

*SOC 4930/5050: Week 04 Equations Quick
Reference*

Christopher Prener, Ph.D.

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Additive Law

$$P(A \cup B) = P(A) + P(B) - P(A \cap B) \quad (1)$$

Conditional Probability

$$P(A|B) = \frac{P(A \cap B)}{P(B)} \quad (2)$$

Multiplicative Law

$$P(A \cap B) = P(A) * P(B|A) \quad (3)$$

Independent

$$P(A \cap B) = P(A) * P(B) \quad (4)$$

Bayes' Theorem

The posterior probability can be calculated using this simplified formula:

$$\frac{xy}{xy + z(1-x)} \quad (5)$$