**Introduction**: The purpose of this assignment is to take sets of data corresponding to different demographics: Gender, Career Sectors, Company sizes, Salaries, and Savings, to determine probabilities amongst variables. All the data presented here has been analyzed and processed through Microsoft Excel.

**Results:**

**5.b**

**A.)** The probability that a person is selected at random out of the 500 employees and is young is 131/500

**B.)** There are 187 women out of the 266 female employees that make over $55,000 so the probability of selecting one of these women at random is from this precondition is 188/266

**C.)** There are 48 women in the Financial sector, the probability of selecting a woman at random who works in the Finance Sector and is paid more than $60,000 is 35/48 since 35 of those women do make more than $60,000.

**D.)**

**1.** P(women) = 266/500 = 0.472

**2.** P (Finance | women) = P(women) \* P (women in finance from all women) = (266/500) \* (48/266) = 0.096

**3.** P (Finance + 60K | women) = P(women) \* P (women in finance from all women) \* P (women in finance + 60k) = (266/500) \* (48/266) \* (35/48) = 0.07

**E.)** The probability that a person is a man if he earns more than 90,000 is 113/500 = 0.226

**F.)**

**1.** P(Man) = 234/500 = 0.468

**2.** P (Earns +90,000 | Man) = [(234/500) \*(115\*234)] =0.23.

1. **EVENT A:** P(Man) = Total men/ Total employees **EVENT B:** P (Earns +90,000 | Man) = [(# of male/total employee) \*(# of men that earn 90000+/#of male employees)]
2. The first one is not conditional, the second one is, we need to set the first one as the condition to solve for a man that earns more than $90,000.
3. The prior event is that the selected person is a man.

**G.)** P (Man+85,000 | company size 4 ∩ Sector 5) = 3/500 = 0.006

**H.)** P (Man+85,000 | company size 4 ∩ Sector) = P (men making 85,000) / P (# of men in sector 5) +

P (# of men in company size 4) = (((30/11) / ((102/185) + (33/103))/ 500) = 0.006

5c.



5d.







1. The mean is the expected value, and therefore they are equal. In this example the mean = expected value = 82764.69. This means that on average most employees make a salary around $83,000. This is a rough estimate considering how education makes approximately $73,000 annually.

1. The standard deviation was equal to 5828.5069, a relatively low value. This low value signifies that most of the data points studied have a tendency to be closer to the mean of the data set, helping us make the claim that almost all the other average salaries for all the sectors were within a close range of the expected value (mean).