

Reading Assignment 2: Decisions Under Ignorance Part 2

Assigned Reading Read the following sections from M. Peterson. *An introduction to decision theory*. Cambridge University Press, 2017.

1. Sections 3.2-3.6,
2. Review Section 2.2 from last class.

Technical Requirements

Answer questions one, three, five, and six. Together, your answers should not be longer than a single typed page. Remember to write down the page numbers/ranges that indicate where the concepts necessary for answering the questions are introduced.

1. Order the acts (from best to worst) in the decision matrix below using the maximin and leximin. Briefly explain your reasoning.

	State 1	State 2	State 3
Act 1	2	2	1
Act 2	2	1	1
Act 3	0	3	4

2. What type of scale is necessary for characterizing the best actions under maximin and leximin?
3. Calculate the expected value of acts 1 and 2 in the decision matrix below if State 1 has a probability of 99/100 and State 2 has a probability of 1/100. Then order the acts according to the optimism-pessimism rule if $\alpha = 99/100$.

	State 1	State 2
Act 1	100	0
Act 2	0	100

4. Order the acts in the first question above (from best to worst) according to the principle of insufficient reason.
5. Order the acts in the first question above from best according to the minimax regret principle.
6. Consider the decision problem below. Find a randomized act that strictly dominates Act 3. Explain your reasoning.

	State 1	State 2
Act 1	100	0
Act 2	0	100
Act 3	40	40