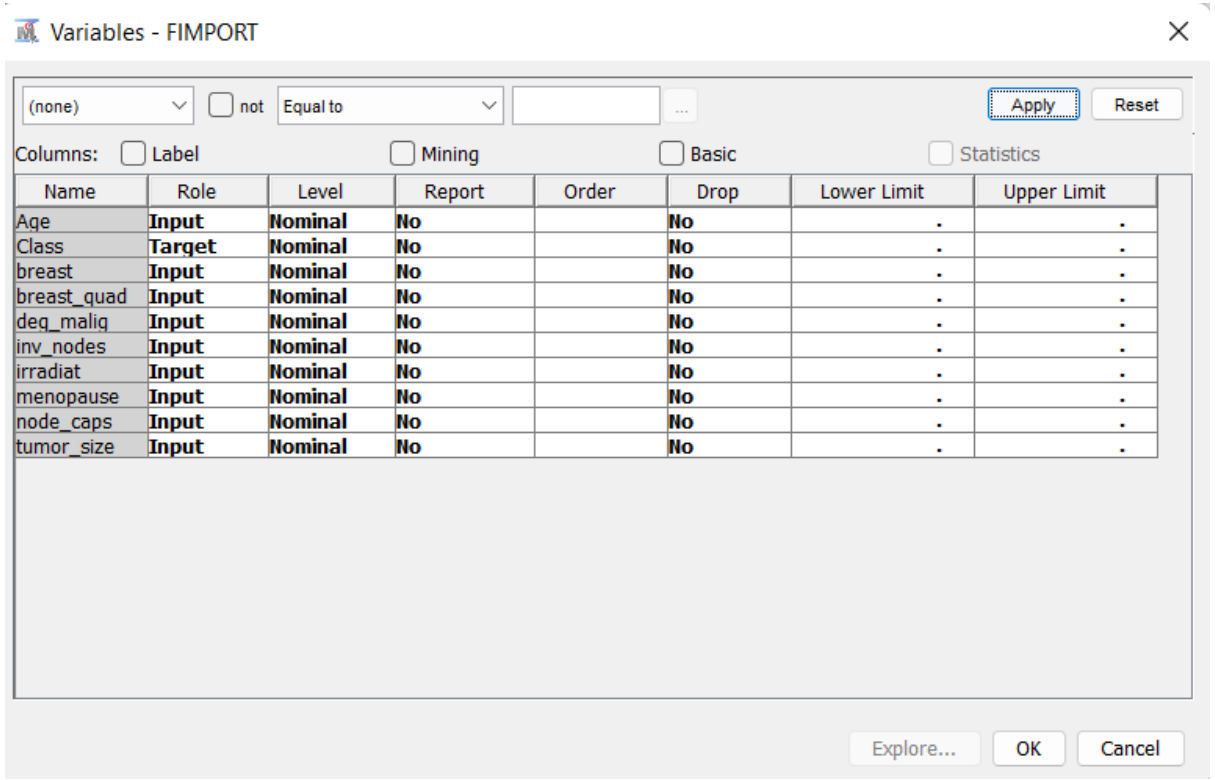
To determine whether the class of the data point represents a recurrence event or a non-recurrence of the Target variable.

To identify the best performing model for decision making

Dataset

There are nine qualities – some linear and some nominal – are used to characterize the instances.

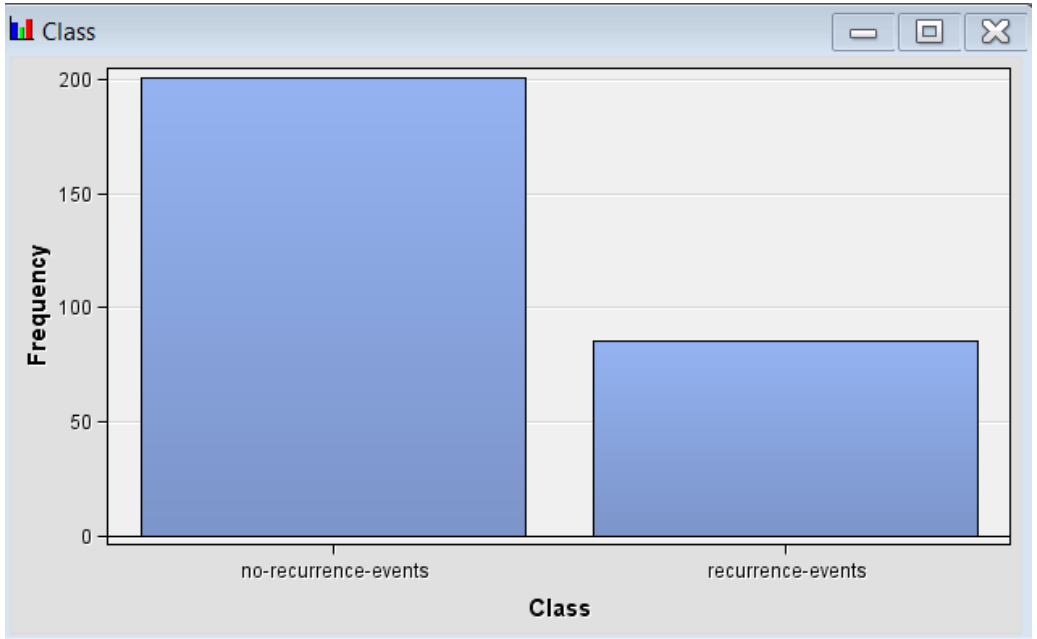




Name	Role	Level	Report	Order	Drop	Lower Limit	Upper Limit
Age	Input	Nominal	No		No	.	.
Class	Target	Nominal	No		No	.	.
breast	Input	Nominal	No		No	.	.
breast_quad	Input	Nominal	No		No	.	.
deg_malig	Input	Nominal	No		No	.	.
inv_nodes	Input	Nominal	No		No	.	.
irradiat	Input	Nominal	No		No	.	.
menopause	Input	Nominal	No		No	.	.
node_caps	Input	Nominal	No		No	.	.
tumor_size	Input	Nominal	No		No	.	.

Target Variable

There are 85 re-occurrences events and 201 instances of no recurrence events in the target variable.



Data Partition and Transformation

The data was divided into

- **60%** for training
- **30%** for validation
- **10%** for testing

Partition Summary

Type	Data Set	Number of Observations
DATA	EMWS2.FIMPORT_train	286
TRAIN	EMWS2.Part_TRAIN	170
VALIDATE	EMWS2.Part_VALIDATE	86
TEST	EMWS2.Part_TEST	30

Model Building

Steps:

File Import

Stat Explore

Graph Explore

Multiplot

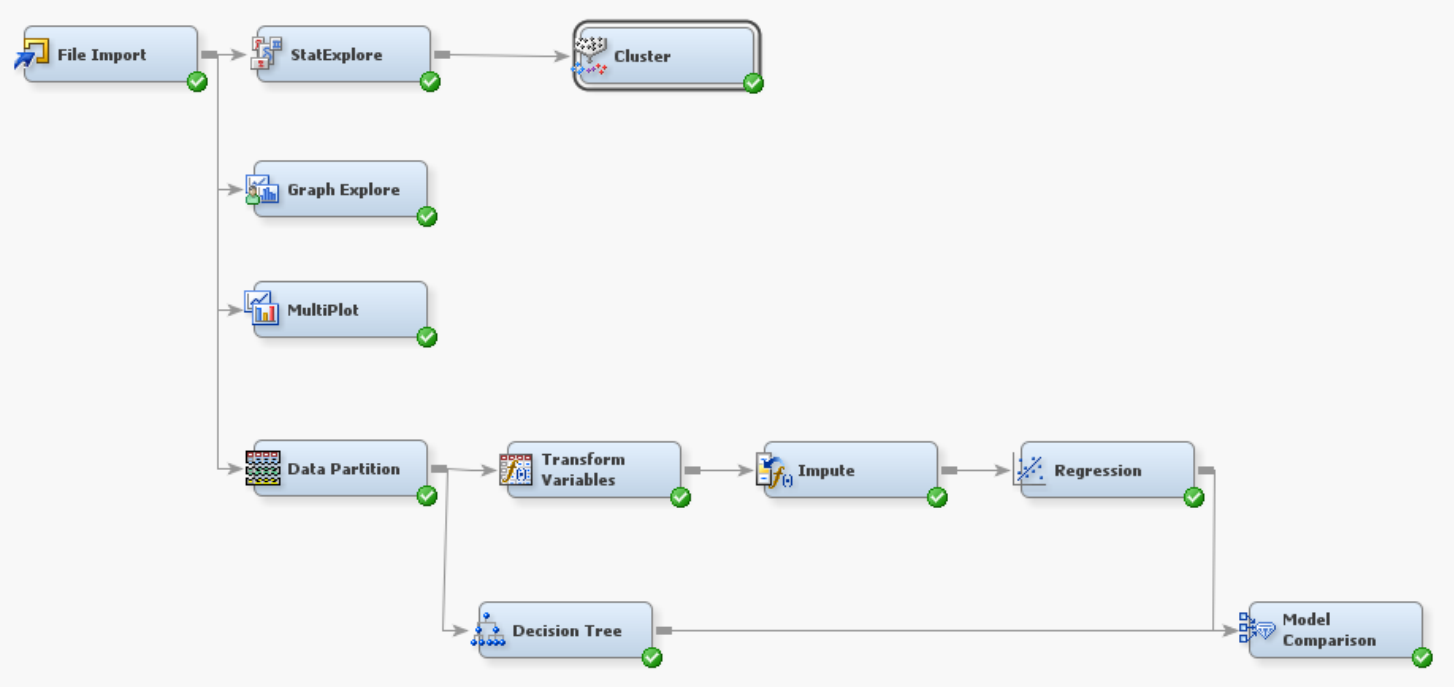
Data Partition

Data Transformation

Logistic Regression

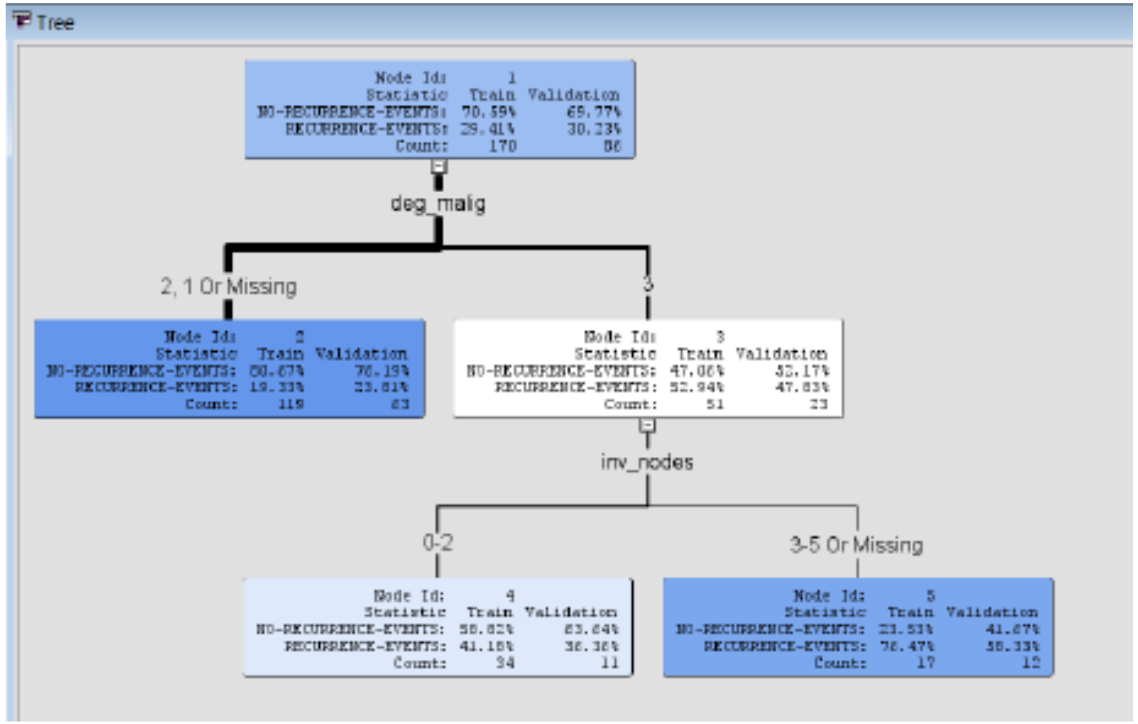
Decision Tree

Model Comparison

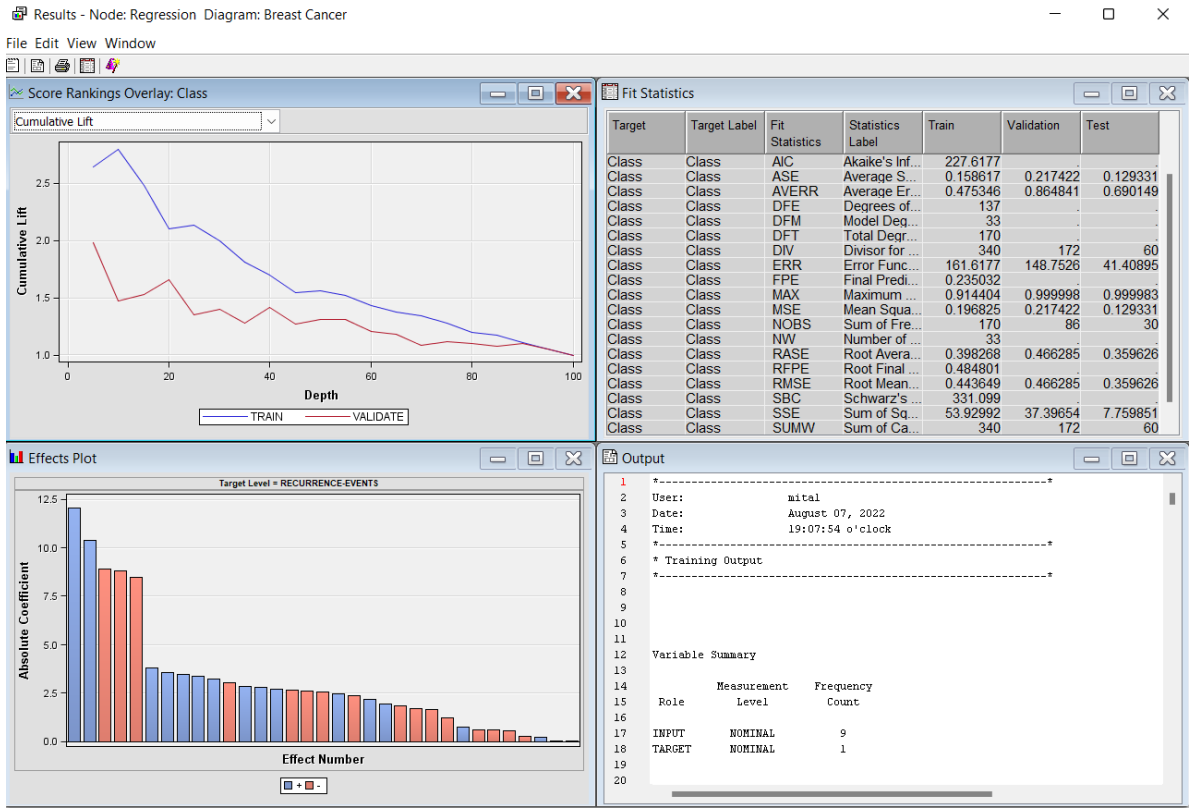


Model Output

Decision Tree



Regression



Model Comparison

The **Decision Tree model** has been selected for the fact that the decision parameters are slightly better than the regression model.

A model is better when the average squared error is low.

Variables Breast and Menopause are of no significance.

Fit Statistics
Model Selection based on Valid: Misclassification Rate (_VMISC_)

Selected Model	Model Node	Model Description	Valid: Misclassification Rate	Train: Average Squared Error	Train: Misclassification Rate	Valid: Average Squared Error
Y	Tree	Decision Tree	0.27907	0.17558	0.24118	0.20276
	Reg	Regression	0.31395	0.15862	0.22941	0.21742

Conclusion

The seriousness of the cancer can be determined with the variables – deg-malig and inv-nodes.

The recurrence of cancer is higher of Type 3 category of malig degree and is much higher with 3-5 inv nodes.

Thank You!