

Estimation

Prerequisites

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One of the major applications of statistics is estimating [population parameters](#) from sample [statistics](#) . For example, a poll may seek to estimate the proportion of adult residents of a city that support a proposition to build a new sports stadium. Out of a random sample of 200 people, 106 say they support the proposition. Thus in the sample, 0.53 of the people supported the proposition. This value of 0.53 is called a [point estimate](#) of the population proportion. It is called a point estimate because the estimate consists of a single value or point.

The concept of degrees of freedom and its relationship to estimation is discussed in [Section B](#). "Characteristics of Estimators" discusses two important concepts: bias and precision.

Point estimates are usually supplemented by [interval estimates](#) called [confidence intervals](#) . Confidence intervals are intervals constructed using a method that contains the population parameter a specified proportion of the time. For example, if the pollster used a method that contains the parameter 95% of the time it is used, he or she would arrive at the following 95% confidence interval: $0.46 < \pi < 0.60$. The pollster would then conclude that somewhere between 0.46 and 0.60 of the population supports the proposal. The media usually reports this type of result by saying that 53% favor the proposition with a margin of error of 7%. The sections on confidence interval

show how to compute confidence intervals for a variety of parameters.

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