

# Statistics for shooters: five things to know

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1. The biggest gap: extreme spread. Extreme spread is the distance between the two shots farthest apart, and it changes a lot from one group to the next even when nothing about the rifle has changed.
  - At the range. One five-shot group with an extreme spread of one inch could come from a rifle that usually shoots three quarters or one that usually shoots an inch and a half. A single small group is good news, not proof.
2. Why five shots tell you little. A small group is mostly luck: the same rifle shoots groups of very different sizes, and the fewer the shots, the wider the spread.
  - At the range. Before you believe a change made a difference, shoot enough to be sure. One good group after a change proves very little.
3. The range the truth is probably in. A confidence interval is the range your rifle's true figure probably lies in, given the shots you have, and it shrinks as you shoot more.
  - At the range. If two loads' ranges overlap a lot, you do not yet know which is better. Shoot more before you decide.
4. Comparing two loads. When two loads are compared on a few shots, one of them nearly always looks better, even when they are exactly the same.
  - At the range. Do not pick a load from one group of each. Shoot both until GroupLab's comparison says it can tell them apart, or until you accept that the difference, if any, is too small to matter.
5. What is good enough? Good is set by your job, not by bragging: work out the target size and distance, and ask what precision gives you the hits you need.

The whole guide, with pictures and the numbers behind every sentence: [grouplab.org/guides/statistics-primer/](http://grouplab.org/guides/statistics-primer/)