

To save on expenses, Rona and Jerry agreed to form a carpool for traveling to and from work. Rona preferred to use the somewhat longer but more consistent Queen City Avenue. Although Jerry preferred the quicker expressway, he agreed with Rona that they should take Queen City Avenue if the expressway had a traffic jam. The following payoff table provides the one-way time estimate in minutes for traveling to or from work.

Decision Alternative	State of Nature	
	Expressway Open	Expressway Jammed
	s_1	s_2
Queen City Avenue, d_1	30	30
Expressway, d_2	25	45

Based on their experience with traffic problems, Rona and Jerry agreed on a 0.15 probability that the expressway would be jammed.

In addition, they agreed that weather seemed to affect the traffic conditions on the expressway. Let

C = clear
 O = overcast
 R = rain

The following conditional probabilities apply.

$$\begin{array}{lll}
 P(C | s_1) = 0.8 & P(O | s_1) = 0.2 & P(R | s_1) = 0.0 \\
 P(C | s_2) = 0.1 & P(O | s_2) = 0.3 & P(R | s_2) = 0.6
 \end{array}$$

- Use Bayes' theorem for probability revision to compute the probability of each weather condition and the conditional probability of the expressway open s_1 or jammed s_2 given each weather condition.
- Show the decision tree for this problem.
- What is the optimal decision strategy, and what is the expected travel time?