

Meeting 6:

Problem discussion

1

Consider the following lottery:

The price for buying a lottery ticket is SEK 50. If you win on this lottery, you win SEK 10000. The probability of winning is 0.05.

*Form the decision matrix for the decision problem with actions
"Buy a lottery ticket" and "Do not buy a lottery ticket"*

Would you buy a lottery ticket?

Now, the following three persons are all considering buying a ticket:

- Martin, who has a total asset of SEK 150 000 once he has paid his monthly bills
- Zoran, who has a total asset of SEK 2100 once he has paid his monthly bills
- Sarah, who has a total asset of SEK 1 450 000 once she has paid her monthly bills

Would all three decide like you?

2

Assume you have the intention to travel abroad to meet up with your parents to celebrate a festival day (very important in your family).

The festival day is the day after tomorrow (i.e. on Sunday) and your flight is tomorrow (Saturday).

You have already bought your flight return ticket and it is not refundable. The air carrier is not member of any alliance.

You must be back in Sweden three days after the festival day (i.e. next Wednesday) for a very important deadline at work.

Now, you learn that the pilots of the air carrier have given a three-day strike warning for Monday-Wednesday next week.

Should you go or not?

3

A person asking for medical care has some symptoms that may be connected with two different diseases A and B. The symptoms could also be temporary and disappear within reasonable time.

For A: A therapy treatment that cures the disease if it is present.

If disease A is not present the treatment will lead to that the symptoms remain with the same intense.

For B: A therapy treatment that generally “reduces” the intensity of the symptoms by 10 % regardless of whether B is present or not. If B is present the reduction is 40 %.

Assume that A is present with probability 0.3 (given the symptoms), and that B is present with probability 0.4 (given the symptoms) and that A and B cannot be present at the same time (given the symptoms) $\Rightarrow$ The probability neither A nor B being present (given the symptoms) is 0.3.

What is the Bayes action in this case: Treatment for A, treatment for B or no treatment?