class05.R

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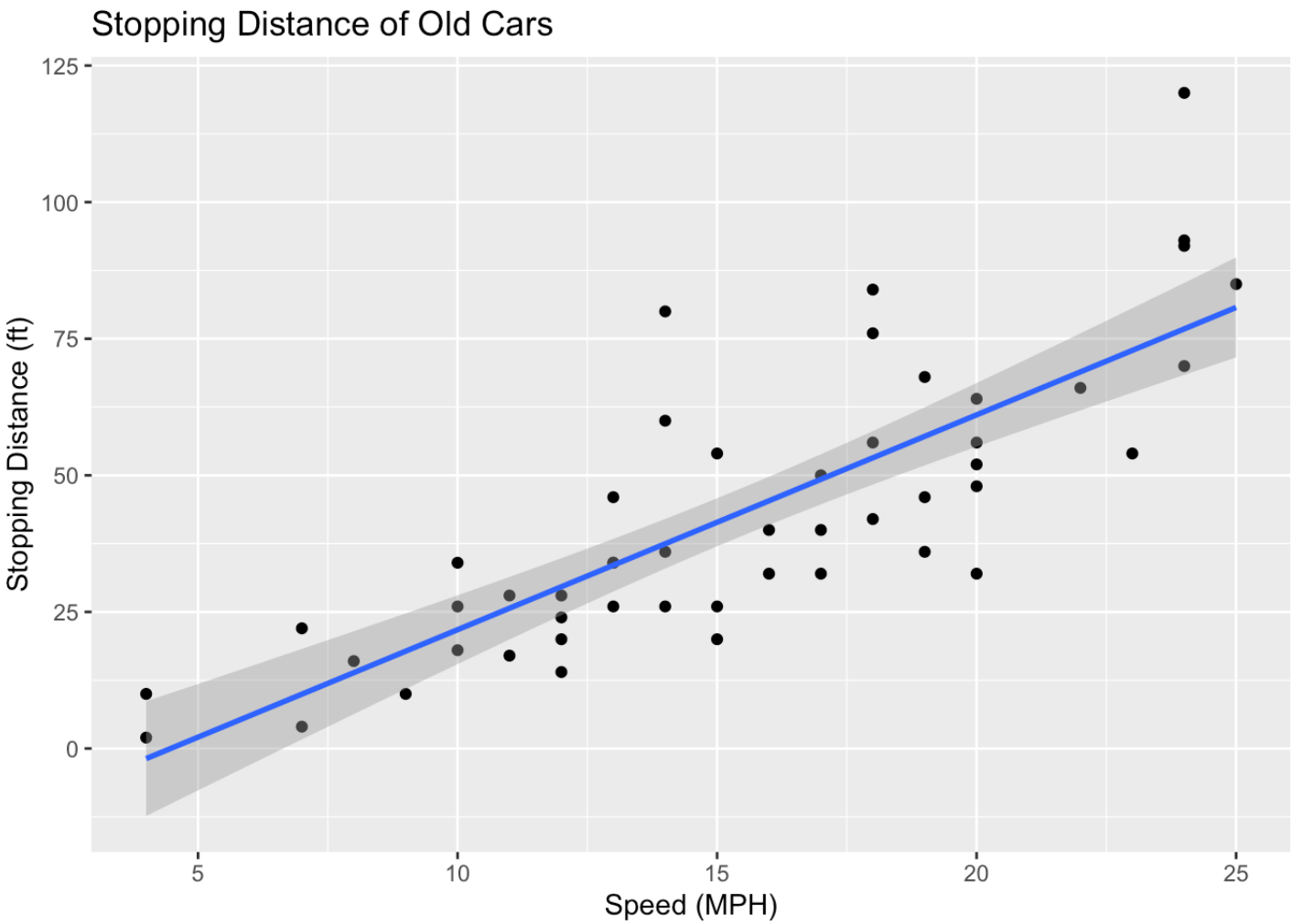
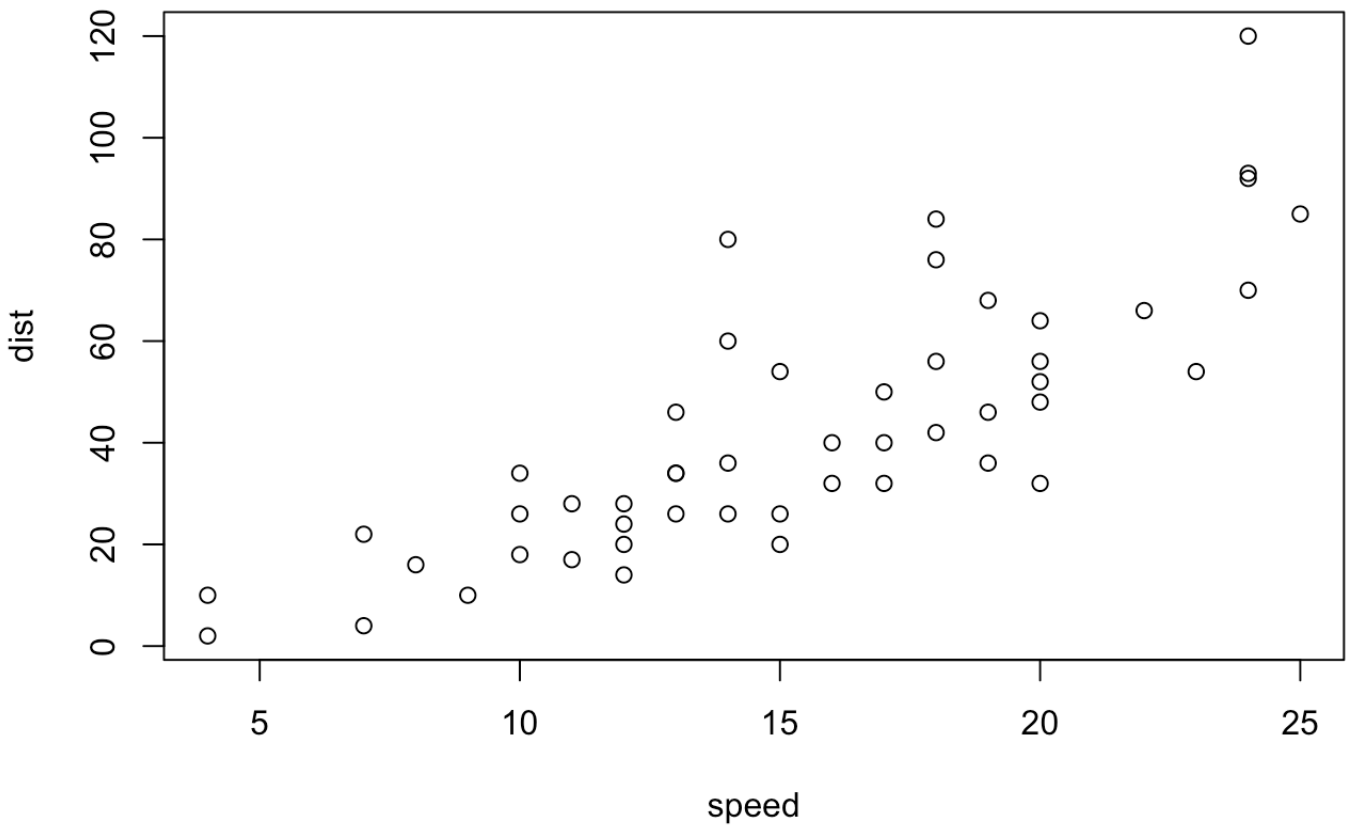
```
# Class 05: Data Visualization
# Trying the ggplot2 package

# First, install and load required packages:
# install.packages("ggplot2")
library(ggplot2)

# we'll try with inbuild cars dataset
ggplot(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'
```




```
# side note: R has in-built plotting
plot(cars)
```




```
# import gene expression 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
```

```
# Q. How many genes?
nrow(genes)
```

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

```
# Q. How many genes are up-regulated?
table(genes$State)
```

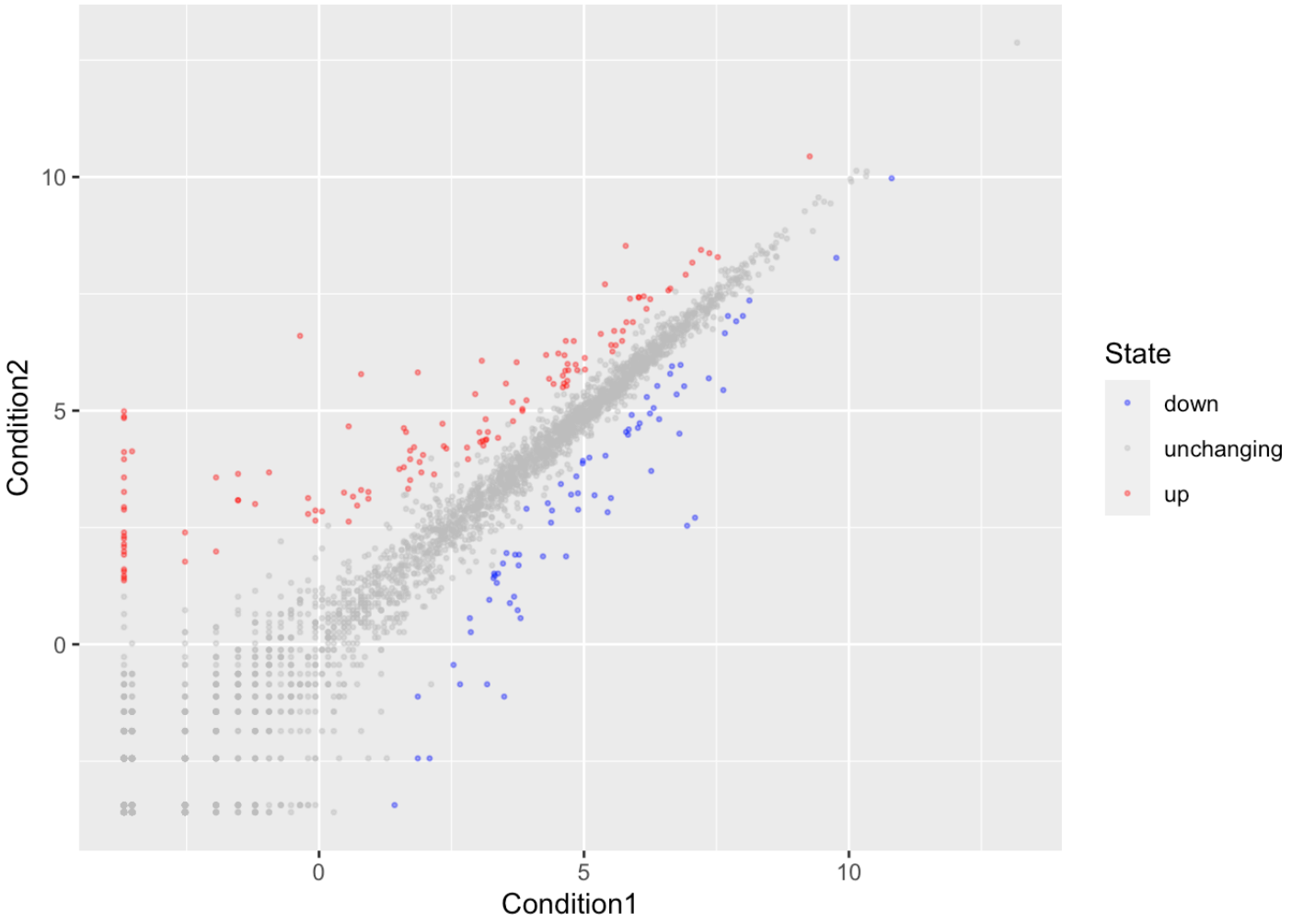
```
##
##       down unchanging         up
##         72       4997        127
```

```
# Q. What percentage is up?
round(table(genes$State) / nrow(genes) * 100, 2)
```

```
##
##       down unchanging         up
##       1.39      96.17       2.44
```

```
# Let's make a figure
p <- ggplot(genes, aes(Condition1, Condition2, col=State)) +
  geom_point(alpha = 0.4, size = 0.5)
p
```

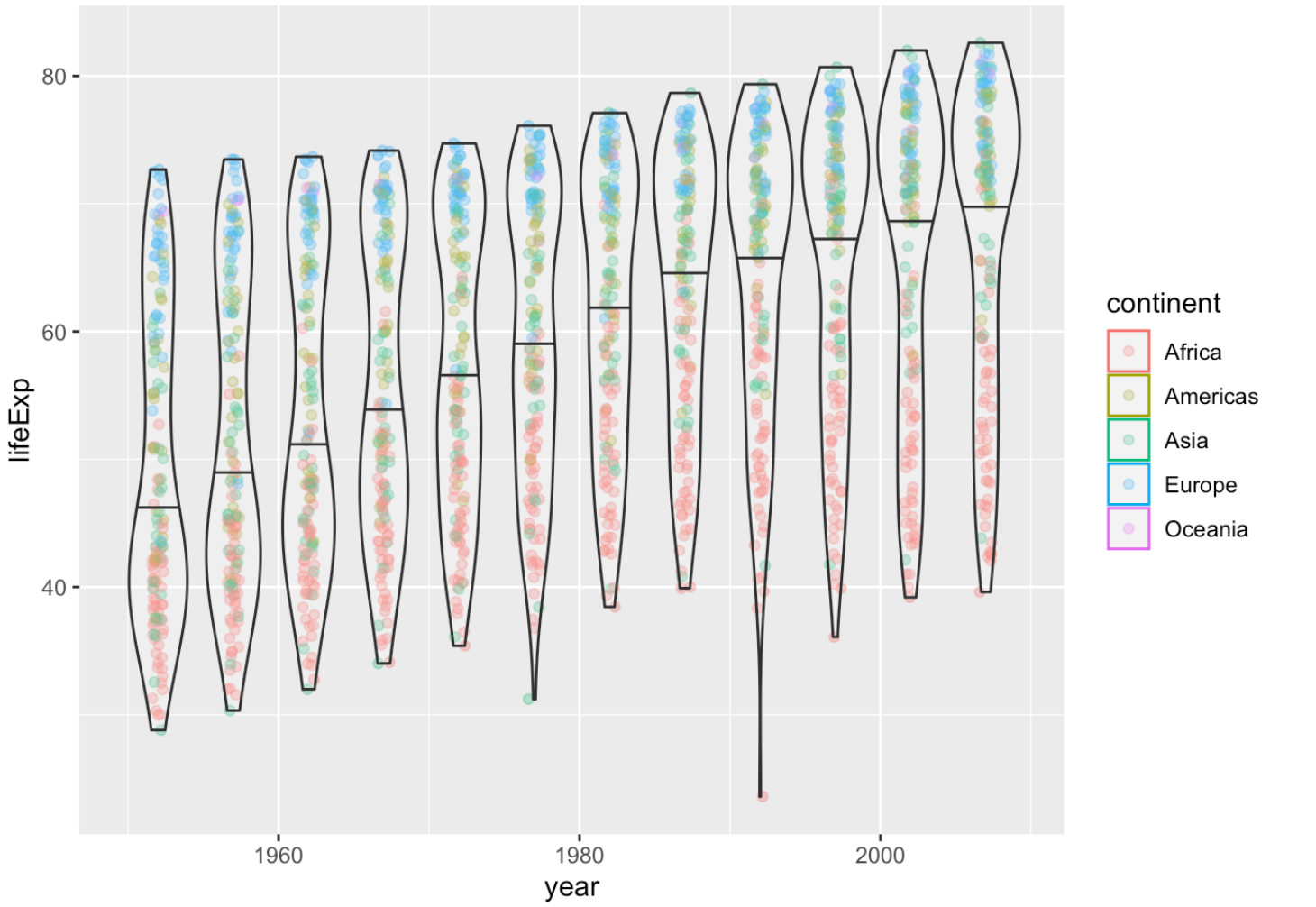
```
# change color scheme
p + scale_color_manual(values = c("blue", "grey", "red"))
```




```
# Let's explore thegapminder dataset
# install.packages("gapminder")
library(gapminder)
head(gapminder)
```

```
## # A tibble: 6 × 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.
```

```
# Let's make a new plot of year vs. lif exp
ggplot(gapminder, aes(year, lifeExp, col=continent)) +
  geom_jitter(alpha=0.3, width=0.4) +
  geom_violin(aes(group=year), alpha = 0.2,
              draw_quantiles = 0.5)
```




```
# install the plotly
# install.packages("plotly")
library(plotly)
```

```
##
## Attaching package: 'plotly'
```

```
## The following object is masked from 'package:ggplot2':
##
##     last_plot
```

```
## The following object is masked from 'package:stats':
##
##     filter
```

```
## The following object is masked from 'package:graphics':
##
##     layout
```

```
ggplotly()
```