Quantitative Research Methods: history 4

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1 history 4 for QRM

- history 4 27 October 2016... Folowing on from hypothesis testing
- use Wages.xls ##import data and attach

```
#xx=read.table("clipboard",header=TRUE)
xx=read.csv("/Users/sn0wfree/Dropbox/PhD(1st)/BST 215Quantitative Research Methods term 1/r code/Wages.
head(xx)
```

```
##   Education     South Gender Experience     Union  Wage Age     Race
## 1         8 Not_South Female         21 Non_Union  5.10  35 Hispanic
## 2         9 Not_South Female         42 Non_Union  4.95  57    White
## 3        12 Not_South   Male          1 Non_Union  6.67  19    White
## 4        12 Not_South   Male          4 Non_Union  4.00  22    White
## 5        12 Not_South   Male         17 Non_Union  7.50  35    White
## 6        13 Not_South   Male          9     Union 13.07  28    White
##   Occupation        Sector   Married
## 1      Other Manufacturing   Married
## 2      Other Manufacturing   Married
## 3      Other Manufacturing Unmarried
## 4      Other         Other Unmarried
## 5      Other         Other   Married
## 6      Other         Other Unmarried
```

```
attach(xx)
```

1.1 wilcox.test-1

compare the different on Wage|Gender: and use one tail or two tail test

```
wilcox.test(Wage[Gender=="Male"],Wage[Gender=="Female"])
```

```
##
##  Wilcoxon rank sum test with continuity correction
##
## data:  Wage[Gender == "Male"] and Wage[Gender == "Female"]
## W = 44780, p-value = 1.304e-07
## alternative hypothesis: true location shift is not equal to 0
```

```
wilcox.test(Wage[Gender=="Male"],Wage[Gender=="Female"],alternative="greater")
```

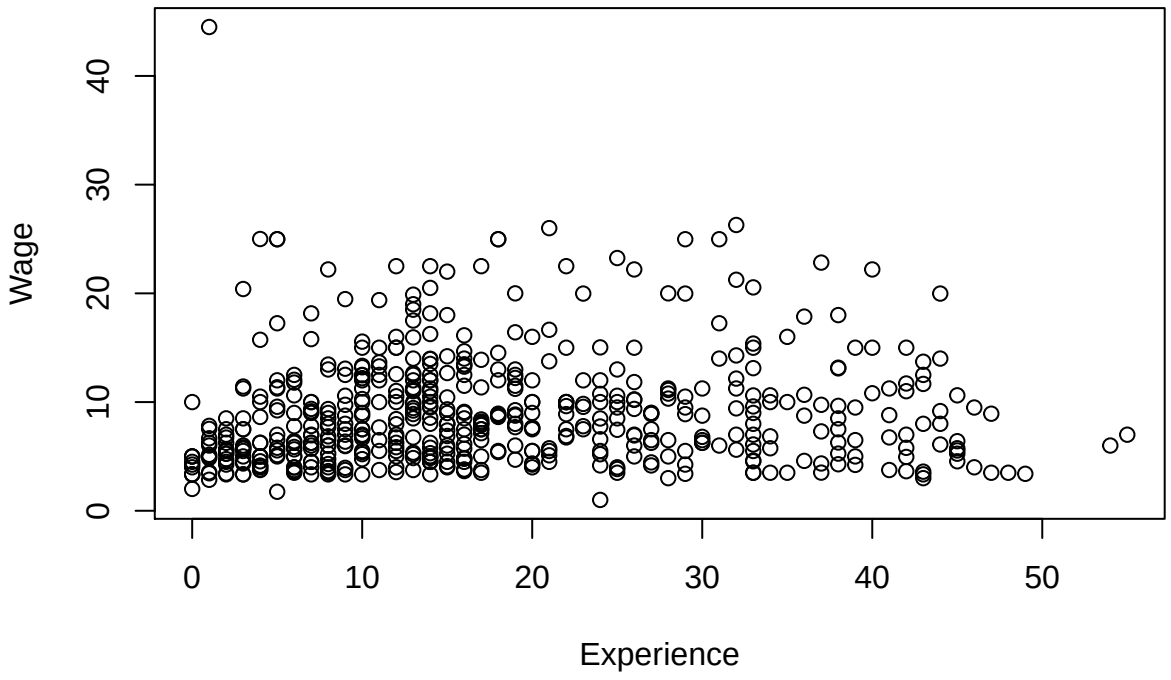
```
##
##  Wilcoxon rank sum test with continuity correction
##
## data:  Wage[Gender == "Male"] and Wage[Gender == "Female"]
## W = 44780, p-value = 6.519e-08
## alternative hypothesis: true location shift is greater than 0
```

```
wilcox.test(Wage[Gender=="Male"],Wage[Gender=="Female"],alternative="less")
```

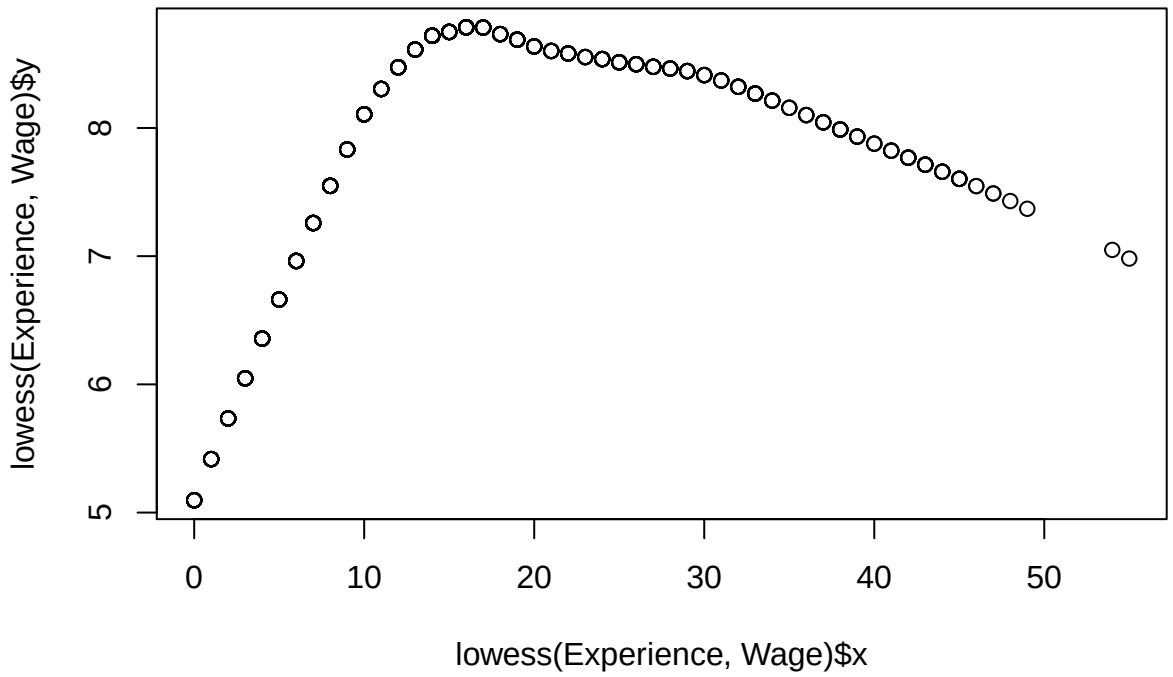
```
##
##  Wilcoxon rank sum test with continuity correction
##
## data:  Wage[Gender == "Male"] and Wage[Gender == "Female"]
## W = 44780, p-value = 1
## alternative hypothesis: true location shift is less than 0
```

1.2 exploratory plot

```
plot(Experience,Wage)
```



```
plot(lowess(Experience,Wage))
```



1.3 cor.test-1:Age,Experience-Wage

```
cor.test(Age,Wage)
```

```
##
##  Pearson's product-moment correlation
##
## data:  Age and Wage
## t = 4.1472, df = 532, p-value = 3.917e-05
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  0.09352049 0.25794433
## sample estimates:
##       cor
## 0.1769669
```

```
cor.test(Experience,Wage)
```

```
##
##  Pearson's product-moment correlation
##
## data:  Experience and Wage
## t = 2.0157, df = 532, p-value = 0.04433
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  0.002225287 0.170649603
```

```
## sample estimates:
##        cor
## 0.08705953
```

```
cor.test(Experience,Wage,alternative="greater")
```

```
##
##  Pearson's product-moment correlation
##
## data:  Experience and Wage
## t = 2.0157, df = 532, p-value = 0.02217
## alternative hypothesis: true correlation is greater than 0
## 95 percent confidence interval:
##  0.01589858 1.00000000
## sample estimates:
##        cor
## 0.08705953
```

1.4 show information on Experience|Gende

```
y=Experience[Gender=="Male"]
x=Experience[Gender=="Female"]
mean(x)
```

```
## [1] 18.83265
```

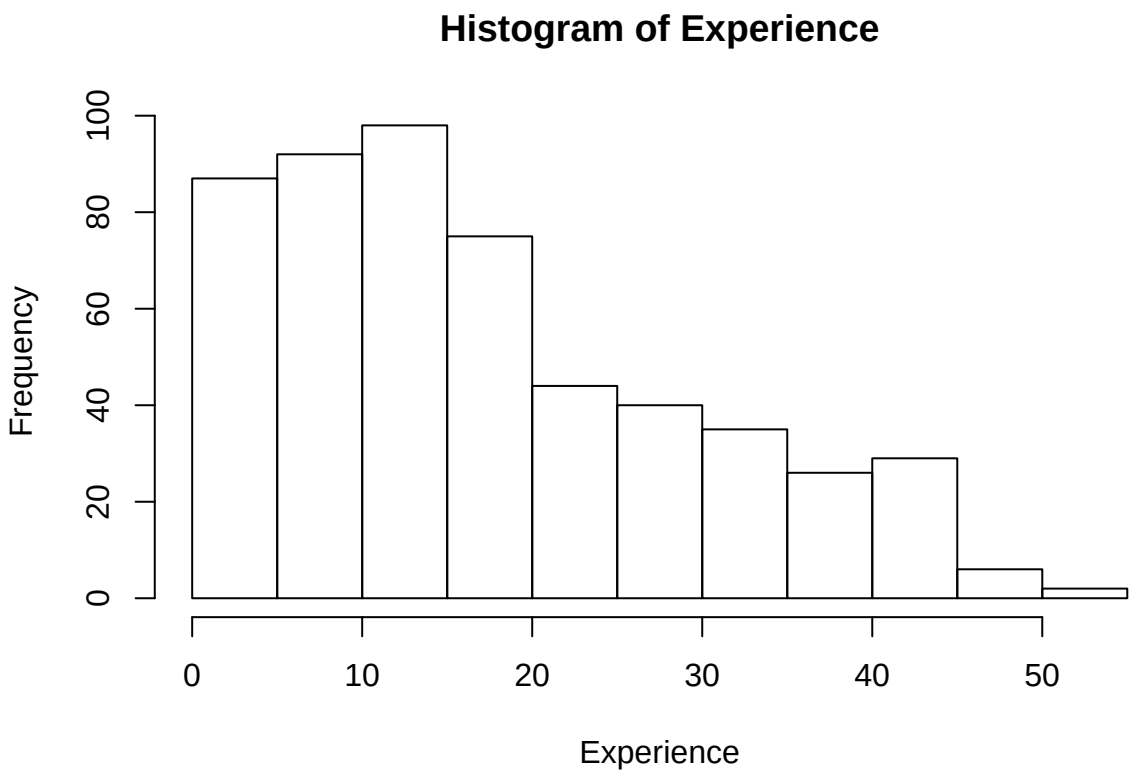
```
mean(y)
```

```
## [1] 16.9654
```

```
table(Experience)
```

```
## Experience
##  0  1  2  3  4  5  6  7  8  9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
## 11 12 15 18 16 15 17 18 19 15 23 11 18 23 28 18 22 15 11 14 13  7 10  6 11
## 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49
## 10 10  8  8  8  6  4  8 15  5  3  4  5  9  5  3  4  7  7  5  6  2  2  1  1
## 54 55
##  1  1
```

```
hist(Experience)
```




```
table(Experience,Gender)
```

```
##            Gender
## Experience Female Male
##          0       5    6
##          1       5    7
##          2       6    9
##          3       5   13
##          4       7    9
##          5       5   10
##          6      15    2
##          7       7   11
##          8       5   14
##          9       4   11
##          10     12   11
##          11      6    5
##          12      5   13
##          13     10   13
##          14     12   16
##          15     13    5
##          16     10   12
##          17      5   10
##          18      4    7
##          19      5    9
##          20      4    9
##          21      3    4
##          22      3    7
##          23      1    5
##          24      9    2
```

```
##         25      8    2
##         26      6    4
##         27      3    5
##         28      5    3
##         29      4    4
##         30      3    3
##         31      1    3
##         32      5    3
##         33      8    7
##         34      1    4
##         35      0    3
##         36      2    2
##         37      3    2
##         38      6    3
##         39      3    2
##         40      2    1
##         41      1    3
##         42      4    3
##         43      4    3
##         44      2    3
##         45      5    1
##         46      2    0
##         47      0    2
##         48      0    1
##         49      1    0
##         54      0    1
##         55      0    1
```

1.5 wilcox.test-2:Experience|Gender

```
y=Experience[Gender=="Male"]
x=Experience[Gender=="Female"]
wilcox.test(x,y)
```

```
##
##  Wilcoxon rank sum test with continuity correction
##
## data:  x and y
## W = 38431, p-value = 0.08819
## alternative hypothesis: true location shift is not equal to 0
```

```
wilcox.test(y,x,alternative="greater")
```

```
##
##  Wilcoxon rank sum test with continuity correction
##
## data:  y and x
## W = 32374, p-value = 0.956
## alternative hypothesis: true location shift is greater than 0
```

```r
wilcox.test(y[Experience==10],x[Experience==10])
```

```
## Warning in wilcox.test.default(y[Experience == 10], x[Experience == 10]):
## cannot compute exact p-value with ties
```

```
##
##  Wilcoxon rank sum test with continuity correction
##
## data:  y[Experience == 10] and x[Experience == 10]
## W = 17.5, p-value = 0.1524
## alternative hypothesis: true location shift is not equal to 0
```

```r
wilcox.test(Wage[Gender=="Female" & Experience==10],Wage[Gender=="Male" & Experience==10])
```

```
## Warning in wilcox.test.default(Wage[Gender == "Female" & Experience ==
## 10], : cannot compute exact p-value with ties
```

```
##
##  Wilcoxon rank sum test with continuity correction
##
## data:  Wage[Gender == "Female" & Experience == 10] and Wage[Gender == "Male" & Experience == 10]
## W = 28.5, p-value = 0.02274
## alternative hypothesis: true location shift is not equal to 0
```

```r
wilcox.test(Wage[Gender=="Female" & Experience==13],Wage[Gender=="Male" & Experience==13])
```

```
##
##  Wilcoxon rank sum test
##
## data:  Wage[Gender == "Female" & Experience == 13] and Wage[Gender == "Male" & Experience == 13]
## W = 59, p-value = 0.7381
## alternative hypothesis: true location shift is not equal to 0
```

```r
wilcox.test(Wage[Gender=="Female" & Experience==14],Wage[Gender=="Male" & Experience==14])
```

```
## Warning in wilcox.test.default(Wage[Gender == "Female" & Experience ==
## 14], : cannot compute exact p-value with ties
```

```
##
##  Wilcoxon rank sum test with continuity correction
##
## data:  Wage[Gender == "Female" & Experience == 14] and Wage[Gender == "Male" & Experience == 14]
## W = 70.5, p-value = 0.2454
## alternative hypothesis: true location shift is not equal to 0
```