Biostatistics (MATH11230)

Vanda Inácio

Below I show a possible way of how to organise the stratified data in an array and pass this information to the `epi.2by2` function from the `epiR` package. This function, among other things, returns the Mantel-Haenszel adjusted OR and RR estimates and corresponding CIs, the stratum-specific estimates and corresponding CIs, and the results of the homogeneity test (to check if there is effect modification), There is a warning, that I do not know where it is coming from, but the results the function is returning are correct.

```
require(epiR)

stratified_data <- array(c(36, 50, 14, 50,
                           24,10,126,90),
                         dim = c(2,2,2),
                         list(area = c("Rural", "Urban"),
                         antibodies = c("Yes", "No"),
                         gender = c("Males","Females"))
                         )

stratified_data
```

```
## , , gender = Males
##
##        antibodies
## area    Yes No
##   Rural  36 14
##   Urban  50 50
##
## , , gender = Females
##
##        antibodies
## area    Yes  No
##   Rural  24 126
##   Urban  10  90
```

```
res <- epi.2by2(stratified_data, units = 1, method = "cohort.count")
res
```

```
##              Outcome +    Outcome -      Total                 Inc risk *
## Exposed +           60          140        200        0.30 (0.24 to 0.37)
## Exposed -           60          140        200        0.30 (0.24 to 0.37)
## Total              120          280        400        0.30 (0.26 to 0.35)
##
##
## Point estimates and 95% CIs:
## -------------------------------------------------------------------
## Inc risk ratio (crude)                          1.00 (0.74, 1.35)
## Inc risk ratio (M-H)                            1.48 (1.13, 1.94)
```

```
## Inc risk ratio (crude:M-H)                      0.67
## Inc odds ratio (crude)                          1.00 (0.65, 1.53)
## Inc odds ratio (M-H)                            2.13 (1.24, 3.63)
## Inc odds ratio (crude:M-H)                      0.47
## Attrib risk in the exposed (crude) *            0.00 (-0.09, 0.09)
## Attrib risk in the exposed (M-H) *              0.12 (0.01, 0.22)
## Attrib risk (crude:M-H)                         0.00
## ------------------------------------------------------------------
##  M-H test of homogeneity of IRRs: chi2(1) = 0.078 Pr>chi2 = 0.780
##  M-H test of homogeneity of ORs: chi2(1) = 0.580 Pr>chi2 = 0.446
##  Test that M-H adjusted OR = 1:  chi2(1) = 7.819 Pr>chi2 = 0.003
##  Wald confidence limits
##  M-H: Mantel-Haenszel; CI: confidence interval
##  * Outcomes per population unit
```

```
names(res)
```

```
##  [1] "method"         "n.strata"       "digits"         "conf.level"
##  [5] "interp"         "units"          "tab"            "massoc.summary"
##  [9] "massoc.interp"  "massoc.detail"
```

```
res$massoc.detail$OR.strata.wald
```

```
##        est     lower    upper
## 1 2.571429 1.2376221 5.342701
## 2 1.714286 0.7813461 3.761170
```