PSY653, Unit 11, In class activity – Smoking, Asbestos, and Lung Cancer

Dataframe: asbestos.csv

In this activity you will use data from Hilt and colleagues (1986) to examine the relationship between smoking, asbestos exposure, and lung cancer. There are 4 variables:

**id**: participant’s id

**smoking\_status**: smoking status of participant (1= current smoker, 2 = former smoker, 3 = never smoker)

**asbestos**: binary indicator of exposure to asbestos (0 = no exposure, 1 = exposure)

**lung\_cancer**: binary indicator of lung cancer status (0 = no lung cancer, 1 = lung cancer)

We will start with just a simple look at asbestos exposure and lung cancer.

1. Please create a new notebook called LungCancerNotebook.
2. Create a first level header called: Load libraries. Add a code chunk, and import these packages: tidyverse, car, margins, and gmodels.
3. Create a first level header called: Import data. Add a code chunk, and import the dataset called asbestos.csv.
4. Create a first level header called: Format data. Add a code chunk, and create factor versions of asbestos and lung cancer.
5. Create a first level header called: Generate a cross table of asbestos and lung cancer. Use the CrossTable function to get a cross tab of asbestos and lung cancer.
6. Use the cross table to calculate the following (either by hand or program R):
   1. Probability of lung cancer if exposed to asbestos
   2. Probability of lung cancer if not exposed to asbestos
   3. Risk ratio of lung cancer to compare people who were exposed (numerator) to those not exposed (denominator) to asbestos.
   4. Odds of lung cancer if exposed to asbestos
   5. Odds of lung cancer if not exposed to asbestos
   6. Odds ratio (OR) of lung cancer to compare people who were exposed (numerator) to those not exposed (denominator) to asbestos.
7. Create a first level header called: Fit a model. Add a code chunk, and then estimate a binary logistic regression model, regress lung cancer on asbestos exposure. Request the OR and 95% CI for the OR. Interpret the results.

