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.
  + The time of the year is probably a critical source of bias. It is expected that bathing suits should be more popular in May rather than February.
  + The samples should be similar in view of age and geographical locations, since these two are probably the most critical issues. Younger people are probably more into new and fashion bathing suit models, as well as people living in beach areas.
* You open a clinic to treat anxiety and find that the people who visit show a higher rate of anxiety than the general population.

We need to have an eye on a couple of issues. We cannot generalize higher stress rates to the whole population due to several biases:

* + Probably only people with high anxiety decide to go to the clinic and not everyone else (self-selection bias).
  + There might be an endogeneity issue, i.e. going to the clinic and visiting a doctor automatically affects the patients and making them anxious.
  + What are the sample characteristics that we are analyzing? Are they compatible with the whole population? In view of age, gender, level of income, employment, etc.
  + What is the time period of the analysis? Has anything happened that causes anxiety in the people? Like a natural phenomenon, a political/social issue, news and rumors on the media, etc.
  + Is there any geographical bias?
* You launch a new ad billboard based campaign and see an increase in website visits in the first week.
  + Where is the billboard located?
  + What types of people is it exposed to?
  + Is the campaign talking about a hot social/political topic?

The 3 questions above help us find a correlation between the sample and what our campaign is all about. For example, if the campaign is about athletic activity and the billboard is located in a location with younger people and probably close to gyms and sport arenas we probably see more people responding to it. We cannot generalize it to the whole population since the average trend in the population could be different from the sample it is exposed to. Or if the campaign is about immigrants, we will probably see less attention in Washington DC that an immigrant-based state such as Florida.

* You launch a loyalty program but see no change in visits in the first week.
  + We are just talking about the very first week. We probably need to give it some time before we can infer some conclusions regarding its efficiency.