Stat 590 HW 1

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Contents

1 Introduction

Here's the first paragraph of the section, which is not indented. As long as you keep lines together, they'll appear in the same paragraph. A blank line will separate paragraphs.

Here's that new paragraph, this and every following paragraph is indented.

2 Methods

You can insert R code like this code chunk below, which will print the values, and produce a plot.

```r
1+1
```

```
## [1] 2
```

```r
letters[5:10]
```

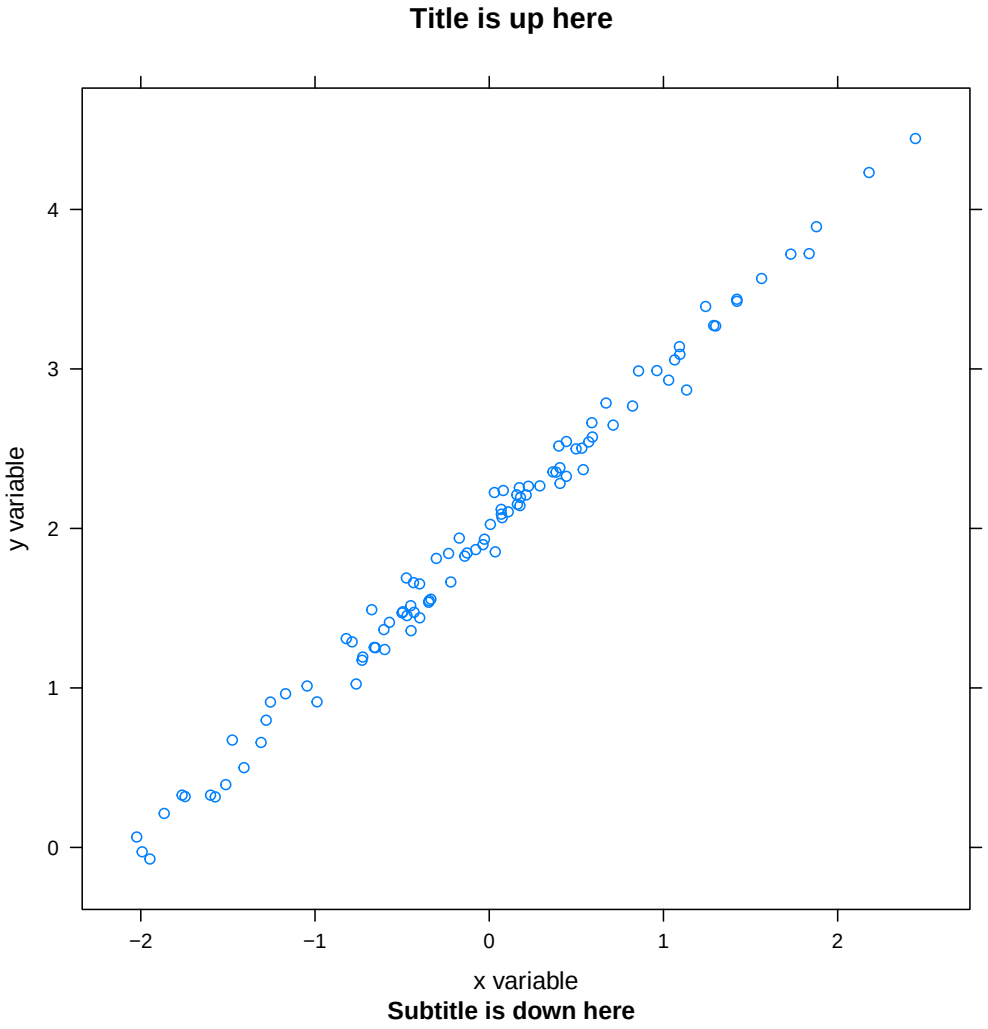
```
## [1] "e" "f" "g" "h" "i" "j"
```

```r
LETTERS[11:15]
```

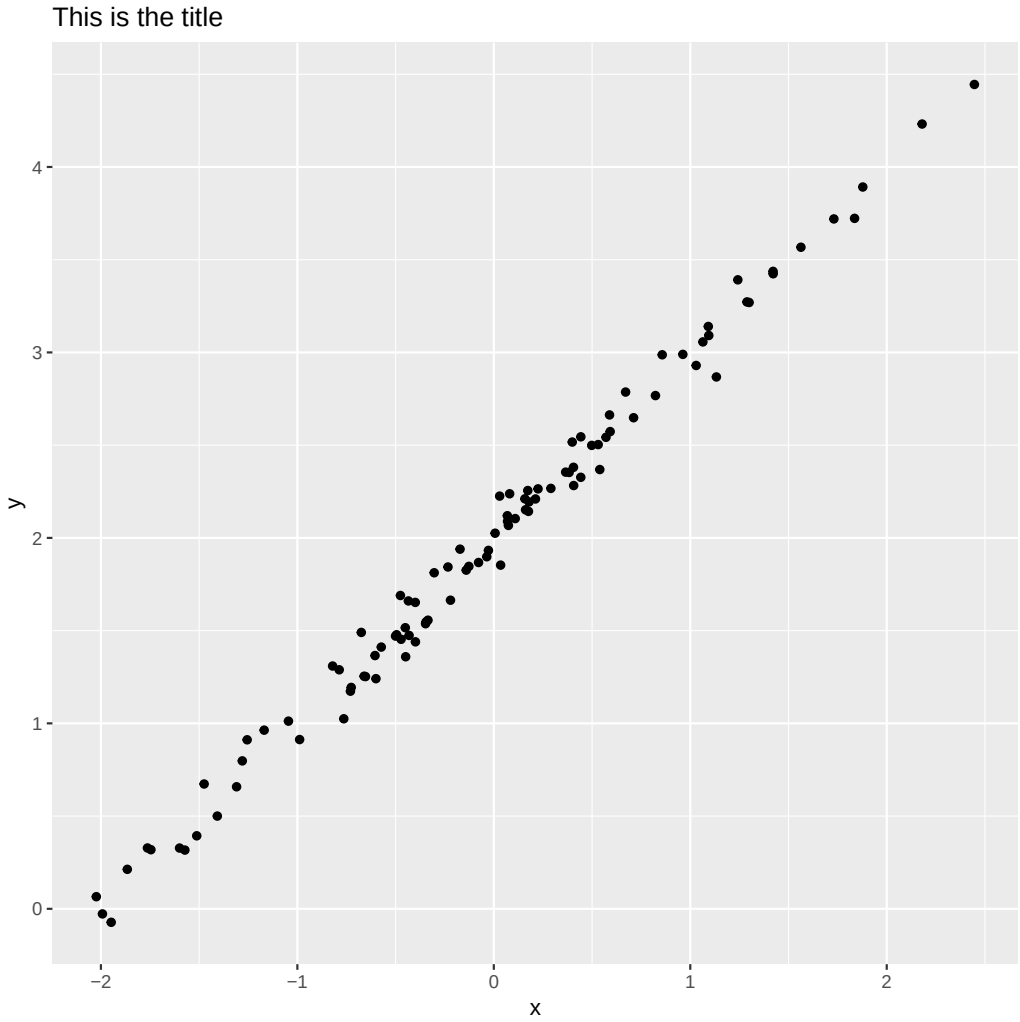
```
## [1] "K" "L" "M" "N" "O"
```

```r
# Create a data.frame called df used for an example plot
df <- data.frame(x = rnorm(100))
df$y <- df$x + rnorm(100, mean = 2, sd = 0.1)

# plot the df data.frame
library(lattice)
xyplot(y ~ x, data = df,
       main = "Title is up here", sub="Subtitle is down here",
       xlab="x variable", ylab="y variable")
```



Using `echo=FALSE` will allow this next code chunk to be hidden, but the resulting plot still displays.



You can print an attractive table from R in a tabular environment. Below are the first 10 observations from df.

You can also write inline expressions, such as $\pi = 3.1415927$, and 1.598673×10^{8} is a big number. The first values in the dataframe are $0.4429, 2.545$.

Equations will take a little practice, but will be beautiful. The **residual**

sum of squares (SS) can be represented in many equivalent forms,

$$\begin{aligned}
\mathrm{SSE}(\hat{\beta}) &= \sum_{i=1}^{n}\{y_i - (\hat{\beta}_0 + \hat{\beta}_1 x_{i1} + \cdots + \hat{\beta}_p x_{ip})\}^2 \qquad (1)\\
&= \sum_{i=1}^{n}\{y_i - \hat{\mu}_i\}^2 \\
&= \sum_{i=1}^{n}\hat{e}_i^2 \\
&= \hat{e}^\top \hat{e} \qquad (2)\\
&= (y - \hat{\mu})^\top (y - \hat{\mu}) \\
&= (y - \mathbf{X}\hat{\beta})^\top (y - \mathbf{X}\hat{\beta}).
\end{aligned}$$

Equations (1) and (2) are equivalent, and the equation reference numbers are connected to their labels in the equation array.

3 Section hierarchy

These last few chunks below show the hierarchy of sections, subsections, etc. ...

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3.1 subsection

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Duis aute irure dolor in reprehenderit...

3.1.1 subsubsection

Lorem ipsum dolor sit amet...

Duis aute irure dolor in reprehenderit...

paragraph Lorem ipsum dolor sit amet...

Duis aute irure dolor in reprehenderit...

subparagraph Lorem ipsum dolor sit amet...
Duis aute irure dolor in reprehenderit...

4 OK, Go!

Now you're ready (with practice) to create reproducible research!

A Appendix, code

Appendix stuff here.