

## Assignment Day 4

- 1) A website displays 10 advertisements and the revenue generated by the website depends on the number of visitors to the site clicking on any of the advertisements displayed on the website. The data collected by the company has revealed that out of 2500 visitors, 30 visitors clicked on 1 advertisement, 15 clicked on 2 advertisements and 5 clicked on 3 advertisements. Remaining did not click on any of the advertisements. Calculate
  - a. The probability that a visitor to the website will click on an advertisement.
  - b. The probability that the visitor will click on at least two advertisements.
  - c. The probability that a visitor will not click on any advertisements.
- 2) Use the Civilian Labor Force data in the Excel file Census Education Data to find the following:
  - a.  $P(\text{unemployed and advanced degree})$
  - b.  $P(\text{unemployed} | \text{advanced degree})$
  - c.  $P(\text{not a high school grad} | \text{unemployed})$
  - d. Are the events “unemployed” and “at least a high school graduate” independent?
- 3) The weekly demand of a slow moving product has the following probability mass function:

Demand, $x$	Probability, $f(x)$
0	0.2
1	0.4
2	0.3
3	0.1
4 or more	0

Find the expected value, variance and standard deviation of weekly demand.

- 4) A popular resort hotel has 300 rooms and is usually fully booked. About 6% of the time a reservation is cancelled before the 6:00 p.m. deadline with no penalty. What is the probability that at least 280 rooms will be occupied?. Use the binomial distribution to find the exact value.
- 5) Black boxes used in aircrafts are manufactured by three companies A, B and C. 75% are manufactured by A, 15% by B, and 10% by C. The defect rates of black box manufactured by A, B and C are 4%, 6% and 8%, respectively. If a black box tested randomly is found to be defective, what is the probability that it is manufactured by company A?