Accuracy and Precision

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

- Accuracy of a sample is how close the sample mean ($\bar{x}$) is to the population mean (μ).
- Precision of a sample is much confidence one may have in the estimated sample mean.

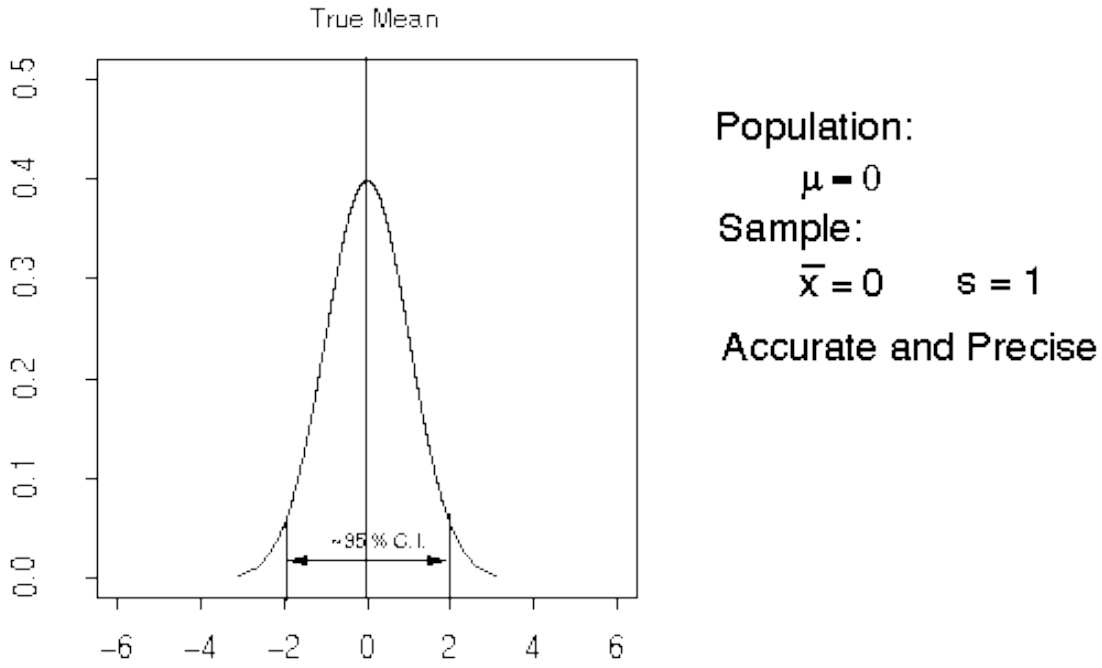

Figure 1 Accurate and Precise

Author: David R. Larsen
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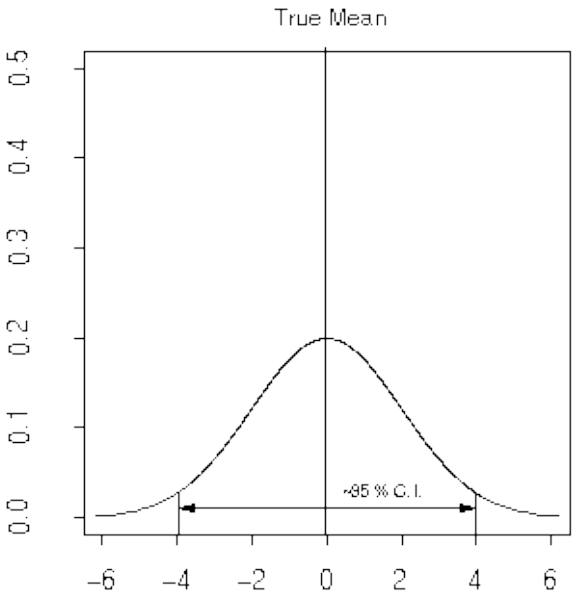


Population:

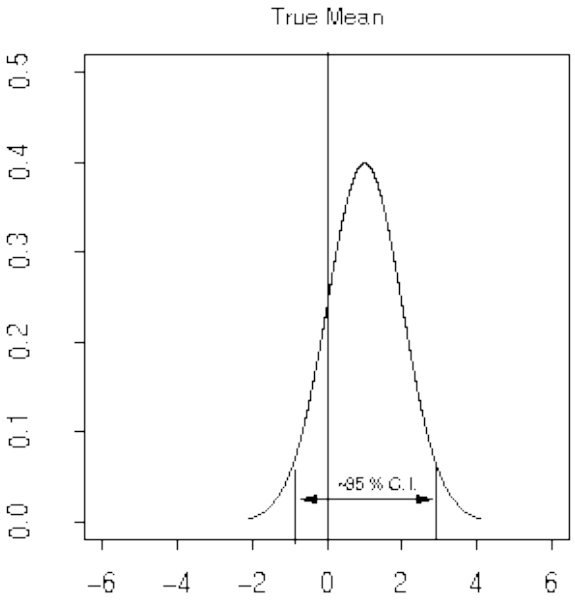
$\mu = 0$

Sample:

$\bar{x} = 0 \quad s = 2$

Accurate but less Precise

Figure 2 Accurate but less precise



Population:

$\mu = 0$

Sample:

$\bar{x} = 1 \quad s = 1$

Precise but less Accurate

Figure 3. Precise but less accurate

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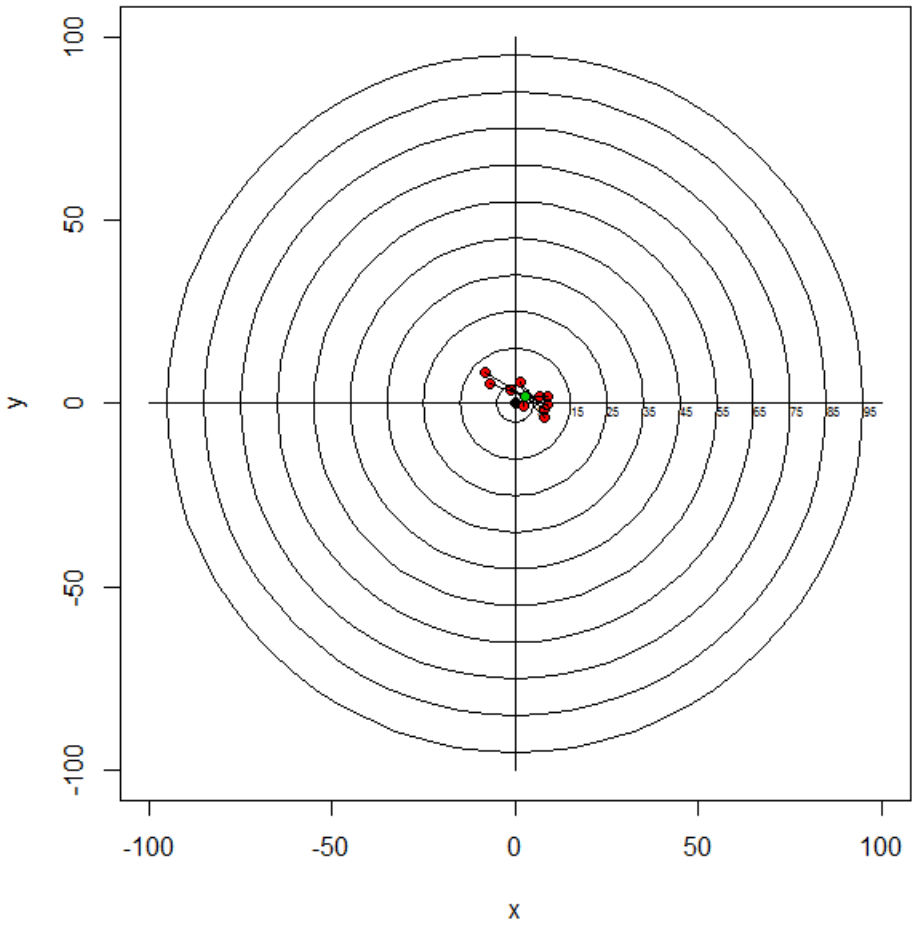

Figure 4 Target accurate and precise.

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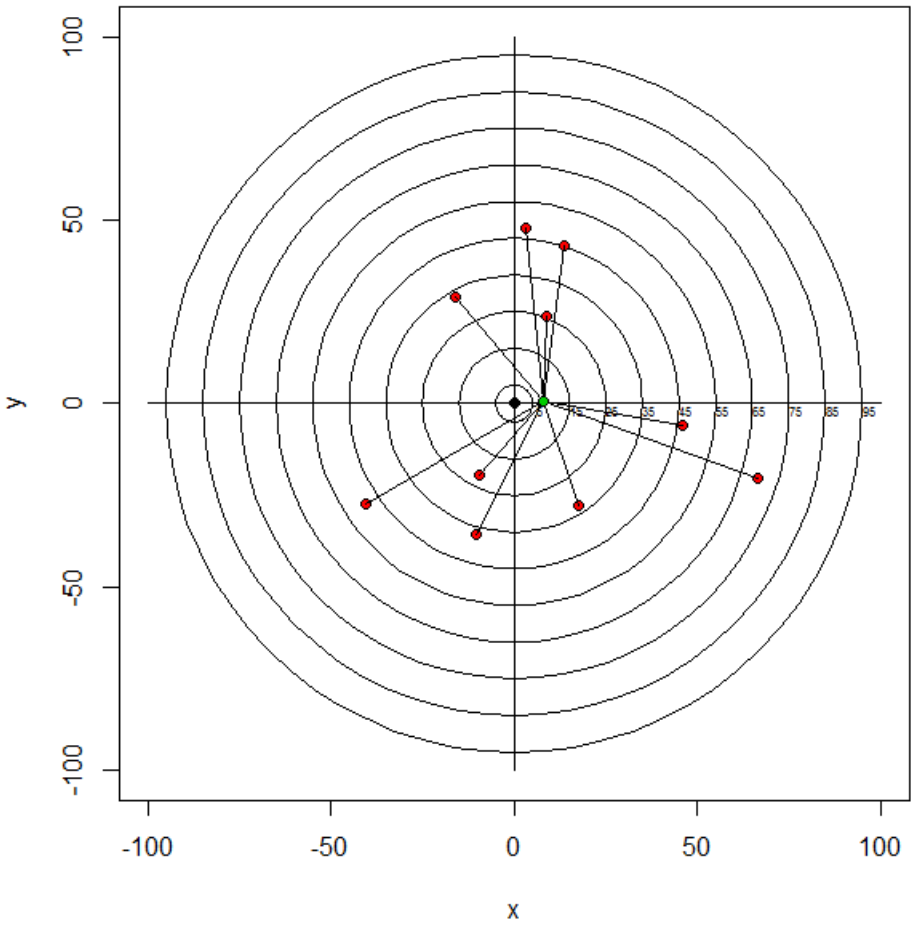

Figure 5 Target Accurate but less precise

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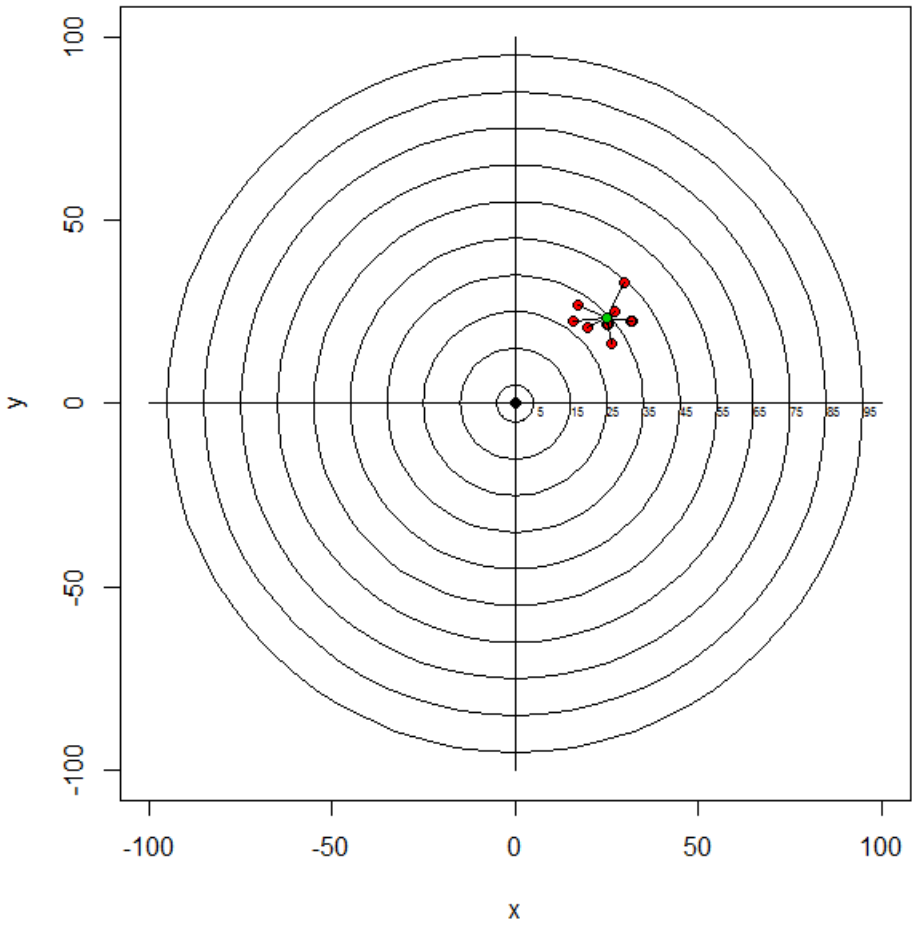

Figure 6 Precise but less accurate

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