Solution: SimOb Inject 15 - Stratified analysis

## 1. Install packages and load libraries

# Load the required libraries into the current R session:  
pacman::p\_load(rio,   
 here,   
 tidyverse,   
 skimr,  
 plyr,  
 janitor,  
 lubridate,  
 gtsummary,   
 flextable,  
 officer,  
 epikit,   
 apyramid,   
 scales,  
 EpiStats)

## 2. Import your data

# Import the raw data set:   
copdata <- rio::import(here::here("data", "Copenhagen\_clean2.rds"))

## 3. Risk Ratio

### a) Veal as exposure of interest, stratified by having eaten pasta

stratall <- copdata %>%   
 # Mutate across to convert cases to numeric:  
 mutate(across(.cols = case,   
 .fns = ~ as.numeric(.)))  
  
# Pass data to the csinter function:  
pastastrata <- csinter(x = stratall,   
 cases = "case",   
 exposure = "veal",   
 by = "pasta")  
  
pastastrata

$df1  
 CSInter case - veal by(pasta) Total Cases Risk % P.est. Stats  
1 pasta = 1 338 <NA> NA Risk difference 0.10  
2 Exposed 330 198 60.00 Risk Ratio 1.20  
3 Unexposed 8 4 50.00 Attrib.risk.exp 0.17  
4 NA <NA> NA Attrib.risk.pop 0.16  
5 pasta = 0 36 <NA> NA Risk difference 0.02  
6 Exposed 8 3 37.50 Risk Ratio 1.05  
7 Unexposed 28 10 35.71 Attrib.risk.exp 0.05  
8 NA <NA> NA Attrib.risk.pop 0.01  
9 Missing / Missing % 3 0.8% NA <NA> NA  
 95%CI-ll 95%CI-ul  
1 -0.25 0.45  
2 0.60 2.41  
3 -0.68 0.59  
4 NA NA  
5 -0.36 0.40  
6 0.38 2.92  
7 -1.65 0.66  
8 NA NA  
9 NA NA  
  
$df2  
 Point Estimate Chi2 p.value Stats 95%CI-ll 95%CI-ul  
1 Woolf test of homogeneity 0.04 0.833 NA NA NA  
2 Crude RR for veal NA NA 1.53 1.01 2.32  
3 MH RR veal adjusted for pasta NA NA 1.15 0.64 2.04  
4 Adjusted/crude relative change NA NA -25.08 NA NA

Let’s check if pasta is associated with veal (if we are thinking veal may be a confounder, we need to see if there is an association between the potential confounder (veal) and the exposure (pasta)):

# Perform Wilcoxon rank sum test on pasta and veal:  
wilcox.test(pasta ~ veal,   
 data = copdata)

Wilcoxon rank sum test with continuity correction  
  
data: pasta by veal  
W = 1496, p-value < 2.2e-16  
alternative hypothesis: true location shift is not equal to 0

### c) Champagne as exposure of interest, stratified by having eaten pasta

# Pass data to the csinter function:  
champstrata <- csinter(x = stratall,   
 cases = "case",   
 exposure = "champagne",   
 by = "pasta")