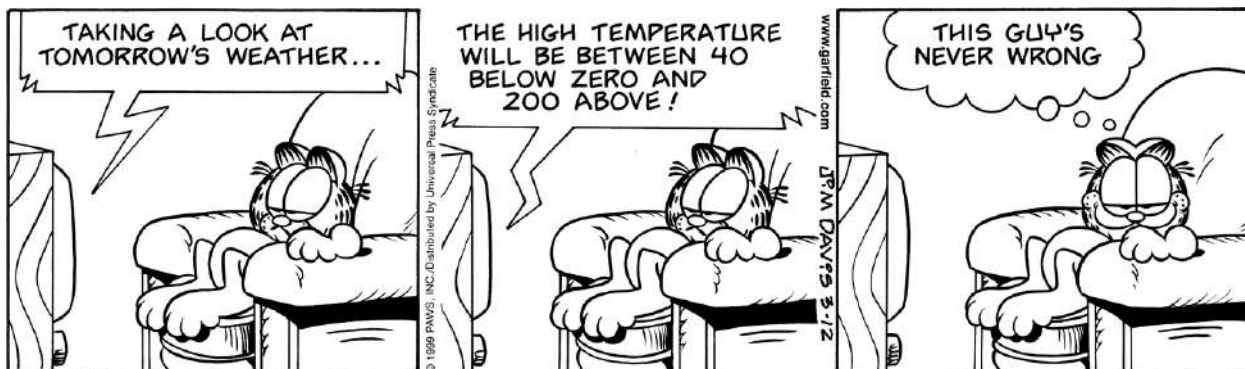


Chapter 8: Estimating with Confidence

Key Vocabulary:

- point estimator
- point estimate
- confidence interval
- margin of error
- interval
- confidence level
- random
- normal
- independent
- four step process
- level C confidence interval
- degrees of freedom
- standard error
- one -sample z interval
- t distribution
- t-procedures
- one-sample t interval
- robust



8.1 Confidence Intervals: The Basics (pp.615-643)

1. A *point estimator* is a statistic that...
2. The value of the point estimator statistic is called a _____ and it is our "best guess" at the value of the _____.
3. **Example** "From Batteries to Smoking" Answer parts "a" and "b."
 - a) Point Estimator is _____ (notation is _____) for the population mean (μ).
 - The Point Estimate is _____
 - b) Point Estimator is _____ (notation is _____) for the population proportion (p).
 - The Point Estimate is _____
4. **Example** "The Mystery Mean" we will do as an activity next class.

5. Summarize the facts about *sampling distributions* learned in chapter 7:

<i>sampling distributions <u>for means</u></i>	<i>sampling distributions <u>for proportions</u></i>
• Shape	• Shape
• Center	• Center
• Spread	• Spread

6. “**The Big Idea...** is that the _____ of $\bar{x}$ tells us how close to _____ the _____ ($\bar{x}$) is likely to be.

- Or, said a different way... “How close _____ is likely to be to the _____ population _____ (_____).

7. A **Confidence Interval** for a parameter has 2 parts : **“estimate $\pm$ margin of error”**

- $\bar{x}$ and $\hat{p}$ are examples of the _____.
- Define margin of error:

- The confidence level C is a _____. That is, in **C%** of all possible _____, the method would yield an _____ that captures the _____ population _____.

8. What is the difference in interpretation between **Confidence Interval** and **Confidence Level**?

- Interpret a Confidence Level (CL)** : "To say that we are 95% confident is shorthand for

- Explain how to interpret a **Confidence Interval (CI)**.

- The **confidence level(CL)** does **NOT** tell us the chance that a particular confidence interval captures the population parameter because the _____ is not a probability.

What does CL tell us? And explain “**plausible values**?”

9. Sketch and label a 95% *confidence interval* for the standard normal curve $N(0,1)$. Label the mean, ± 3 standard deviations, shade the 95% confidence area, and confidence interval.

- In a sampling distribution of $\bar{x}$, why is the interval of numbers between $\bar{x} \pm 2s$ called a 95% *confidence interval*? HINT: Think Empirical Rule.

10. General form to calculate a confidence interval is on the **Green Sheet**:

statistic $\pm$ (critical value) • (standard deviation of the statistic)

statistic $\pm$ _____

a) From this formula, what is the “**margin of error**?”

b) What does the “**critical value**” depend on?

c) What does the “**standard deviation**” depend on?

11. What happens when the **sample size (n)** increases?

12. When the **confidence level** increases, what happens to the **confidence interval**?

●—————● [____ % CI]

●—————● [____ % CI]

13. Explain the two conditions when the margin of error gets smaller.

#1 _____

#2 _____

14. State the 3 **conditions for constructing a confidence interval** for population parameters p or μ .

- Random

- Normal

- Independent

19. What are the two important reminders for constructing and interpreting confidence intervals?

#1 _____

#2 _____