R version 3.4.1 (2017-06-30) -- "Single Candle"

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Platform: x86_64-w64-mingw32/x64 (64-bit)

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 Natural language support but running in an English locale

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[Previously saved workspace restored]

> #Script Name: dilip.k.lalwani_HW07_Script.R

> #Location: C:\Users\dilip\Google Drive\FALL 2017 CLASSES\STAT 604\HW07

> #Created by Dilip Lalwani

> #Creation Date: 10/04/17

> #Purpose: Practice using higher level graphics and adding objects to graphs.

> #Last executed: 10/05/17

>

> Sys.time()

```
[1] "2017-10-05 00:26:23 CDT"

> #1 housekeeping

> objects()

[1] "OKHS"    "Oklahoma" "zipdata"

> ls()

[1] "OKHS"    "Oklahoma" "zipdata"

> rm(list=ls())

> #2 load previously saved workspace

> load("C:/Users/dilip/Google Drive/FALL 2017 CLASSES/STAT 604/HW04/HW04.RData")

> # show contents of workspace

> ls ()

[1] "Oklahoma"

> #3 Send graphics to PDF file

> pdf("C:/Users/dilip/Google Drive/FALL 2017 CLASSES/STAT
604/HW07/dilip.k.lalwani_HW07_graph.pdf")

> #4a First histogram with default number of breaks

> hist(Oklahoma$PTRatio, freq=FALSE, xlab="Pupils/Teacher", main="Pupil/Teacher Ratios in Oklahoma
Schools")

> #4b Vector that can be used to extend the length of the X axis and force breaks every 5 pupils/teacher

> brv <- seq(0,max(Oklahoma$PTRatio, na.rm=TRUE),5)

> #4c New histogram with break points at 5 pupils/teacher

> hist(Oklahoma$PTRatio, freq=FALSE, breaks=brv, xlab="Pupils/Teacher", main="Pupil/Teacher Ratios
in Oklahoma Schools")

> #5 Maroon line to the graph that shows the normal distribution density of the PTRatio numbers

> xd <- seq(min(Oklahoma$PTRatio, na.rm=TRUE), max(Oklahoma$PTRatio, na.rm=TRUE), 0.01)

> yd <- dnorm(xd, mean=mean(Oklahoma$PTRatio, na.rm=TRUE), sd=sd(Oklahoma$PTRatio,
na.rm=TRUE))

> lines(xd, yd, col="RED")

> #6 Vertical line on the previous histogram at the average PTRatio

> abline(v=mean(Oklahoma$PTRatio, na.rm=TRUE), col=5)
```

```
> #7 New plot showing the number of teachers compared to the PTRatio

> plot(Oklahoma$Teachers, Oklahoma$PTRatio, pch=3, col="#FF9900",xlim=c(0,140), xlab="Teachers",
ylab="Pupil/Teacher Ratio")

> #8 Colored fit line for the plot

> abline(lm(PTRatio~Teachers, Oklahoma), col="PURPLE")

> fl <- lm(PTRatio~Teachers, Oklahoma)

> summary(fl)


Call:

lm(formula = PTRatio ~ Teachers, data = Oklahoma)


Residuals:

   Min    1Q  Median    3Q    Max

-14.627  -1.935  -0.015   1.666 140.506


Coefficients:

          Estimate Std. Error t value Pr(>|t|)

(Intercept) 14.383468  0.227431  63.243  < 2e-16 ***

Teachers    0.045986  0.007922   5.805 7.61e-09 ***

---

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


Residual standard error: 5.686 on 1778 degrees of freedom

  (5 observations deleted due to missingness)

Multiple R-squared:  0.0186,    Adjusted R-squared:  0.01805

F-statistic:  33.7 on 1 and 1778 DF,  p-value: 7.612e-09


> #9 Date and time of creation embedded near the upper right hand corner of the graph area

> text(80, 150, Sys.time(), adj=0)
```

```
> #10 Boxplot of the number of students in each grade (Columns Grade7 through Grade12)

> boxplot(Oklahoma[6:11], range=0, names=c(7,8,9,10,11,12), xlab="Grades", ylab="Students",
main="Tulsa County vs. State", col="lightgreen")

> #11 Diamonds representing average number of students in each grade from Tulsa County.

> okla <- rep(0, 6)

> for(i in 6:11)

+ {

+ okla[i-5] <- mean(Oklahoma[grepl("Tulsa", Oklahoma$County, ignore.case = TRUE),i], na.rm=TRUE)

+ }

> lines(okla, type="p", pch=23, col="red", bg="darkgreen", cex=1.5)

> dev.off()

null device

      1

>
```