

Overview of Unit #3

1. Important Topics in Testing: Refs. B&D 4.4,5,7,9 B&C: 8.2.1,2 9.2, 9.3.1

Background: Material from earlier unit.

Major Results:

- A) Definition of likelihood ratio tests
- B) Wilks Theorem: Use of Chi-square for thresholds
- C) Near equivalence of classes of tests and interval estimators
- D) Bayesian testing: Generalized Zero-One loss optimality

2. Asymptotics Refs: B&D 5.2, 5.3.3, 5.4.3, 5.5 B&C: 10.1.1, 10.1.2, 10.3.1

Background: convergence in distribution

Major Results:

- A) Wald's theorem on consistency of the MLE, and its technique of proof
- B) Cramer's proof of asymptotic normality of the MLE
- C) Wilks theorem redux: convergence of likelihood ratios to Chi-squares
- D) Bahadur's theorem on efficiency of the MLE
- E) Walker's Theorem on posterior normality (includes consistency)