

## 5.3: The Bigger Picture

---

The concepts and ideas presented in this chapter are likely not intuitive at first. Probability is a tough topic for everyone, but the tools it gives us are incredibly powerful and enable us to do amazing things with data analysis. They are the heart of how inferential statistics work.

To summarize, the probability that an event happens is the number of outcomes that qualify as that event (i.e. the number of ways the event could happen) compared to the total number of outcomes (i.e. how many things are possible). This extends to graphs like a pie chart, where the biggest slices take up more of the area and are therefore more likely to be chosen at random. This idea then brings us back around to our normal distribution, which can also be broken up into regions or areas, each of which are bounded by one or two  $z$ -scores and correspond to all  $z$ -scores in that region. The probability of randomly getting one of those  $z$ -scores in the specified region can then be found on the Standard Normal Distribution Table. Thus, the larger the region, the more likely an event is, and vice versa. Because the tails of the distribution are, by definition, smaller and we go farther out into the tail, the likelihood or probability of finding a result out in the extremes becomes small.

---

This page titled [5.3: The Bigger Picture](#) is shared under a [CC BY-NC-SA 4.0](#) license and was authored, remixed, and/or curated by [Foster et al.](#) ([University of Missouri's Affordable and Open Access Educational Resources Initiative](#)) via [source content](#) that was edited to the style and standards of the LibreTexts platform.