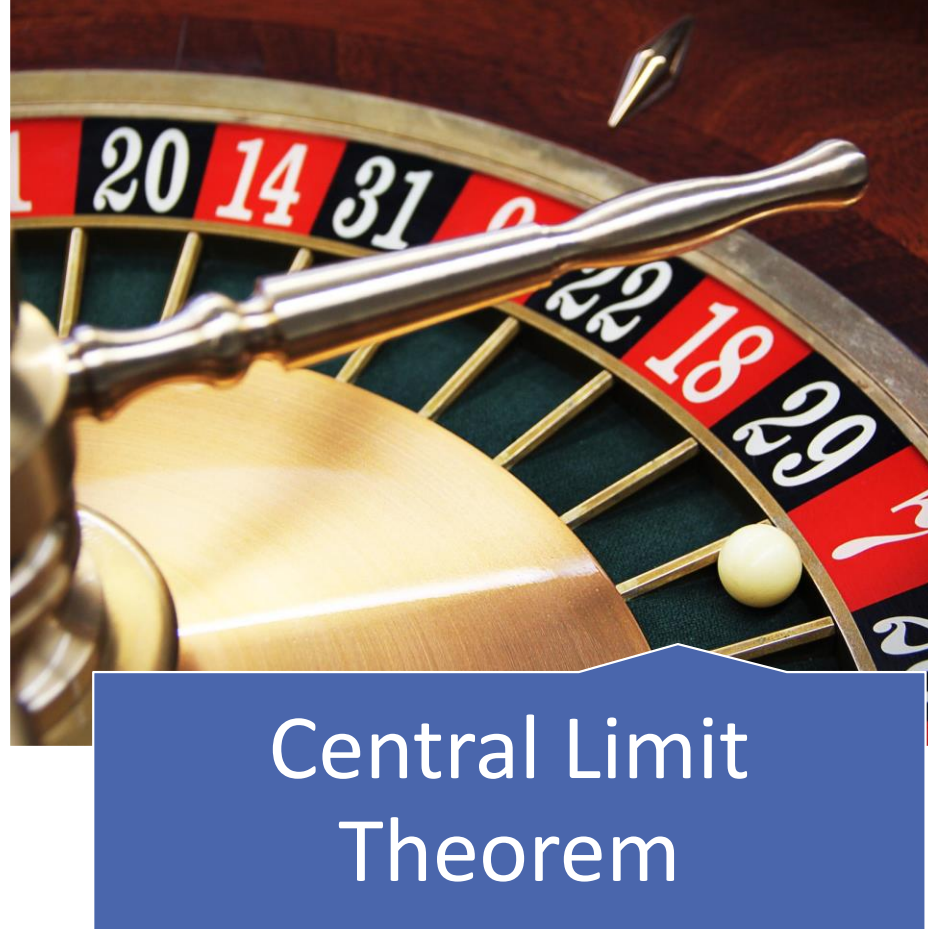
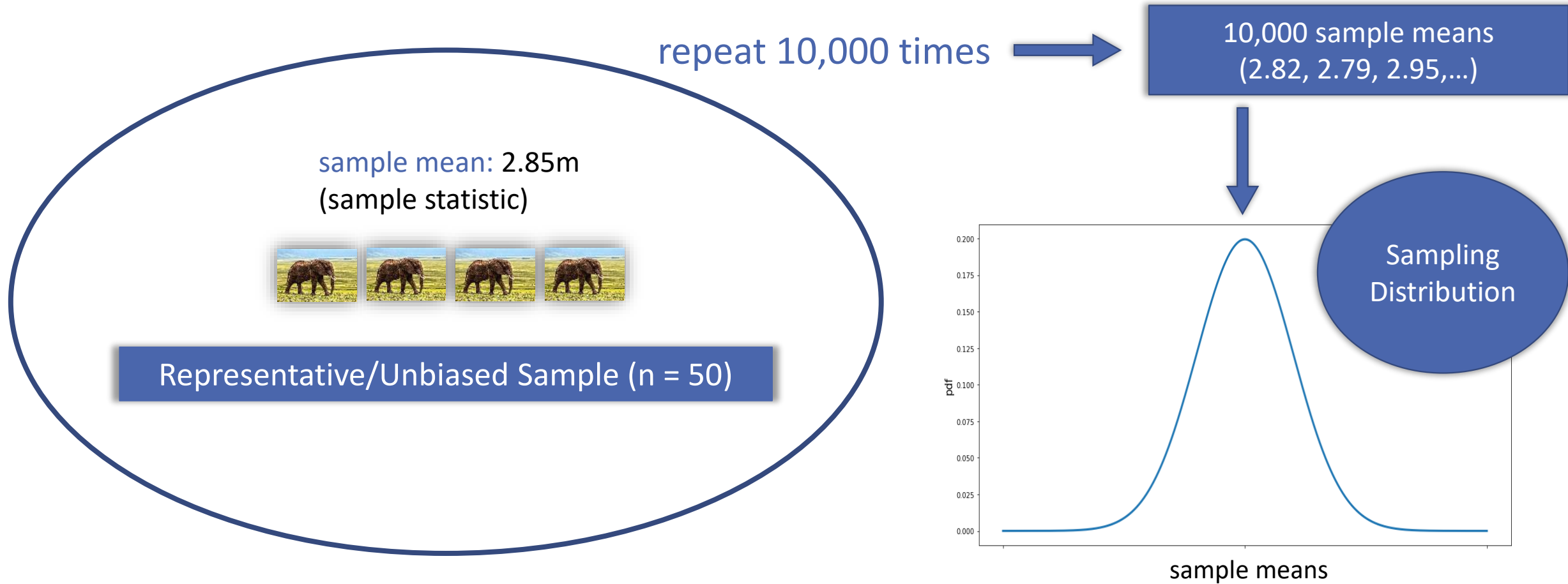


Statistics – Central Limit Theorem

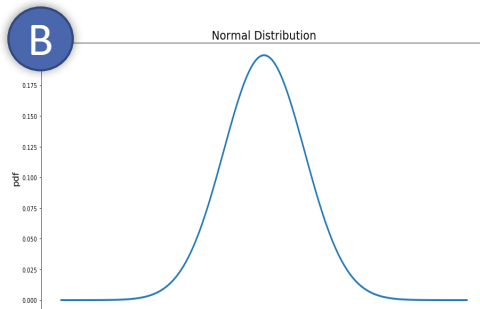
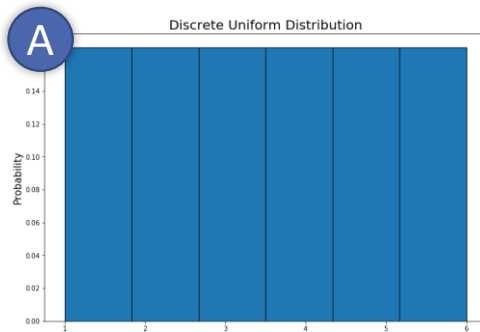


Sampling Distribution



Sampling Distribution is (approx.) a Normal Distribution...

Populations

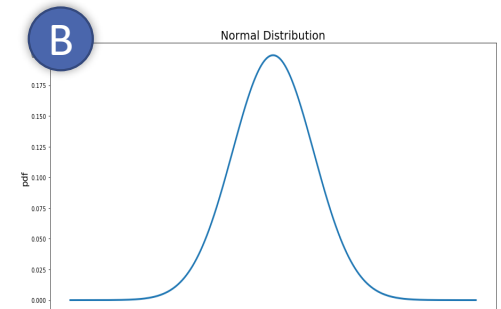
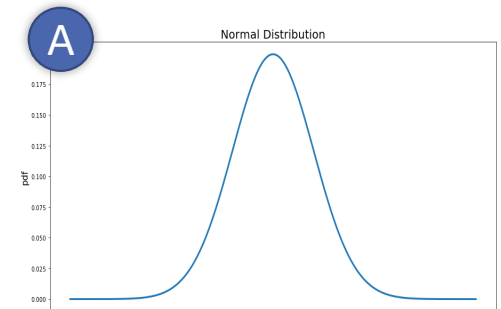


...if sample size > 30 ...



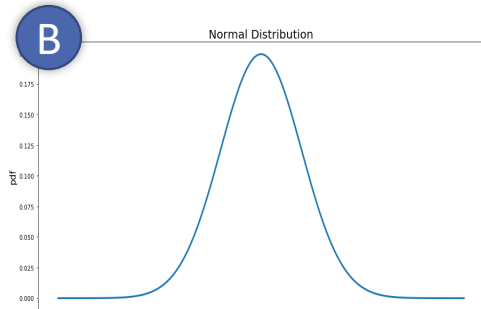
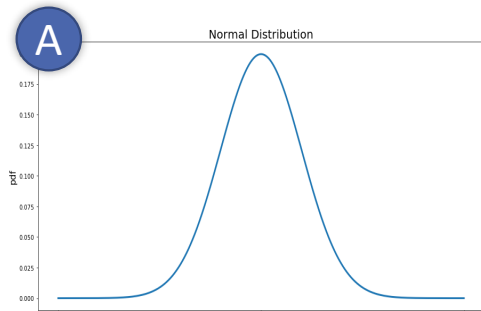
...irrespective of
population distribution

Sampling Distributions



Why is this useful?

Sampling Distributions (Normal Distributions)



Normal Distributions are fully described by μ and σ

$\mu \approx$ population mean

$$\sigma(\text{standard error}) = \frac{\text{population std}}{\sqrt{\text{sample size (n)}}}$$

Point Estimate

„The true population mean is approx. 2.85m (sample mean)“

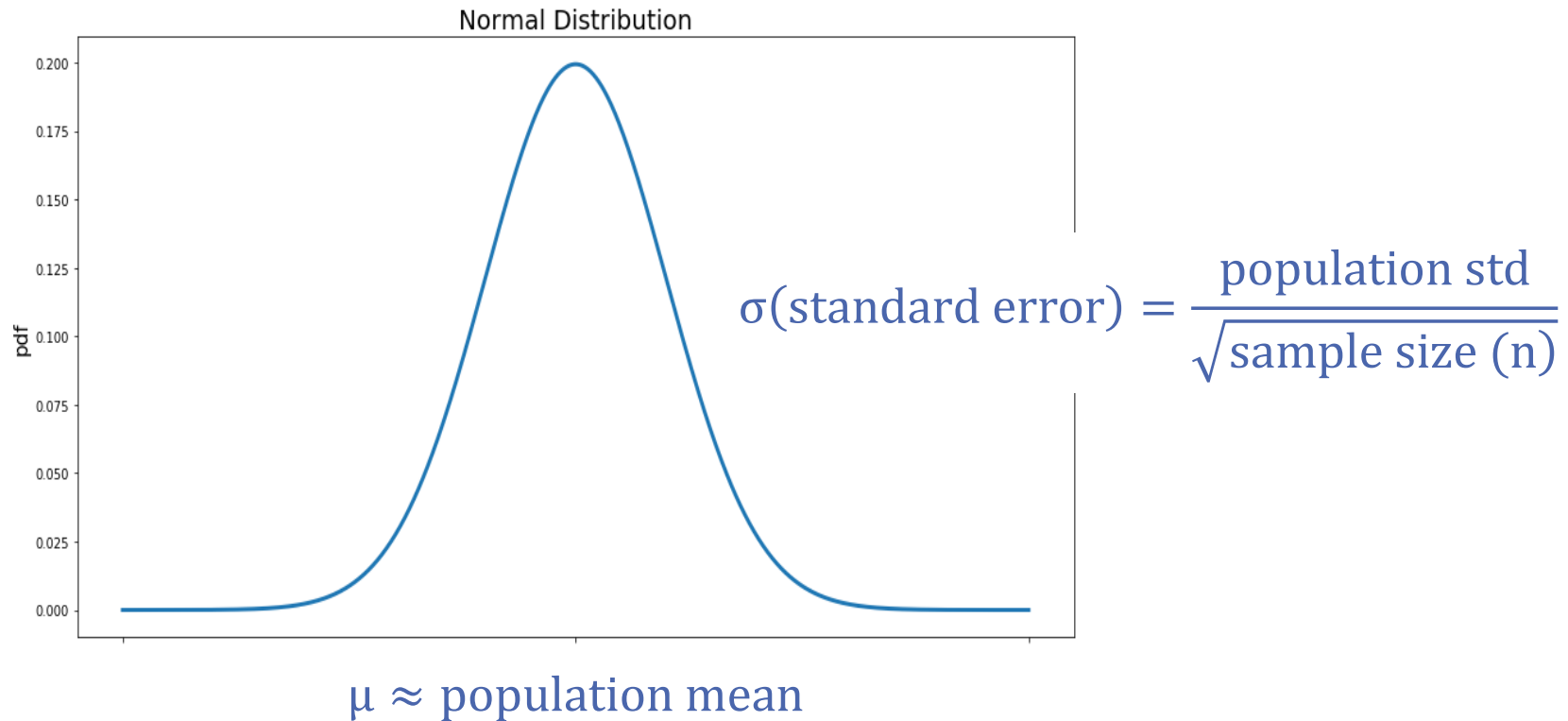


Confidence Interval Estimate

„With 90% confidence, the true population mean lies in the interval between 2.70m and 3.0m (confidence interval)“

a simple shift...

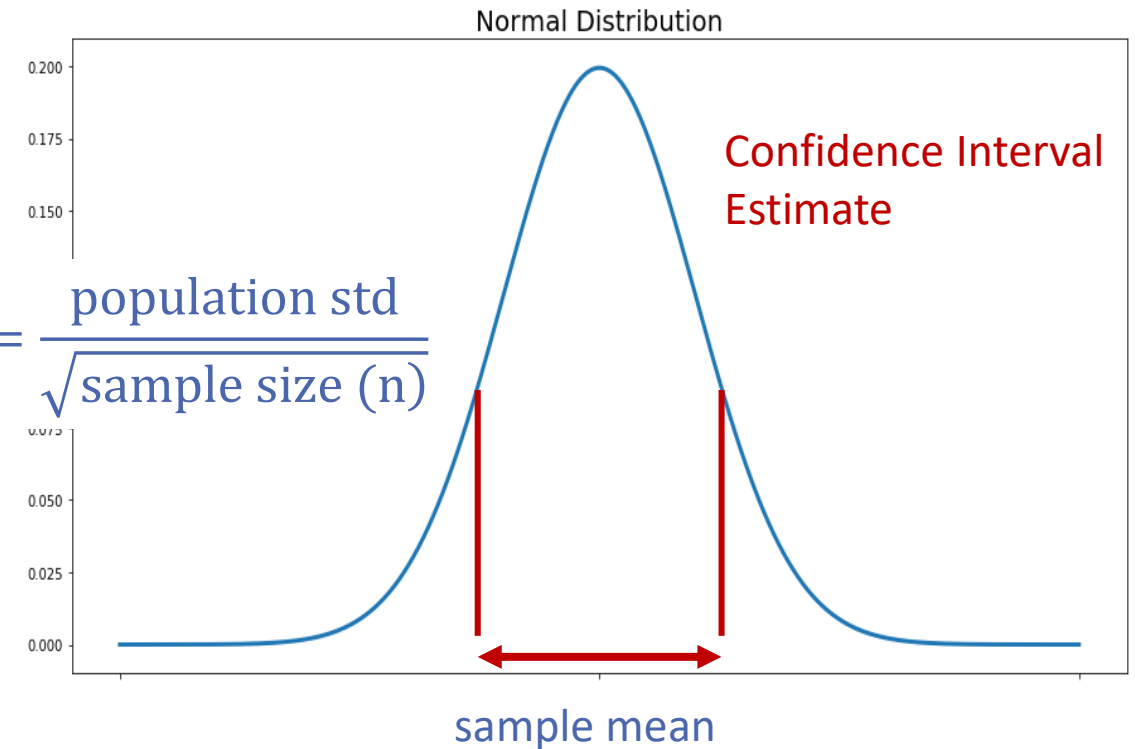
Sampling Distribution



...and we create a Confidence Interval Estimate

Sampling Distribution

$$\sigma(\text{standard error}) = \frac{\text{population std}}{\sqrt{\text{sample size (n)}}}$$



Is there still a problem...?

To estimate the population mean,
we require the population standard
deviation / variance?

There is a solution for it...!