A5 Exercises

10.9

1. I am interested in how anti-lobbying laws would affect climate policy.
2. The relative frequency distribution shows the share of observations taking on a value in a specific range while the standard frequency distribution shows the number of times an observation takes on a value in a specific range.
3. The PDF is a continuous function and thus cannot be created exactly from just plotting the relative frequency distribution at discrete points on the x-axis.
4. The probability mass function (PMF) is the function that describes the probability of a discrete random variable taking on a certain value rather than falling in between a range of values, as the CDF describes. More specifically, the CDF describes the probability that a random variable takes on a value equal to or less than a specific value.
5. A contingency table could be used to look at the joint distribution of what people vote and if they live in a rural or an urban area.
6. Political processes that might be described by:
    a. Bernoulli: voting for a given outcome
    b. Poisson: number of policychanges during an administration period
7. Can't access the link
8. Plot joint bivariate distributions
9. We can't say anything about probability if we only know the mean and not the distribution. But it will be lower than the probability of 3 in the year.
10. Bach vs. Stravinsky
    Expected utility of going to Bach: E[U(Bach)]=0,5*18+0,5*8= 13
    Expected utility of going to Stravinsky: E[U(Stravinsky)]=0,5*3+0,5*13=8
    She should go to Bach.
    If there is a 30% probability of her friend being at the Stravinsky concert:
    Expected utility of going to Bach: E[U(Bach)]=0,3*18+0,7*8= 11
    Expected utility of going to Stravinsky: E[U(Stravinsky)]=0,3*3+0,7*13=10
    She should still go to Bach.
11. Based on the observed maneuvers, the expected utility of going to war will be -0,3 and thus not initiating a war would be optimal. If A goes with their beliefs, expected utility of going to war would be 0,2 and it would be optimal to initiate war.

11.4

1. PDF is a continuous function
2. PMF describes a discrete random variable and the probability that it will take on a specific value. The PDF describes a continuous variable and the probability that it will take on a value within a (potentially infinitesimally small) interval.
3. The PDF describes a continuous variable and the probability that it will take on a value within a (potentially infinitesimally small) interval while the CDF describes the cumulative density function, i.e. the probability that a random variable takes on the value of or less than a given value.
4. Examining how the distribution of age correlates with a person's spending share on food.
5. Because a distribution can look normal but not be.
6. The PDF is continuous while the relative frequency distribution is discrete.

7. The PDF requires calculating an integral since it is a continuous function as opposed to calculating a sum for a relative frequency distribution.
8. $Var(X) = E[(X-\mu)^2] = E[X^2 - 2X\mu - \mu^2] = E[X^2] - 2\mu E[X] + \mu^2 = E[X^2] - 2\mu^2 + \mu^2 = E[X^2] - \mu^2$
9. $Prob(benefit) = 1 - \Pr(X \leq 10) = 1 - \frac{10}{25} = \frac{15}{25} \approx 0{,}6$
10. The mean tells us that the average firm has $100 million deficit and that the average firm fluctuates around this mean with $300 million.
11. Political process that might be drawn from
    a. Normal or log-normal: age distribution in the country
    b. Logistic: heavier tales than a normal distribution, perhaps the distribution of family size
    c. Exponential: amount of time a president lasts in office
12. Link inactive
13. Link inactive