

Week 3 Recap

Monday is off (labour day)

Wednesday: Conditional probability and Bayes' formula. Here is the wikipedia link for Bayes' theorem [Bayes/wiki. !\[\]\(c3d993ca47bfe2a953c700506ce31fa0_img.jpg\) \(https://en.wikipedia.org/wiki/Bayes%27_theorem\)](https://en.wikipedia.org/wiki/Bayes%27_theorem)

Conditional probability is the tool to discuss how partial information changes the probability assigned to an event: Supposed your friend rolls a pair of dice (one blue, one red). You do not see the result but you friend tells you the sum is 10. Now, given that information, what is the probability that the red die show 5? Before the roll, the probability that the red die will show 5 was $1/6$. But what is it now that you know that the sum is 10? How does this relates to the probability (before the roll) that the sum is 10 and the red die shows 5 (this probability is clearly $1/36$)?

Bayes' formula/theorem is very important both theoretically and in practical problems such as interpreting the result of medical tests.

Independence (as a key concept in probability theory). We will use independence (and conditional probability) throughout the semester. Be sure to understand the difference between "independence" in a general context and "independence" as a concept in probability theory. They are related but also different because the second one as a precise mathematical definition.

Read the first 3 sections of Chapter 2.