Date 11-16-2026

Full name (in CAPITAL LETTERS) _____ **SUNet ID** (the part before @stanford.edu) _____ **Section** (e.g., TUES 9:30) _____

Please write legibly so the teaching team can log your attendance: if we can't read your name, we can't give you credit.

PSYCH 10 · Fall 2026 · Worksheet for Lecture 15: Confidence intervals

Work through these with the people sitting next to you; the teaching team will help. Credit is for a good-faith effort, not for right answers. Hand it in before you leave.

Part 1 · The standard error

Two weeks before the election, Change Research polled 842 Mississippi voters about the U.S. Senate race between Senator Cindy Hyde-Smith (Republican) and Scott Colom (Democrat): Hyde-Smith 43%, Colom 40%. The estimate is Hyde-Smith's lead over Colom, 3 points, and its standard error is about 3 points.

a. The standard error is the standard deviation of a distribution. Which distribution: the individual responses in this poll, or the leads of many polls of this size? Write *responses* or *leads*, then one sentence saying what the standard error is a measure of.

a. ☐ responses ☐ leads what it measures: _____

b. Suppose the pollster had reached four times as many voters. Would the standard error be about the same, about half, about a quarter, or about double? Select one, then one sentence giving the reason.

b. ☐ about the same ☐ about half ☐ about a quarter ☐ about double reason: _____

c. A poll of the same size in California, a state with about ten times as many voters, would have a larger standard error. Is that right or wrong? Write *right* or *wrong*, then one sentence giving the reason.

c. ☐ right ☐ wrong reason: _____

Part 2 · The confidence interval

The poll's 95% confidence interval for Hyde-Smith's lead runs from about -3 to 9 points.

a. Each sentence below offers a reading of that confidence interval. Write *justified* or *not justified* beside each sentence's number.

1. The true lead is plausibly anywhere in this range, and values outside the range are implausible.
2. If the poll were repeated with new voters, the new lead would fall in this range 95% of the time.
3. There is a 95% probability that the true lead lies in this range.
4. Because the range includes 0, a tie remains plausible.

a. 1. _____ 2. _____ 3. _____ 4. _____

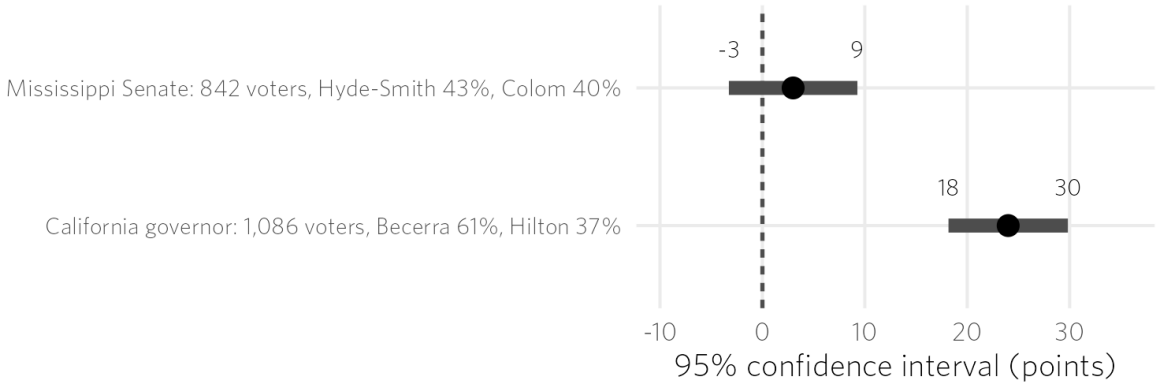
b. Suppose the poll had found a larger lead, with the same standard error. Would the confidence interval be wider, narrower, or the same width? Would it sit in the same place? One sentence.

b. ☐ wider ☐ narrower ☐ the same width; where it sits: _____

c. A second pollster reports a confidence interval for the same race that is twice as wide. Give two different reasons that could explain the wider confidence interval.

c. _____

Part 3 · Careful conclusions from two polls



The figure shows the 95% confidence interval for the leader's lead in two polls: the Mississippi Senate poll, and a California governor poll in which Xavier Becerra (Democrat) led Steve Hilton (Republican) by a wide margin.

a. For each poll, say in one sentence what its confidence interval tells you about the leader's true lead: how large it could plausibly be, and how small.

a. Mississippi: _____

California: _____

b. Suppose the Mississippi pollster had reached ten times as many voters and found the same lead. Write what you could then say about the true lead, hedged as carefully as the evidence warrants, and name one thing the bigger poll would not change.

b. _____

_____

c. A news report said that the Mississippi poll "showed Hyde-Smith ahead." Write a more carefully hedged sentence that says what the poll supports about who was ahead.

c. _____

_____

Something new you learned today: _____