Lesson 4 HW 2 EC

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Question 3.3 a and c

Part A

```
or<- oddsratio(60,2,44,61,conf.level = 0.95)
```

```
##            Disease Nondisease Total
## Exposed         60         44   104
## Nonexposed       2         61    63
## Total           62        105   167
```

```
#exposed is political positon and diseased is agree
logOR <- log(or$estimate)
logOR
```

```
## [1] 3.727882
```

Part C

```
# library(fmsb)
# Estimate, confidence interval, and p value for odds ratio
oddsratio(60,2,44,61,conf.level = 0.95)
```

```
##            Disease Nondisease Total
## Exposed         60         44   104
## Nonexposed       2         61    63
## Total           62        105   167
```

```
##
##  Odds ratio estimate and its significance probability
##
## data:  60 2 44 61
## p-value = 1.832e-12
## 95 percent confidence interval:
##    9.647569 179.299445
## sample estimates:
## [1] 41.59091
```

```
# reccomended package doesn't come up with what the book says
#library(PropCIs)
orscoreci(60,(60+44),2,(2+61),conf.level=0.95)
```

```
##
##
##
```

```
## data:
##
## 95 percent confidence interval:
##   10.55088 162.15606
```

The interval is imprecise because there are very few numbers of republicans who agreed.

Question 3.4

difference of proportions confidence interval

```
wald2ci(1085,(1085+55623),703,(703+441239), conf.level=0.95, adjust = "Wald")
```

```
##
##
##
## data:
##
## 95 percent confidence interval:
##  0.01640877 0.01867602
## sample estimates:
## [1] 0.0175424
```

The difference of proportions confidence interval indicates that there is a difference in the proprotion of fatalities between those who do and do not wear a seatbelt.
The confidence level indicates that 95% of the time this method will produe a range that reflects the true parameter, in this case difference of proportion. In 5% of cases this methodology will produce an interval that does not reflect the true parameter.

relative risk confidence interval

```
riskscoreci(1085,(1085+55623),703,(703+441239), conf.level=0.95)
```

```
##
##
##
## data:
##
## 95 percent confidence interval:
##  10.94383 13.21942
```

The confidence interval of the relative risk indicates that the risk of fatality when not wearing a seatbelt is relatively higher than when wearing a seatbelt. The confidence level indicates that 95% of the time this method will produe a range that reflects the true parameter, in this case relative risk. In 5% of cases this methodology will produce an interval that does not reflect the true parameter.

oddsratio confidence interval

```
#library(fmsb)
oddsratio(1085,703,55623,441239,conf.level=0.95)
```

```
##            Disease Nondisease  Total
## Exposed       1085      55623  56708
## Nonexposed     703     441239 441942
## Total         1788     496862 498650

##
##  Odds ratio estimate and its significance probability
##
## data:  1085 703 55623 441239
## p-value < 2.2e-16
## 95 percent confidence interval:
##  11.13023 13.46739
## sample estimates:
## [1] 12.24317
```

The odds ratio confidence interval indicates that those not wearing a seatbelt are 11.13 to 13.47 times more likely to experience a fatality. The confidence level indicates that 95% of the time this method will produe a range that reflects the true parameter, in this case the odds ratio In 5% of cases this methodology will produce an interval that does not reflect the true parameter.

```
sessionInfo()
```

```
## R version 3.4.1 (2017-06-30)
## Platform: x86_64-w64-mingw32/x64 (64-bit)
## Running under: Windows 10 x64 (build 16299)
##
## Matrix products: default
##
## locale:
## [1] LC_COLLATE=English_United States.1252
## [2] LC_CTYPE=English_United States.1252
## [3] LC_MONETARY=English_United States.1252
## [4] LC_NUMERIC=C
## [5] LC_TIME=English_United States.1252
##
## attached base packages:
## [1] stats     graphics  grDevices utils     datasets  methods   base
##
## other attached packages:
## [1] PropCIs_0.3-0 fmsb_0.6.1
##
## loaded via a namespace (and not attached):
##  [1] compiler_3.4.1  backports_1.1.0 magrittr_1.5    rprojroot_1.2
##  [5] tools_3.4.1     htmltools_0.3.6 yaml_2.1.14     Rcpp_0.12.13
##  [9] stringi_1.1.5   rmarkdown_1.6   knitr_1.16      stringr_1.2.0
## [13] digest_0.6.12   evaluate_0.10.1
```