

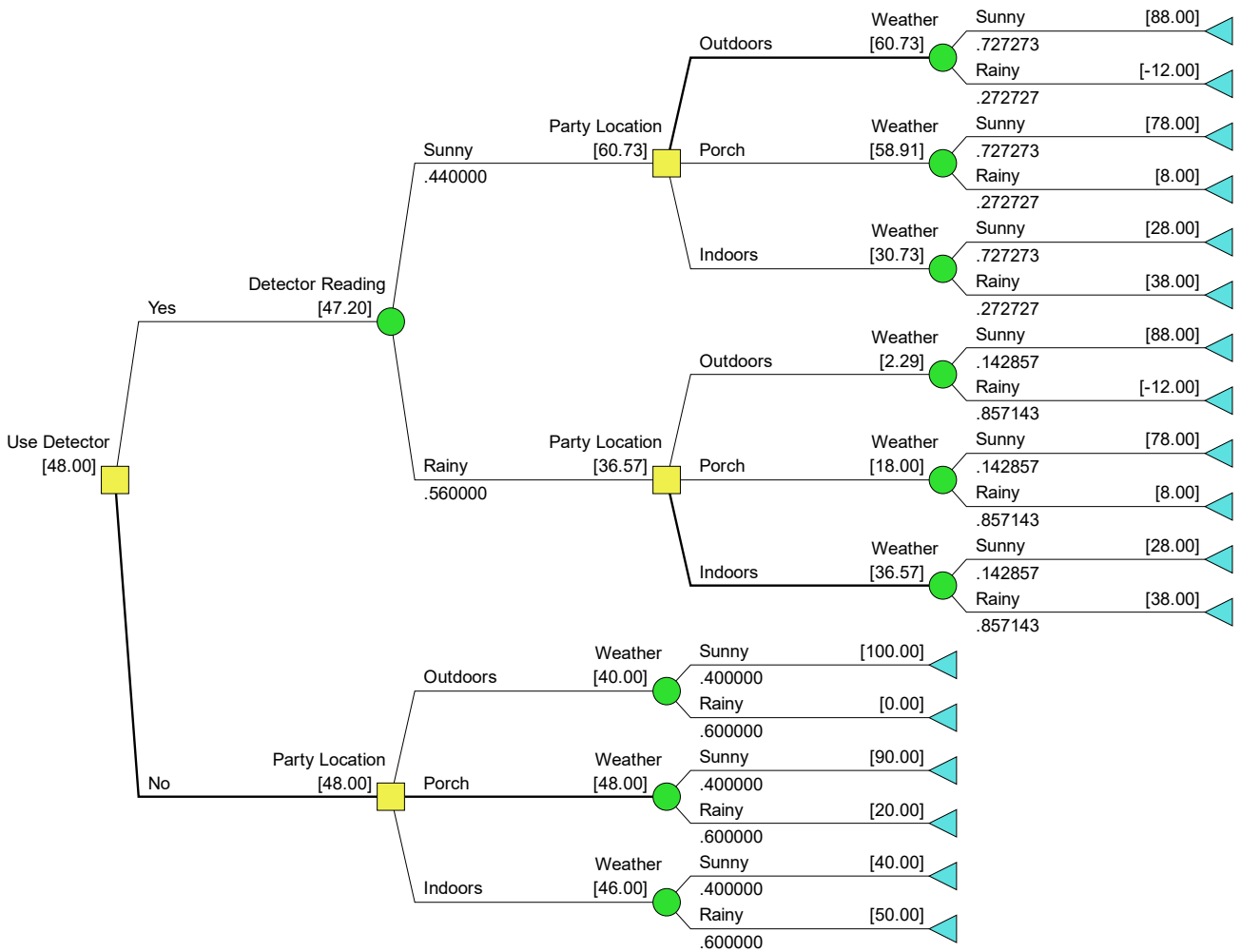
# Chapter 4.extra

## How to draw risk profile of initial alternatives when there are multiple sequential decisions

### Example:

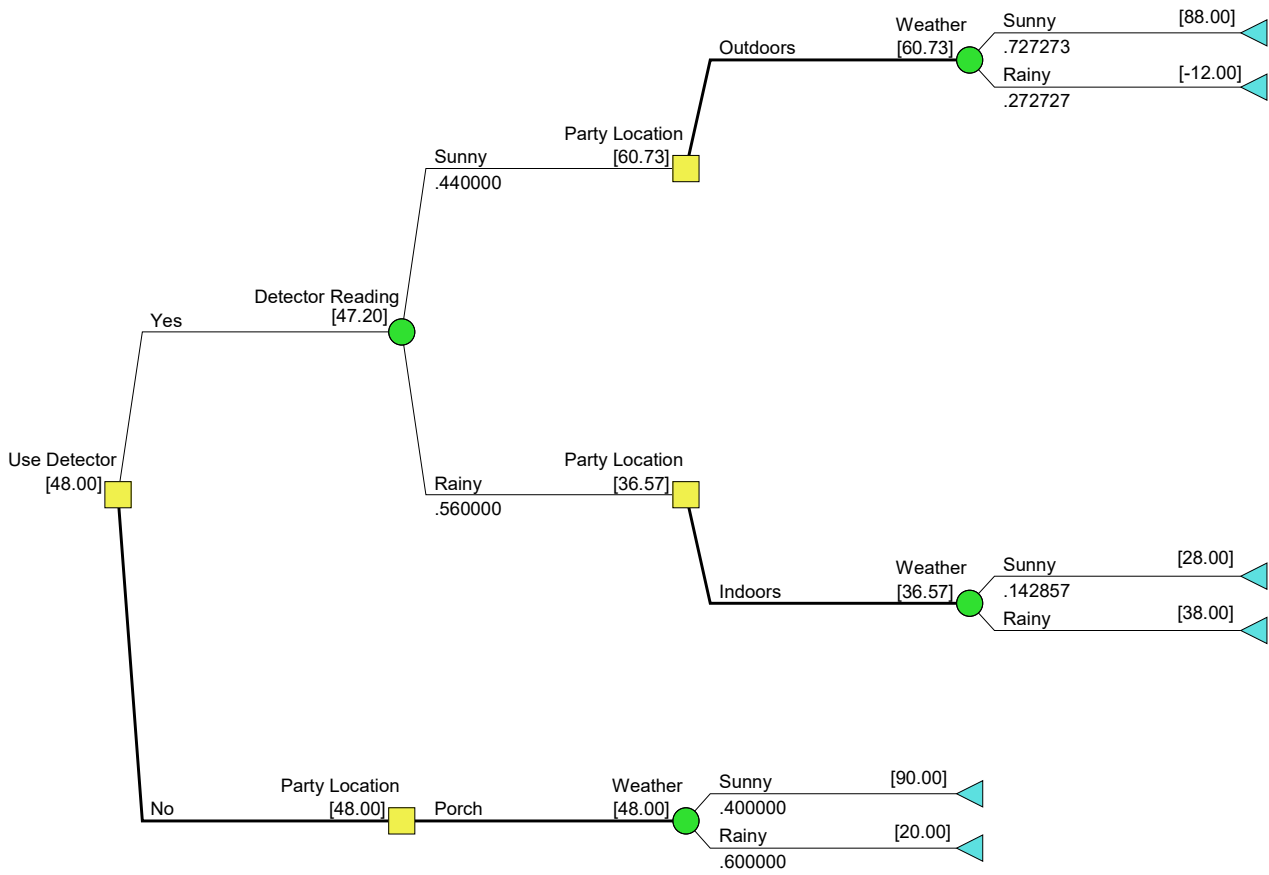
Consider Jane’s Party Problem with decision to use a rain detector at \$12 or not.

### 1. Generate Optimal Decision Policy Tree:



Licensed by Syncopation Software for educational and non-commercial research purposes only.

## 2. Prune None Optimal Decision Sub-Trees.



## 3. Extract end-point probabilities and values

Initial Alternative: Use Detector

End point	Probability	Value
1	$0.44 \times 0.727272727 = 0.32$	88
2	$0.44 \times 0.272727273 = 0.12$	-12
3	$0.56 \times 0.142857143 = 0.08$	28
4	$0.56 \times 0.857142857 = 0.48$	38

Initial Alternative: No detector

End point	Probability	Value
1	0.4	90
2	0.6	20

#### 4. Sort probabilities table by value:

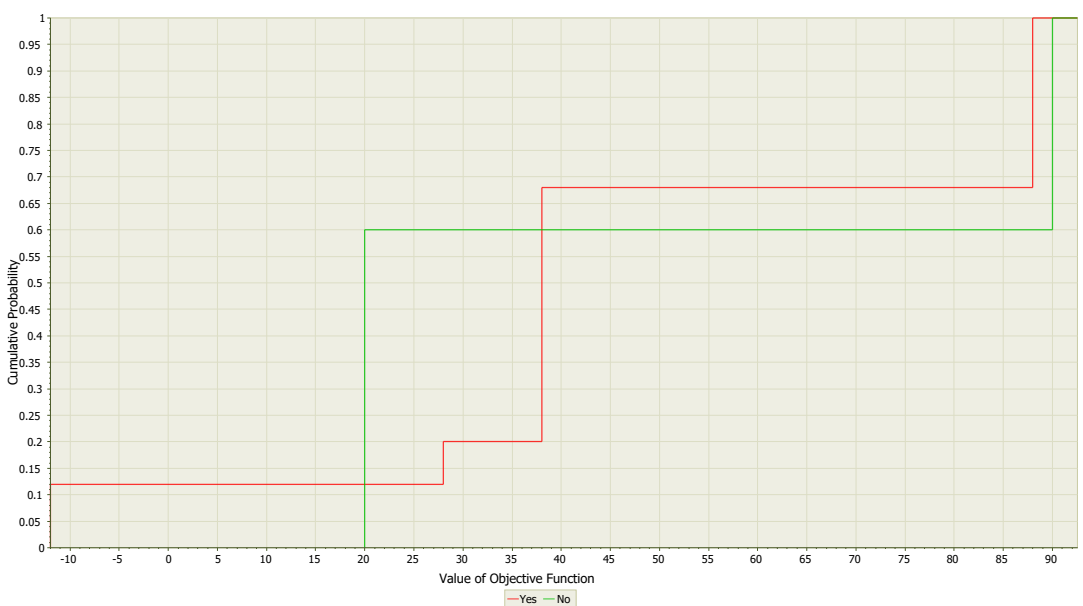
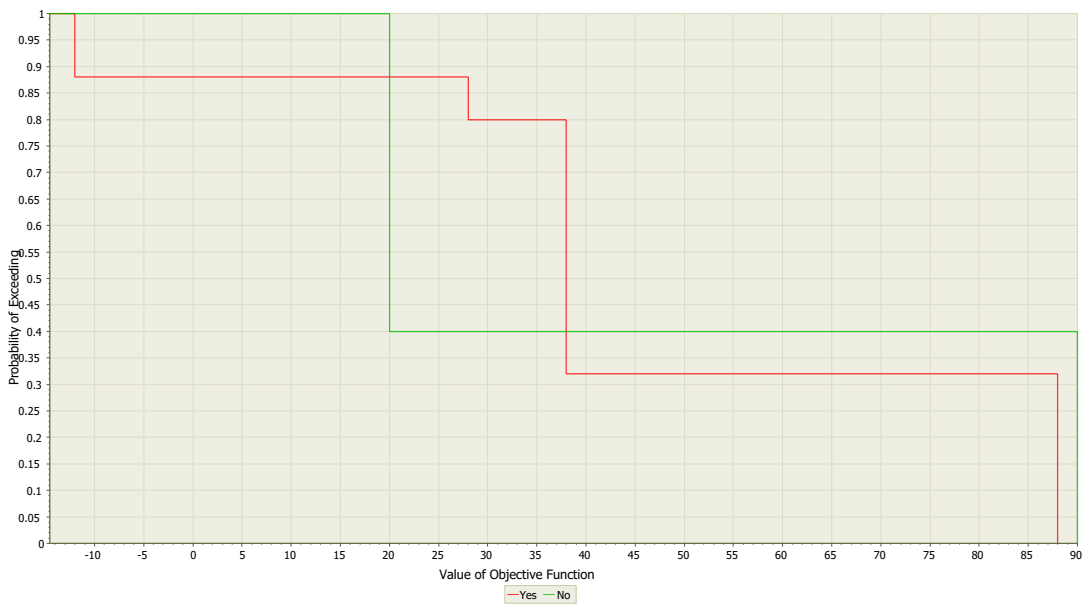
Initial Alternative: Use Detector

End point	Probability	Value
1	$0.44 \times 0.272727273 = 0.12$	-12
2	$0.56 \times 0.142857143 = 0.08$	28
3	$0.56 \times 0.857142857 = 0.48$	38
4	$0.44 \times 0.727272727 = 0.32$	88

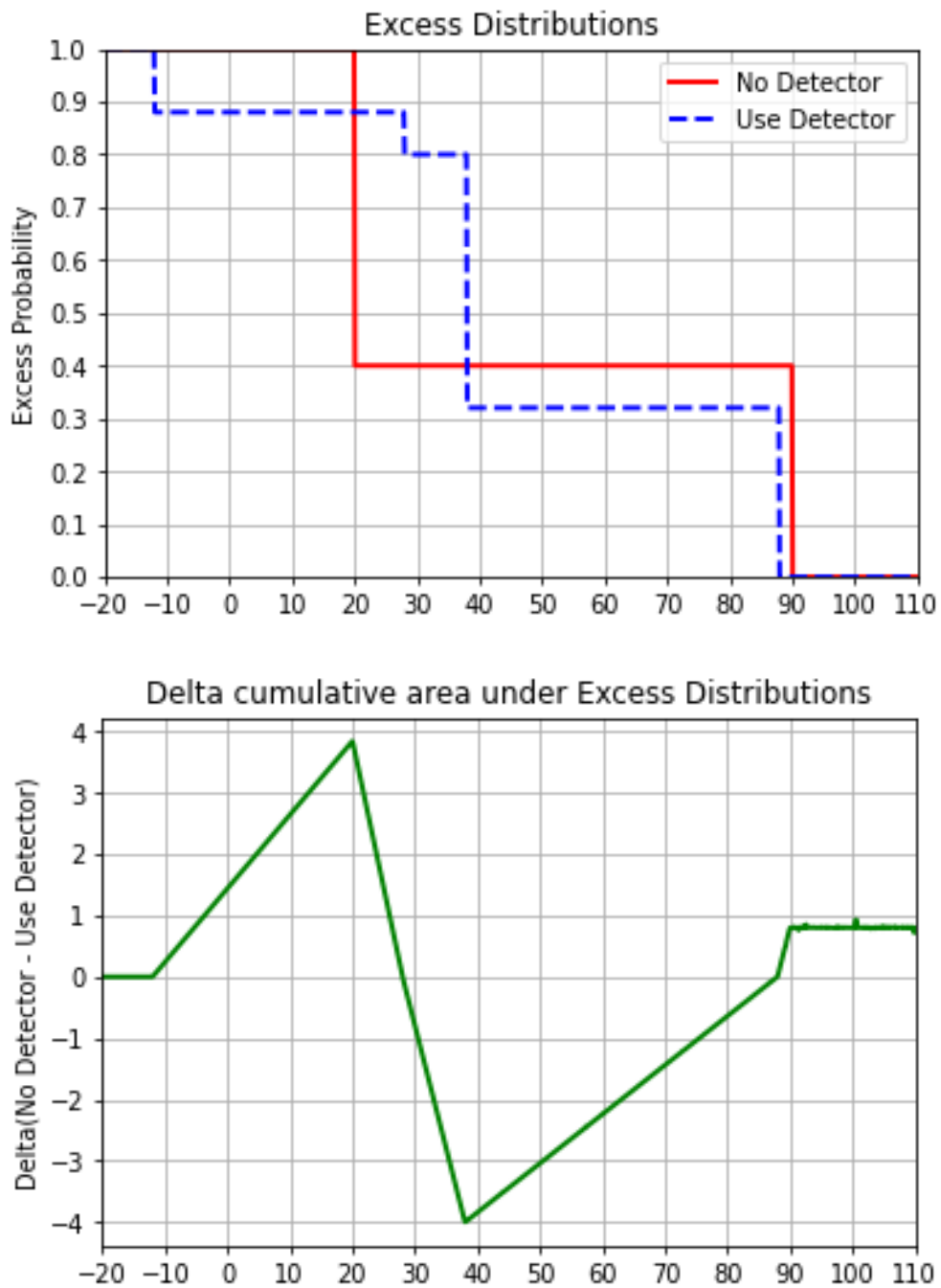
Initial Alternative: No detector

End point	Probability	Value
1	0.6	20
2	0.4	90

#### 5. Plot Risk Profiles of Initial Decision Alternatives:



## 6. Check for Second Order Stochastic Dominance



Result: No Detector does not 2SD Use Detector.