

# Assignment

[Code ▼](#)

*sn0wfree*

**12/16/2016**

- Import Data
- Find Topics
  - 1.Geography information
  - 2. Factors analysis:
  - total regression
- Geography information
  - Geography information-barplot or lineplot
  - Geography information-simpleplot
  - Geography information-boxplot
  - Geography information-t.test
- Factors analysis
  - Factors Analysis-Plot for Factors
  - Factors Analysis-Successful Rate|PovRate1
  - Factors Analysis-Successful Rate|Ginicoef
  - Factors Analysis-Successful Rate|Adanced Education

## Import Data

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```
crowdfunding<-read.csv( "forqrm.csv" ,header=1)
head(crowdfunding)
```

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```
library(lmtest)
```

```
Loading required package: zoo
```

```
Attaching package: 'zoo'
```

```
The following objects are masked from 'package:base':
```

```
as.Date, as.Date.numeric
```

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```
rownames(crowdfunding)<-crowdfunding$State
```

# Find Topics

## 1.Geography information

1. Geography information:found the significantly different by state/by region
- Amount

successfull rate within graphy/plot

## 2. Factors analysis:

2. factors:studying the relationship between Successful Rate and other factors:
- Higher Eduction:pAdDeg;

Ginicoeff

average\_pledged\_amount\_of\_Grand.Total

## total regression

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```
summary(lm(crowdfunding$successful.rate~crowdfunding$GiniCoeff))#significant:0.00398
```

Call:

lm(formula = crowdfunding\$successful.rate ~ crowdfunding\$GiniCoeff)

Residuals:

| Min       | 1Q        | Median    | 3Q       | Max      |
|-----------|-----------|-----------|----------|----------|
| -0.197648 | -0.054730 | -0.003818 | 0.055170 | 0.201729 |

Coefficients:

|                         | Estimate | Std. Error | t value | Pr(> t )   |
|-------------------------|----------|------------|---------|------------|
| (Intercept)             | -0.5417  | 0.2993     | -1.810  | 0.07655 .  |
| crowdfunding\$GiniCoeff | 2.0008   | 0.6613     | 3.026   | 0.00398 ** |

---

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.08254 on 48 degrees of freedom

Multiple R-squared: 0.1602, Adjusted R-squared: 0.1427

F-statistic: 9.154 on 1 and 48 DF, p-value: 0.003981

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```
summary(lm(crowdfunding$successful.rate~crowdfunding$PovRate1))#0.231
```

```
Call:
lm(formula = crowdfunding$successful.rate ~ crowdfunding$PovRate1)
```

```
Residuals:
      Min       1Q   Median       3Q      Max
-0.225537 -0.045025 -0.004279  0.048042  0.198351
```

```
Coefficients:
              Estimate Std. Error t value Pr(>|t|)
(Intercept)      0.28895    0.06241   4.630 2.81e-05 ***
crowdfunding$PovRate1 0.50069    0.41300   1.212   0.231
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
Residual standard error: 0.08872 on 48 degrees of freedom
Multiple R-squared:  0.02971,    Adjusted R-squared:  0.009496
F-statistic: 1.47 on 1 and 48 DF,  p-value: 0.2313
```

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```
summary(lm(crowdfunding$successful.rate~crowdfunding$Densitym2))# 0.109
```

```
Call:
lm(formula = crowdfunding$successful.rate ~ crowdfunding$Densitym2)
```

```
Residuals:
      Min       1Q   Median       3Q      Max
-0.224584 -0.061843  0.002916  0.046978  0.195381
```

```
Coefficients:
              Estimate Std. Error t value Pr(>|t|)
(Intercept)    3.477e-01  1.556e-02  22.339  <2e-16 ***
crowdfunding$Densitym2 7.821e-05  4.793e-05   1.632   0.109
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
Residual standard error: 0.08767 on 48 degrees of freedom
Multiple R-squared:  0.05255,    Adjusted R-squared:  0.03281
F-statistic: 2.662 on 1 and 48 DF,  p-value: 0.1093
```

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```
summary(lm(crowdfunding$successful.rate~crowdfunding$pHigh))#bad:0.2320
```

```
Call:
lm(formula = crowdfunding$successful.rate ~ crowdfunding$pHigh)
```

```
Residuals:
      Min       1Q   Median       3Q      Max
-0.225211 -0.041414 -0.003402  0.046713  0.203517
```

```
Coefficients:
              Estimate Std. Error t value Pr(>|t|)
(Intercept)      0.7499     0.3198   2.345  0.0232 *
crowdfunding$pHigh -0.4451     0.3677  -1.211  0.2320
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
Residual standard error: 0.08872 on 48 degrees of freedom
Multiple R-squared:  0.02963,    Adjusted R-squared:  0.00941
F-statistic: 1.465 on 1 and 48 DF,  p-value: 0.232
```

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```
summary(lm(crowdfunding$successful.rate~crowdfunding$pBatDeg))#low:0.05511
```

```
Call:
lm(formula = crowdfunding$successful.rate ~ crowdfunding$pBatDeg)
```

```
Residuals:
      Min       1Q   Median       3Q      Max
-0.23906 -0.06503  0.01415  0.05343  0.16307
```

```
Coefficients:
              Estimate Std. Error t value Pr(>|t|)
(Intercept)      0.22503     0.07128   3.157  0.00275 **
crowdfunding$pBatDeg 0.50740     0.25810   1.966  0.05511 .
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
Residual standard error: 0.08665 on 48 degrees of freedom
Multiple R-squared:  0.07451,    Adjusted R-squared:  0.05523
F-statistic: 3.865 on 1 and 48 DF,  p-value: 0.05511
```

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```
summary(lm(crowdfunding$successful.rate~crowdfunding$pAdDeg))#significant:0.00501
```

```
Call:
lm(formula = crowdfunding$successful.rate ~ crowdfunding$pAdDeg)
```

```
Residuals:
      Min       1Q   Median       3Q      Max
-0.22412 -0.06718  0.01152  0.04708  0.15306
```

```
Coefficients:
              Estimate Std. Error t value Pr(>|t|)
(Intercept)    0.22570    0.04815   4.688 2.31e-05 ***
crowdfunding$pAdDeg 1.40251    0.47679   2.942  0.00501 **
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
Residual standard error: 0.0829 on 48 degrees of freedom
Multiple R-squared:  0.1527,    Adjusted R-squared:  0.1351
F-statistic: 8.653 on 1 and 48 DF,  p-value: 0.005015
```

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```
summary(lm(crowdfunding$successful.rate~log(crowdfunding$average_of_goal_Grand.Total)))#bad:0.687
```

```
Call:
lm(formula = crowdfunding$successful.rate ~ log(crowdfunding$average_of_goal_Grand.Total))
```

```
Residuals:
      Min       1Q   Median       3Q      Max
-0.238246 -0.054736 -0.000484  0.048484  0.180450
```

```
Coefficients:
              Estimate Std. Error t value Pr(>|t|)
(Intercept)    0.25937    0.25576   1.014   0.316
log(crowdfunding$average_of_goal_Grand.Total)  0.01173    0.02889   0.406   0.687
```

```
Residual standard error: 0.08991 on 48 degrees of freedom
Multiple R-squared:  0.003421,    Adjusted R-squared:  -0.01734
F-statistic: 0.1648 on 1 and 48 DF,  p-value: 0.6866
```

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```
summary(lm(crowdfunding$successful.rate~log(crowdfunding$average_pledged_amount_of_Grand.Total)))#3.32e-06
```

```
Call:
lm(formula = crowdfunding$successful.rate ~ log(crowdfunding$average_pledged_amount_of_Grand.Total))

Residuals:
    Min       1Q   Median       3Q      Max
-0.189630 -0.044692 -0.007067  0.038298  0.192130

Coefficients:
                                Estimate Std. Error t value Pr(>|t|)
(Intercept)                -0.51646     0.16756   -3.08    0.0034 **
log(crowdfunding$average_pledged_amount_of_Grand.Total)  0.11471     0.02181    5.25    3.32e-06 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.07174 on 48 degrees of freedom
Multiple R-squared:  0.3655,    Adjusted R-squared:  0.3523
F-statistic: 27.65 on 1 and 48 DF,  p-value: 3.322e-06
```

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```
summary(lm(crowdfunding$GiniCoeff~crowdfunding$pAdDeg))#significant:0.0353
```

```
Call:
lm(formula = crowdfunding$GiniCoeff ~ crowdfunding$pAdDeg)

Residuals:
    Min       1Q   Median       3Q      Max
-0.031714 -0.014215  0.001214  0.013231  0.037791

Coefficients:
                                Estimate Std. Error t value Pr(>|t|)
(Intercept)                0.431222     0.009986  43.184    <2e-16 ***
crowdfunding$pAdDeg  0.214191     0.098889   2.166    0.0353 *
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.01719 on 48 degrees of freedom
Multiple R-squared:  0.08904,    Adjusted R-squared:  0.07006
F-statistic: 4.691 on 1 and 48 DF,  p-value: 0.03531
```

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```
summary(lm(lm(crowdfunding$successful.rate~crowdfunding$GiniCoeff)$residuals~crowd
funding$pAdDeg))#residuals ~ ADdeg:0.0368
```

```
Call:
lm(formula = lm(crowdfunding$successful.rate ~ crowdfunding$GiniCoeff)$residuals ~
  crowdfunding$pAdDeg)

Residuals:
      Min       1Q   Median       3Q      Max
-0.187967 -0.048021 -0.005676  0.052160  0.167582

Coefficients:
              Estimate Std. Error t value Pr(>|t|)
(Intercept)   -0.09539    0.04578   -2.083   0.0426 *
crowdfunding$pAdDeg  0.97396    0.45341    2.148   0.0368 *
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.07884 on 48 degrees of freedom
Multiple R-squared:  0.0877,    Adjusted R-squared:  0.06869
F-statistic: 4.614 on 1 and 48 DF,  p-value: 0.03678
```

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```
summary(lm(log(crowdfunding$average_pledged_amount_of_Grand.Total)~crowdfunding$Gi
niCoeff))#0.02357
```

```
Call:
lm(formula = log(crowdfunding$average_pledged_amount_of_Grand.Total) ~
  crowdfunding$GiniCoeff)

Residuals:
      Min       1Q   Median       3Q      Max
-1.2903 -0.2256  0.0348  0.2210  1.1218

Coefficients:
              Estimate Std. Error t value Pr(>|t|)
(Intercept)     3.856     1.631    2.365   0.0221 *
crowdfunding$GiniCoeff  8.427     3.604    2.339   0.0236 *
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.4498 on 48 degrees of freedom
Multiple R-squared:  0.1023,    Adjusted R-squared:  0.08358
F-statistic: 5.469 on 1 and 48 DF,  p-value: 0.02357
```

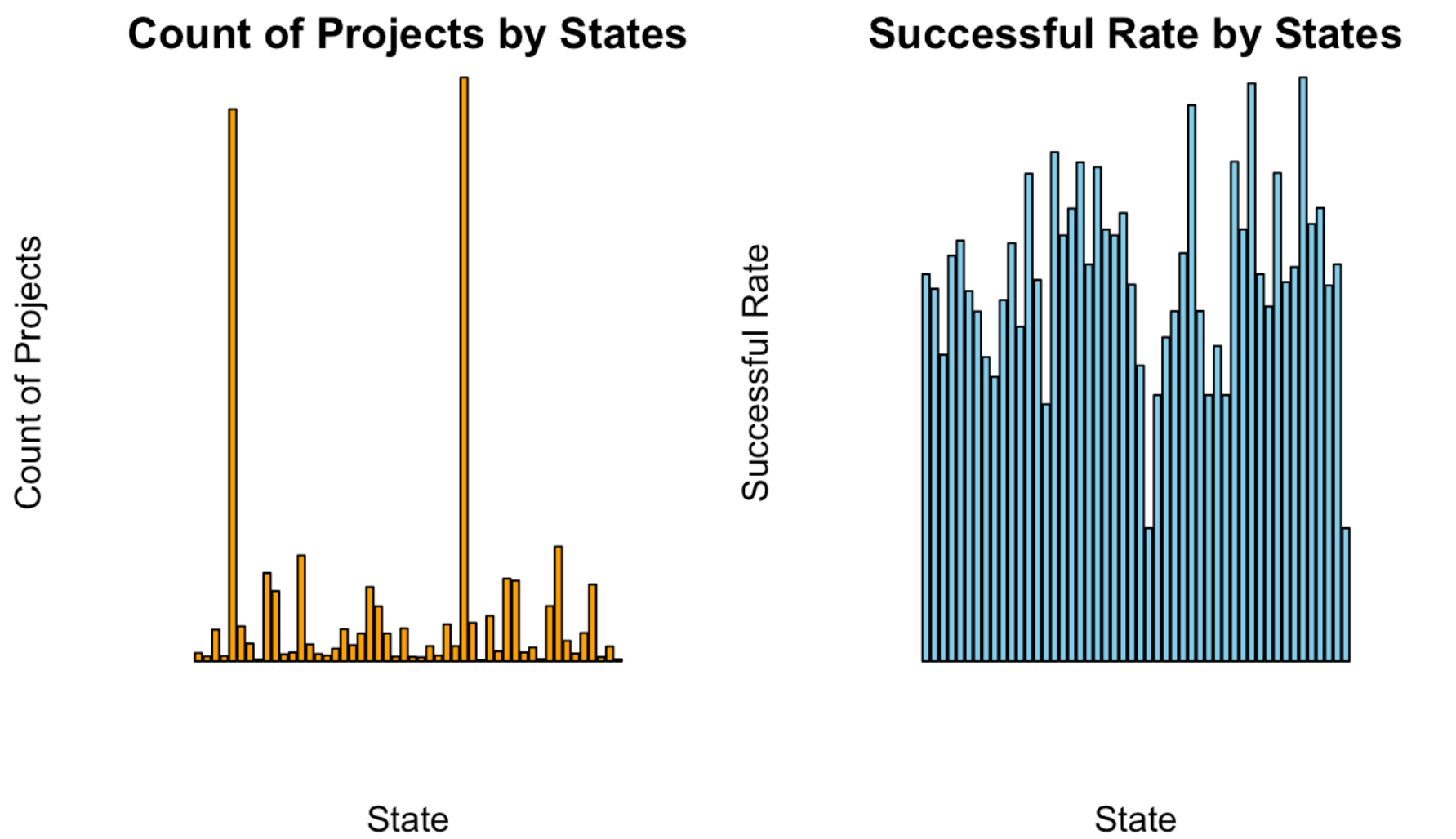
# Geography information

## Geography information-barplot or lineplot

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```
par(mfrow=c(1,2) )
#barplot(crowdfunding$count_of_Grand.Total,names.arg = crowdfunding$State,col="sky
blue")
barplot(crowdfunding$count_of_Grand.Total,col="orange",axes = 0,xlab = "State",,yl
ab="Count of Projects",main="Count of Projects by States")
barplot(crowdfunding$successful.rate,col="skyblue",axes  = 0,xlab = "State",main="
Successful Rate by States",ylab="Successful Rate")
```



## Geography information-simpleplot

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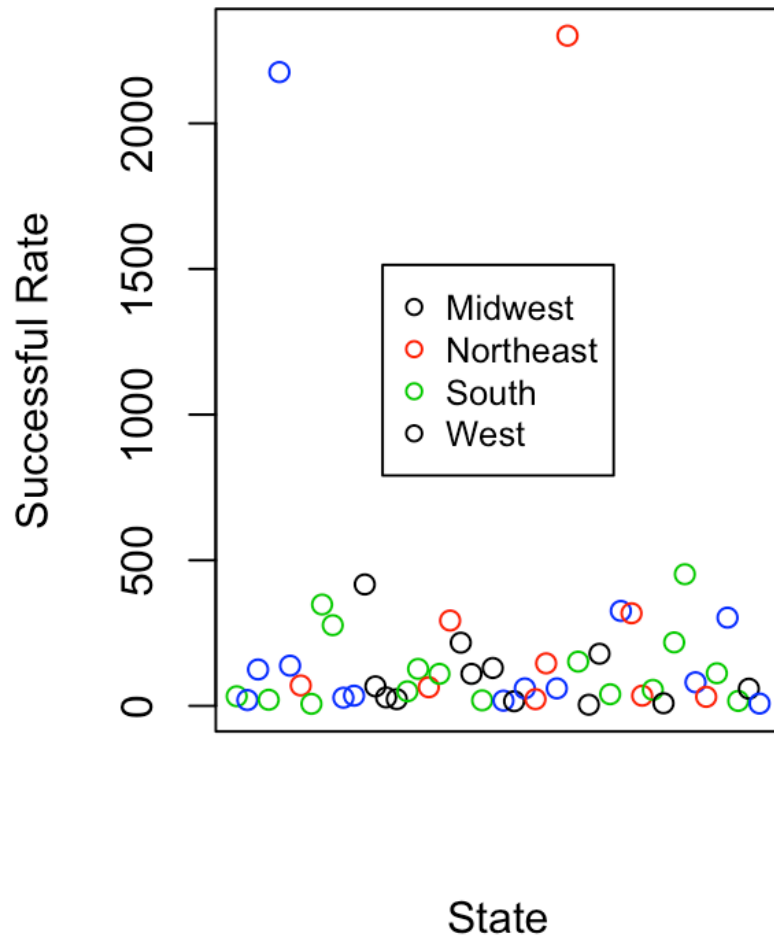
```
par(mfrow=c(1,2) )
#count_of_Grand.Total
plot(crowdfunding$count_of_Grand.Total,col=crowdfunding$Region, main="Count of Pro
ject Plot",ylab="Successful Rate",xaxt="n",xlab="State")
#axis(side=1,at=c(1,2,3,4,5,6,7,8),labels=c(crowdfunding$State))
legend("center",legend = levels(crowdfunding$Region),cex = 0.8, pch = 1,col=1:3)
```

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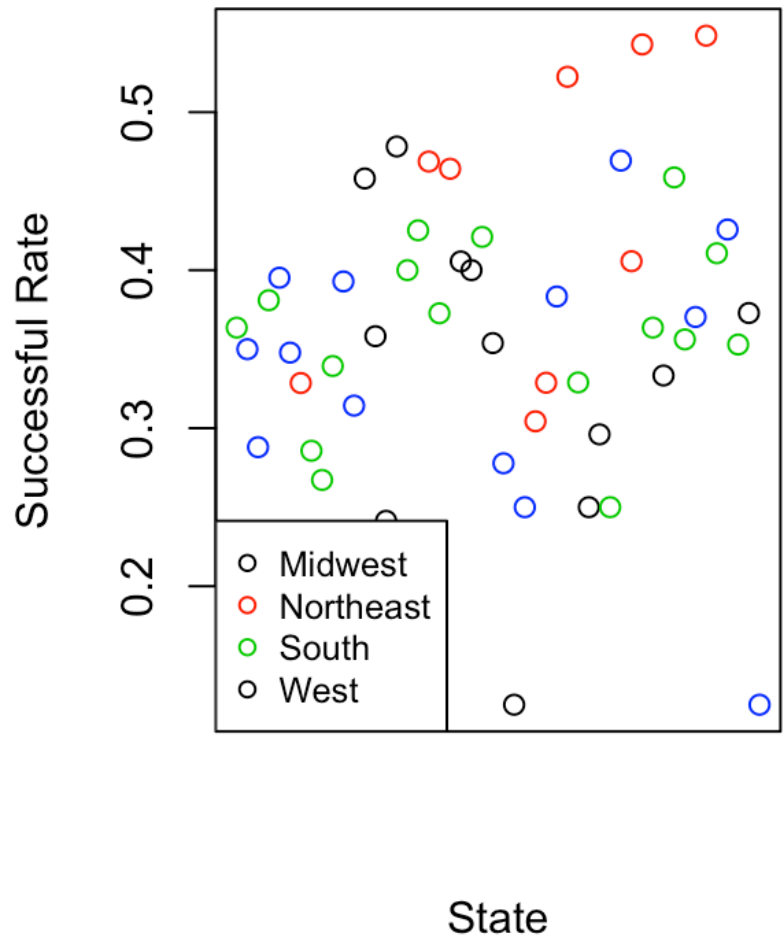


```
#successful.rate
plot(crowdfunding$successful.rate,col=crowdfunding$Region, main="Successful Rate P
lot",ylab="Successful Rate",xaxt="n",xlab="State")
#axis(side=1,at=c(1,2,3,4,5,6,7,8),labels=c(crowdfunding$State))
legend("bottomleft",legend = levels(crowdfunding$Region),cex = 0.8, pch = 1,col=1:
3)
```

### Count of Project Plot



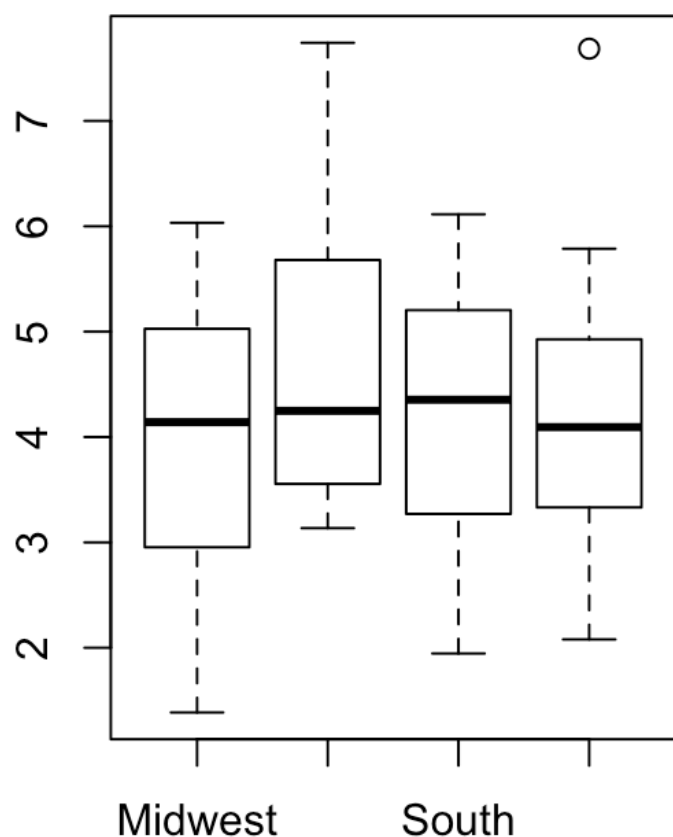
### Successful Rate Plot



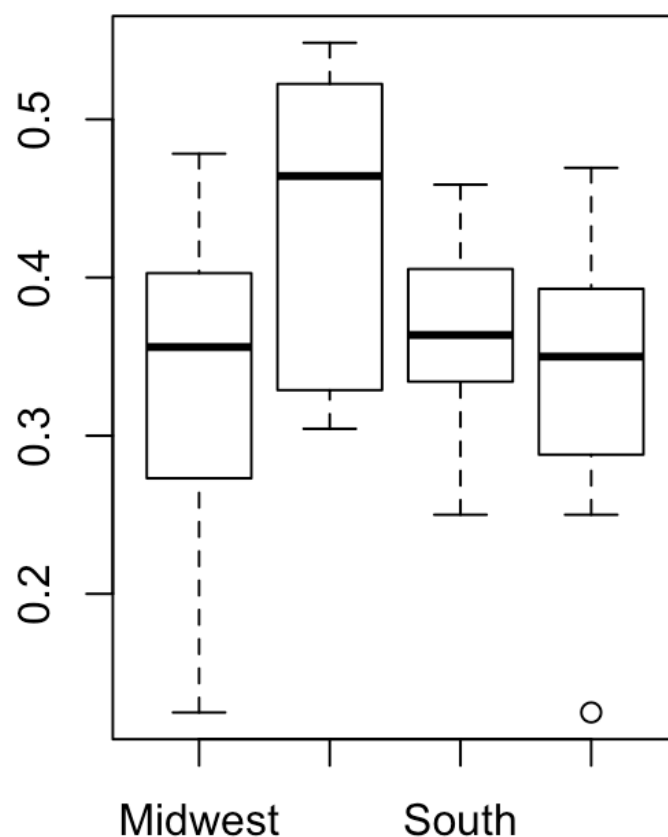
## Geography information-boxplot

```
par(mfrow=c(1,2))
#Boxplot for successful.rate and count_of_Grand.Total
#count_of_Grand.Total
boxplot(log(crowdfunding$count_of_Grand.Total[crowdfunding$Region=="Midwest"]),log
(crowdfunding$count_of_Grand.Total[crowdfunding$Region=="Northeast"]),log(crowdfun
ding$count_of_Grand.Total[crowdfunding$Region=="South"]),log(crowdfunding$count_of
_Grand.Total[crowdfunding$Region=="West"]),names=levels(crowdfunding$Region),main=
"Count of Projects BoxPlot by Region")
#successful.rate
boxplot(crowdfunding$successful.rate[crowdfunding$Region=="Midwest"],crowdfunding$
successful.rate[crowdfunding$Region=="Northeast"],crowdfunding$successful.rate[cro
wdfunding$Region=="South"],crowdfunding$successful.rate[crowdfunding$Region=="West
"],names=levels(crowdfunding$Region),main="Successful Rate BoxPlot by Region")
```

## Count of Projects BoxPlot by Region



## Successful Rate BoxPlot by Region



## Geography information-t.test

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```
#t.test(crowdfunding$successful.rate[crowdfunding$Region=="West"],crowdfunding$successful.rate[crowdfunding$Region=="Northeast"])
#t.test(crowdfunding$count_of_Grand.Total[crowdfunding$Region=="West"],crowdfunding$count_of_Grand.Total[crowdfunding$Region=="Northeast"])
#calcuale P Value in the t.test of Successful Rate by Region
p=NULL
temp<-NULL
for (location1 in c(levels(crowdfunding$Region))){
  for (location2 in c(levels(crowdfunding$Region))){
    if (1){
      temp<-t.test(crowdfunding$successful.rate[crowdfunding$Region==location1],crowdfunding$successful.rate[crowdfunding$Region==location2])
      if(temp$p.value<=0.1){
        #print(c(location1,location2,temp$p.value))
      }
      p<-c(p,temp$p.value)}}
SR.t.test.p.vlaue<-as.data.frame(matrix(p,4,4),row.names = c(levels(crowdfunding$Region)))
colnames(SR.t.test.p.vlaue)<-c(levels(crowdfunding$Region))
print("Successful Rate by Region")
```

```
[1] "Successful Rate by Region"
```

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```
SR.t.test.p.vlaue
```

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```
#-----  
#calcualte P Value in the t.test of Count of projects by Region  
p=NULL  
temp<-NULL  
for (location1 in c(levels(crowdfunding$Region))){  
  for (location2 in c(levels(crowdfunding$Region))){  
    if (1){  
      temp<-t.test(log(crowdfunding$count_of_Grand.Total[crowdfunding$Region==location1]),log(crowdfunding$count_of_Grand.Total[crowdfunding$Region==location2]))  
      if(temp$p.value<=0.1){  
        #print(c(location1,location2,temp$p.value))  
      }  
      p<-c(p,temp$p.value)}}}  
CP.t.test.p.vlaue<-as.data.frame(matrix(p,4,4),row.names = c(levels(crowdfunding$Region)))  
colnames(CP.t.test.p.vlaue)<-c(levels(crowdfunding$Region))  
print("Count of Projects by Region ")
```

```
[1] "Count of Projects by Region "
```

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```
CP.t.test.p.vlaue
```

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

## Factors analysis

This article is to analyse the factors to the crowdfunding successful rate. I guess the Education, the inequity of family income and the poverty rate may be related to the crowdfunding successful rate. and in the follow context, i will analyse the those factors.

Firstly, The Statistical Summary ### Factors Analysis-Statistical Summary

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```
library(moments)
summary(crowdfunding$successful.rate)
```

| Min.   | 1st Qu. | Median | Mean   | 3rd Qu. | Max.   |
|--------|---------|--------|--------|---------|--------|
| 0.1250 | 0.3179  | 0.3636 | 0.3631 | 0.4095  | 0.5484 |

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```
kurtosis(crowdfunding$successful.rate)
```

```
[1] 3.630147
```

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```
summary(crowdfunding$GiniCoeff)
```

| Min.   | 1st Qu. | Median | Mean   | 3rd Qu. | Max.   |
|--------|---------|--------|--------|---------|--------|
| 0.4190 | 0.4400  | 0.4530 | 0.4522 | 0.4658  | 0.4990 |

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```
kurtosis(crowdfunding$GiniCoeff)
```

```
[1] 2.552647
```

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```
summary(crowdfunding$pAdDeg)
```

| Min.    | 1st Qu. | Median  | Mean    | 3rd Qu. | Max.    |
|---------|---------|---------|---------|---------|---------|
| 0.06100 | 0.07950 | 0.09200 | 0.09794 | 0.11000 | 0.16400 |

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```
kurtosis(crowdfunding$pAdDeg)
```

```
[1] 3.382781
```

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```
summary(crowdfunding$PovRate1)
```

| Min.   | 1st Qu. | Median | Mean   | 3rd Qu. | Max.   |
|--------|---------|--------|--------|---------|--------|
| 0.0920 | 0.1212  | 0.1480 | 0.1480 | 0.1705  | 0.2190 |

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```
kurtosis(crowdfunding$PovRate1)
```

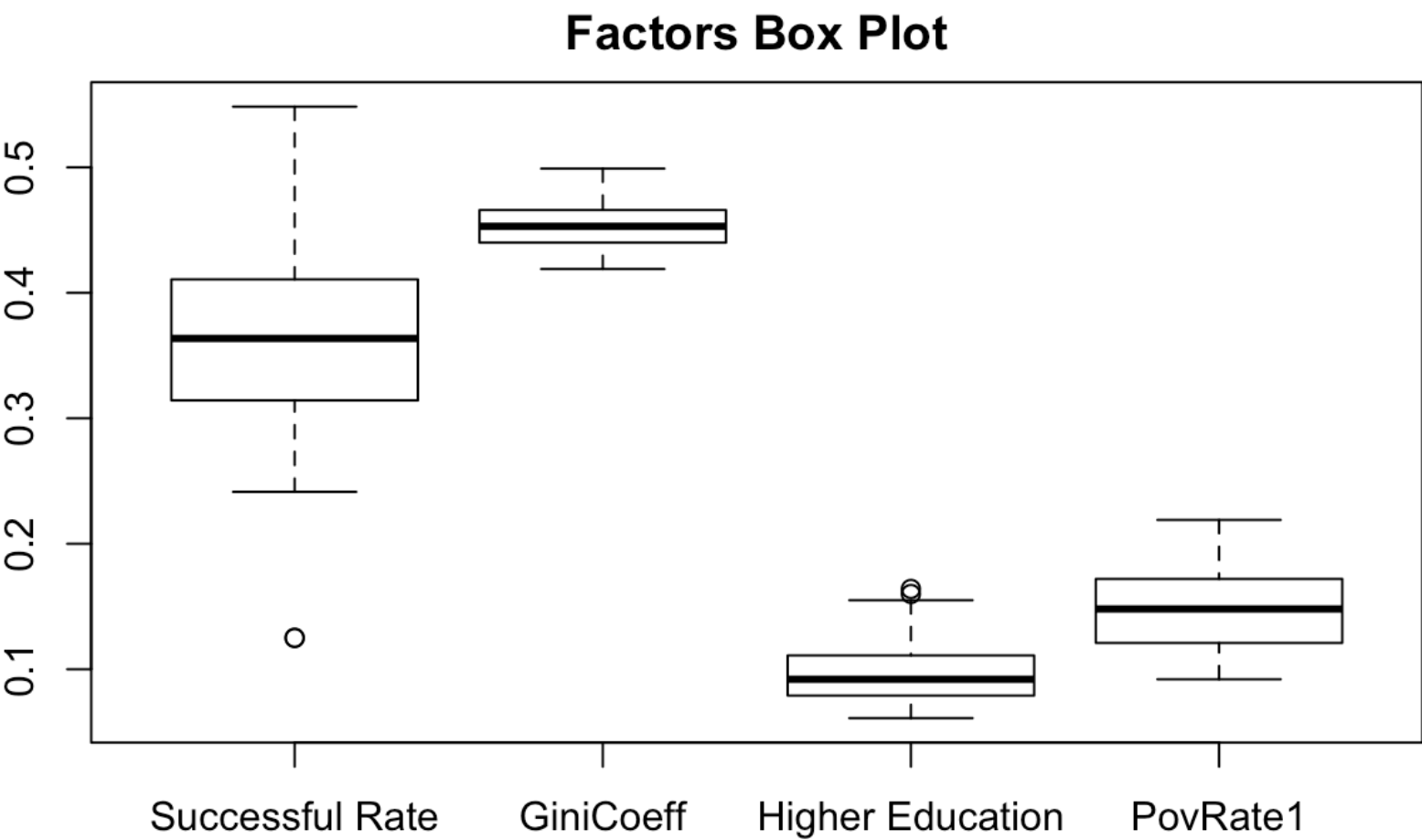
```
[1] 2.159154
```

## Factors Analysis-Plot for Factors

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```
boxplot(crowdfunding$successful.rate,crowdfunding$GiniCoeff,crowdfunding$pAdDeg,crowdfunding$PovRate1,names = c("Successful Rate","GiniCoeff","Higher Education","PovRate1"),main="Factors Box Plot")
par(mfrow=c(2,2))
```



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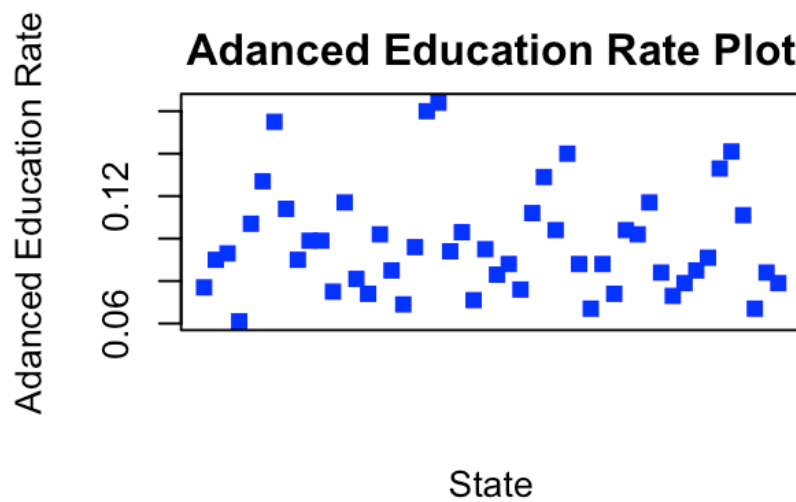
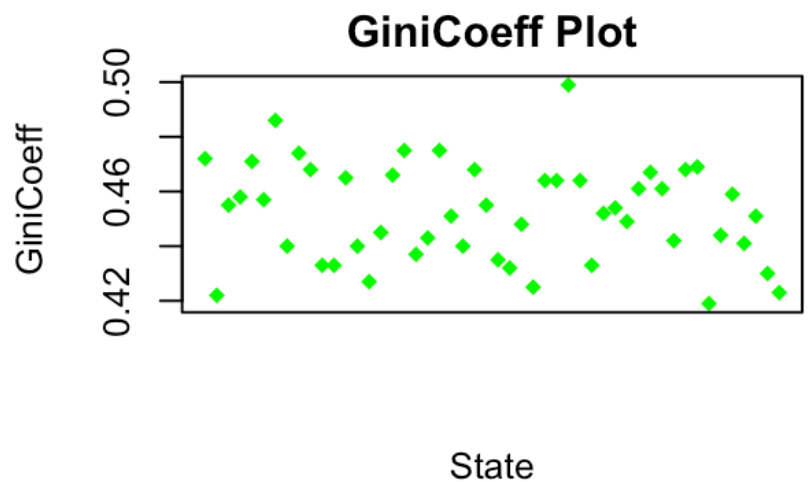
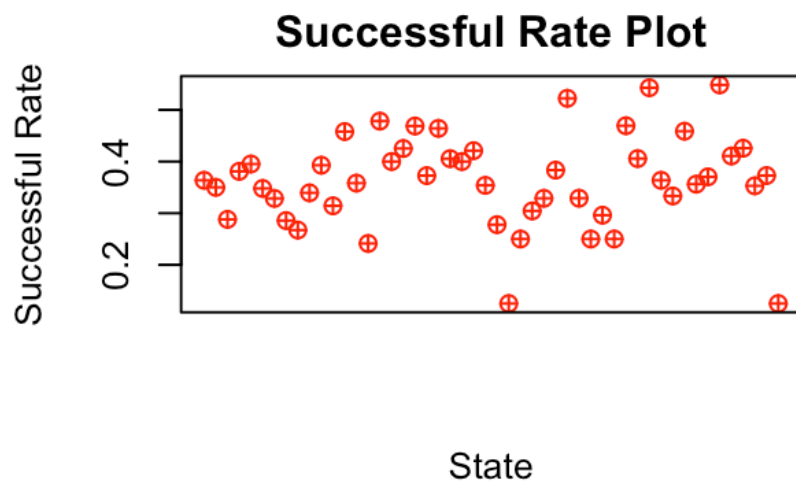
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```
plot(crowdfunding$successful.rate,col="red",pch=10,xlab="State",ylab="Successful Rate",xaxt="n",main="Successful Rate Plot")
plot(crowdfunding$GiniCoeff,col="green",pch=18,xlab="State",xaxt="n",ylab="GiniCoeff",xaxt="n",main="GiniCoeff Plot")
```

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```
plot(crowdfunding$pAdDeg,col="blue",pch=15,xlab="State",xaxt="n",ylab="Adanced Education Rate",xaxt="n",main="Adanced Education Rate Plot")
plot(crowdfunding$PovRate1,col="black",pch=16,xlab="State",xaxt="n",ylab="Poverty Rate",xaxt="n",main="Poverty Rate Plot")
```



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```
hc<-hclust(dist(crowdfunding),method = "ward.D", members = NULL)
```

NAs introduced by coercion

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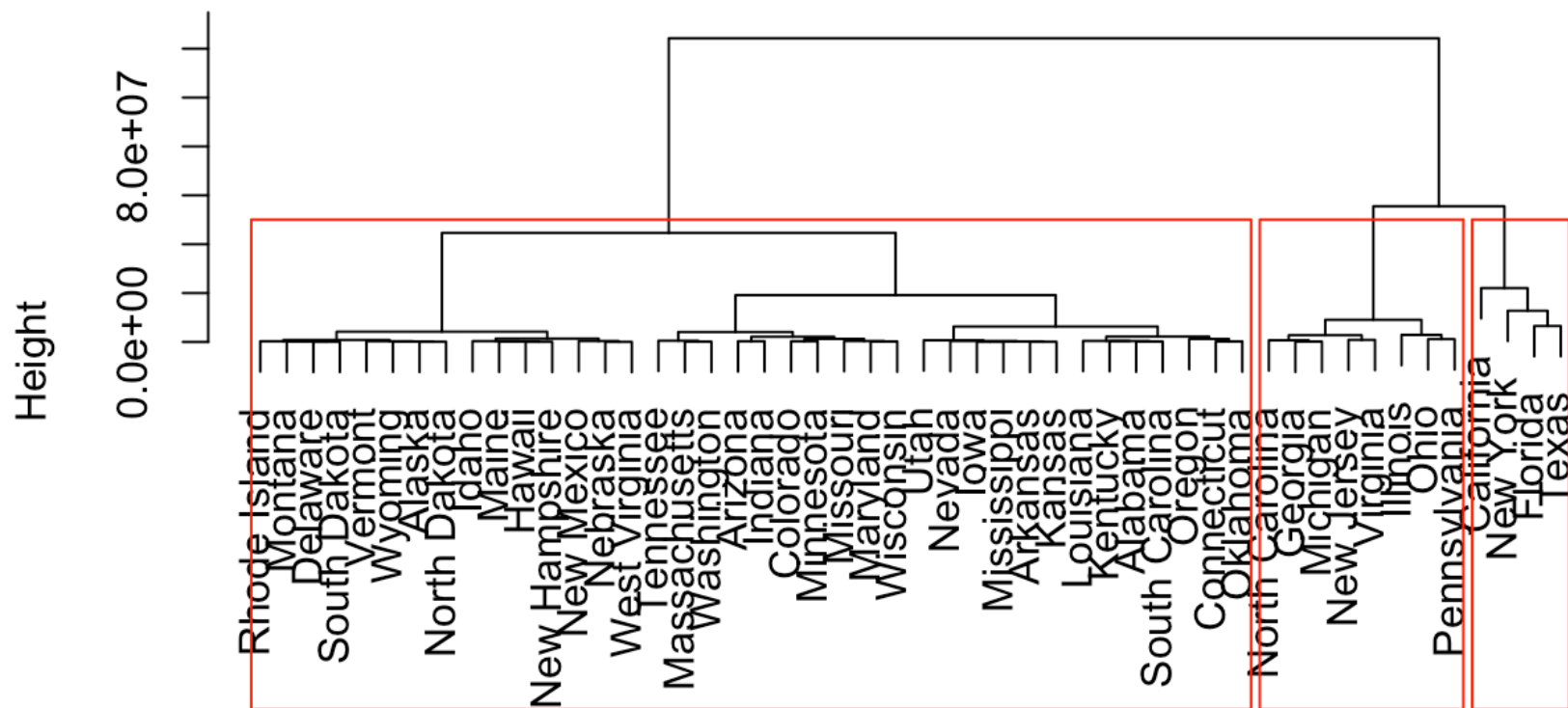
```
plclust(hc)
```

'plclust' is deprecated.  
Use 'plot' instead.  
See help("Deprecated")

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```
rect.hclust(hc,k=3)
```



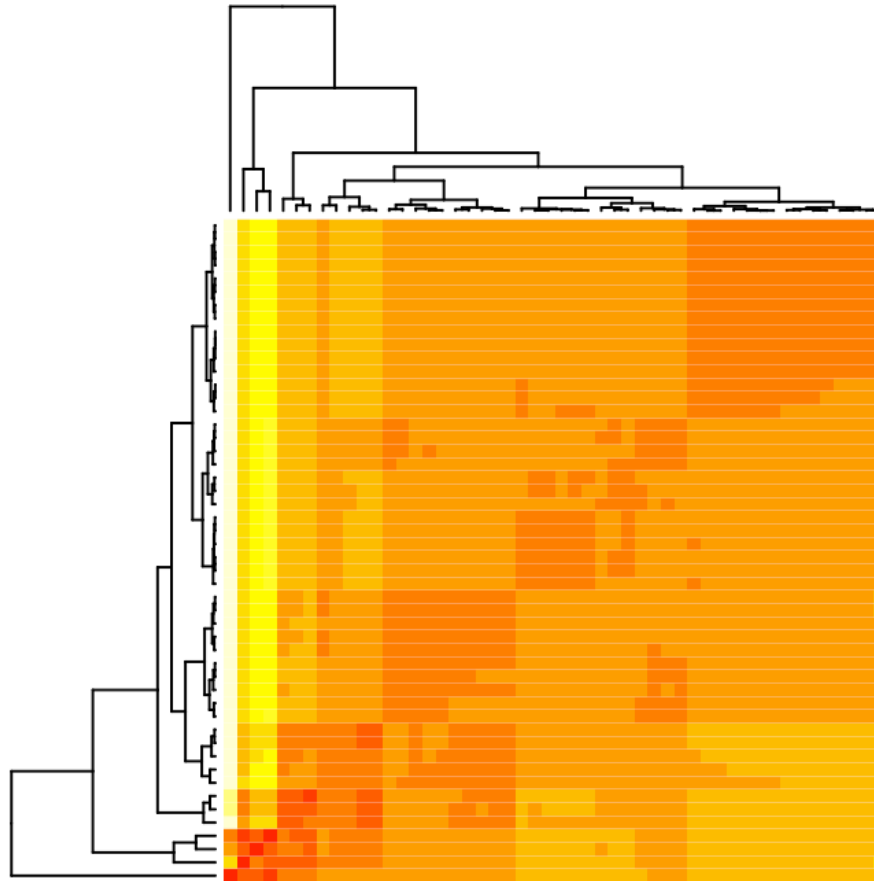
```
dist(crowdfunding)  
hclust (*, "ward.D")
```

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```
heatmap(as.matrix(dist(crowdfunding,method= 'euclidean')) ,labRow = F, labCol = F)
```

NAs introduced by coercion



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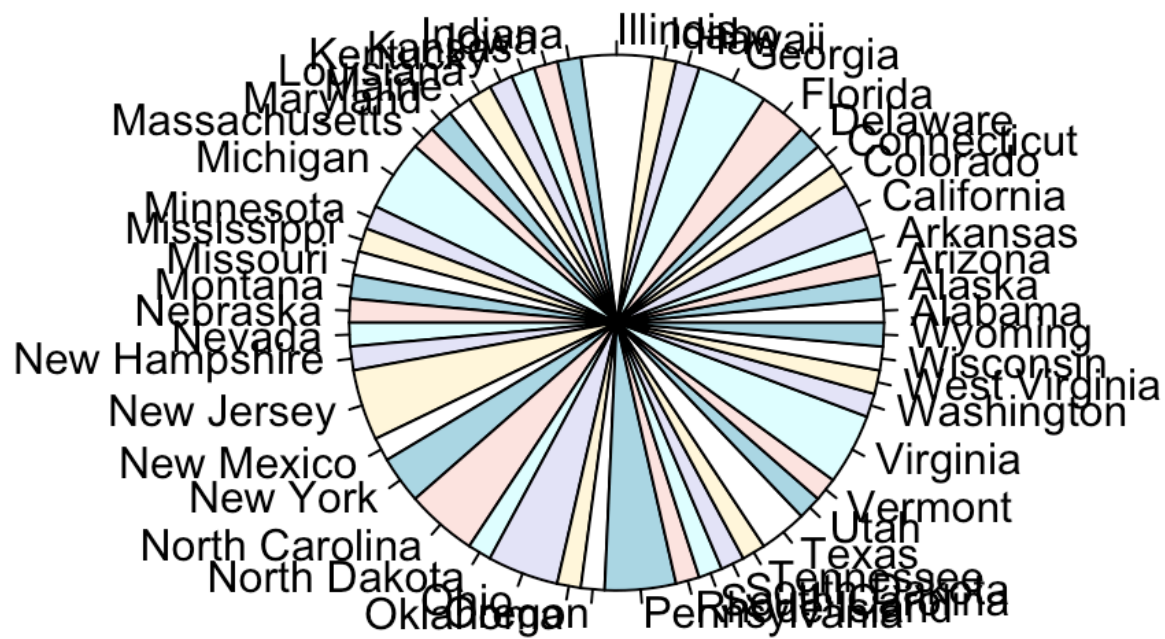
```
result<-cutree(hc,k=3)  
as.data.frame(result)
```

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```
pie(result)
```

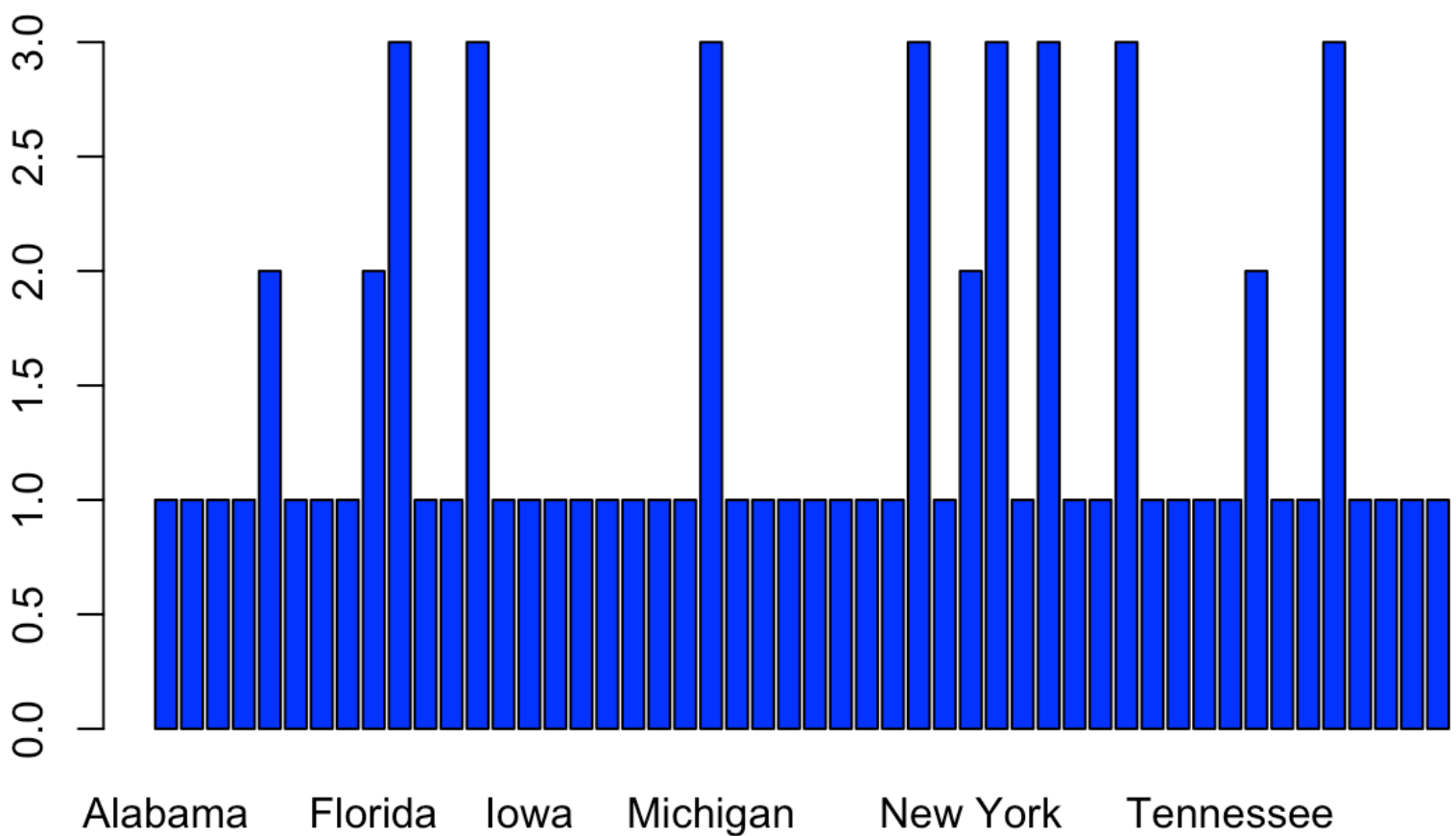




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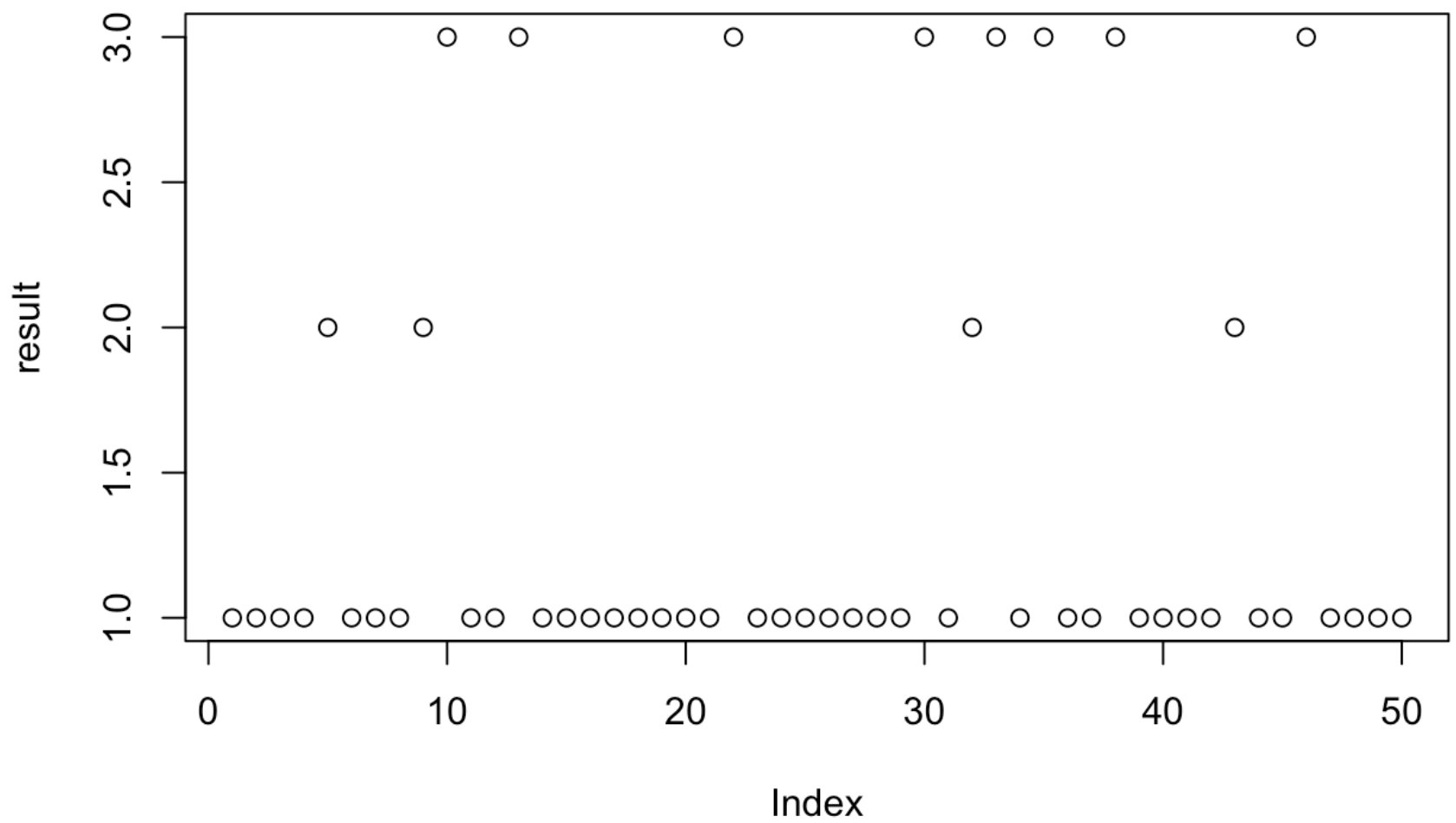
```
barplot(result,col = "blue")
```



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```
#table(result)
#summary(result)
plot(result,type = "p")
```



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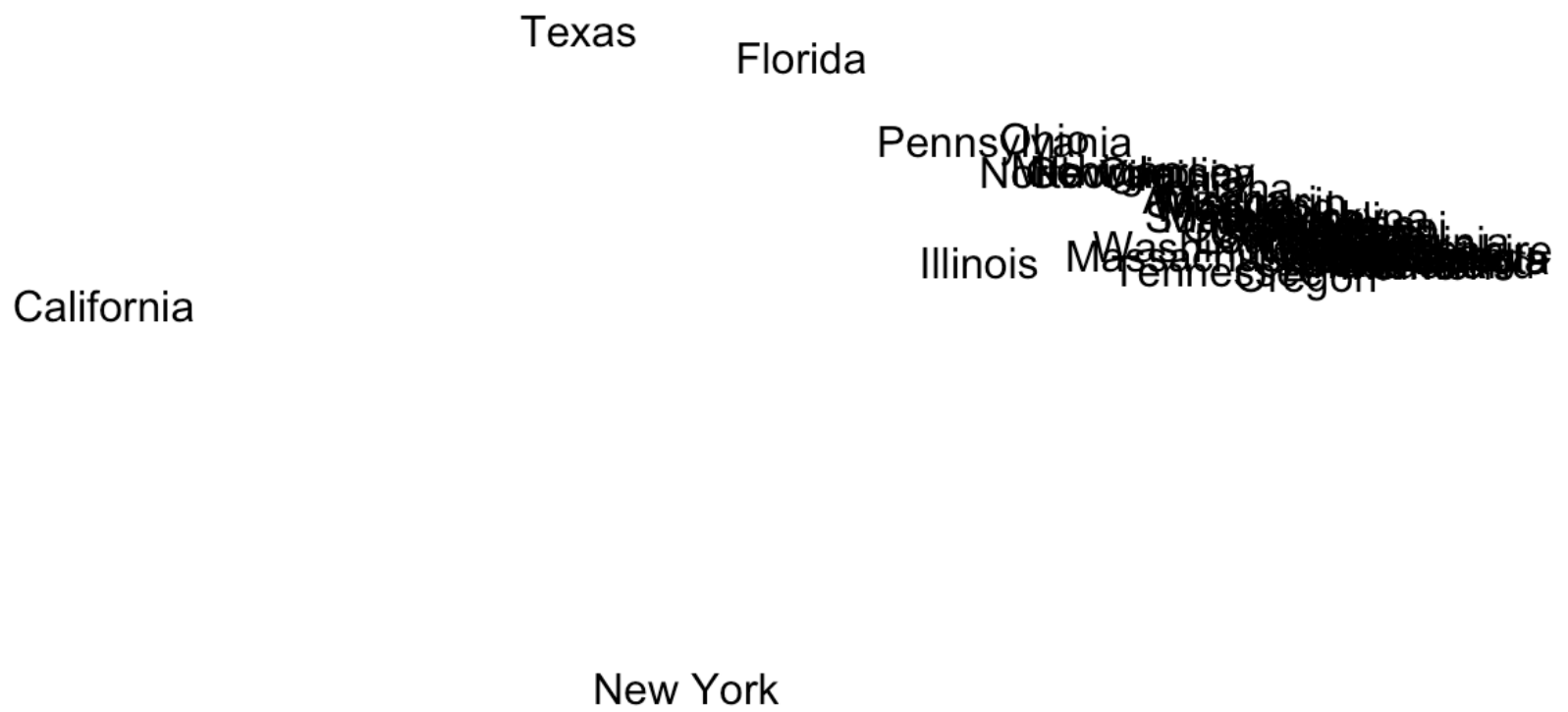
```
library(ggplot2)
mds2 <- -cmdscale(dist(crowdfunding))
```

NAs introduced by coercion

Hide

Hide

```
plot(mds2, type="n", axes=FALSE, ann=FALSE)
text(mds2, labels=rownames(mds2), xpd = NA)
```



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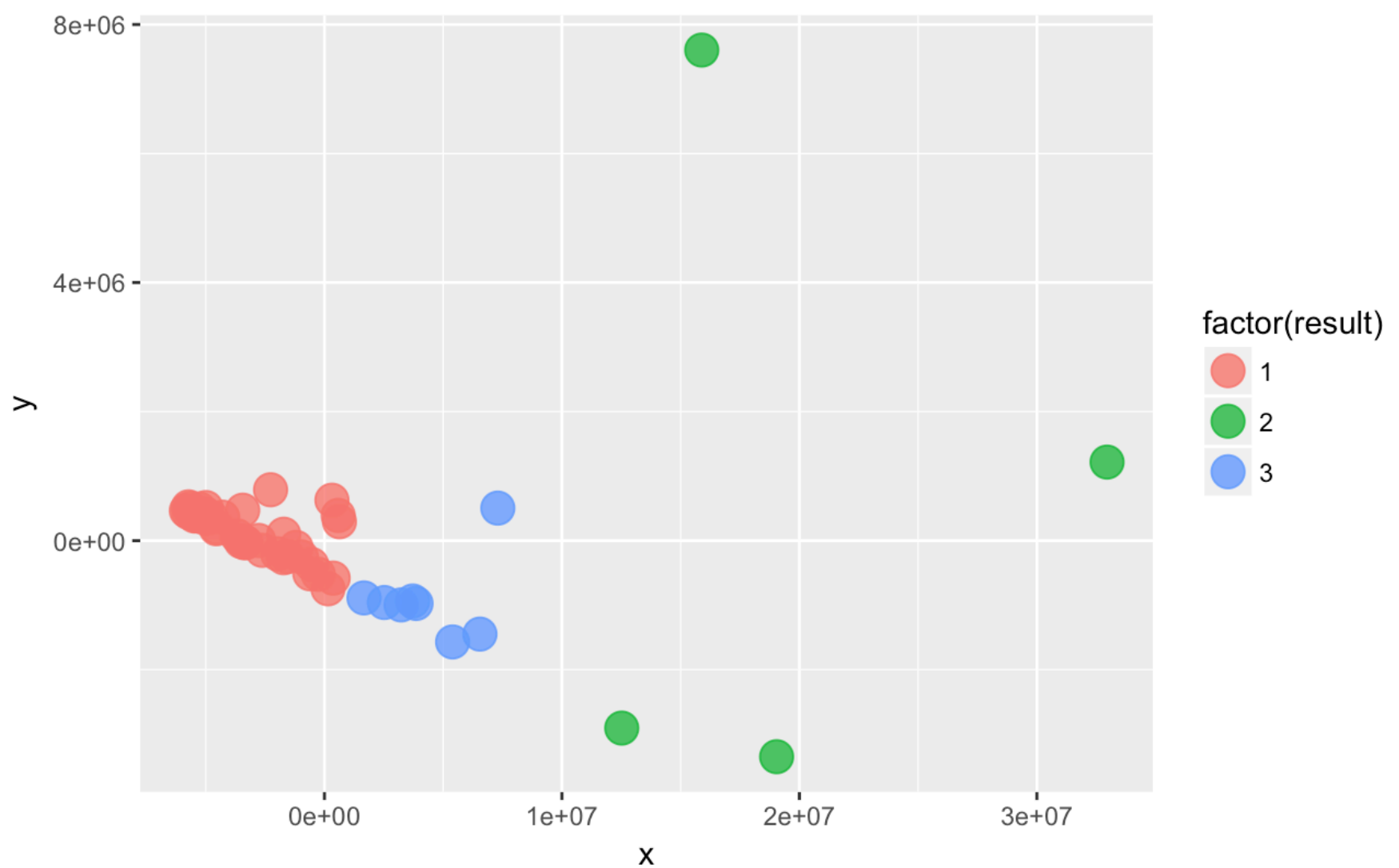
```
mds<-cmdscale(dist(crowdfunding),k=3,eig=T)
```

```
NAs introduced by coercion
```

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```
x = mds$points[,1]
y = mds$points[,2]
p=ggplot(data.frame(x,y),aes(x,y))
p+geom_point(size=5 , alpha=0.8 , aes(colour=factor(result) ))
```



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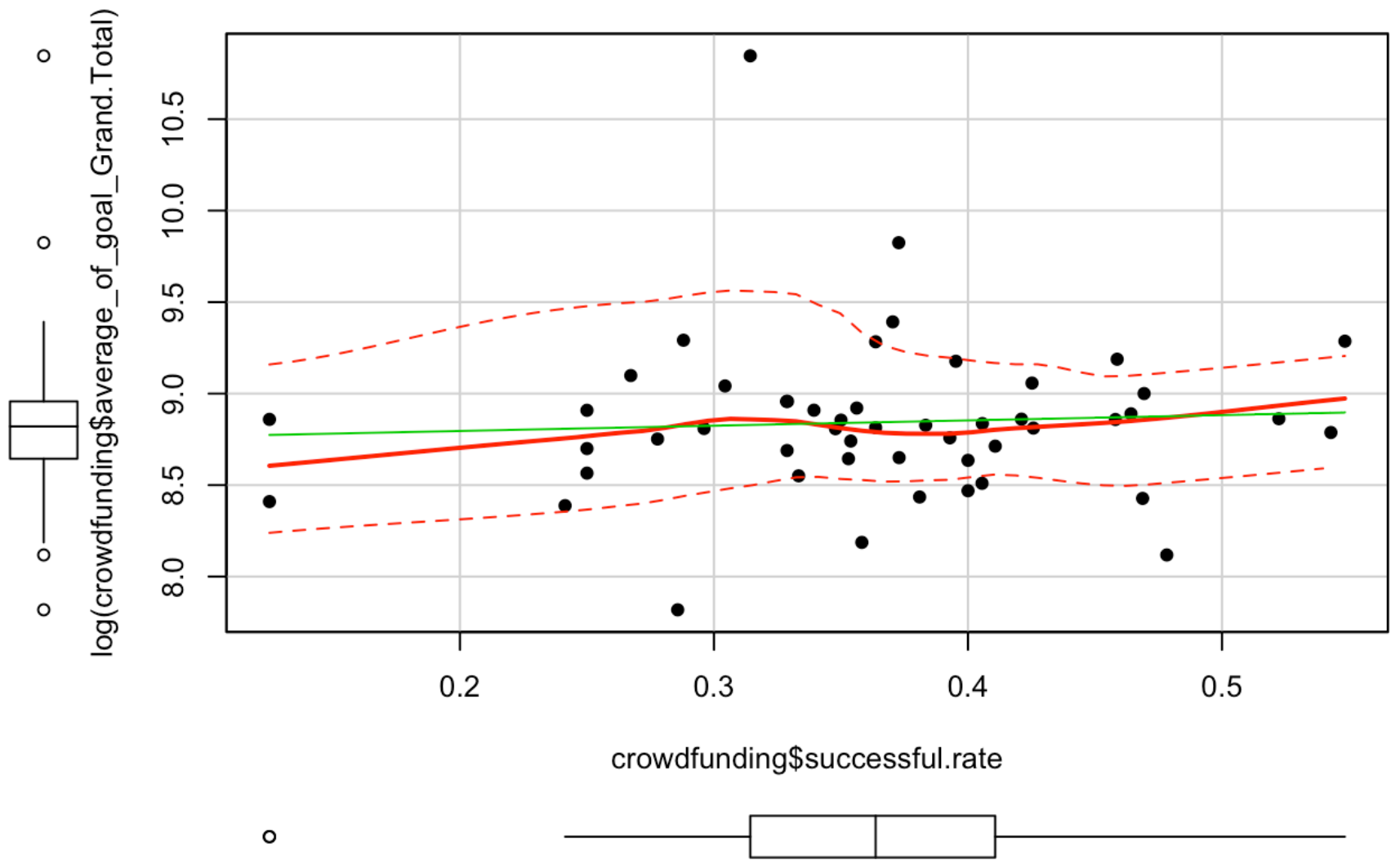
```
k2<-kmeans(all,centers=5,nstart=10)
summary(k2)
```

|              | Length | Class  | Mode    |
|--------------|--------|--------|---------|
| cluster      | 49     | -none- | numeric |
| centers      | 225    | -none- | numeric |
| totss        | 1      | -none- | numeric |
| withinss     | 5      | -none- | numeric |
| tot.withinss | 1      | -none- | numeric |
| betweenss    | 1      | -none- | numeric |
| size         | 5      | -none- | numeric |
| iter         | 1      | -none- | numeric |
| ifault       | 1      | -none- | numeric |

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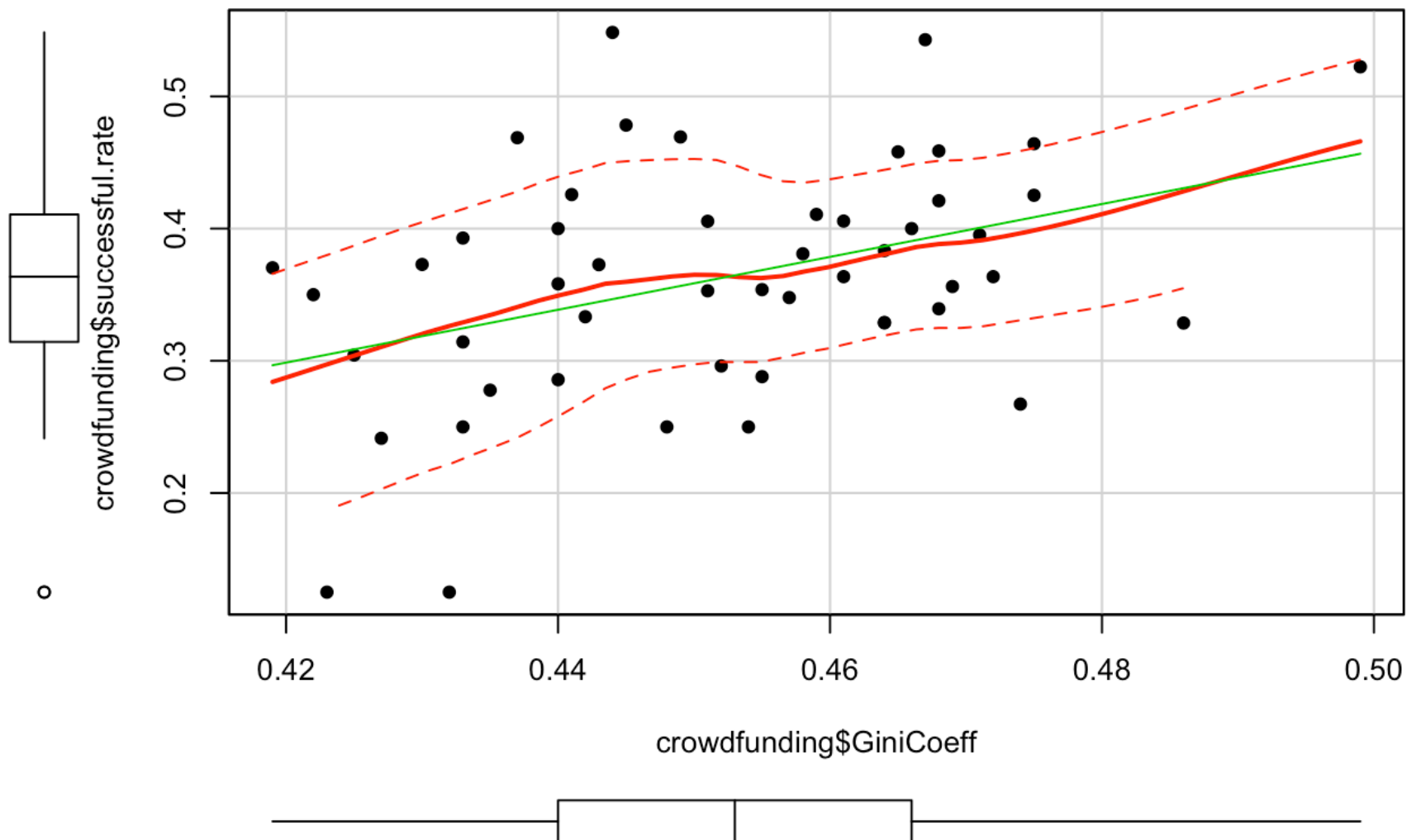
```
library(car)
scatterplot(crowdfunding$successful.rate,log(crowdfunding$average_of_goal_Grand.Total),pch=19)
```



Hide

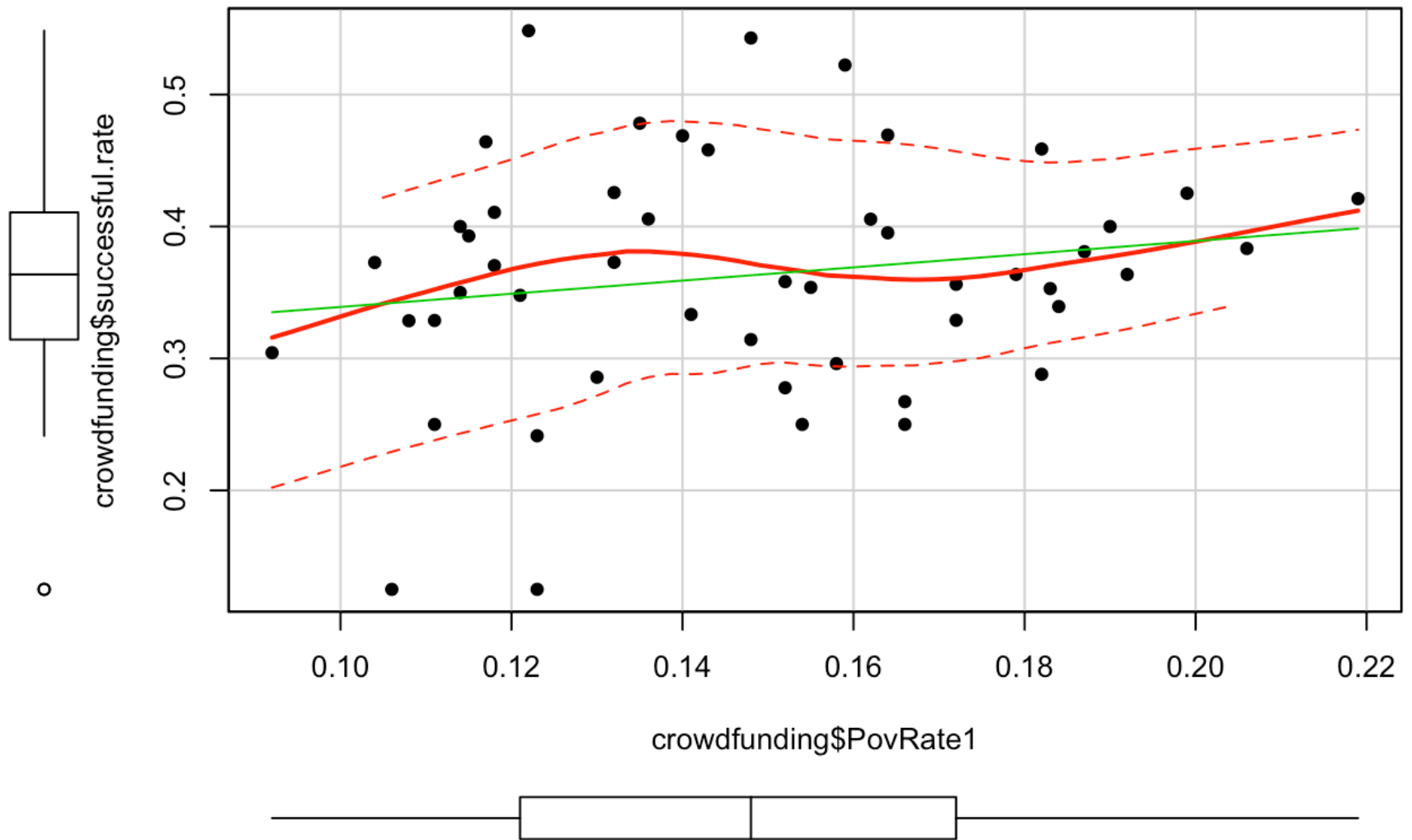
Hide

```
scatterplot(crowdfunding$successful.rate~crowdfunding$GiniCoeff,pch=19)
```

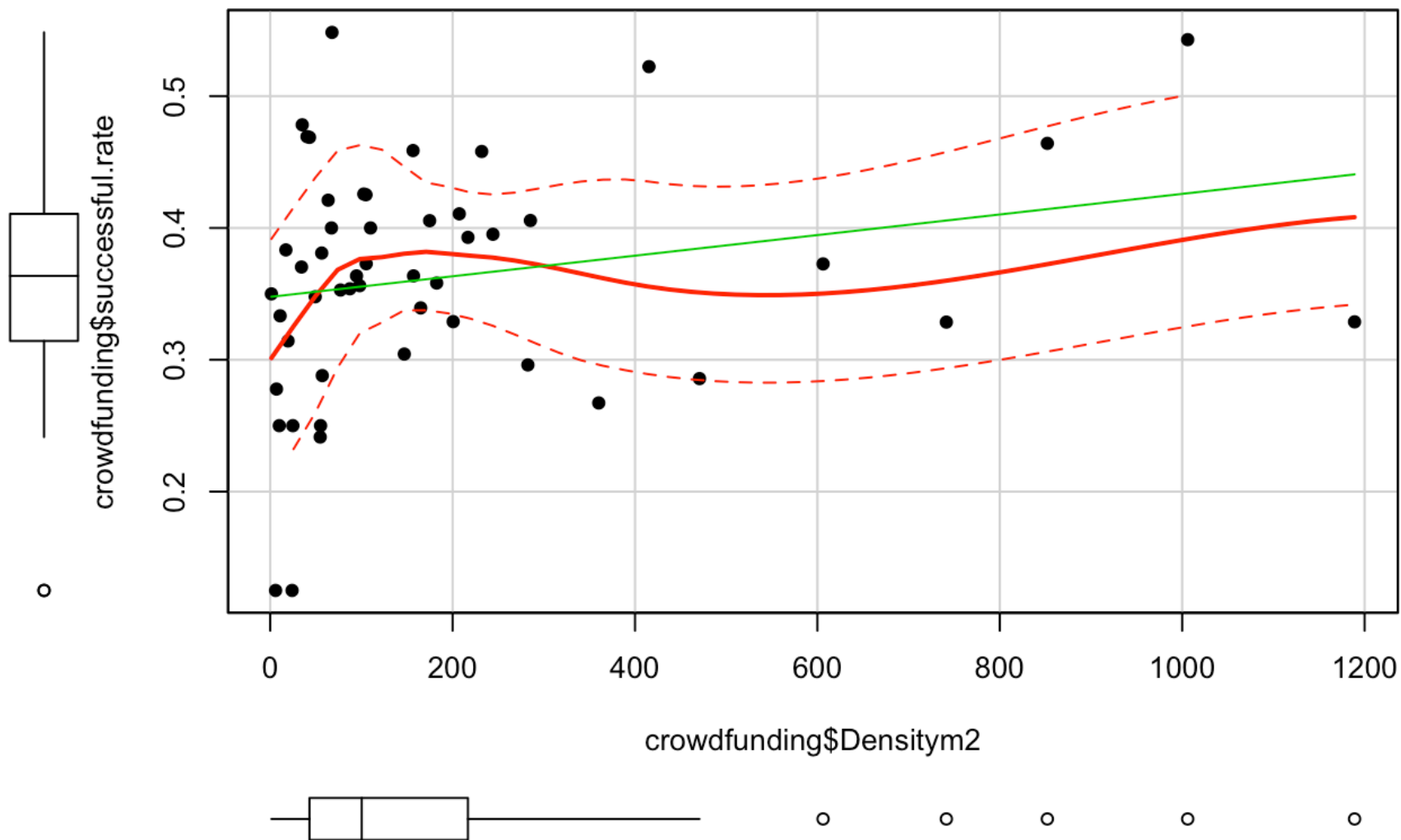


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```
scatterplot(crowdfunding$successful.rate~crowdfunding$PovRate1,pch=19)
```



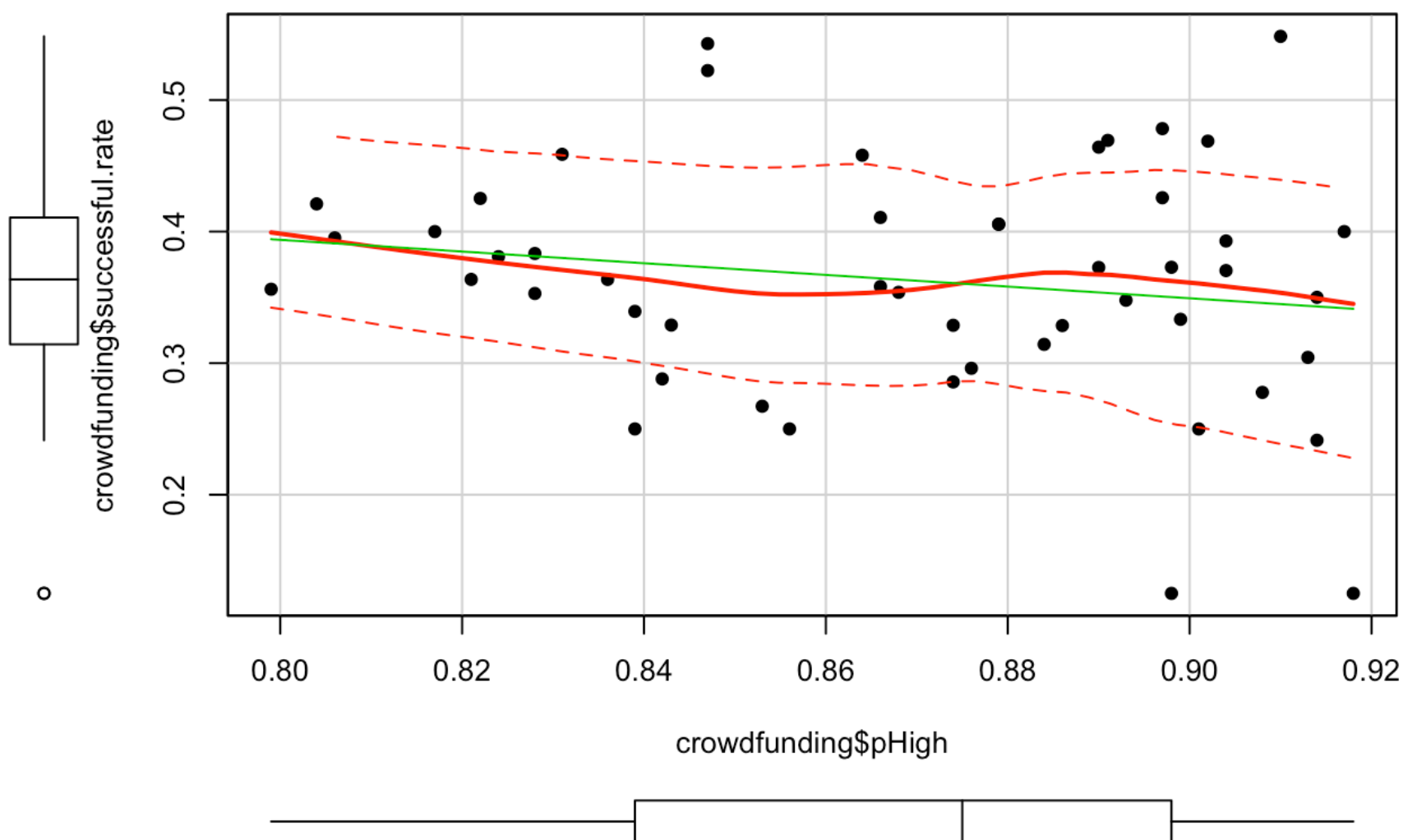
```
scatterplot(crowdfunding$successful.rate~crowdfunding$Densitym2,pch=19)
```



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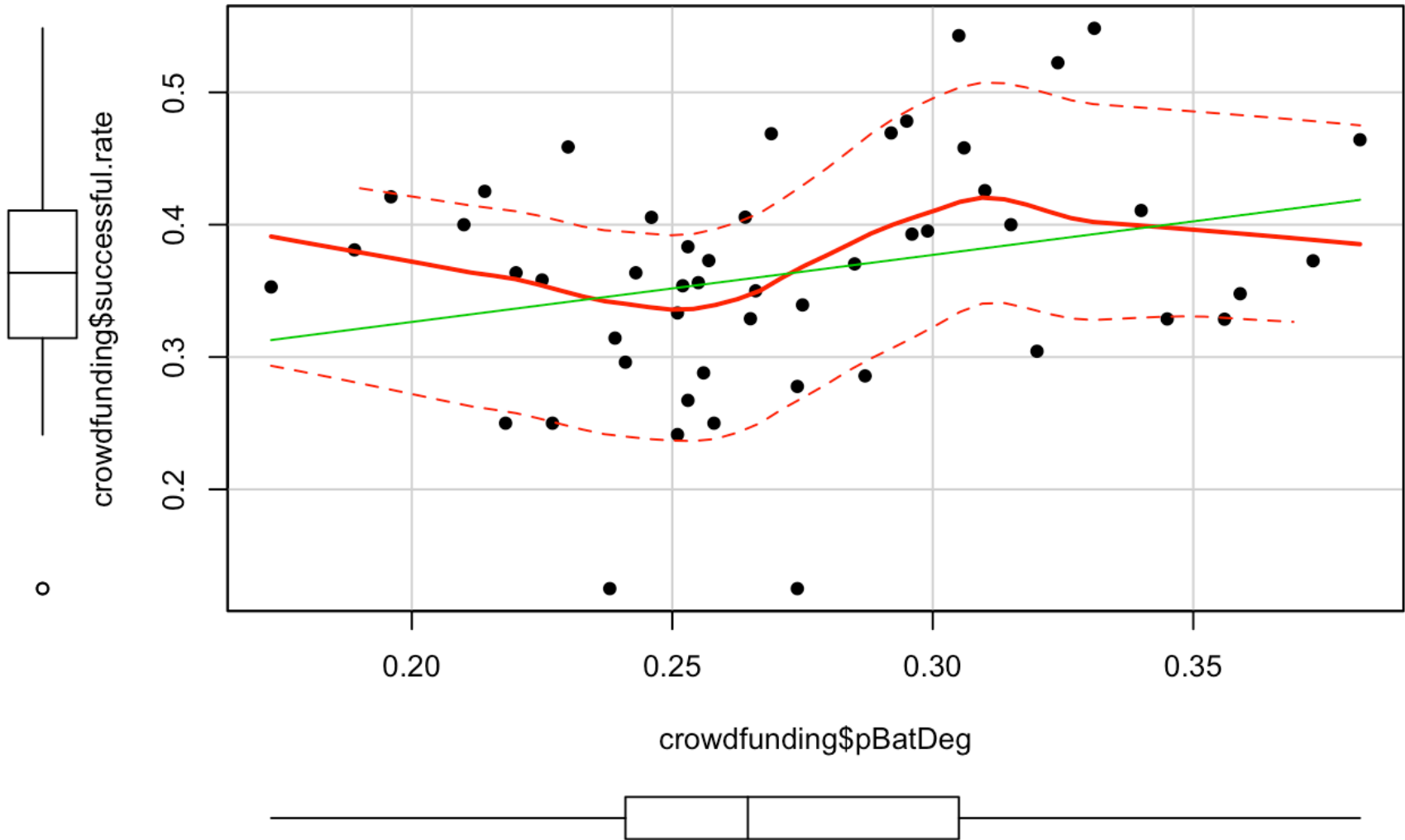
Hide

```
scatterplot(crowdfunding$successful.rate~crowdfunding$pHigh,pch=19)
```



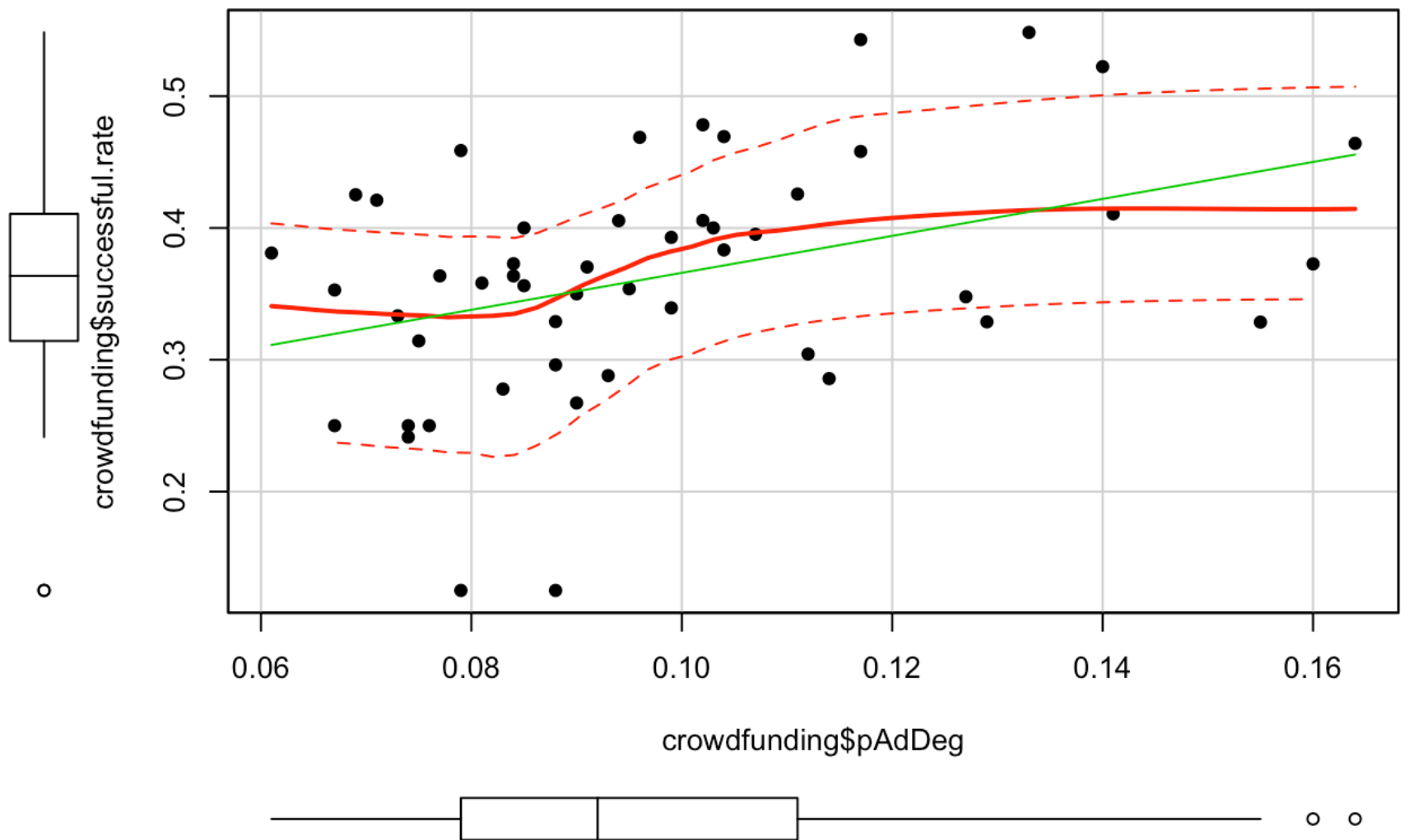
Hide

```
scatterplot(crowdfunding$successful.rate~crowdfunding$pBatDeg,pch=19)
```



```
scatterplot(crowdfunding$successful.rate~crowdfunding$pAdDeg,pch=19)
```



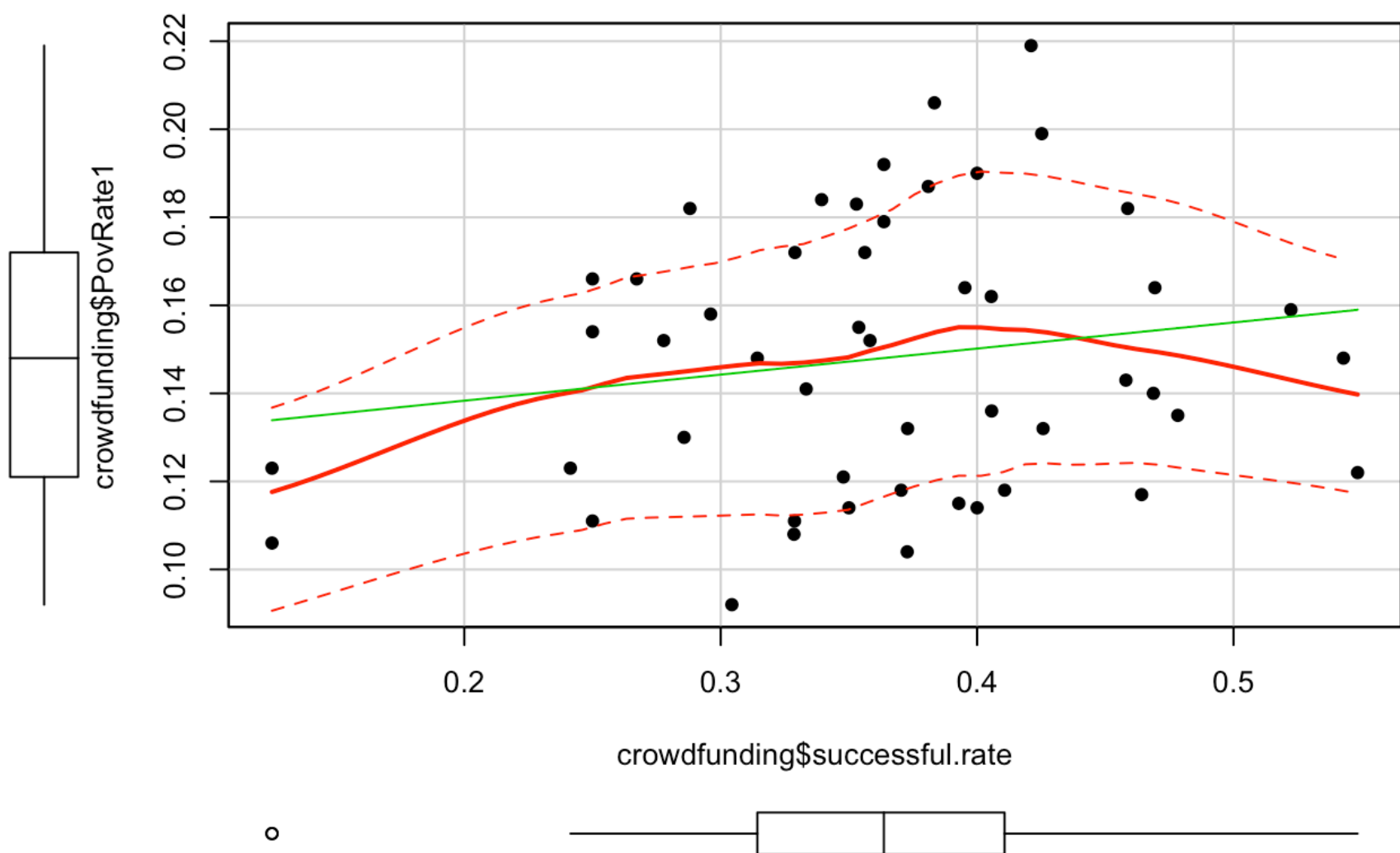


## Factors Analysis-Successful Rate|PovRate1

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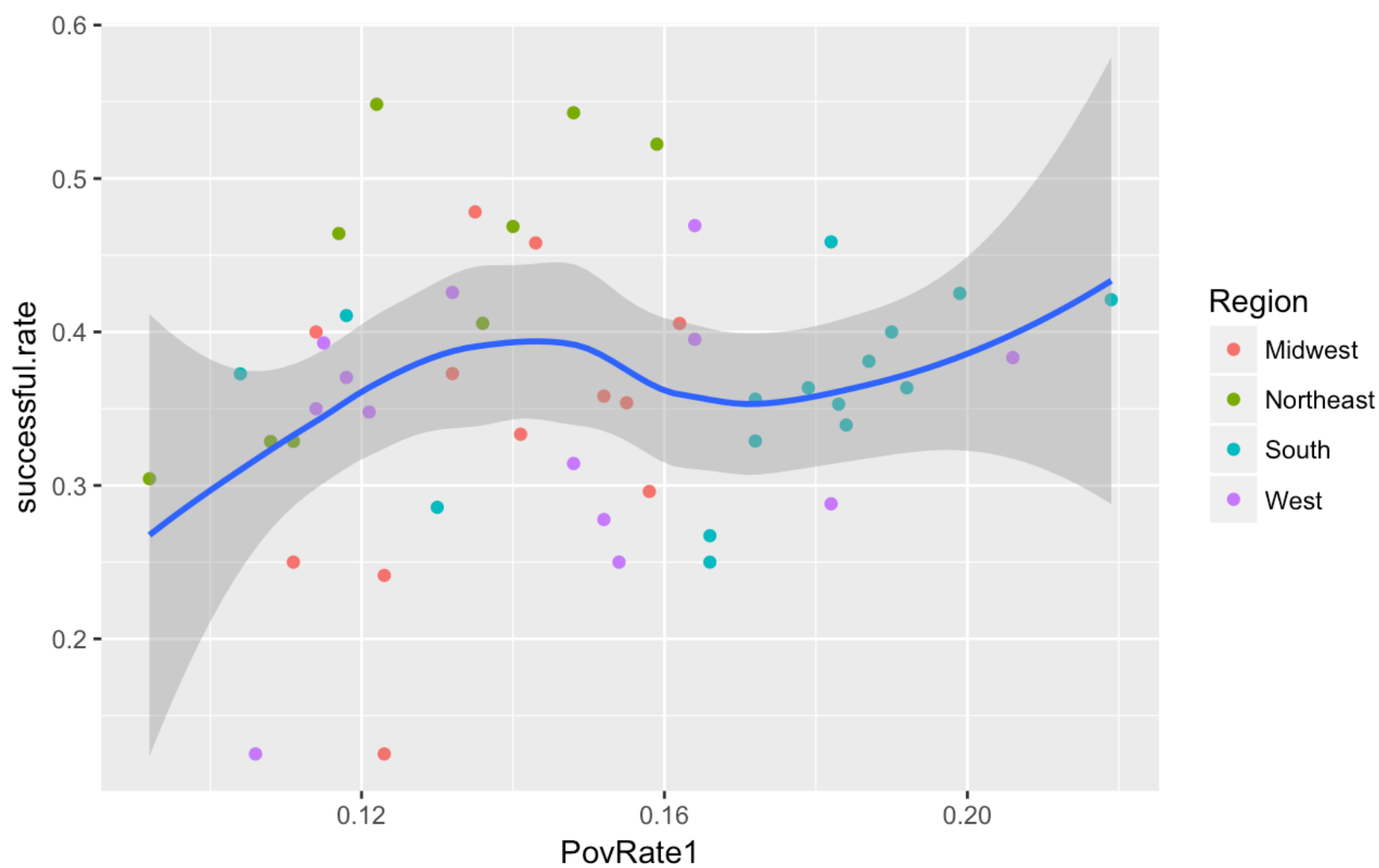
```
#redo scatterplot with Successful Rate-PovRate1
scatterplot(crowdfunding$successful.rate,crowdfunding$PovRate1,pch=19)
```



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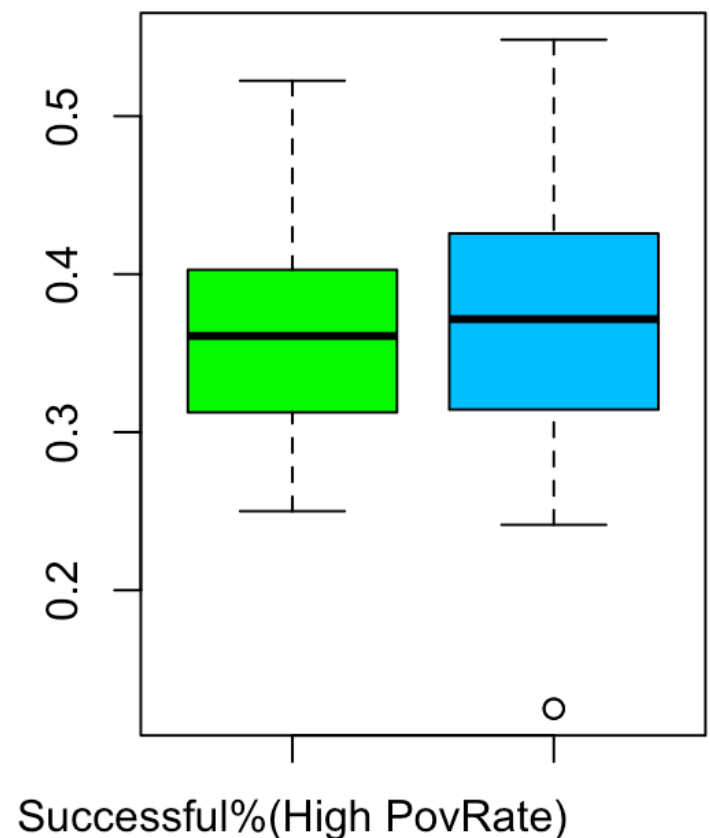
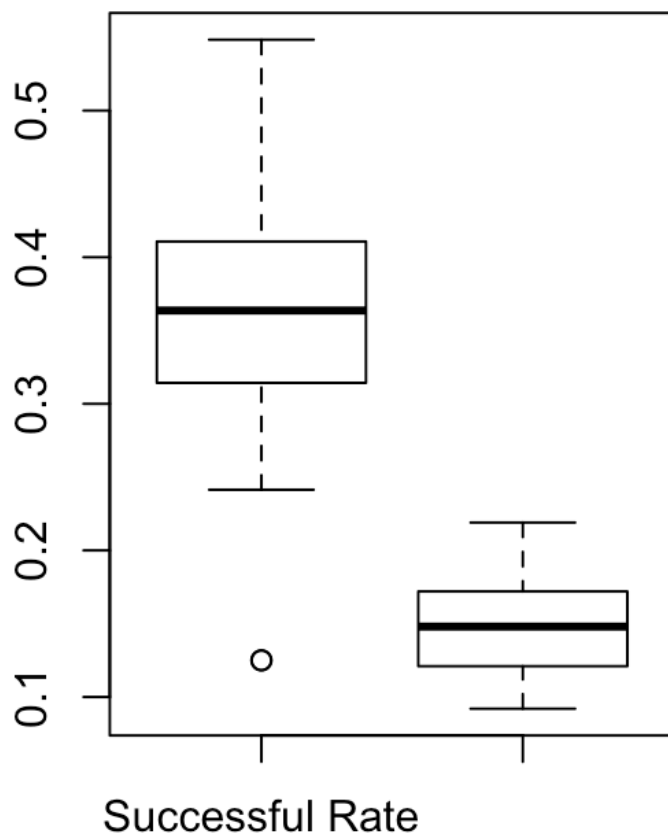
```
ggplot(crowdfunding,aes(x=PovRate1,y=successful.rate,main = "Successful rate~PovRate"))+geom_point(aes(col=Region))+geom_smooth(method = "loess")
par(mfrow=c(1,2))
```



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```
boxplot(crowdfunding$successful.rate,crowdfunding$PovRate1,names=c("Successful Rate","PovRate1"))  
boxplot(crowdfunding$successful.rate[crowdfunding$PovRate1>mean(crowdfunding$PovRate1)],crowdfunding$successful.rate[crowdfunding$PovRate1<=mean(crowdfunding$PovRate1)],col = c("green","deepskyblue"),names=c("Successful%(High PovRate)","Successful%(Low PovRate)"),xlab="Successful rate by PovRate1")
```



Successful rate by PovRate1

Hide

Hide

```
t.test(crowdfunding$successful.rate[crowdfunding$PovRate1>mean(crowdfunding$PovRate1)],crowdfunding$successful.rate[crowdfunding$PovRate1<=mean(crowdfunding$PovRate1)])
```

## Welch Two Sample t-test

```
data: crowdfunding$successful.rate[crowdfunding$PovRate1 > mean(crowdfunding$PovRate1)] and crowdfunding$successful.rate[crowdfunding$PovRate1 <= mean(crowdfunding$PovRate1)]
t = -0.01904, df = 43.704, p-value = 0.9849
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.05105839  0.05010288
sample estimates:
mean of x mean of y
0.3628157 0.3632935
```

Hide

Hide

```
plot(crowdfunding$successful.rate,crowdfunding$PovRate1,pch=19,col=crowdfunding$Region,xlab="Successful Rate",ylab="PovRate1",main="Successful Rate-PovRate1 Plot with lowess line")
points(lowess(crowdfunding$successful.rate,crowdfunding$PovRate1,f=1/3),pch=4,col="orange",type="l")
```

Hide

Hide

```
#abline(lm(crowdfunding$successful.rate~crowdfunding$PovRate1),col="orange")
legend("topleft",legend = levels(crowdfunding$Region),cex = 0.8, pch = 19,col=1:3)
qqplot(crowdfunding$successful.rate,crowdfunding$PovRate1,pch=1,col=crowdfunding$Region,main="QQ plot: (Successful Rate & PovRate)")
```

Hide

Hide

```
qqline(crowdfunding$successful.rate,crowdfunding$PovRate1,col="red")
```

the condition has length > 1 and only the first element will be used

Hide

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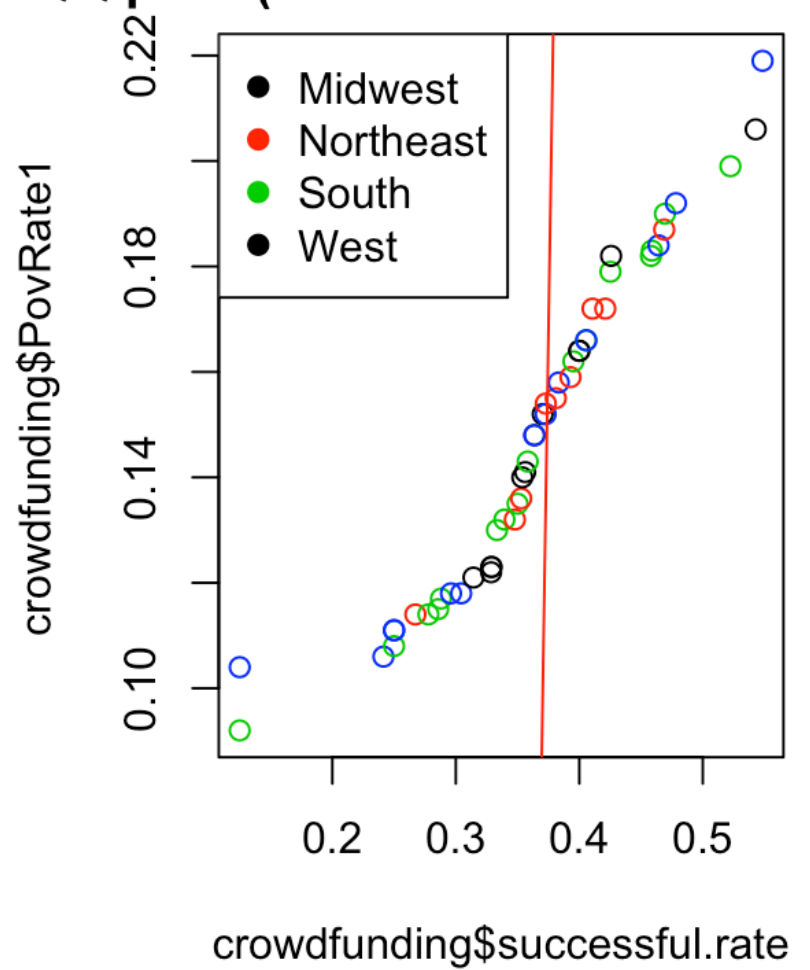
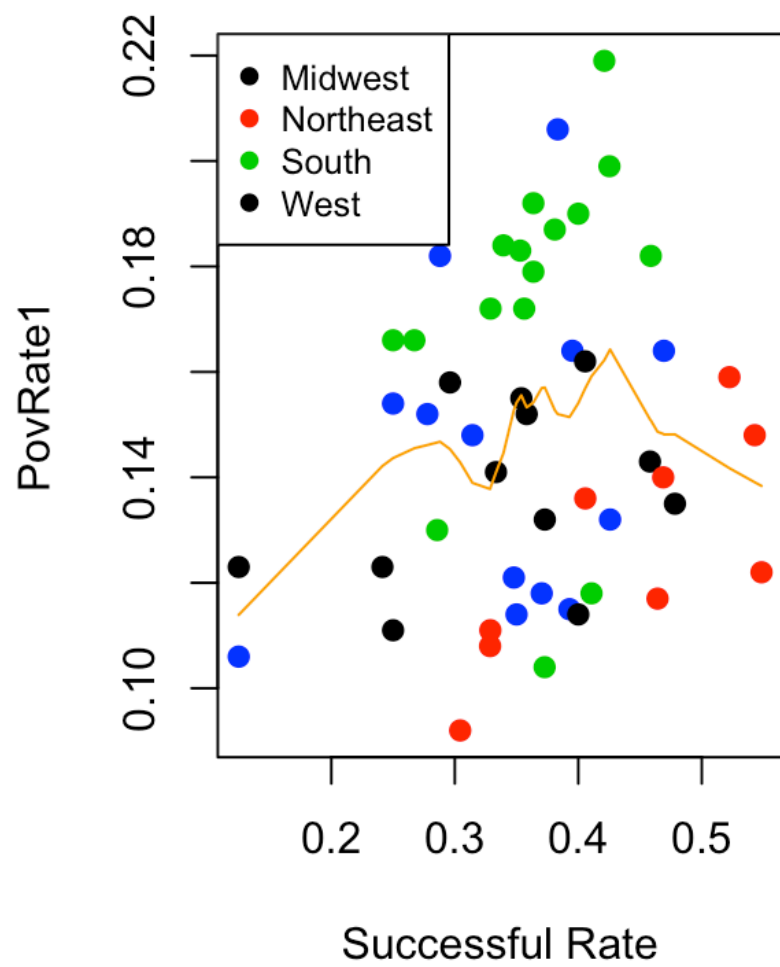
```
legend("topleft",legend = levels(crowdfunding$Region), pch = 19,col=1:3)
```

Hide

Hide

```
par(mfrow=c(1,1))
```

## Successful Rate-PovRate1 Plot with low QQ plot: (Successful Rate & PovRate1)

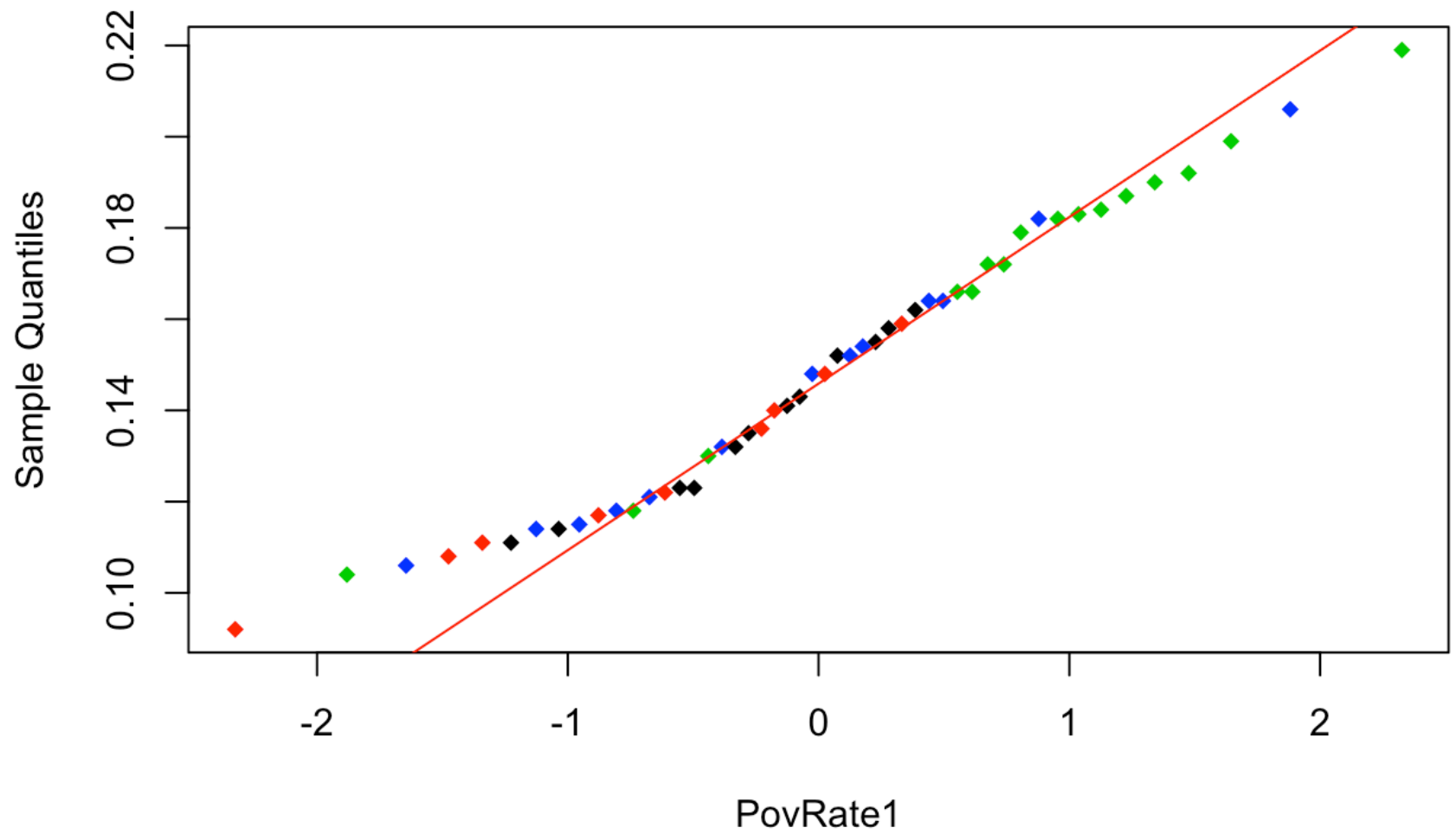


Hide

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```
#qqnorm(crowdfunding$successful.rate,col=crowdfunding$Region,xlab="Successful Rate")
#qqline(crowdfunding$successful.rate,col="red")
qqnorm(crowdfunding$PovRate1,col=crowdfunding$Region,pch=18,xlab="PovRate1")
qqline(crowdfunding$PovRate1,col="red")
```

## Normal Q-Q Plot

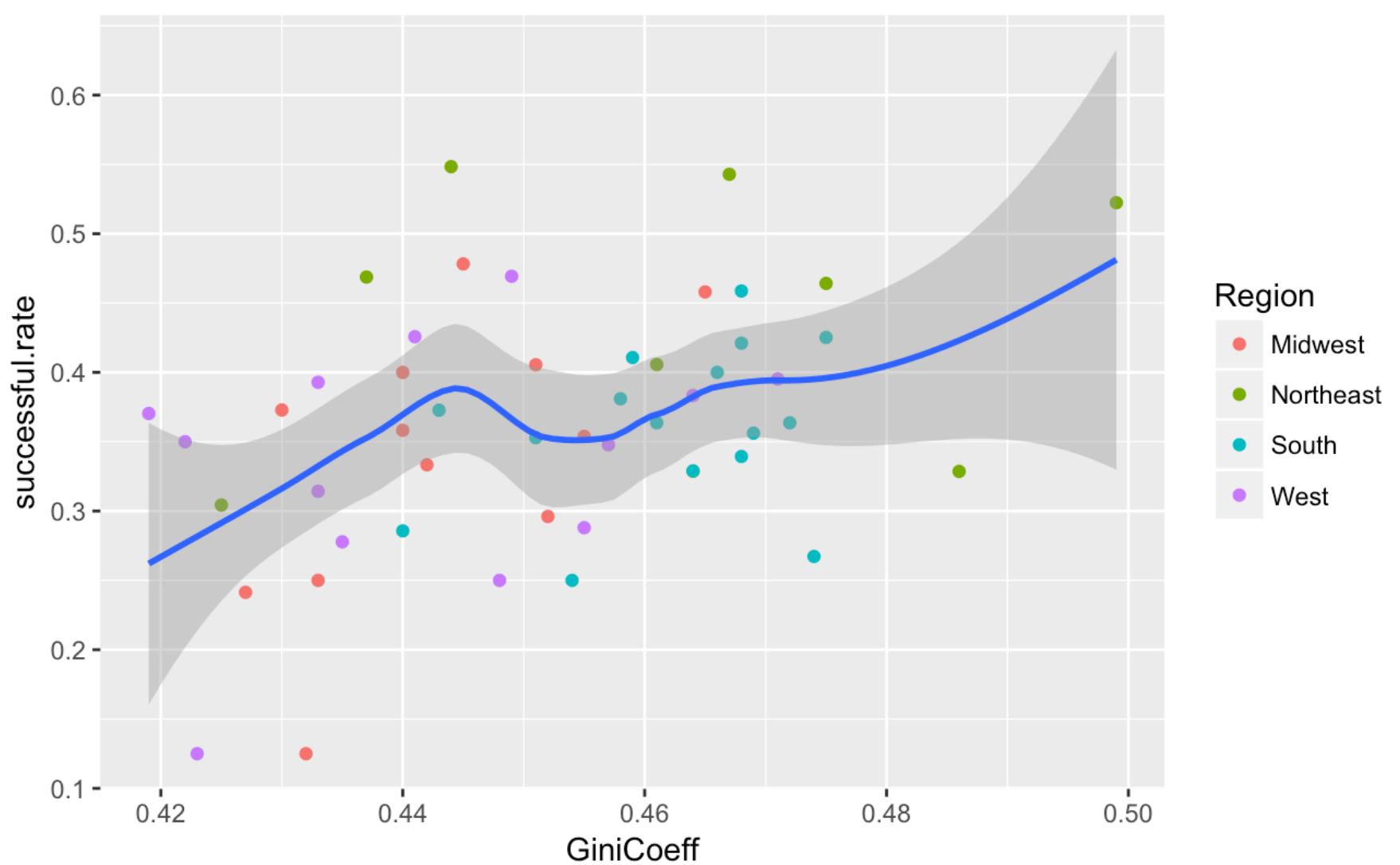


## Factors Analysis-Successful Rate|Ginicoef

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```
ggplot(crowdfunding,aes(x=GiniCoeff,y=successful.rate,main = "Successful rate~Gini  
Coeff"))+geom_point(aes(col=Region))+geom_smooth(method = "loess")  
par(mfrow=c(1,2))
```



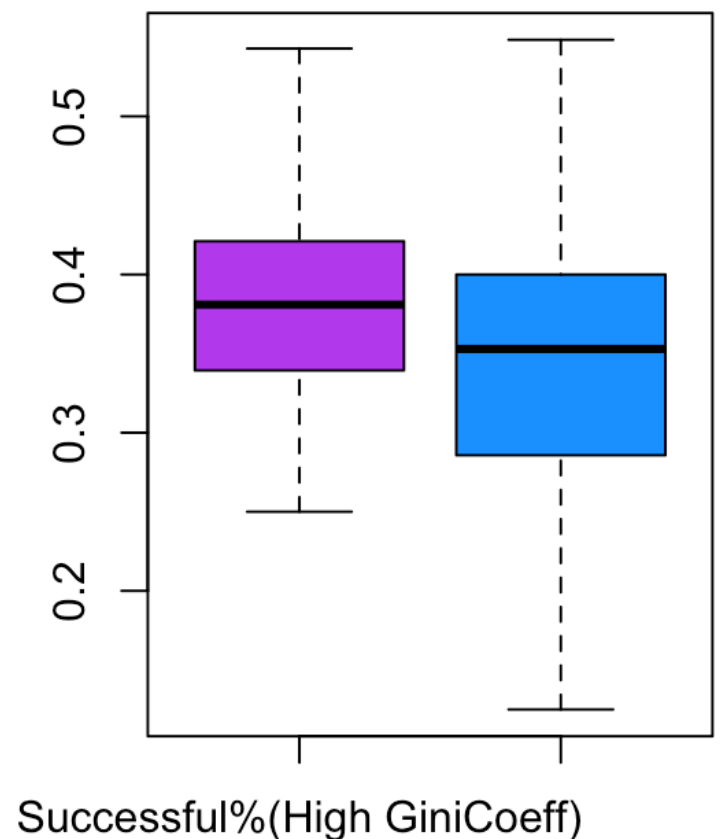
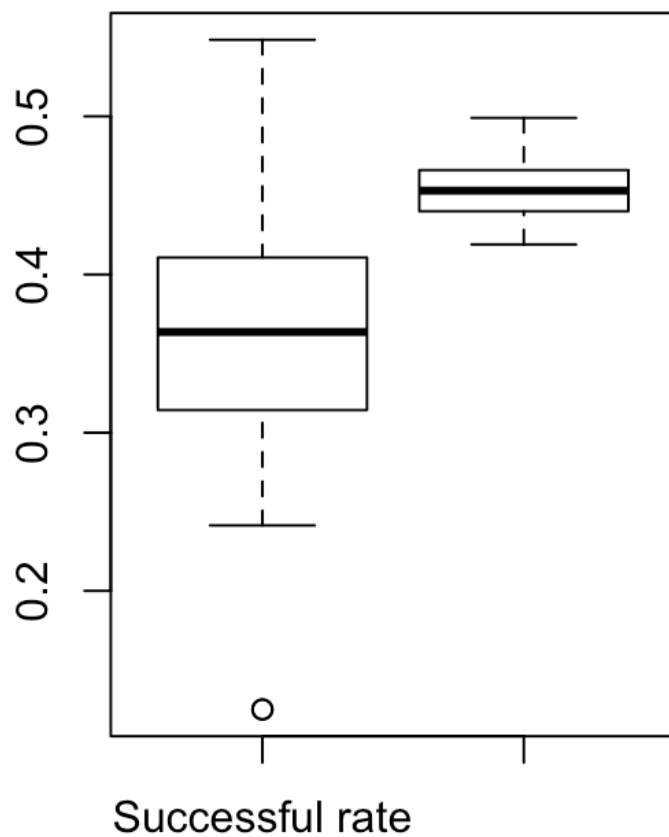
Hide

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```

boxplot(crowdfunding$successful.rate,crowdfunding$GiniCoeff,names=c("Successful rate","GiniCoeff"))
boxplot(crowdfunding$successful.rate[crowdfunding$GiniCoeff>mean(crowdfunding$GiniCoeff)],crowdfunding$successful.rate[crowdfunding$GiniCoeff<=mean(crowdfunding$GiniCoeff)],col = c("darkorchid2","dodgerblue"),names=c("Successful%(High GiniCoeff)","Successful%(Low GiniCoeff)"),xlab="Successful rate by GiniCoeff")

```



Successful rate by GiniCoeff

Hide

Hide

```
t.test(crowdfunding$successful.rate[crowdfunding$GiniCoeff>mean(crowdfunding$GiniC
oeff)],crowdfunding$successful.rate[crowdfunding$GiniCoeff<=mean(crowdfunding$Gini
Coeff)])
```

Welch Two Sample t-test

```
data: crowdfunding$successful.rate[crowdfunding$GiniCoeff > mean(crowdfunding$Gin
iCoeff)] and crowdfunding$successful.rate[crowdfunding$GiniCoeff <= mean(crowfund
ing$GiniCoeff)]
```

```
t = 1.6383, df = 43.111, p-value = 0.1086
```

```
alternative hypothesis: true difference in means is not equal to 0
```

```
95 percent confidence interval:
```

```
-0.009375926 0.090607105
```

```
sample estimates:
```

```
mean of x mean of y
```

```
0.3833720 0.3427564
```

Hide

Hide



```
plot(crowdfunding$successful.rate,crowdfunding$GiniCoeff,f=1/3 ,pch=19,col="blue",
xlab="Successful Rate",ylab="GiniCoeff",main="Successful Rate-GiniCoeff Plot with
lowess line")
points(lowess(crowdfunding$successful.rate,crowdfunding$GiniCoeff,f=1/3),pch=4,col
="red",type="l")
```

Hide

Hide

```
qqplot(crowdfunding$successful.rate,crowdfunding$GiniCoeff,pch=19,col="red",main="
Q-Q Plot: Successful Rate-GiniCoeff")
qqline(crowdfunding$successful.rate,crowdfunding$GiniCoeff)
```

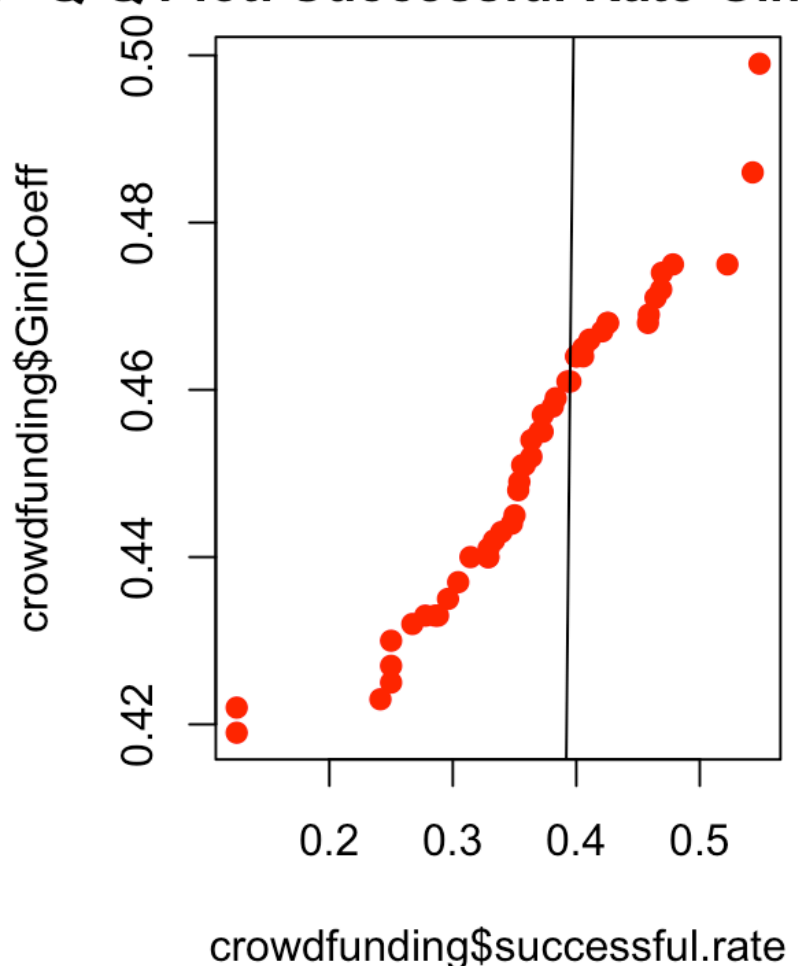
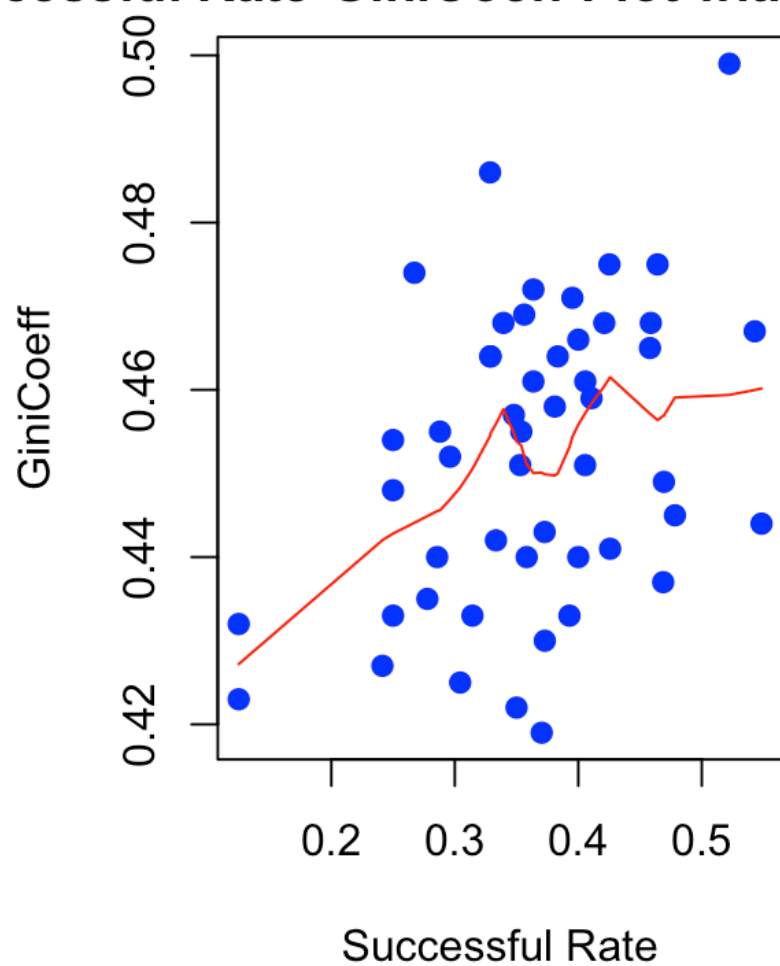
the condition has length > 1 and only the first element will be used

Hide

Hide

```
#qqnorm(crowdfunding$successful.rate,col="orange",xlab="Successful Rate")
#qqline(crowdfunding$successful.rate,col="red")
par(mfrow=c(1,1))
```

## Successful Rate-GiniCoeff Plot with low Q-Q Plot: Successful Rate-GiniCo

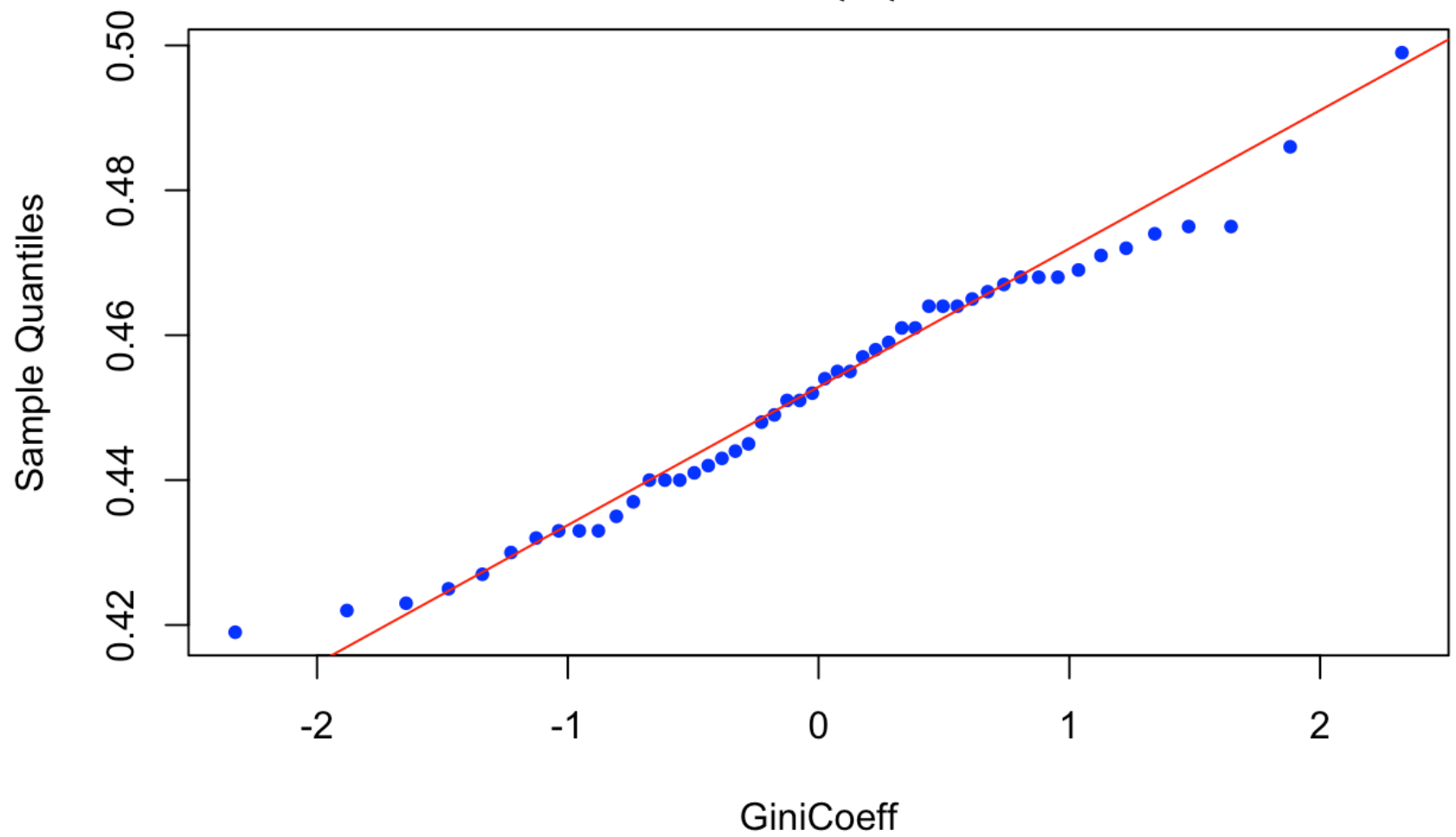


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Hide

```
qqnorm(crowdfunding$GiniCoeff,col="blue",pch=20,xlab="GiniCoeff")
qqline(crowdfunding$GiniCoeff,col="red")
```

Normal Q-Q Plot

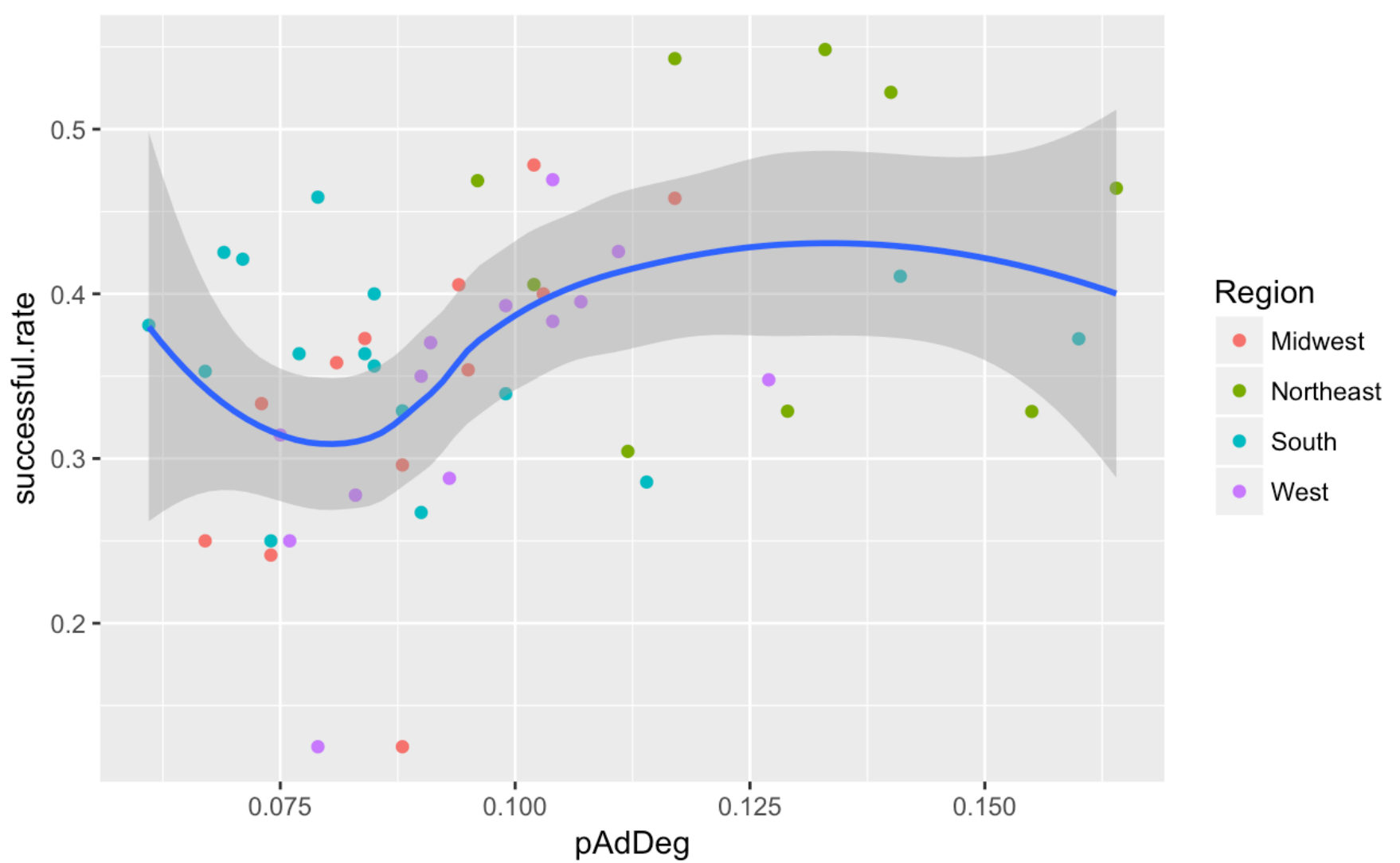


## Factors Analysis-Successful Rate|Adanced Education

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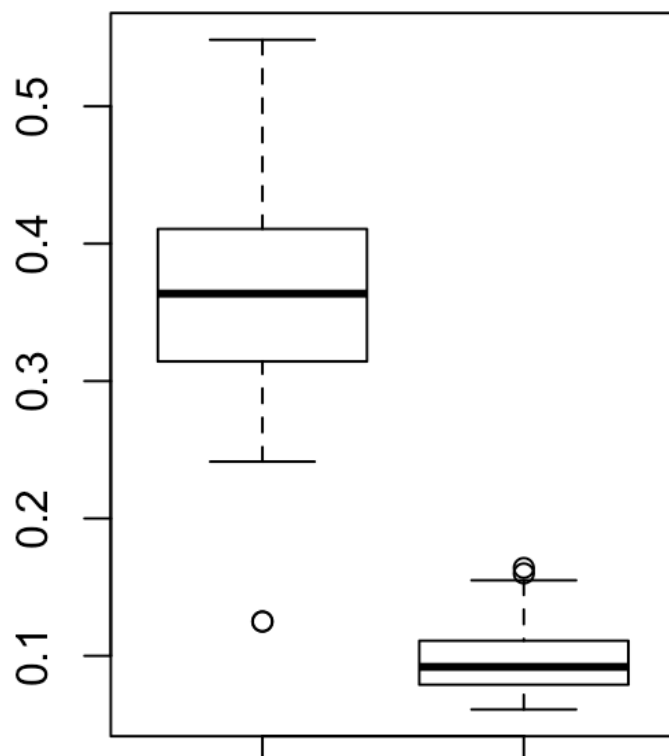
```
ggplot(crowdfunding,aes(x=pAdDeg,y=successful.rate,main = "Successful rate~GiniCoeff"))+geom_point(aes(col=Region))+geom_smooth(method = "loess")
par(mfrow=c(1,2))
```



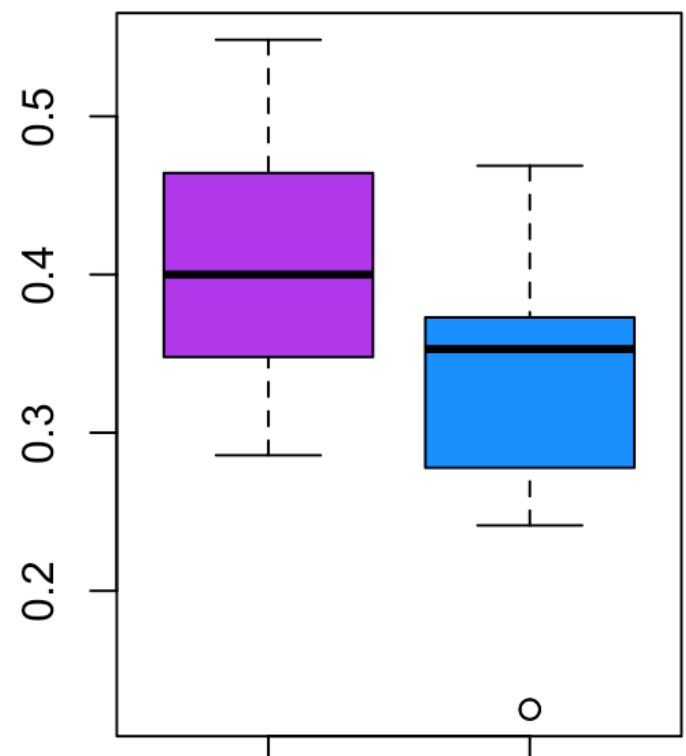
Hide

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```
boxplot(crowdfunding$successful.rate,crowdfunding$pAdDeg,names=c("Successful rate",
,"Adanced Education"))
boxplot(crowdfunding$successful.rate[crowdfunding$pAdDeg>mean(crowdfunding$pAdDeg)
],crowdfunding$successful.rate[crowdfunding$pAdDeg<=mean(crowdfunding$pAdDeg)],col
= c("darkorchid2","dodgerblue"),names=c("Successful%(High Adanced Education)","Suc
cessful%(Low Adanced Education)"),xlab="Successful rate by Adanced Education")
```



Successful rate



Successful%(High Adanced Education)

Successful rate by Adanced Education

Hide

Hide

```
t.test(crowdfunding$successful.rate[crowdfunding$pAdDeg>mean(crowdfunding$pAdDeg)],
crowdfunding$successful.rate[crowdfunding$pAdDeg<=mean(crowdfunding$pAdDeg)])
```

Welch Two Sample t-test

```
data: crowdfunding$successful.rate[crowdfunding$pAdDeg > mean(crowdfunding$pAdDeg
)] and crowdfunding$successful.rate[crowdfunding$pAdDeg <= mean(crowdfunding$pAdDe
g)]
```

```
t = 3.5483, df = 45.573, p-value = 0.0009119
```

```
alternative hypothesis: true difference in means is not equal to 0
```

```
95 percent confidence interval:
```

```
0.03480093 0.12610121
```

```
sample estimates:
```

```
mean of x mean of y
```

```
0.4097258 0.3292747
```

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```
plot(crowdfunding$successful.rate,crowdfunding$pAdDeg,f=1/3 ,pch=19,col="blue",xla
b="Successful Rate",ylab="Adanced Education",main="Successful Rate-Adanced Educati
on Plot with lowess line")
points(lowess(crowdfunding$successful.rate,crowdfunding$pAdDeg,f=1/3),pch=4,col="r
ed",type="l")
```

Hide

Hide

```
qqplot(crowdfunding$successful.rate,crowdfunding$pAdDeg,pch=19,col="red",main="Q-Q  
Plot: Successful Rate-Adanced Education")  
qqline(crowdfunding$successful.rate,crowdfunding$pAdDeg)
```

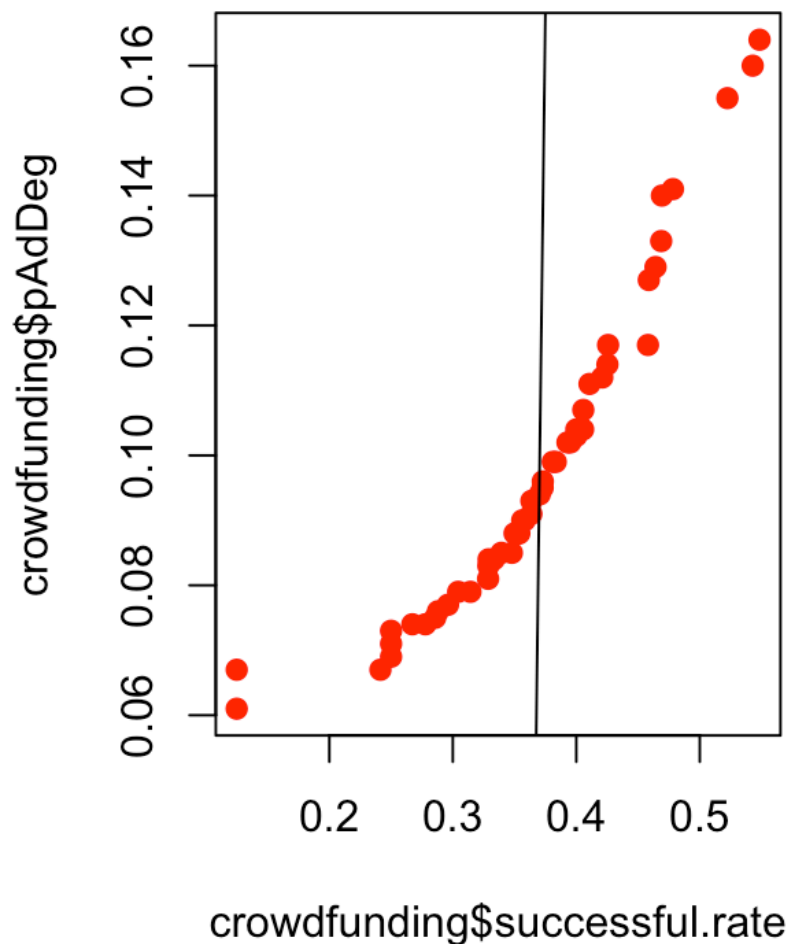
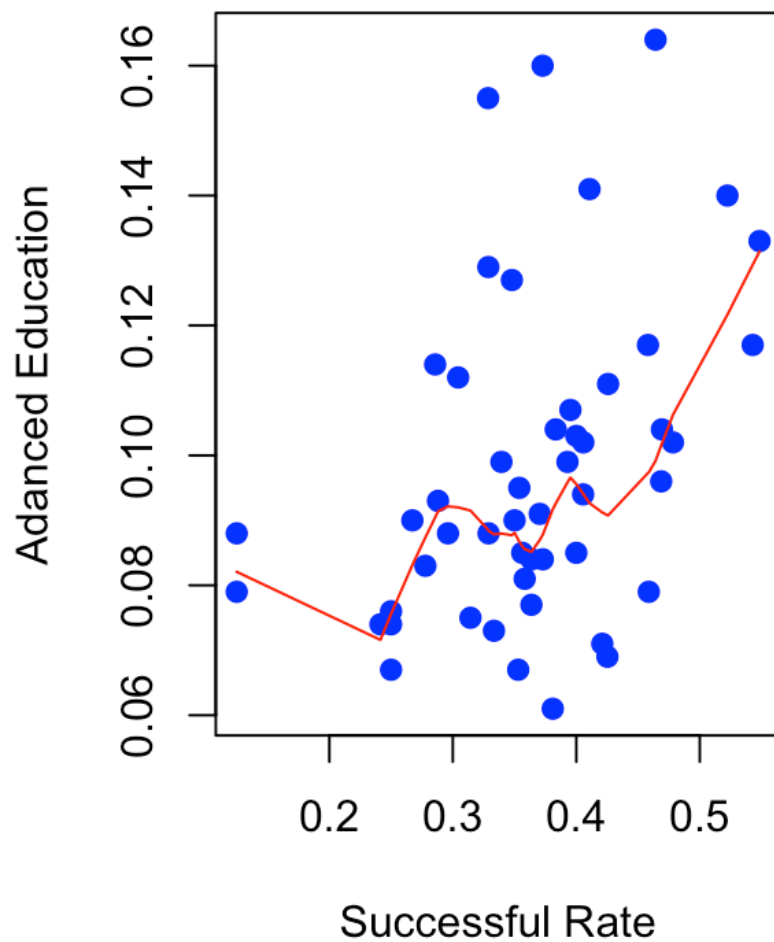
the condition has length > 1 and only the first element will be used

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```
#qqnorm(crowdfunding$successful.rate,col="orange",xlab="Successful Rate")  
#qqline(crowdfunding$successful.rate,col="red")  
par(mfrow=c(1,1))
```

## ful Rate-Adanced Education Plot with Plot: Successful Rate-Adanced Ed



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```
qqnorm(crowdfunding$pAdDeg,col="blue",pch=20,xlab="Adanced Education")  
qqline(crowdfunding$pAdDeg,col="red")
```

Normal Q-Q Plot

