Quantitative Methods in Political Science

Recitation

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New York University

September 23, 2013

Review from Last Week's Lab Session

Basics of Stata:

- Opening Stata and the four windows

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  - *sort* and *gsort*
  - *tabulate*
- Also, the use of options and the *help* command

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  - So what is the best way to summarize variables?
- Measures of central tendency (mean, median, mode)
- Measures of dispersion/spread (standard deviation, variance, interquartile range (IQR)

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  - Example: *summarize gdppc*
  - We can also add an additional option: *summarize gdppc, detail*
- This is what you should get:

```
. summarize gdppc, detail

                    Income per capita
-------------------------------------------------------------
      Percentiles      Smallest
 1%          299          -1725
 5%          617            299
10%          674            418      Obs                 155
25%         1144            498      Sum of Wgt.         155

50%         2930                     Mean           5318.639
                        Largest      Std. Dev.      5814.222
75%         6965          20421
90%        15925          20585      Variance       3.38e+07
95%        18602          21536      Skewness       1.477913
99%        21536          24484      Kurtosis       4.141886
```

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- Notice the wealth of information:
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  - What's the IQR? (You can use the Stata calculator command)
- So now you know how to open and create data, find out what the data contains, create tables and crosstabs, and summarize data. Now let's move on to visualizing data

Stem and Leaf Plot

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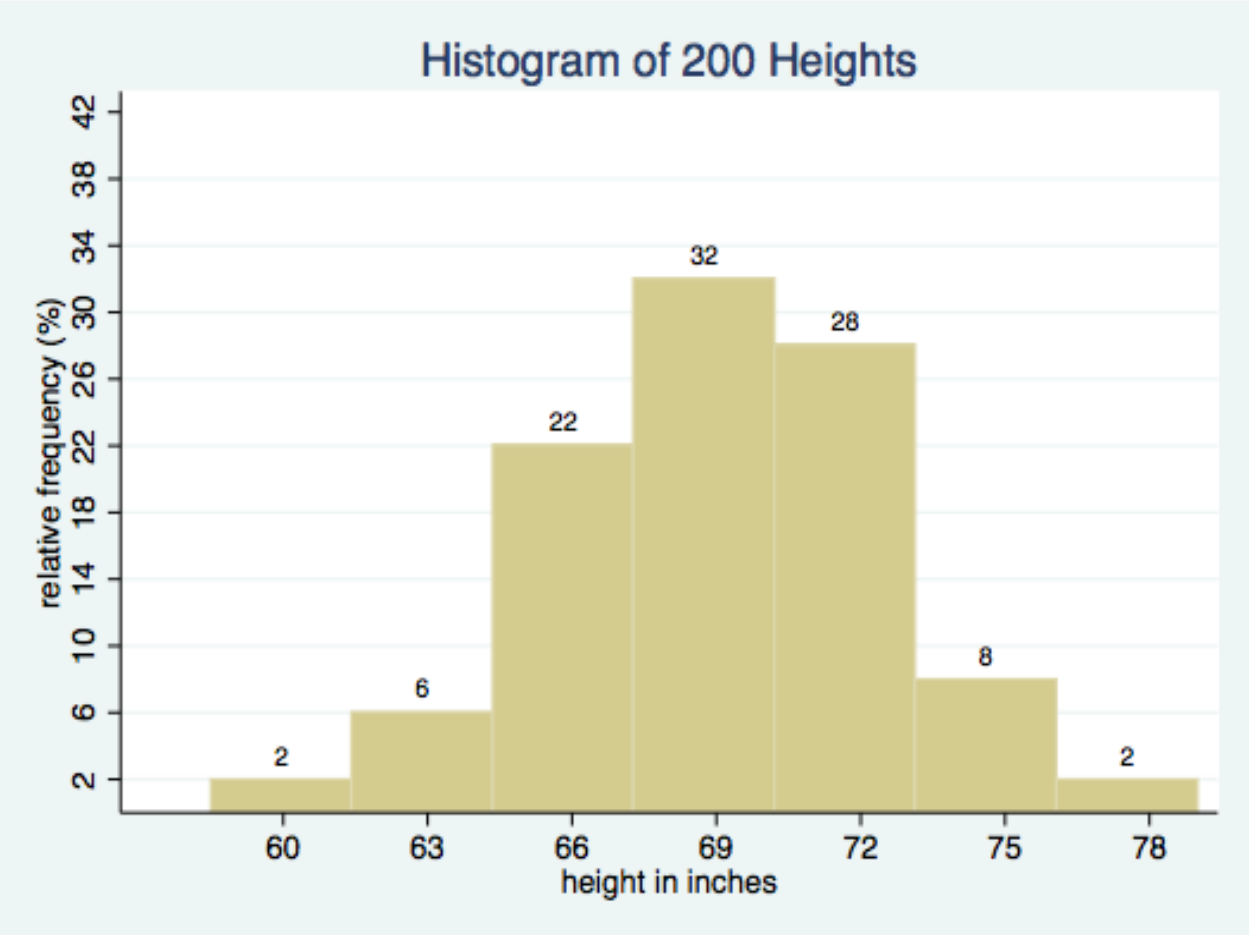
- Example: *stem agehinst*
- From this, you can get a general sense of how the data are distributed
- But we probably want to do more than this and we can by using a variety of Stata's Graphics options

Graphs: Histogram

Recall in class you were shown a histogram of heights...



How can we make one of these?

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  - Example: *hist gdppc, bin(10)*

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  - Example: *hist gdppc, bin(10) title(Histogram of Income per Capita)*
- Why don't you explore and try experimenting with different numbers of bins and widths to see how your histograms change

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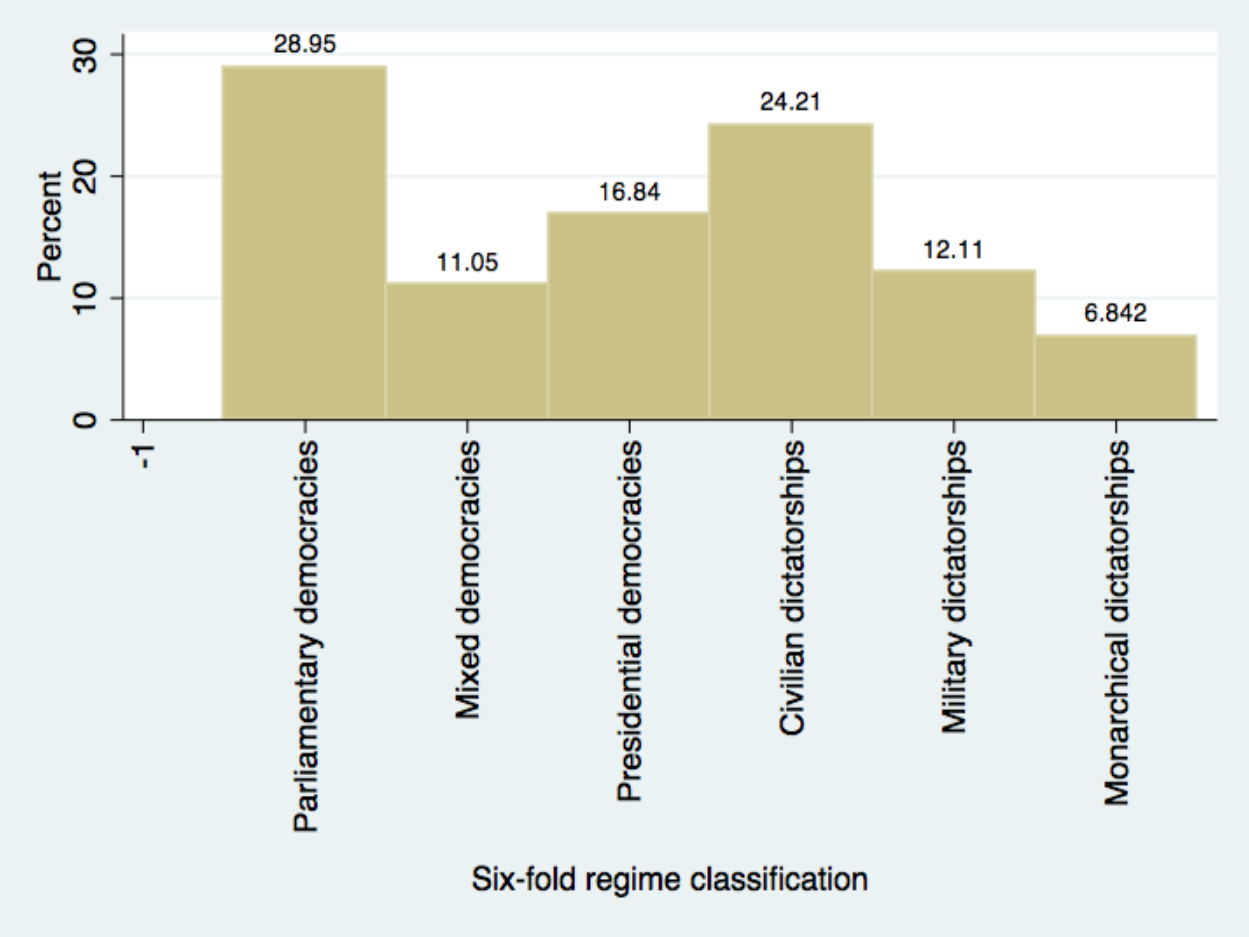

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- Play around in here to create a graph you find appealing

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  - You can change the file format by selecting JPEG (.jpg) or Portable Network Graphics (.png)

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  - You can change the file format by selecting JPEG (.jpg) or Portable Network Graphics (.png)
  - This way you can open up your graph as a normal graphic outside of Stata

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- Again, you can click on "Graph Editor" to change colors, titles, etc.

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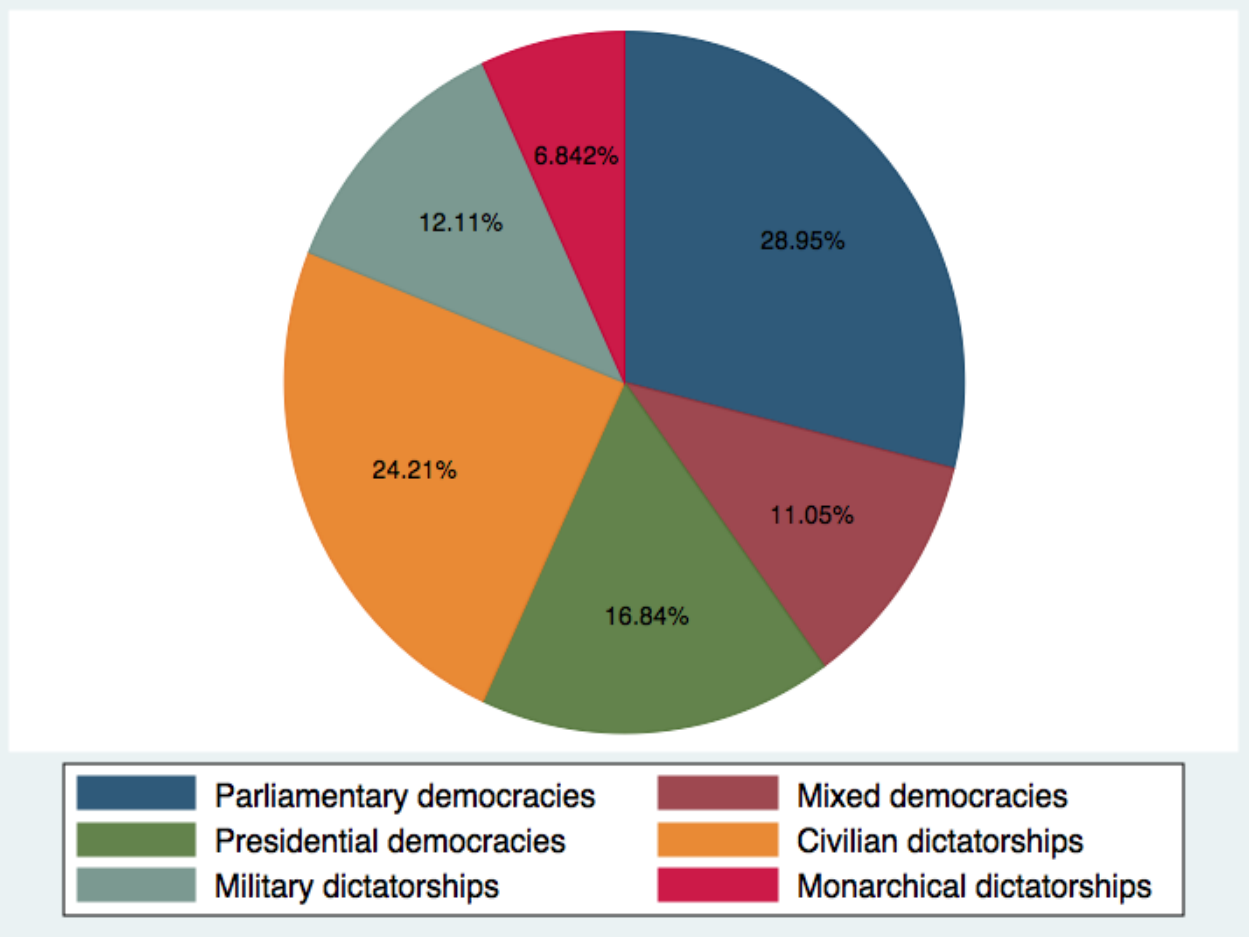
6.842%
12.11%
28.95%
24.21%
11.05%
16.84%
Parliamentary democracies
Mixed democracies
Presidential democracies
Civilian dictatorships
Military dictatorships
Monarchical dictatorships

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  - Type *graph bar (mean)* ***variablename****, over(****variablename****)*
  - Example: *graph bar (mean) gdppc, over(hinst)*
  - You can add options as well to make it pretty
  - Example: *graph bar (mean) gdppc, over(hinst, label(angle(vertical))) ylabel(#4)*

Graphs: Bar

Now let's make a bar chart using two variables: *gdppc* and *hinst*

- You can use the *graph bar* command directly:
  - Type *graph bar (mean)* ***variablename****, over(****variablename****)*
  - Example: *graph bar (mean) gdppc, over(hinst)*
  - You can add options as well to make it pretty
  - Example: *graph bar (mean) gdppc, over(hinst, label(angle(vertical))) ylabel(#4)*
- As always, use the "Graph Editor" to change anything you need

Graphs: Bar

You can also use the dropdown menu:

- From the dropdown menu select “Graphics” and then choose “Bar chart”

Graphs: Bar

You can also use the dropdown menu:

- From the dropdown menu select “Graphics” and then choose “Bar chart”
- In the main window select “Graph by calculating summary statistics”

Graphs: Bar

You can also use the dropdown menu:

- From the dropdown menu select “Graphics” and then choose “Bar chart”
- In the main window select “Graph by calculating summary statistics”
- In the “Statistics to plot” box select the first row, select “Mean” under “Statistic” and then select *gdppc* under “Variables”

Graphs: Bar

You can also use the dropdown menu:

- From the dropdown menu select “Graphics” and then choose “Bar chart”
- In the main window select “Graph by calculating summary statistics”
- In the “Statistics to plot” box select the first row, select “Mean” under “Statistic” and then select *gdppc* under “Variables”
- Change to the “Categories” tab, select the “Group 1” box, and select the *hinst* variable under “Grouping variable”

Graphs: Bar

You can also use the dropdown menu:

- From the dropdown menu select “Graphics” and then choose “Bar chart”
- In the main window select “Graph by calculating summary statistics”
- In the “Statistics to plot” box select the first row, select “Mean” under “Statistic” and then select *gdppc* under “Variables”
- Change to the “Categories” tab, select the “Group 1” box, and select the *hinst* variable under “Grouping variable”
- Click on the “Properties” box; select “Vertical” under “Angle” in the Labels box and click “Accept”

Graphs: Bar

You can also use the dropdown menu:

- From the dropdown menu select “Graphics” and then choose “Bar chart”
- In the main window select “Graph by calculating summary statistics”
- In the “Statistics to plot” box select the first row, select “Mean” under “Statistic” and then select *gdppc* under “Variables”
- Change to the “Categories” tab, select the “Group 1” box, and select the *hinst* variable under “Grouping variable”
- Click on the “Properties” box; select “Vertical” under “Angle” in the Labels box and click “Accept”
- Change to the “Y axis” tab and select the “Major tick/label properties” box

Graphs: Bar

You can also use the dropdown menu:

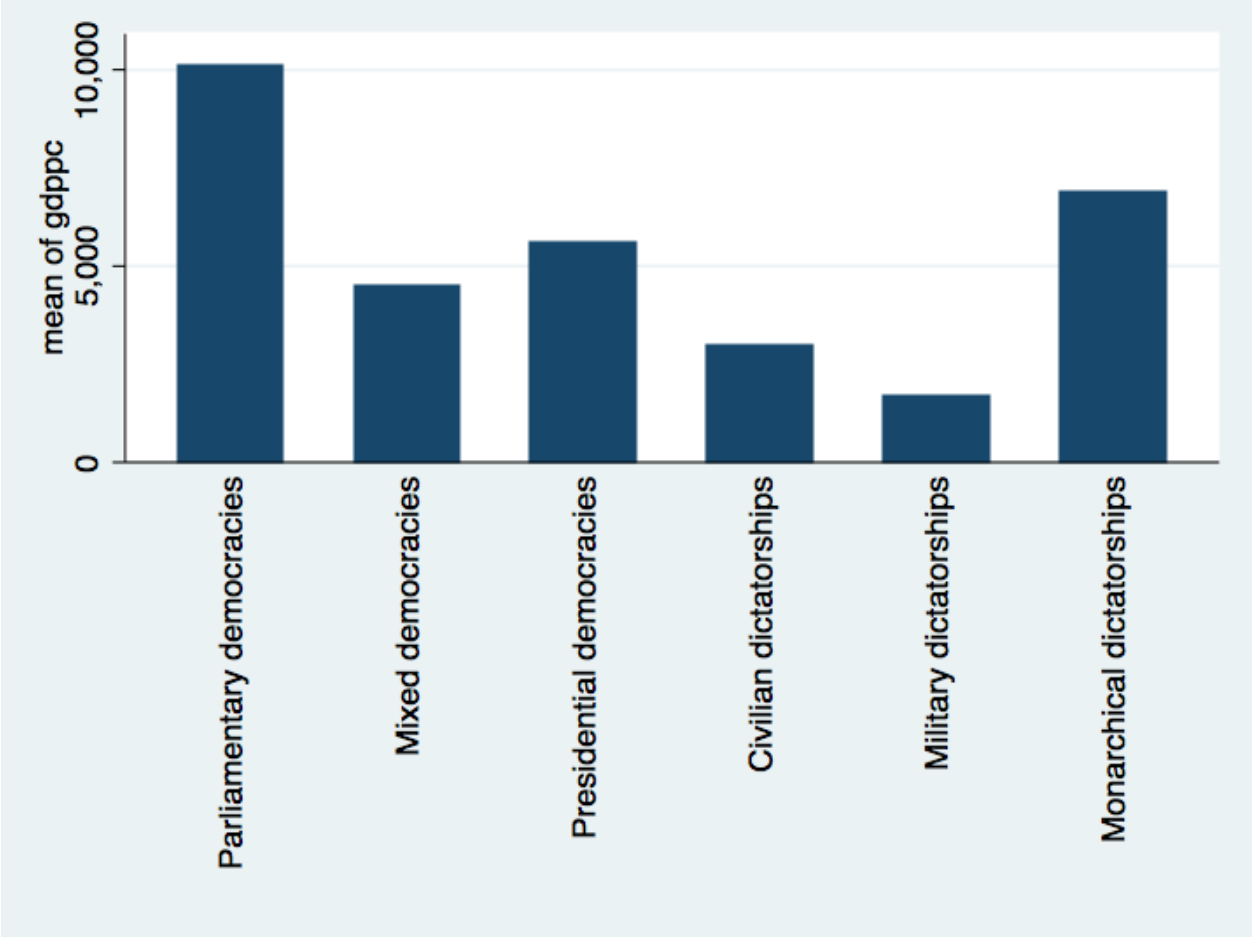
- From the dropdown menu select “Graphics” and then choose “Bar chart”
- In the main window select “Graph by calculating summary statistics”
- In the “Statistics to plot” box select the first row, select “Mean” under “Statistic” and then select *gdppc* under “Variables”
- Change to the “Categories” tab, select the “Group 1” box, and select the *hinst* variable under “Grouping variable”
- Click on the “Properties” box; select “Vertical” under “Angle” in the Labels box and click “Accept”
- Change to the “Y axis” tab and select the “Major tick/label properties” box
- Select “Suggest # of ticks” and input 4 ticks; click “Accept”

Graphs: Bar

You can also use the dropdown menu:

- From the dropdown menu select “Graphics” and then choose “Bar chart”
- In the main window select “Graph by calculating summary statistics”
- In the “Statistics to plot” box select the first row, select “Mean” under “Statistic” and then select *gdppc* under “Variables”
- Change to the “Categories” tab, select the “Group 1” box, and select the *hinst* variable under “Grouping variable”
- Click on the “Properties” box; select “Vertical” under “Angle” in the Labels box and click “Accept”
- Change to the “Y axis” tab and select the “Major tick/label properties” box
- Select “Suggest # of ticks” and input 4 ticks; click “Accept”
- Click “OK”

Graphs: Bar


mean of gdppc
0
5,000
10,000
Parliamentary democracies
Mixed democracies
Presidential democracies
Civilian dictatorships
Military dictatorships
Monarchical dictatorships

Graphs: Box

Let's move on to box plots:

- You can create a box plot using the *graph box* command:

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  - Type *graph box* **variablename**
  - Example: *graph box gdppc*
  - The default is a vertical box plot, you could get a horizontal one by using *graph hbox* instead

Graphs: Box

Let's move on to box plots:

- You can create a box plot using the *graph box* command:
  - Type *graph box* **variablename**
  - Example: *graph box gdppc*
  - The default is a vertical box plot, you could get a horizontal one by using *graph hbox* instead
  - Example: *graph hbox gdppc*

Graphs: Box

Let's move on to box plots:

- You can create a box plot using the *graph box* command:
  - Type *graph box* **variablename**
  - Example: *graph box gdppc*
  - The default is a vertical box plot, you could get a horizontal one by using *graph hbox* instead
  - Example: *graph hbox gdppc*
- Again, change colors and titles using "Graph Editor"

Graphs: Box

Now let's make a box plot using two variables: *gdppc* and *hinst*

- From the dropdown menu select "Graphics" and then choose "Box plot"

Graphs: Box

Now let's make a box plot using two variables: *gdppc* and *hinst*

- From the dropdown menu select "Graphics" and then choose "Box plot"
- Select "Horizontal" under the Orientation box (this is optional, you could leave it as vertical if you want)

Graphs: Box

Now let's make a box plot using two variables: *gdppc* and *hinst*

- From the dropdown menu select "Graphics" and then choose "Box plot"
- Select "Horizontal" under the Orientation box (this is optional, you could leave it as vertical if you want)
- Select the *gdppc* variable under "Variables"

Graphs: Box

Now let's make a box plot using two variables: *gdppc* and *hinst*

- From the dropdown menu select "Graphics" and then choose "Box plot"
- Select "Horizontal" under the Orientation box (this is optional, you could leave it as vertical if you want)
- Select the *gdppc* variable under "Variables"
- Switch to the "Categories" tab; select the "Group 1" option and select the *hinst* variable under "Grouping variable"

Graphs: Box

Now let's make a box plot using two variables: *gdppc* and *hinst*

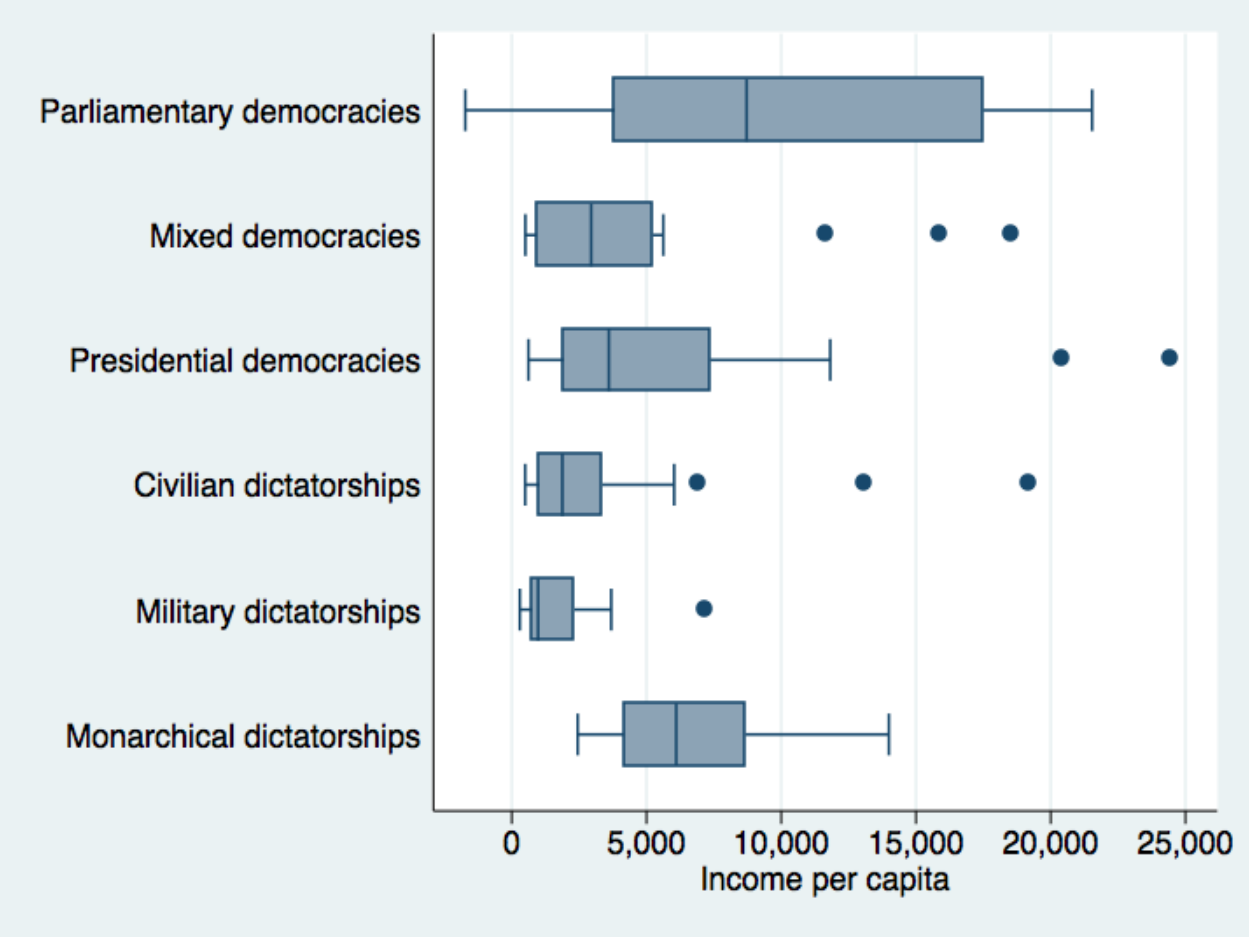
- From the dropdown menu select "Graphics" and then choose "Box plot"
- Select "Horizontal" under the Orientation box (this is optional, you could leave it as vertical if you want)
- Select the *gdppc* variable under "Variables"
- Switch to the "Categories" tab; select the "Group 1" option and select the *hinst* variable under "Grouping variable"
- Click "OK"

Graphs: Box

Now let's make a box plot using two variables: *gdppc* and *hinst*

- From the dropdown menu select "Graphics" and then choose "Box plot"
- Select "Horizontal" under the Orientation box (this is optional, you could leave it as vertical if you want)
- Select the *gdppc* variable under "Variables"
- Switch to the "Categories" tab; select the "Group 1" option and select the *hinst* variable under "Grouping variable"
- Click "OK"
- The same thing can be achieved by typing: *graph hbox gdppc, over(hinst)*

Graphs: Box


Parliamentary democracies
Mixed democracies
Presidential democracies
Civilian dictatorships
Military dictatorships
Monarchical dictatorships
0
5,000
10,000
15,000
20,000
25,000
Income per capita