



Analysis of Low Birth Weight in Babies and Its Causes.

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Meet the Data:

- ▶ Sample of 17097 observations.
- ▶ Total Variables 38
- ▶ 50% variables having positive low birth weight and 50% having normal birth weight
- ▶ Sample Variables:
 - ▶ EthnicityDAD
 - ▶ Smoking habit
 - ▶ HyperTension during Pregnancy
 - ▶ Month of pregnancy prenatal care began

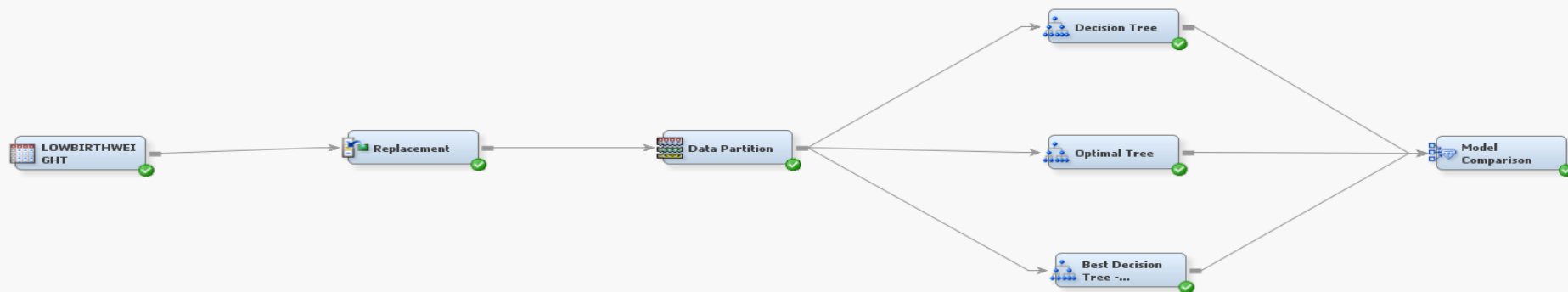
Variable Selection:

- ▶ 28 of 38 variables were selected
- ▶ Rejected Variables

Variables	Role	Level	Note
TERMS	Rejected		Termination won't make any impact. It is usually the couple's decision to have a baby or not. They can have a healthy baby after certain time when they are ready
YrsLastFetalDeath	Rejected		As we are having LOUTCOME variable, these both variables almost mention same. So Rejecting the variable
YrsLastLiveBirth	Rejected		As we are having LOUTCOME variable, these both variables almost mention same. So Rejecting the variable
CIGNUM	Rejected		Smoker variable also gives the same information. There is no requirement to find out the number of cigerrates.
DRINKER	Rejected		DRINKNUM variable also gives the same information. There is no requirement to find out the number of drinks
HYPERCH	Rejected		Previous hypertension in adult won't affect the baby weight
PINFANT	Rejected		There is no particular reasoning that pre infant weight can affect the current baby weight
AMNIO	Rejected		Amniocentesis is a diagnostic test for genetic disorders. It wont affect the baby weight
ULTRA	Rejected		Ultra sound test is also one of the diagnostic test. It won't affect the baby weght

Model Preparation:

- ▶ Data Partition: 50% - Training and 50% Validation
- ▶ 3 Decision trees were prepared
 - ▶ Maximal Tree
 - ▶ Optimal Tree
 - ▶ Probability Tree



Best Decision Tree:

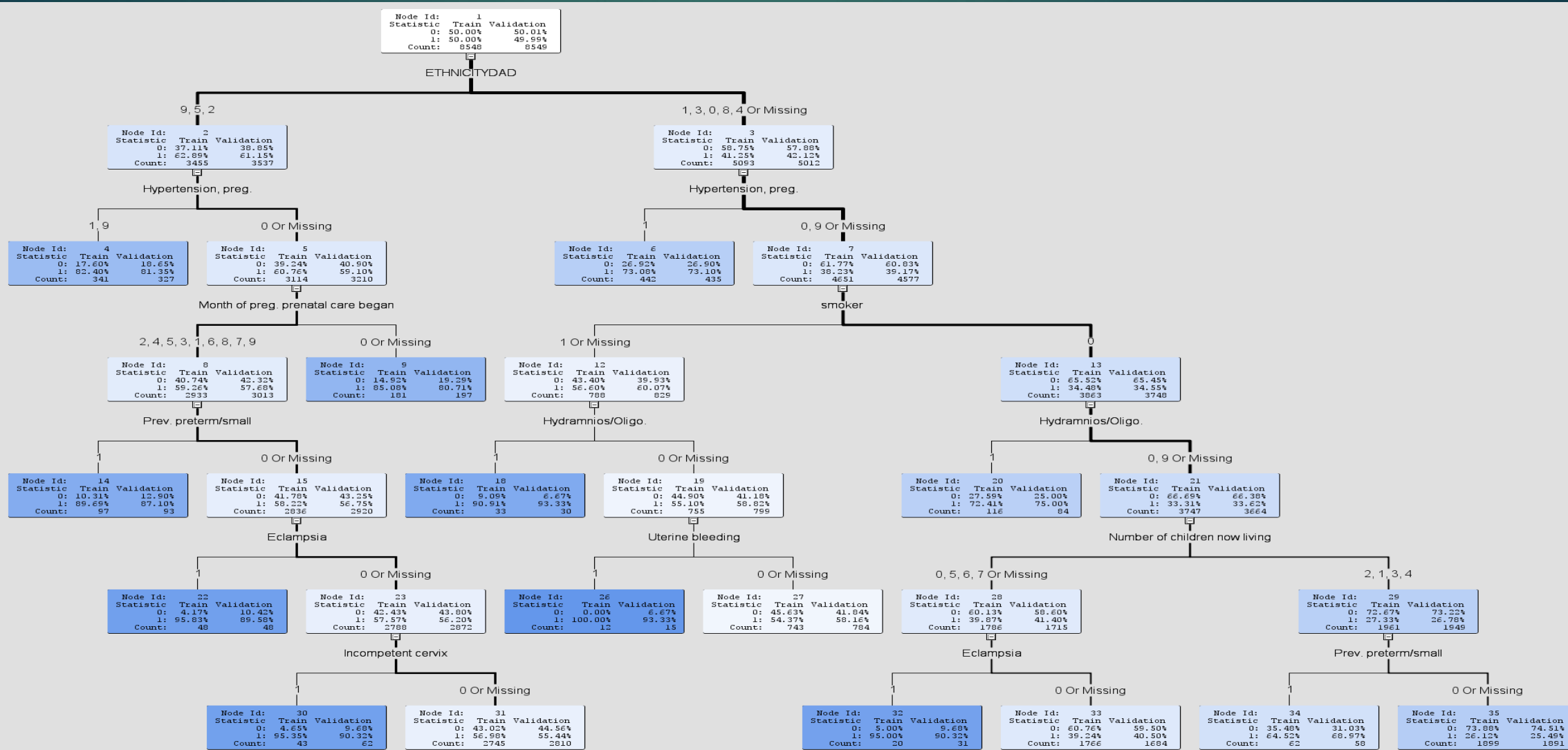
- ▶ Best Decision tree has been selected from among the 3 trees using the Missclassification rate, average square error and complexity.
- ▶ Selected Tree: Probability Tree
- ▶ No.of leaves : 15

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	Tree3	Probability Tree	0.35419	0.21735	0.34944	0.21909
	Tree2	Optimal Tree	0.35419	0.22376	0.34944	0.22495
	Tree	Decision Tree	0.35443	0.21691	0.34909	0.21942

Best Decision Tree cntd..



Results

- ▶ Parameter majorly affect the birth weight of babies:
 - ▶ Ethnicity of Father
 - ▶ Smoking habit
 - ▶ Hyper Tension during Pregnancy
 - ▶ Month of pregnancy prenatal care began
 - ▶ Previous preterm/small
 - ▶ Hydraminos
 - ▶ Eclampsia



THANK YOU