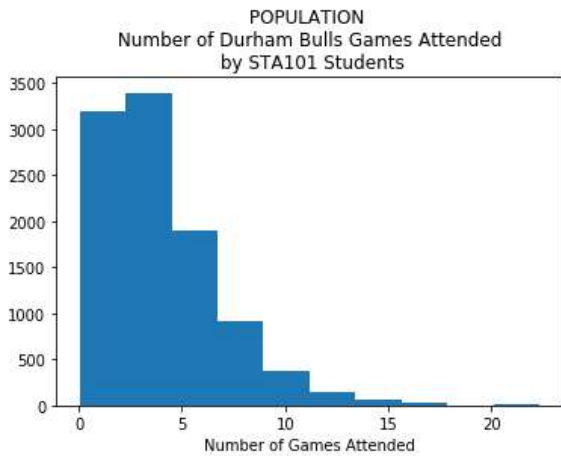


# Sampling Distributions



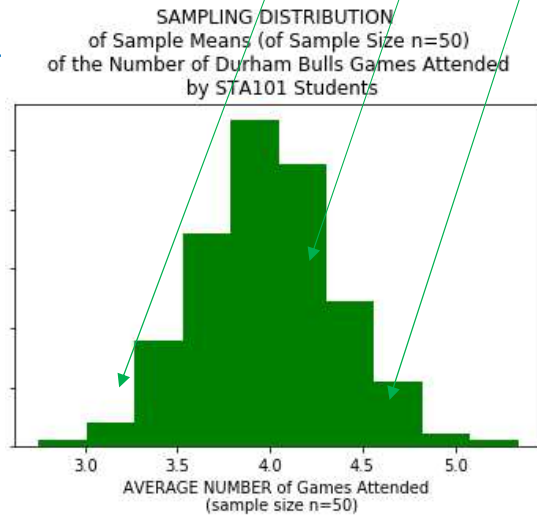
<http://www.goduke.com/>

# Population Distribution



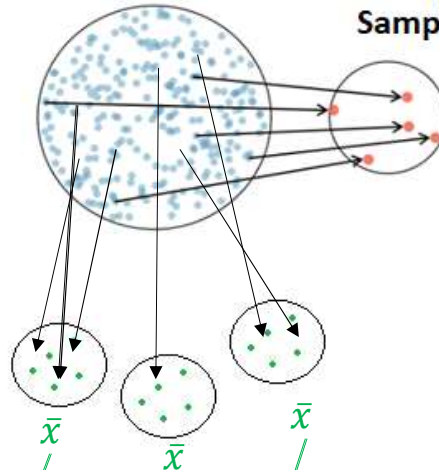
Population Mean:  $\mu$   
Population Standard Deviation:  $\sigma$

# Sampling Distribution

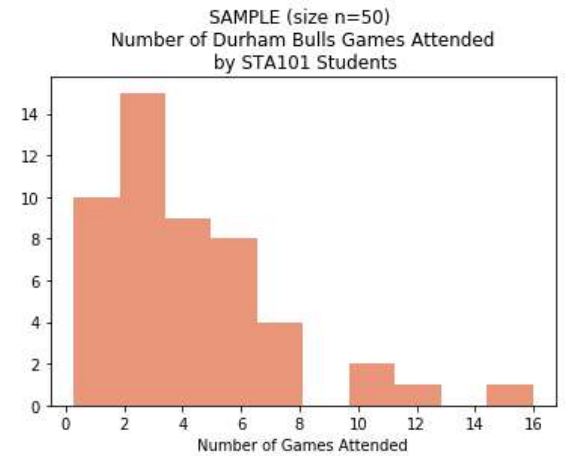


Sampling Mean:  $\mu$   
Sampling Standard Deviation  $\leftrightarrow$  (Standard Error) :  $\sigma/\sqrt{n}$   
(sometimes estimated with  $s/\sqrt{n}$ )

All STA101 Students



# Sample Distribution

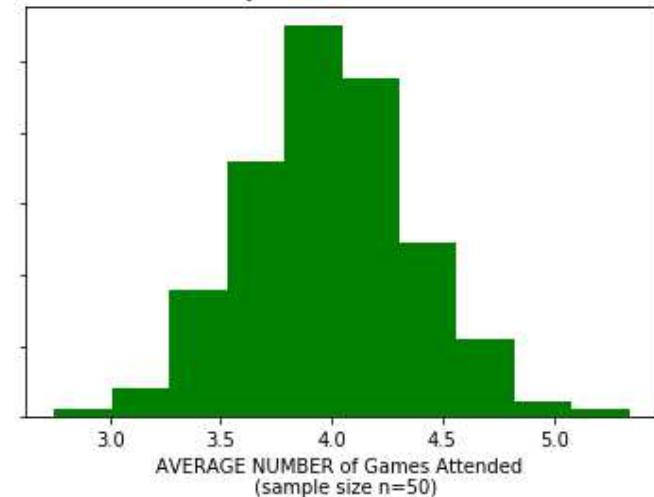


Sample Mean:  $\bar{x}$   
Sample Standard Deviation:  $s$

# TODAY:

What is the center,  
shape, and spread of a  
sampling distribution?

SAMPLING DISTRIBUTION  
of Sample Means (of Sample Size  $n=50$ )  
of the Number of Durham Bulls Games Attended  
by STA101 Students



# What are these conditions?

## Central Limit Theorem

Under the right conditions, the **distribution of the sample means (sampling dist)** is well approximated by a normal distributio

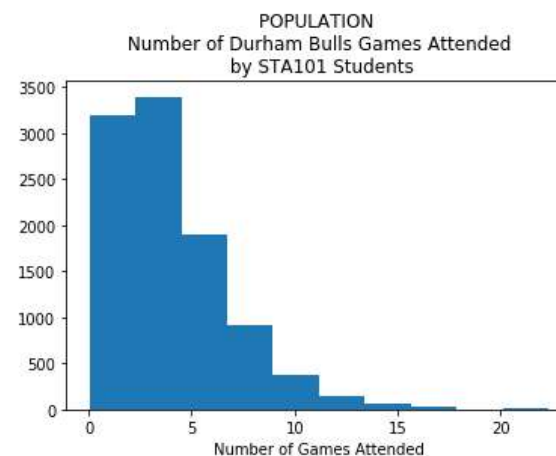
$$\bar{x} \sim N \left( \text{mean} = \mu, SE = \frac{\sigma}{\sqrt{n}} \right)$$

# Checking Skewness

## Conditions for Central

### Limit Theorem:

How can we guess what the shape of the population distribution is (without seeing it)?



# Important Reminder

## for Scratch Cards and Application Exercises

Accurately taking group attendance on the scratch cards and application exercises is part of your participation grade!

### Correct Name Format

**Group Name:** "Stats IS FUN"

**Present Group Members:**

- Amy Lastname
- Barry Lastname

**Absent Group Members:**

- Missing Mary
- Absent Albert

### Incorrect Name Format

"Stats IS FUN"

- Amy Lastname
- Barry Lastname
- Missing Mary
- Absent Albert

# Readiness Assessment Prep Hint: Test your knowledge with the Coursera Practice Quizzes.

✓ **Video:** Required Sample Size for ME 4 min

✓ **Video:** CI (for the mean) examples 5 min

---

Strengthen Your Understanding

🕒 **Reading:** Week 1 Suggested Readings and Practice Exercises 10 min

🕒 **Practice Quiz:** Week 1 Practice Quiz 6 questions [Resume](#)

🕒 **Quiz:** Week 1 Quiz 7 questions Overdue July 22, 11:59 PM PDT

**Need help?  
Confused about  
something?  
Come stop by  
office hours!**



## Office Hours

**Instructor Office Hours:** Tuesdays 2:00pm-4:00pm Old Chemistry 208A

### TA Office Hours:

TA	Time	Location
Sibora Seranaj	Monday 9 - 11 am	Old Chem 203B
Austin Jia	Monday 2:30 - 4:30pm	Old Chem 203B
Valerie Roberts	Monday 6:30 - 8:30pm	Old Chem 025
Morgan Bird	Monday, 5:00 - 7:00pm	Old Chem 025
Melanie Lai Wai	Tuesday 8:30 - 10:30am	Old Chem 203B
Ed Tam	Tuesday 12pm - 2pm	Old Chem 203B
Samantha Morales	Tuesday 3:30-5:30pm	Old Chem 203B
Brian Jiang	Tuesday 6:00-8:00pm	Old Chem 203B
Rose Graves	Tuesday 7-9pm	Old Chem 203B
Junette Yu	Wednesday 11:00-1:00pm	Old Chem 203B
Mark Sampson	Wednesday 3:00-5:00 pm	Old Chem 025
Eduardo Coronado	Wednesday 5 - 7pm	Old Chem 025
Tess Chandler	Thursday 3-4pm	Old Chem 203B
Vanessa Alwan	Friday 8-10am	Old Chem 203B
Tess Chandler	Friday 12-1pm	Old Chem 025
Lavonne Hoang	Friday 2-4 pm	Old Chem 203B
Tessa Johnson	Friday 5:30-7:30 pm	Old Chem 025

<https://www2.stat.duke.edu/courses/Spring19/sta101.001/officehours.html>