

Ch. 17, Ch. 18, & Ch. 19 Responses

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Contents

1 Ch. 17 Question Responses	1
1.1 Question 1	1
1.2 Question 2	2

1 Ch. 17 Question Responses

1.1 Question 1

Imagine you are conducting a field experiment to study the effectiveness of a new educational program aimed at improving student performance. Before starting the study, you estimate based on existing literature that there is a 40% chance ($\pi = 0.4$) that your hypothesized intervention genuinely improves student outcomes. You design your experiment with power $(1 - \beta) = 0.8$ and significance level (α of 0.05). However, after running the experiment, there is a potential concern regarding researcher bias. Suppose there is a researcher bias factor (u) of 30%. Please calculate the PSP with researcher bias and interpret what this means in terms of your confidence in the research finding.

$$\begin{aligned} PSP^{\text{bias}} &= \frac{(1 - \beta)\pi + \beta\pi u}{(1 - \beta)\pi + \beta\pi u + [\alpha + (1 - \alpha)u](1 - \pi)} \\ &= \frac{0.8 \times 0.4 + 0.2 \times 0.4 \times 0.3}{0.8 \times 0.4 + 0.2 \times 0.4 \times 0.3 + [0.05 + 0.95 \times 0.3](1 - 0.4)} \\ &= \frac{0.32 + 0.024}{0.32 + 0.024 + 0.335 \times 0.6} \\ &= \frac{0.344}{0.545} \end{aligned}$$

This implies that the total share of associations that are declared to be true that are actually true is $\frac{0.344}{0.545}$. Notice that this is lower than if there was no researcher bias, hence amid researcher bias, we are less confident in the research finding.

1.2 Question 2

This paper by Qiu et al. (2024) has recently sparked intense debate on X. Many economists deem it unethical to conduct an NFE on PhD students entering the job market as it can deeply impact their future. Compare it to the job training program in LaLonde 1986. Are these two experiments ethically different? Why?

The two ethical differences that stand out to me are: 1) In LaLonde (1986), it is more clear to participants what the objective of the program is, i.e., the job training that they are agreeing to is the point of the study, whereas in Qiu et al. (2024), the point is the high-profile re-tweeting, and it seems unclear up front that this is what participants are entering into. 2) Probably more importantly, it seems that there is a higher risk of harming bystanders in Qiu et al. (2024) than in LaLonde (1986). In LaLonde (1986), the labor markets under consideration are sufficiently large that the job training program is unlikely to have a significant impact on the labor market as a whole. However, in Qiu et al. (2024), the academic job market is sufficiently small, with some people getting precisely one offer and perhaps never getting into academia without it, that inducing advantages may have tangible effects on people's long-run careers.