

Name: \_\_\_\_\_

What is the primary reason we bootstrap? Or said differently, what do we get from bootstrapping?

**Solution:**

The primary (overarching) reason we bootstrap is to understand the sampling distribution of our statistic,  $\hat{\theta}$ . The different parts of that distribution help us with different parts of statistical inference.

- If the sampling distribution is normal, we can use normal theory (!) to create CIs and find p-values.
- If the statistic is biased, we should adjust our methods in particular ways.
- If the SE of the statistic is untractable, we can estimate the SE. This is particularly important for arbitrary statistics that don't have corresponding theory which can estimate the SE.