

Let us read the fuel efficiency data that ships with Stata

```
. sysuse auto, clear
(1978 automobile data)
```

To study how fuel efficiency depends on weight it is useful to transform the dependent variable from “miles per gallon” to “gallons per 100 miles”

```
. gen gphm = 100/mpg
```

We then obtain a fairly linear relationship

```
. twoway scatter gphm weight || lfit gphm weight, ///
> ytitle(Gallons per 100 Miles) legend(off)
. graph export auto.png, width(500) replace
(file auto.png not found)
file auto.png saved as PNG format
```

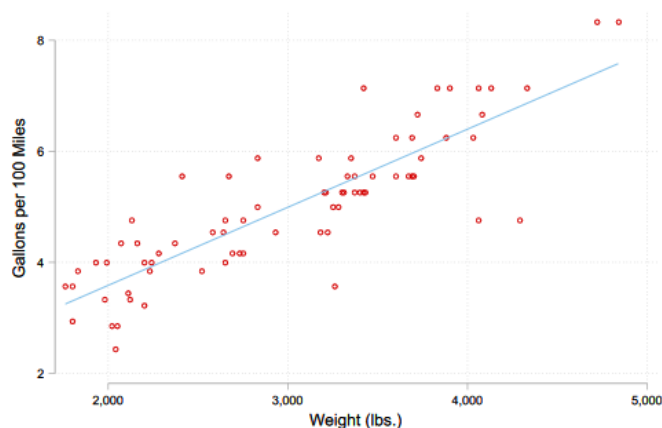


Figure 1: Fuel Efficiency by Weight

The regression equation estimated by OLS is

```
. regress gphm weight
```

Source	SS	df	MS	Number of obs	=	74
Model	87.2964969	1	87.2964969	F(1, 72)	=	194.71
Residual	32.2797639	72	.448330054	Prob > F	=	0.0000
				R-squared	=	0.7300
				Adj R-squared	=	0.7263
Total	119.576261	73	1.63803097	Root MSE	=	.66957
gphm	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
weight	.001407	.0001008	13.95	0.000	.001206	.0016081
_cons	.7707669	.3142571	2.45	0.017	.1443069	1.397227

Thus, a car that weighs 1,000 pounds more than another requires on average an extra 1.4 gallons to travel 100 miles.

That's all for now!