# Extra Credit Assignment Case 01

Sara Lemus

2/25/2021

## Table 1

Age- Mean and SD

```
## # A tibble: 2 x 2
##   TRTMT   mean_age
## * <fct>      <dbl>
## 1 Digoxin     63.4
## 2 Placebo     63.5
```

```
## # A tibble: 2 x 2
##   TRTMT   sd_age
## * <fct>    <dbl>
## 1 Digoxin   11
## 2 Placebo   10.8
```

Ejection fraction- mean and SD

```
## # A tibble: 2 x 2
##   TRTMT   mean_age
## * <fct>      <dbl>
## 1 Digoxin     28.6
## 2 Placebo     28.4
```

```
## # A tibble: 2 x 2
##   TRTMT   sd_age
## * <fct>    <dbl>
## 1 Digoxin    8.8
## 2 Placebo    8.9
```

Median duration of CHF- Mo

```
## # A tibble: 2 x 2
##   TRTMT   median
##   <fct>    <dbl>
## 1 Digoxin     17
## 2 Placebo     16
```

Female, Nonwhite, Age > 70

```
## # A tibble: 2 x 2
## # Groups:   TRTMT [2]
##   TRTMT   prop_female
##   <fct>         <dbl>
## 1 Digoxin        22.2
## 2 Placebo        22.5
```

```
## # A tibble: 2 x 2
## # Groups:   TRTMT [2]
##   TRTMT   prop_nonwhite
##   <fct>           <dbl>
## 1 Digoxin          14.3
## 2 Placebo          14.8
```

```
## # A tibble: 2 x 2
## # Groups:   TRTMT [2]
##   TRTMT   prop_70plus
##   <fct>         <dbl>
## 1 Digoxin        26.7
## 2 Placebo        27.4
```

Method of assesing ejection fraction, Cardiothotacic ratio

```
## # A tibble: 6 x 4
## # Groups:   TRTMT [2]
##   TRTMT   EJFMETH          n prop_ejfmeth
##   <fct>   <chr>        <int>        <dbl>
## 1 Digoxin 2-D Echo      1003         29.5
## 2 Digoxin Angiography    187          5.5
## 3 Digoxin Radionuclide  2207         65
## 4 Placebo 2-D Echo      1022         30
## 5 Placebo Angiography    197          5.8
## 6 Placebo Radionuclide  2184         64.2
```

```
## # A tibble: 2 x 2
## # Groups:   TRTMT [2]
##   TRTMT   prop_chest
##   <fct>        <dbl>
## 1 Digoxin       34.6
## 2 Placebo       34.4
```

NYHA class, No. of Signs or symptoms of CHF

```
## # A tibble: 8 x 4
## # Groups:   TRTMT [2]
##   TRTMT   FUNCTCLS     n prop_nyha
##   <fct>   <chr>    <int>     <dbl>
## 1 Digoxin I          465      13.7
## 2 Digoxin II        1810      53.3
## 3 Digoxin III       1042      30.7
## 4 Digoxin IV          76       2.2
## 5 Placebo I          442      13
## 6 Placebo II        1854      54.5
## 7 Placebo III       1039      30.5
## 8 Placebo IV          66       1.9
```

```
## # A tibble: 10 x 3
## # Groups:   TRTMT [2]
##    TRTMT    NSYM prop_chp
##    <fct>   <dbl>    <dbl>
##  1 Digoxin     0      1.1
##  2 Digoxin     1      2.4
##  3 Digoxin     2      7.1
##  4 Digoxin     3      9.3
```

```
##  5 Digoxin     4     80.2
##  6 Placebo     0      1.1
##  7 Placebo     1      2
##  8 Placebo     2      7.1
##  9 Placebo     3      8.6
## 10 Placebo     4     81.2
```

Medical History

```
## # A tibble: 2 x 2
## # Groups:   TRTMT [2]
##   TRTMT   prop_prevmi
##   <fct>         <dbl>
## 1 Digoxin        64.7
## 2 Placebo        65.3
```

```
## # A tibble: 2 x 2
## # Groups:   TRTMT [2]
##   TRTMT   prop_angina
##   <fct>         <dbl>
## 1 Digoxin        27.1
## 2 Placebo        26.4
```

```
## # A tibble: 2 x 2
## # Groups:   TRTMT [2]
##   TRTMT   prop_dia
##   <fct>      <dbl>
## 1 Digoxin     28.3
## 2 Placebo     28.6
```

```
## # A tibble: 2 x 2
## # Groups:   TRTMT [2]
##   TRTMT   prop_hyper
##   <fct>        <dbl>
## 1 Digoxin       45
## 2 Placebo       45.8
```

Previous digoxin use

```
## # A tibble: 2 x 2
## # Groups:   TRTMT [2]
##   TRTMT   prop_dig
##   <fct>      <dbl>
## 1 Digoxin     44.1
## 2 Placebo     44.6
```

Primary cause of CHF

```
## # A tibble: 4 x 4
## # Groups:   TRTMT [2]
##   TRTMT   CHFETIOL        n prop_chfcause
##   <fct>   <chr>       <int>         <dbl>
## 1 Digoxin Ischemic     2405          70.8
## 2 Digoxin Nonischemic   983          28.9
## 3 Placebo Ischemic     2398          70.5
## 4 Placebo Nonischemic   996          29.3
```

```
## # A tibble: 6 x 4
## # Groups:   TRTMT [2]
```

```
##   TRTMT   CHFETIOL         n prop_chfcause
##   <fct>   <chr>        <int>         <dbl>
## 1 Digoxin Hypertensive   272           8
## 2 Digoxin Idiopathic     525          15.5
## 3 Digoxin Other          186           5.5
## 4 Placebo Hypertensive   311           9.1
## 5 Placebo Idiopathic     482          14.2
## 6 Placebo Other          203           6
```

Concomitant medications

```
## # A tibble: 2 x 2
## # Groups:   TRTMT [2]
##   TRTMT   prop_diuretics
##   <fct>            <dbl>
## 1 Digoxin           81.2
## 2 Placebo           82.2
```

```
## # A tibble: 2 x 2
## # Groups:   TRTMT [2]
##   TRTMT   prop_acei
##   <fct>       <dbl>
## 1 Digoxin      94.1
## 2 Placebo      94.8
```

```
## # A tibble: 2 x 2
## # Groups:   TRTMT [2]
##   TRTMT   prop_nitr
##   <fct>       <dbl>
## 1 Digoxin      42.1
## 2 Placebo      43.1
```

```
## # A tibble: 2 x 2
## # Groups:   TRTMT [2]
##   TRTMT   prop_vasod
##   <fct>        <dbl>
## 1 Digoxin        0.9
## 2 Placebo        1.5
```

Daily dose of study medication perscribed

```
## # A tibble: 8 x 3
## # Groups:   TRTMT [2]
##   TRTMT   DIGDOSE prop_dose
##   <fct>     <dbl>     <dbl>
## 1 Digoxin   0.125      17.5
## 2 Digoxin   0.25       70.6
## 3 Digoxin   0.375      10.3
## 4 Digoxin   0.5         1.1
## 5 Placebo   0.125      17.4
## 6 Placebo   0.25       70.1
## 7 Placebo   0.375      11.3
## 8 Placebo   0.5         0.9
```

## Table 4

### Ejection Fraction

```
## # A tibble: 4 x 5
## # Groups:   TRTMT [2]
##   TRTMT   EJF_PER_NEW yes_dwhf randomized percent
##   <fct>   <chr>          <int>      <int>   <dbl>
## 1 Digoxin <0.25            428       1127    38
## 2 Digoxin 0.25-0.45        613       2270    27
## 3 Placebo <0.25            556       1130    49.2
## 4 Placebo 0.25-0.45        735       2273    32.3
```

Absolute difference

```
##       est lwr.ci upr.ci
## [1,] -5.3     -8   -2.7
```

```
##        est lwr.ci upr.ci
## [1,] -11.2  -15.3   -7.2
```

Risk Ratio

```
##                 exp(coef) exp(-coef) lower .95 upper .95
## TRTMT_REDigoxin       0.8       1.25      0.72      0.89
```

```
##                 exp(coef) exp(-coef) lower .95 upper .95
## TRTMT_REDigoxin      0.68       1.47       0.6      0.77
```

### Previous Use of Digoxin

```
## # A tibble: 4 x 5
## # Groups:   TRTMT [2]
##   TRTMT   DIGUSE yes_dwhf randomized percent
##   <fct>    <dbl>    <int>      <int>   <dbl>
## 1 Digoxin      0      491       1899    25.9
## 2 Digoxin      1      550       1498    36.7
## 3 Placebo      0      603       1884    32
## 4 Placebo      1      688       1519    45.3
```

Absolute difference

```
##       est lwr.ci upr.ci
## [1,] -8.6  -12.1   -5.1
```

```
##       est lwr.ci upr.ci
## [1,] -6.2     -9   -3.3
```

Risk Ratio

```
##                 exp(coef) exp(-coef) lower .95 upper .95
## TRTMT_REDigoxin      0.74       1.35      0.66      0.83
```

```
##                 exp(coef) exp(-coef) lower .95 upper .95
## TRTMT_REDigoxin      0.77        1.3      0.68      0.86
```

### Cause of Heart Failure

```
## # A tibble: 4 x 5
## # Groups:   TRTMT [2]
##   TRTMT   CHFETIOL_NEW yes_dwhf randomized percent
```

```
##   <fct>   <chr>           <int>      <int>   <dbl>
## 1 Digoxin Ischemic          731       2405    30.4
## 2 Digoxin Nonischemic       306        983    31.1
## 3 Placebo Ischemic          873       2398    36.4
## 4 Placebo Nonischemic       413        996    41.5
```

Absolute difference

```
##      est lwr.ci upr.ci
## [1,]  -6   -8.7   -3.3
```

```
##        est lwr.ci upr.ci
## [1,] -10.3  -14.5   -6.1
```

Risk Ratio

```
##                 exp(coef) exp(-coef) lower .95 upper .95
## TRTMT_REDigoxin      0.79       1.26      0.72      0.88
```

```
##                 exp(coef) exp(-coef) lower .95 upper .95
## TRTMT_REDigoxin      0.67        1.5      0.58      0.77
```

**Cardiothoracic Ratio**

```
## # A tibble: 4 x 5
## # Groups:   TRTMT [2]
##   TRTMT   CHESTX_NEW yes_dwhf randomized percent
##   <fct>   <chr>         <int>      <int>   <dbl>
## 1 Digoxin <0.55           600       2221    27
## 2 Digoxin >0.55           441       1176    37.5
## 3 Placebo <0.55           724       2233    32.4
## 4 Placebo >0.55           567       1170    48.5
```

Absolute difference

```
##       est lwr.ci upr.ci
## [1,] -5.4   -8.1   -2.7
```

```
##      est lwr.ci upr.ci
## [1,] -11  -14.9     -7
```

Risk Ratio

```
##                 exp(coef) exp(-coef) lower .95 upper .95
## TRTMT_REDigoxin      0.79       1.27      0.71      0.88
```

```
##                 exp(coef) exp(-coef) lower .95 upper .95
## TRTMT_REDigoxin      0.69       1.44      0.61      0.78
```

**NYHA Class**

```
## # A tibble: 4 x 5
## # Groups:   TRTMT [2]
##   TRTMT   NYHA_NEW  yes_dwhf randomized percent
##   <fct>   <chr>        <int>      <int>   <dbl>
## 1 Digoxin I or II        601       2275    26.4
## 2 Digoxin III or IV      440       1122    39.2
## 3 Placebo I or II        739       2296    32.2
## 4 Placebo III or IV      552       1107    49.9
```

Absolute difference

```
##       est lwr.ci upr.ci
## [1,] -5.8   -8.4   -3.1
```

```
##        est lwr.ci upr.ci
## [1,] -10.6  -14.8   -6.5
```

Risk Ratio

```
##                 exp(coef) exp(-coef) lower .95 upper .95
## TRTMT_REDigoxin      0.78       1.28       0.7      0.87
```

```
##                 exp(coef) exp(-coef) lower .95 upper .95
## TRTMT_REDigoxin       0.7       1.43      0.62      0.79
```

**Overall study population**

```
## # A tibble: 2 x 2
## # Groups:   TRTMT [2]
##   TRTMT   prop_dwhf
##   <fct>       <dbl>
## 1 Digoxin      30.6
## 2 Placebo      37.9
```

Absolute Difference

```
##       est lwr.ci upr.ci
## [1,] -7.3   -9.5     -5
```

Risk Ratio

```
##                 exp(coef) exp(-coef) lower .95 upper .95
## TRTMT_REDigoxin      0.75       1.33      0.69      0.82
```

## Remarks

In general, I was able to replicate the findings of this study. However, there were some small discrepancies. In Table 1, 9 table values were off by about 0.1. This is assumed to be due to discrepancies in rounding, as the values in the original table were rounded up to the nearest 0.1, though the actual proportion estimates were most likely calculated with more signficant digits. In Table 4, the largest discrepancy was that for the "III or IV" category of NYHA class, the proportion for the placebo group differentiated by 0.1 and the estimate for the absolute difference of the two proportions differentiated by 0.2. The accompanying 95% confidence interval is also different by a similar margin. Once again, due to the fact that the magnitude of the error is small and that the other level of the variable (class I or II) mirrors the original table, it is also thought that this discrepancy may be also due to rounding, despite the fact that calculations were made follwing the paper (ie: absolute differences were calculated before rounding).