# 13.2 A/B Testing Assignment

* Does a new supplement help people sleep better?
  + Version
    - Control= population that does not take the new supplement but a placebo
    - Experimental = population that does take the new supplement
  + Sample
    - The sample should consist of randomized individuals, broken up equally to minimize disparities in gender race socioeconomic class and the occurrence of sleep issues.
  + Hypothesis
    - If the supplement is effective there should be a measurable difference in the quality of sleep between the control and experimental populations with a higher quality of sleep for those taking the supplement
  + Outcomes
    - A there is a positive measurable difference in sleep quality
    - B there is no measurable difference in sleep quality
    - C there is a negative measurable difference in quality of sleep
  + Other measured variables
    - Sleep disruptions to individuals
    - Length of sleep
    - Stress
    - Life changes ie (new job or job loss, new infants)
* Will new uniforms help a gym's business?
  + Version
    - Control= population that does wear a new uniform
    - Experimental = population that does take the new supplement
  + Sample
    - If the gym has multiple locations it could test uniforms separate locations. And then compare the change in business at that location from previous years to estimate care should be taken to avoid times of the year when gym membership increases such as after new years. Locations should be selected so that each population has a similar distribution of surroundings and clientele
    - If the gym has one location then care must be taken to avoid customer confusion. Uniforms could be tested over the course of a year to see how business improves. However, that may lead to problems where the year was better or worse regardless of uniforms. In that case
  + Hypothesis
    - If the uniforms improve the gym’s business then revenue and profit margins should be higher for the locations that wore the new uni
  + Outcomes
    - There is a measurable increase in profit from gyms that wear uniforms
    - There is no measurable increase in profit from gyms that wear uniforms
    - Ther is a decrease in profit from gyms that wear the new uniforms
  + Other measured variables
    - Membership
    - Attendance
    - Customer satisfaction
    - Employee satisfaction
    - Changes in costs for each gym
    - Expenditures irrelevant to uniforms
* Will a new homepage improve my online exotic pet rental business?
  + Version
    - Control= users that do not see the new home page
    - Experimental = users that see the new home page
  + Sample
    - A large sample that randomly selects users based on IP address into control and experimental groups taking care not to bias results with age, gender, pet ownership, previous pet rentals or previous customer expenditure. Connect the IP addresses to in store and online customers
  + Hypothesis
    - If the new web page improves business then the experimental population will likely rent pets more than the control
  + Outcomes
    - There is a measurable increase in pet rentals for the experimental population
    - There is no measurable increase in rentals for the experimental population
    - Ther is no measurable difference in rentals between the populations
  + Other measured variables
    - Reviews
    - Clicks
    - Time spent on pages
    - purchases/ rentals
    - money expenditure by customers
* If I put 'please read' in the email subject will more people read my emails?
  + Version
    - Control= recipients who do not receive an email with receive in the subject line
    - Experimental = recipients who do receive an email with receive in the subject line
  + Sample
    - Multiple Emails can be sent out with various subject lines and content prevent other subject material from biasing the results half would say read in the subject line.
  + Hypothesis
    - The emails with ‘read’ in the subject line will be more thoroughly read have more time spend on them and included instructions will likely be followed.
  + Outcomes
    - Read in the subject line has no effect on time spent or following instructions in the content
    - There is a measurable difference in time spent on emails or instructions followed
    - Ther is no measurable difference in rentals between the populations
  + Other measured variables
    - Time is taken to open an email
    - Responses to emails
    - Time emails are sent
    - Content of emails
    - Other subject lines