

# **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

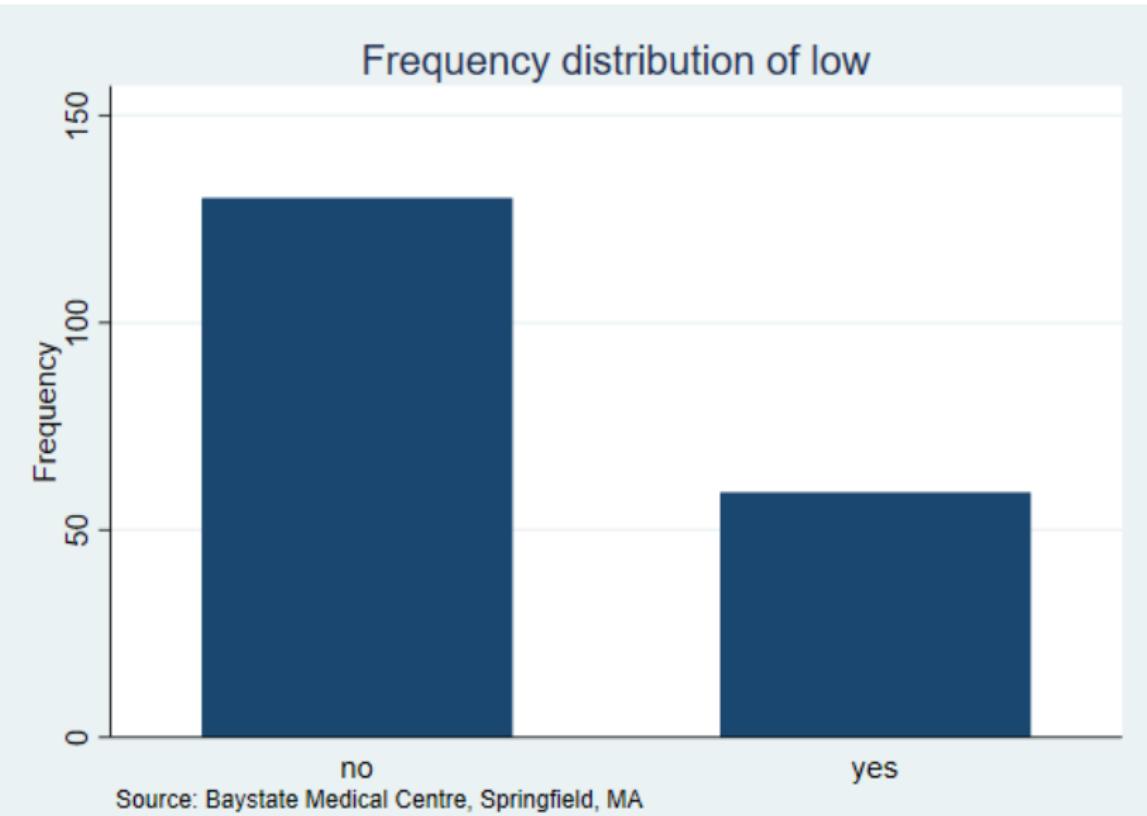
```
use birthwt.dta, clear

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

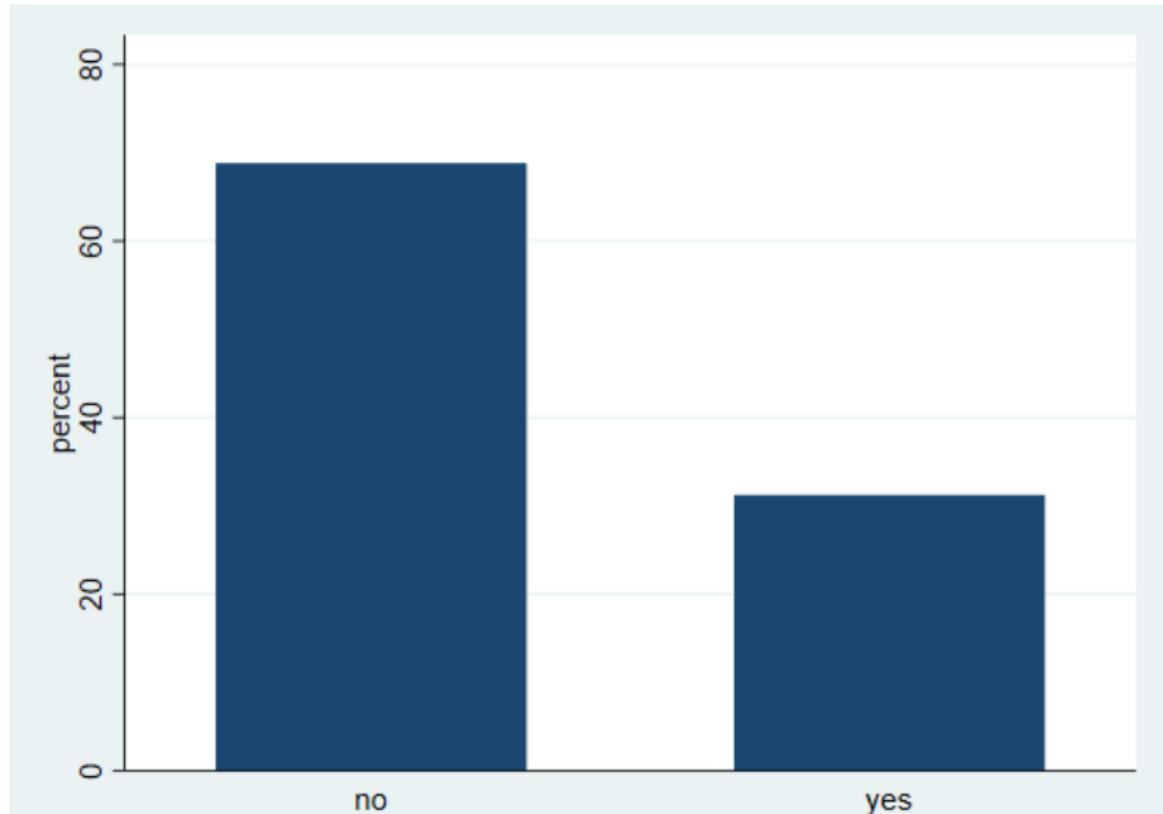
graph bar, over(low) /*gives a percentage bar graph */
```

How to save these graphs?

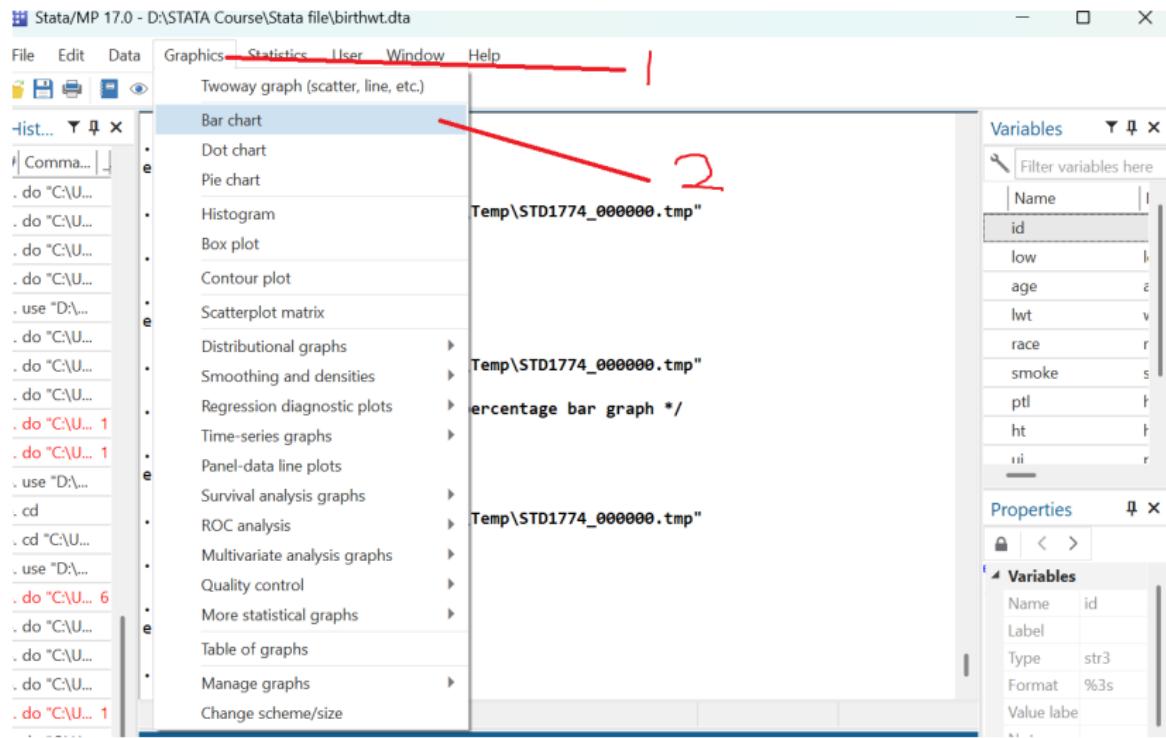
## Simple bar chart



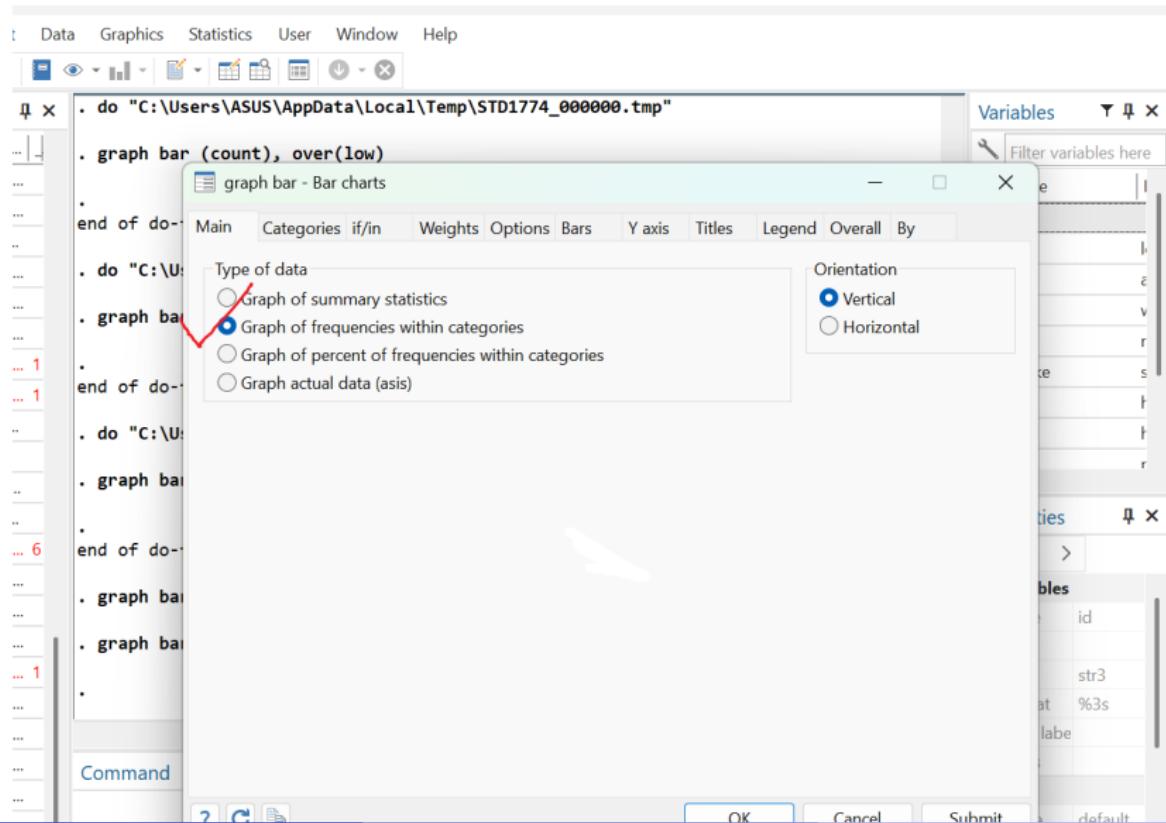
## Simple bar chart



# Simple bar chart



## Simple bar chart

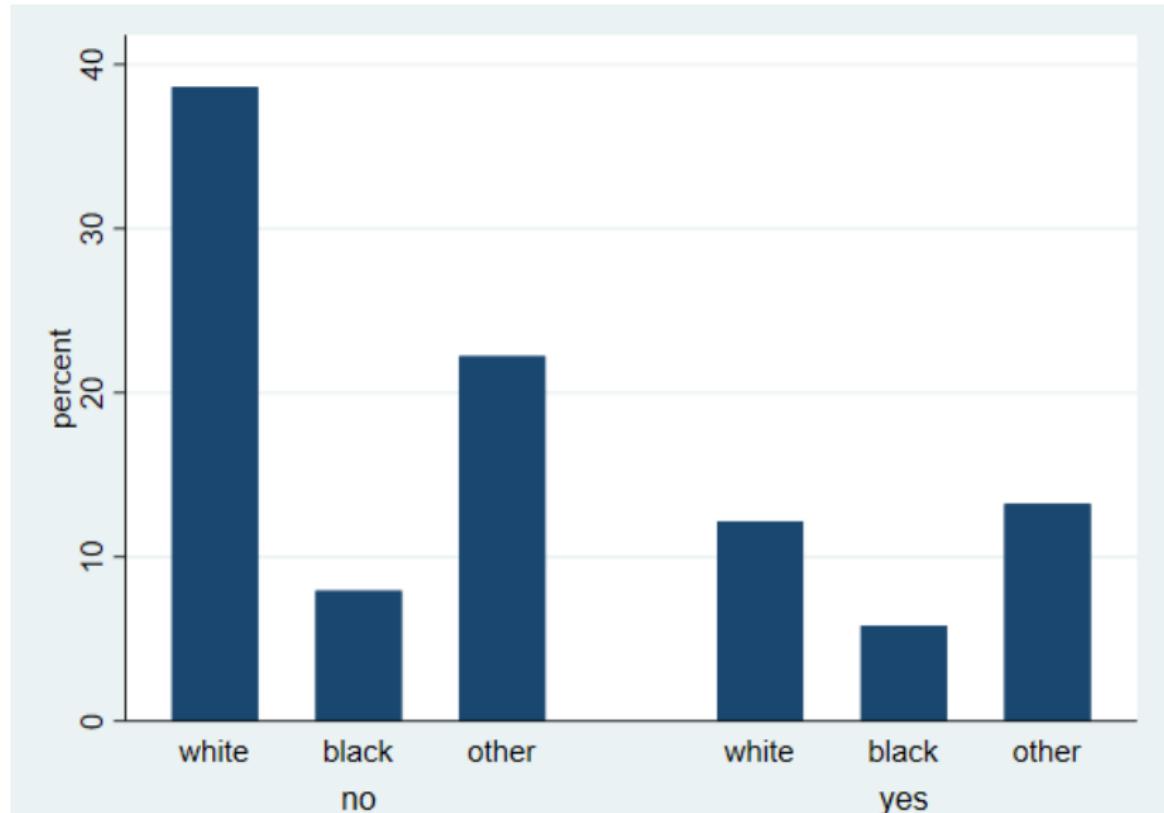


# Simple bar chart

# Multiple bar charts

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

## Multiple bar charts



# Multiple bar chart

The screenshot shows the Stata/MP 17.0 interface. The title bar reads "Stata/MP 17.0 - D:\STATA Course\Stata file\birthwt.dta". The menu bar has "Graphics" highlighted with a red box and a red arrow pointing to the "Bar chart" option. The "Variables" panel on the right shows variables like id, low, age, lwt, race, smoke, ptl, ht, ui. The "Properties" panel below it shows properties for variable "id". The main window displays a list of graph types under the "Graphics" menu, with "Bar chart" selected.

File Edit Data Graphics Statistics User Window Help

Twoway 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 \*/

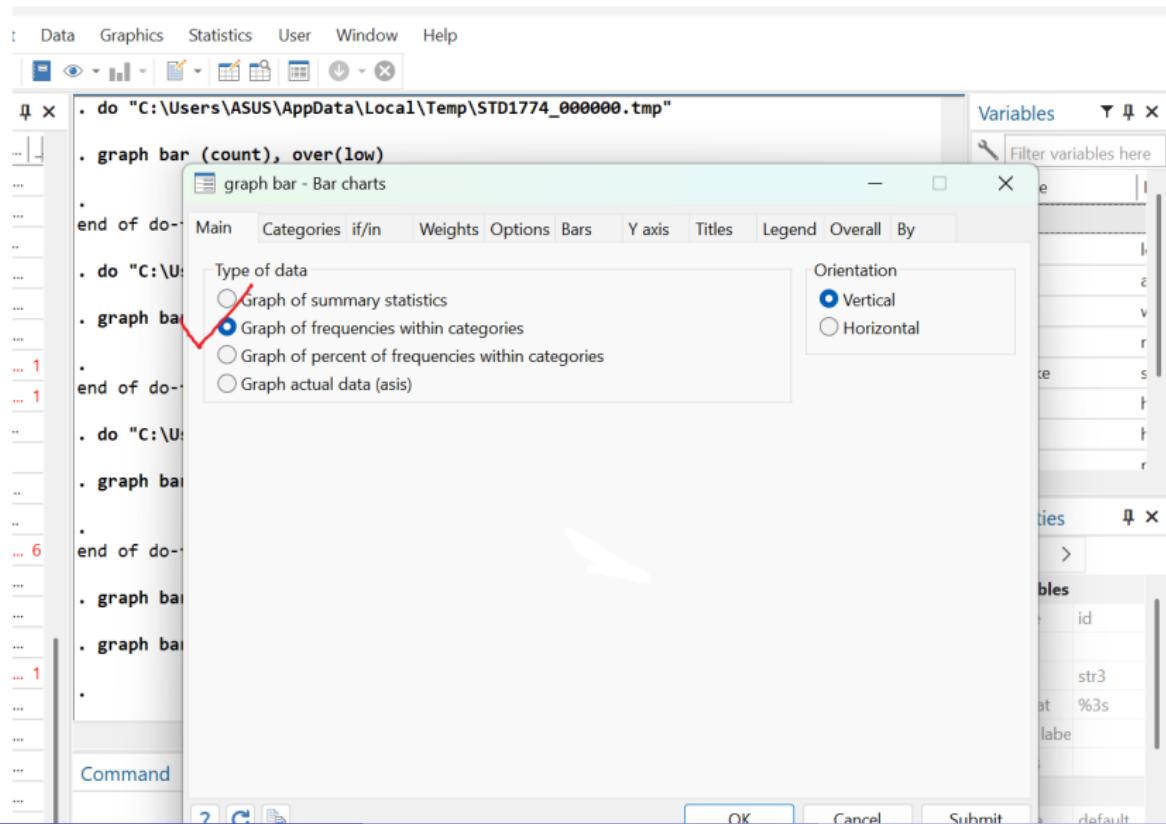
Temp\STD1774\_000000.tmp"

Variables

Name id  
Label  
Type str3  
Format %6.3s  
Value labe

Properties

# Multiple bar chart



# Multiple bar chart

The screenshot shows the 'graph bar - Bar charts' dialog box in SPSS. The 'Main' tab is selected. There are three sections for grouping variables:

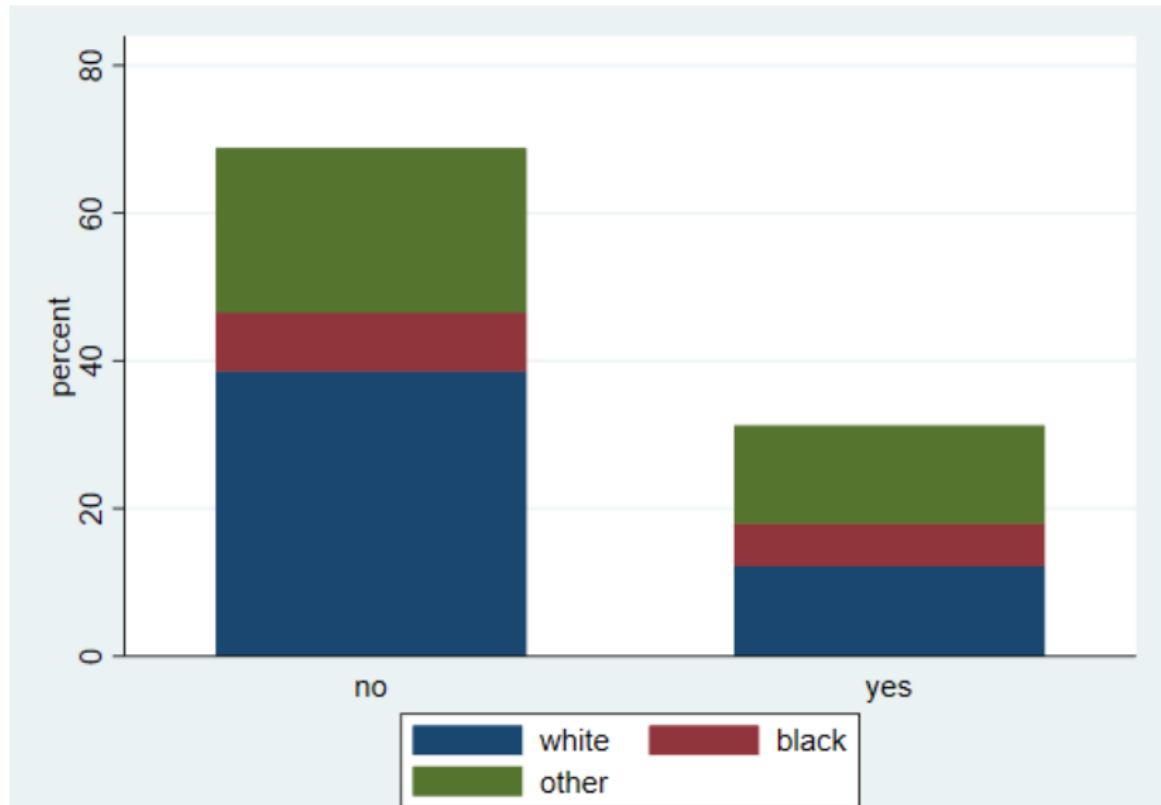
- Group 1:** Checked, Grouping variable: race, Properties button, Select 1st Variable (highlighted in red).
- Group 2:** Checked, Grouping variable: low, Properties button, Select 2nd Variable (highlighted in red).
- Group 3:** Unchecked, Grouping variable: (empty dropdown), Properties button.

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

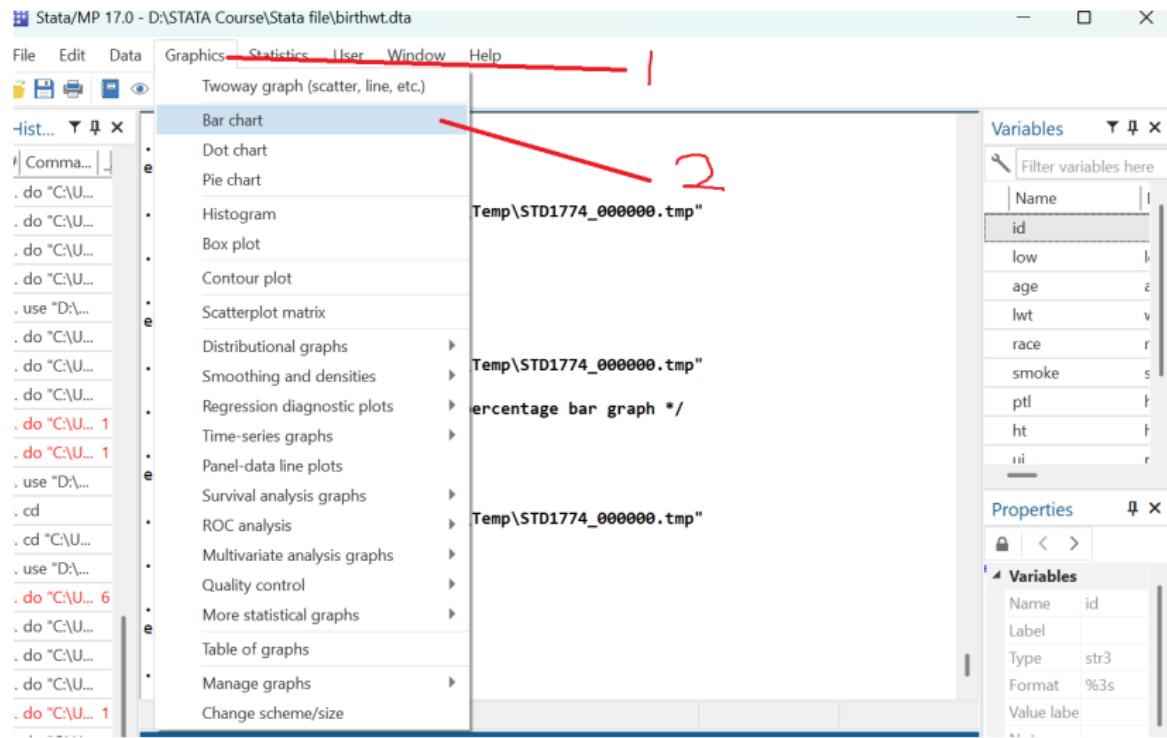
## stacked bar charts

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

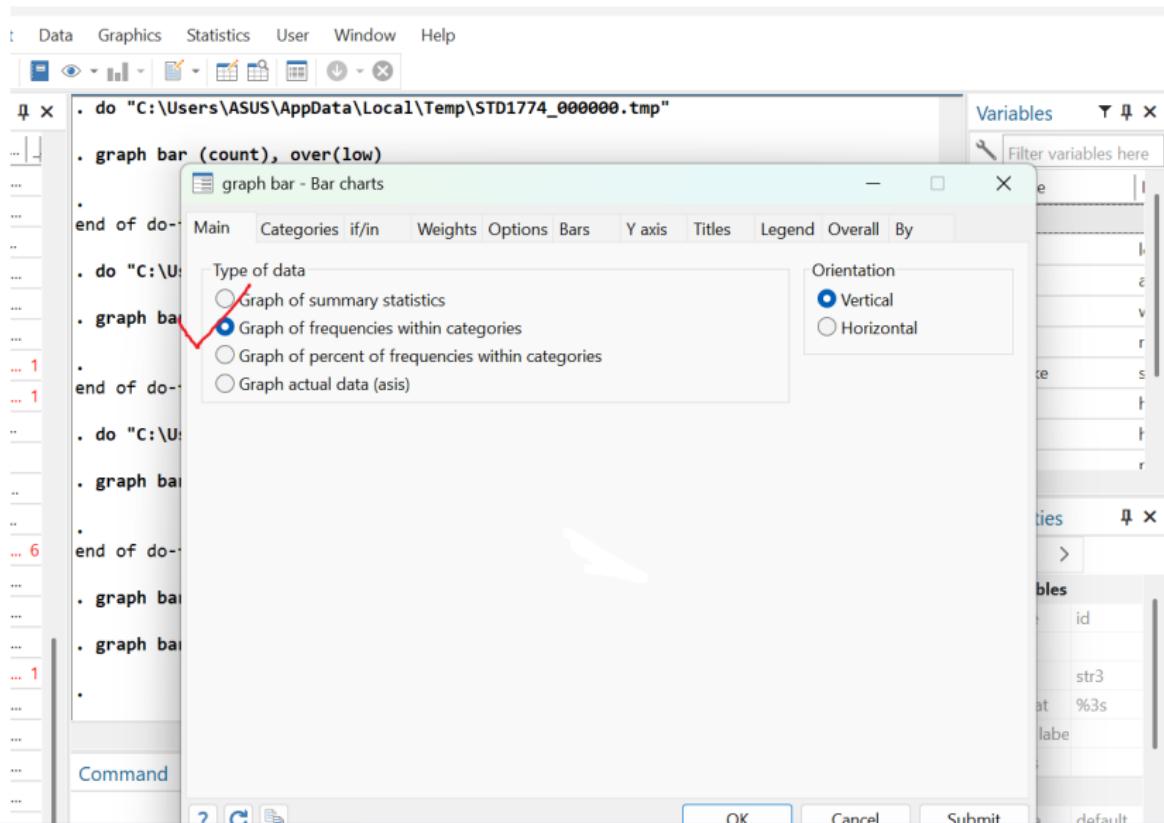
## stacked bar charts



# stacked bar chart



## 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

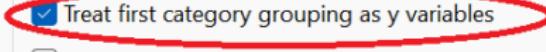
Missing values

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

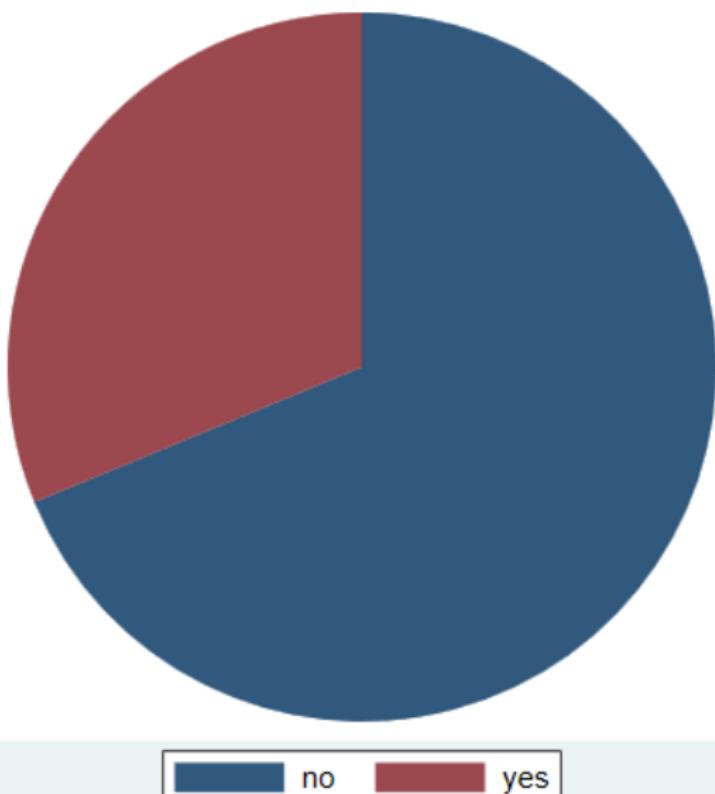
## Pie chart

- 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  $360^\circ$  which is the total number of degree in a circle. This  $360^\circ$  is to be divided proportionately among the components for drawing a pie chart.

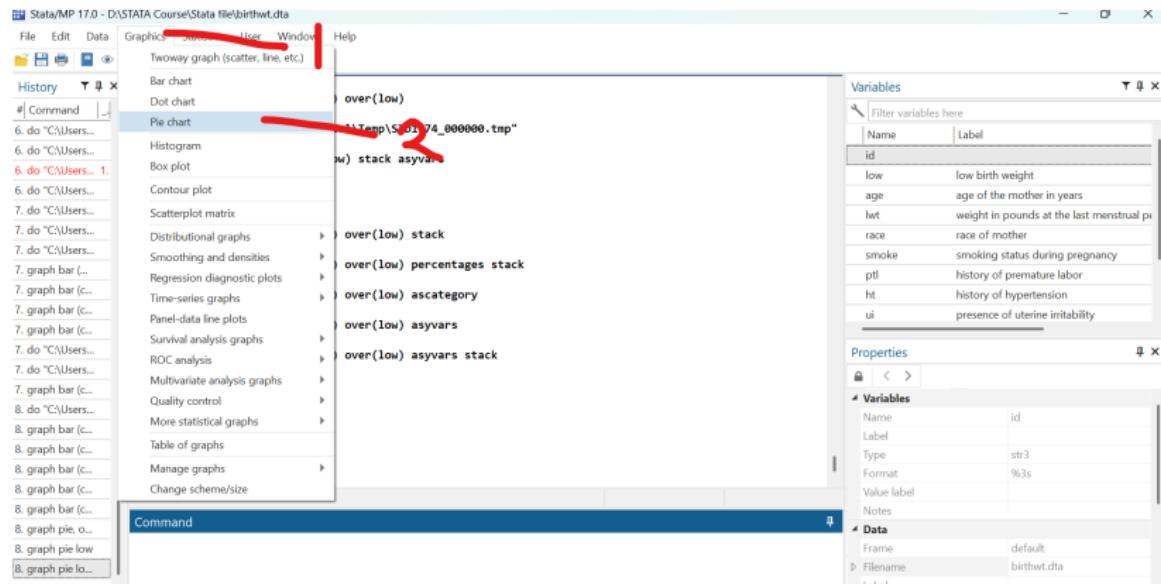
## Pie chart

```
graph pie, over(low)
```

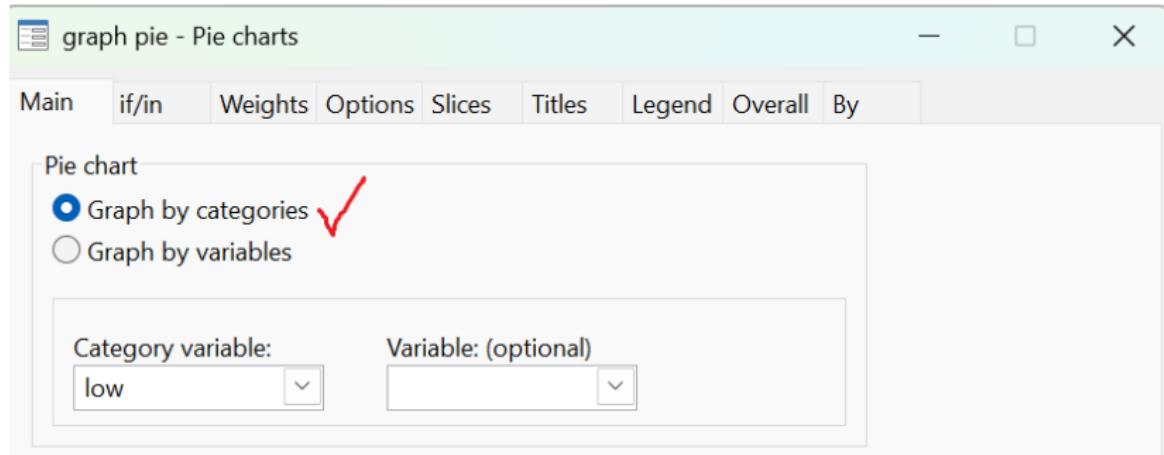
## Pie chart



# Pie chart



# Pie chart



Select Categorical Variable

# THANK YOU