Tutorial 01, Michaelmas Term

Research Methods for Political Science (PO3600)

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http://muellerstefan.net/research-methods

Table of contents

Tutorial Structure

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- Deepen and apply knowledge from the lectures
- Learn how to use SPSS
- Apply theories, concept and statistical methods to real-world data
- Clarify questions, discuss homework
- **But tutorials do not replace the lectures!**

Grades

Students taking the entire module:

1. 60% of mark based on end-of-year exam (covers methods and statistics).
2. 2 homework assignments counting 4% (1 during MT, 1 during HT).
3. 2 papers counting 10% (one at the end of each term). Work will be done *in pairs*submitting joint papers.
4. 8 homework exercises (4 per term). Submit online via Turnitin *before class*.

Exchange students (one term only)

1. 1 homework assignment counting 12%.
2. 80% of the mark based on two papers: a research proposal (30%) and a final paper based on that proposal (50%).
3. 8% based on the 4 homework exercises to be submitted *before* the tutorials.

Turnitin

Separate Turnitin modules per term.

MT: Class ID: **16383023**; Password: **po3600**

HT: TBD

Please register as soon as possible!

Dates for Michaelmas Term

Homework

Submit 4 homework exercises per term on Monday evening (11:59pm)
preceding the tutorial session

- Week 4: HW 1 (next Monday!)
- Week 6: HW 2
- Week 9: HW 3
- Week 11: HW 4

Paper deadlines

- Homework 1: 10/11 2017, 11:59pm
- Research proposal (one-term students only!): 24/11 2017, 11:59pm
- Paper 1: 15/12 2017, 11:59pm

How to Use SPSS

- How to open (data) in SPSS?

- How to work reproducibly in SPSS?

Distribution of the Sample Mean

Simulation

http://onlinestatbook.com/stat_sim/sampling_dist/
(click "Begin" in the top left corner)
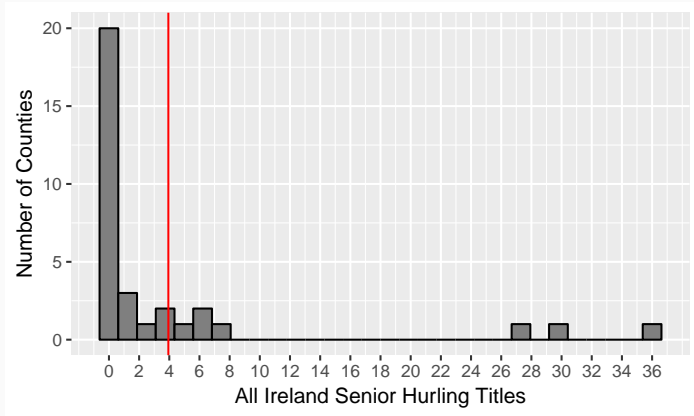
Central Limit Theorem

As your sample size (n) increases, we find a normal distribution when (for example) taking sample mean or sample sum.
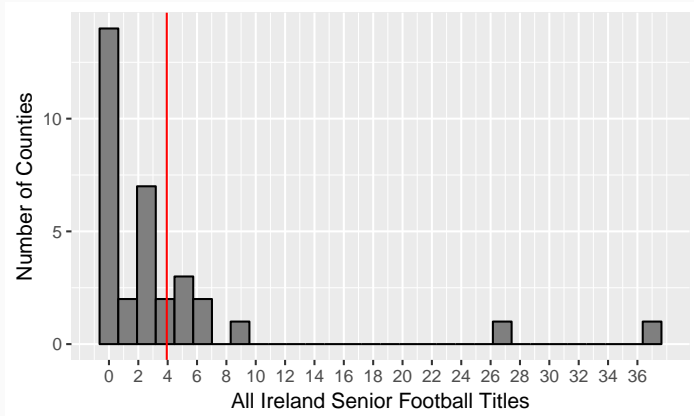
Irish Example of Skewed Distribution

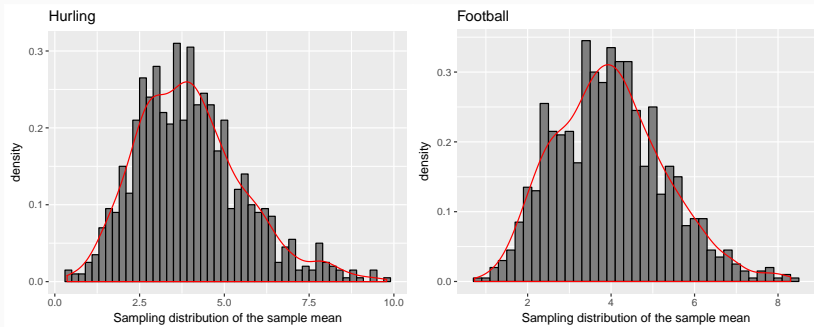# Irish Example of Skewed Distribution

Distribution of All-Ireland Hurling Titles per County

Distribution of All-Ireland Football Titles per County

Distribution of Bootstrapped Sample Means

Note: 1000 random draws, plot distribution of means; hypothetical example as we draw from the population!

Estimate mean, standard deviation, and standard error

1. Estimate mean: $\bar{x} = \frac{\sum x}{n}$

2. Estimate standard deviation: $\sigma = \sqrt{\frac{\sum(x - \bar{x})^2}{n-1}}$

3. Estimate standard error of the mean: $sd(\bar{X}) = \frac{\sigma}{\sqrt{n}}$

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Hands-on exercise: Estimate $\bar{x}, \sigma, sd(\bar{X})$ for the following sample:
$9, 2, 5, 4$

Solution

Mean: $\bar{x} = \frac{9+2+5+4}{4} = \frac{20}{4} = 5$

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$(9-5)^2 = 4^2 = 16$

$(2-5)^2 = (-3)^2 = 9$

$(5-5)^2 = (0)^2 = 0$

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Standard error: $sd(\bar{X}) = \frac{\sigma}{\sqrt{n}} = \frac{2.94392}{\sqrt{4}} = 1.47196$