

Methods in Epidemiologic Research
Sample Problems
Chapter 6 – Measures of Association

Preparation

We will carry on with the data that were used in the exercises for Chapter 4, but we will focus on the effect of having had a previous myocardial infarction (-prmi-) on the risk of dying within 1 year of admission for the MI included in this dataset. All individuals in this dataset were followed for at least 1 year after admission, so there are no withdrawals (censored observations) to worry about.

The first thing you will have to do is generate three new variables.

- Create a 0/1 variable which indicates whether or not the individual died during the 1st year following admission.
- Create a variable indicating the amount of time that the person was under observation. This will be 1 year if the person survived and for those who died, it will be the time until death. When computing this variable, take the following 2 issues into consideration.
 - Before computing this variable, add 1 to the original survival time variable (-surv_mi-) because people who died on the day of admission were listed as having a “survival” of 0 days, but we want them to have a “time under observation” of 1 day.
 - Convert the time from days to years (by dividing by 365.25). This is just to avoid having very small values when estimating rates.
- Generate a 0/1 variable indicating whether or not the person survived the full 5 year period. (This is just done to confirm that there were no withdrawals during the year.)

Questions

1. Compute and interpret the risk ratio (RR) for previous myocardial infarction.
2. Compute and interpret the incidence rate ratio (IR) for previous myocardial infarction.
3. Compute and interpret the odds ratio (OR) for previous myocardial infarction.
 - (a) Does the relative magnitude of the RR, IR and OR make sense?
 - (b) Is the OR close to the RR? Why, or why not?
4. Compute and interpret the following measures of effect.
 - (a) Risk difference (RD)
 - (b) Incidence rate difference (ID)
 - (c) Attributable fraction – exposed (Af_e)
 - (d) Population attributable risk (PAR)
 - (e) Population attributable fraction (Af_p)
5. Interpret the confidence intervals (CI) for each of the above.