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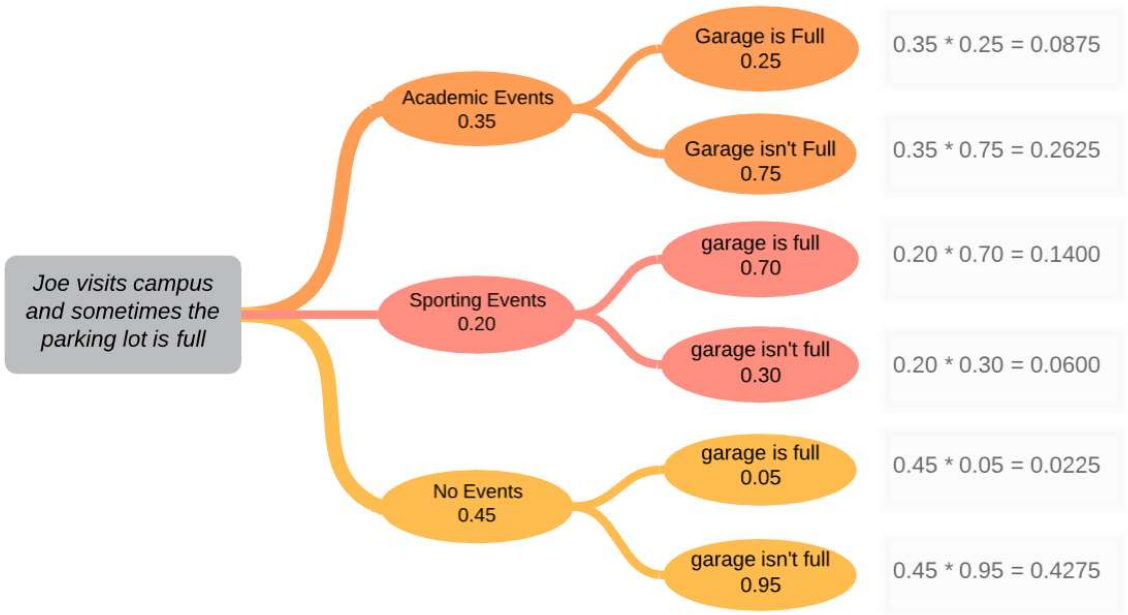
Saturday, September 19, 2020 11:28 AM

1. Joe Visits Campus and sometimes the garage is full

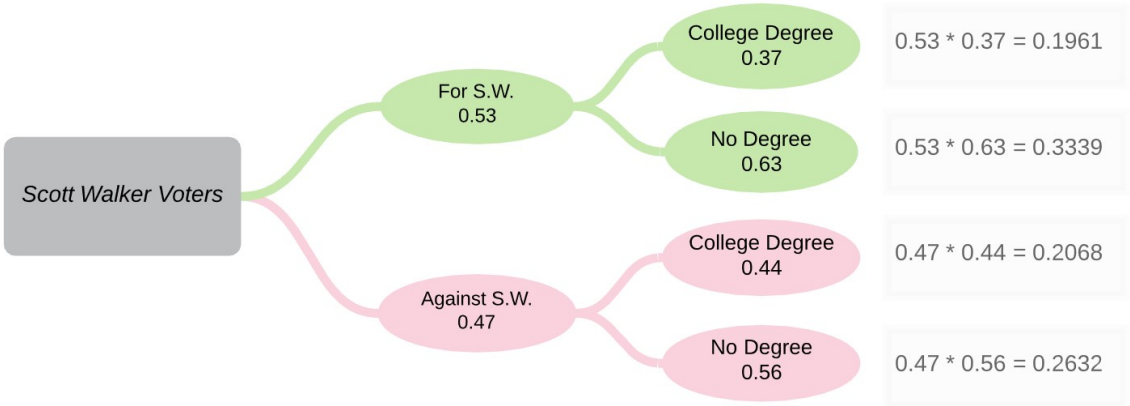
a.



b. SE = Sporting Event
GF = Garage is full
P(SE | GF) =(% garage is full from sporting event) / (% garage is full)
P(SE | GF) = (0.1400)/(0.0875+0.1400+0.0225) = **0.56**

2. Some of the people that vote for Scott Walker have degrees

a.



b. CD = Voter was found to have a college degree
VF = Voted for Scott Walker
P(CD | VF) = (% voted for S.W. + have a degree) / (% have a degree)
P(CD | VF) = (0.1961)/(0.1961+0.2068) = 0.4867
49% chance of voting for Scott Walker, given they were found to have a college degree

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3. Renal failure killed people
   a. NP = Neither parent had a renal failure
      RF = Person dies of renal failure
      115 people had a parent that died of renal failure and also died of renal failure
      321 total people died of renal failure
      321 - 115 = 206 people that died of renal failure without having a parent that died of renal failure
      P(NP | RF) = (# of people that died of RF given neither parent had an RF) / (% died of RF)
      P(NP | RF) = (206) / (321) = 0.6417
      There is a 64% chance that someone died of renal failure, given they did not have a parent that had a renal failure

4. Chicken Nugs with extra calories
   a. P(0) = The probability of drawing the first one with more calories
      $P(0) = \frac{12!}{0!12!} \cdot 0.95^{12} \cdot 0.05^{0} = 0.54$
      P(1) = The probability of drawing the second one with more calories
      $P(1) = \frac{12!}{1!11!} \cdot 0.95^{11} \cdot 0.05^{1} = 0.34$
      P(2) = The probability of drawing the third one with more calories
      $P(0) = \frac{12!}{2!10!} \cdot 0.95^{10} \cdot 0.05^{2} = 0.1$
      P(3) = 1 - P(0) - P(1) - P(2)
      P(3) = 0.02

5. College interns are 'great employees'
   a. $\frac{n!}{0!\,(n-0)!} \cdot 0.8^{n-0} \cdot 0.2^{0} = 0.1$
      $0.8^{n} = 0.1$
      $n \cdot \ln(0.8) = \ln(0.1)$
      $n = \ln(0.1)/\ln(0.8) = 10.32$
      Goal: find the probability that 1 or more great employee equals 0.9 (90%)
      Therefore, to have a 90% chance of finding at least one great employee, you would need 11 interns, because you can't have .32 of an intern
   b. This is similar to the first problem but instead of 1 or more success to equal 0.9, it is 2 or more successes
      $\frac{n!}{0!(n-0)!} \cdot 0.8^{n-0} \cdot 0.2^{0} + \frac{n!}{0!(n-0)!} \cdot 0.8^{n-0} \cdot 0.2^{0} = 0.1$
      $0.8^{n}(1 + 0.25n) = 0.1$
      Through putting in each number from 12 and up, I found that 18 makes this equation true

At this point, it's 11:16 pm and im honestly exhausted from working these problems all day, for future assignments, im going to split my work into multiple days.