

For each of the following scenarios, call out the potential biases in the proposed experiment. Do your best to try to discover not only the bias, but the initial design. There is plenty of room for interpretation here, so make sure to state what assumptions you're making.

Questions in **bold**. Answers in regular font.

You're testing advertising emails for a bathing suit company and you test one version of the email in February and the other in May.

I'm assuming what is being measured is clicks. The Bias would be in the months. In a lot of places May is in swimsuit season so people are more likely to click the email whereas February is early and swimsuits may not be on people's mind.

You open a clinic to treat anxiety and find that the people who visit show a higher rate of anxiety than the general population.

The bias is in the test sample. Someone not dealing with anxiety would most likely not visit a clinic treating only anxiety. So therefore the people showing up would have to have a higher rate of anxiety to have reason to be there.

You launch a new ad billboard based campaign and see an increase in website visits in the first week.

The billboard is only seen by a specific population whereas the site is accessible to many times more than that population. So you would have to take into account to track site activity in that specific area. Also depending on what other week you are comparing it to you could have problems with the sample size since we don't know what product is being advertised. If it's the same swimsuit company in example 1 you don't want to compare to a week outside of swimsuit season and have the billboard be placed during swimsuit season.

You launch a loyalty program but see no change in visits in the first week.

I'm assuming the loyalty program works the same way as a rewards program where the longer you use the service the more rewards, perks or loyalty points you receive. If that is the case the sample of 1 week isn't enough to measure the success of the launch because these are things that require long time use to accrue rewards.