

Sai_Omkar_Kandukuri_PS3

R Markdown

This is an R Markdown document. Markdown is a simple formatting syntax for authoring HTML, PDF, and MS Word documents. For more details on using R Markdown see <http://rmarkdown.rstudio.com>.

When you click the **Knit** button a document will be generated that includes both content as well as the output of any embedded R code chunks within the document. You can embed an R code chunk like this:

```
library(tidyverse)
set.seed(11182021)
grid <- expand.grid(x=c(1,2,3),y=c(1,2,3,4))
sample <- mutate(grid,p = c(0.15,0.05,0.05,0.05,0.05,0.05,0.05,0.05,0.1,0.05,0.25,0.1))

#sample_50n <- sample_n(sample,size = 50, replace = TRUE, weight = sample$p)
sample50n <- sample_n(sample,size = 50, replace = TRUE, weight = sample$p)

sample50n %>% summarise(mean(x), var(x), mean(y), var(y), cov(x,y))
```

```
##   mean(x)    var(x) mean(y)    var(y) cov(x, y)
## 1      2.1 0.6632653      2.88 1.209796 0.2367347
```

```
grid <- expand.grid(x=c(1,2,3),y=c(1,2,3,4))
sample <- mutate(grid,p = c(0.15,0.05,0.05,0.05,0.05,0.05,0.05,0.05,0.1,0.05,0.25,0.1))

sample500n <- sample_n(sample,size = 500, replace = TRUE, weight = sample$p)

sample500n %>% summarise(mean(x), var(x), mean(y), var(y), cov(x,y))
```

```
##   mean(x)    var(x) mean(y)    var(y) cov(x, y)
## 1      2.022 0.6067295      2.726 1.533992 0.232493
```

```
grid <- expand.grid(x=c(1,2,3),y=c(1,2,3,4))
sample <- mutate(grid,p = c(0.15,0.05,0.05,0.05,0.05,0.05,0.05,0.05,0.1,0.05,0.25,0.1))

sample10000n <- sample_n(sample,size = 10000, replace = TRUE, weight = sample$p)

sample10000n %>% summarise(mean(x), var(x), mean(y), var(y), cov(x,y))
```

```
##   mean(x)    var(x) mean(y)    var(y) cov(x, y)
## 1      2.0044 0.6020408      2.7472 1.484441 0.236836
```

#Mean, Variance, covariance gets fine tuned and closer to calculated values as we increase the sample size