AP Statistics

2019-02-01 5.3 Homework

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Pg. 329-332 63,65,67,69,77,79,83,85,91,93,97,99

Question 63

Part A

P("Almost Certain"|M) = 597/2459 = 0.2428

Part B

P(F|"Some chance but probably not") = 426/712 = 0.5983

Question 65

Part A

P("a good chance"|F) = 663/2367 = 0.2801

Part B

P("a good chance") = 1421/4826 = 0.2944

Part C

They are not mutually exclusive; if they were independent then P("a good chance") would equal P("a good chance"|F). However, they do not.

Question 67

Part A

P(D|F) = 13/17 = 0.765

Given that the senator is female, there is a probability of 0.765 that she is a democrat

Part B

P(F|D) = 13/60 = 0.217

If a democrat is selected, there is a probability of 0.217 that they are female

Question 69

They are not. P(D|F) = 0.765, P(D) = 0.6

If they were independent, P(D|F) would equal P(D).

Question 77

See "2019-02-01 5.3 Homework - Question 77.png"

P = 0.2210526316

Question 79

P(pirates) = 0.29, P(dont care) = 0.67

P(pirates ∩ dont care) = 0.1943

Question 83

See "2019-02-01 5.3 Homework - Question 83.png"

P(credit card) = .88*.28+.02*.34+.10*.43 = 0.2962

Question 85

P(premium|credit card) = P(premium ∩ credit card)/P(credit card) = 0.14517

Question 91

P(O-) = 0.072

P(not O-) = 1-0.072 = 0.928

P(10x not O-) = P(not O-) occurring 10 times = (P(not O-))^10 = 0.928^10 = 0.47367

Therefore, probability of P(10x not O-) NOT occurring is 1-P(10x not O-) = 0.52633

Question 93

No - a single show running late is not independent of the next show running late.

Question 97

No - a single flight being late is likely to cause further delays at the terminal/gate, further delaying other flights.

Question 99

Part A: See "2019-02-01 5.3 Homework - Question 99.png"

Part B

P(+) = 0.01*0.9985 + 0.99*0.006 = 0.015925

Part C

P(Antibody|+) = P(Antibody ∩ +)/P(+) = 0.627