Social Studies 201

December 6, 2004

Notes about final examination

The topics for the final examination will centre around interval estimates, samples size, and hypothesis tests, the methods examined since the second midterm. There will be five or six questions on the examination and you are expected to answer three of these. Make sure you bring the tables of the normal and t-distributions and a calculator. You may bring any other written material you wish to the examination.

The final examination is from 9:00 a.m to 12:00 noon in CL435, Monday, December 13, 2004.

Topics

1. **Interval estimates**

   (a) **Interval estimate for a mean, μ, large sample size**
   If the sample size is $n \geq 30$, then the interval estimate is

   $$\bar{X} \pm Z\frac{s}{\sqrt{n}}$$

   (b) **Interval estimate for a mean, μ, small sample size**
   If the sample size is $n < 30$, then the interval estimate is

   $$\bar{X} \pm t\frac{s}{\sqrt{n}}$$

   using the t-value for $n - 1$ degrees of freedom.

   (c) **Interval estimate for a proportion, p, large sample size**
   If n is larger than 5 divided by the smaller of p or q, then the interval estimate is

   $$\hat{p} \pm Z\sqrt{\frac{pq}{n}}$$

2. **Sample size**

   (a) **Estimate of mean, μ**

   $$n = \left(\frac{Z\sigma}{E}\right)^2$$

   (b) **Estimate of proportion, p**

   $$n = \left(\frac{Z}{E}\right)^2 pq$$

3. **Hypothesis tests**

   (a) **Hypothesis test for a mean, μ, large sample size**

   $$H_0 : \mu = M$$

   $$H_1 : \mu \neq M \text{ or } \mu > M \text{ or } \mu < M$$

   $$Z = \frac{\bar{X} - \mu}{\frac{\sigma}{\sqrt{n}}}$$

   (b) **Hypothesis test for a mean, μ, small sample size**

   $$H_0 : \mu = M$$

   $$H_1 : \mu \neq M \text{ or } \mu > M \text{ or } \mu < M$$

   $$t = \frac{\bar{X} - \mu}{\frac{\sigma}{\sqrt{n}}}$$

   (c) **Hypothesis test for a proportion (p), large sample size**

   $$H_0 : p = P$$

   $$H_1 : p \neq P \text{ or } p > P \text{ or } p < P$$

   $$Z = \frac{\hat{p} - p}{\sqrt{\frac{pq}{n}}}$$