

Lecture 7: Tables and Figures

BIOSTAT 212, Summer 2016



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Review/ questions from last week?

Interaction vs. Confounding

```
cs response any_acu, by(migraine)
```

migraine	RR	[95% Conf. Interval]		M-H Weight
0	.4444444	.0490764	4.024966	1.058824
1	1.800402	1.360891	2.381856	22.77465
Crude	1.737737	1.316512	2.293735	
M-H combined	1.740162	1.319813	2.294389	
Test of homogeneity (M-H)		chi2(1) =	1.531	Pr>chi2 = 0.2160

Interaction: Are the stratum specific RRs different, look at the MH test for homogeneity
(low p-value = evidence for interaction)

Confounding: Does the crude (unadjusted) estimate differ from the adjusted (MH combined)?
NO P-value

Tables

◊ When to use

- display comparison
- enumerate a list that cannot be in text form

◊ When not to use

- when data is better shown as a figure
- When you can summarize table in a sentence

Tables

- ◇ Generate numbers/statistics in Stata
- ◇ Copy into excel
 - Edit<copy table
 - Copy numbers
 - *minimize manual retyping
- ◇ Round in excel

- ◇ There are programs that will directly export tables into word and format. Check out the .pdf “Making publication quality tables in stata” on the website. (good for LATEX users)

Practice

Table 1: Baseline characteristics. Values are in numbers (percentages) of participants unless otherwise indicated

	Acupuncture (N)	Control (N)
Mean age in years (SD)	Mean (SD)	Mean (SD)
Female	N (%)	N (%)
Migraine diagnosis	N (%)	N (%)
Mean chronicity in years (SD)	N (SD)	N (SD)

Practice

- ◇ Run code for table in Stata (in .do file)

- `tabstat age sex migraine chronicity, by(group) stat(n mean sd)`

- ◇ Edit<copy table

- ◇ Paste into excel

- ◇ Round in excel

- ◇ Format in excel/word

-
- ◇ Run code for table in Stata
 - ◇ Edit<copy table
 - ◇ Paste into excel
 - ◇ Round in excel
 - ◇ Format in excel/word

Figures

◊ When to use

- demonstrating overall effects, comparisons
- showing trends, longitudinal variation

◊ When not to use

- can data be displayed in text? as a table?

◊ Design features

- simple design, large easy to read labels, all axes labeled

Figures

◊ Lecture 5:

- `histogram*`
- `graph box*`

◊ Today:

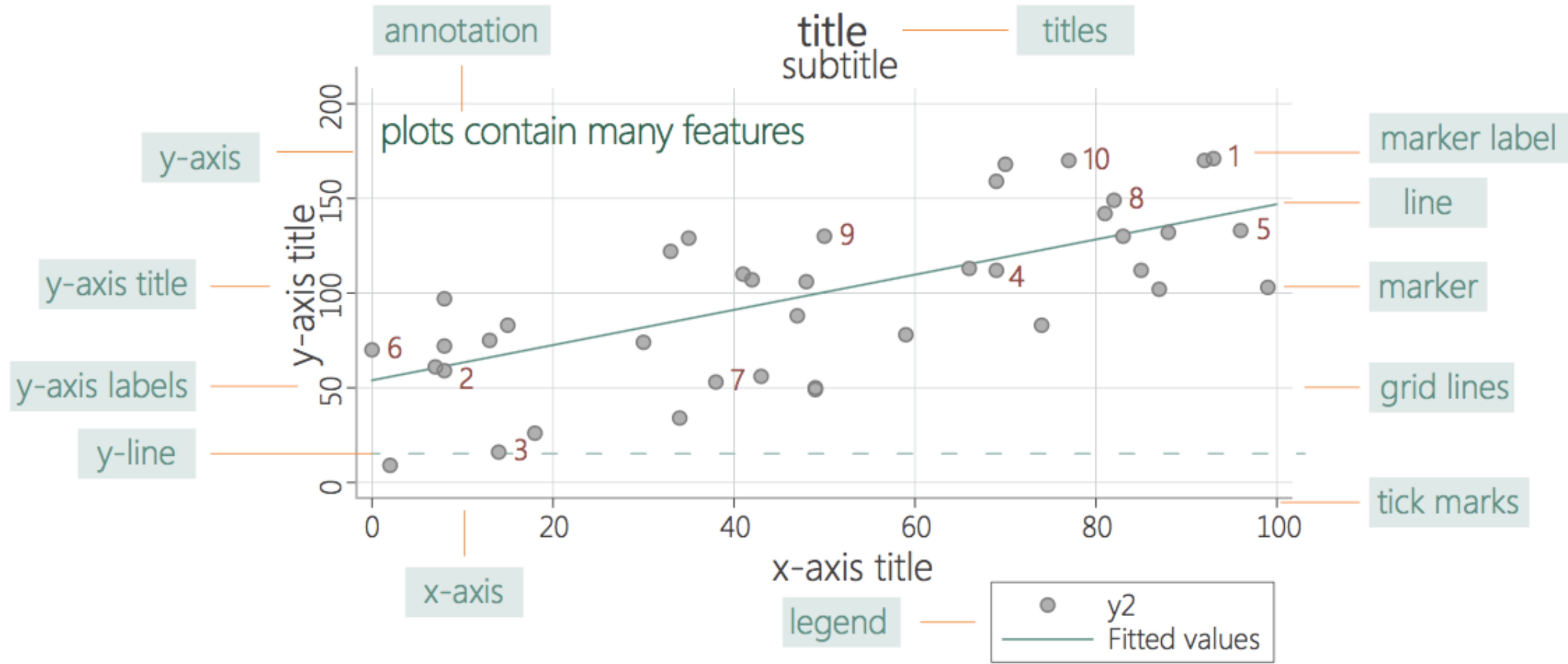
1. `dotplot*`

2. The `'twoway'` family:

- `scatter`
- `kdensity`
- **Fit**
 - `lowess`
 - `Lfit` – Linear fit
 - `Lfitci` – Linear fit with CIs
- `bar`

*use same twoway formatting options

ANATOMY OF A PLOT



Dot plot: dotplot

dotplot `varname`

Options

`, over(varname)`

`center`

`if`

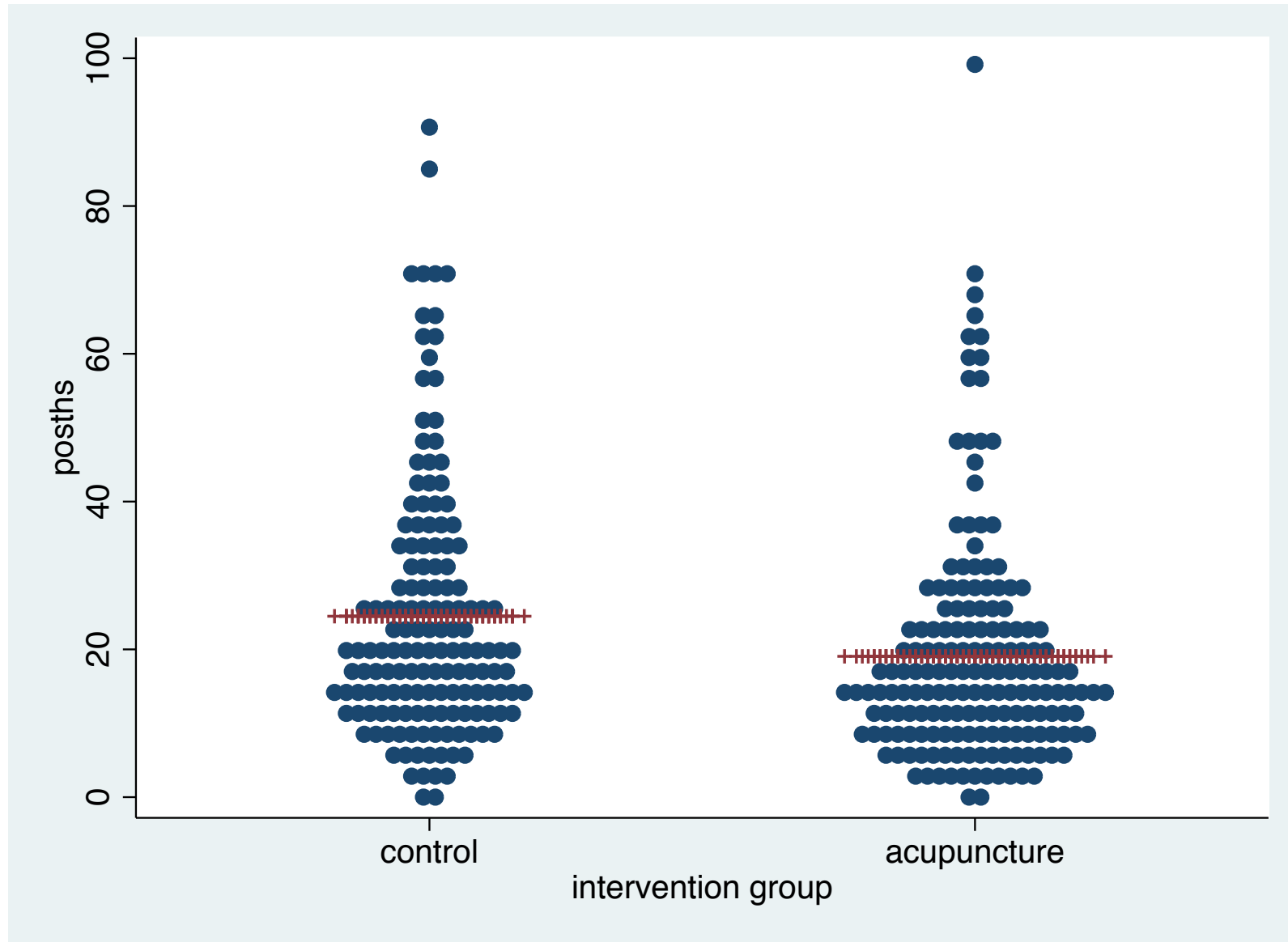
`in`

`mean`

`median`

`twoway_options`

- display dotplot for each value of `groupvar`
- center the dot for each column
- use logic operators
- subset data
- place horizontal line at mean
- place horizontal line at median
- all options of `twoway` also allowed



`dotplot posths, over(group) center mean`

The twoway family: `twoway`

`twoway` `plot` `varname`

`plot type:`

- | | |
|------------------------|-----------------------------------|
| <code>scatter</code> | – scatterplot |
| <code>area</code> | – line plot with shading |
| <code>bar</code> | – bar plot |
| <code>dot</code> | – dot plot |
| <code>contour</code> | – contour plot with filled areas |
| <code>lowess</code> | – lowess line plot |
| <code>lfit</code> | – linear prediction plot |
| <code>lfitci</code> | – linear prediction plot with CIs |
| <code>histogram</code> | – histogram plot |
| <code>kdensity</code> | – kernel density plot |

****Many more – read the twoway help file**

Twoway: overlay 2 or more graphs

twoway

```
plot1 varname [plot1 options] ||  
plot 2 varname [plot2 options] ||  
plot 3 varname [plot3 options] ||
```

or

twoway

```
(plot1 varname [plot1 options])  
(plot 2 varname [plot2 options])  
(plot 3 varname [plot3 options])
```

Saving and naming

, saving ("graphname", replace)

-Save the graph as a Stata .gph file on

, name ("graphname")

-graph is saved in memory instead of on disk. Once we quit Stata, the graph in memory is erased.

Figure options

general options

, by (varname)
in

-for each value of groupvar
-subset data

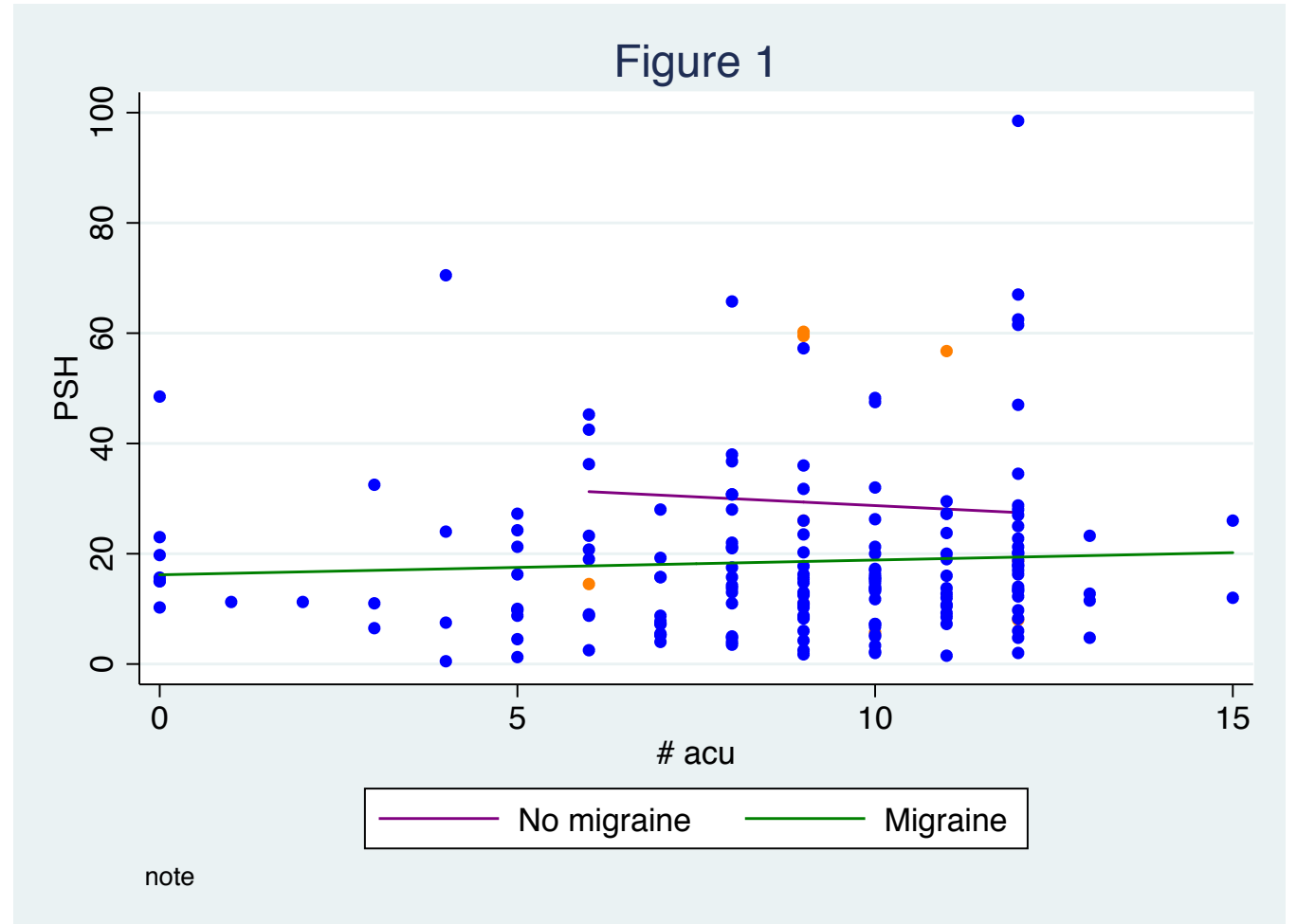
title options

title (xyz)
subtitle (xyz)
caption (xyz)
note (xyz)

- overall title
- subtitle of title
- Explanation of plot
- add a note on the plot

Practice: Figure 1

- Open the 'lecture7' .do file
- Run the code for 'Figure 1'



Practice: Figure 1

- ◇ Change the title to “Figure 1: Acupuncture treatments and headache score”

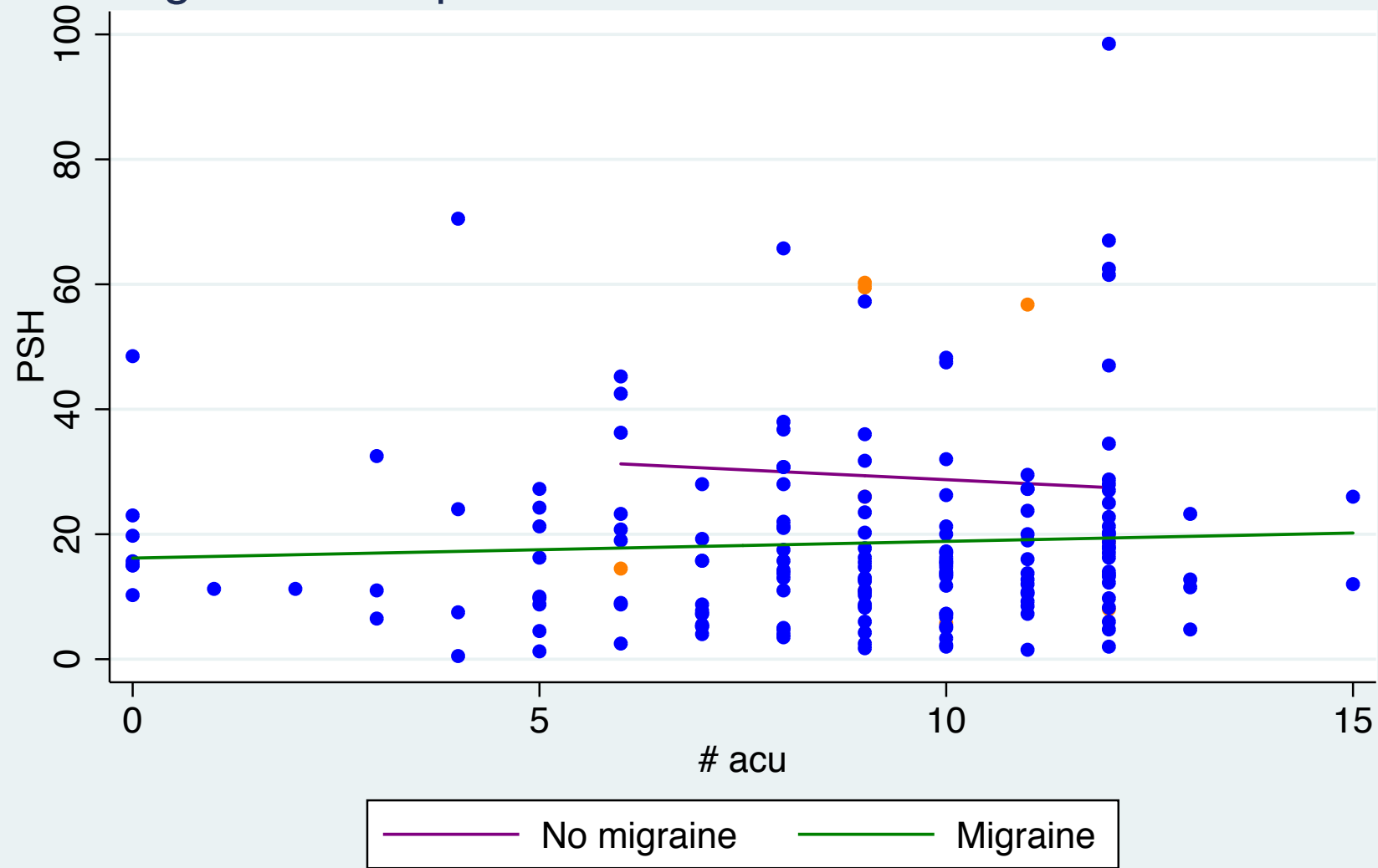
`title (Figure 1: Acupuncture treatments and headache score)`

- ◇ Add a note

`note (Lecture 7 practice)`

- ◇ Run your commands for Figure 1 to see if it worked

Figure 1 : Acupuncture treatments and headache score



Lecture 7 practice

Figure options, cont.

Axis options

`ytitle(xyz)`

- y axis title

`xtitle(xyz)`

- x axis title

`tttitle(xyz)`

- time axis title

Legend options

`label1(xyz)`

- custom label

`leend(off)`

- turn legend off (xyz)

Legend options

`fysize (#)`

- force y size, as a percentage

`fxsize (#)`

- force x size, as a percentage

Practice: Figure 1

- ◇ Change the y-axis to “Post-study headache score”

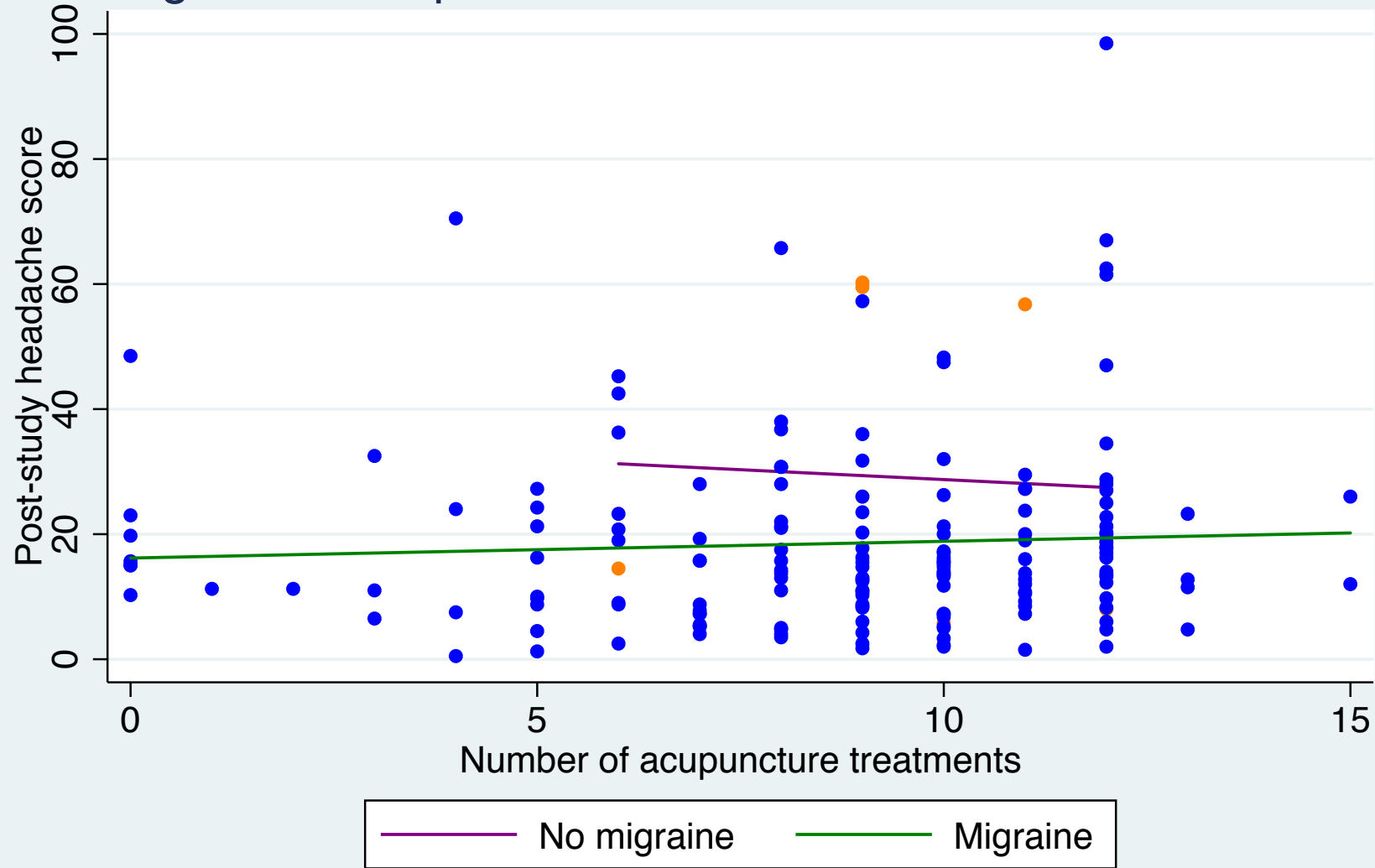
```
ytitle(Post-study headache score)
```

- ◇ Change the x-axis to “Number of acupuncture treatments”

```
xtitle(Number of acupuncture treatments)
```

- ◇ Run your commands for Figure 1 to see if it worked

Figure 1 : Acupuncture treatments and headache score



Lecture 7 practice

Color options



Marker color

`mcolor(blue)`

Marker label color

`mlcolor(blue)`

Line color

`lcolor(blue)`

Text color

`color(blue)`

Gridline color

`glcolor(blue)`

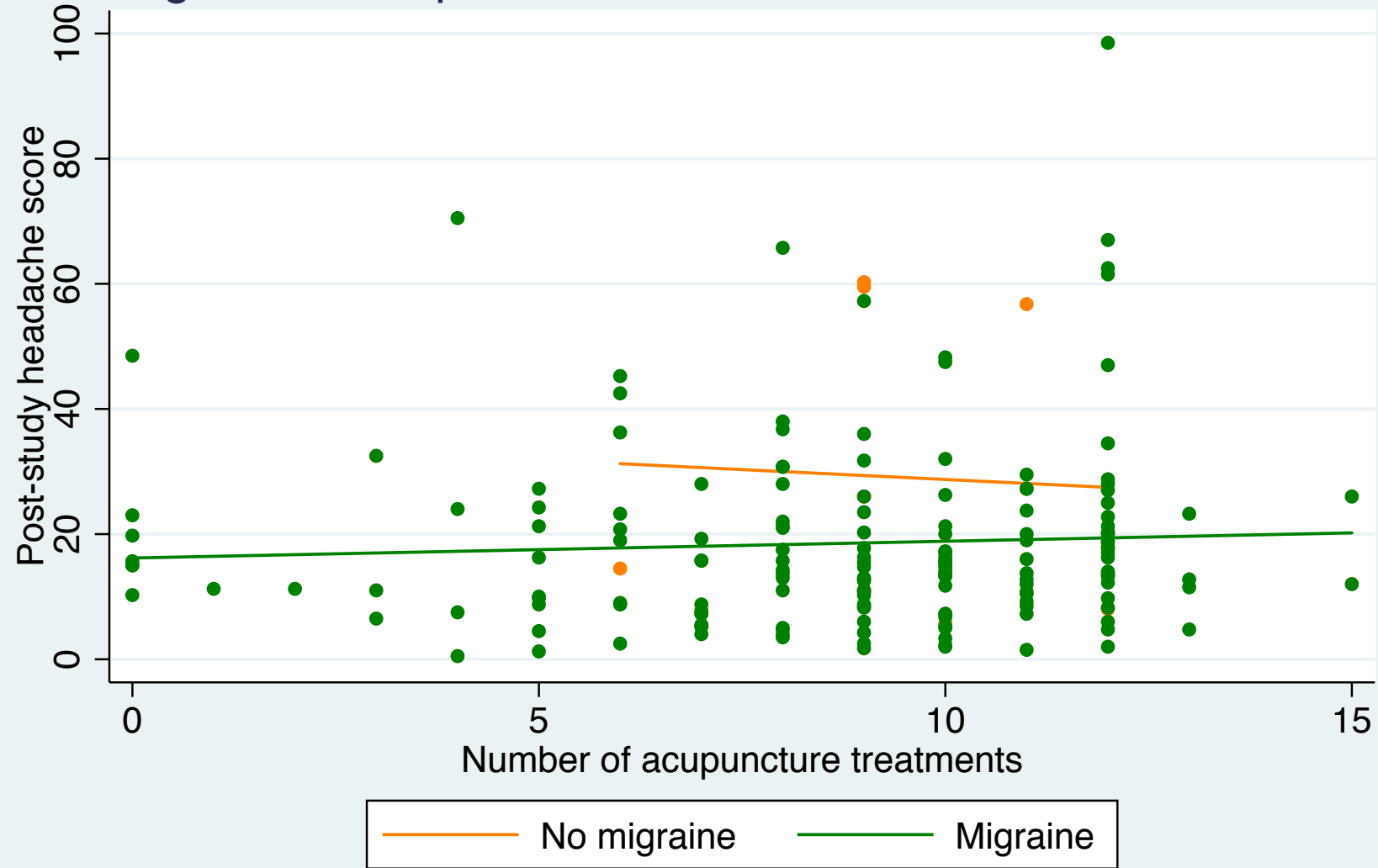
Axis label color

`labcolor(blue)`

Practice: Figure 1

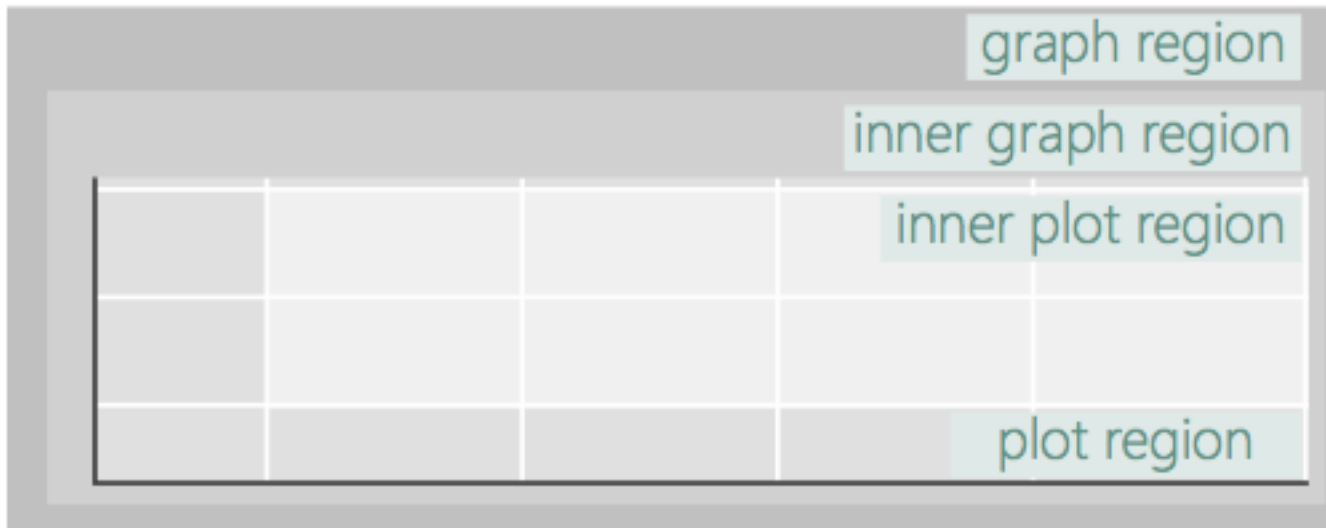
- ◇ Change the marker color to orange for the no migraine group
 - `mcolor(orange)`
- ◇ Change the line color to green for the migraine group
 - `lcolor(green)`
- ◇ Run your commands for Figure 1 to see if it worked

Figure 1 : Acupuncture treatments and headache score



Lecture 7 practice

Region options



Graph region color

`graphregion (color (blue) )`

Plot region color

`plotregion (color (blue) )`

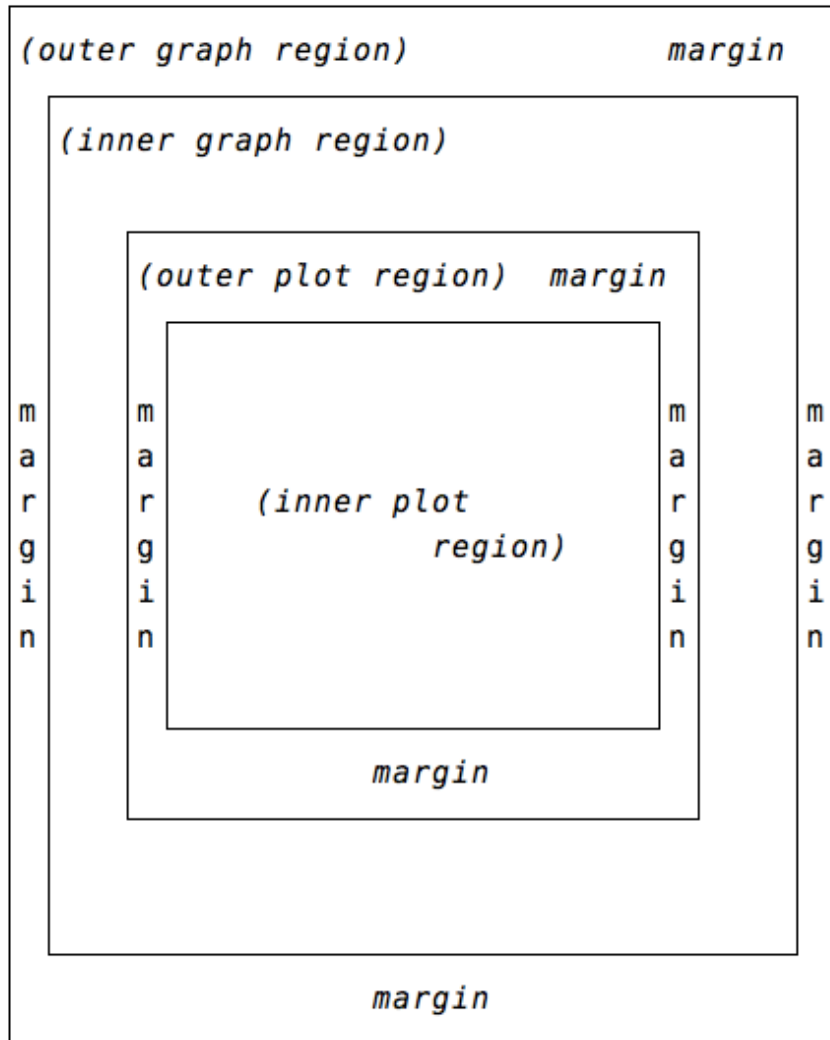
Graph region outline color

`graphregion (lcolor (blue) )`

Plot region outline color

`plotregion (lcolor (blue) )`

Margin options



Title margin

```
title("my title", margin(tiny))
```

Graph region margin

```
graphregion(margin(large))
```

Size options

zero
tiny
vsmall
small
medsmall
medium
medlarge
large
vlarge

Line pattern options

, `lpattern(solid)`

A solid horizontal line.

solid

A horizontal line with short, regular dashes.

dash

A horizontal line with long dashes and single dots.

longdash_dot

A horizontal line with small, regular dots.

dot

A horizontal line with long, regular dashes.

longdash

A horizontal line with short dashes and single dots.

dash_dot

A horizontal line with short, regular dashes.

shortdash

A horizontal line with short dashes and single dots.

shortdash_dot

blank

, `glpattern(solid)`

-grid line pattern

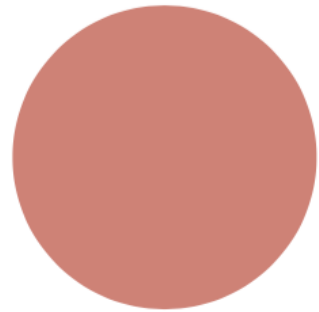
Marker symbol options

, msymbol (D)

	O		D		T		S
	o		d		t		s
	Oh		Dh		Th		Sh
	oh		dh		th		sh
	+		X		p	none	i

Marker size options

, msize(huge)



ehuge



vhuge



huge



vlarge



large

● medlarge

● medium

● medsmall

● small

● vsmall

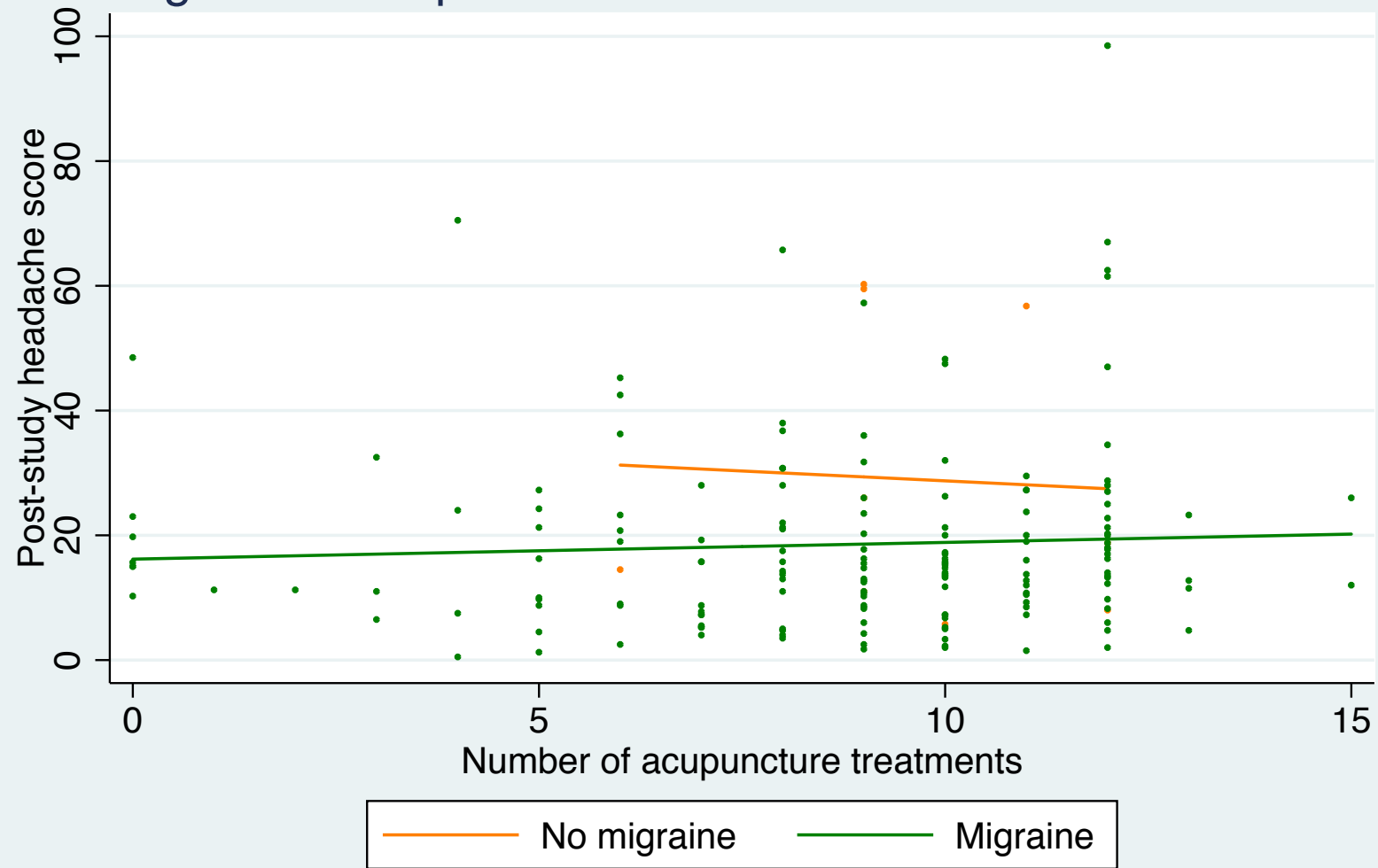
● tiny

● vtiny

Practice: Figure 1

- ◇ Change the marker size to tiny (both no migraine and migraine group)
 - `msize(tiny)`
- ◇ Run your commands for Figure 1 to see if it worked

Figure 1 : Acupuncture treatments and headache score



Lecture 7 practice

Text size options

, size(`large`)

28 pt.	vhuge	10 pt.	medsmall
20 pt.	huge	8 pt.	small
16 pt.	vlarge	6 pt.	vsmall
14 pt.	large	4 pt.	tiny
12 pt.	medlarge	2 pt.	half_tiny
11 pt.	medium	1.3 pt.	third_tiny
		1 pt.	quarter_tiny
		1 pt	minuscule

Line width options

, lwidth(*thin*)

	vvtick		medthin
	vtick		thin
	thick		vthin
	medthick		vvthin
	medium		none

, glwidth(*thin*)

– Grid line width

Schemes

, scheme ([scheme](#))

Stata scheme options

s2color

- factory setting

s2mono

- s2color in monochrome

s2gcolor

- color white used in the Stata manuals

s2manual

- s2gcolor in monochrome

s1rcolor

- a plain look on black background

s1color

- a plain look

s1mono

- a plain look in monochrome

s1manual

- s1mono but smaller

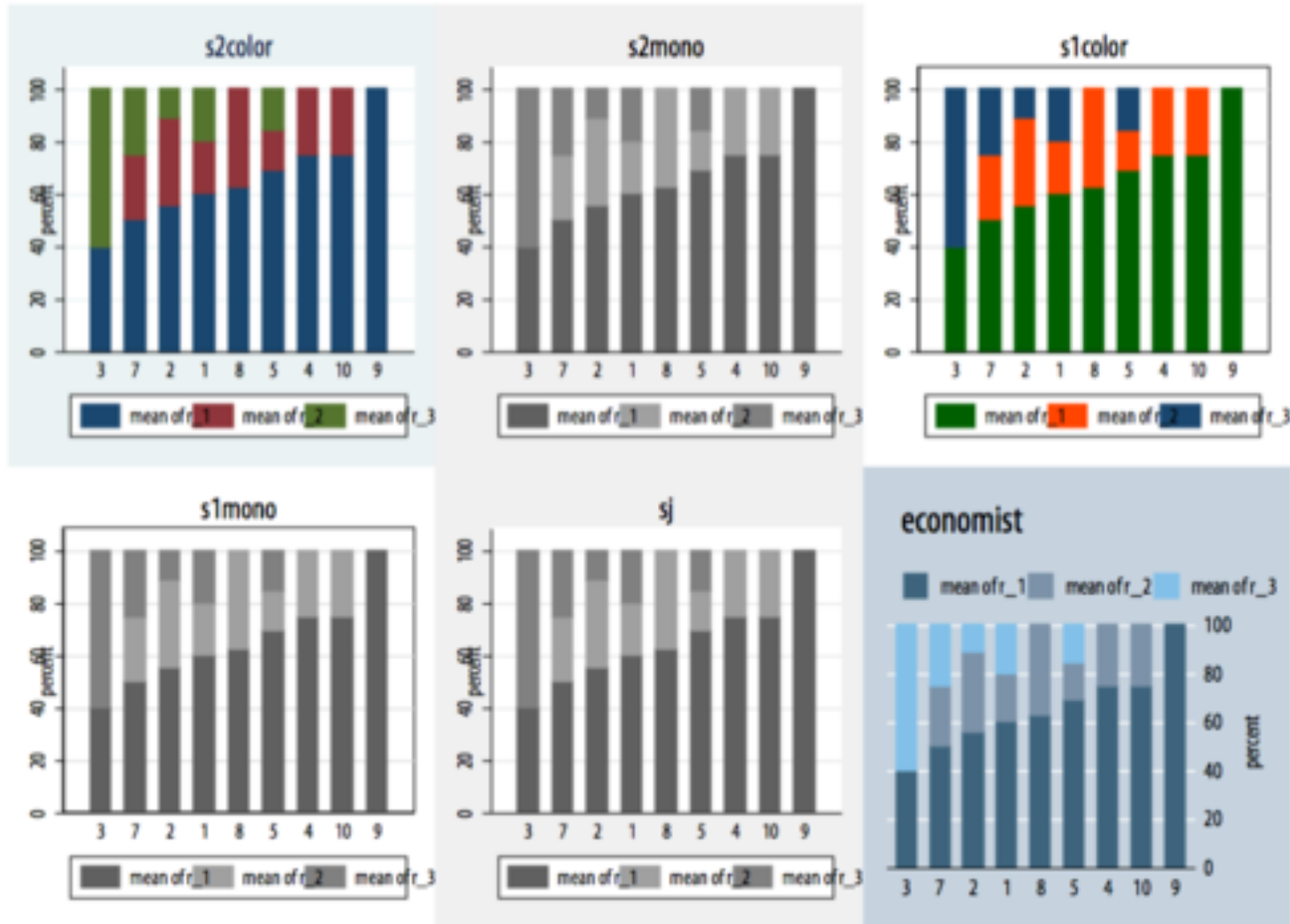
economist

- The Economist magazine

sj

- Stata Journal

Stata schemes



Scheme options

set scheme `schemename`

– set your default scheme (in .do file)

set scheme `schemename`, permanently

– set your default scheme permanently

Or:

[preferences<graph preferences]

**you can also select default text here*

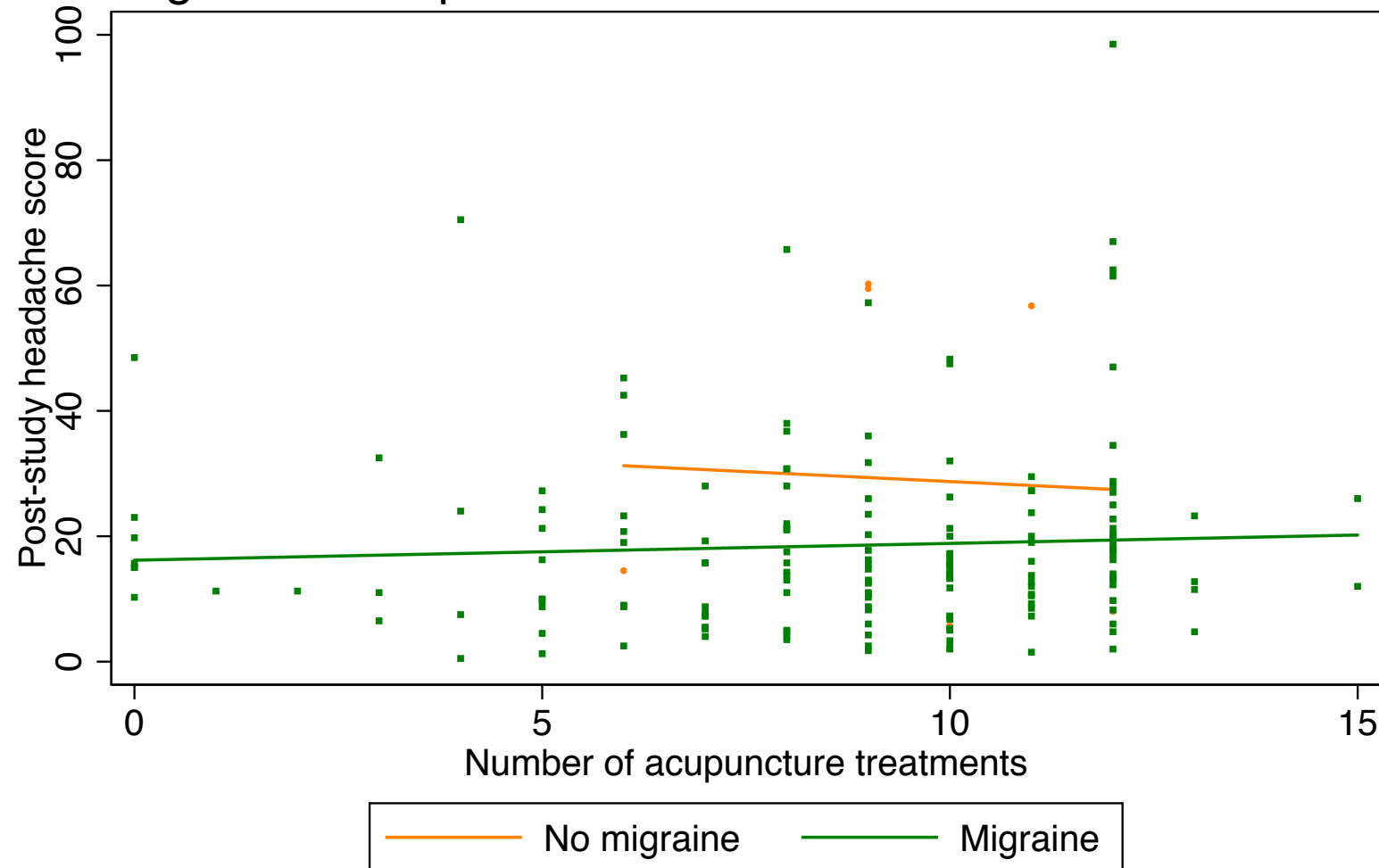
Additional options

1. Create and save your own scheme (.ado file)
2. Download other schemes from the internet

Practice: Figure 1

- ◇ Change the scheme to `s1mono`
 - `scheme (s1mono)`
- ◇ Run your commands for Figure 1 to see if it worked

Figure 1 : Acupuncture treatments and headache score



Lecture 7 practice

Combining figures: `graph combine`

`graph combine graph1 graph2 graph3...`

options

`, altshrink`

- reduces size of text and markers

`, cols(#)`

- number of columns

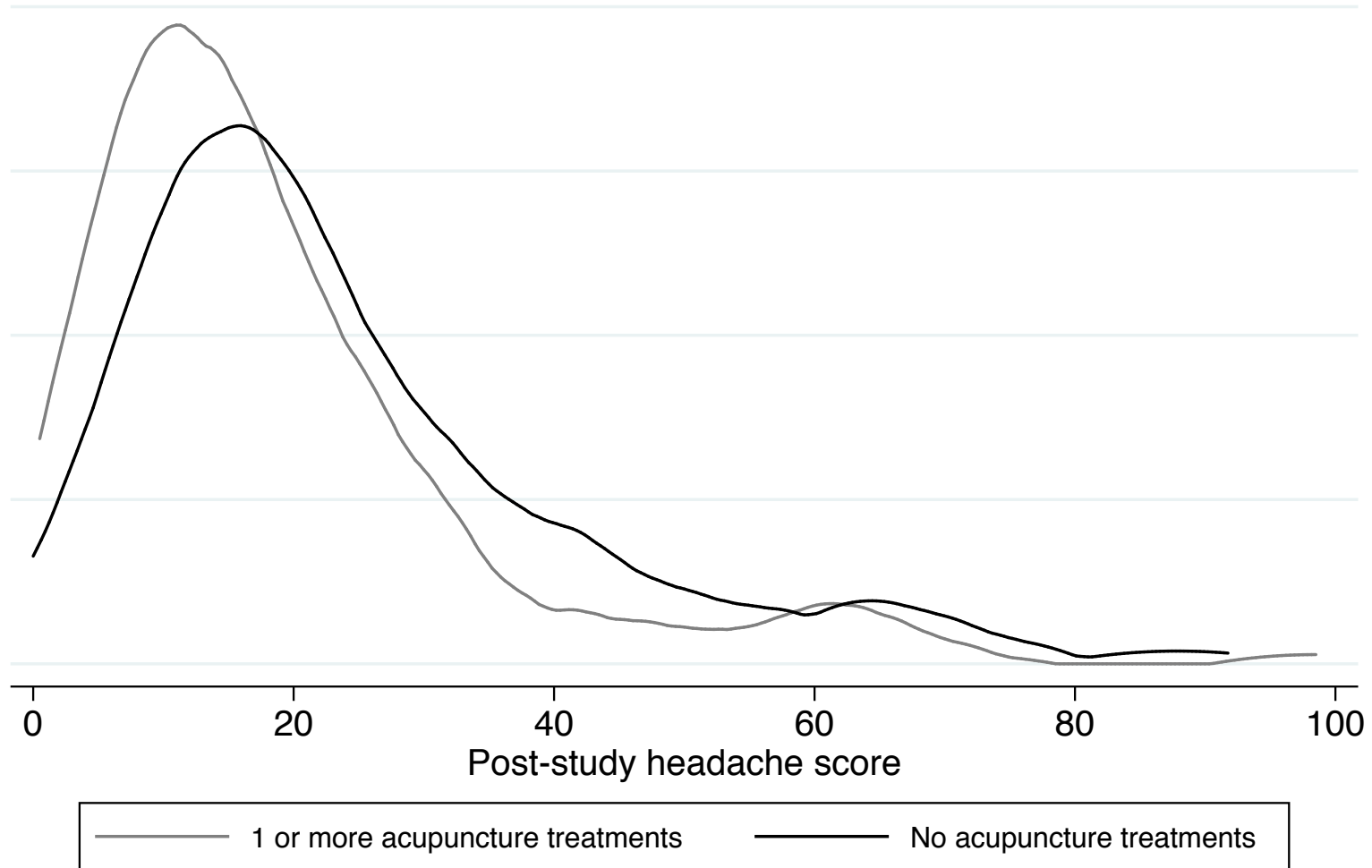
`, rows(#)`

- number of rows

Practice: Figure 2

- ◇ Run the code for 'Figure 2'
- ◇ Change the line color for the no acupuncture group to gray
 - `lcolor(gray)`
- ◇ Turn off the y axis
 - `yscale(off)`
- ◇ Change the color of the graph region to white
 - `graphregion(fcolor(white))`
- ◇ Change the legend font size to small
 - `size(small)`

Figure 2: Distribution of headache score



Box plot competition!

Working with in teams of 2/3:

- ◇ Create a boxplot of `posths` over `acu_cat`
- ◇ Format however you like
 - *Consider using a scheme*
 - *Labels are nice*
- ◇ Write your team member's names in a note in the plot
- ◇ Upload to the course website [under “Box Plot Competition”]
- ◇ Turn in by Thursday Sept 1 @ 9PM
 - `.gph` or `.pdf`
- ◇ We have **prizes** for the winning team
 - For each team member: Peet's coffee gift card, 10 extra credit points and Stata lanyard!