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The *R* Workshop

Applying the Integrated Suite of Software Facilities for Statistical Computing and Graphics

University of Georgia
Department of Workforce Education, Leadership, and Social Foundations
College of Education Research Office

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6. Summarizing Data

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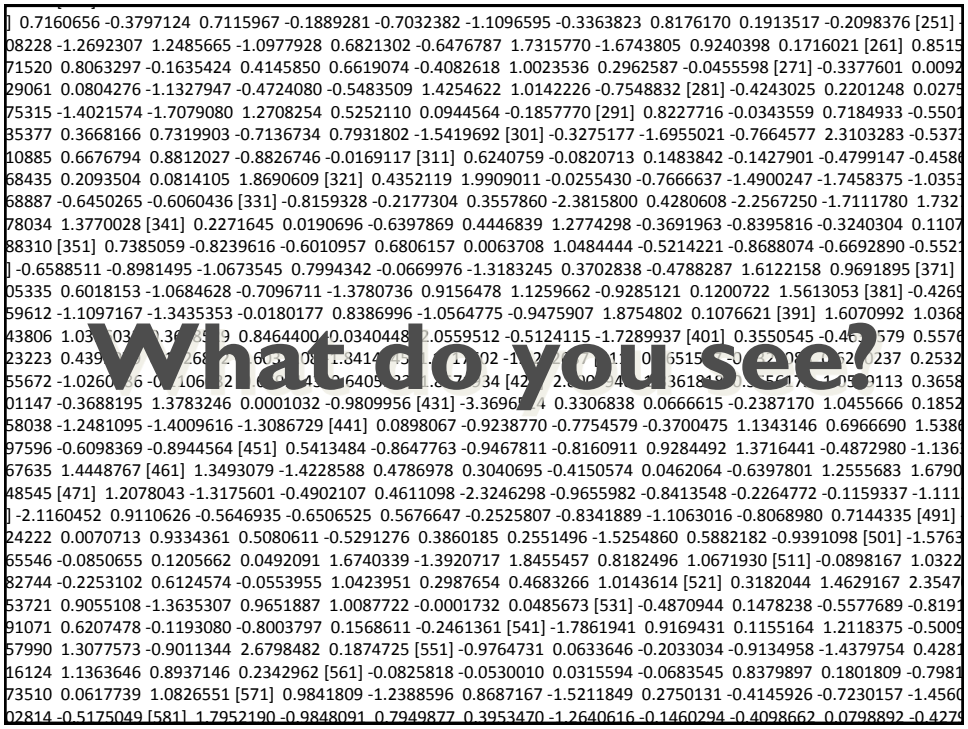


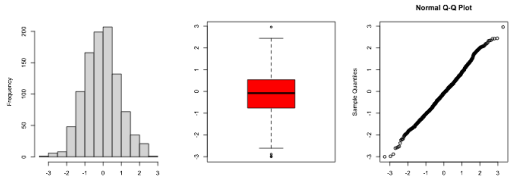
What or How to Summarize Your Data

- It depends on your research question(s)
- Do not make blind ventures with your data
- Avoid overcooking
- Use your intelligence and common sense

Summarizing Data

Distribution!

- Distributional information would be *be-all* and *end-all*
- Statistics such as mean, standard deviation, and regression coefficients stand for some partial (but important) features of the distribution
- Visualization is always the first step of your analysis



Summarizing Data

Summary Statistics

- Location (of the distribution):
  mean, median, trimmed mean...
- Scale (of the distribution):
  standard deviation, variance, range, IQR...
- Shape (of the distribution):
  skewness, kurtosis...
- Relative location (in the distribution):
  quantile, percentile, minimum, maximum...

Summarizing Data

```
library(MatchIt)
data(lalonde)
attach(lalonde)

boxplot(re78~treat)

re78.treat <- re78[treat==1]
re78.contr <- re78[treat==0]

mean(re78); sd(re78)
mean(re78.treat); sd(re78.treat)
mean(re78.contr); sd(re78.contr)

summary(lalonde)
```

Summarizing Data


```
summary.stats <- function(y)
{
x <- na.omit(y)        # Omit missing values
m <- mean(x)
s <- sd(x)
z <- (x-m)/s           # Standardization
skew <- mean(z^3)      # Skewness
kurt <- mean(z^4)      # Kurtosis
mini <- min(x)         # Minimum
maxi <- max(x)         # Maximum
q <- quantile(x, probs=c(.25, .50, .75))
res <- list(average=m, stdev=s,
            skewness=skew, kurtosis=kurt,
            q1=q[1], q2=q[2], q3=q[3],
             minimum=mini, maximum=maxi)

return(res)
}

summary.stats(re78.treat)
summary.stats(re78.contr)
```

Summarizing Data

```
table(treat, black)
table(treat, hisp)
table(treat, married)
table(treat, nodegr)
par(mfrow=c(1,2))
boxplot(age~treat, names=c("Control", "Treatment"), ylab="age")
boxplot(educ~treat, names=c("Control", "Treatment"),
 ylab="educ")
```

Summarizing Data