Suppose there are 8000 people in a town. Out of the 8000 people 800 are females. In that town 1600 people are employed. Out of those 1600 employed people, only 120 are female. From the contingency table, work out the followings.

a. Calculate relative risk.
b. odds of success for both the rows.
c. Calculate odds ratio.
d. Verify that, $\pi_i = \dfrac{\Omega\_i}{1+\Omega\_i}$ for i=1,2
e. Based on the value of θ, comment on association between the groups.
f. Verify that, odds ratio= relative risk x $\dfrac{1-\pi 2}{1-\pi 1}$

<u>Solution (for part a):</u>

employee_data <- data.frame(

  Sex = rep(c("Female", "Male"), 2),

  Status = c(rep("Employed", 2), rep("Unemployed", 2)),

  Count = c(800, 7200, 120, 1480)

)

```r
# Display the data frame

print(employee_data)


# Create a contingency table

contingency_table <- xtabs(Count ~ Sex + Status, data = employee_data)

print(contingency_table)


#part a
 pi<-c()
for(i in 1:2){
  pi[i]<-contingency_table[i,1]/sum(contingency_table[i,])
}


relative_risk <- pi[1]/pi[2]
```