

**To: Einfach Medical Supplies (EMS)**  
**From: Tallie Chen**  
**Subject: Randomized experiment of different opening pitch on the conversion of clinics**

### Experiment Introduction

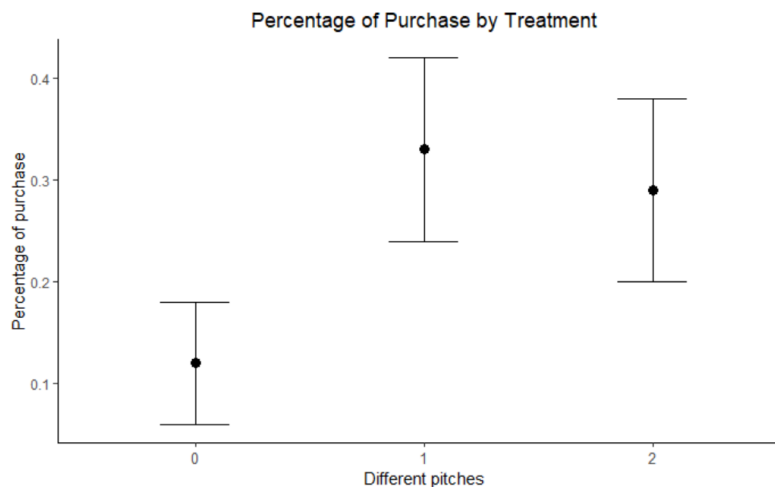
In order to land more sales in our initial expansion region, we want to conduct an experiment to test whether different opening pitches have different effects on conversion of clinics by using a randomized controlled design.

### Balance check for randomized experiments

Within the expansion region, we took 322 clinics and randomized them into three groups of roughly equal numbers: Control (using existing opening pitch), Treatment 1 (“Easier to use” opening pitch) and Treatment 2 (“Fewer errors” opening pitch).

The way we randomize is by keeping the characteristics (number of doctors, average panel size per doctor, distance) of each group similar on average. If the features that’s not affected by the treatment are similar overall across 3 groups, then we know that any systematic differences in outcome metric (Purchase) between groups must be coming from the treatment.

### Evaluate the results of the experiments



We can see that the second treatment has the largest percentage of purchase (34%), and, unlike the third treatment group, the CI doesn’t overlap with the control group, suggesting that Treatment 2 might be a good opening pitch to increase sales. However, since what we want to learn is actually the differences of percentage of purchase between control group and treatment groups, we’d better calculate the Average Treatment effect (ATE) to confirm the conclusion.

*How much the average treatment effect (ATE) is*

Clearly, “Easier to use” has relatively larger ATE, which means using “easier to use” opening pitch could generate 21% more of the purchase orders than using existing opening pitch.

	Treatment Effect percentage purchased	Lower 95% CI	Upper 95% CI
Easier to use	0.21	0.100	0.320
Fewer errors	0.17	0.063	0.277
Control Mean	0.12	NA	NA

### *How accurate our estimates on ATE is*

Once we have estimates of ATE based on 3 sample groups, how do we know the difference is due to chance or real? That's when confidence interval comes in handy. If the confidence interval includes 0, it means the sample difference is due to chance. In contrast, if it doesn't include 0, we can interpret the confidence interval as the range within which we can expect the true difference in the percentage purchased can be found. As we can see, the "Easier to use" treatment generate the highest percentage purchased and the narrowest confidence interval, while the CI of "Fewer error" almost includes zero.

In conclusion, sales people using the "Easier to use" opening pitch has a higher chance to be invited and thus have more chance to land sales.

### **Caveats and limitations**

One limitation of the experiment is the small sample size. The problem of that is, although the features of the clinics across 3 different groups are similar on average, the frequency distributions are not perfectly well balanced (especially for Avg\_panel\_size), which might result in large confidence intervals in the estimates.

Another limitation is the outcome metric. Here we only have the outcome metric of whether or not the clinics buy the testing device, not the number of devices they purchased. Since the treatment 2 group has more clinics with larger average panel size than other 2 groups, it's highly likely that those clinics purchased more devices than those in 2 other groups. In this case, measuring the total sales is more meaningful than the existing outcome metric.

### **Peer review:**

This memo is certainly well-organized and easy to follow with clear explanations for every technical term and intuitive interpretations for the data. I appreciate that the writer includes two additional paragraphs about ATE and explains everything a layman needs to understand the contents conveyed through the table. The only suggestion I would give is to add a brief summary of the final result at the beginning paragraph, so that the audience is able to know things they care about the most in the first place.