

# PS01 Response

## Applied Stats/Quant Methods 1

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### Instructions

*This is a template from which you can reference to create your own responses in R and LaTeX.*

### Question 1: Education

A school counselor was curious about the average of IQ of the students in her school and took a random sample of 25 students' IQ scores. The following is the data set:

```
1 y <- c(105, 69, 86, 100, 82, 111, 104, 110, 87, 108, 87, 90, 94, 113, 112, 98,
      80, 97, 95, 111, 114, 89, 95, 126, 98)
```

Notice, I'm reading in only one line of code from the answers in my .R file using this code:

```
\lstinputlisting[language=R, firstline=40, lastline=40]{PS01_answersJZ.R}}
```

If you're looking at the code in the .tex file as you investigate this example, **which you should**, you'll notice that you could also copy your code results using the `verbatim` environment (`\begin{verbatim}` PASTE RESULTS HERE `\end{verbatim}`). The results will look something like this:

STATE		Y		X1		X2		X3	
AK	: 1	Min.	: 49.00	Min.	:1053	Min.	:334.0	Min.	:326.0
AL	: 1	1st Qu.	: 68.25	1st Qu.	:1698	1st Qu.	:374.2	1st Qu.	:426.2
AR	: 1	Median	: 81.00	Median	:1897	Median	:395.0	Median	:568.0
AZ	: 1	Mean	: 85.04	Mean	:1912	Mean	:404.7	Mean	:561.7
CA	: 1	3rd Qu.	:102.00	3rd Qu.	:2096	3rd Qu.	:419.5	3rd Qu.	:661.2
CO	: 1	Max.	:142.00	Max.	:2817	Max.	:637.0	Max.	:899.0

You can also save figures in R, and place them in your answers that you're writing in your .tex file. First, you need to make sure your path/file name is correct, then you'll save your work when your in R (see code below).

```

1 # create scatterplot of Y and X1
2 pdf("plot_example.pdf")
3 plot(expenditure$X1, expenditure$Y)
4 dev.off()

```

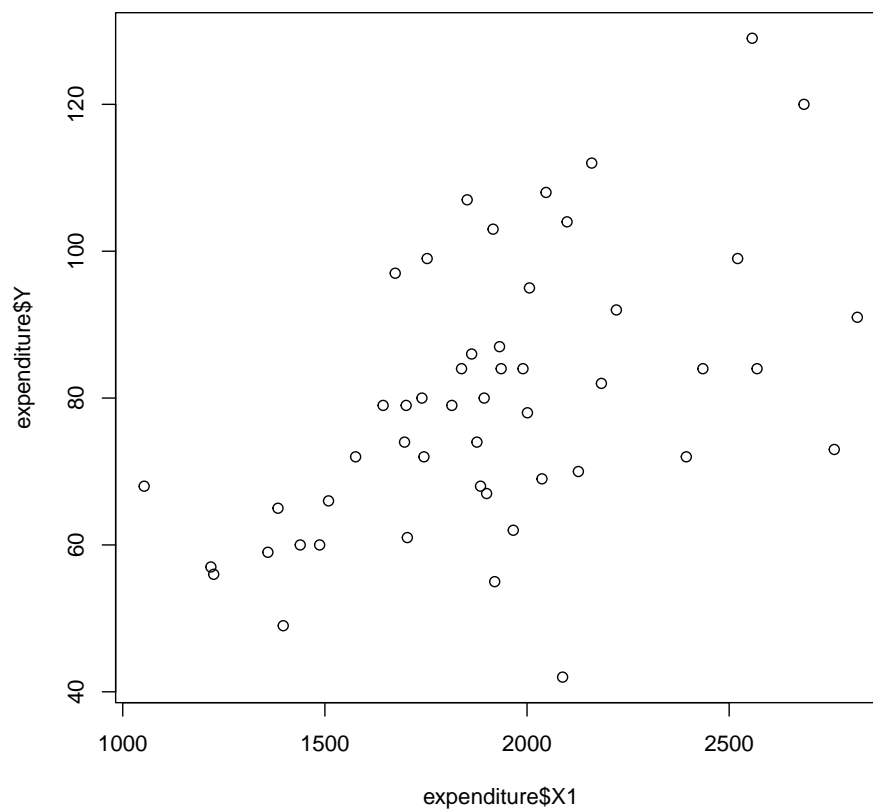
With our figure saved, we just need to render it in our .tex file, which we can do using the `figure` environment:

```

\begin{figure}[h!]\centering
\caption{\footnotesize Example from base plot in R.}
\label{fig:plot_1}
\includegraphics[width=.85\textwidth]{plot_example.pdf}
\end{figure}

```

Figure 1: Example from base plot in R.



Finally can also save tables in R, and place them in your answers in your .tex file, just like you would a figure. You will essentially dump and save the information in a new file, and then read that file in through Latex.

```

1 # run an example regression , to show how to save table
2 regression1 <- lm(Y~X1, data=expenditure)
3 # now save that output to a file that you can read in later to your answers
4 # make it easier for when we need to do this again, let's create a function
5 output_stargazer <- function(outputFile, ...) {
6   output <- capture.output(stargazer(...))
7   cat(paste(output, collapse = "\n"), "\n", file=outputFile, append=TRUE)
8 }
9 # execute function and check ls() to make sure it worked
10 output_stargazer("regression_output1.tex", regression1)

```

That's great, you saved your table in a new file in the same folder as your .tex and .R files. Now, let's read in our saved table using `\inputregression_output1.tex`, which will result in:

Table 1

<i>Dependent variable:</i>	
	Y
X1	0.025*** (0.006)
Constant	32.546*** (11.034)
Observations	50
R <sup>2</sup>	0.283
Adjusted R <sup>2</sup>	0.268
Residual Std. Error	15.836 (df = 48)
F Statistic	18.920*** (df = 1; 48)
<i>Note:</i> *p<0.1; **p<0.05; ***p<0.01	

Or, you can paste the code you get from `stargazer` in R into the `verbatim` environment in LaTeX. This is more labor intensive, but produces the same results.