4.12 Exercises

1. Go to a weather data website such as weather-warehouse.com. Collect at least twenty data observations for a consistently defined temperature or precipitation item. Record a clear definition and source for the selected item. Transfer the data to a spreadsheet. Use the spreadsheet or another program to produce a histogram containing at least three bars. Use the spreadsheet to compute the data's first two moments using the first two equations of this chapter. Do not use the internal mean and variance functions provided by the program except as a check on your results.

2. Make some lists from the chapter's material. What risk-like concepts are available and how do they differ? Expand the two-column dichotomy of the third section of chapter one to list only risk-dedicated public actions. What are the different economic methods available to empirically study risk-cognizant levels of water use?

3. (suggested by Park and Sharp-Bette 1990, 359) An agent with preferences represented by $u(w) = 1 - e^{-0.0001w}$ possesses 10,000 units of water (w). There are two costless but mutually exclusive lotteries available: the agent can have either (a) an additional 20,000 units with certainty or (b) a chance p of receiving 30,000 additional units and (1–p) of receiving 10,000 additional units. What is the agent's coefficient of absolute risk aversion? What level of p makes the agent indifferent between the two lotteries? If p=0.5, what's the certainty equivalent of (b)?

4. Here you will apply the option price ideal directly to a net benefits calculation. The scenario benefits are precisely those given in section 4.7.2 by the u function (4.15) and Table 4.2. In addition, the action under consideration has the following cost attributes. No action costs are $114 with certainty. Action costs are $116 with probability 0.5 and $120 with probability 0.5. Assume that cost-side risk is independent of benefit-side risk. With this information, specify the alternative net benefits that might happen and their probabilities for both no action and action. Define the two available lotteries. Try to compute both the expected net benefits of the action as well as option price for the action's net benefits.