Statistics  Hypothesis Tests  March 12, 2009

Outline
Setting: a population, a single quantitative variable, and an unknown parameter $\mu$
Assumptions: population normally distributed, sample a SRS

1. Steps in hypothesis testing:
   (a) Null hypothesis: $H_0: \mu = \mu_0$
   (b) Alternate hypothesis: $H_a: \mu \neq \mu_0$ (or a one-sided hypothesis)
   (c) Test statistic
      \[ t = \frac{\bar{x} - \mu_0}{s/\sqrt{n}} \]
      If the null hypothesis is true, $t$ has a $t$-distribution with $n - 1$ degrees of freedom.
   (d) $P$-value
      i. Meaning
      ii. Computation using Crunchit (exact)
      iii. Computation using tables
   (e) Conclusion

2. Reporting conclusions: the notion of statistical significance

3. Caution: statistical significance is not necessarily significance in the sense of importance