

7.3: Sampling Distribution, Probability and Inference

We've seen how we can use the standard error to determine probability based on our normal curve. We can think of the standard error as how much we would naturally expect our statistic – be it a mean or some other statistic) – to vary. In our formula for z based on a sample mean, the numerator $(\bar{X} - \mu)$ is what we call an observed effect. That is, it is what we observe in our sample mean versus what we expected based on the population from which that sample mean was calculated. Because the sample mean will naturally move around due to sampling error, our observed effect will also change naturally. In the context of our formula for z , then, our standard error is how much we would naturally expect the observed effect to change. Changing by a little is completely normal, but changing by a lot might indicate something is going on. This is the basis of inferential statistics and the logic behind hypothesis testing, the subject of Unit 2.

This page titled [7.3: Sampling Distribution, Probability and Inference](#) 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.

- [6.4: Sampling Distribution, Probability and Inference](#) by [Foster et al.](#) is licensed [CC BY-NC-SA 4.0](#). Original source: <https://irl.umsl.edu/oer/4>.