

Chapter 2 Exercises

Exercise 1: Draw the causal model in which nodes A, B, and C correspond respectively to "yellow teeth", "Cancer", "smoking".

Exercise 2: Figure 2.10 shows examples of causal views of risk and opportunity that 'start' from the same trigger ('Drive fast'). Construct a similar pair of examples starting with the trigger 'invest \$1 million in start-up company'.

Exercise 3: The Armageddon example in Section 2.6 presents the causal view of risk from the trigger "meteor on collision course". We could also consider this as an opportunity to save the world. Hence, draw the analogous causal opportunity view with appropriate opportunity event, controls and mitigants.

Exercise 4: List the benefits and drawbacks of using the equation $\text{Risk} = \text{Probability} \times \text{Impact}$ as a means of quantifying risk.

Exercise 5: Suppose we have a large dataset of patients who entered hospital with head injuries. We have two types of data for each patient. The 'inputs' collected on arrival at hospital (age, pupil dilation, brain scan result, arterial pressure and the 'outcome' (which is a variable with two outcomes "OK" and "death/permanent brain damage"). In order to identify future cases requiring most urgent treatment we want to 'learn' which profile of 'input' data is most likely to result in the worst outcome. Explain what is 'missing' from the following 'causal model' built for this purpose.

