**DRILL: Getting Testy...**

For each of the following questions, outline how you could use an A/B test to find an answer. Be sure to identify all five key components of an A/B test we outlined above.

* Does a new supplement help people sleep better?

Let's go through an example. If we were trying to test whether a supplement helps people sleep better, we might test two supplements, one with *a placebo(no active ingredient)* and one with **the supplement**  ("*Placebo*" vs "**supplement**"; our two versions).

We would then randomly give one of the two versions of the pill to a subset of users (all users who get the supplement represent our sample, and all users that get the placebo one of our two experimental groups), and track how long they sleep (our outcome of interest).

We expect that the **supplement** will result in longer hours of sleep (our hypothesis). We may also want to look at the gender and age of our sample, if we have that information, to make sure the groups are similar. We can also look at whether the two feel rested with longer hours of sleep (a secondary outcome).

If the two groups appeared similar in age, gender, and anything else we measured, but longer hours of sleep for supplements, we would conclude that the supplement caused people to sleep better. As a result, we would advocate for providing the supplement **to other users**.

* Will new uniforms help a gym's business?

Let's go through an example. If we were trying to test whether a new uniform will help a gyms business, we might test two uniforms, one with *old uniform (current uniform)* and one with **the new uniform** ("*current*" vs "**new**"; our two versions).

We would then randomly give one of the two versions of the uniform to a subset of employees (all employees who get the new uniform represent our sample, and all users that get the current uniform one of our two experimental groups), and track how sales increases (our outcome of interest).

We expect that the **new uniform** will result in increased sales for the business (our hypothesis). We may also want to look at the gender and age of our sample, if we have that information, to make sure the groups are similar. We can also look at whether the uniforms are similar in style (a secondary outcome).

If the two groups appeared similar in age, gender, and anything else we measured, but sales increased, we would conclude that the new uniform helped the gyms business. As a result, we would advocate for providing the new uniforms to other employees.

* Will a new homepage improve my online exotic pet rental business?

Let's go through an example. If we were trying to test whether a new homepage will improve the sales of an online exotic pet rental business, we might test two homepage, the current homepage *(no changes made)* and one with **the new homepage** ("*current homepage*" vs "**new homepage**"; our two versions).

We would then randomly give one of the two versions of the homepages to a subset of users (all users who get the new homepage represent our sample, and all users that get the current homepage one of our two experimental groups), and track if sales increase with the new homepage (our outcome of interest).

We expect that the **new homepage** will result in increased sales (our hypothesis). We may also want to look at the gender and age of our sample users, if we have that information, to make sure the groups are similar. We can also look at whether the homepage increases sales over time (a secondary outcome).

If the two groups appeared similar in age, gender, and anything else we measured, but sales have increased, we would conclude that the new homepage caused an improvement to the online exotic pet rental business. As a result, we would advocate for using the new homepage **to other users**.

* If I put 'please read' in the email subject will more people read my emails?

Let's go through an example. If we were trying to test whether “please read” in the email subject will get more people to read emails we might test two emails, one with *the current email subject (no please read)* and one with **the please read email** ("*no please read*" vs "**please read**"; our two versions).

We would then randomly give one of the two versions of the email to a subset of users (all users who get the “please read email” our sample, and all users that get the current one (“no please read”) of our two experimental groups), and track how many emails are opened and read (our outcome of interest).

We expect that the **“please read email”** will result in more emails being opened and read (our hypothesis). We may also want to look at the gender and age of our sample, if we have that information, to make sure the groups are similar. We can also look at whether the “please read emails”have a higher number of clicks (a secondary outcome).

If the two groups appeared similar in age, gender, and anything else we measured, but more emails are opened and read, we would conclude that the “please read email” caused more users to open and read the emails. As a result, we would advocate for providing the “please read email” **to other users**.