

Confidence Interval Estimation for the Population Proportion

1. It is important for airlines to follow the published scheduled departure times of flights. Suppose that one airline that recently sampled records of 246 flights originating in Orlando found that 10 flights were delayed for severe weather, 4 flights were delayed for maintenance concerns, and all the other flights were on time. (Source: Statistics for Business and Economics, 2007, 6th edition, Prentice Hall, by Paul Newbold, William L. Carlson, Betty Thorne. pp.298)
  - a. Estimate the percentage of on-time departures using a 98% confidence level.
  - b. Estimate the percentage of flights delayed for severe weather using a 98% confidence level.
2. Suppose that a random sample of 142 graduate admissions personnel was asked what role scores on standardized tests (such as GMAT or GRE) play in the consideration of a candidate for graduate school. Of these sample members 87 answered “very important”. Find a 95% confidence interval for the population proportion of graduate admissions personnel with this view. (pp.297-298)
3. Management wants an estimate of the proportion of the corporation’s employees who favor a modified bonus plan. From a random sample of 344 employees it was found that 261 were in favor of this particular plan. Find a 90% confidence interval estimate of the true population proportion that favors this modified bonus plan. (pp.296)
4. In a random sample of 95 manufacturing firms 67 indicated that their company attained ISO certification within the last two years. Find a 99% confidence interval for the population proportion of companies that have been certified within the last 2 years. (pp.298)
5. From a random sample of 400 registered voters in one city, 320 indicated that they would vote in favors of a proposed policy in an upcoming election. (pp.298)
  - a. Calculate the LCL (Lower confidence limit) for a 98% confidence interval estimates for the population proportion of this policy.
  - b. Calculate the width of a 90% confidence interval estimates for the population proportion in favor of this policy
6. Find the standard error of the proportion for: (pp.297)
  - a.  $n=250; \hat{p}=0.3$
  - b.  $n=175; \hat{p}=0.45$
  - c.  $n=400; \hat{p}=0.05$
7. Find the margin of error for: (pp.297)
  - a.  $n=250; \hat{p}=0.3; \alpha=0.05$
  - b.  $n=175; \hat{p}=0.45; \alpha=0.08$
  - c.  $n=400; \hat{p}=0.05; \alpha=0.04$
8. Find the confidence interval for estimating the population proportion for: (pp.297)
  - a. 92.5% confidence level;  $n=650; \hat{p}=0.10$
  - b. 99% confidence level;  $n=140; \hat{p}=0.01$
  - c.  $A=0.09; n=365; \hat{p}=0.50$