**Q: Which specific customers should we focus on when offering retention incentives?**

Possible answers that miss a point:

* Those that are at the highest risk of churning. Why not: perhaps they are not valuable enough to offset the cost of the retention incentive.
* Those customers who are most profitable. Why not: The incentive may not affect them (e.g., perhaps they are not at risk of leaving or don’t care about the discount).
* Those most likely to be affected. Why not: We must again think about the potential value of convincing them to stay vs. the cost of trying to convince them to stay.

Answer: We should target customers for whom it is profitable to do so.

**Q: Complete the following benefit cost matrix.**

We need to complete the benefit-cost matrix to determine this first.

If **L and** **NT**, then no revenue from the customer: .

If **L and T**, then I must pay the cost of reaching out: .

If **S and T**, then I get the customer’s value minus the cost of the incentive and reaching out: .

If **S and NT**, then I get the customer’s value without having to do anything: .

**Q: Is there data to calculate or estimate these quantities? If not, how would you proceed?**

We want to intervene if the following inequality is met:

Here’s the answer for each.

* : Monthly charges multiplied by 12. We don’t need predictive modelling.
* : We can estimate a predictive model with historical data.
* : We could assume they will renew the contract for the same amount. In practice, I’d expect people to renew for the same amount or increase their expense (due to discount).
* : We don’t have historical data on this.

Alternatives to proceed:

* **Collect data through an A/B test**. This could be costly and may require time we do not have, but it is a great alternative. We will discuss this alternative at the end of class.
* **Use data from a past retention campaign**. (We will discuss this alternative soon.)
* **Assume that customers who receive the offer always stay**. This is equivalent to sending the promotions to the people with the highest expected loss (so, it’s not that crazy).

**Q: Suppose we have some data from a past retention campaign. Would it help?**

Effectiveness will depend on the similarity of the incentive to past incentives. Also, (as we will discuss soon) on ability to make causal inferences.

**Q: Show chart from past. How should we interpret it?**

We can conclude that, in the previous retention campaign, people that received the incentive churned more than people that didn’t. However, we don’t know **why** and cannot conclude from this chart alone if they churned more **because** of the incentive. Perhaps there are other factors that could explain this result. What factors? For example, whether they complained or not.

**Q: We get data on who complained, and the chart reverses. How is this possible?**

The chart shows that, when I don’t know whether someone complained, the difference in churn rates is positive. However, once I know whether someone complained, the difference in churn rates is negative. The reason is that people that complained (a) are more likely to receive the incentive and (b) churn more. As a result, receiving the incentive serves as a proxy for complaints. So, based on the charts, we can see that people that received the incentive churn more (at least partly) because they complained more.

This is known as a Simpson’s paradox. It often occurs when there is a hidden variable that cofounds that result. In the next chart, we may think that more exercise leads to more cholesterol. The problem is that there could be another variable, which we often call a confounding variable, that is positively related to exercise and cholesterol and that is leading to this result (such as age).