Problem 1 : Part 1 3/26/24

Conditional Probability Distribution Calculation

1. Bathrooms - continuous
2. # Rooms - discrete

Distribution For Bathrooms:

- Apartment:

μ = (Sum of Bathrooms in Apartments) / (# of apartments)
= (1 + 1 + 1 + 2.5 + 1 + 1.5 + 1) / 7 = 1.29

σ^2 = (For each value of Bathrooms in Apartments, subtract μ, and square the result) / (# of Apartments - 1)
= 0.32

- House:

μ = (Sum of Bathrooms in House) / (# of Houses)
= (1 + 1 + 1 + 1 + 1 + 1 + 1.5) / 7 = 1.07

σ^2 = (For each value of Bathrooms in Houses, subtract μ, and square the result) / (# of Houses - 1)
= 0.04

- Condo:

μ = (Sum of Bathrooms in Condo) / (# of Condos)
= (1 + 1 + 1 + 2.5 + 1 + 1.5) / 6 = 1.33

σ^2 = (For each value of Bathrooms in Condos, subtract μ, and square the result) / (# of Condos - 1)
= 0.37

Distribution For # Rooms:

- Apartments:
  - Probability of 5 rooms: 1/7 = 0.1429
    6 rooms: 2/7 = 0.2857
    7 rooms: 2/7 = 0.2857
    8 rooms: 1/7 = 0.1429
    9 rooms: 1/7 = 0.1429

- House:
  - probability of 5 rooms: 1 / 7 = 0.1429
    6 rooms: 4 / 7 = 0.5714
    7 rooms: 2 / 7 = 0.2857
- Condo:
  - probability of 3 rooms: 5 / 6 = 0.8333
    5 rooms: 1 / 6 = 0.1429