class05html.R

tianyunhua

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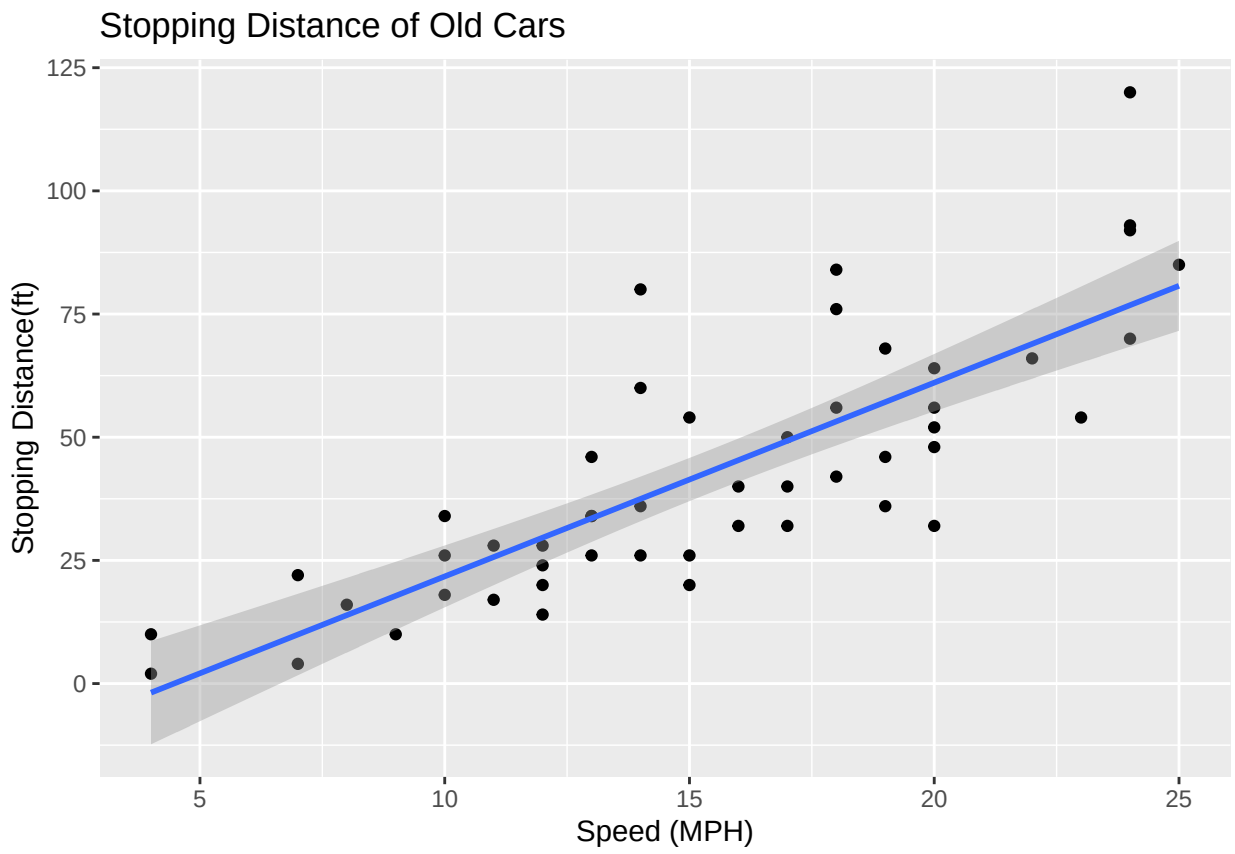
```
#Class 05:Data Visualization

#ggplot2 package

#load the packages
library(ggplot2)
#ggplot layers: data+aes+geoms
head(cars)
```

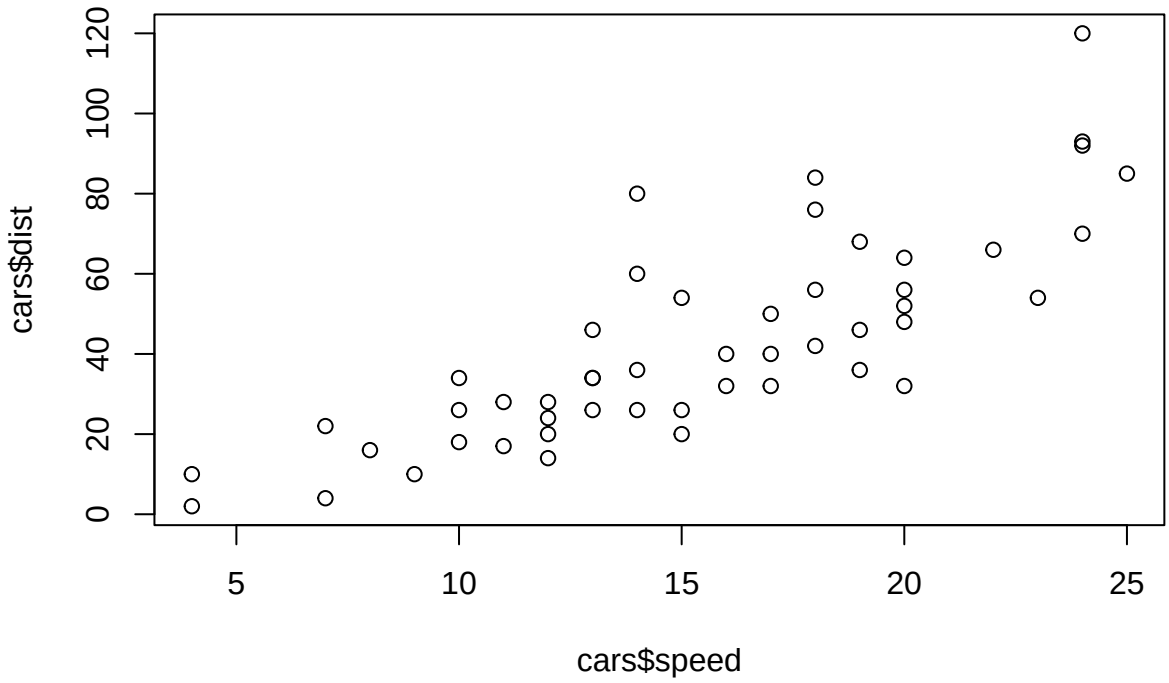
```
##   speed dist
## 1     4    2
## 2     4   10
## 3     7    4
## 4     7   22
## 5     8   16
## 6     9   10
```

```
ggplot(data = cars) +
  aes(x = speed, y = dist) +
  geom_point() +
  geom_smooth(method = "lm") +
  labs(title = "Stopping Distance of Old Cars", x ="Speed (MPH)",
       y = "Stopping Distance(ft)")
```

```
## `geom_smooth()` using formula 'y ~ x'
```




```
#popular graphic system "base" R graphics
plot(cars$speed, cars$dist)
```




```
#RNA seq data
url <- "https://bioboot.github.io/bimm143_S20/class-material/up_down_expression.txt"
genes <- read.delim(url)
head(genes)
```

```
##         Gene Condition1 Condition2      State
## 1      A4GNT -3.6808610 -3.4401355 unchanging
## 2       AAAS  4.5479580  4.3864126 unchanging
## 3      AASDH  3.7190695  3.4787276 unchanging
## 4       AATF  5.0784720  5.0151916 unchanging
## 5       AATK  0.4711421  0.5598642 unchanging
## 6 AB015752.4 -3.6808610 -3.5921390 unchanging
```

```
#how many genes are in the dataset
nrow(genes)
```

```
## [1] 5196
```

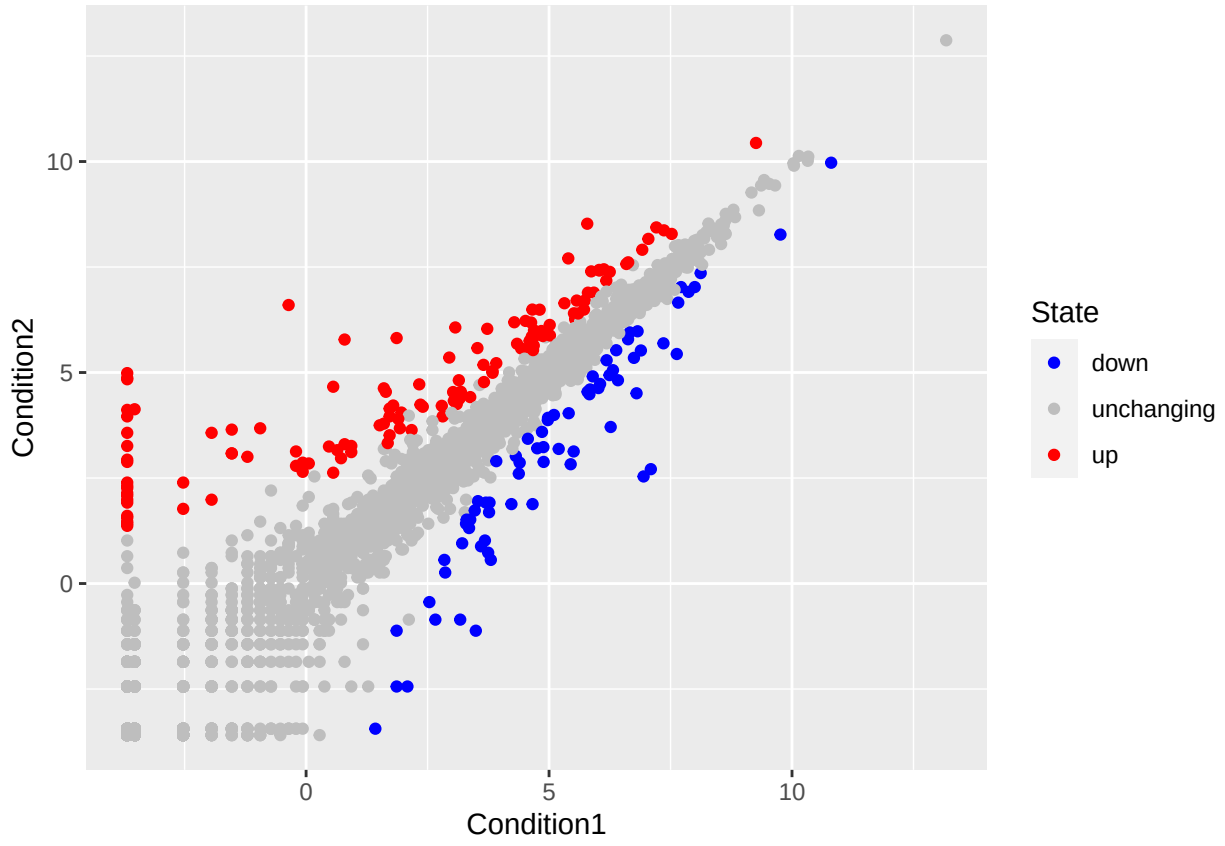
```
#how many genes are "up"?
table(genes$State)
```

```
##
##       down unchanging         up
##         72       4997        127
```

```
#what % are up?
round(table(genes$State)/nrow(genes)*100, 3)
```

```
##
##       down unchanging         up
##      1.386     96.170      2.444
```

```
#lets make a figure
p <- ggplot(genes) +
  aes(x = Condition1, y = Condition2, col = State) +
  geom_point()

p + scale_color_manual(values = c("blue", "gray", "red"))
```

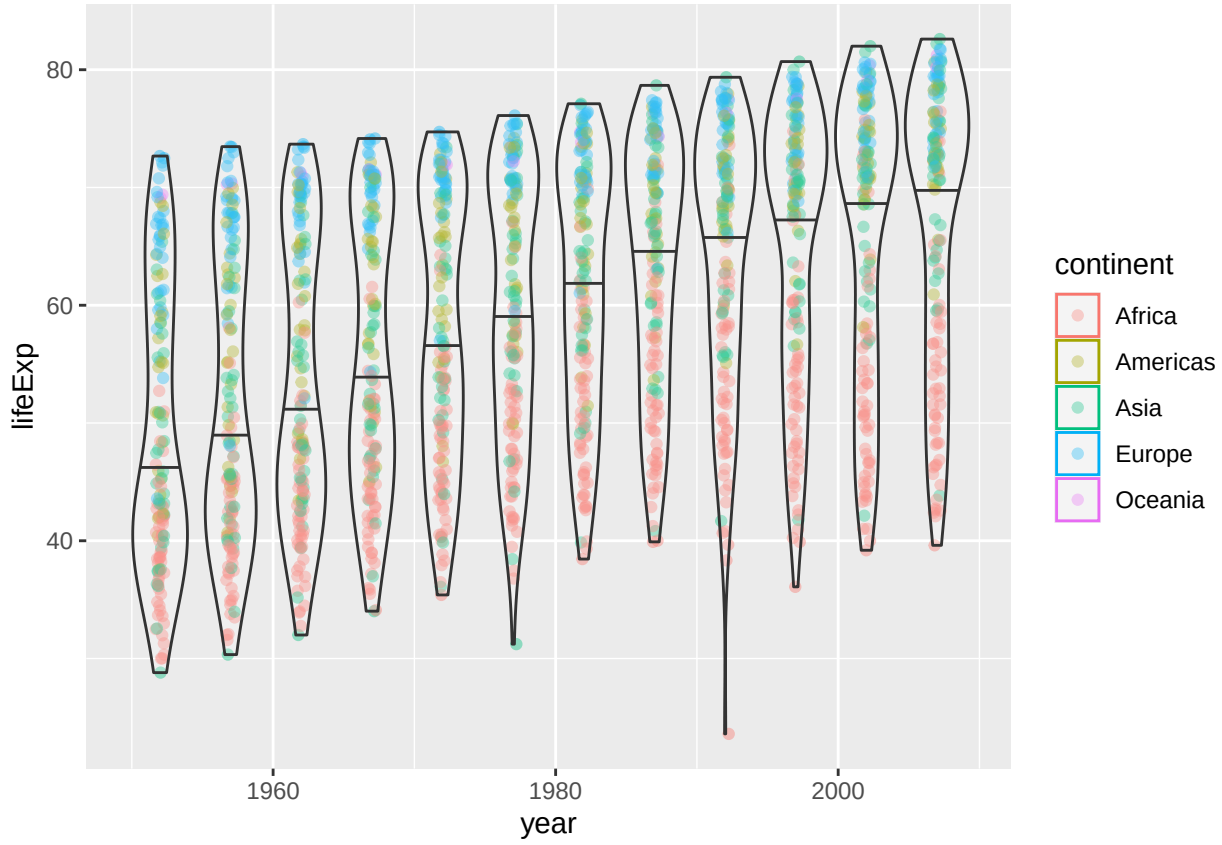



```
#install gapminder
library(gapminder)
head(gapminder)
```

```
## # A tibble: 6 x 6
##   country     continent  year lifeExp      pop gdpPercap
##   <fct>       <fct>     <int>   <dbl>    <int>     <dbl>
## 1 Afghanistan Asia       1952    28.8  8425333      779.
## 2 Afghanistan Asia       1957    30.3  9240934      821.
## 3 Afghanistan Asia       1962    32.0 10267083      853.
```

```
## 4 Afghanistan Asia       1967    34.0 11537966      836.
## 5 Afghanistan Asia       1972    36.1 13079460      740.
## 6 Afghanistan Asia       1977    38.4 14880372      786.
```

```
#make a new plot of year vs lifespan

ggplot(gapminder) +
  aes(x = year, y = lifeExp, col = continent) +
  geom_jitter(width = 0.3, alpha = 0.4) +
  geom_violin(aes(group = year), alpha = 0.2,
              draw_quantiles = 0.5)
```




```
#install the plotly
#library(plotly)
#ggplotly()
```