

Assignment 2g: Confidence Intervals vs. Tests of Statistical Significance

Tables 2 and 3 show summary statistics derived by using the *regress* command in Stata to generate means describing the proportion of students who reported having a significant illness themselves or in their families. Students were also asked to rate on a scale of 1-100 how these illnesses impacted their studies. Data was collected for illnesses that occurred before the pandemic, and after the onset of the pandemic in spring 2020. The table is below.

About one third of the term was before the start of the pandemic, and about two-thirds of the term were after the pandemic started.

Table 2

Student Ratings of Serious Illness/Injury/Disability, Including Mental Health

		Pre-pandemic Mean CI	During Pandemic Mean CI
Proportion	Their own	0.28 [0.23, 0.32]	0.42 [0.37, 0.47]
	Family	0.24 [0.20, 0.29]	0.45 [0.40, 0.49]
Rated impact on studies, all students ¹ (scale 0-100)	Their own	17.9 [14.55, 21.22]	31.1 [26.87, 35.29]
	Family	13.7 [10.75, 16.61]	31.2 [27.31, 35.11]
Rated impact on studies, only students with this factor (scale 1-100)	Their own	64.3 [58.56, 69.98]	74.1 [69.54, 78.69]
	Family	56.9 [50.22, 63.65]	69.9 [65.21, 74.61]
Coef., proportion	Either own or family	0.37 [0.32, 0.42]	0.54 [0.49, 0.59]
Coef., rated impact on studies, all students ¹	Either own or family	15.8 [13.14, 18.42]	31.1 [27.58, 34.71]

¹Rated impact on studies scale was set to 0 for students who did not have illness, etc.

A reviewer on the paper made the following recommendation about Table 2.

Normally, I would expect to see tests of significance. Why didn't you just conduct those for pre-to-post pandemic outcomes, and report them as we'd tend to see? They're simple, yet powerful.

Is this reviewer's recommendation a good idea? Why or why not? How might you respond to this recommendation?

Some questions to help aid you in forming your response:

- i. What do the confidence intervals allow us to say about any pairs of point estimates in this table that we might want to compare? What do they not allow us to say?*

- ii. *What would tests of statistical significance (e.g., p-values for the difference between different pairs of point estimates) allow us to say that confidence intervals do not allow us to do?*
- iii. *Which of the point estimates in the table are appropriate to compare to one another? Are there any point estimates on the table where it could potentially be problematic to compare them? Why or why not?*
- iv. *What are the affordances of confidence intervals in this case? What are their limitations?*
- v. *What would the affordances of giving p-values be in this case? What would the limitations be?*