

Dynamic Decision-Making Exercise: Tee Times

Dynamic Pricing

You are in the business of purchasing last minute tee times from a local golf course at a low cost and reselling them to your customer base. The local golf course typically sells them to you two days before the date/time of the tee time. To be more specific, suppose it is Monday morning and Mike, the owner of the local golf course, offers to sell you 1 slot to be used on Wednesday at 8:00am. You can sell this slot to a single golfer. Figure 1 summarizes the likelihood you will sell the slot if you charge a certain price each day. What price should you set each day to maximize the amount of profit from the slot? What is the maximum you would be willing to pay Mike for the slot?

Price	Probability of selling the slot at the given price on Monday	Probability of selling the slot at the given price on Tuesday
\$10	0.51	0.85
\$20	0.47	0.79
\$30	0.42	0.67
\$40	0.37	0.47
\$50	0.26	0.31
\$60	0.18	0.08

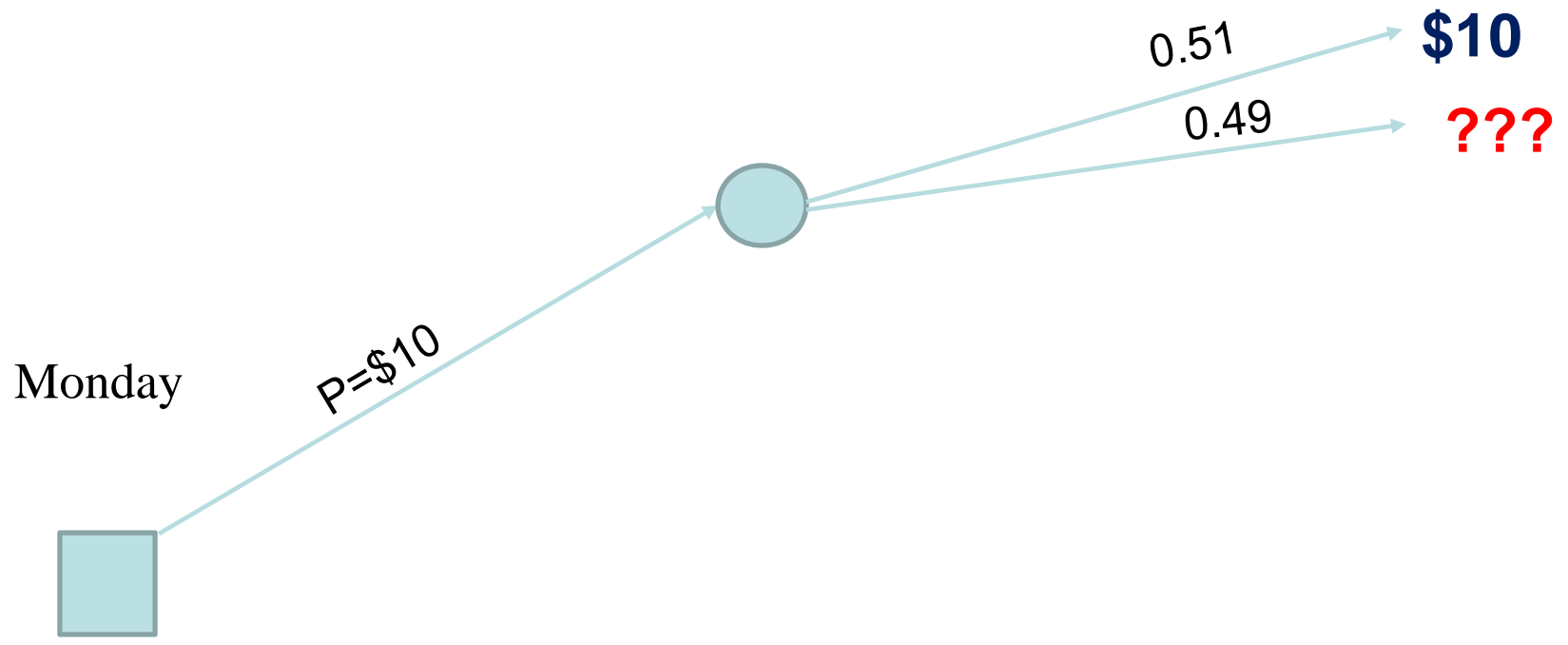
Figure 1: Table of probabilities of selling the slot at a given price for each day

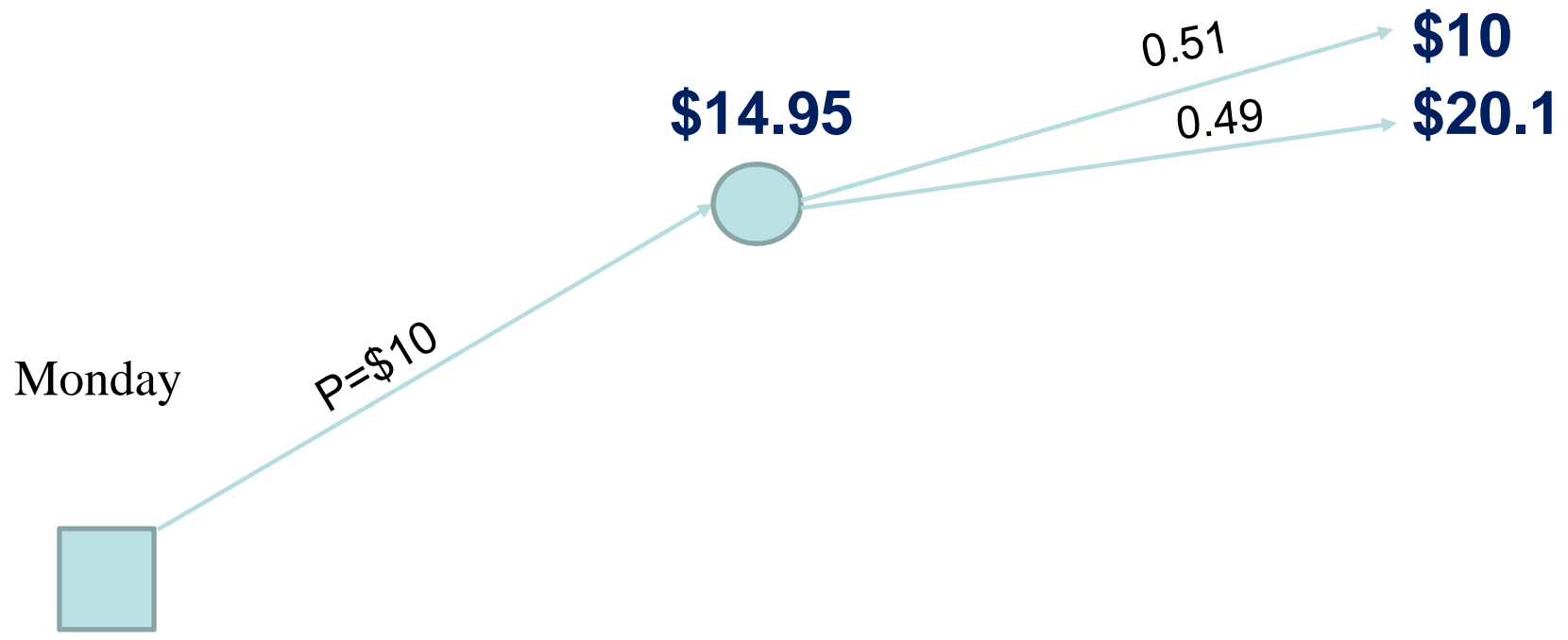
Optimal decision-making

- Monday Price: \$50
- Tuesday Price: \$30
- Maximum Willing to Pay: \$27.87

MUST think about what to do on Tuesday first













Radiant

Radiant **Data** Design ▾ Basics ▾ Model ▾ Multivariate ▾ R ▾  ▾  ▾  ▾

Datasets:
diamonds ▾
 Add/edit data description
 Rename data

Load data of type:
state ▾

Load previous app state:
Browse... **No file selected**

Save data to type:
rda ▾
 Save
 Remove data from memory
?

Manage View Visualize Pivot Explore Transform Combine

price	carat	clarity	cut	color	depth	table	x	y	z
580	0.32	VS1	Ideal	H	61.00	56.00	4.43	4.45	2.71
650	0.34	SI1	Very Good	G	63.40	57.00	4.45	4.42	2.81
630	0.30	VS2	Very Good	G	63.10	58.00	4.27	4.23	2.68
706	0.35	VVS2	Ideal	H	59.20	56.00	4.60	4.65	2.74
1080	0.40	VS2	Premium	F	62.60	58.00	4.72	4.68	2.94
3082	0.60	VVS1	Ideal	E	62.50	53.70	5.35	5.43	3.38
3328	0.88	SI1	Ideal	I	61.70	56.00	6.14	6.18	3.80
4229	0.93	SI1	Premium	E	61.40	57.00	6.34	6.23	3.86
1895	0.51	VVS2	Very Good	G	63.40	57.00	5.09	5.06	3.22
3546	1.01	SI2	Good	E	63.90	58.00	6.31	6.37	4.05

10 of 3,000 rows shown. See View-tab for details

Diamond prices

Prices of 3,000 round cut diamonds

Description

A dataset containing the prices and other attributes of a sample of 3000 diamonds. The variables are as follows:

Load: *tee-times-state.rda*

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Radiant Data Design Basics Model Multivariate R

Model Plot Sensitivity

Max Min Calculate tt-monday tt-monday Save input Save output Remove Choose File No file chosen

```
1 name: Dynamic Pricing of Tee times (Monday)
2 variables:
3   EMV(Tuesday): dtree("tt-tuesday")
4   type: decision
5   $10:
6     type: chance
7     Sold:
8       p: 0.51
9       payoff: 10
10    Unsold:
11      p: 0.49
12      payoff: EMV(Tuesday)
13   $20:
14     type: chance
15     Sold:
16       p: 0.47
17       payoff: 20
18    Unsold:
19      p: 0.53
20      payoff: EMV(Tuesday)
21   $30:
22     type: chance
23     Sold:
24       p: 0.42
25       payoff: 30
26    Unsold:
27      p: 0.58
28      payoff: EMV(Tuesday)
29   $40:
30     type: chance
31     Sold:
32       p: 0.37
33       payoff: 40
34    Unsold:
35      p: 0.63
36      payoff: EMV(Tuesday)
37   $50:
38     type: chance
39     Sold:
40       p: 0.26
41       payoff: 50
42    Unsold:
43      p: 0.74
44      payoff: EMV(Tuesday)
45   $60:
46     type: chance
47     Sold:
48       p: 0.18
49       payoff: 60
50    Unsold:
51      p: 0.82
52      payoff: EMV(Tuesday)
```

Select: tt-tuesday

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Radiant Data Design Basics Model Multivariate R Save Save output Remove Choose File No file chosen

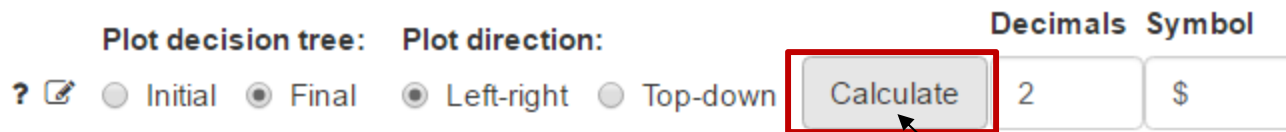
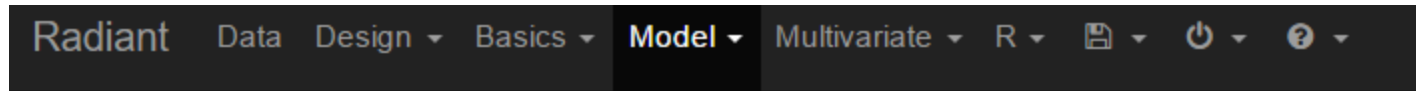
Model Plot Sensitivity

? Max Min Calculate tt-tuesday tt-tuesday Save input Save output Remove Choose File No file chosen

```
1 name: Dynamic Pricing of Tee times (Tuesday)
2 type: decision
3 $10:
4   type: chance
5   Sold:
6     p: 0.85
7     payoff: 10
8   Unsold:
9     p: 0.15
10    payoff: 0
11 $20:
12   type: chance
13   Sold:
14     p: 0.79
15     payoff: 20
16   Unsold:
17     p: 0.21
18     payoff: 0
19 $30:
20   type: chance
21   Sold:
22     p: 0.67
23     payoff: 30
24   Unsold:
25     p: 0.23
26     payoff: 0
27 $40:
28   type: chance
29   Sold:
30     p: 0.47
31     payoff: 40
32   Unsold:
33     p: 0.53
34     payoff: 0
35 $50:
36   type: chance
37   Sold:
38     p: 0.31
39     payoff: 50
40   Unsold:
41     p: 0.69
42     payoff: 0
43 $60:
44   type: chance
45   Sold:
46     p: 0.08
47     payoff: 60
48   Unsold:
49     p: 0.92
50     payoff: 0
```

Select: Calculate

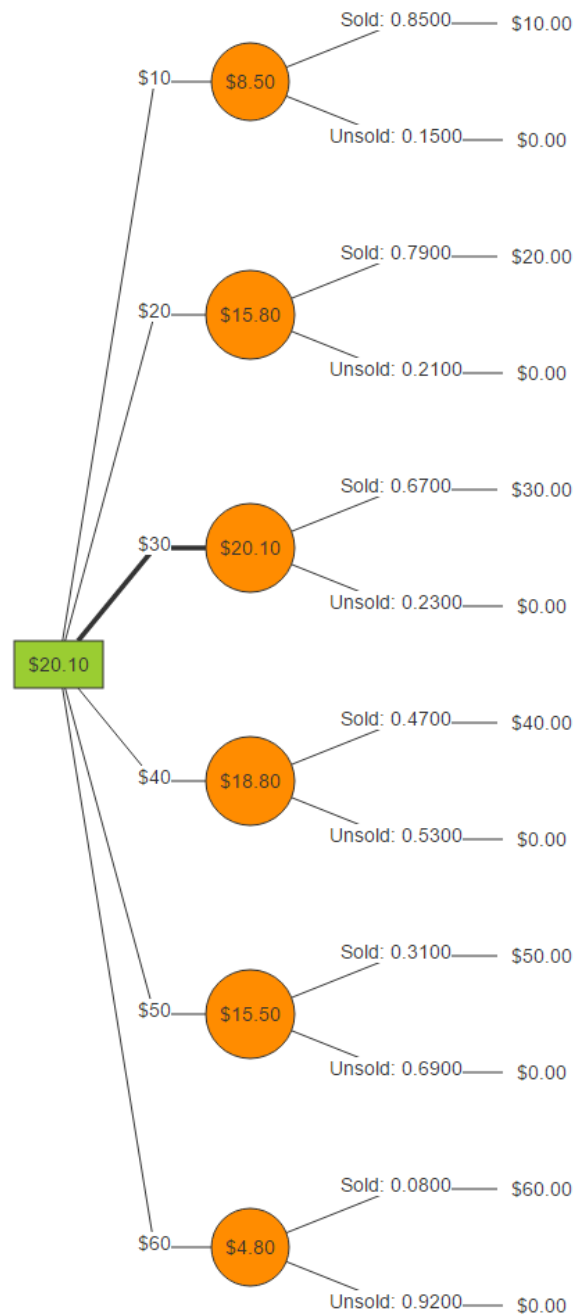
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Select: Calculate

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Tuesday's Decision



Monday's Decision

