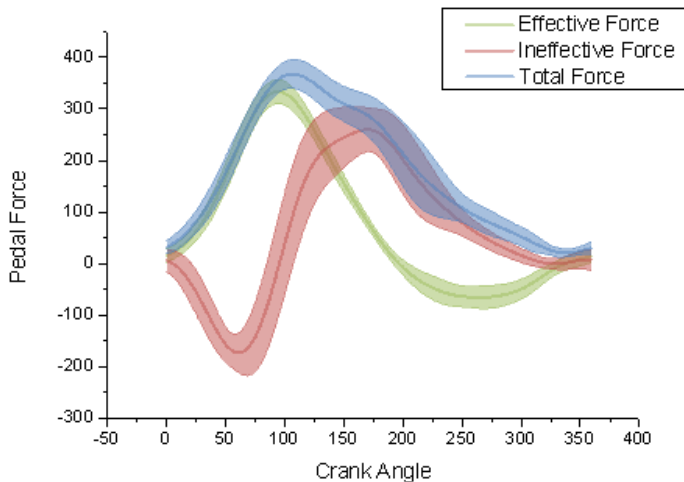


MATH 205: Statistical methods

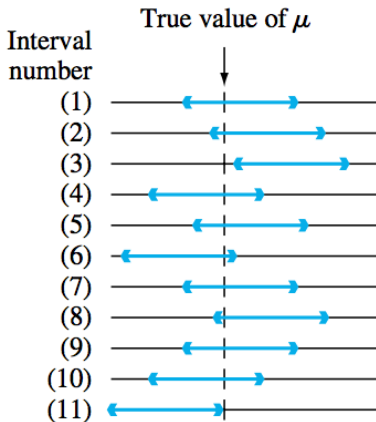
Lab 7: Confidence intervals

A good prediction comes with a range



- Assume that you have been using an AI to predict the stock price of Microsoft every day in the last few years
- The prediction comes as a range, e.g., [295, 305]
- The algorithm, on average, is correct 95 out of 100 days
- Then we say that a prediction from this AI has a confidence of 95%

Confidence intervals



95% confidence interval: If we repeat the experiment many times, the interval contains μ about 95% of the time

A thought experiment

- I generate 100 observations from normal random variable with (true) mean μ and standard deviation 1 (but I don't let you know the value of μ). I then ask you to estimate the μ .
- It is natural to estimate μ by a range centered at the sample mean \bar{x}
- The question is: what should the width of this range be?