

Exercise 1.1 (a) In the treatment group, the percent of pain-free patients was $\frac{10}{43} \approx 23\%$. In the control group, $\frac{2}{46} \approx 4\%$.

(b) At first glance, it seems acupuncture in area M is more effective than acupuncture in area S. However, neither method alleviated more than 25% of the migraines. I wonder about alternative methods like medicine, meditation, or just waiting. In fact, I have all sorts of questions about the research, but unfortunately the paper is behind a paywall.

(c) My instinct says there is a significant difference between treatment and control groups. Of course, there is always the possibility the observed difference is just due to chance, but that possibility seems unlikely in this case.

I will say that the provided data could also suggest the control acupuncture (in area S) actually just made the patients worse. But, presumably there is evidence that acupuncture in S is similar to no acupuncture because the author called that group the control group.

Exercise 1.2 (a) In the treatment group: $\frac{66}{85} \approx 78\%$. In the control group: $\frac{65}{81} \approx 80\%$.

(b) Well, $78\% < 80\%$, so the control group has slightly better outcomes.

(c) It seems highly plausible that this difference could be due to chance.

For an analogy, imagine flipping a quarter 100 times and a penny 100 times. Imagine the quarter landed heads 53 times and the penny landed heads 49 times. Would you conclude the quarter has a higher probability of landing heads? No. This difference is probably due to natural variation.