Accuracy and Precision

By David R. Larsen

Two concepts that are often confused are *accuracy* and *precision*. The following figures illustrate the difference between these ideas.

- **Accuracy** of a sample is how close the sample mean (xbar) is to the population mean (*:*).
- **Precision** of a sample is how well the confidence one may have in the estimated sample mean.

In the following figures **the true mean is drawn in black** the estimated mean is drawn in blue and the 2 s lines in red

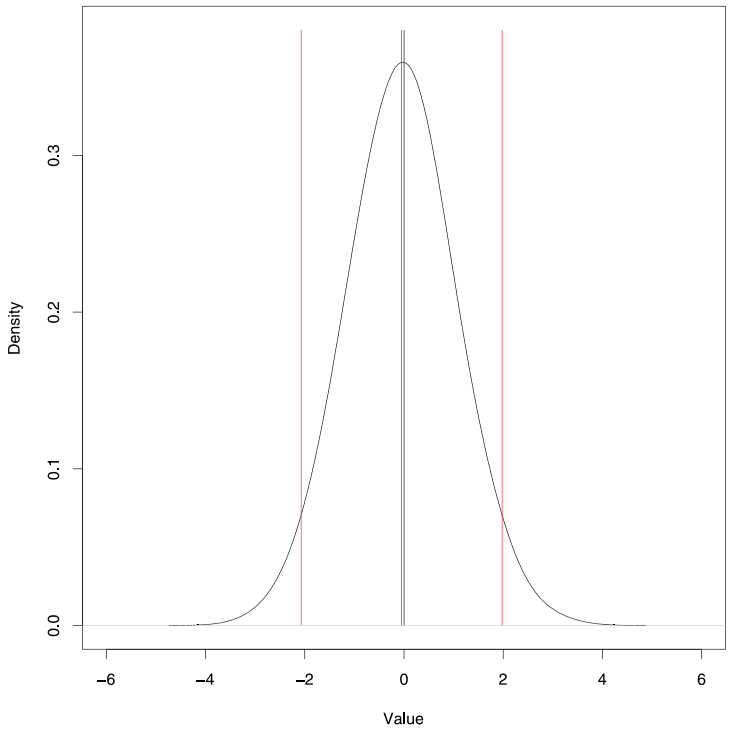

Figure 1 - The sample estimate is both accurate and precise.

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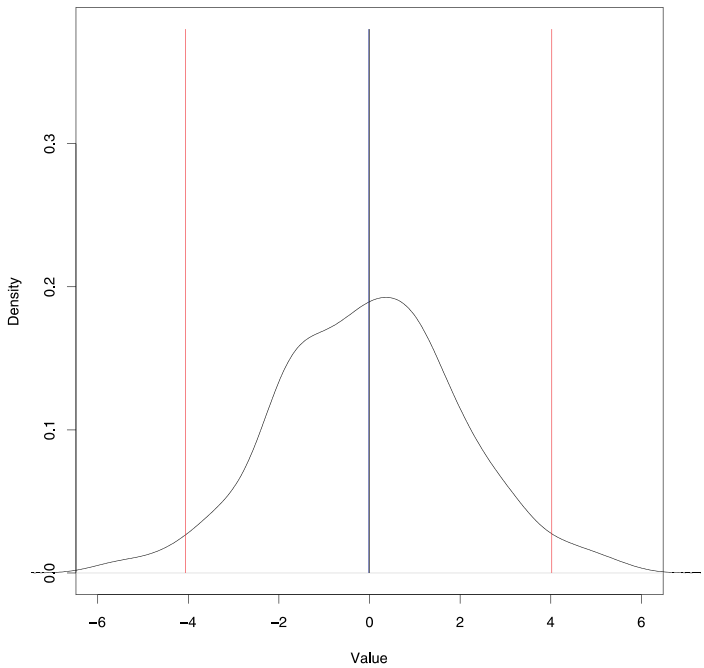

Figure 2 - The sample estimate is accurate but less precise.

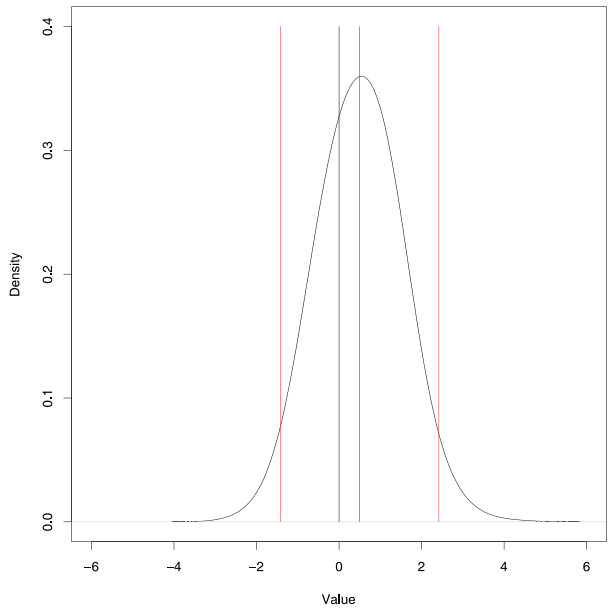

Figure 3 - The sample estimate is biased but just as precise as figure 1.

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Also See:

Chapter 1 - Introduction pages 1-6 in:

Zar, J. H. 1996. Biostatistical Analysis. Prentice-Hall, Inc. Englewood Cliffs, New Jersey. 718 pp.

Chapter 2-5 - Precision Accuracy and Bias in:

Husch, B., T. W. Beers, J. A. Kershaw, Jr. 2003. Forest Mensuration. John Wiley and Sons. Inc., Hoboken, New Jersey. 443 pp.

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