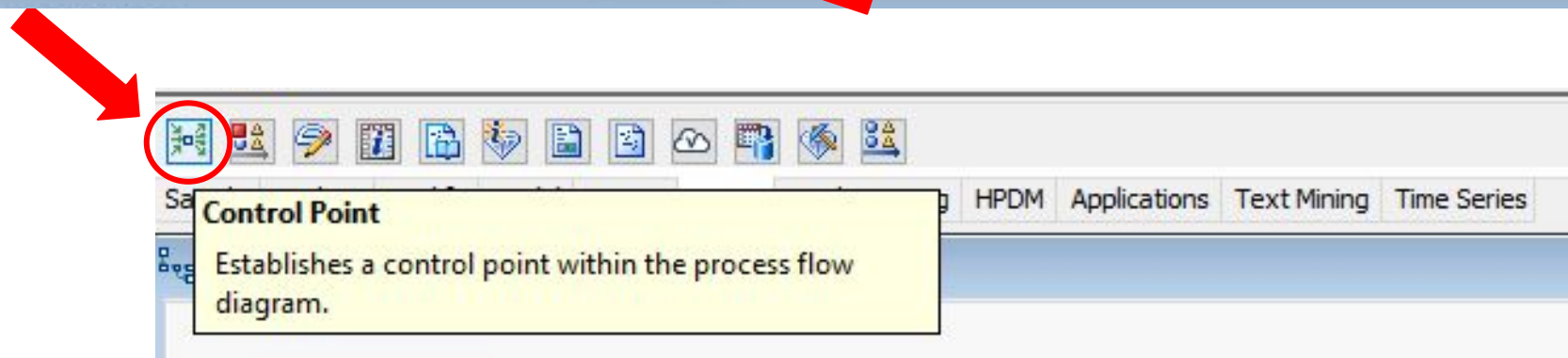
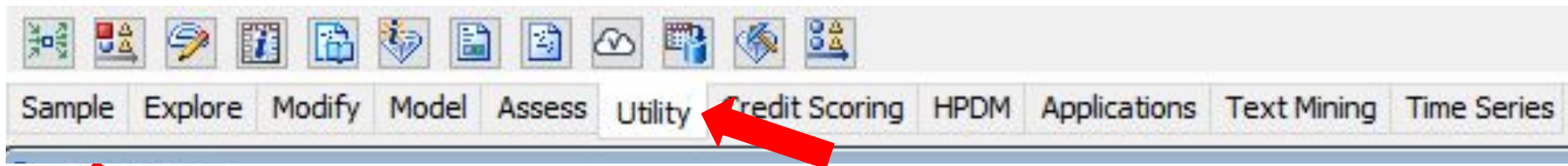
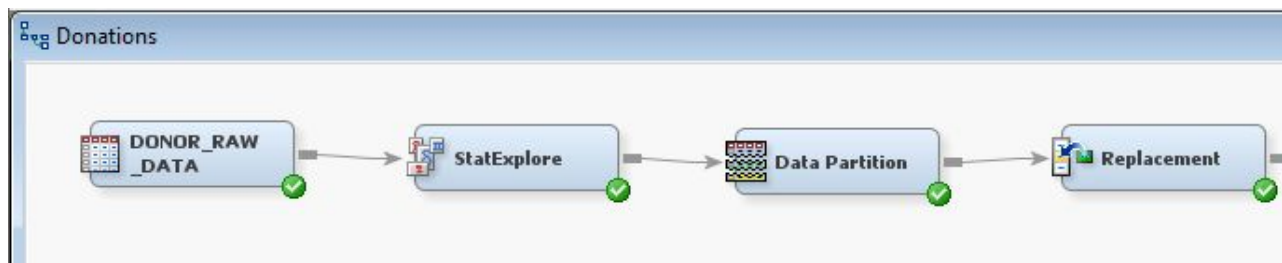
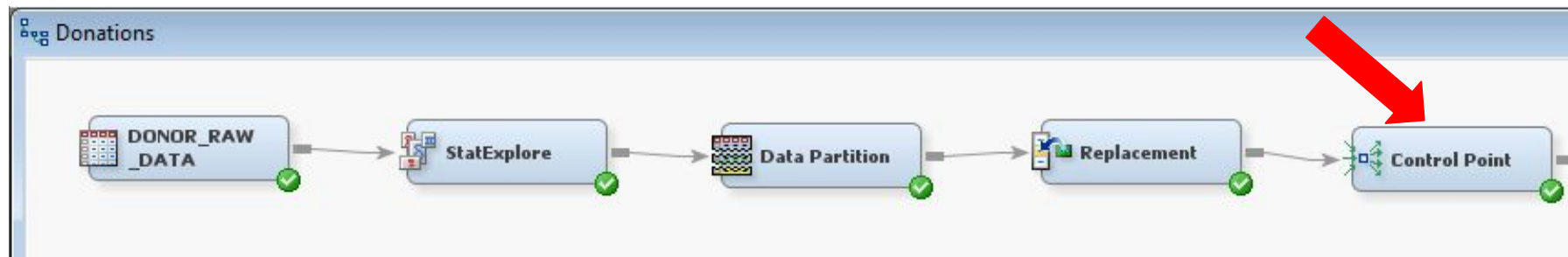


# SAS Demonstration: Build a Decision Tree

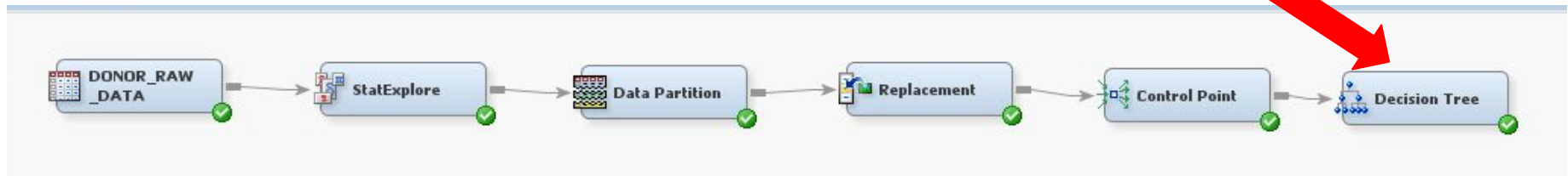
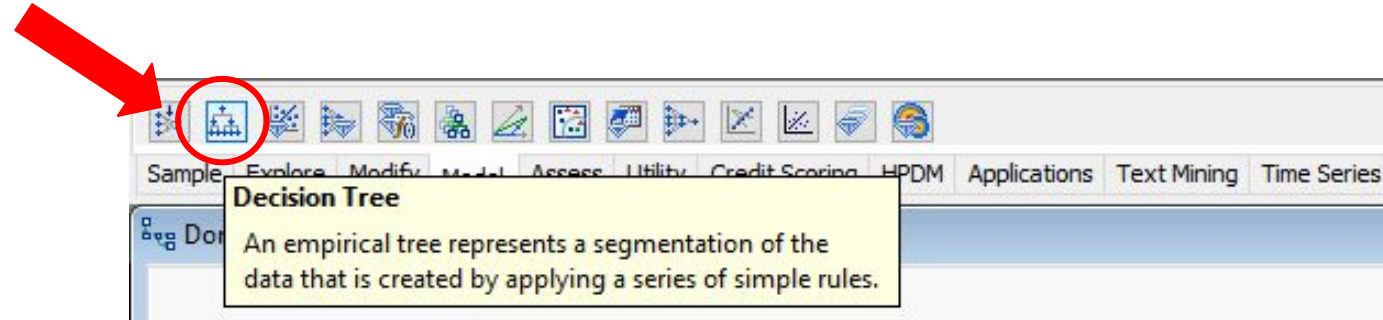
# Step 1: Train and Prune Decision Tree



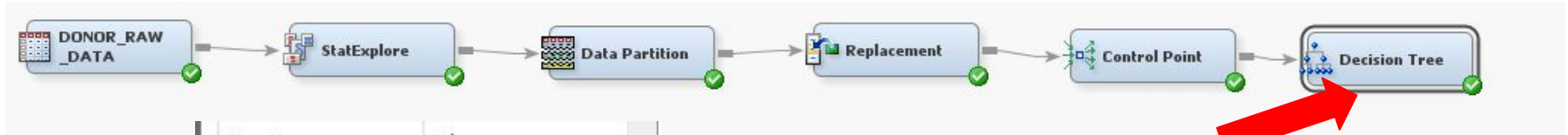
# Step 1: Train and Prune Decision Tree



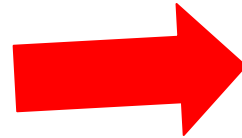
# Step 1: Train and Prune Decision Tree



# Step 1: Train and Prune Decision Tree

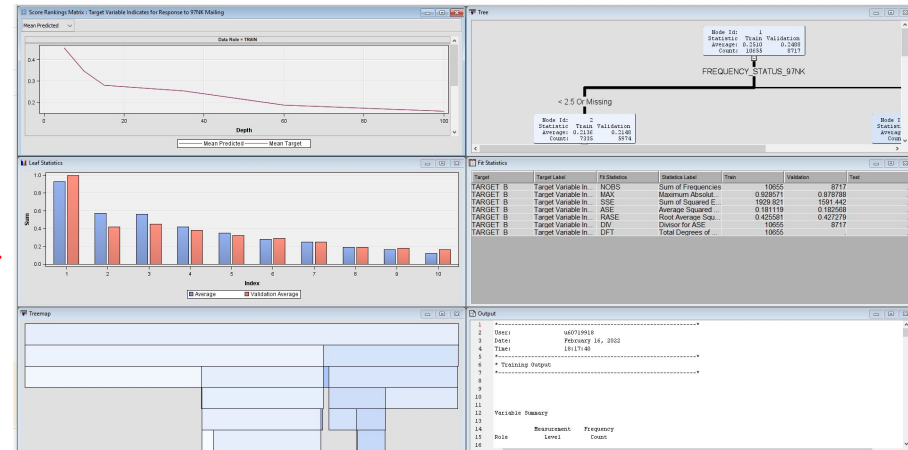
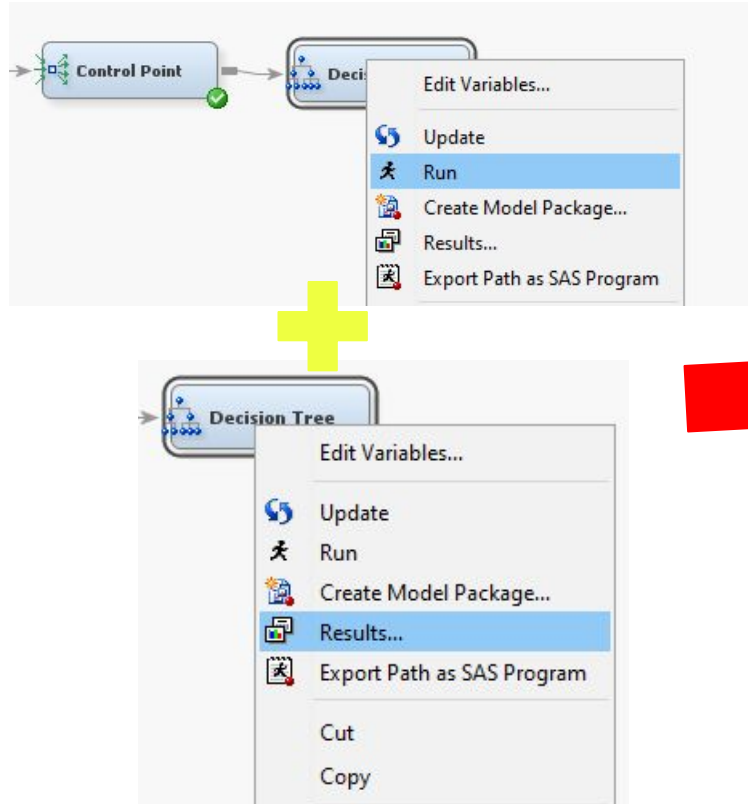


Property	Value
<b>Train</b>	
Variables	...
Interactive	...
Import Tree Model	No
Tree Model Data Set	...
Use Frozen Tree	No
Use Multiple Targets	No
Splitting Rule	
Interval Target Criterion	ProbF
Nominal Target Criterion	ProbChisq
Ordinal Target Criterion	Entropy
Significance Level	0.2
Missing Values	Use in search
Use Input Once	No
Maximum Branch	2
Maximum Depth	6
Minimum Categorical Size	5
Node	
Leaf Size	5
Number of Rules	5
Number of Surrogate Rules	0
Split Size	.

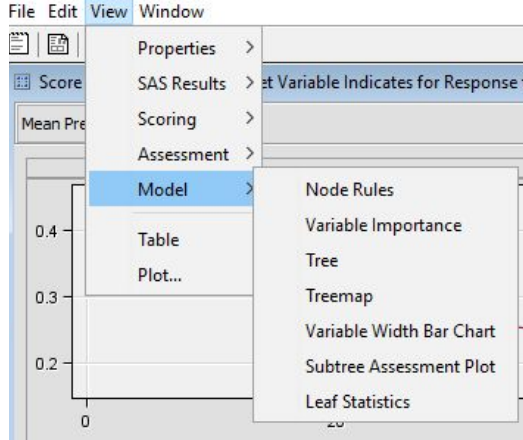


<b>Train</b>	
Variables	...
Interactive	...
Import Tree Model	No
Tree Model Data Set	...
Use Frozen Tree	No
Use Multiple Targets	No
Splitting Rule	
Interval Target Criterion	ProbF
Nominal Target Criterion	ProbChisq
Ordinal Target Criterion	Entropy
Significance Level	0.2
Missing Values	Use in search
Use Input Once	No
Maximum Branch	2
Maximum Depth	10
Minimum Categorical Size	5
Node	
Leaf Size	8
Number of Rules	5
Number of Surrogate Rules	4
Split Size	.

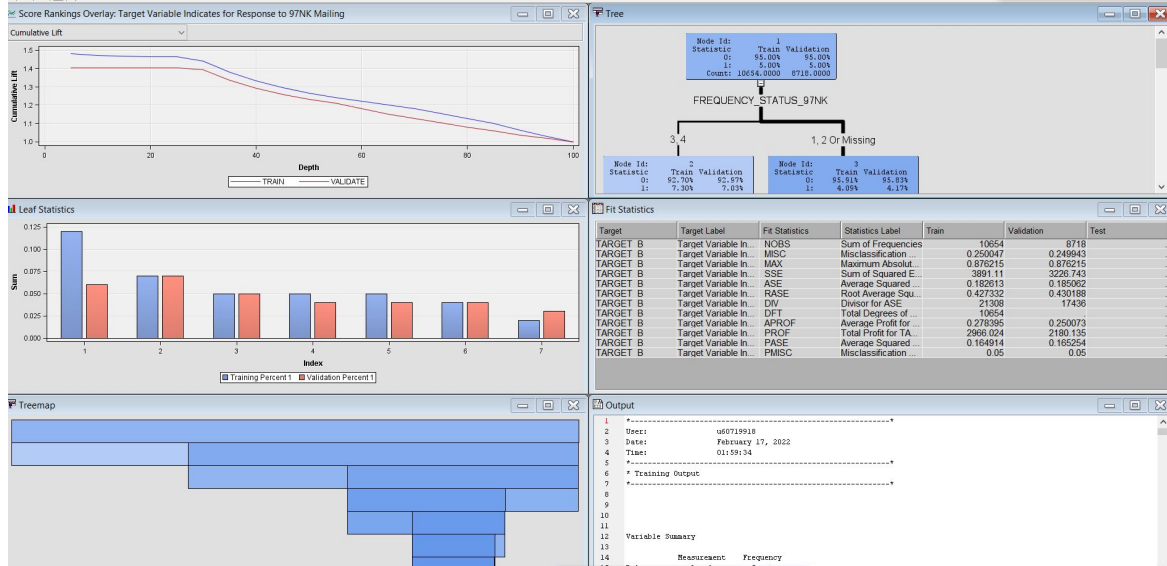
# Step 1: Train and Prune Decision Tree



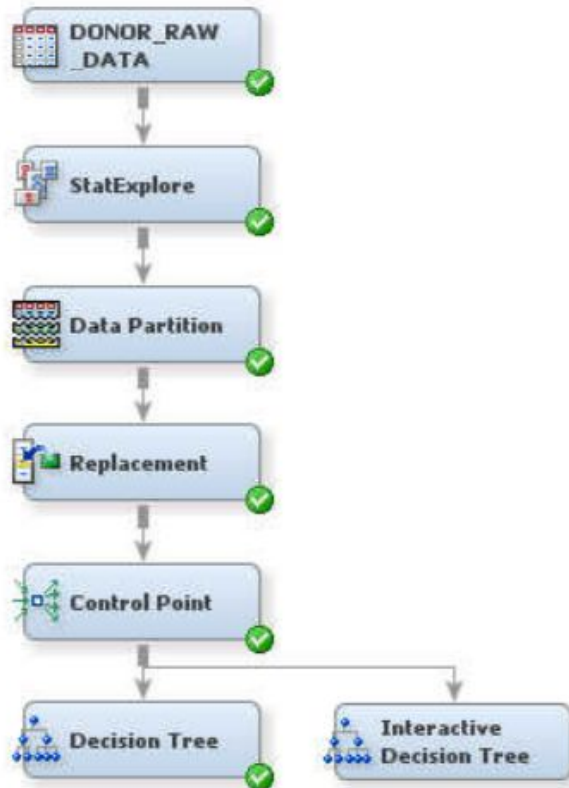
# Step 1: Train and Prune Decision Tree



```
Node Rules
1 Node = 2
2 -----
3 if FREQUENCY_STATUS_97NKG IS ONE OF: 3, 4
4 then
5
6 Tree Node Identifier = 2
7 Number of Observations = 3024.067307
8 Predicted: TARGET_B=1 = 0.07
9 Predicted: TARGET_B=0 = 0.93
10
11 -----
12 Node = 6
13 -----
14 if PEP_STAR IS ONE OF: 1
15 AND FREQUENCY_STATUS_97NKG IS ONE OF: 1, 2 or MISSING
16 then
17 Tree Node Identifier = 6
18 Number of Observations = 2989.1494063
19 Predicted: TARGET_B=1 = 0.05
20 Predicted: TARGET_B=0 = 0.95
21
22 -----
23 Node = 15
24 -----
25 if PER_CAPITA_INCOME >= 17477
26 AND PEP_STAR IS ONE OF: 0 or MISSING
```



## Step 2: Interactively Train a Decision Tree



Split Node 1

Target Variable: TARGET\_B

Variable	... -Log(p)	Branches
FREQUENCY_STATUS_97NK	38.6017	2
LAST_GIFT_AMT	33.1086	2
RECENT_RESPONSE_COUNT	31.4996	2
RECENT_RESPONSE_PROP	31.1671	2
FILE_AVG_GIFT	29.7171	2
LIFETIME_AVG_GIFT_AMT	29.7171	2
PEP_STAR	29.4852	2
RECENT_CARD_RESPONSE_COUNT	28.7487	2
LIFETIME_MAX_GIFT_AMT	27.164	2
FILE_CARD_GIFT	26.4389	2
RECENT_AVG_GIFT_AMT	25.8255	2
LIFETIME_GIFT_COUNT	24.3828	2
REGENCY_STATUS_96NK	20.149	2
LIFETIME_MIN_GIFT_AMT	15.3125	2
LIFETIME_GIFT_RANGE	14.2944	2
RECENT_CARD_RESPONSE_PROP	14.1088	2
LIFETIME_PROM	13.1224	2
RECENT_STAR_STATUS	12.9681	2
MONTHS_SINCE_LAST_GIFT	12.9636	2
RECENT_AVG_CARD_GIFT_AMT	12.7762	2
LIFETIME_CARD_PROM	12.3162	2
LIFETIME_GIFT_AMOUNT	12.042	2

Edit Rule...

OK Cancel Apply Refresh



## Step 2: Interactively Train a Decision Tree

MONTHS\_SINCE\_LAST\_GIFT - Interval Split Rule

Target Variable: TARGET\_B

Assign missing values to:

☒ A specific branch 2

☐ A separate missing values branch

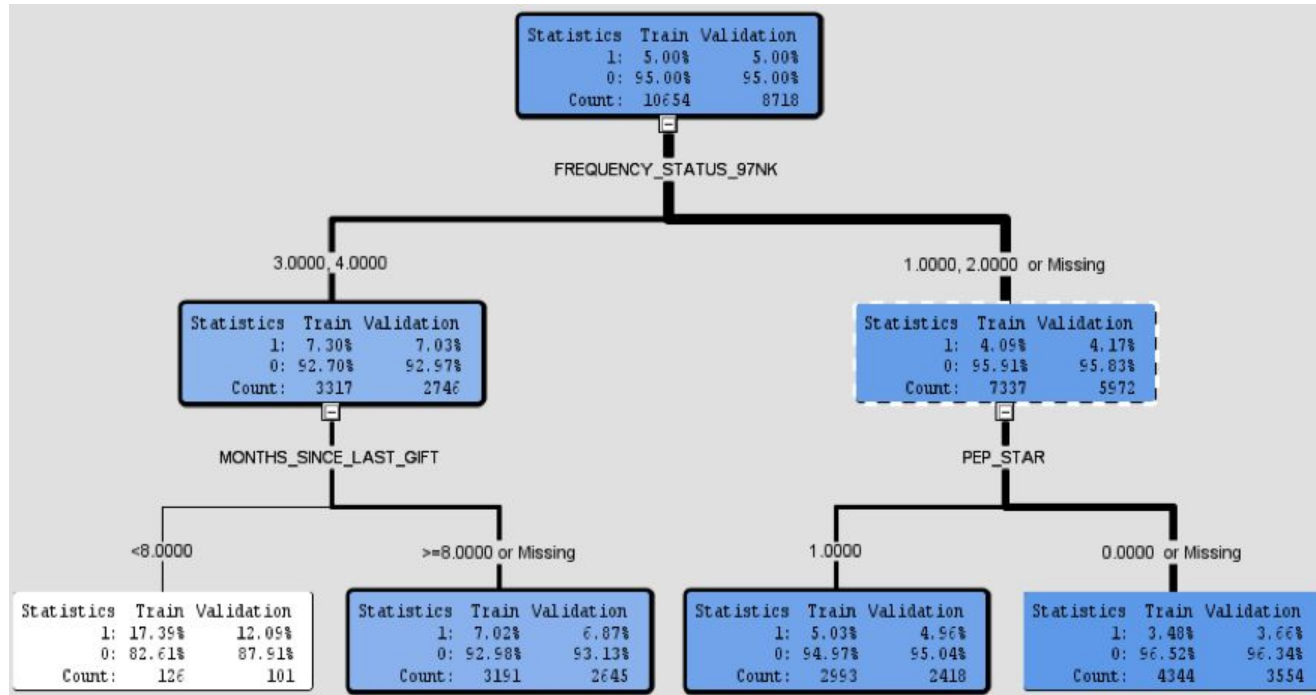
☐ All branches

Branches

Branch		Split Point
1	<	8.0000
2	>=	8.0000

New split point:

## Step 2: Interactively Train a Decision Tree



## Step 3: Create a Gradient Boosting Model

