Better Graphing in Stata

Andy Grogan-Kaylor

8 Dec 2019 19:19:49

Introduction

- Stata is a powerful and intuitive data analysis program.
- Learning how to graph in Stata is an important part of learning how to use Stata. Yet, the default graphs in Stata can sometimes be less than optimal.
- This document is an introduction to (a) basic graphing ideas in Stata; and (b) some simple ways to make your Stata graphs look more professional.
- If this document is presented as slides, navigation links are in the corner of this slide deck.
- If this document is presented as slides, you can generate a printable version of these slides, by clicking on the "Ø".

Data

We are going to use the famous "iris" data collected by Ronald Fisher.

```
.
. use "iris.dta", clear

.
. summarize
```

Variable	Obs	Mean	Std. Dev.	Min	Max
Sepal_Length	150	5.843333	.8280661	4.3	7.9
Sepal_Width	150	3.057333	.4358663	2	4.4
Petal_Length	150	3.758	1.765298	1	6.9
Petal_Width	150	1.199333	.7622377	.1	2.5
Species	150	2	.8192319	1	3

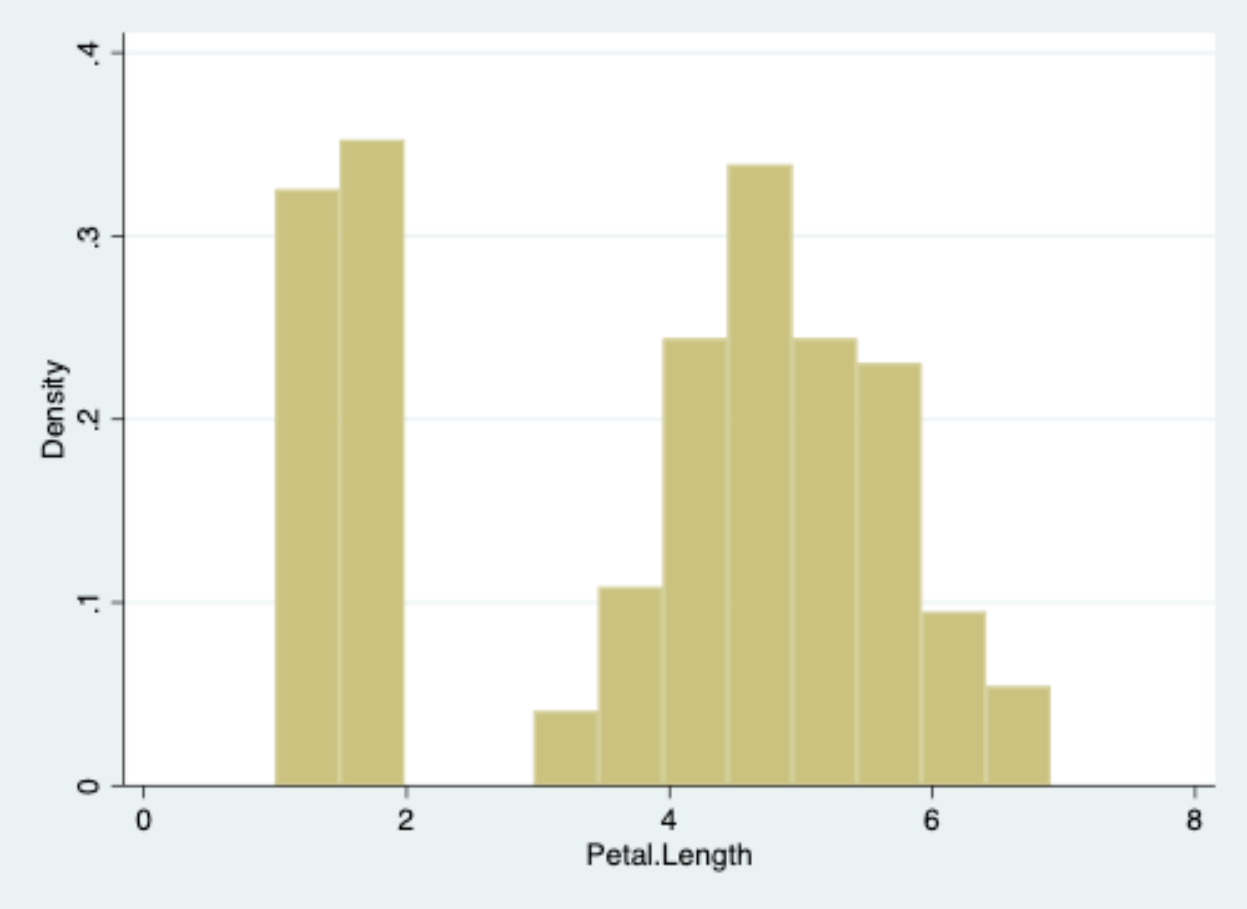
```
.
```

Basic Graphs

Continuous Variable `histogram`

```
.
. histogram Petal_Length
(bin=12, start=1, width=.49166667)

.
```

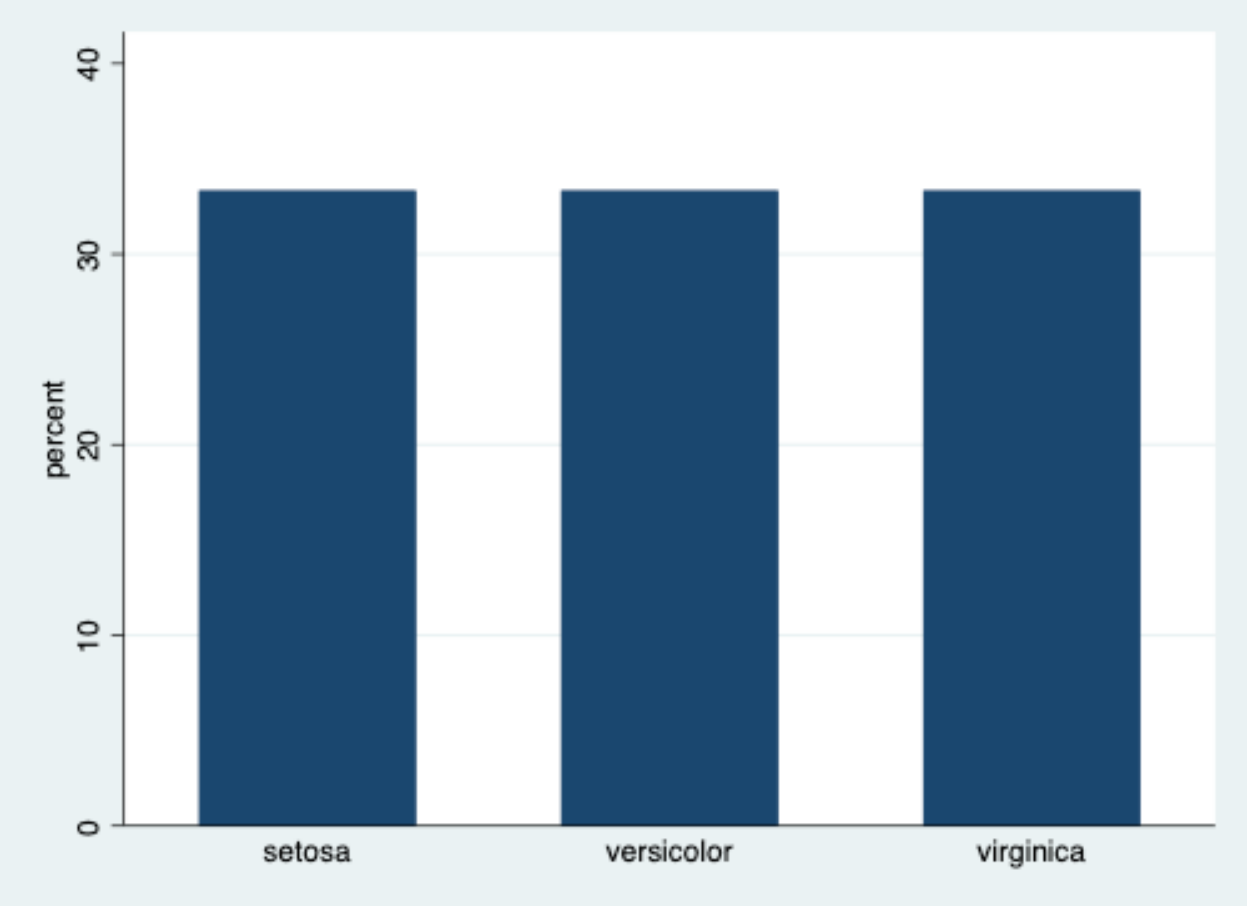


Histogram of Petal Width

Categorical Variable `graph bar`

```
.
. graph bar, over(Species)

.
```

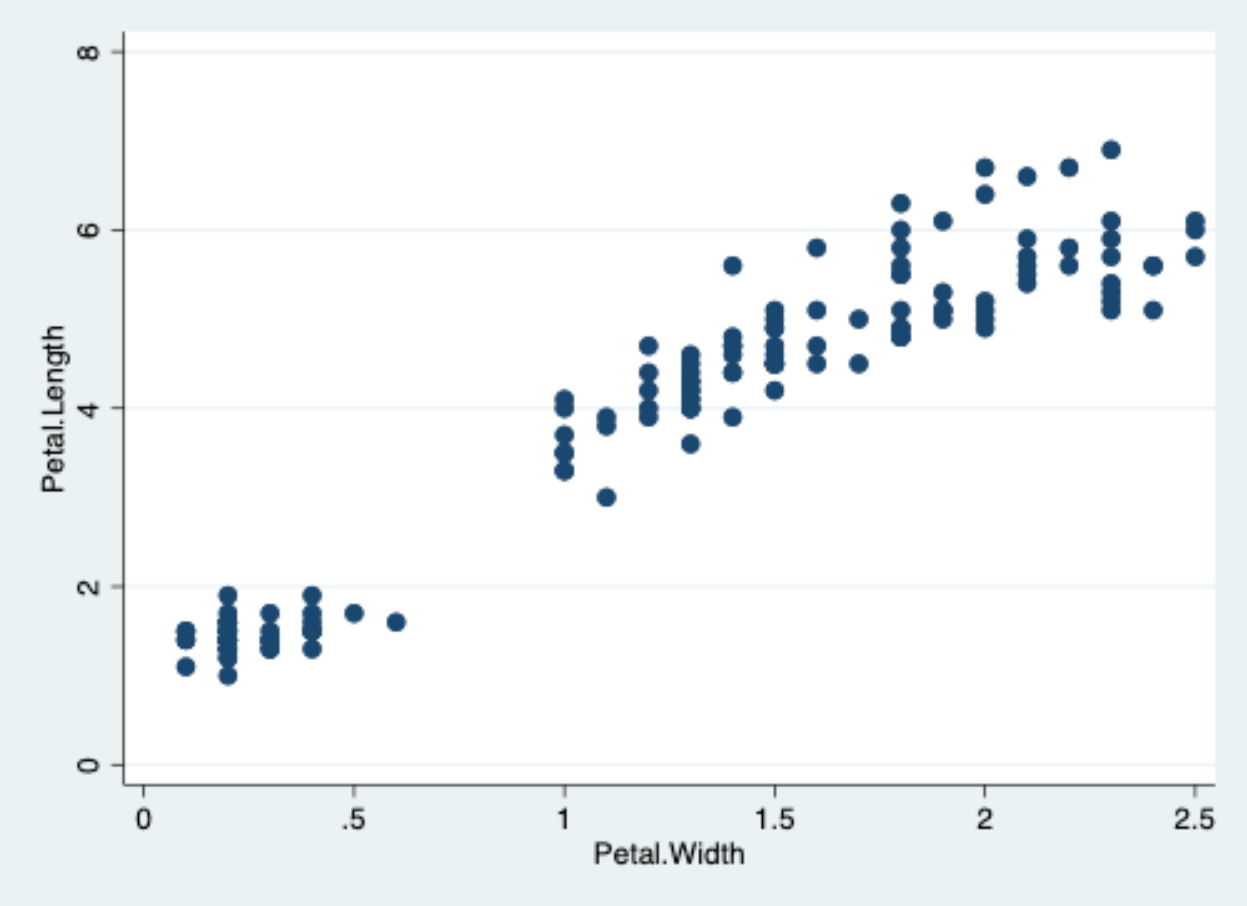


Bar Graph of Species

Continuous by Continuous `twoway`

```
.
. twoway scatter Petal_Length Petal_Width

.
```



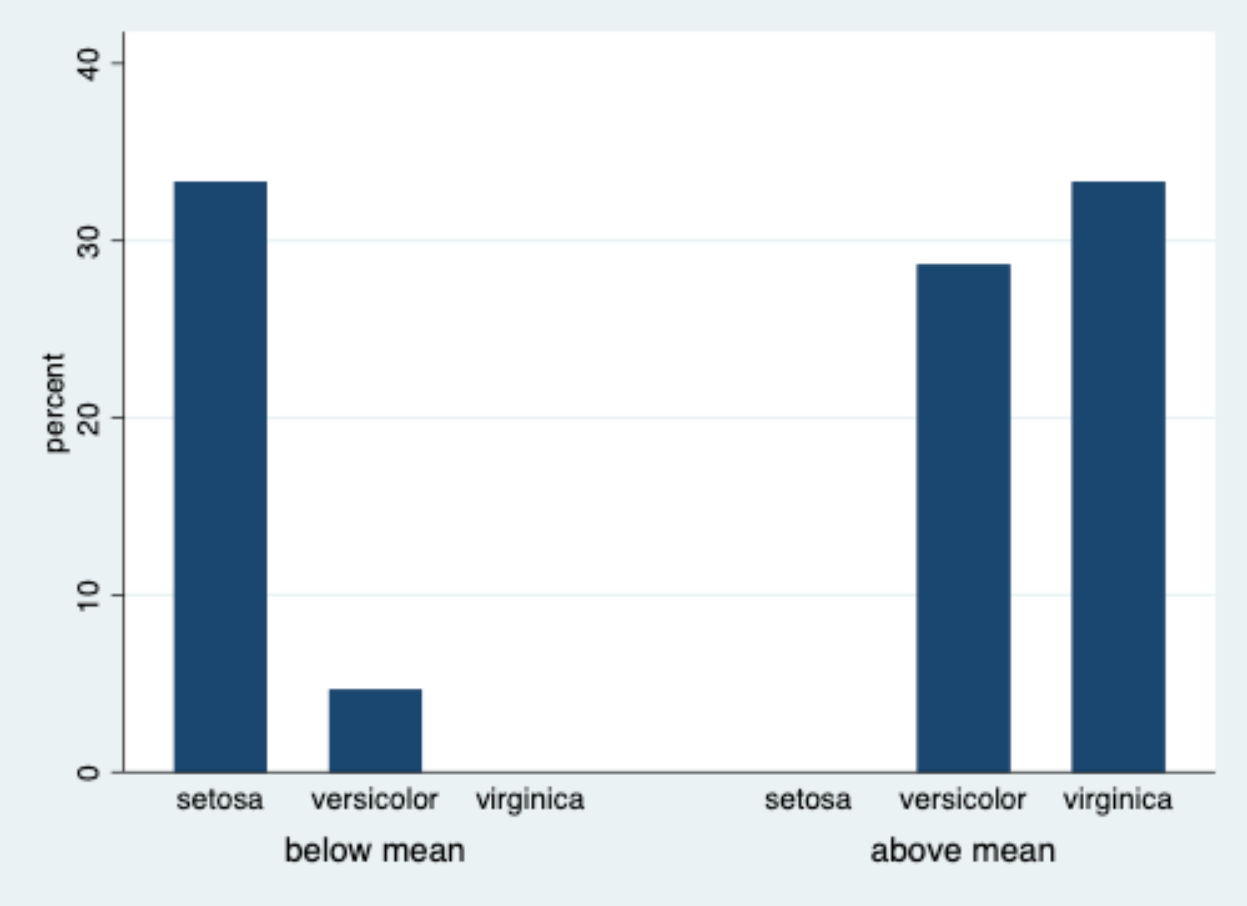
Scatterplot

Categorical by Categorical `graph bar`

```
.
. recode Petal_Length ///
> (min/3.758 = 0 "below mean") ///
> (3.758/max = 1 "above mean"), ///
> generate(Petal_Group) // dichotomize Petal_Length
(150 differences between Petal_Length and Petal_Group)

.
. graph bar, over(Species) over(Petal_Group)

.
```

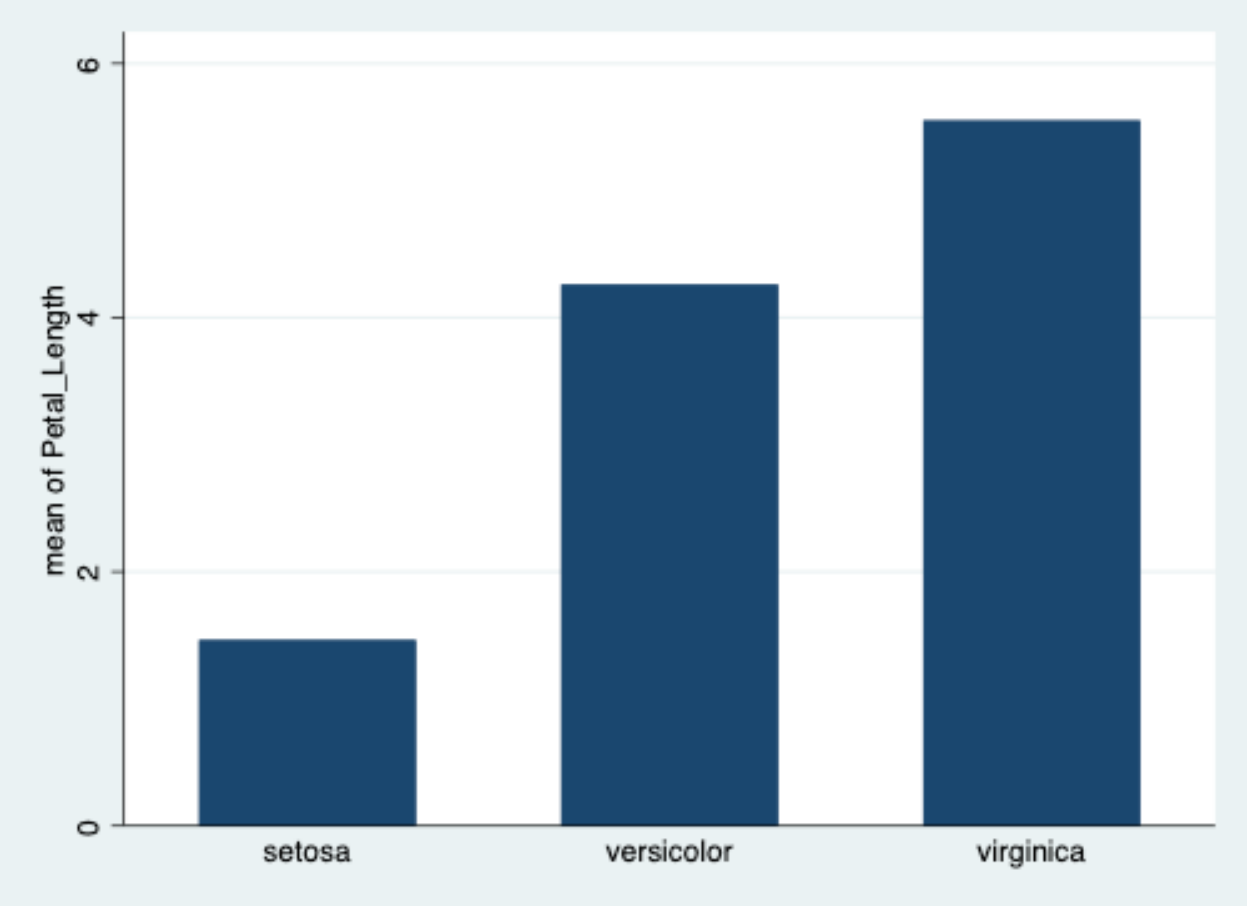


Bar Graph of Species by Category of Petal Length

Continuous by Categorical `graph bar`

```
.
. graph bar Petal_Length, over(Species)

.
```

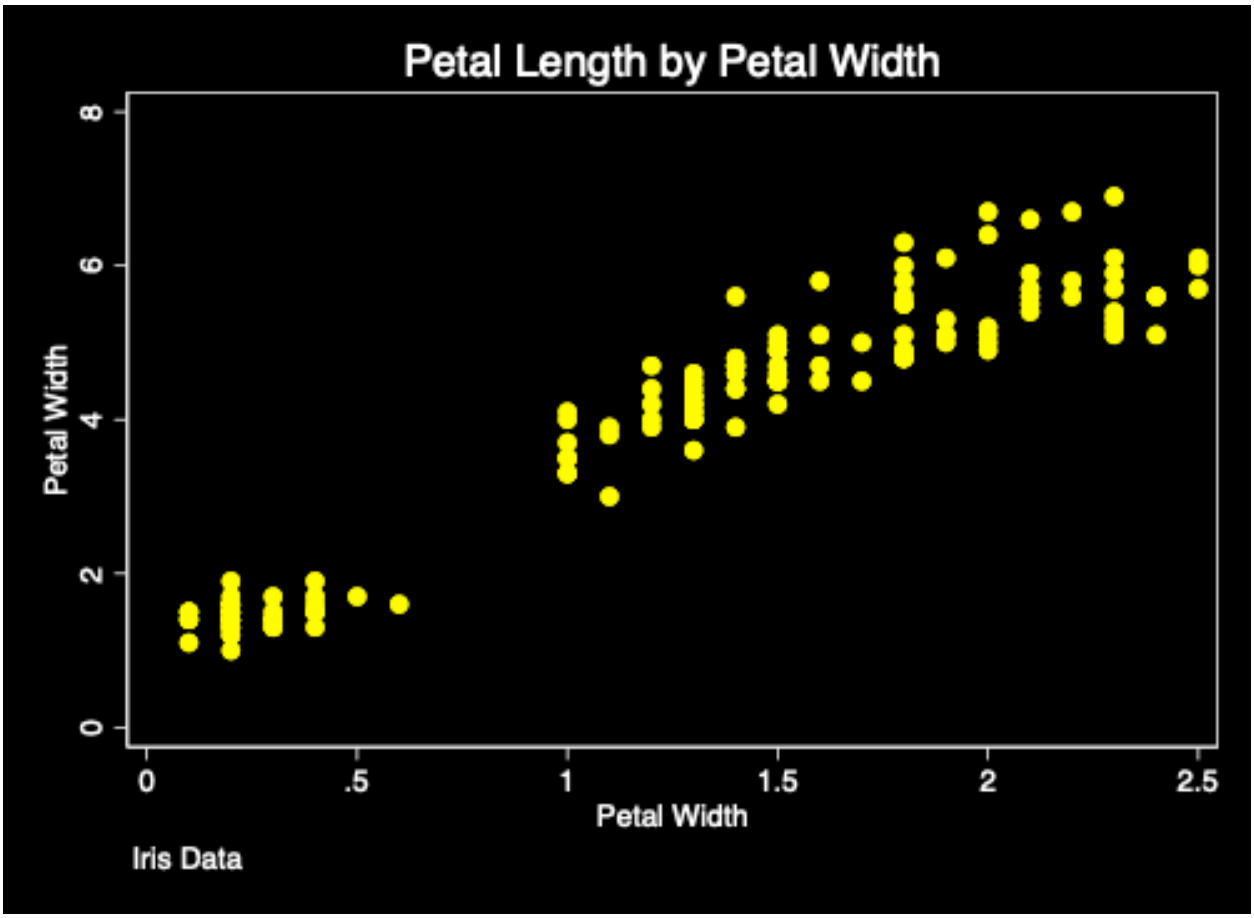


Bar Graph of Petal Length by Species

Titles and Labels , `title(...) xtitle(...) ytitle(...)`

```
.
. twoway scatter Petal_Length Petal_Width, scheme(s1rcolor) ///
> title("Petal Length by Petal Width") ///
> xtitle("Petal Width") ytitle("Petal Width") ///
> caption("Iris Data")

.
```



Graph With Titles and Labels

Better Graphing With Schemes `,scheme(...)`

The easiest method to make better Stata graphs is through the use of predefined Stata graphing schemes.

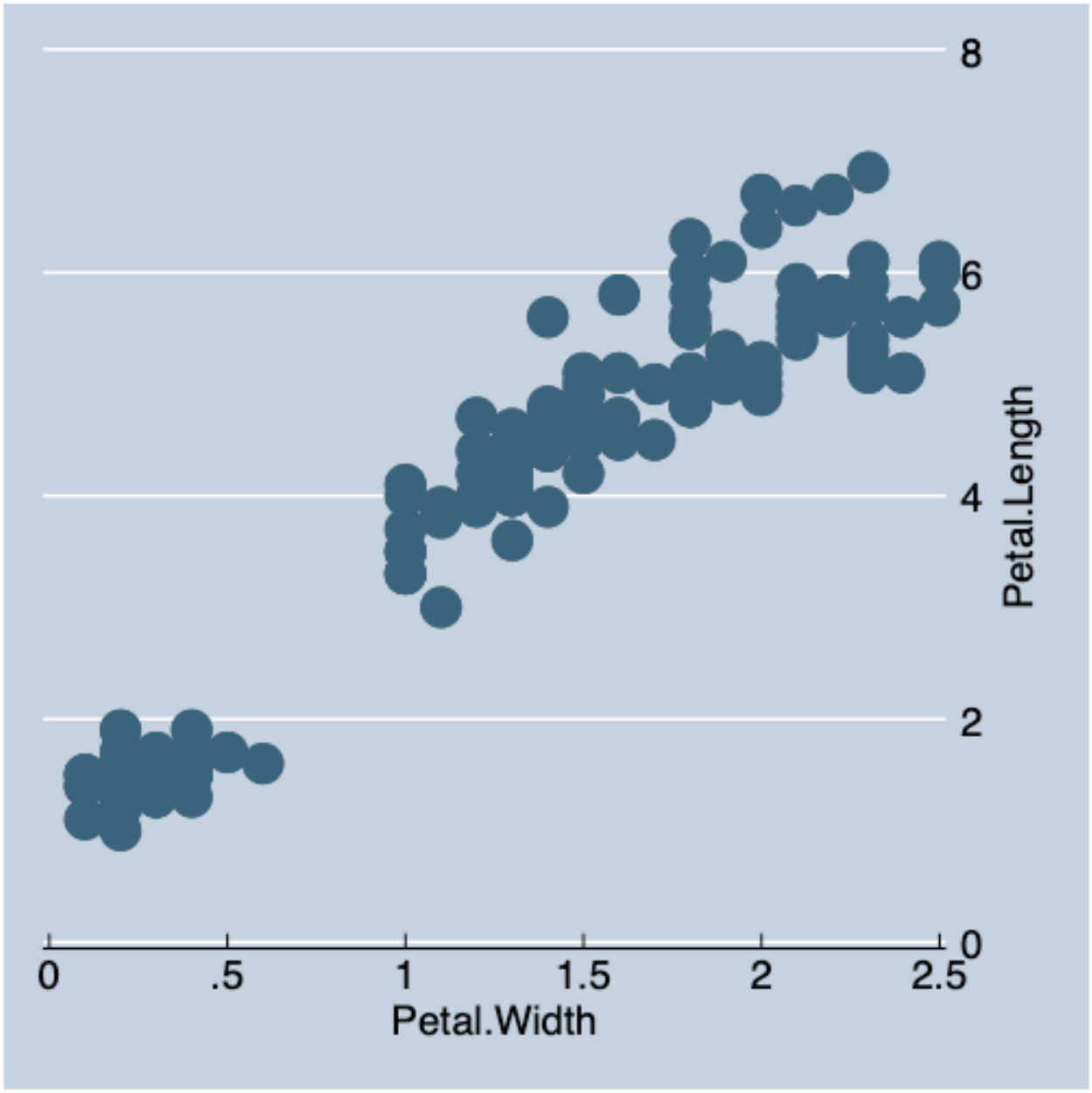
Pre-Defined Schemes

Some schemes, e.g. `economist`, `sj` and `s1rcolor` are pre-installed with Stata.

Economist Scheme

```
.
. twoway scatter Petal_Length Petal_Width, scheme(economist)

.
```

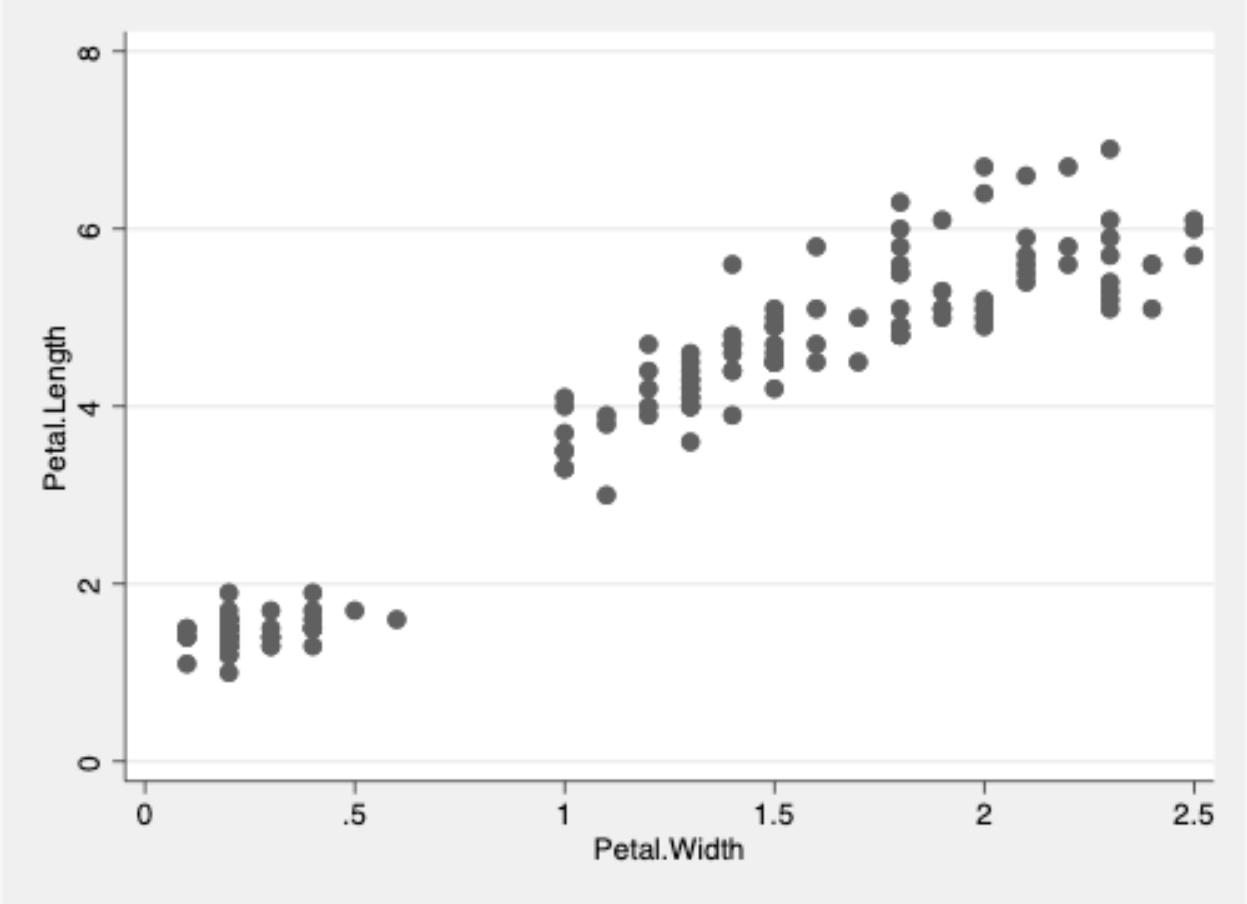


Scatterplot with Economist Scheme

Stata Journal Scheme

```
.
. twoway scatter Petal_Length Petal_Width, scheme(sj)

.
```

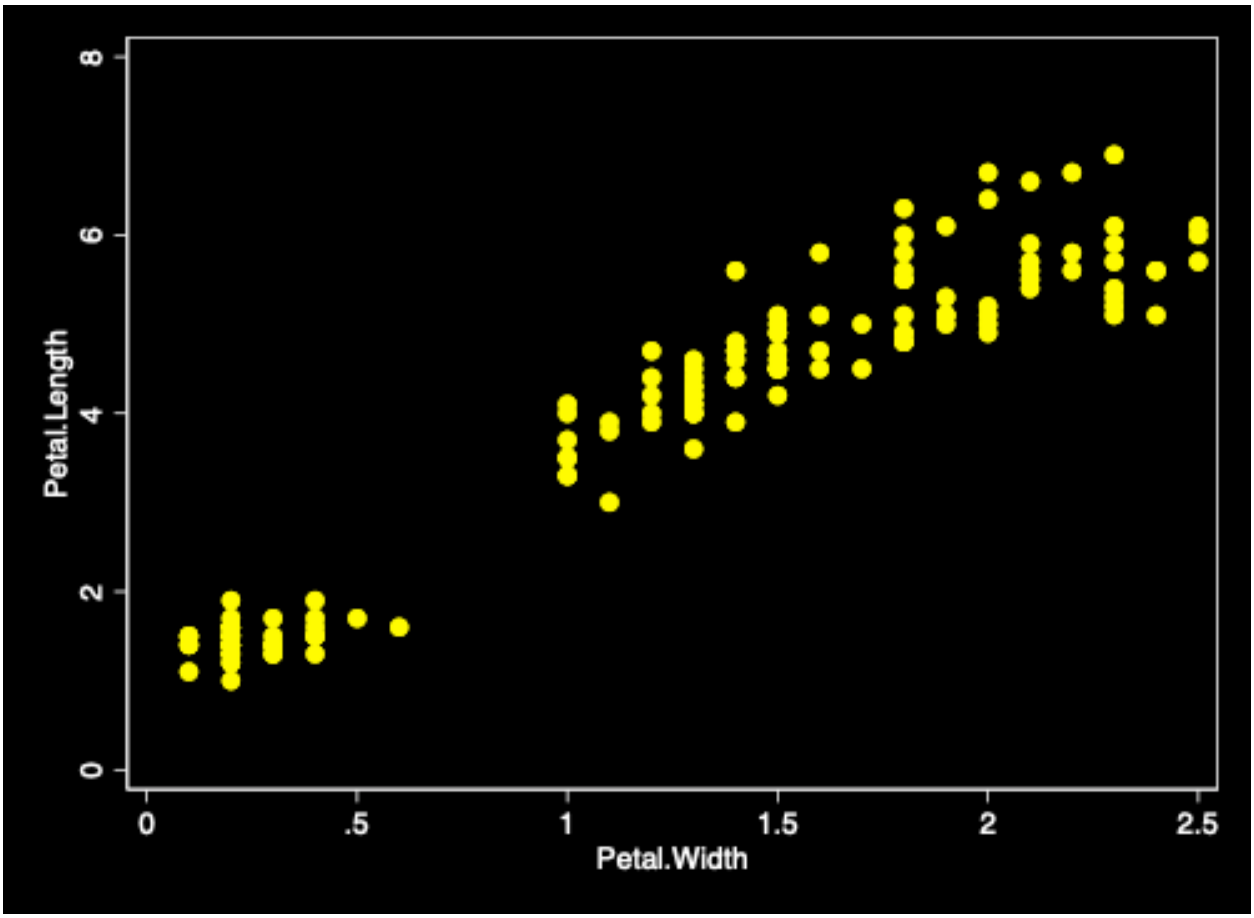


Scatterplot with Stata Journal Scheme

`s1rcolor` Scheme

```
.
. twoway scatter Petal_Length Petal_Width, scheme(s1rcolor)

.
```



Scatterplot with `s1rcolor` Scheme

User Written Schemes

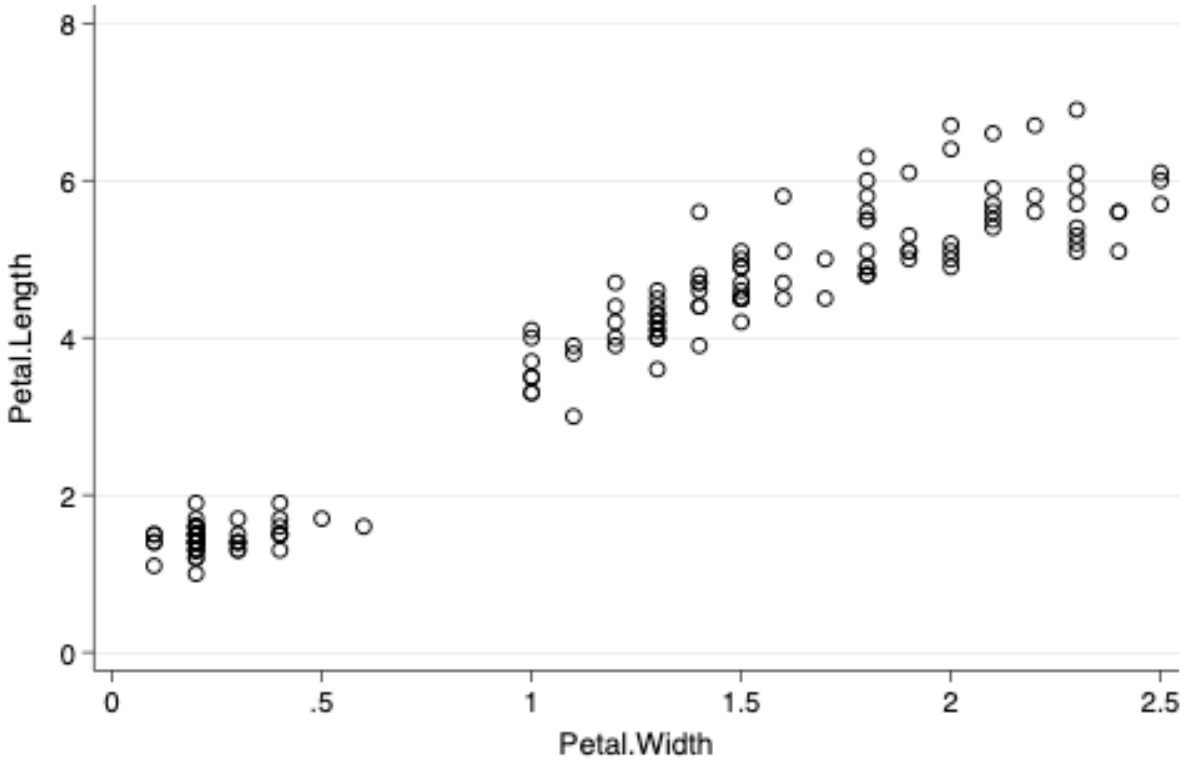
Two of the best user written schemes are `plottig` and `lean2`.

Use the `findit` command e.g. `findit lean2` to find these schemes.

`lean2` Scheme

```
.
. twoway scatter Petal_Length Petal_Width, scheme(lean2)

.
```



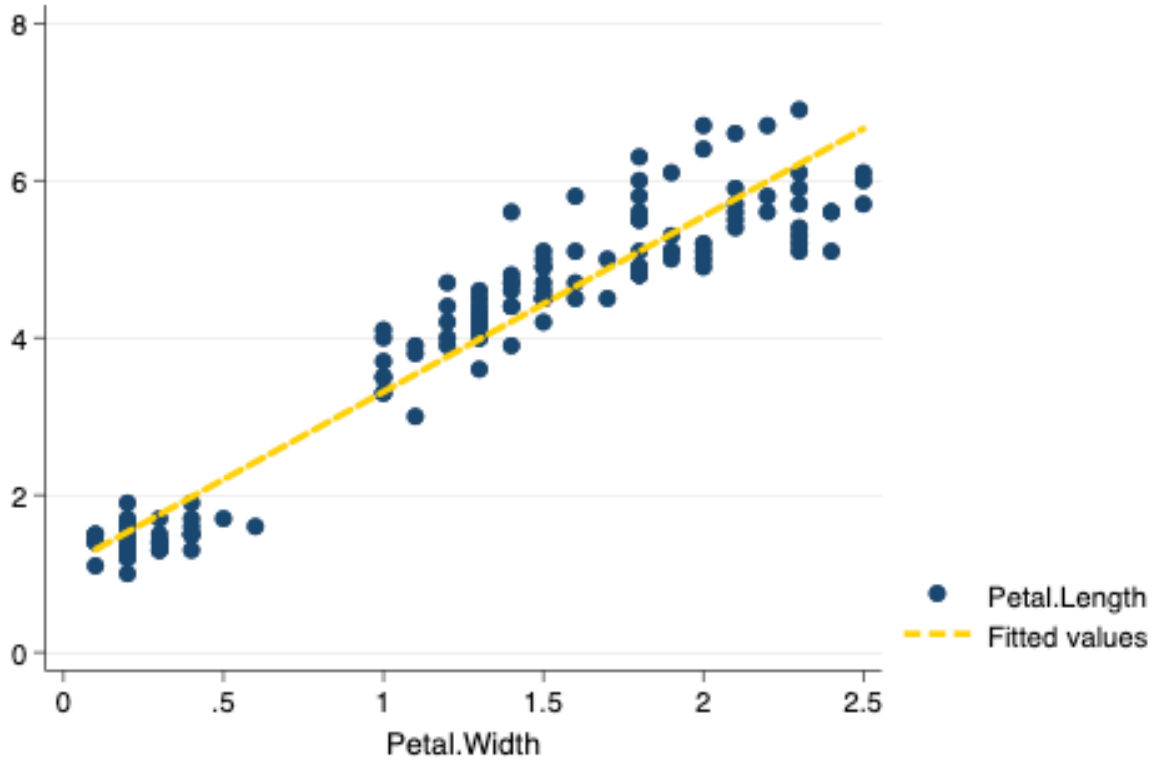
Scatterplot with Lean2 Scheme

Michigan graph scheme

I have written a `michigan` graph scheme described *here*.

```
.
. twoway (scatter Petal_Length Petal_Width) ///
> (lfit Petal_Length Petal_Width), scheme(michigan)

.
```



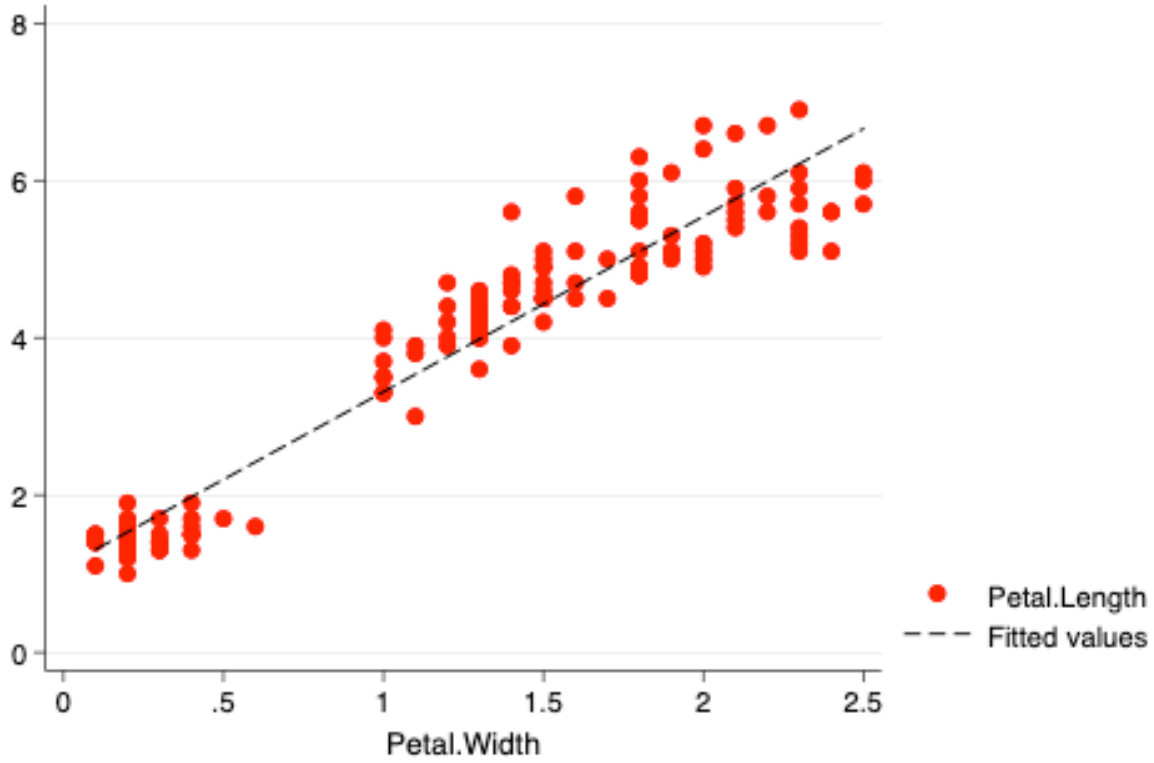
Scatterplot with `michigan` Scheme

Schemes as a Base for Further Tweaking

Schemes can be used as a base that can then be further modified.

```
.
. twoway (scatter Petal_Length Petal_Width, msymbol(0) mcolor(red)) ///
> (lfit Petal_Length Petal_Width), ///
> scheme(lean2)
(note:  named style 0 not found in class symbol, default attributes used)

.
```



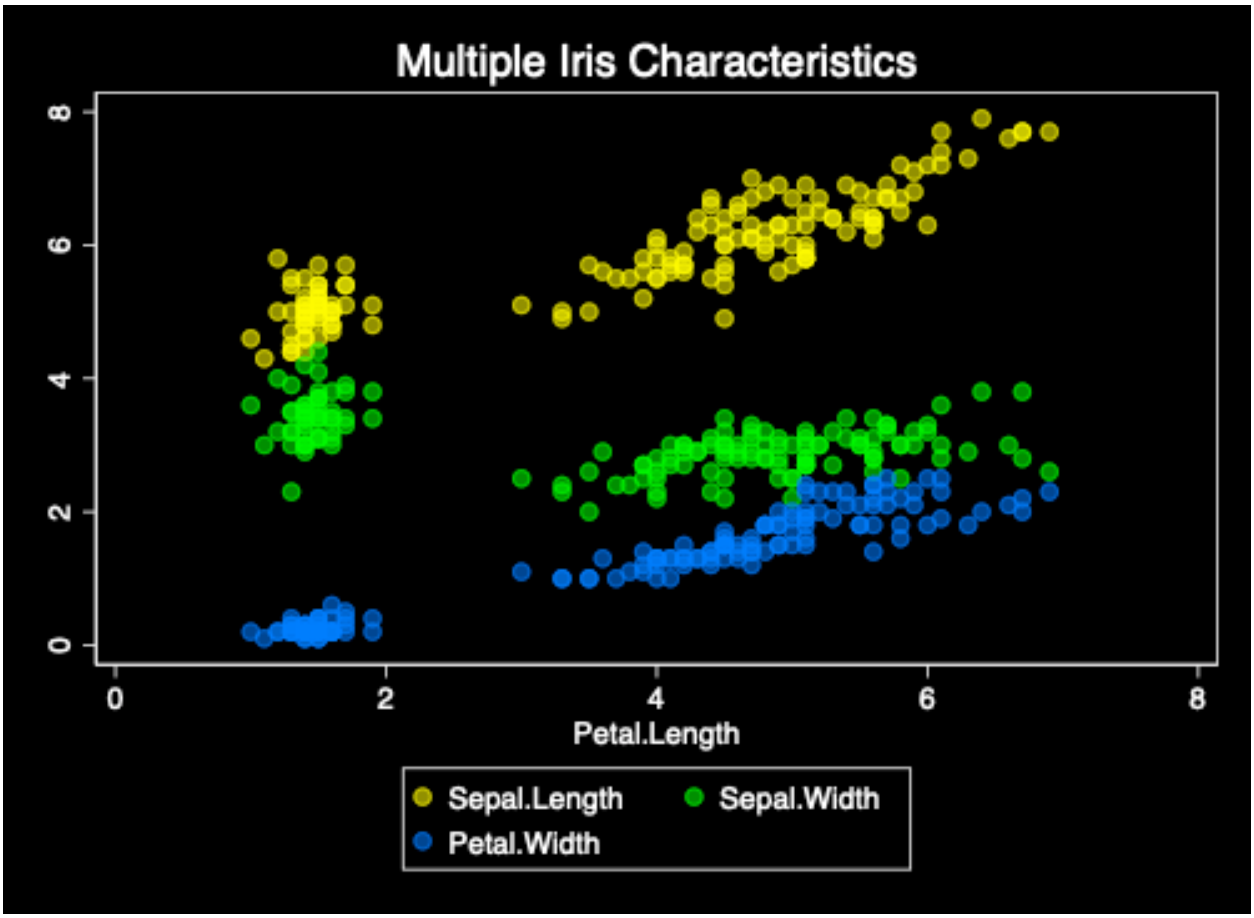
Modified Scatterplot with `lean2` Scheme as a Base

Even More Tweaks

Based upon an example at *https://blog.stata.com/2018/10/02/scheming-your-way-to-your-favorite-graph-style/*

```
.
. twoway scatter Sepal_Length Sepal_Width Petal_Width Petal_Length, ///
> color(%50 %50 %50) /// transparency
> title("Multiple Iris Characteristics") /// title
> scheme(s1rcolor) // scheme

.
```



Modified Scatterplot with `s1rcolor` Scheme as a Base

More Information

See also *Two Page Stata*

Created by *agrogan@umich.edu*