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.

* 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.
* You open a clinic to treat anxiety and find that the people who visit show a higher rate of anxiety than the general population.
* You launch a new ad billboard based campaign and see an increase in website visits in the first week.
* You launch a loyalty program but see no change in visits in the first week.

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.

Potential biases:

1. Seasonality could play a role in city/region where swimming patters are not the same in February and May

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

Potential biases:

1. Selection bias: people without anxiety don’t tend to go to treat anxiety

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

Potential biases:

1. Bias due to study context/setting: what is your website about? Is there seasonality in the visit patterns?
2. Selection bias: billboard campaign could reach mainly commuters, as opposed to a varied group of customers.

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

Potential biases:

1. Study context: is the loyalty program supposed to give results in a week?
2. Bias in assignment to conditions/selection bias: who was reached by the loyalty program (e.g. regular visitors that visit anyway)?