group36

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R Markdown

```
library(fitdistrplus)

## Loading required package: MASS

## Loading required package: survival

library(magrittr)
```

Introduction

we divided this document into two parts : the first one analyzing the distribution for the couples, and the second one testing the couple's distribution.

##couples first comparing in this part we presenting the information for each distribution

```
dataset <- read.csv(file.choose(), header = T)
couples <- (dataset$X1)
normFit <- fitdist(couples,"norm")
summary(normFit)

## Fitting of the distribution ' norm ' by maximum likelihood
## Parameters :
##      estimate Std. Error
## mean 1.828472  0.2647336
## sd   1.834128  0.1871947
## Loglikelihood:  -97.22438   AIC:  198.4488   BIC:  202.1912
## Correlation matrix:
##      mean sd
## mean    1  0
## sd      0  1

expFit <- fitdist(couples,"exp")
summary(expFit)

## Fitting of the distribution ' exp ' by maximum likelihood
## Parameters :
##       estimate Std. Error
## rate 0.5469047 0.07893863
## Loglikelihood:  -76.96708   AIC:  155.9342   BIC:  157.8054
```

families first comparing

in this part we presenting the information for each distribution

```
families <- (dataset$X2)
print(families)
```

```
##  [1] 1.45000000 0.82000000 0.33333333 3.58333333 0.08333333
1.11666667
##  [7] 2.50000000 1.15000000 0.95000000 3.70000000 0.81666667
1.30000000
## [13] 0.53333333 0.33333333 1.36666667 0.15000000 0.78333333
0.46666667
## [19] 3.20000000 0.08333333 0.48333333 0.55000000 0.33333333
0.46666667
## [25] 1.23333333 0.50000000 3.63333333 0.35000000 0.41666667
0.66666667
## [31] 0.90000000 0.15000000 0.23333333 1.73333333 0.71666667
0.68333333
## [37] 0.45000000 0.16666667 2.08333333 1.40000000 0.75000000
5.11666667
## [43] 0.48333333 6.18333333 2.25000000 2.20000000 0.80000000
0.56666667
```

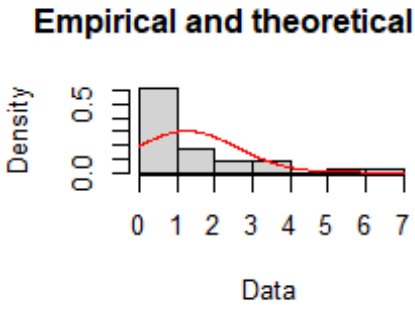
```
expFit <- fitdist(families,"exp")
normFit<-fitdist(families,"norm") # fitting a normal distrbution
summary(normFit)
```

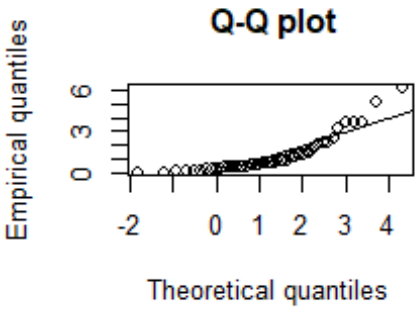
```
## Fitting of the distribution ' norm ' by maximum likelihood
## Parameters :
##      estimate Std. Error
## mean 1.254583  0.1902223
## sd   1.317899  0.1345072
## Loglikelihood:  -81.35891   AIC:  166.7178   BIC:  170.4602
## Correlation matrix:
##      mean sd
## mean    1  0
## sd      0  1
```

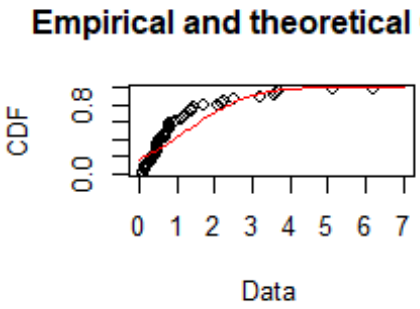
```
summary(expFit)
```

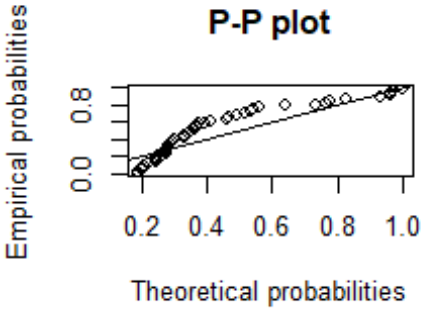
```
## Fitting of the distribution ' exp ' by maximum likelihood
## Parameters :
##       estimate Std. Error
## rate 0.7970774   0.115048
## Loglikelihood:  -58.88657   AIC:  119.7731   BIC:  121.6443
```

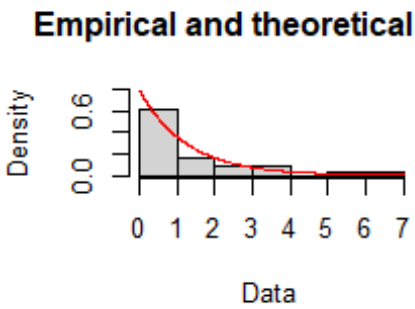
##Comparing Plots this section will show us which distribution is the correct one according to Q-Q and P-P plots, among distribution lines combined with theoretical data :

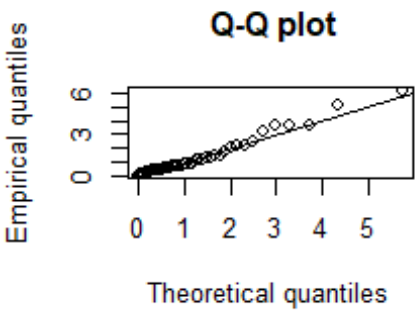

Empirical and theoretical den
Density
0.0
0.5
0 1 2 3 4 5 6 7
Data

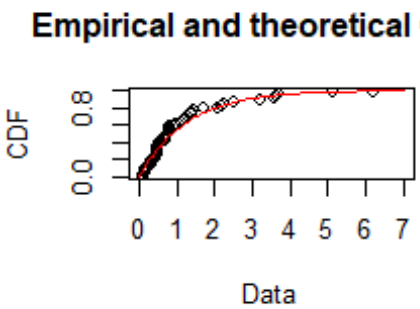

Q-Q plot
Empirical quantiles
0
3
6
-2 0 1 2 3 4
Theoretical quantiles

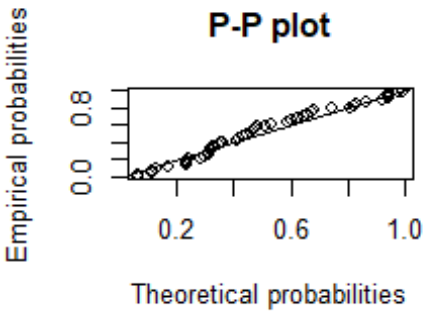

Empirical and theoretical CDF
CDF
0.0
0.8
0 1 2 3 4 5 6 7
Data

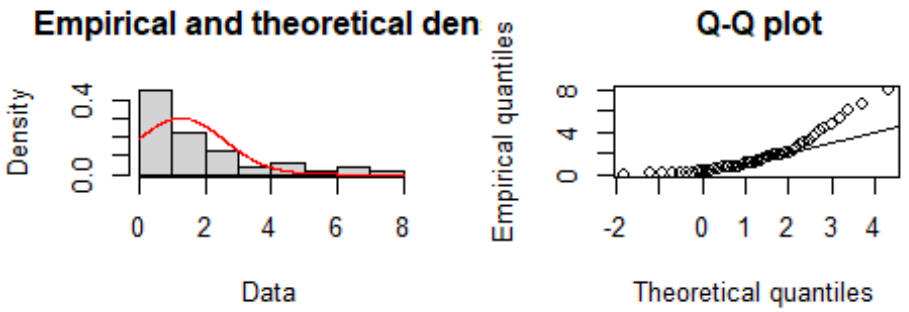

P-P plot
Empirical probabilities
0.0
0.8
0.2 0.4 0.6 0.8 1.0
Theoretical probabilities

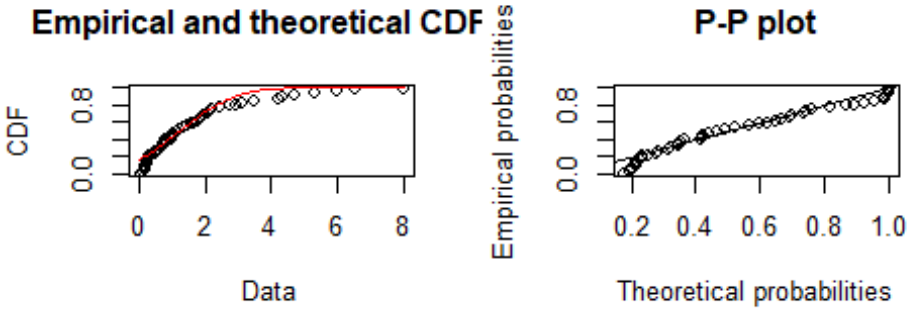

Empirical and theoretical den
Density
0.0
0.6
0 1 2 3 4 5 6 7
Data

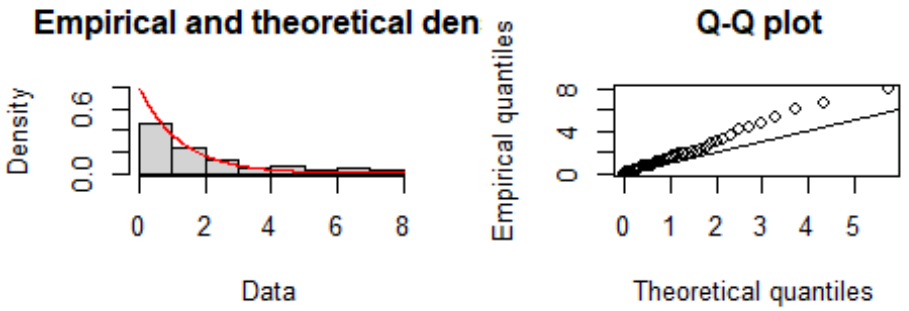

Q-Q plot
Empirical quantiles
0
3
6
0 1 2 3 4 5
Theoretical quantiles

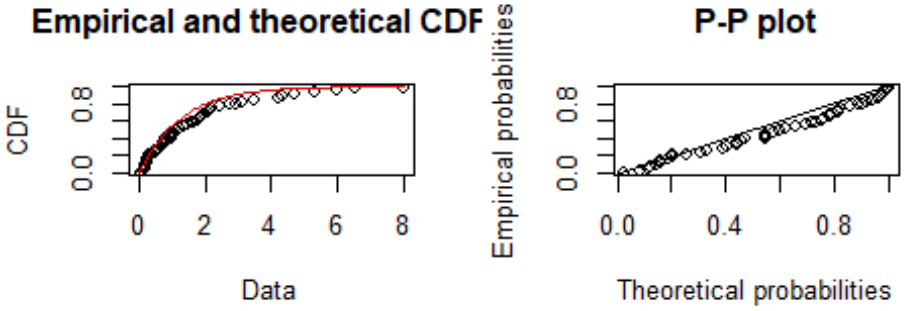

Empirical and theoretical CDF
CDF
0.0
0.8
0 1 2 3 4 5 6 7
Data


P-P plot
Empirical probabilities
0.0
0.8
0.2 0.6 1.0
Theoretical probabilities









##combined compairing Plots this section combine both lists in one table for better view and compare:

```
par(mfrow=c(2,2)) # manually define a 2X2 graph window
legendText<-c("exp","norm") # define legend text
denscomp(list(expFit,normFit),legendtext=legendText) #
qqcomp(list(expFit,normFit),legendtext=legendText)  #
cdfcomp(list(expFit,normFit),legendtext=legendText) #
ppcomp(list(expFit,normFit),legendtext=legendText)
```