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- 1) UNIVARIATE ANALYSES. (Use data file “Z:\Cathy Zimmer\STATA\2018 u.s. general social survey.dta”.)  
a) Frequency Distributions.  
i) Tabulate command.

```
tab1 sex  
tab1 sex, plot  
tab1 age, plot
```

- ii) Stem command.

```
stem age  
stem age, lines(10)
```

- iii) Table command.

```
table happy  
table happy, row
```

- b) Descriptive Statistics.  
i) Summarize command.

```
su age educ  
su age educ, detail  
  
by sex: su age educ, detail
```

- ii) Means command.

```
means age educ
```

- c) T-tests – ttest command -- testing the hypothesis that a variable has a specified mean.

```
ttest age=45
```

- d) Confidence Intervals – ci command.

```
ci means educ  
ci means educ, level(90)
```

*\*\*Note: All of the analyses above and the ones to follow can be done using the menu system as well.*

## 2) BIVARIATE ANALYSES.

- a) Cross Tabulations -- tabulate command.

```
tab2 sex happy, row col cell  
tab2 sex happy, chi2  
tab2 sex happy, all exact
```

- b) Correlation Coefficients and Covariances.

- i) Correlate command – observations are excluded if one of the variables has a missing value, that is, listwise deletion is used.

```
cor age educ  
cor age educ prestg10, covariance
```

- ii) Pwcorr command – calculations of correlations are done on a pairwise basis.

```
pwcorr age educ prestg10, obs sig
```

- c) T-tests – ttest command

- i) Independent samples -- testing the hypothesis that two groups have the same mean on one variable.

```
ttest educ, by (sex)  
ttest educ, by (sex) unequal
```

- ii) Paired samples – testing the hypothesis that one group has the same mean on two variables.

```
ttest maeduc=paeduc
```

- d) One-Way ANOVA – oneway command.

```
oneway educ race, scheffe tabulate
```

## 3) MULTIVARIATE ANALYSES.

- a) OLS Regression – regress command.

```
reg educ age paeduc sex
```

The following posttest commands can be executed after the regress command to perform regression diagnostics.

```
rvfplot, yline(0) – to produce a fitted residual versus fitted value plot  
avplots – to produce partial plots  
hettest – to test for heteroscedasticity  
vif – to test for multicollinearity
```

b) Logistic Regression – logistic command.

**logistic happy2 age sex educ**

(Note: Use the ologit command for ordered logistic regression and the mlogit command for multinomial logistic regression.)

c) ANOVA – anova command.

**anova educ sex race sex#race**

d) Other Techniques

i) Survival Analysis – st streg command.

ii) Generalized Linear Models – glm command.

iii) Tobit Regression -- tobit command.

iv) Two Stage Least Squares Regression – ivreg command or reg3 command.

v) Panel Data Analyses – a set of xt commands, such as xtreg. See the XT Manual.

vi) Many, many others....

4) GRAPHICS. (Back to auto.dta data.)

a) Producing Graphs

i) Bar Chart

(1) This is a user-written command, so we need to install it.

**findit catplot**

(2) Click on “catplot from <http://fmwww.bc.edu/RePEc/bocode/c>”

(3) Click on “(click here to install)”

(4) Now we can use the command.

**catplot foreign**  
**catplot foreign, percent recast(bar)**

ii) Other Bar Charts

**graph bar mpg, over(foreign)**  
**graph hbar mpg, over(foreign) over(rep78)**

Try the same thing with the menu system – and add some options – it is easier!

iii) Histogram

**histogram foreign, frequency**  
**histogram price, percent**

iv) Pie Chart

**graph pie, over(foreign)**  
**graph pie, over(foreign) plabel(\_all percent)**

v) Box Plot

**graph box mpg, by(foreign, row(1) total)**

vi) Scatterplots

**graph twoway scatter mpg weight**  
**graph twoway scatter mpg weight || lfit mpg weight**

b) Saving Graphs

To save a graph, click on File, Save As, type in name for file, and save.  
Notice the .gph extension, which tells Stata that this is a graph file.

c) Editing Graphs

To edit a graph, right click on the graph and click Start Graph Editor. Click on the part of the graph you want to change. Then change the appropriate values in the dialog box.

d) Copying Graphs

To copy a graph to a word processor or other application, right click on the graph and click Copy Graph. Then paste into the other document.