

# Birth Weight

JDT

9/23/2021

Needed Packages

```
if(!require(FSA)){install.packages("FSA")}
if(!require(ggplot2)){install.packages("ggplot2")}
if (!require("mosaic")) install.packages("mosaic", dep=FALSE)
if (!require("nortest")) install.packages("nortest", dep=TRUE)
if (!require("epitools")) install.packages("epitools", dep=TRUE)
if (!require("prettyR")) install.packages("prettyR", dep=TRUE)
if (!require("rms")) install.packages("rms", dep=TRUE)
# add other as needed
```

## Problem – Infant Birth Weight Data

Read data from SAS input file

```
# this data came from SASHELP.BWEIGHT
bw = read.csv('bwgt.csv', header = TRUE)
bw = data.frame(bw)
#summary(bw)
bw = transform(bw, AgeGroup.f = as.factor(AgeGroup))
bw = transform(bw, Race.f = as.factor(Race))
bw = transform(bw, Drinking.f = as.factor(Drinking))
bw = transform(bw, Death.f = as.factor(Death))
bw = transform(bw, Smoking.f = as.factor(Smoking))
bw = transform(bw, SomeCollege.f = as.factor(SomeCollege))
bw = transform(bw, LowBirthWgt.f = as.factor(LowBirthWgt))
```

```
tally(~ AgeGroup + Race.f, data=bw)
```

```
##           Race.f
## AgeGroup Asian Black Hispanic Native White
##      1      8    91      83      6    169
##      2    101   375     475     22   1337
##      3     36    52      66      4    264
```

```
tally(~ Race.f | AgeGroup.f, data=bw)
```

```
##           AgeGroup.f
## Race.f      1      2      3
##   Asian      8    101    36
##   Black     91   375    52
##   Hispanic  83   475    66
##   Native      6     22     4
##   White    169  1337   264
```

```
library(mosaic)
mytab = tally(~ Race.f | AgeGroup.f, data=bw)
addmargins(mytab)
```

```
##           AgeGroup.f
## Race.f      1      2      3 Sum
##   Asian      8    101    36 145
##   Black     91    375    52 518
##   Hispanic  83    475    66 624
##   Native      6     22     4  32
##   White    169   1337   264 1770
##   Sum       357   2310   422 3089
```

```
prop.table(mytab, 1)
```

```
##           AgeGroup.f
## Race.f      1      2      3
##   Asian  0.05517241 0.69655172 0.24827586
##   Black  0.17567568 0.72393822 0.10038610
##   Hispanic 0.13301282 0.76121795 0.10576923
##   Native  0.18750000 0.68750000 0.12500000
##   White  0.09548023 0.75536723 0.14915254
```

```
library(epitools)
attach(bw)
mytab = tally(~ LowBirthWgt.f | Death.f, data=bw)
addmargins(mytab)
```

```
##           Death.f
## LowBirthWgt.f  No  Yes  Sum
##           No  2278  198 2476
##           Yes   205  408  613
##           Sum  2483  606 3089
```

```
prop.table(mytab, 1)
```

```
##           Death.f
## LowBirthWgt.f      No      Yes
##           No  0.92003231 0.07996769
##           Yes  0.33442088 0.66557912
```

```
riskratio(x=Smoking.f, y=Death.f)
```

```
## $data
##           Outcome
## Predictor    No Yes Total
##           156  41   197
##    No    1786 405   2191
##    Yes     541 160    701
##    Total 2483 606   3089
##
## $measure
##           risk ratio with 95% C.I.
## Predictor estimate      lower      upper
##           1.0000000      NA      NA
##    No  0.8881678 0.6670955 1.182502
##    Yes 1.0966911 0.8087967 1.487063
```

```
##
## $p.value
##      two-sided
## Predictor midp.exact fisher.exact chi.square
##           NA           NA           NA
##      No    0.4206715    0.4449380    0.4220298
##      Yes   0.5556210    0.6286442    0.5493629
##
## $correction
## [1] FALSE
##
## attr("method")
## [1] "Unconditional MLE & normal approximation (Wald) CI"
```