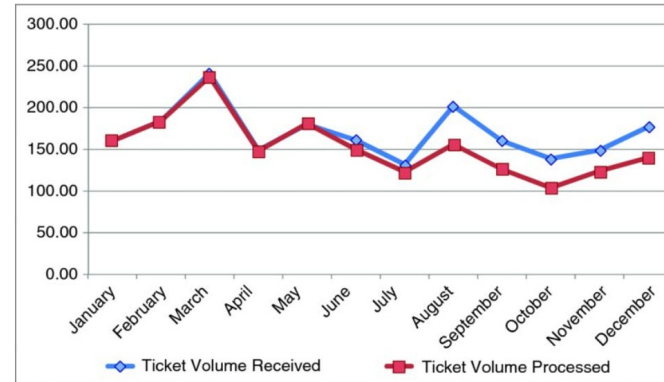


Data Visualization II

John Rios

Business Intelligence and Analytics



Orientation



Shape



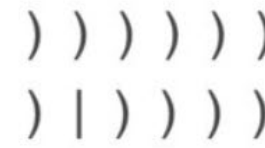
Line length



Line width



Size



Curvature



Added marks



Enclosure



Terry College of Business
UNIVERSITY OF GEORGIA

A Few Lessons from Knafllic (2015)

1

Understand the context

2

Choose an appropriate visual display

3

Eliminate clutter

4

Focus attention where you want it

5

Think like a designer

6

Tell a story



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1

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Tell a story

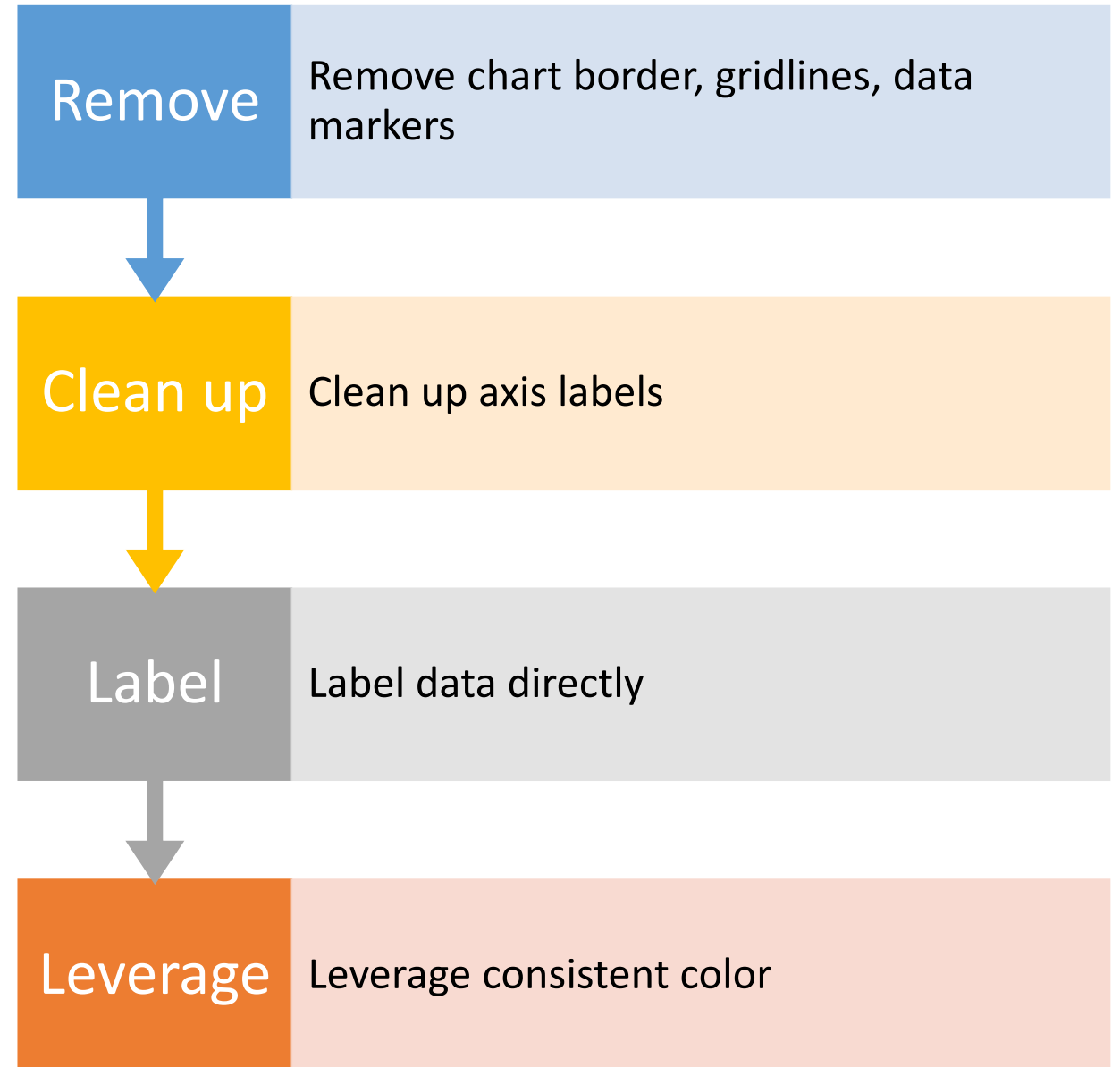


A close-up, blue-tinted photograph of a pen drawing a jagged line on a grid. The pen is silver and black, and the line it is drawing is thick and dark. The background is a light blue grid with some numbers like '2,5' and '2,47' visible. The overall image has a soft, out-of-focus quality, emphasizing the line being drawn.

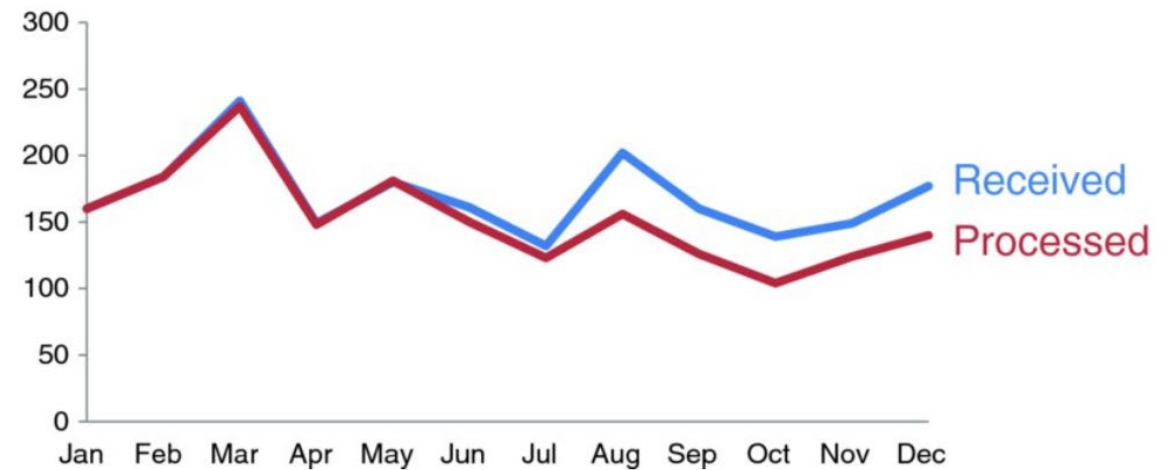
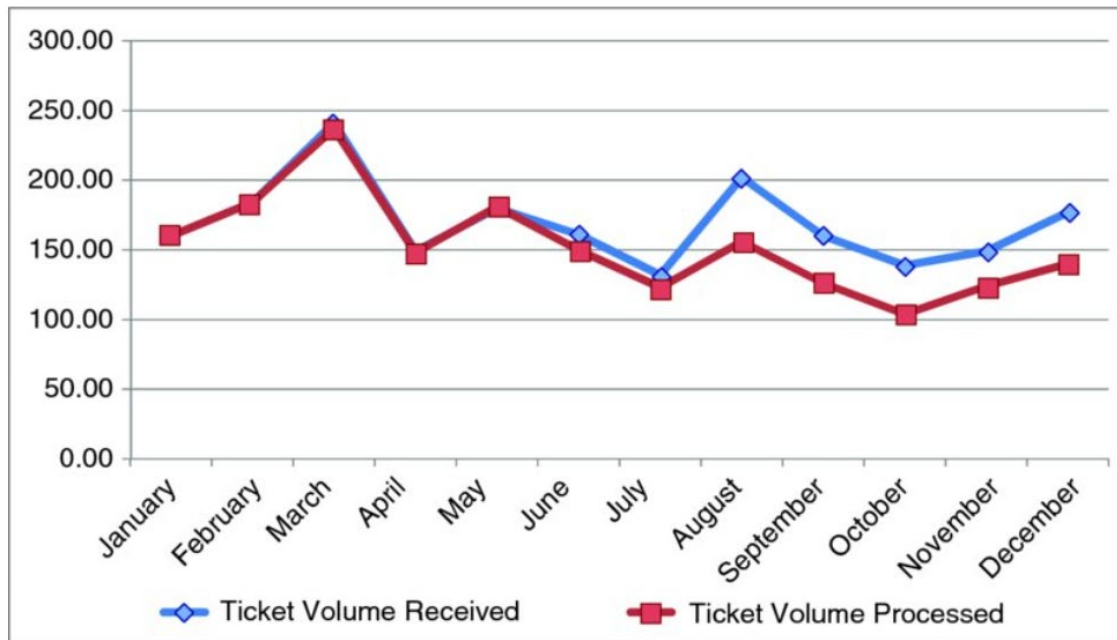
Clutter is your enemy!

Maximize the data-ink ratio (a.k.a. maximize signal-to-noise ratio)

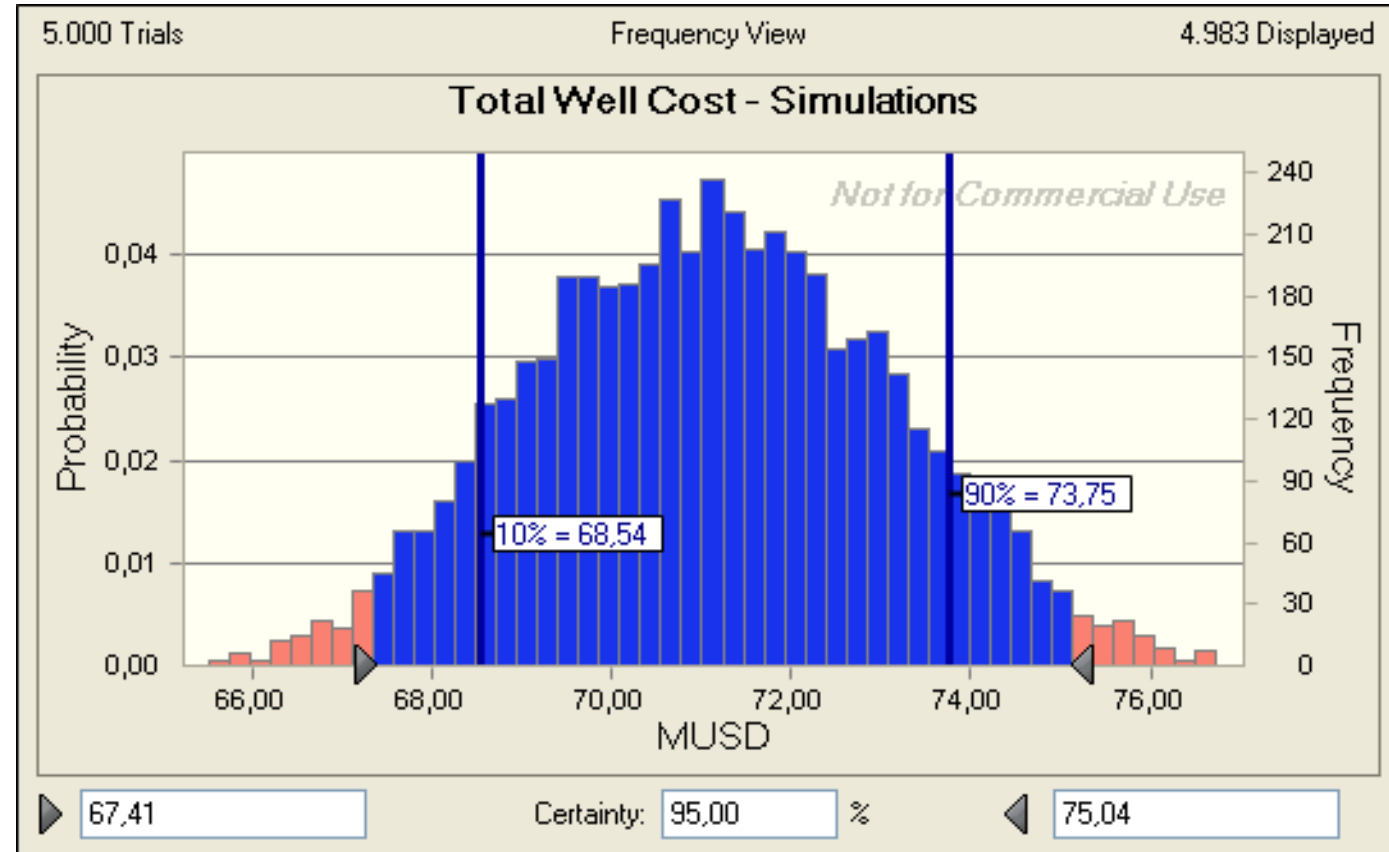
Decluttering: step-by-step



Before and after



Understand Your Audience



A Few Lessons from Knafllic (2015)

1

Understand the context

2

Choose an appropriate visual display

3

Eliminate clutter

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5

Think like a designer

6

Tell a story



Focus your audience's attention

- While it is important to eliminate distractions, it is also important to look at what remains – **the data!**
 - Taking advantage of how people see
 - Pre-attentive attributes

Pre-attentive attributes



Orientation



Shape



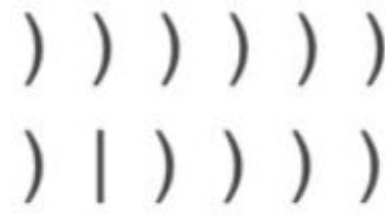
Line length



Line width



Size



Curvature



Added marks



Enclosure

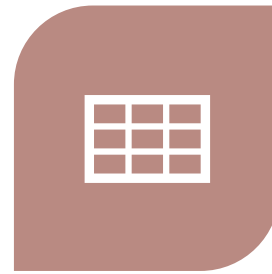
How to determine what to stand out?



PUSH EVERYTHING TO THE
BACKGROUND



MAKE DATA STAND OUT



ADD DATA MARKERS
(CLUTTER, I KNOW!)

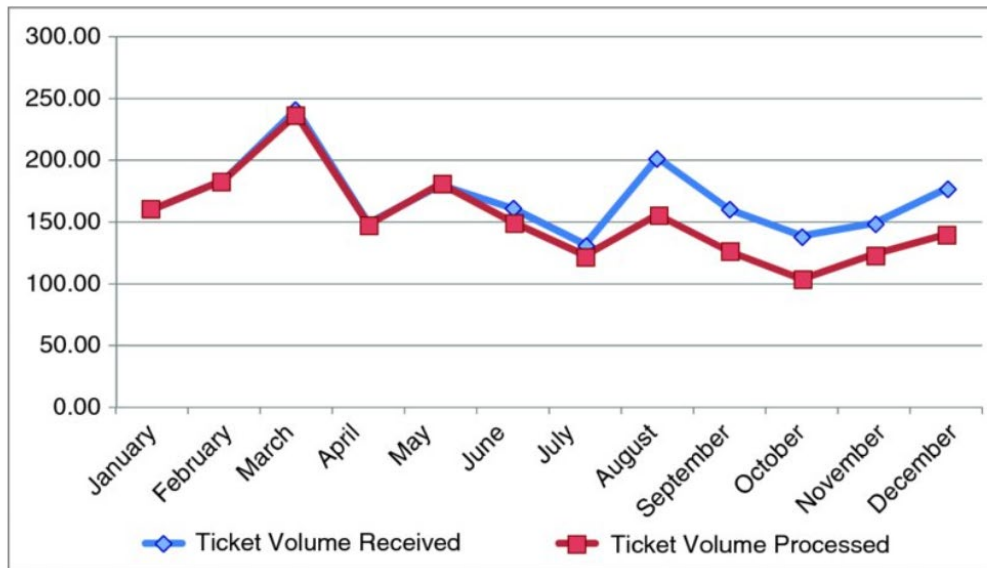


BE STRATEGIC ABOUT
WHICH MARKERS TO
PRESERVE

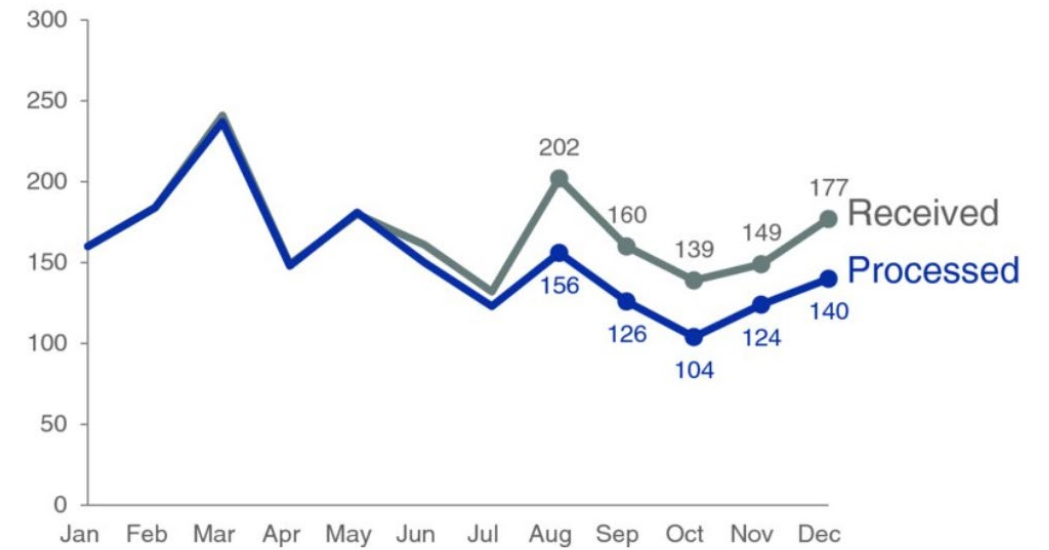
Size & color

- Size matters
 - Relative size denotes relative importance
- Resist the urge to use color for the sake of being colorful
 - Leverage color strategically
 - **Grey** as base color
 - **Blue** for attention-grabbing
 - Avoid issue of colorblindness
 - Prints well in black and white

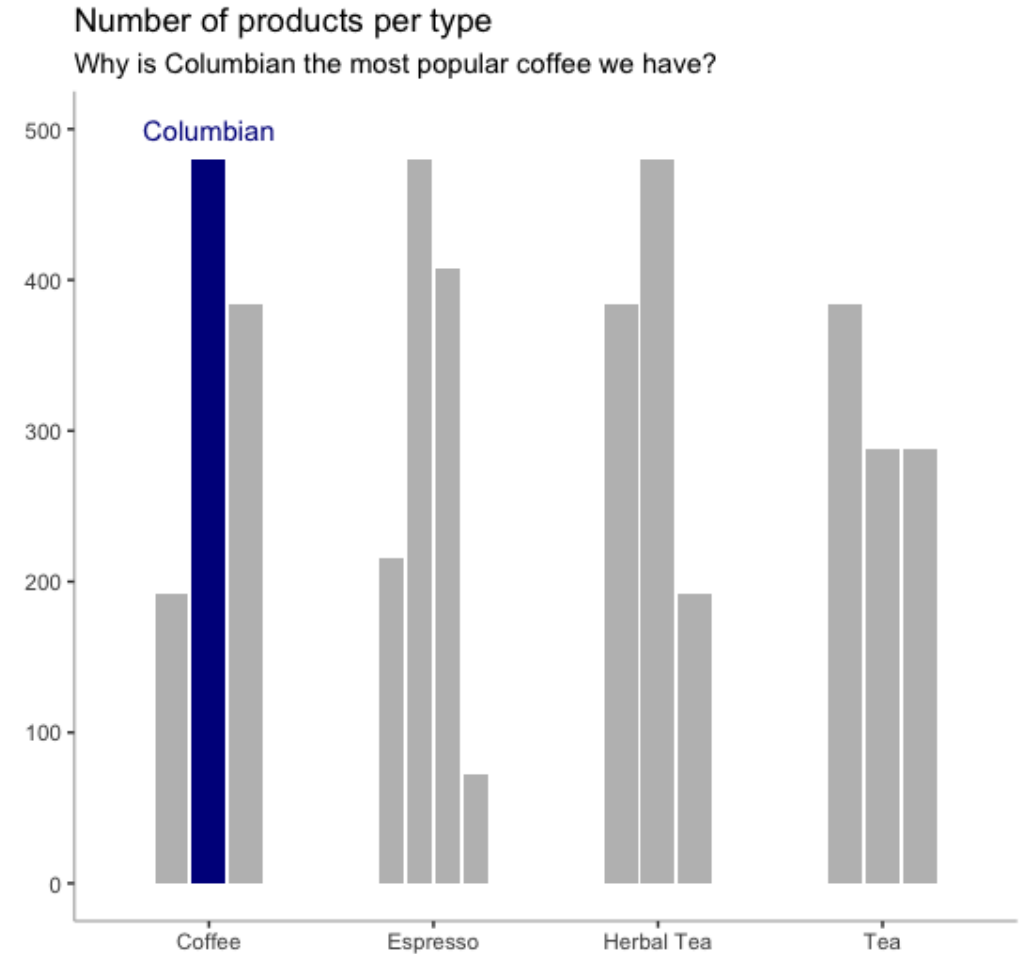
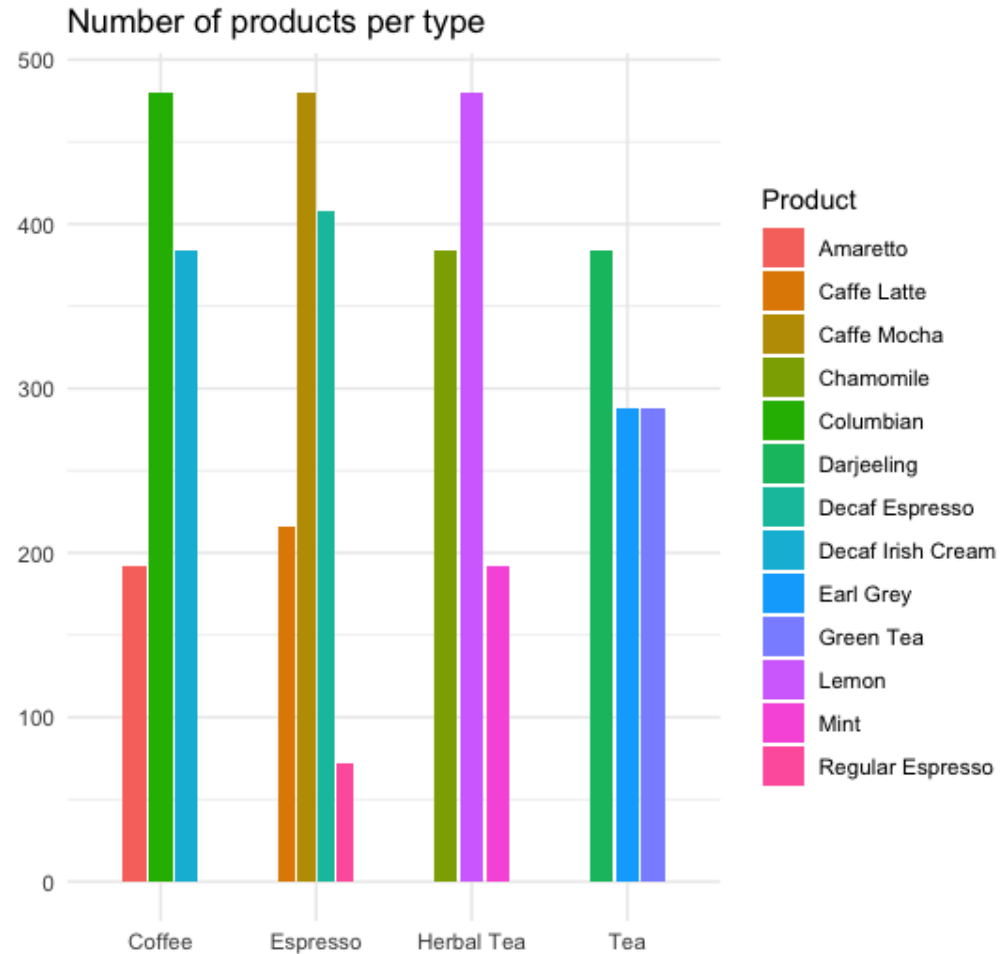
How it started



How it is going



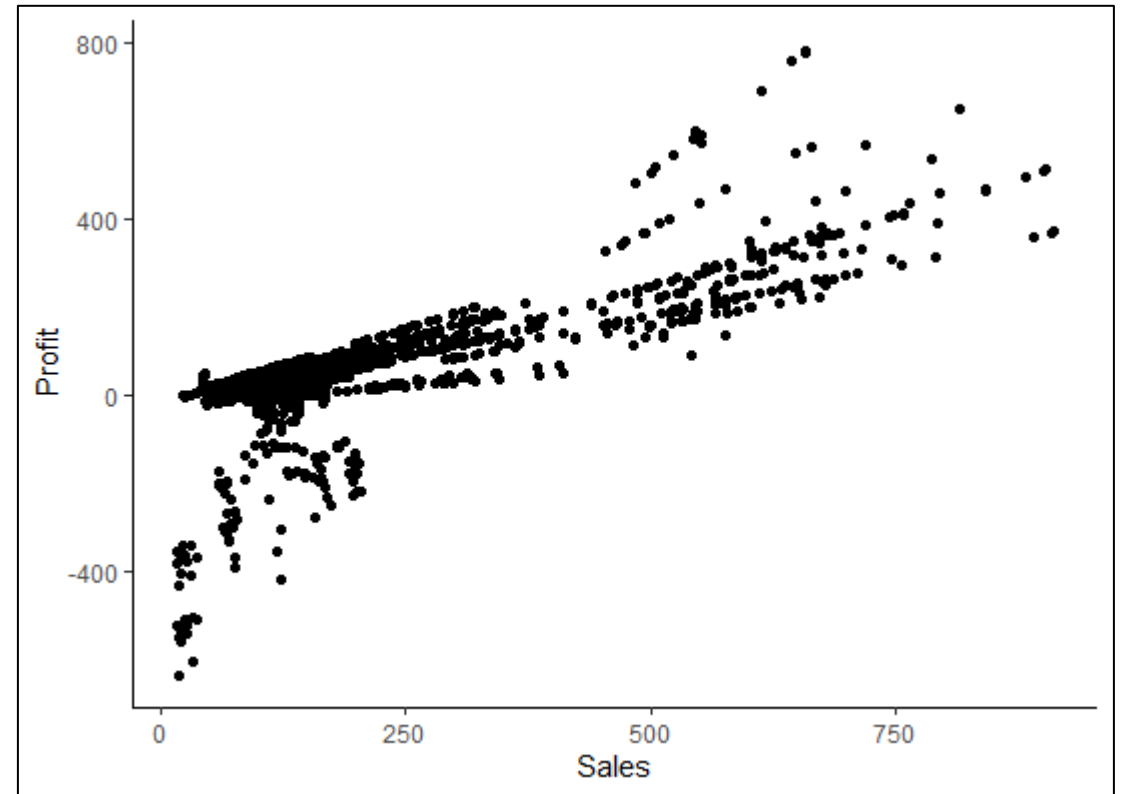
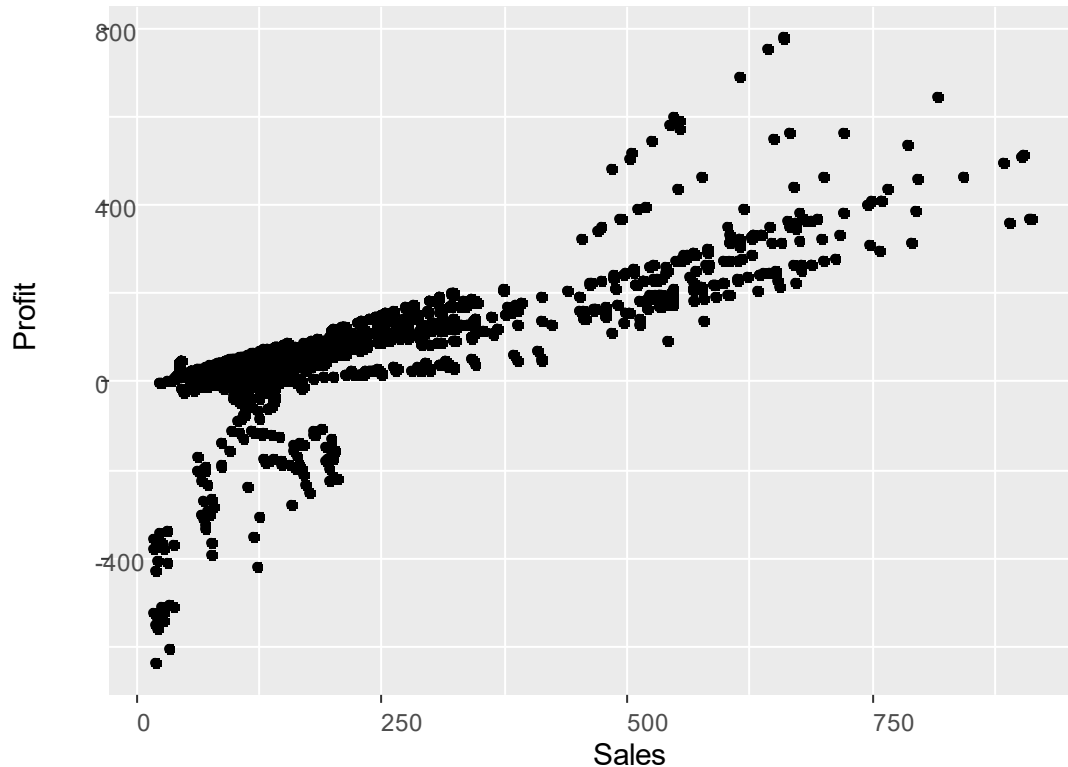
Use color sparingly



[illegible]

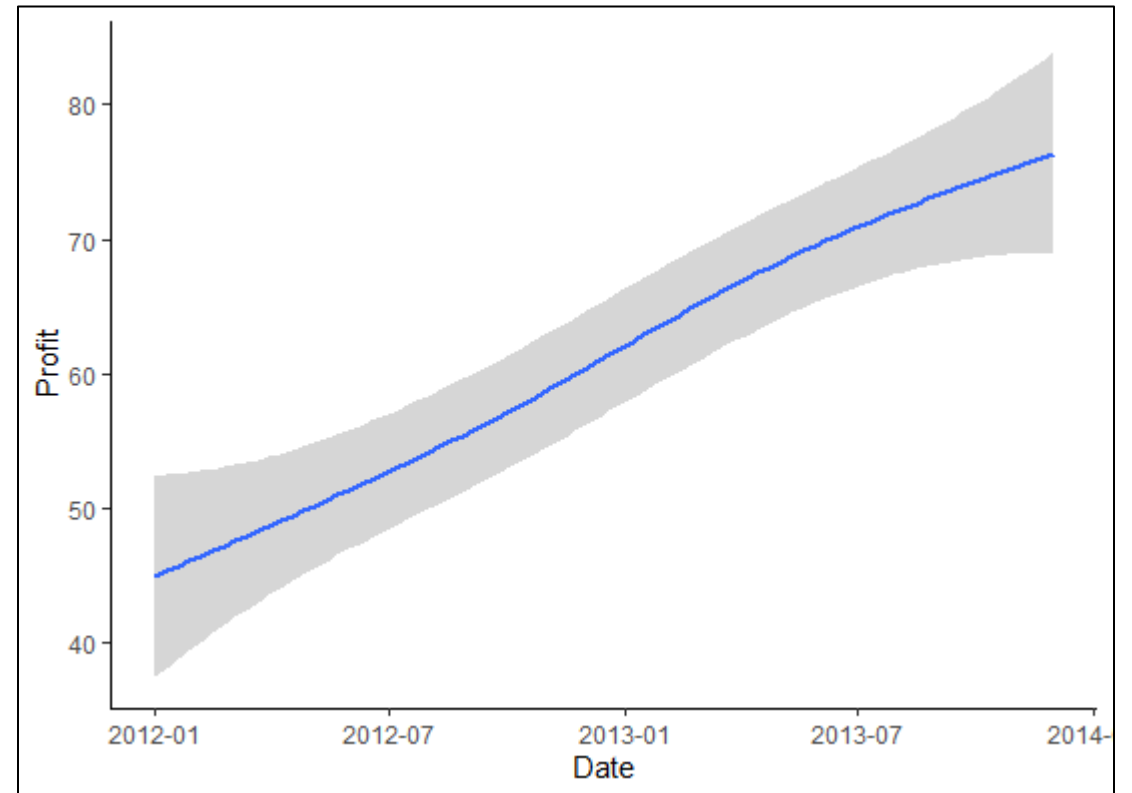
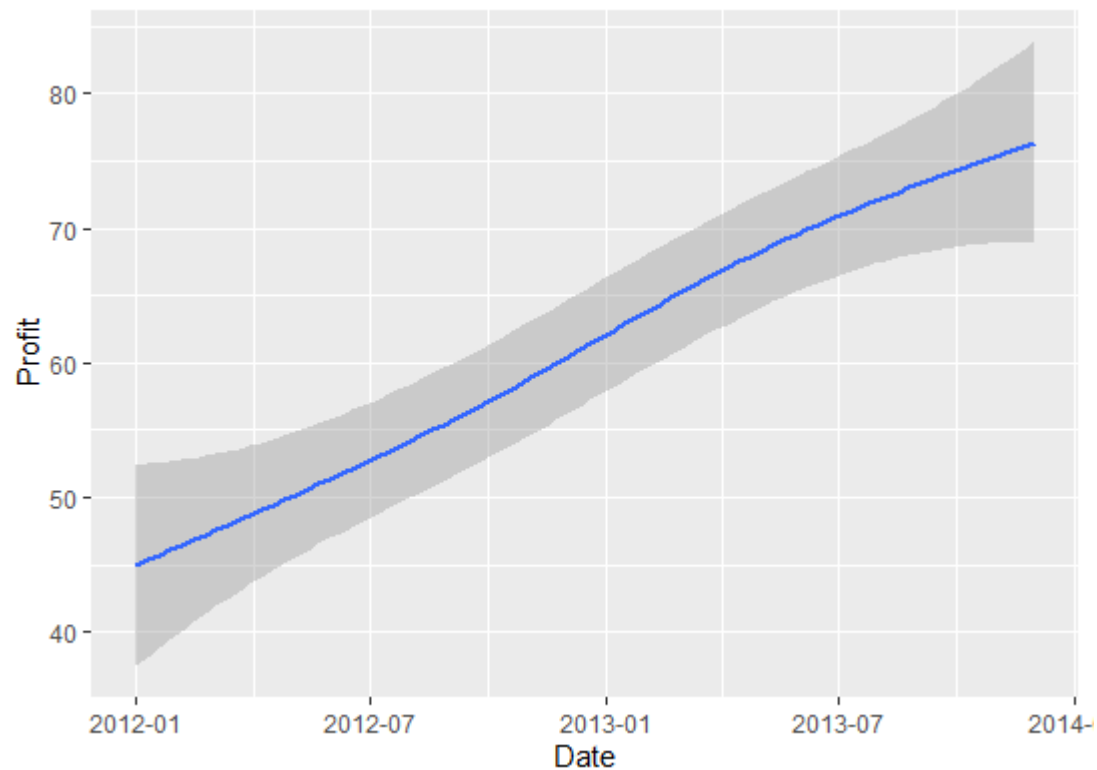
Eliminating clutter

```
ggplot(data = CoffeeChain) +  
  geom_point(mapping = aes(x = Sales, y = Profit)) +  
  theme_classic()
```



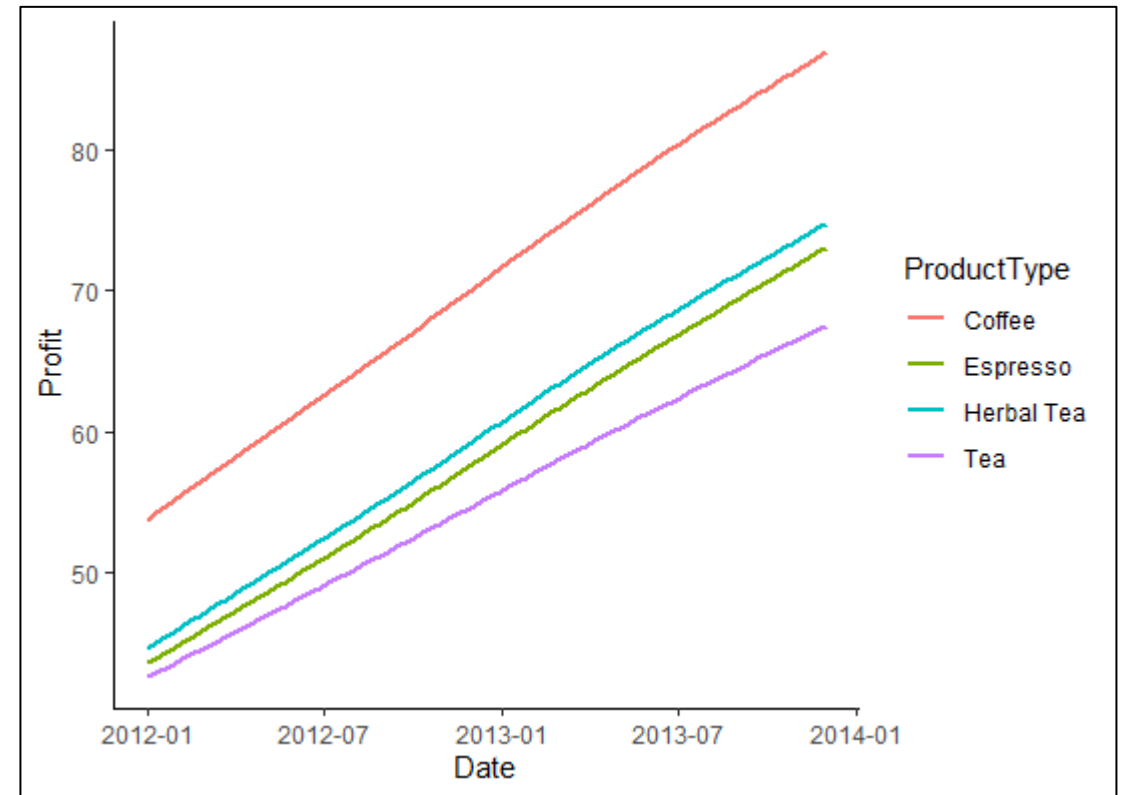
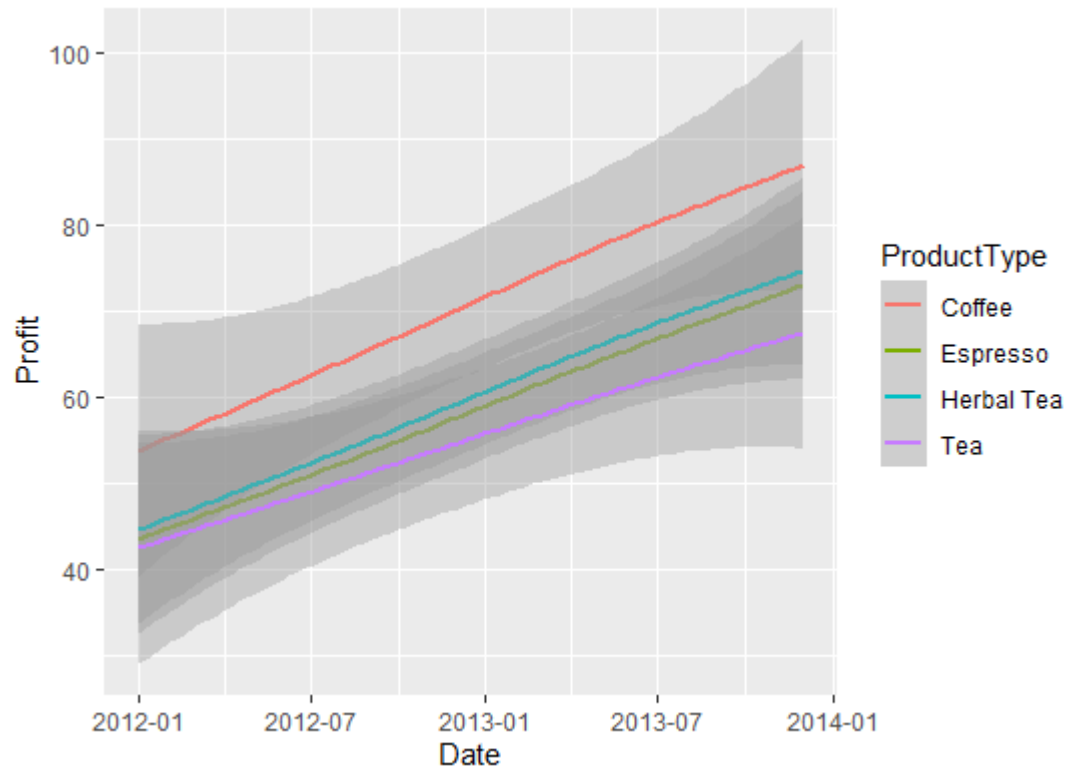
Eliminating clutter

```
ggplot(data = CoffeeChain) +  
  geom_smooth(mapping = aes(x = Date, y = Profit)) +  
  theme_classic()
```



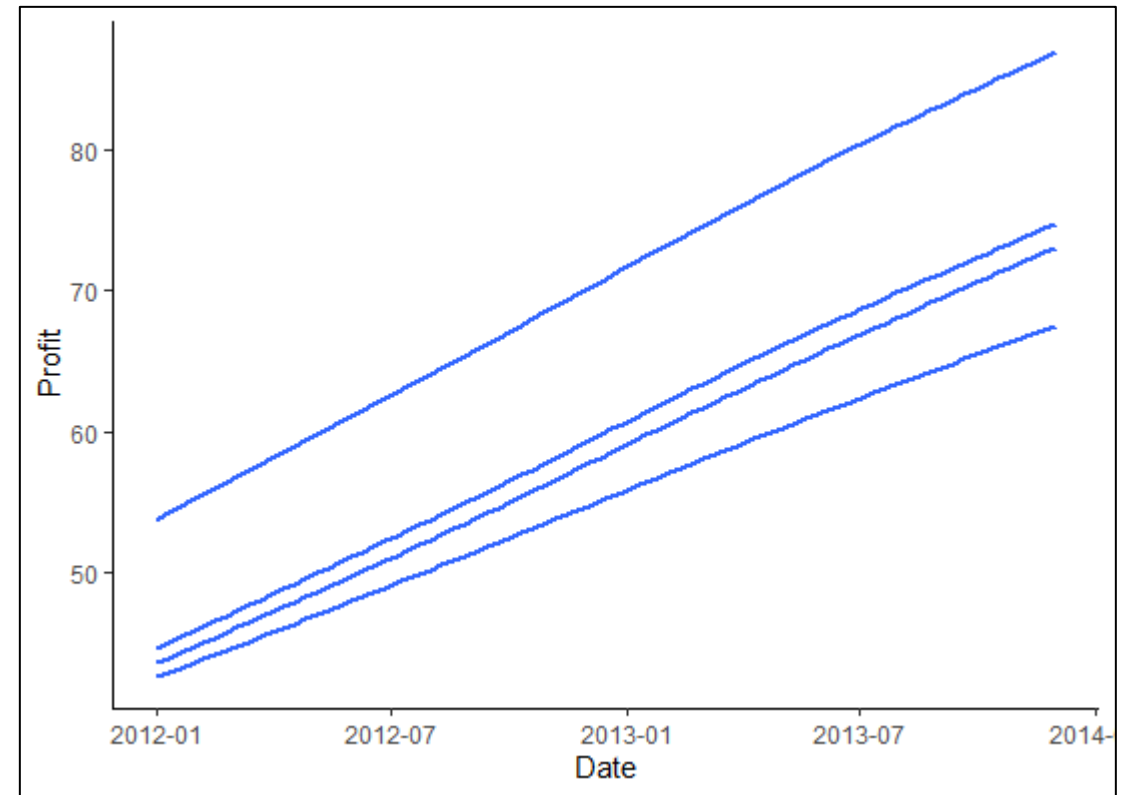
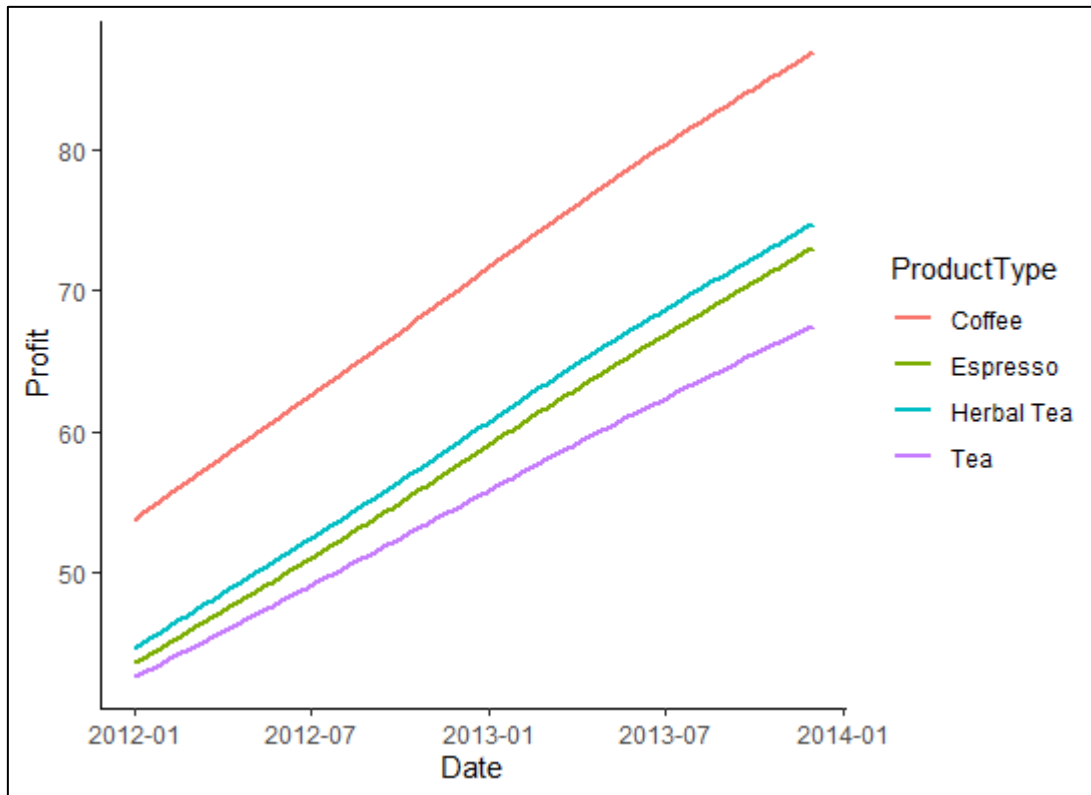
Eliminating clutter

```
ggplot(data = CoffeeChain) +  
  geom_smooth(mapping = aes(x = Date, y = Profit, color = ProductType), se = FALSE) +  
  theme_classic()
```



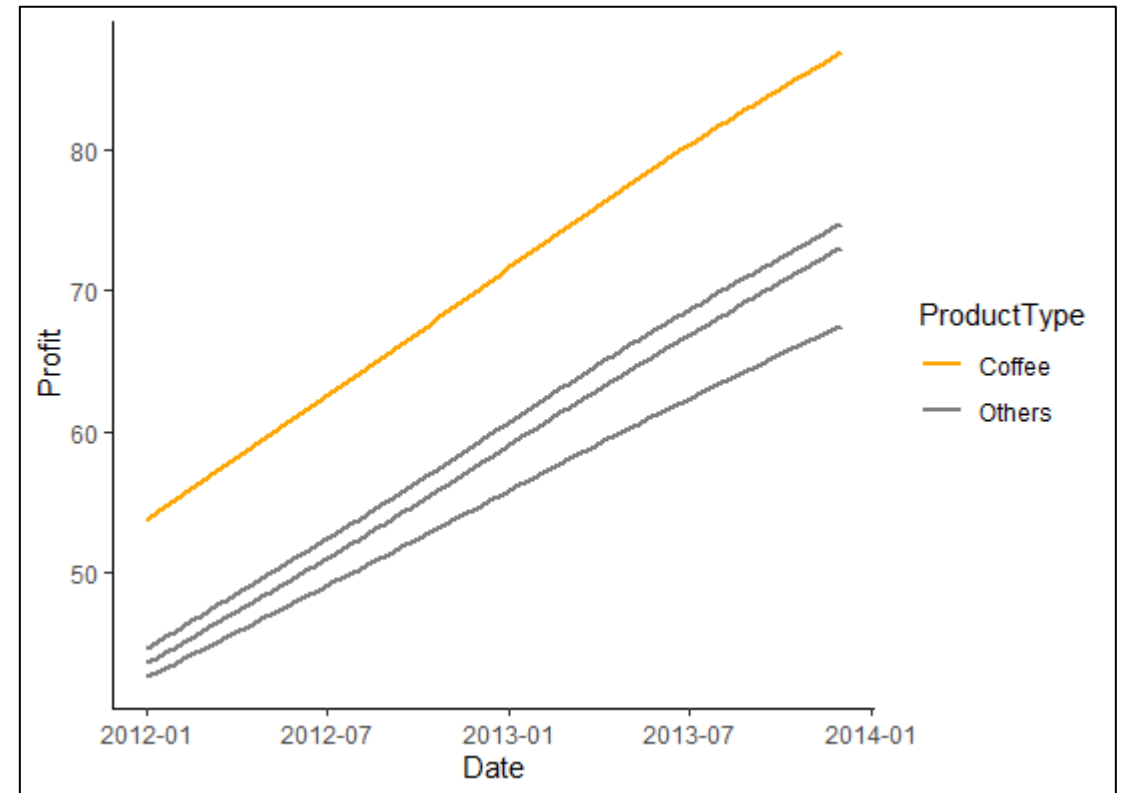
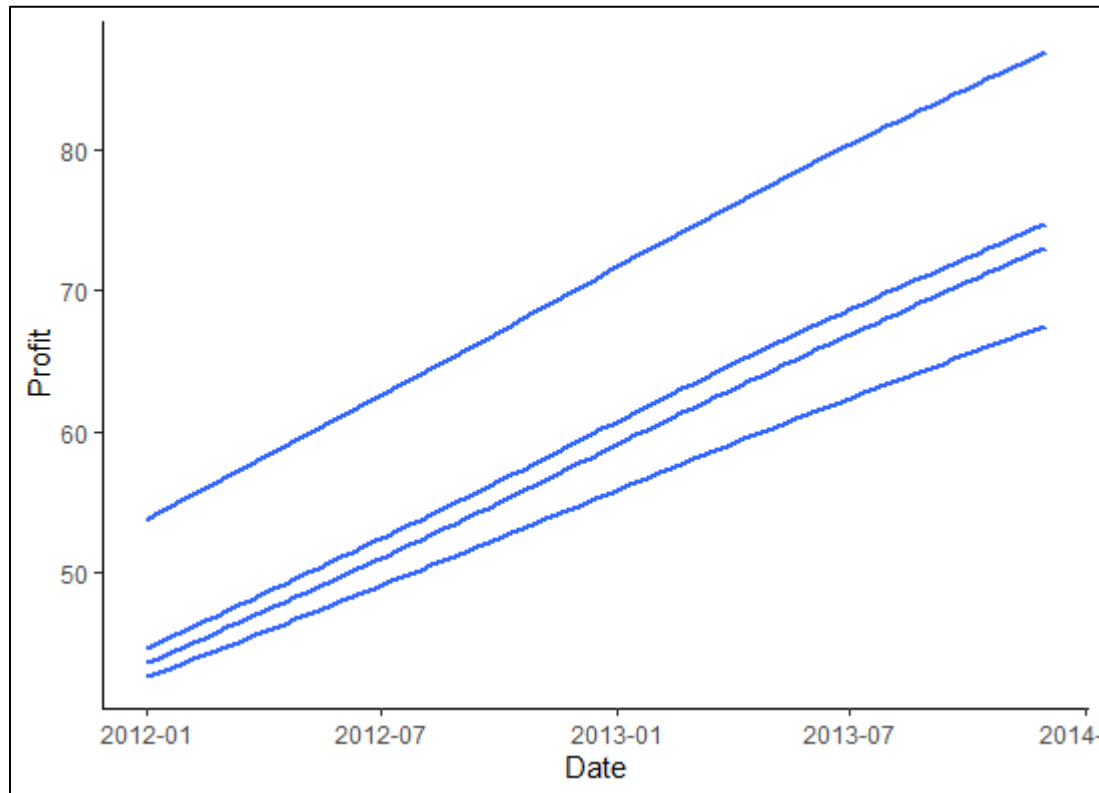
Focusing attention where you want it

```
ggplot(data = CoffeeChain) +  
  geom_smooth(mapping = aes(x = Date, y = Profit, group = ProductType), se = FALSE) +  
  theme_classic()
```



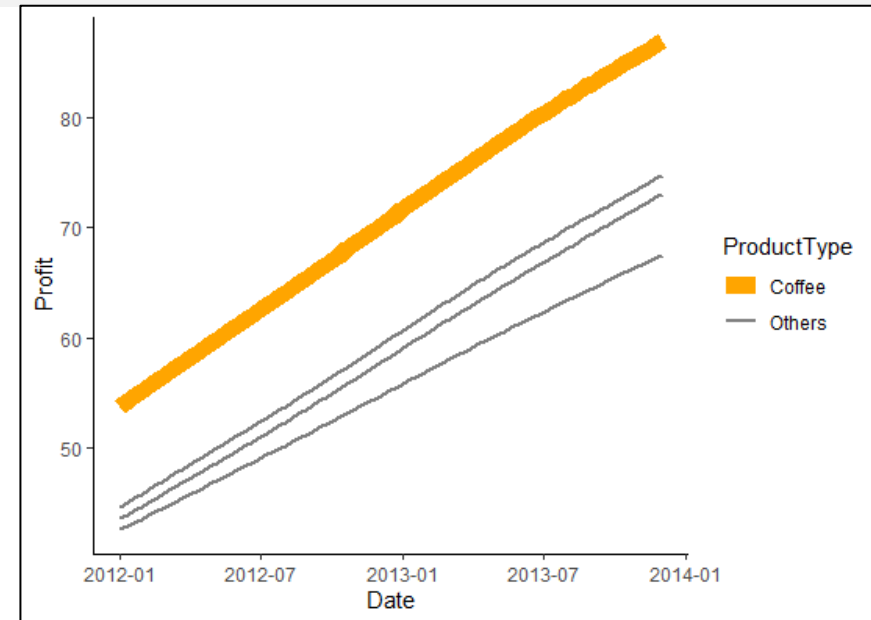
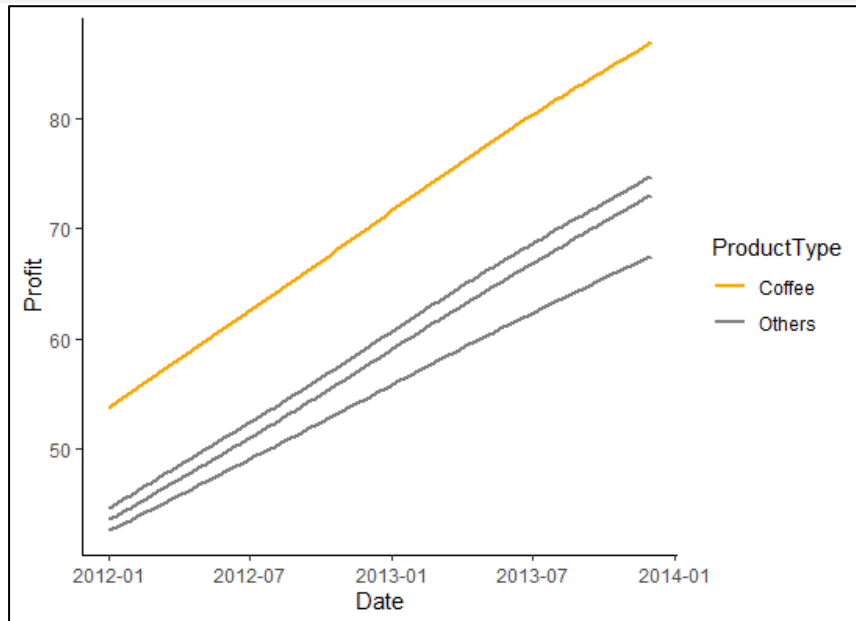
Focusing attention where you want it

```
ggplot(data = CoffeeChain) +  
  geom_smooth(mapping = aes(x = Date, y = Profit, group = ProductType,  
                           color=factor(ifelse(ProductType=="Coffee","Coffee","Others"))), se = FALSE) +  
  theme_classic() +  
  scale_color_manual(name = "ProductType", values=c("orange","grey50"))
```



Focusing attention where you want it

```
ggplot(data = CoffeeChain) +  
  geom_smooth(mapping = aes(x = Date, y = Profit, group = ProductType,  
                           color=factor(ifelse(ProductType=="Coffee","Coffee","Others")),  
                           size=factor(ifelse(ProductType=="Coffee","Coffee","Others"))), se = FALSE) +  
  theme_classic() +  
  scale_color_manual(name = "ProductType", values=c("orange","grey50")) +  
  scale_size_manual(name = "ProductType", values=c(4,1))
```



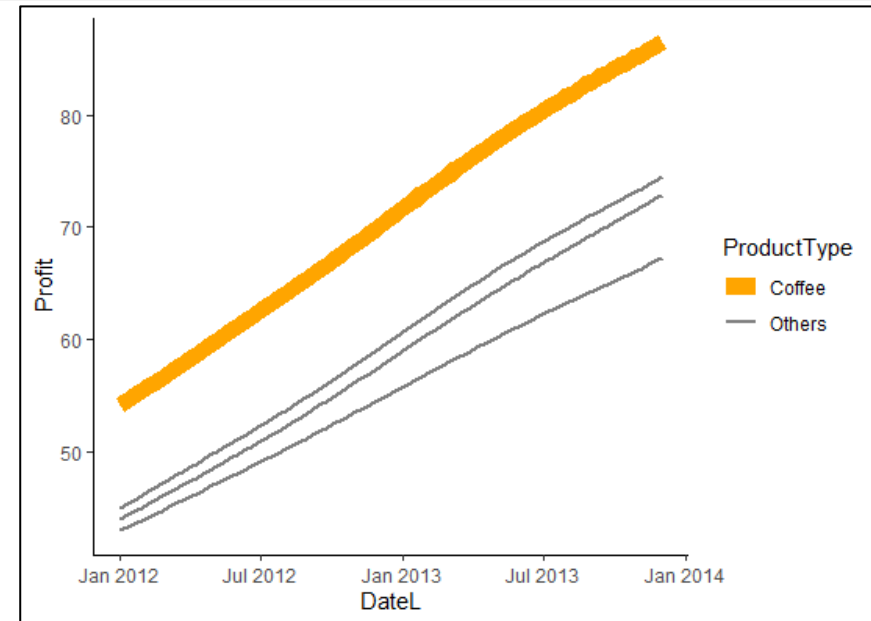
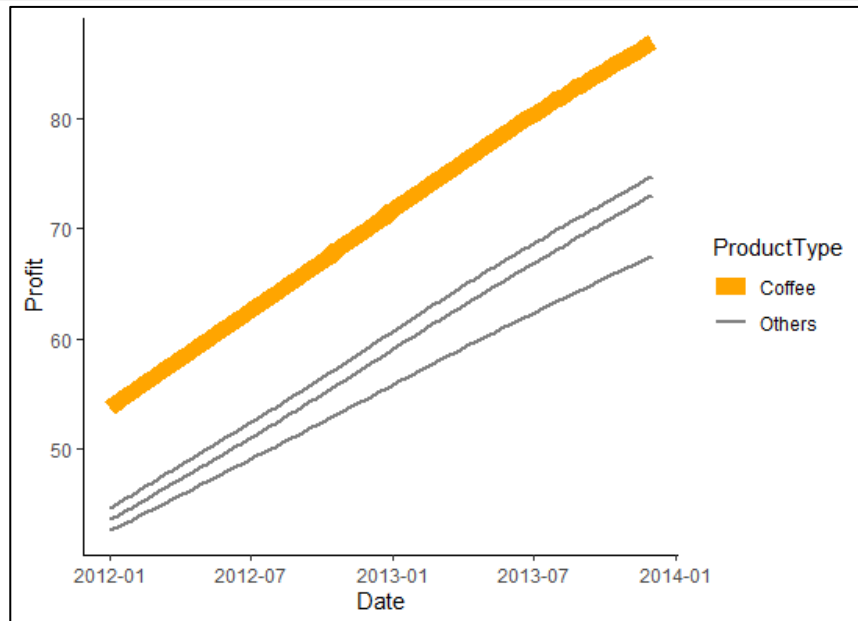
Focusing attention where you want it (fixing the date axis)

- First you will need “lubridate”
- Then a new Date variable formatted as date

```
library(lubridate)  
CoffeeChain$DateL <- ymd(CoffeeChain$Date)
```

Focusing attention where you want it (fixing the date axis)

```
ggplot(data = CoffeeChain) +  
  geom_smooth(mapping = aes(x = DateL, y = Profit, group = ProductType,  
                           color=factor(ifelse(ProductType=="Coffee","Coffee","Others")),  
                           size=factor(ifelse(ProductType=="Coffee","Coffee","Others"))), se = FALSE) +  
  theme_classic() +  
  scale_color_manual(name = "ProductType", values=c("orange","grey50")) +  
  scale_x_date(date_labels = "%b %Y") +  
  scale_size_manual(name = "ProductType", values=c(4,1))
```



A note on dates for ggplot2

Format used on the X axis

As soon as the time variable is recognized as a `date`, you can use the `scale_x_date()` function to choose the format displayed on the X axis.

Below are 4 examples on how to call the function. See beside the list of available options. ([source](#))

Symbol	Meaning	Example
%d	day as a number (0-31)	01-31
%a	abbreviated weekday	Mon
%A	unabbreviated weekday	Monday
%m	month (00-12)	00-12
%b	abbreviated month	Jan
%B	unabbreviated month	January
%y	2-digit year	07
%Y	4-digit year	2007

```
p+scale_x_date(date_labels = "%b")
p+scale_x_date(date_labels = "%Y %b %d")
p+scale_x_date(date_labels = "%W")
p+scale_x_date(date_labels = "%m-%Y")
```