Lab 7

Public Health 241: Statistical Analysis of Categorical Data

In this (very) brief lab, we'll cover tools you'll need to complete Homework 8. This includes two methods of testing for multiplicative interaction.

1 Stratified Analyses

Today, we'll again be using the Western Collaborative Group Study data. You can find it on bCourses if you don't already have it.

1. Load the WCGS data set and generate the wtcat variable (as we did last time):

```
wcgs <- wcgs %>% mutate(wtcat = ifelse(weight0 <= 150, 0,
                        ifelse(weight0 > 150 & weight0 <= 160, 1,
                        ifelse(weight0 > 160 & weight0 <= 170, 2,
                        ifelse(weight0 > 170 & weight0 <= 180, 3, 4)))))
```

Note that the categories are slightly modified to better follow the book and lecture notes.

2. The Woolf test of homogeneity can be done with the `woolf_test()` function from the `vcd` package:

```
woolf_test(table(wcgs$chd69, wcgs$dibpat0, wcgs$wtcat))
```

```
##
##  Woolf-test on Homogeneity of Odds Ratios (no 3-Way assoc.)
##
## data:  table(wcgs$chd69, wcgs$dibpat0, wcgs$wtcat)
## X-squared = 4.0436, df = 4, p-value = 0.4001
```

3. The Breslow-Day test of homogeneity can be done with the `BreslowDayTest()` function from the `DescTools` package.

```
BreslowDayTest(table(wcgs$chd69, wcgs$dibpat0, wcgs$wtcat))
```

```
##
##  Breslow-Day test on Homogeneity of Odds Ratios
##
## data:  table(wcgs$chd69, wcgs$dibpat0, wcgs$wtcat)
## X-squared = 4.1077, df = 4, p-value = 0.3916
```

In both cases $p > 0.05$, so we fail to reject the H_0 that the OR are the same. This suggests there is little evidence for multiplicative interaction.