Group #1: Continuous X & Y Data

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Rules

- A brief narrative of what data style links these geoms together, including the characteristics of data and an example of data types that match the style, clearly identifying each.
- At least one working example of each geom, the product graph presented in the slideshow and the code that reproduces the graph in the R Markdown file.
- An explanation of the different options and/or arguments of each geom. Ideally, each option will have a working example in the R Markdown file.

What is Continuous Data?

- Data that can take any value
- “Default in R”
- Quantitative
- Technically gives an infinite number of possible values

Geom_point: What is it and what it does

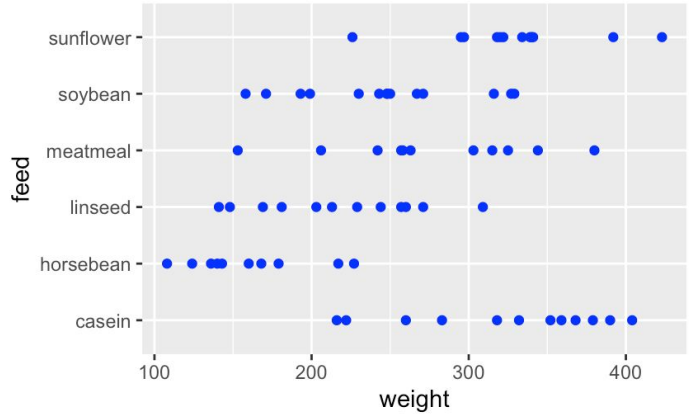
- Scatter Plot
- Control point size, shape, color, and fill
- Makes it easy to visualize and chart data within the base we are already using
- displaying the relationship between two continuous variables
- Able to add bars and other factor for teachers.

Geom_point: How to use geom_point

- Start with basics:
  - A <- ggplot(data)
- Choose type of plot wanted
  - geom_point (data information)
- To add points together add on to equation a second one with + in between the two chunk of instructions
  - ggplot(data) + geom_point (information)
- Add “aesthetics” (AES) which allow you to format your graph using x,y, color, fill, group, shape, size etc in the geom_point section

Geom_point Visualizations

```r
A <- ggplot(chickwts, aes(weight, feed)) + C
<-geom_point(colour = "blue")
```

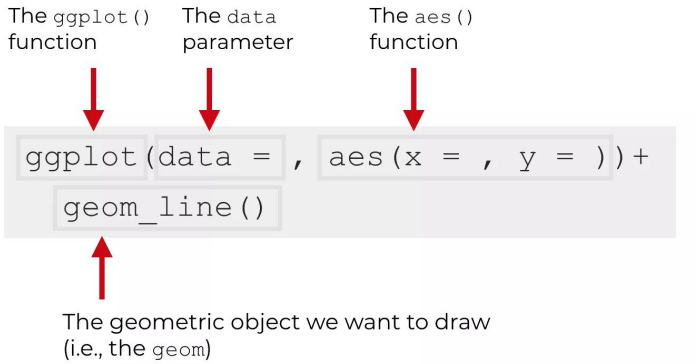


- To add more to the aesthetics of the plot, after “blue” inserts a coma and the next command
  - ….= blue, size = 3)

A <- ggplot(chickwts, aes(weight, feed)) + C <-geom_point(colour = "blue")

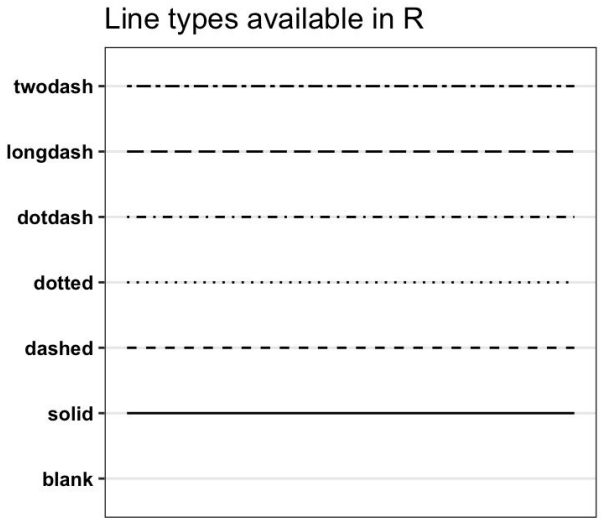
Geom_line: What it is and What it does

- Overall, geom_line () serves as a way to make a line graph
- Uses the points provided by geom_point and connects them in order of the variable on the x axis.
- highlights exactly when changes occur

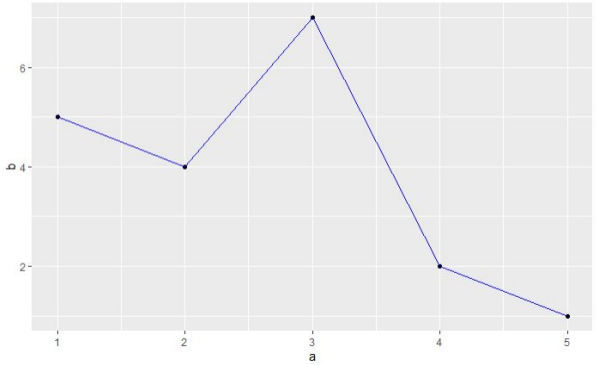


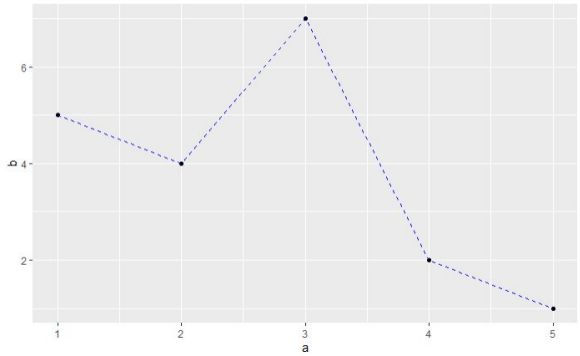
Geom_line: Appearance

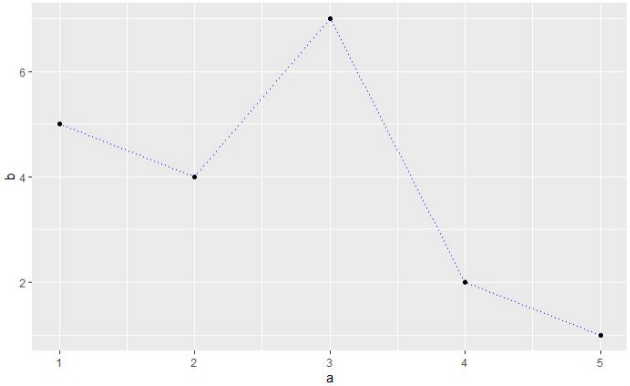
- You can also change the appearance of the lines
  - Color
  - Line type
  - Ex. geom_line(color="blue", linetype=2)

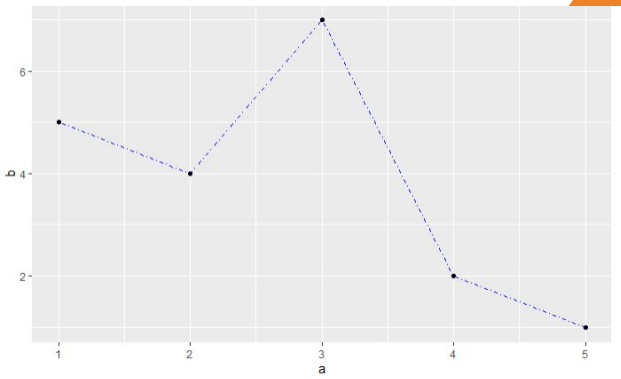


```{r}
a <- c(1,2,4,5,3)
b <- c(5,4,2,1,7)
qplot( a, b, geom="blank") + geom_point() + geom_line(color="blue", linetype=2)
qplot( a, b, geom="blank") + geom_point() + geom_line(color="blue", linetype=4)
qplot( a, b, geom="blank") + geom_point() + geom_line(color="blue", linetype=3)
qplot( a, b, geom="blank") + geom_point() + geom_line(color="blue", linetype=1)
```









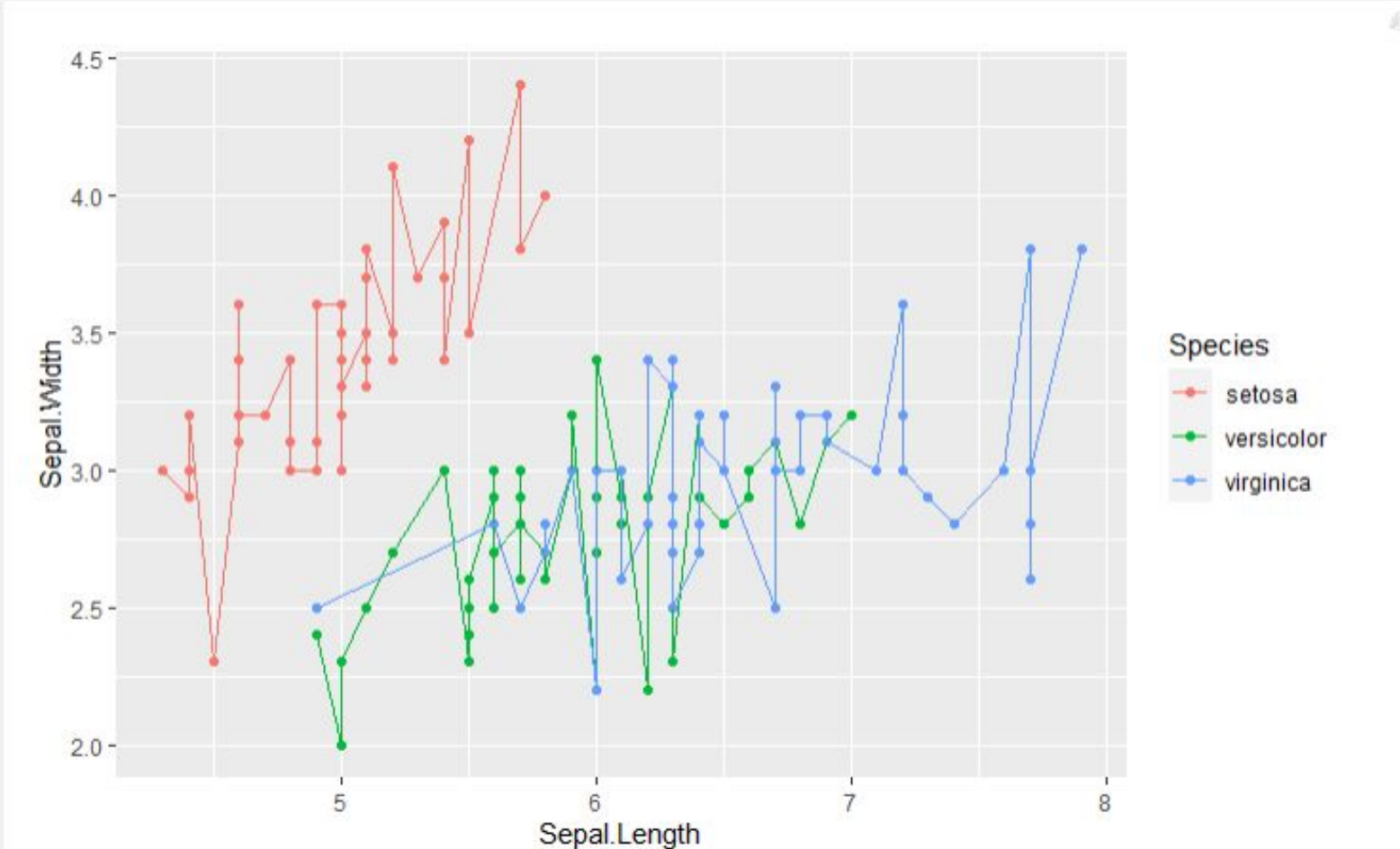
Let's Look at a Coded Example:

	Sepal.Length	Sepal.Width	Petal.Length	Petal.Width	Species
1	5.1	3.5	1.4	0.2	setosa
2	4.9	3.0	1.4	0.2	setosa
3	4.7	3.2	1.3	0.2	setosa
4	4.6	3.1	1.5	0.2	setosa
5	5.0	3.6	1.4	0.2	setosa
6	5.4	3.9	1.7	0.4	setosa
7	4.6	3.4	1.4	0.3	setosa
8	5.0	3.4	1.5	0.2	setosa
9	4.4	2.9	1.4	0.2	setosa
10	4.9	3.1	1.5	0.1	setosa
11	5.4	3.7	1.5	0.2	setosa
12	4.8	3.4	1.6	0.2	setosa
13	4.8	3.0	1.4	0.1	setosa
14	4.3	3.0	1.1	0.1	setosa
15	5.8	4.0	1.2	0.2	setosa

- Using a continuous data set
  - Iris data set
  - Plotting the Sepal.Width against Sepal.Length
  - Also want to include a factor to show the species

```
```{r setup, include=TRUE}
data("iris")
ggplot(iris, aes( x = Sepal.Length, y = Sepal.Width, color = Species)) + geom_point() + geom_line()
```
```

Working Example Graph



Geom_qq_line (Quantile to Quantile): What it is & what it does

- Compute the slope and intercept of the line connecting the points at specified quartiles of the theoretical and sample distributions.
- Use the following for a quantile-quantile plot: geom_qq_line ()
- Used to determine whether a range of numbers follows a certain distribution: the closer the data points are to being a straight line, the closer the data is to the distribution.

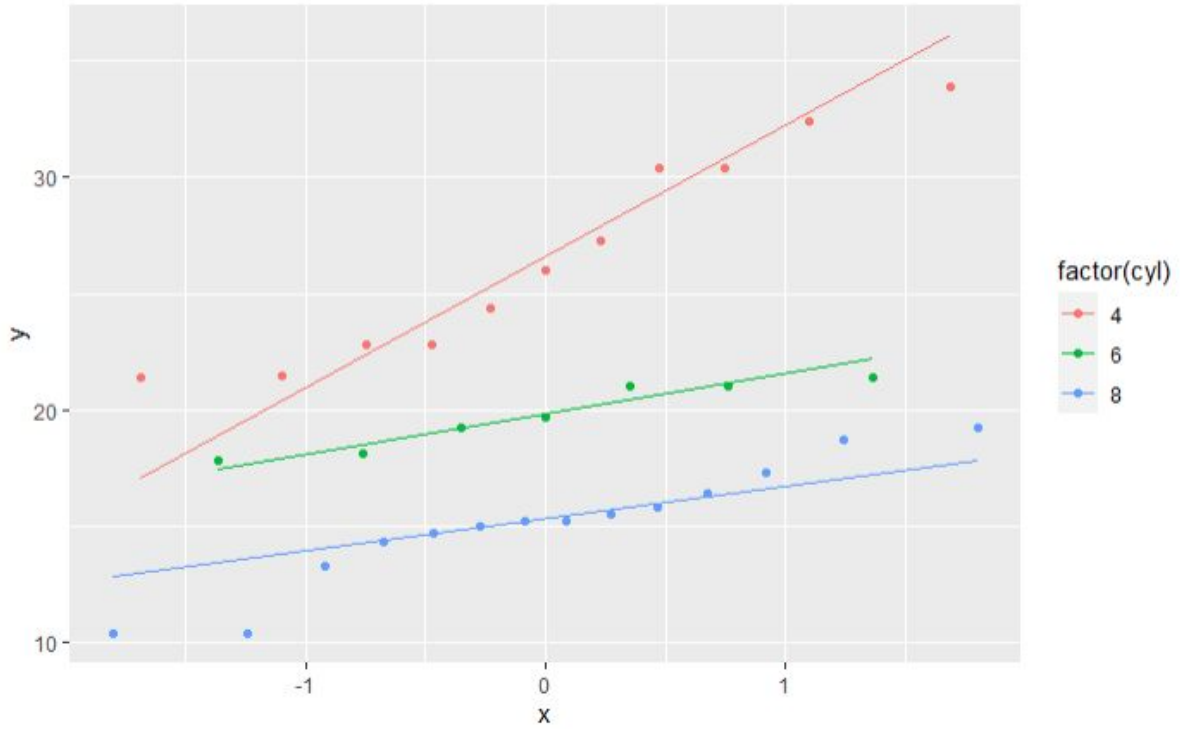
Geom_qq_line: How to use

- ggplot (mtcars, → data
- aes (sample = mpg, colour = factor, (cyl)) → aesthetic attributes
- stat_qq () → produces a quantile-quantile plot
- stat_qq_line () → compute slope & intercept connecting the points

ggplot (mtcars, aes (sample = mpg, colour = factor(cyl))) + stat_qq () + stat_qq_line ()

Geom_qq_line: Working example

```r
ggplot(mtcars, aes(sample = mpg, colour = factor(cyl))) +
  stat_qq() +
  stat_qq_line()
```



Resources

- http://www.sthda.com/english/articles/32-r-graphics-essentials/131-plot-two-continuous-variables-scatter-graph-and-alternatives/
- m/english/articles/32-r-graphics-essentials/131-plot-two-continuous-variables-scatter-graph-and-alternatives/
- https://plotly.com/ggplot2/geom_line/
- How to use geom_line in ggplot2 - Sharp Sight (sharpsightlabs.com)
- https://ggplot2.tidyverse.org/reference/geom_qq.html
- https://www.youtube.com/watch?v=gCAwHbmOqCo
- How to use geom_line in ggplot2 - Sharp Sight (sharpsightlabs.com)
- The Book of R (itu.edu.tr)
- A Detailed Guide to Plotting Line Graphs in R using ggplot geom_line (michaeltoth.me)
- A quantile-quantile plot — geom_qq_line • ggplot2 (tidyverse.org)