**Study:** In each of the following studies, individuals were given a survey about their medication and post operation habits.

**Variables:**

* Gender: Male or female participant
* Race: White, Black, Latino, Asian, Other
* Before the study: how often participants brushed their teeth
* After the study: how often participants brushed their teeth
* Reminders: if they use phone/alarm reminders to take their medication

**Data Screening is incorporated into each test. Exclude people who have NA (missing) values.**

**Goodness of fit test:** Do we have an equal number of people in each race/ethnicity category?

1. Include a screen shot of the Vassar Stats output.
2. Do we meet the assumptions (small categories, 0 in a cell)?
3. Was there a significant difference from expected found?
4. Which group appears to be the lowest/highest? Interpret the standardized residuals.

**Independence:** Do males and females use reminders in the same pattern?

1. Include a screen shot of the Vassar Stats output.
2. Do we meet the assumptions (small categories, 0 in a cell)?
3. Was there a significant difference from expected found?
4. Which group appears to be the lowest/highest? Interpret the standardized residuals.
5. What is the size of the effect (interpret V)?
6. Run this same test using Fisher’s exact test, and include the *p* values.
   1. Do they show approximately the same answer?

**McNemars:** Do people change their brushing habits after an intervention?

1. First, we have to set up the data to be appropriate for McNemars test, and ignore the rest of the categories in those cells.

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | After | |
|  |  | Once A Day | Twice A Day |
| Before | Once A Day |  |  |
| Twice A Day |  |  |

1. Use the data above to enter into the online formula.
2. Include a screen shot of the Vassar Stats output.
3. Do we meet the assumptions (small categories, 0 in a cell)?
4. Was there a significant difference from expected found?
5. What is the odds ratio for the change in teeth brushing?