Quantitative Methods in Political Science

Recitation

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Review from Last Week’s Lab Session

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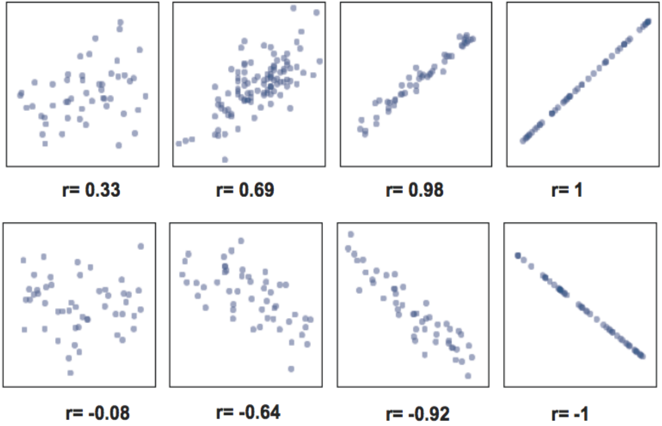
  - Box Plots
- Saving and editing graphs using graph editor

Correlation Analysis

Remember from class...



How do we get here?

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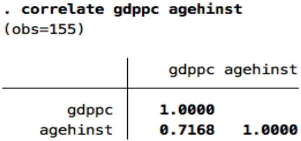

```
. correlate gdppc agehinst
(obs=155)

             |    gdppc agehinst
-------------+------------------
       gdppc |   1.0000
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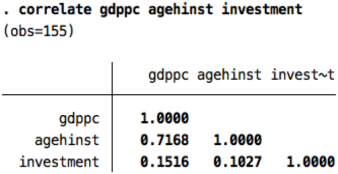

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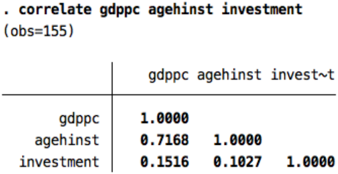

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- Notice correlation coefficients are still only for each pair of variables.

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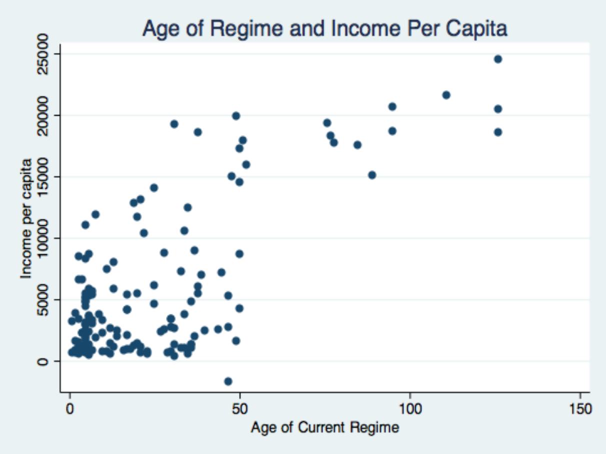
- Like other forms of data visualization, you can save and edit your scatterplot in the "Graph Editor" window
- You can also use the dropdown menu: Graphics → Twoway graph

Scatterplots



Generating Variables

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  - *generate zero=0*
  - This creates a variable that is all zeros

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Recode categorical variables:

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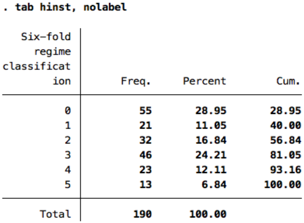

```
. tab hinst, nolabel

   Six-fold |
     regime |
 classificat |
        ion |      Freq.     Percent        Cum.
------------+-----------------------------------
          0 |         55       28.95       28.95
          1 |         21       11.05       40.00
          2 |         32       16.84       56.84
          3 |         46       24.21       81.05
          4 |         23       12.11       93.16
          5 |         13        6.84      100.00
------------+-----------------------------------
      Total |        190      100.00
```

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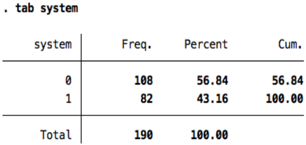

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     system |      Freq.     Percent        Cum.
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          0 |        108       56.84       56.84
          1 |         82       43.16      100.00
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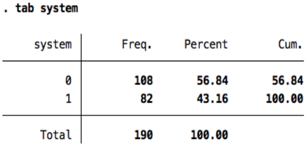

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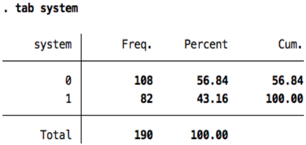

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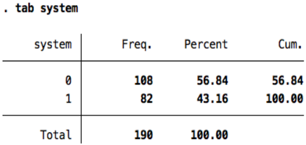

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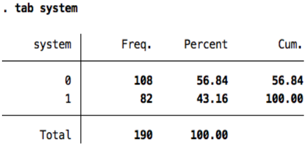

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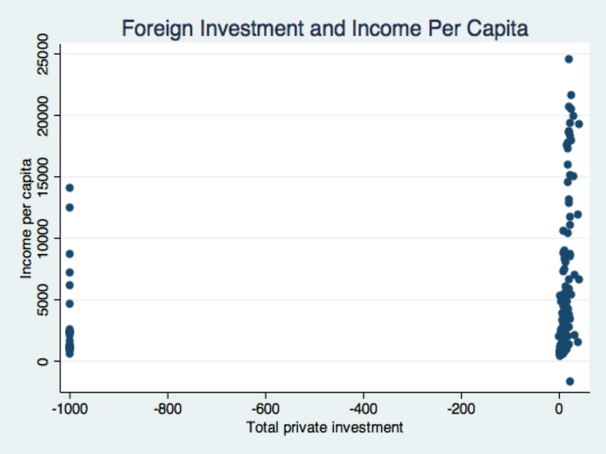
Missing Data

Let's take a look at a scatterplot of income per capita and investment: *scatter gdppc investment*



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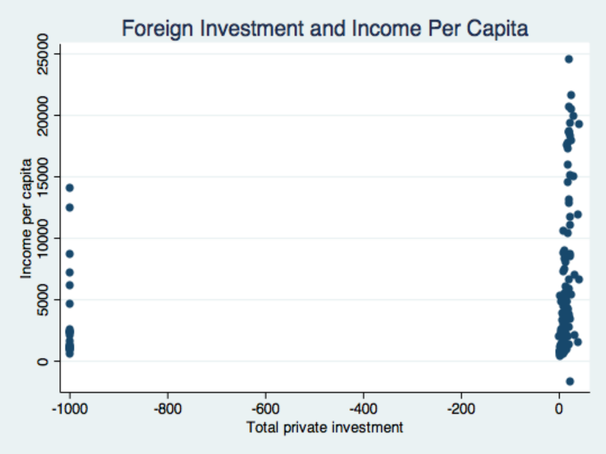

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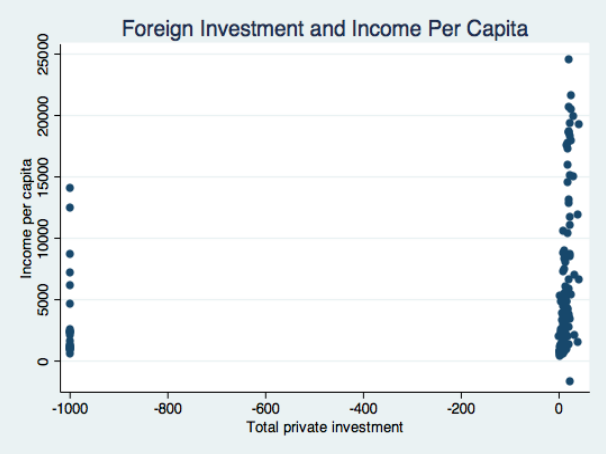

- correlation = 0.1516 (found by *correlate gdppc investment*)
- Does something look a little weird?

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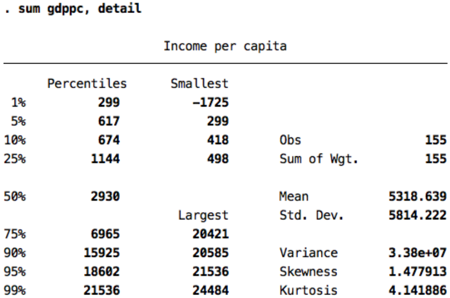

```
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                      Income per capita
-------------------------------------------------------------
      Percentiles      Smallest
 1%          299          -1725
 5%          617            299
10%          674            418       Obs                 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
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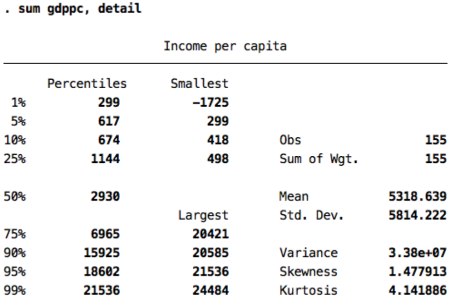

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- We can see from the scatterplot and summarize output that we have some values of income per capita that are negative. Does this make sense?

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We can change this...

- First let's find the observations that have negative income per capita:

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- First let's find the observations that have negative income per capita:
  - *list name country gdppc if gdppc<0*

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    - We find that Germany has negative income per capita
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    - The period (.) is used to signify missing data in Stata

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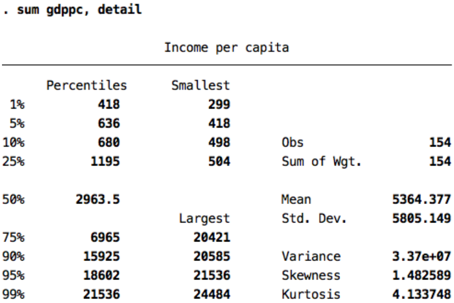

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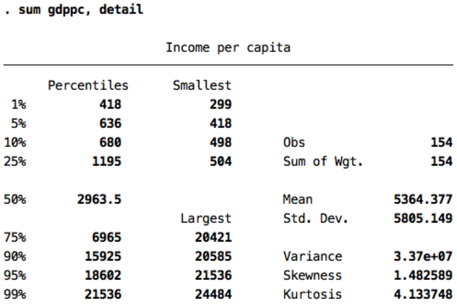
- Let's take a look at our data again:
  - *sum gdppc, detail*



```
. sum gdppc, detail

                      Income per capita
-------------------------------------------------------------
      Percentiles      Smallest
 1%          418            299
 5%          636            418
10%          680            498       Obs                 154
25%         1195            504       Sum of Wgt.         154

50%       2963.5                      Mean           5364.377
                        Largest       Std. Dev.      5805.149
75%         6965          20421
90%        15925          20585       Variance       3.37e+07
95%        18602          21536       Skewness       1.482589
99%        21536          24484       Kurtosis       4.133748
```

- Now everything is positive. Also notice how the mean, percentiles, variance and standard deviation changes as well.

Missing Data

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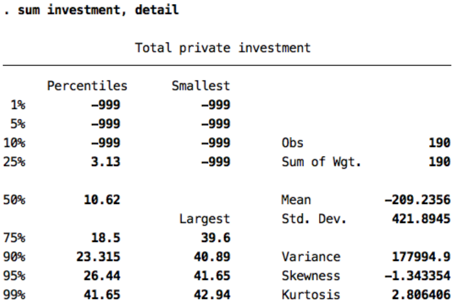

```
. sum investment, detail

                  Total private investment
-------------------------------------------------------------
      Percentiles      Smallest
 1%         -999           -999
 5%         -999           -999
10%         -999           -999       Obs                 190
25%         3.13           -999       Sum of Wgt.         190

50%        10.62                      Mean          -209.2356
                        Largest       Std. Dev.      421.8945
75%         18.5           39.6
90%       23.315          40.89       Variance       177994.9
95%        26.44          41.65       Skewness      -1.343354
99%        41.65          42.94       Kurtosis       2.806406
```

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- Again, we can fix this using the *recode* command:
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  - The missing data is now coded with a " . "

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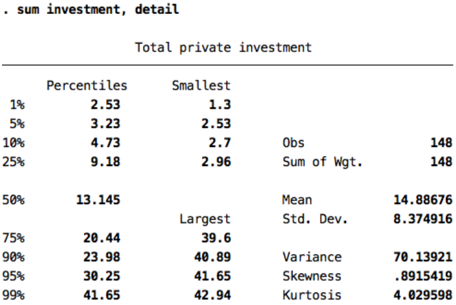

```
. sum investment, detail

                  Total private investment
-------------------------------------------------------------
      Percentiles      Smallest
 1%         2.53            1.3
 5%         3.23           2.53
10%         4.73            2.7       Obs                 148
25%         9.18           2.96       Sum of Wgt.         148

50%       13.145                      Mean           14.88676
                        Largest       Std. Dev.      8.374916
75%        20.44           39.6
90%        23.98          40.89       Variance       70.13921
95%        30.25          41.65       Skewness       .8915419
99%        41.65          42.94       Kurtosis       4.029598
```

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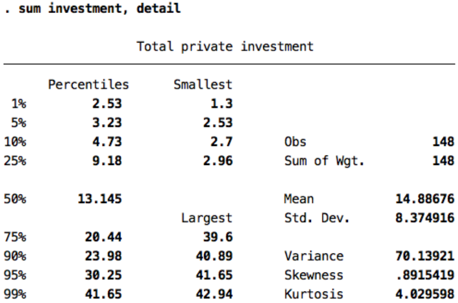

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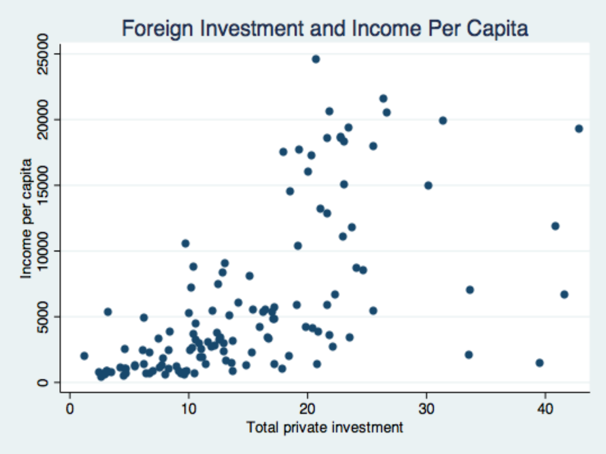
```

- Again notice how many of our descriptive statistics have changed.

Missing Data

Let's go all the way back and take a look at the scatterplot of income per capita and investment again: *scatter gdppc investment*



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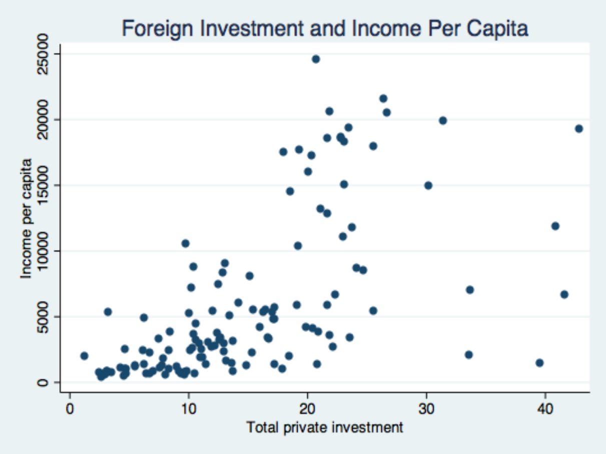

- Much better looking scatterplot

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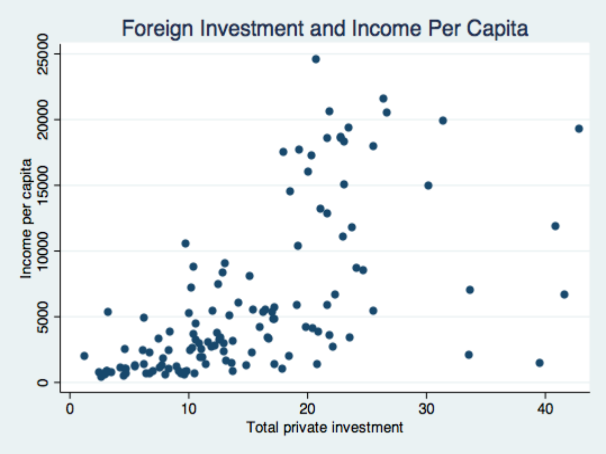

- Much better looking scatterplot
- correlation = 0.6071 (found by *correlate gdppc investment*)