

Training on Statistical Tools for Research: Stata

Graphical presentation of data in Stata

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Available graphs

- For qualitative data
 - Bar chart
 - Pie chart
- For quantitative data
 - Histogram
 - Boxplot
 - Scatter diagram

Graphical presentation of qualitative data

- Bar chart and pie chart are graphical presentation for summary of qualitative data.
- In bar chart comparisons are made based on original scale of measurement, while in pie chart comparisons are made in terms of transformed measurement scale (in degree)
- Therefore, bar chart is more preferable than pie chart.

Bar chart

- A bar graph is another tool to represent frequencies or percentages of categories of a nominal or ordinal variable.
- In a bar graph, categories are displayed through rectangles of equal width where heights of the rectangles represent frequency/percentage of the respective categories.

Types of bar chart

The bar charts can be classified as the following way

- Simple bar chart (involves with single variable)
- Multiple bar chart (involves with multiple variables)
- Component (or Stacked) bar chart (involves with multiple variables)

Simple bar chart

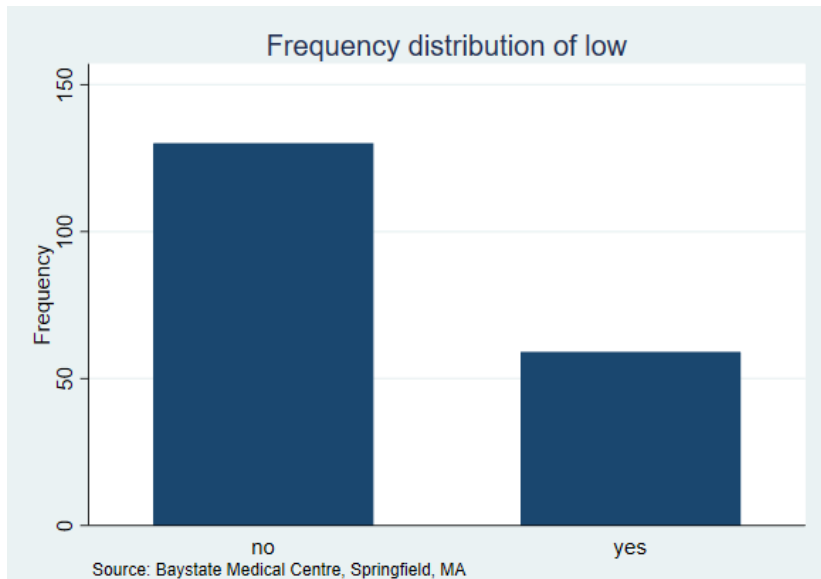
```
use birthwt.dta, clear

graph bar (count), over(low) ///
ytitle("Frequency") ///
title("Frequency distribution of low") ///
note("Source: Baystate Medical Centre, Springfield, MA")

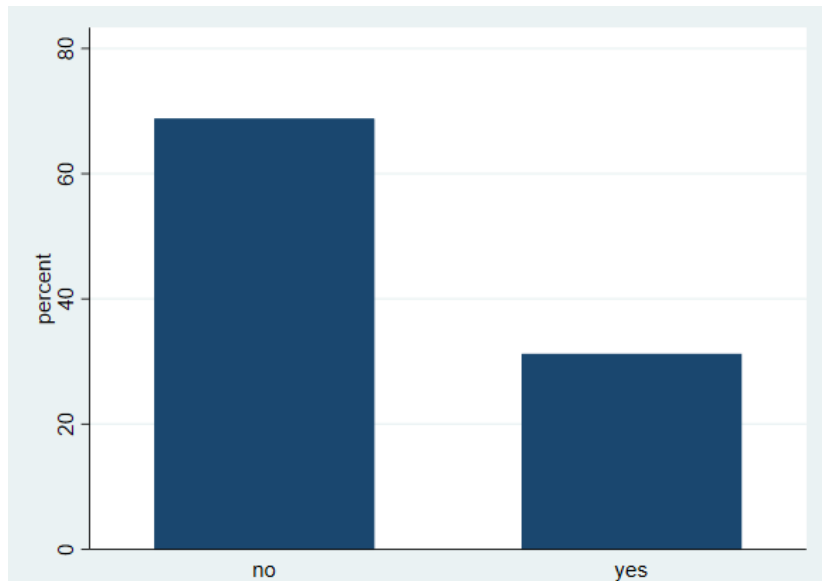
graph bar, over(low) /*gives a percentage bar graph */
```

How to save these graphs?

Simple bar chart



Simple bar chart



Simple bar chart

Stata/MP 17.0 - D:\STATA Course\Stata file\birthwt.dta

File Edit Data Graphics ~~Statistics~~ User Window Help

Two-way graph (scatter, line, etc.)

Bar chart

Dot chart

Pie chart

Histogram

Box plot

Contour plot

Scatterplot matrix

Distributional graphs

Smoothing and densities

Regression diagnostic plots

Time-series graphs

Panel-data line plots

Survival analysis graphs

ROC analysis

Multivariate analysis graphs

Quality control

More statistical graphs

Table of graphs

Manage graphs

Change scheme/size

Temp\STD1774_000000.tmp"

Temp\STD1774_000000.tmp"

percentage bar graph */

Temp\STD1774_000000.tmp"

Variables

Filter variables here

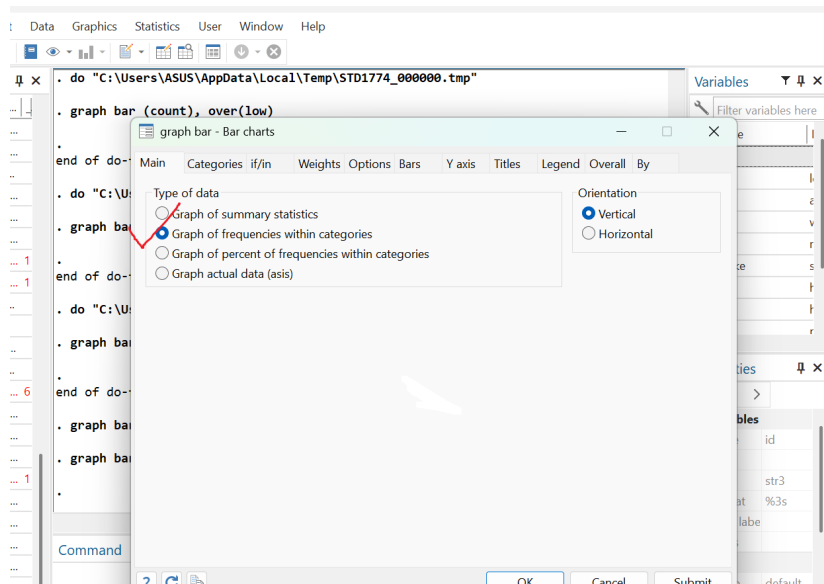
Name	
id	
low	
age	
lwt	
race	
smoke	
ptl	
ht	
ui	

Properties

Variables

Name	id
Label	
Type	str3
Format	%3s
Value label	

Simple bar chart



Simple bar chart

The screenshot shows the Stata 17.0 interface with the following components:

- Command Window:** Displays the command `graph bar (count), over(low)`.
- Dialog Box:** A window titled "graph bar - Bar charts" is open. It has tabs for Main, Categories if/in, Weights, Options, Bars, Y axis, Titles, Legend, and Overall By. The "Main" tab is active, showing three groups for grouping variables. Group 1 is selected, and the grouping variable is set to "low". A red arrow points to the "low" dropdown menu. The "OK" button is highlighted with a red arrow.
- Variables Window:** Located on the right, it lists variables: id, low, age, lwt, race, smoke, ptl, ht, ui. The "low" variable is selected.
- Properties Window:** Also on the right, it shows the properties for the selected variable "low", including Name, Label, Type, Format, Value label, and Notes.

Stata 17.0 - D:\STATA Course\Stata file\birthwt.dta

File Edit Data Graphics Statistics User Window Help

History

do "C:\Users\ASUS\AppData\Local\Temp\STD1774_000000.tmp"

graph bar (count), over(low)

graph bar - Bar charts

Main Categories if/in Weights Options Bars Y axis Titles Legend Overall By

Group 1

Grouping variable: low

Properties Select variable

Group 2

Grouping variable:

Properties

Group 3

Grouping variable:

Properties

Note: three category groupings are allowed only when graphing on a single statistic of a single variable.

OK Cancel Submit

Variables

Filter variables here

Name	Label
id	
low	low birth weight
age	age of the mother in years
lwt	weight in pounds at the last menstrual period
race	race of mother
smoke	smoking status during pregnancy
ptl	history of premature labor
ht	history of hypertension
ui	presence of uterine irritability

Properties

Variables

Name	Label
id	

Data

Frame	Label
default	

Filename: birthwt.dta

Label: birthwt.dta

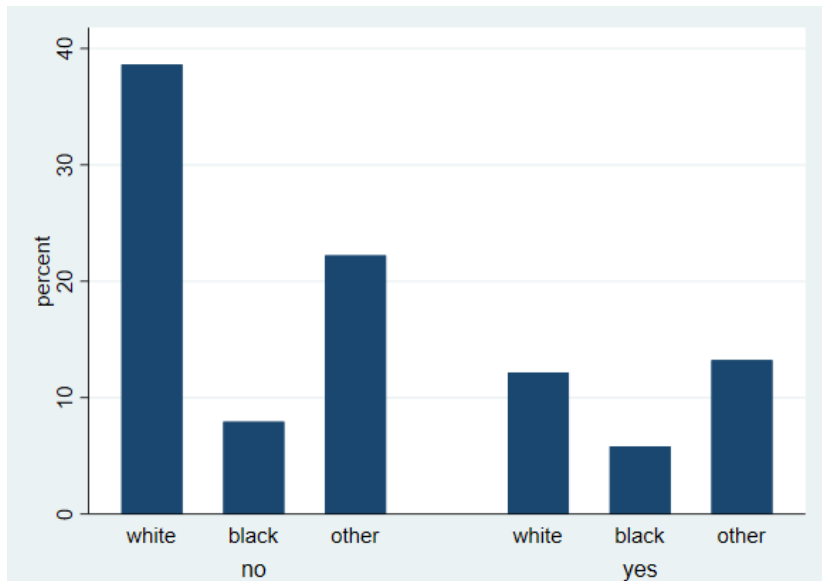
C:\Users\ASUS\OneDrive\Desktop\STATA Course

1:38 AM 12/28/2024

Multiple bar charts

```
graph bar (count), over(race) over(low)  
graph bar, over(race) over(low)
```

Multiple bar charts



Multiple bar chart

Stata/MP 17.0 - D:\STATA Course\Stata file\birthwt.dta

File Edit Data Graphics ~~Statistics~~ User Window Help

Two-way graph (scatter, line, etc.)

Bar chart

Dot chart

Pie chart

Histogram

Box plot

Contour plot

Scatterplot matrix

Distributional graphs

Smoothing and densities

Regression diagnostic plots

Time-series graphs

Panel-data line plots

Survival analysis graphs

ROC analysis

Multivariate analysis graphs

Quality control

More statistical graphs

Table of graphs

Manage graphs

Change scheme/size

Temp\STD1774_000000.tmp"

Temp\STD1774_000000.tmp"

percentage bar graph */

Temp\STD1774_000000.tmp"

Variables

Filter variables here

Name	
id	
low	
age	
lwt	
race	
smoke	
pti	
ht	
ui	

Properties

Variables

Name	id
Label	
Type	str3
Format	%3s
Value label	

Multiple bar chart

The screenshot shows the Stata software interface. The command window contains the following code:

```
. do "C:\Users\ASUS\AppData\Local\Temp\STD1774_000000.tmp"  
  
. graph bar (count), over(low)  
  
. end of do  
  
. do "C:\U  
  
. graph bar  
  
. end of do  
  
. do "C:\U  
  
. graph bar  
  
. end of do  
  
. graph bar  
  
. graph bar  
  
. Command
```

A dialog box titled "graph bar - Bar charts" is open, showing the "Main" tab. The "Type of data" section has four radio buttons: "Graph of summary statistics", "Graph of frequencies within categories" (selected), "Graph of percent of frequencies within categories", and "Graph actual data (asis)". The "Orientation" section has two radio buttons: "Vertical" (selected) and "Horizontal".

The background shows the Stata menu bar (Data, Graphics, Statistics, User, Window, Help) and the Variables list on the right.

Multiple bar chart

graph bar - Bar charts

Main

Categories

if/in

Weights

Options

Bars

Y axis

Titles

Legend

Overall

By

☒ Group 1

Grouping variable:
race

Properties

Select 1st Variable

☒ Group 2

Grouping variable:
low

Properties

Select 2nd Variable

☐ Group 3

Grouping variable:

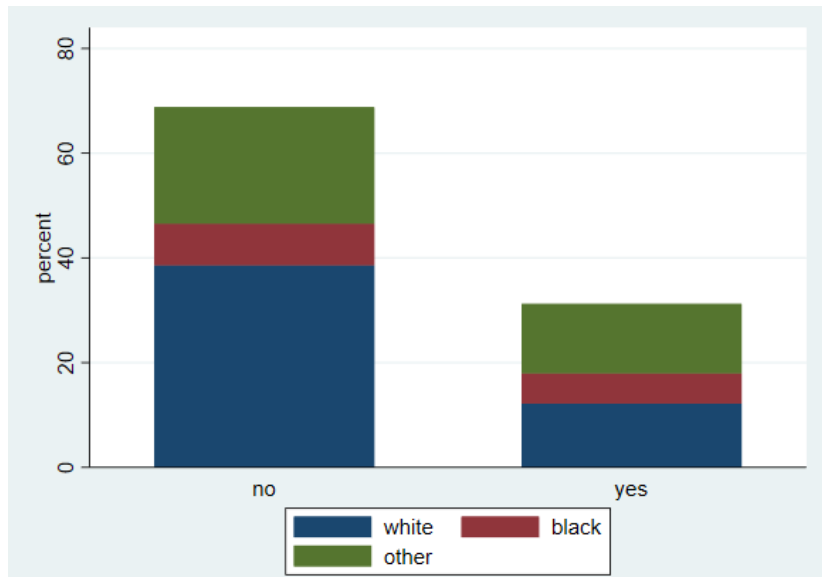
Properties

Note: three category groupings are allowed only when graphing on a single statistic of a single variable.

stacked bar charts

```
graph bar, over(race) over(low) stack asyvars  
/*treat first over() group as yvars*/
```

stacked bar charts



stacked bar chart

Stata/MP 17.0 - D:\STATA Course\Stata file\birthwt.dta

File Edit Data Graphics ~~Statistics~~ User Window Help

Two-way graph (scatter, line, etc.)

Bar chart

Dot chart

Pie chart

Histogram

Box plot

Contour plot

Scatterplot matrix

Distributional graphs

Smoothing and densities

Regression diagnostic plots

Time-series graphs

Panel-data line plots

Survival analysis graphs

ROC analysis

Multivariate analysis graphs

Quality control

More statistical graphs

Table of graphs

Manage graphs

Change scheme/size

Temp\STD1774_000000.tmp"

Temp\STD1774_000000.tmp"

percentage bar graph */

Temp\STD1774_000000.tmp"

Variables

Filter variables here

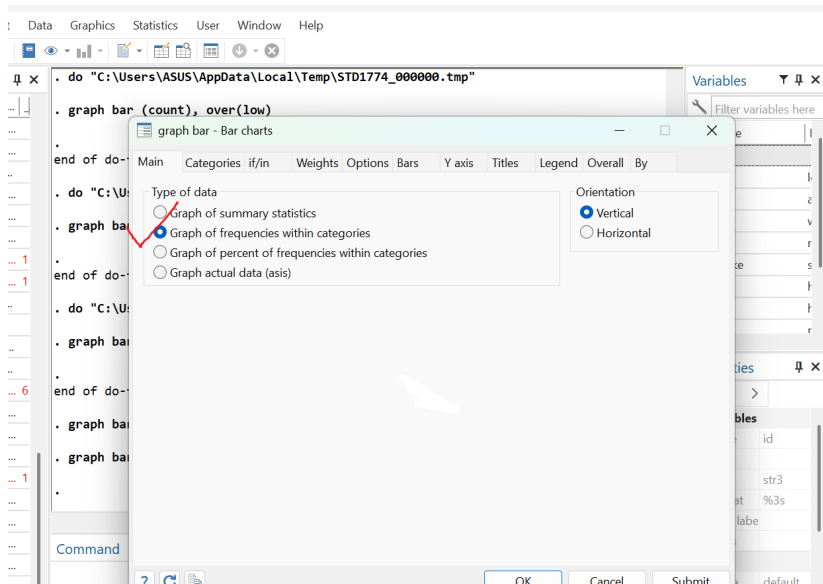
Name	
id	
low	
age	
lwt	
race	
smoke	
ptt	
ht	
ui	

Properties

Variables

Name	id
Label	
Type	str3
Format	%3s
Value label	

stacked bar chart



stacked bar chart

graph bar - Bar charts

Main

Categories

if/in

Weights

Options

Bars

Y axis

Titles

Legend

Overall

By

☒ Group 1

Grouping variable:
race

Properties

Select 1st Variable

☒ Group 2

Grouping variable:
low

Properties

Select 2nd Variable

☐ Group 3

Grouping variable:

Properties

Note: three category groupings are allowed only when graphing on a single statistic of a single variable.

stacked bar chart

graph bar - Bar charts

Main Categories if/in Weights Options Bars Y axis Titles Legend Overall By

Bar options

- ☒ Stack bars on y variables
- ☐ Base bar heights on percentages
- ☐ Omit empty categories (bars)
- ☐ Do not force y axis to include zero

Missing values

- ☐ Include categories for missing values
- ☐ Exclude observations with missing values (casewise deletion)

Labeling and legend options

- ☐ Treat y variables as first category grouping
- ☒ Treat first category grouping as y variables
- ☐ Label y variables on x axis (advanced)

Properties

☐ Place categorical axis on the opposite side

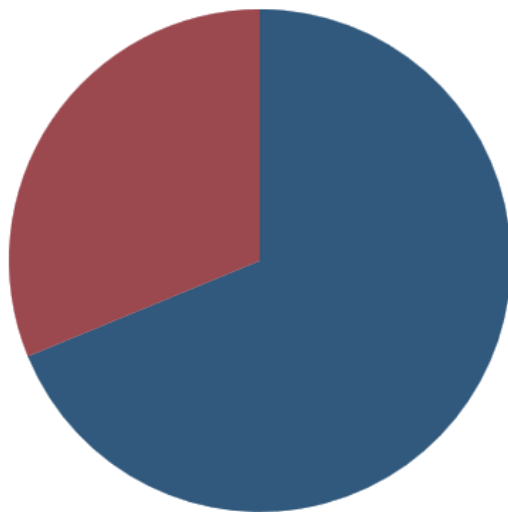
Pie chart

- The pie diagram is intended to compare the distinct components which together constitute a whole.
- The whole is presented by a circle of arbitrary radius and segments of the circle represents the component parts.
- The whole corresponds to the 360° which is the total number of degree in a circle. This 360° is to be divided proportionately among the components for drawing a pie chart.

Pie chart

graph pie, over(low)

Pie chart



Pie chart

The screenshot shows the Stata 17.0 interface. The 'Graphics' menu is open, and the 'Pie chart' option is selected. The Command window shows the command 'pie chart' and the Variables window lists the variables used for the pie chart.

Graphics Menu:

- Two-way graph (scatter, line, etc.)
- Bar chart
- Dot chart
- Pie chart**
- Histogram
- Box plot
- Contour plot
- Scatterplot matrix
- Distributional graphs
- Smoothing and densities
- Regression diagnostic plots
- Time-series graphs
- Panel-data line plots
- Survival analysis graphs
- ROC analysis
- Multivariate analysis graphs
- Quality control
- More statistical graphs
- Table of graphs
- Manage graphs
- Change scheme/size

Command Window:

```
pie chart
```

Variables Window:

Name	Label
id	
low	low birth weight
age	age of the mother in years
lwt	weight in pounds at the last menstrual period
race	race of mother
smoke	smoking status during pregnancy
ptl	history of premature labor
ht	history of hypertension
ui	presence of uterine irritability

Properties Window:

Variable	Value
Name	id
Label	
Type	str3
Format	%3s
Value label	
Notes	
Frame	default
Filename	birthwt.dta
Label	

Pie chart

graph pie - Pie charts

Main

if/in

Weights

Options

Slices

Titles

Legend

Overall

By

Pie chart

☒ Graph by categories ✓

☐ Graph by variables

Category variable:

low

Variable: (optional)

Select Categorical Variable

THANK YOU