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## Summary Report for Decision Tree Model

### Decision\_Tree\_Redeemer

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Call:

```
rpart(formula = Redeemer ~ Customer.Segment + Income + Region + Spend
+ Status + Stays.Per.Year + Total.Days.Stayed + Years.Of.Loyalty, data =
the.data, minsplit = 20, minbucket = 7, usesurrogate = 2, xval = 10,
maxdepth = 20, cp = 0)
```

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#### Model Summary

Variables actually used in tree construction:

[1] Customer.Segment Income Region Spend

[5] Status Stays.Per.Year

Root node error: 248/1593 = 0.15568

n = 1593

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#### Pruning Table

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Level	CP	Num Splits	Rel Error	X Error	X Std Dev
1	0.2701613	0	1.00000	1.00000	0.058348
2	0.1209677	1	0.72984	0.73387	0.051196
3	0.0241935	3	0.48790	0.52016	0.043904
4	0.0221774	4	0.46371	0.52823	0.044213
5	0.0161290	6	0.41935	0.48790	0.042637
6	0.0120968	9	0.37097	0.50403	0.043277
7	0.0080645	11	0.34677	0.50806	0.043435
8	0.0053763	12	0.33871	0.54032	0.044670
9	0.0040323	15	0.32258	0.55645	0.045270
10	0.0020161	21	0.29839	0.58871	0.046436
11	0.0000000	23	0.29435	0.60887	0.047142

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#### Leaf Summary

node), split, n, loss, yval, (yprob)

\* denotes terminal node

1) root 1593 248 No (0.84431890 0.15568110)

2) Spend &lt; 9549.39 1504 170 No (0.88696809 0.11303191)

4) Stays.Per.Year &gt;= 1.5 1187 46 No (0.96124684 0.03875316)

8) Spend &lt; 4064.11 1041 17 No (0.98366955 0.01633045)

16) Stays.Per.Year &gt;= 2.5 759 0 No (1.00000000 0.00000000) \*

17) Stays.Per.Year &lt; 2.5 282 17 No (0.93971631 0.06028369)

34) Spend &lt; 1439.415 179 0 No (1.00000000 0.00000000) \*

35) Spend &gt;= 1439.415 103 17 No (0.83495146 0.16504854)

70) Region = 10,3,4,5,6,7,8 87 7 No (0.91954023 0.08045977)

140) Region = 3,4,5,8 57 0 No (1.00000000 0.00000000) \*

141) Region = 10,6,7 30 7 No (0.76666667 0.23333333)

282) Customer.Segment = B,C,E,J,L,N,P,Q 19 1 No (0.94736842 0.05263158) \*

283) Customer.Segment = G,H,K,O,U 11 5 Yes (0.45454545 0.54545455) \*

71) Region = 1,2,9 16 6 Yes (0.37500000 0.62500000) \*

9) Spend &gt;= 4064.11 146 29 No (0.80136986 0.19863014)

18) Stays.Per.Year &gt;= 2.5 111 6 No (0.94594595 0.05405405)

36) Stays.Per.Year &gt;= 3.5 90 1 No (0.98888889 0.01111111) \*

37) Stays.Per.Year &lt; 3.5 21 5 No (0.76190476 0.23809524)

## Leaf Summary

- 74) Spend< 5357.46 13 0 No (1.00000000 0.00000000) \*
- 75) Spend>=5357.46 8 3 Yes (0.37500000 0.62500000) \*
- 19) Stays.Per.Year< 2.5 35 12 Yes (0.34285714 0.65714286)
- 38) Income=A,C,E,F,G,I 23 11 No (0.52173913 0.47826087)
- 76) Customer.Segment=A,F,I,J,Q 8 1 No (0.87500000 0.12500000) \*
- 77) Customer.Segment=B,C,D,H,K,L,O 15 5 Yes (0.33333333 0.66666667) \*
- 39) Income=B,D,H,J,U 12 0 Yes (0.00000000 1.00000000) \*
- 5) Stays.Per.Year< 1.5 317 124 No (0.60883281 0.39116719)
- 10) Spend< 1492.475 197 34 No (0.82741117 0.17258883)
- 20) Stays.Per.Year>=0.5 177 21 No (0.88135593 0.11864407)
- 40) Customer.Segment=A,C,D,F,H,I,K,M,N,O,U 92 4 No (0.95652174 0.04347826) \*
- 41) Customer.Segment=B,E,G,J,L,P,Q,S 85 17 No (0.80000000 0.20000000)
- 82) Status=Bronze,Silver 55 6 No (0.89090909 0.10909091) \*
- 83) Status=Gold 30 11 No (0.63333333 0.36666667)
- 166) Region=3,4,5,8 13 1 No (0.92307692 0.07692308) \*
- 167) Region=1,10,6,7,9 17 7 Yes (0.41176471 0.58823529) \*
- 21) Stays.Per.Year< 0.5 20 7 Yes (0.35000000 0.65000000)
- 42) Customer.Segment=B,C,H,L,U 8 2 No (0.75000000 0.25000000) \*
- 43) Customer.Segment=D,E,F,G,K,O,P,R 12 1 Yes (0.08333333 0.91666667) \*
- 11) Spend>=1492.475 120 30 Yes (0.25000000 0.75000000)
- 22) Spend< 3476.45 75 27 Yes (0.36000000 0.64000000)
- 44) Region=3,5 16 4 No (0.75000000 0.25000000) \*
- 45) Region=1,10,2,4,6,7,8,9 59 15 Yes (0.25423729 0.74576271)
- 90) Income=G,I,J,K 16 7 No (0.56250000 0.43750000) \*
- 91) Income=A,B,C,D,E,F,H,U 43 6 Yes (0.13953488 0.86046512) \*
- 23) Spend>=3476.45 45 3 Yes (0.06666667 0.93333333) \*
- 3) Spend>=9549.39 89 11 Yes (0.12359551 0.87640449)
- 6) Stays.Per.Year>=8.5 11 5 No (0.54545455 0.45454545) \*
- 7) Stays.Per.Year< 8.5 78 5 Yes (0.06410256 0.93589744) \*

### Tree Plot



