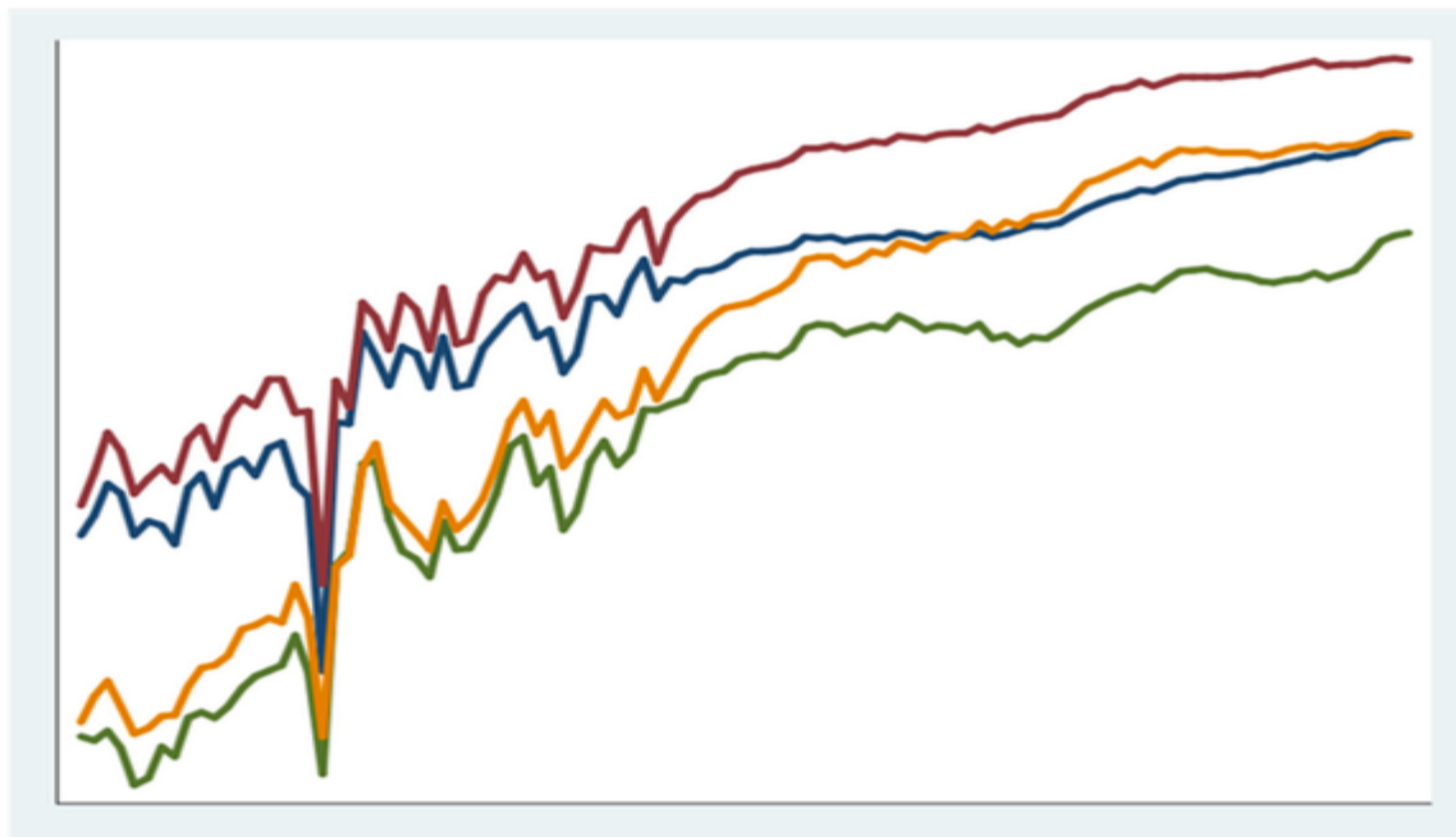
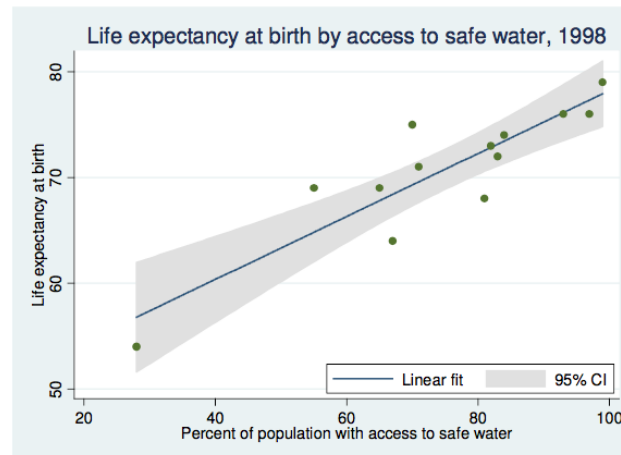


Stata Graphics



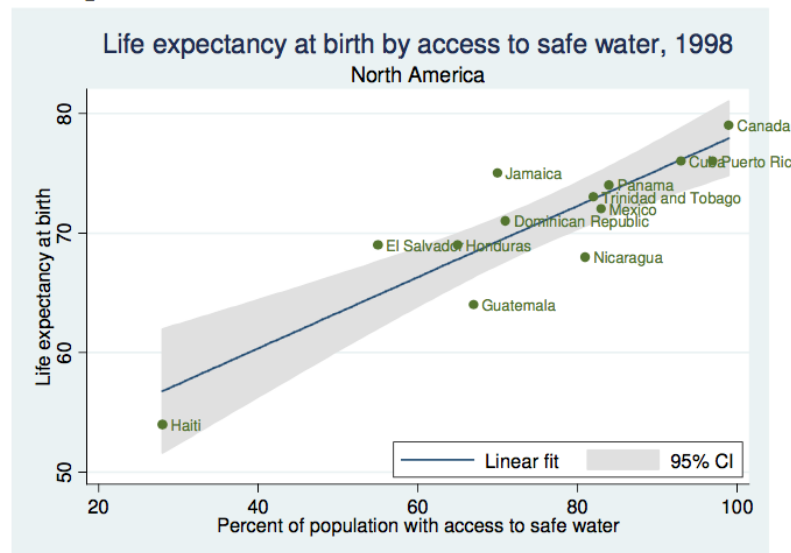
Showing Confidence Intervals, Labelling Axes, Modifying Legend

```
sysuse lifeexp.dta, clear
#delimit ;
twoway
  (lfitci lexp safewater if region == 2) /* North America */
  (scatter lexp safewater if region == 2)
, title("Life expectancy at birth by access to safe water, 1998")
  ytitle("Life expectancy at birth")
  xtitle("Percent of population with access to safe water")
  legend(ring(0) pos(5) order(2 "Linear fit" 1 "95% CI"));
#delimit cr
```



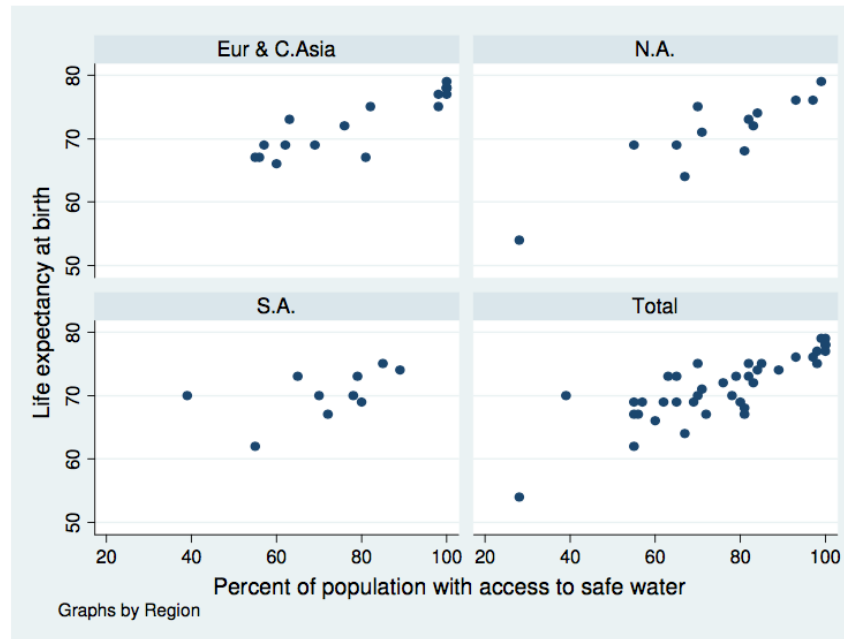
Markers Labels and Subtitles

```
twoway
  (lfitci lexp safewater if region == 2) /* North America */
  (scatter lexp safewater if region == 2, mlabel(country))
, title("Life expectancy at birth by access to safe water, 1998")
  subtitle("North America")
  ytitle("Life expectancy at birth")
  xtitle("Percent of population with access to safe water")
  legend(ring(0) pos(5) order(2 "Linear fit" 1 "95% CI"));
```



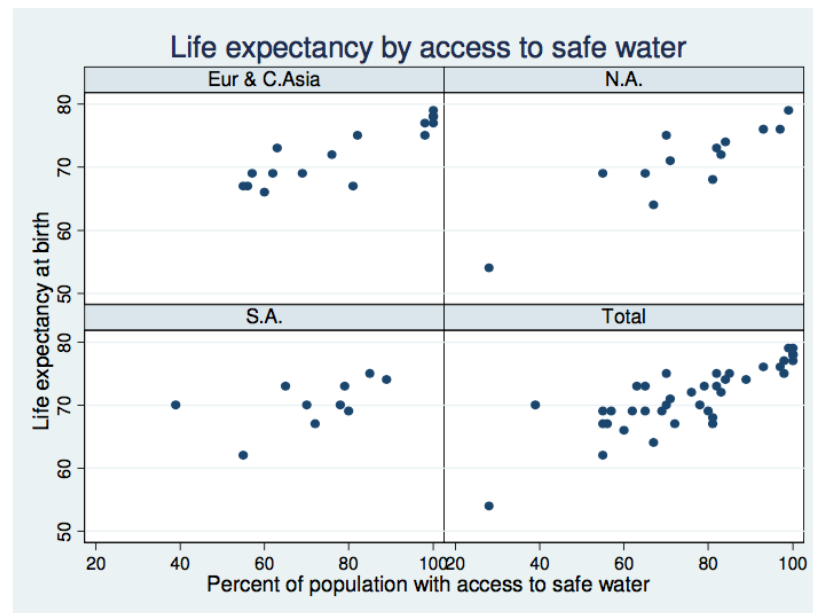
By-Graph: Separate Graphs for Each Subset of Data

```
#delimit ;  
twoway scatter lexp safewater, by(region, total)  
, ytitle("Life expectancy at birth")  
  xtitle("Percent of population with access to safe  
water");  
#delimit cr
```



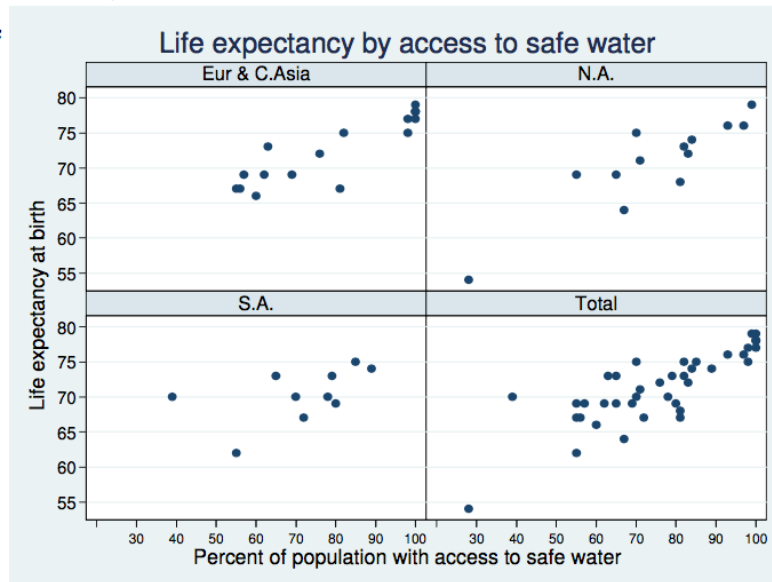
By-Graph Options

```
twoway scatter lexp safewater  
,by(region,total style(compact)  
    title("Life expectancy by access to safe water") note(""))  
ytitle("Life expectancy at birth")  
xtitle("Percent of population with access to safe water");
```



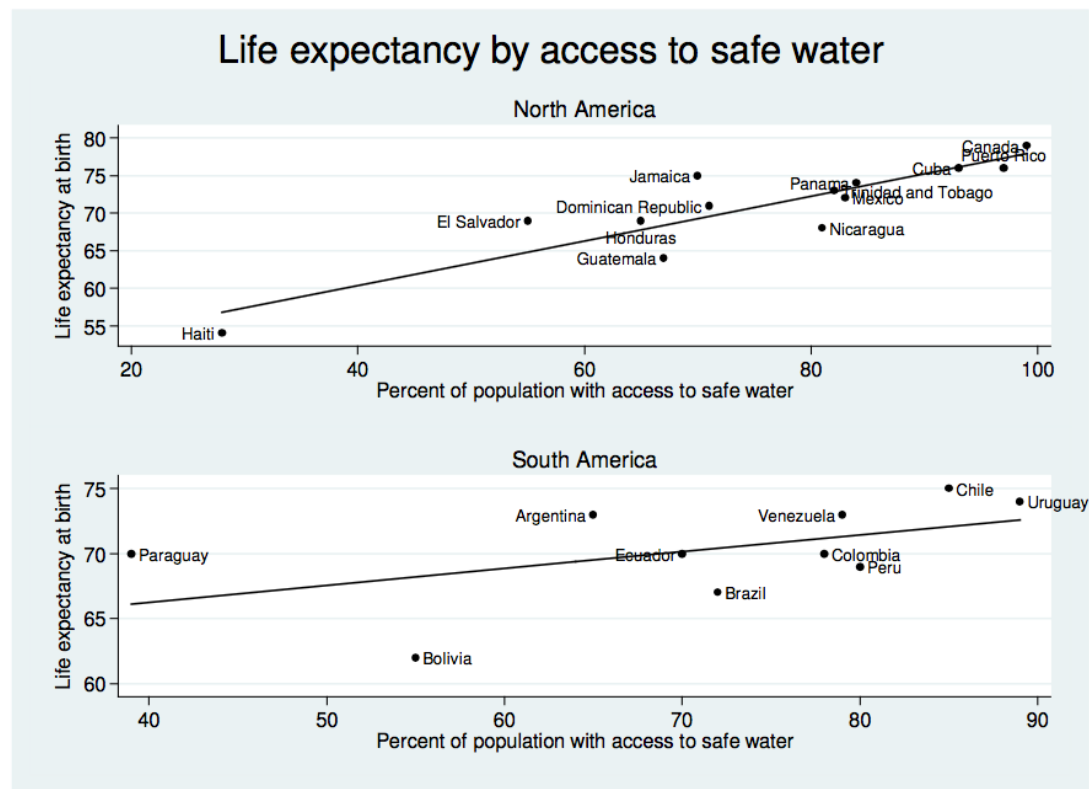
Axis Scale, Ticks and Labels

```
twoway scatter lexp safewater
, by(region,total style(compact)
      title("Life expectancy by access to safe water") note(""))
xscale(range(20 100))
xtick(20(10)100)
xlabel(30(10)100, labsize(small))
xtitle("Percent of population with access to safe water")
ytitle("Life expectancy at birth")
ylabel(55(5)80, angle(0));
```



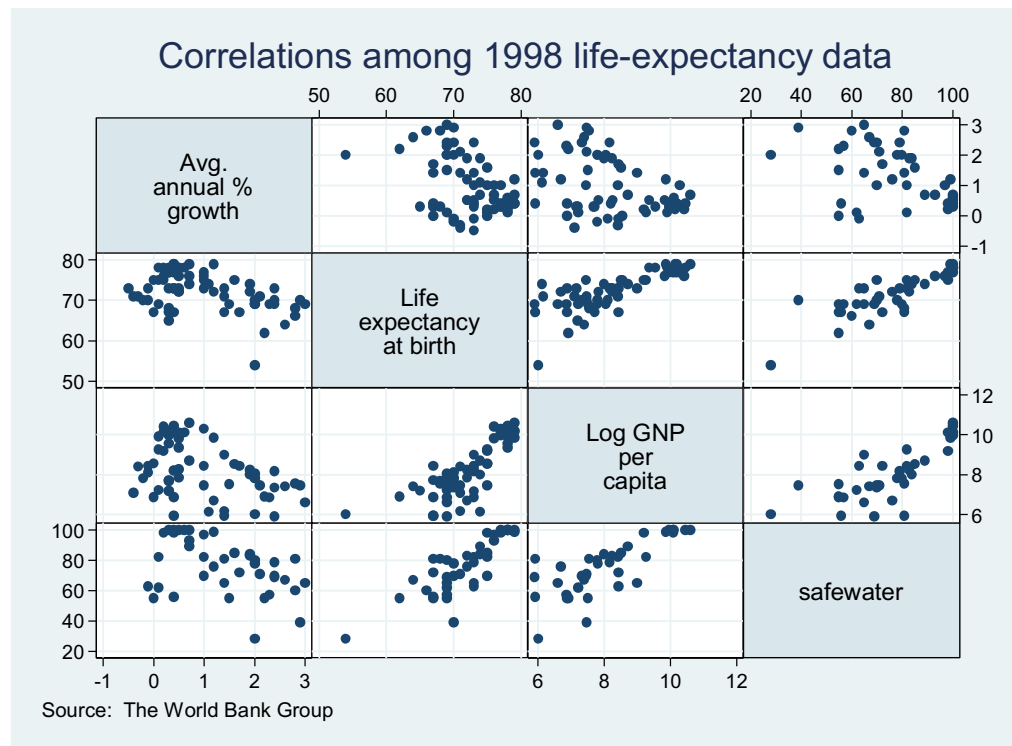
Combining Graphs

```
graph combine north_america south_america
, title("Life expectancy by access to safe water", color(black)) col(1);
```



More Graphs

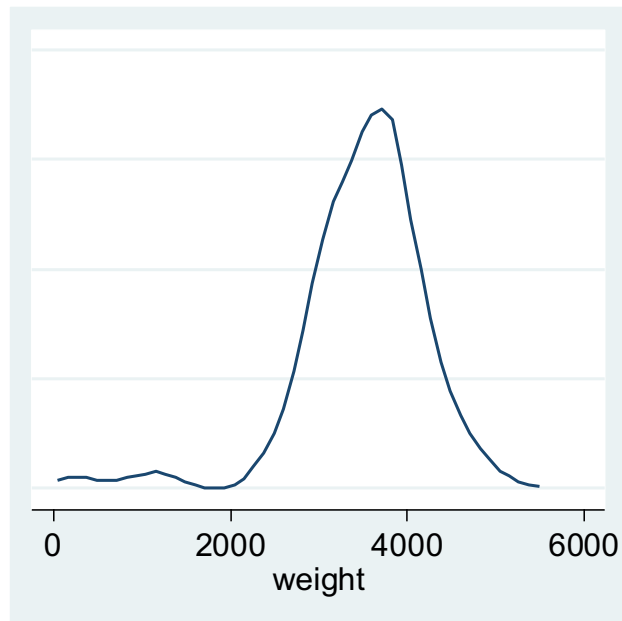
Graph matrix is a great alternative to a correlation matrix to investigate relationships between variables



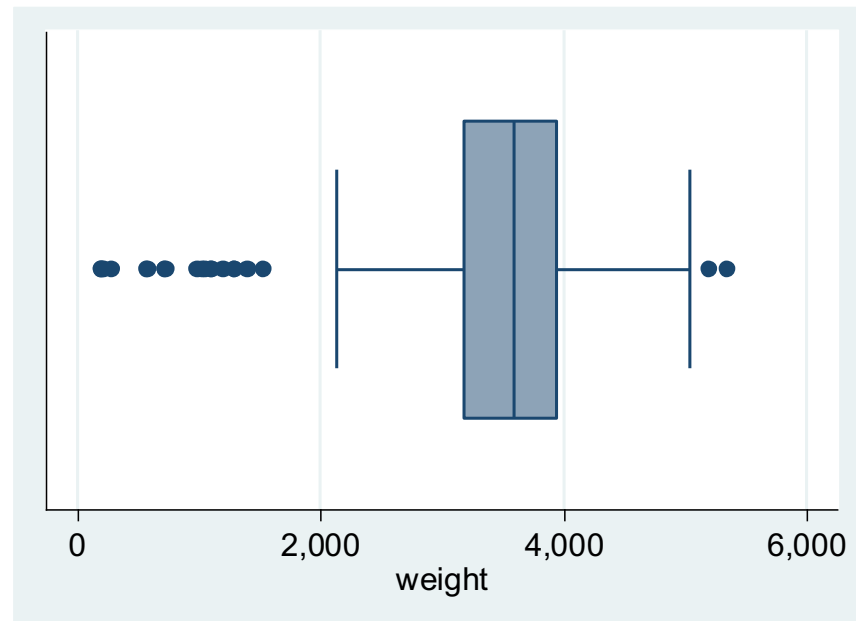
Example using gestational data

Univariate

- Density
 - `kdensity weight`

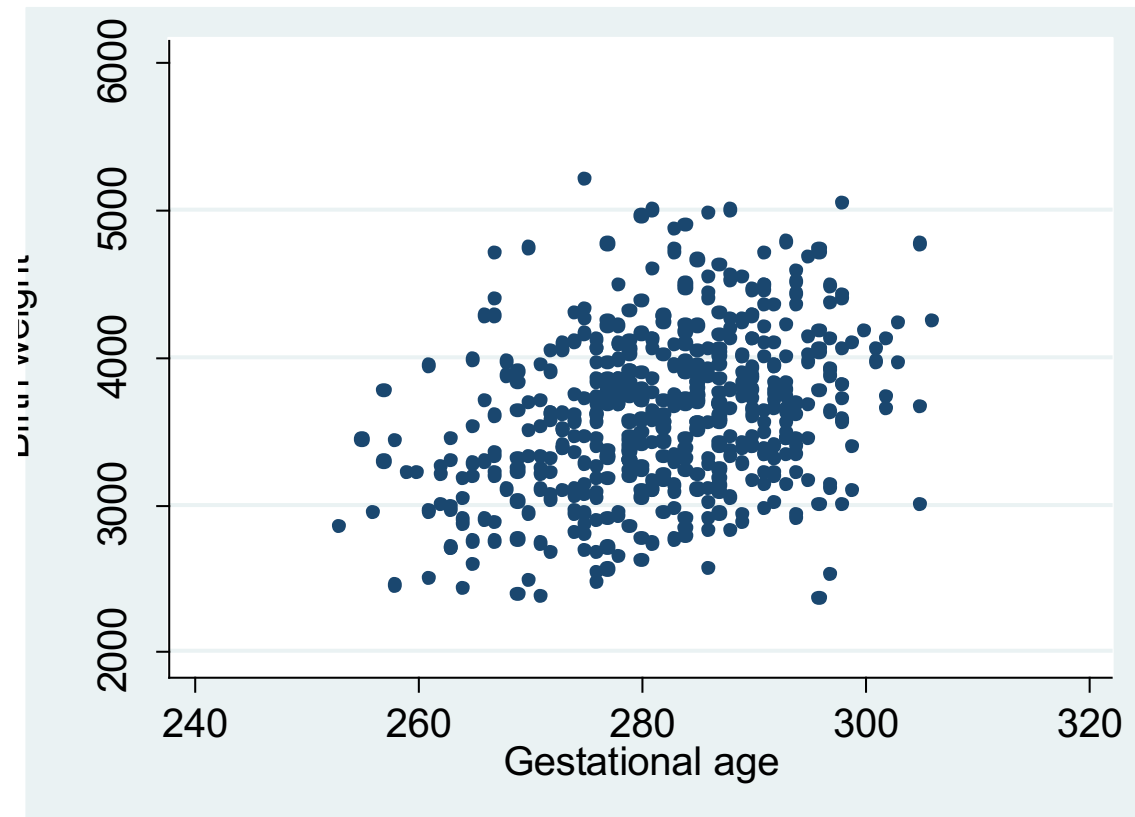


- Boxplot
 - `graph hbox weight`



Bivariate

- Scatter
 - scatter weight gest

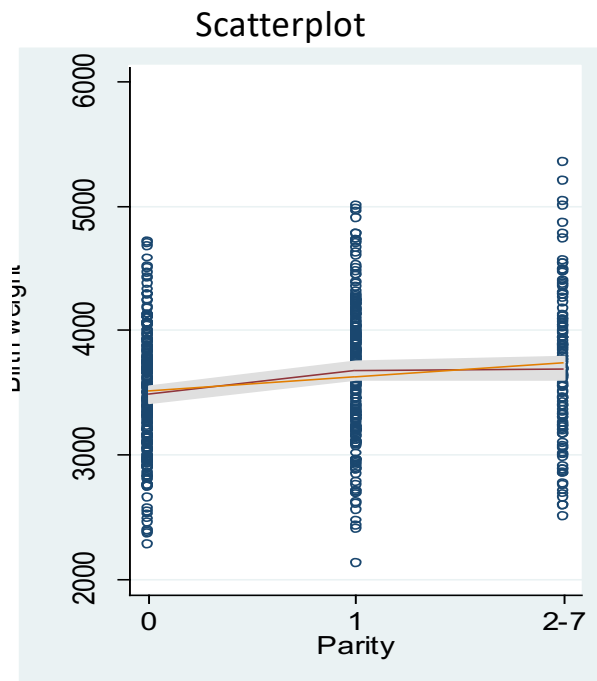


Scatter and density plots for many types of data

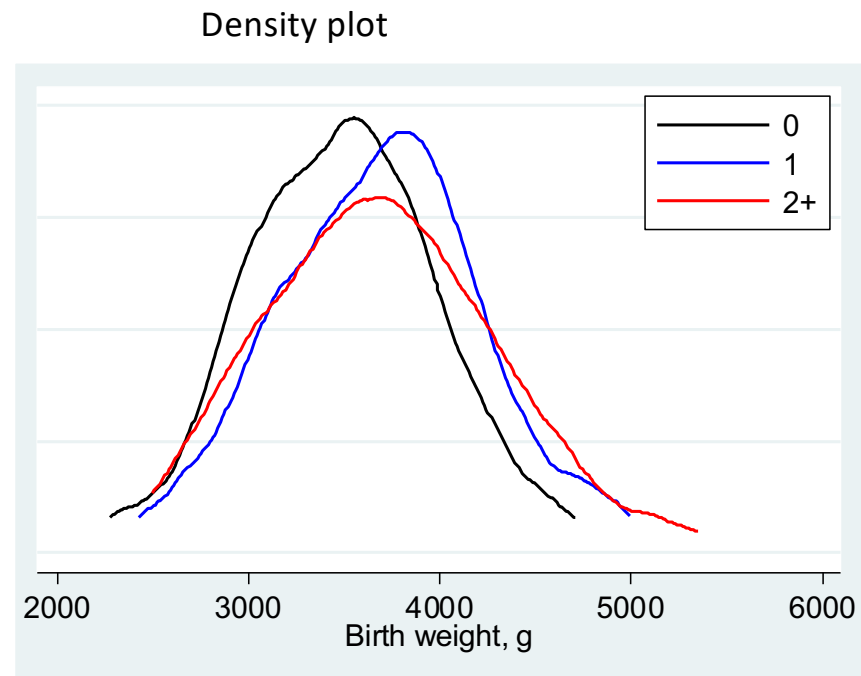
Y-type	X-type	Scatter	Density
Cont			x
Cont	Cont	x	
Cont	Cat	x	x
Binary	Cont	x	

Continuous by 3 categories

- Is birth weight the same over parity?



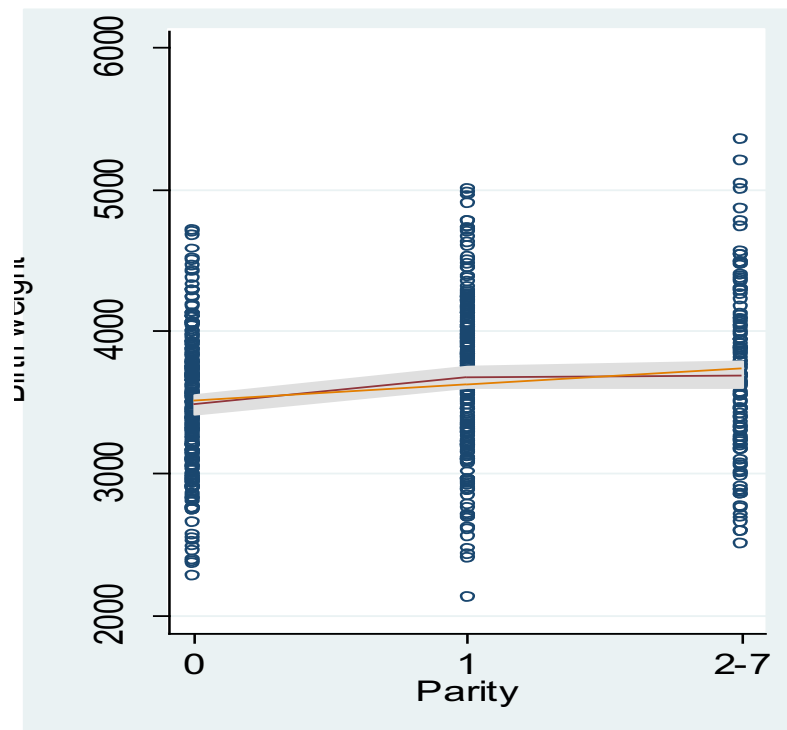
Equal means? Linear effect?
Outliers?



Equal variances?

Continuous by 3 categories

Scatterplot

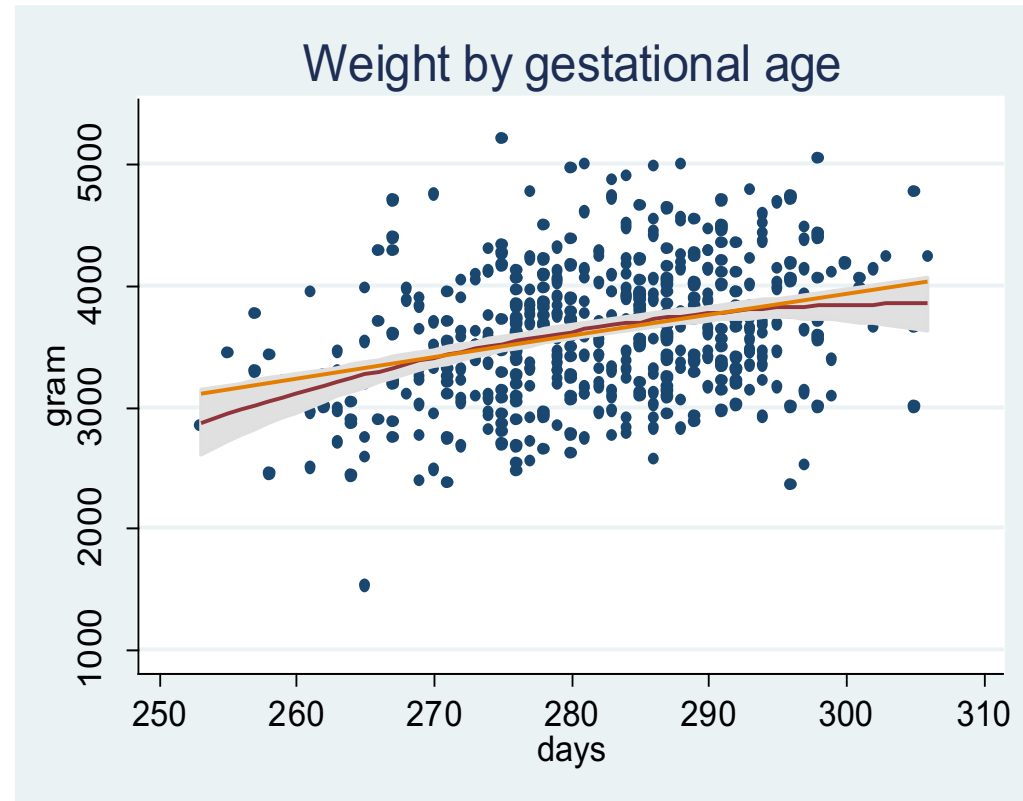


`twoway (scatter weight parity3)
(fpfitci weight parity3) (lfit weight
parity3), legend(off)`

- Look for:
 - Outliers (all analyses)
 - Non-linear effects (regression)

Continuous by continuous

- twoway
 (scatter weight gest)
 (fpfits weight gest)
 (lfit weight gest)
- Look for:
 - Main effect (line)
 - Non-linearity (smooth)
 - outliers



Saving and Including Stata Graphs

save graph in portable format (format determined by filename extension)

vector formats contain drawing instructions (.wmf .emf .ps .eps .pdf)
resolution independent
work well if graph may be resized

```
graph export north_america.wmf
```

raster formats save graph pixel-by-pixel (.png)
use current resolution
work well if including graph on web pages

```
graph export north_america.png
```

include "portable-format-graph" in Windows application (Word, Powerpoint):

Insert -> Picture -> From File

Useful Stata graph websites: <https://www.ssc.wisc.edu/sscc/pubs/4-24.htm>
<https://www.stata.com/support/faqs/graphics/gph/stata-graphs/>