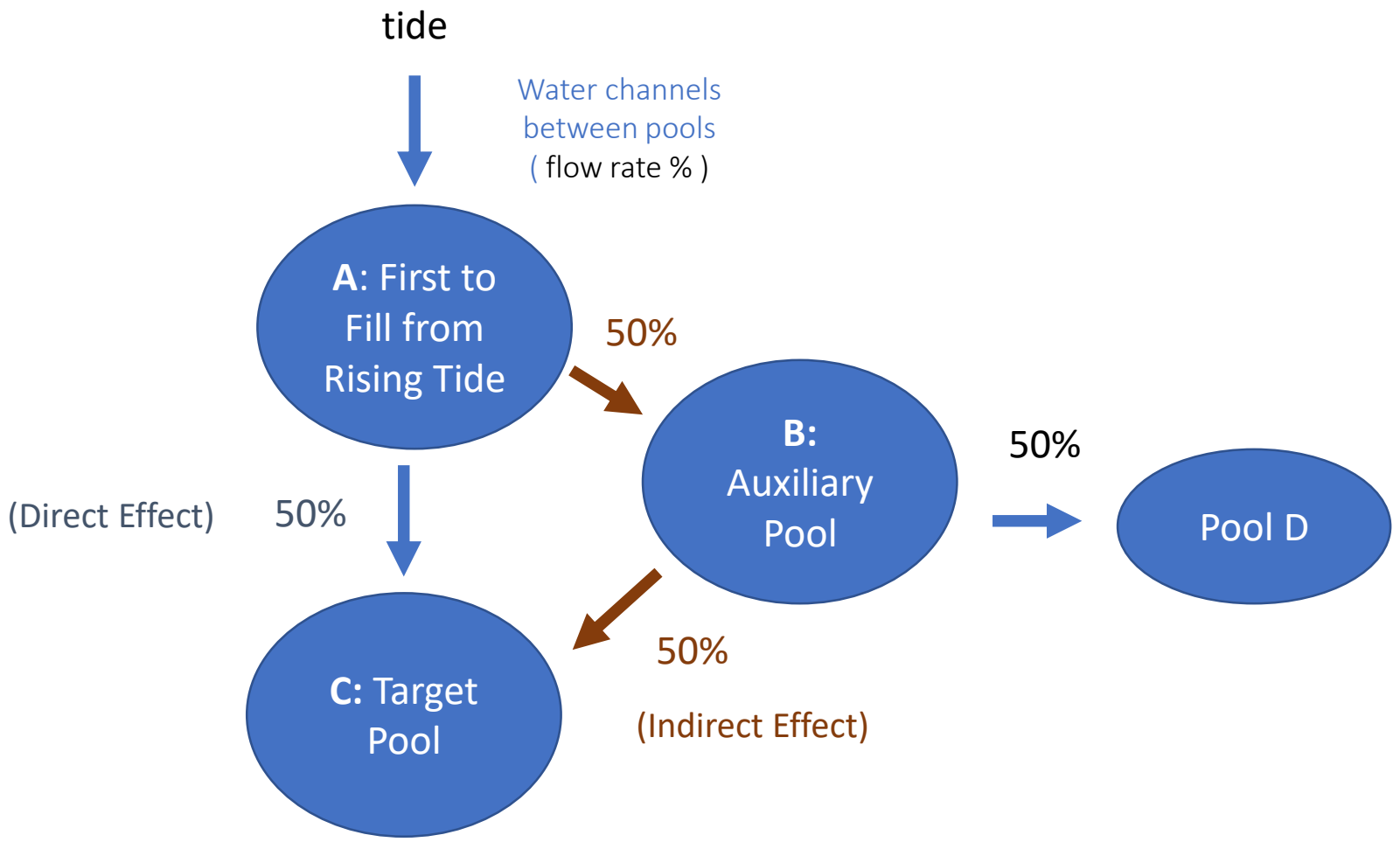
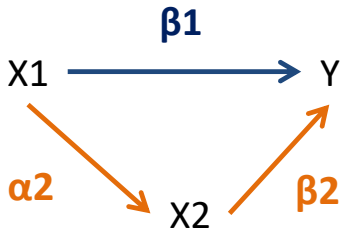
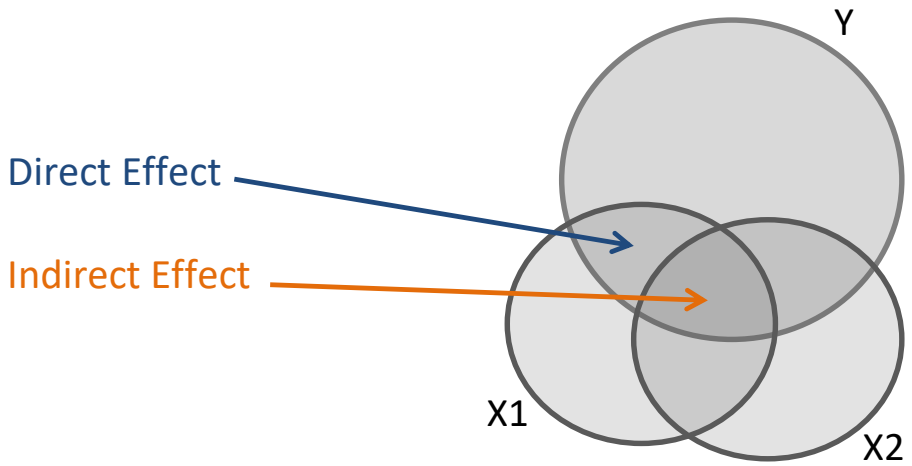
Ocean

Tide pool A and pool B are mostly full from the rising tide. **A new wave washes 10 gallons of water into pool A, which then flows into B and C.** How much water will pool C receive in total?



x = volume of water added to A
y = change in volume of C
y = amount directly from A + amount indirectly from A through B
y = (0.50)(x) + (0.50)(0.50)(x) = 5 + 2.5 = 7.5 gallon increase





$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \varepsilon_1$$ (full regression)

$$X_2 = \alpha_0 + \alpha_1 X_1 + \varepsilon_2$$ (auxiliary regression)

$$bias = \beta_2 \alpha_1$$ (Indirect Effect of X1 on Y)