

```
# TEKNIK PENGAMBILAN SAMPEL
```

```
## Simple Random Sampling
```

```
### ---4.14---
```

```
` `{r}
```

```
n1=30
```

```
N1=300
```

```
sigma_yi_1=25
```

```
p1=sigma_yi_1/n1
```

```
q1=1-p1
```

```
B1=2*sqrt((1-n1/N1)*(p1*q1/(n1-1)))
```

```
p1
```

```
B1
```

```
` `
```

```
### ---4.19---
```

```
` `{r}
```

```
cavities=c(0,4,2,3,2,0,3,4,1,1)
```

```
n2=length(cavities)
```

```
N2=1000
```

```
sigma_yi_2=sum(cavities)
```

```
miu2=sigma_yi_2/n2
```

```
sigma2_2=var(cavities)
```

```
B2=2*sqrt((1-n2/N2)*sigma2_2/n2)
```

```
miu2
```

```
B2
```

```
` `
```

```
### ---4.25---
```

```
` `{r}
```

```
N3=621
```

```
n3=60
```

```
sigma_yi_3=11
```

```
#-----
```

```
p3=sigma_yi_3/n3
```

```
q3=1-p3
```

```
B3=2*sqrt((1-n3/N3)*(p3*q3/(n3-1)))
```

```
#-----
```

```
p3
```

```
B3
```

```
` `
```

```
### ---4.26---
```

```
` `{r}
```

```
B4=0.08
```

```
p4=0.2
```

```
N4=N3
```

```
#-----
```

```
q4=1-p4
```

```
D4=B4^2/4
```

```
n4=(N4*p4*q4)/((N4-1)*D4+p4*q4)
```

```
#-----
```

```
n4
```

```
n4_int=ceiling(n4)
```

```
n4_int
```

```
` `
```

```
## Systematic Sampling
```

```
### ---7.4---
```

```

```{r}
n1=200
N1=2000
sigma_yi_1=132

p1=sigma_yi_1/n1
q1=1-p1
B1=2*sqrt((1-n1/N1)*(p1*q1/(n1-1)))

p1
B1
```

### ---7.5---
```{r}
N2=N1
sigma_yi_2=sigma_yi_1
B2=0.01
p2=p1
#-----
q2=1-p2
D2=B2^2/4
n2=(N2*p2*q2)/((N2-1)*D2+p2*q2)
#-----
n2
n2_int=ceiling(n2)
n2_int
```

### ---7.6---
```{r}
# Create the vector
Amount_of_fill <- c(12.00, 11.91, 11.87, 12.05, 11.75, 11.85, 11.97, 11.98, 12.01, 11.87,
11.93, 11.98, 12.01, 12.03, 11.98, 11.91, 11.95, 11.87, 12.03, 11.98, 11.87, 11.93, 11.97,
12.05, 12.01, 12.00, 11.90, 11.94, 11.93, 12.02, 11.80, 11.83, 11.88, 11.89, 12.05, 12.04)

yi_3 = data.frame(Amount_of_fill)
N3=1800
n3=36
sigma_yi_3=sum(yi_3)
#-----
miu3=sigma_yi_3/n3
var_3=var(yi_3)
B3=2*sqrt((1-n3/N3)*var_3/n3)
#-----
miu3
B3
```

## Stratified Sampling

### ---5.1---
```{r}
N=c(65, 42, 93, 25)
N_Tot = sum(N)
n = c(14, 9, 21, 6)
delinquent = c(4, 2, 8, 1)

p=vector(,4)
Np =vector(,4)
sum_Np = 0

for ( i in 1 : 4){
  p[i]=delinquent[i]/n[i]
  Np [i]=N[i]*p[i]
  sum_Np=sum_Np+Np[i]
}
p_st=(1/N_Tot)*sum_Np

```

```

p
sum_Np
p_st

sum_pst = 0
pst=vector (,4)

for (i in 1:4){
  pst[i]=N[i]^2*(1-n[i]/N[i])*((p[i]*(1-p[i]))/(n[i]-1))
  sum_pst=sum_pst+pst[i]
}

V_pst=(1/N_Tot^2)*sum_pst
B=2*sqrt(V_pst)
B
``,`

### ---5.10---
```{r}
stratum1=c(97,42,25,105,27,45,53,67,125,92,86,43,59,21)
M1=86
m1=14
var1=var(stratum1)
stratum2=c(125,67,256,310,220,142,155,96,47,236,352,190)
M2=72
m2=12
var2=var(stratum2)
stratum3=c(142,310,495,320,196,256,440,510,396)
M3=52
m3=9
var3=var(stratum3)
stratum4=c(167,220,780,655,540)
M4=30
m4=5
var4=var(stratum4)

tau=M1*sum(stratum1)/m1+M2*sum(stratum2)/m2+M3*sum(stratum3)/m3+M4*sum(stratum4)/m4
V_Nybarst=M1^2*(1-m1/M1)*(var1/m1)+M2^2*(1-m2/M2)*(var2/m2)+M3^2*(1-m3/M3)*(var3/m3)+M4^2*(1-m4/M4)*(var4/m4)
V_Nybarst
B_=2*sqrt(V_Nybarst)
tau
B_
``,`

## Cluster Sampling

### ---8.2---
```{r}
m=c(3,7,11,9,2,12,14,3,5,9,8,6,3,2,1,4,12,6,5,8)
y=c(50,110,230,140,60,280,240,45,60,230,140,130,70,50,10,60,280,150,110,120)
n=20
N=96

sum_yi=sum(y)
sum_mi=sum(m)
y_bar=sum_yi/sum_mi
y_bar

mbar=mean(m)
yyi2=vector(,n)
sum_yyi2=0
for (i in 1:n){
  yyi2[i]=(y[i]-y_bar*m[i])^2
  sum_yyi2=sum_yyi2+yyi2[i]
}

```

```

}
sr2=1/(n-1)*sum_yyi2
V_ybar=(1-n/N)*(sr2/(n*mbar^2))
B=2*sqrt(V_ybar)
B
```

### ---8.3---
```{r}
M=N*mbar
tau=M*y_bar
tau
#-----
y_bart=mean(y)
var_t=var(y)
V_Nybart=N^2*(1-n/N)*var_t/n
B_=2*sqrt(V_Nybart)
B_
```

### ---8.14---
```{r}
#dont have the data M6-Exercise 8_14.txt bruh
```

### ---8.15---
```{r}
#same issue with the previous one hehe, check ppt
```

```