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**In-N-Out: Better than McDonald’s for You?**

In this mini-experiment, my objective is to examine the impact of temperature on a hamburger’s shelf life. Many studies have been conducted that show McDonald’s hamburgers do not rot, indicating high levels of chemicals and preservatives in the patties. Others claim, however, that the hamburgers do not rot, because the way in which a McDonald’s hamburger is prepared reduces moisture formation (The Independent, 2016). McDonald’s hamburgers, however, are frozen and over-processed. In-N-Out, on the other hand, boasts about its quality of ingredients. Their patties, as stated on their website, are never frozen nor over-processed. In this mini-experiment, I will be manipulating the temperature of the environment of the In-N-Out hamburgers and accordingly assess the shelf life of the hamburger.

**Measurement and Treatment**

Fifteen hamburgers are the subjects of the experiment. The fifteen hamburgers will be purchased from In-N-Out. The assumption here is that these hamburgers are randomly selected, because there are thousands of hamburgers that are made and sold each day by the food chain. Because these hamburgers include lettuce, tomato, and condiments, I purchase only a plain hamburger. This avoids any inconsistency with regards to the amount of condiments, lettuce, and tomatoes on each patty.

I will slice each hamburger in half. Each half will be a unit in the experiment. Using the R code for random assignment, each half will either be assigned to the treatment or control group: Hamburger <-sample(1:2,30, replace=F). There will be fifteen control units and fifteen treatment units. The treatment condition is temperature, which is manipulated by using a fridge for the treatment group and room temperature for the control group. Each unit will be placed in a ziplock bag (all bags will be of the exact same size). Additionally, in each bag, three tablespoons of bottled water (Arrowhead brand) will be poured in the bag. All the ziplocks will then be sealed. All the control units will be placed on the dining table. There is no window (source of sunlight) in the proximity of the dining table. All the treatment units will be placed on the same shelf in the fridge. The control units are in a room temperature environment, while the treatment units are in a colder environment (35 degrees Fahrenheit). After one week, I will examine the change in the color of the water as an indication of mold or bacterial growth. This is how the potential outcomes will be measured.

**Challenges**

There are a few things to consider that could impact the experiment, but that I plan to control for. First, I will be using the same tools when handling the control and treatment units. I will be wearing a glove and using the same knife when cutting the hamburgers in half. Second, I will use water for the same bottle (one-gallon bottle) to avoid differences in mineral composition across the different bottles.