Angella Ananta Batubara

71476

1. Suppose a company offers three different delivery methods for their products: standard delivery, express delivery, and same-day delivery. 60% of customers choose standard delivery, 30% choose express delivery, and 10% choose same-day delivery. The delivery success rates are 95% for standard delivery, 90% for express delivery, and 85% for same-day delivery. If a customer's delivery fails, what is the probability that they chose express delivery?

   Answer:

   From the narration, we know that,
   60% are standard customers, with success rates 95%
   30% are express customers, with success rates 90%
   10% are same day customers, with success rates 85%

   We want to know the probability of unsuccessful express delivery

   So,
   If there are 1000 customers, then
   Standard = 600, Success = 570, Fail = 30
   Express = 300, Success = 270, Fail = 30
   Sameday = 100, Success = 85, Fail = 15

   Probability of Express customers = 30%
   Probability of unsuccessful delivery = $\frac{30+30+15}{1000} = \frac{75}{1000} = 7{,}5\%$

   $P(Fail|Express) = \frac{7{,}5\%}{30\%} = 25\%$

   Therefore, the probability of unsuccessful express delivery is 25%

2. If a medical test is 95% accurate in detecting a disease and 1% of the population has the disease. Calculate the probability of having the disease given a positive test result!

   Answer:

   From the narration, we know that,
   The medical test accuracy in detecting a disease is 95%
   1% of the population has the disease

We want to know the probability of having the disease and given a positive result

So,
If the population = 10000
The population who has the disease = 100
The medical test with positive results = 95

Therefore, the probability of having the disease and given a positive result = $\frac{\mathbf{95}}{\mathbf{10000}} = \mathbf{0,95}\%$