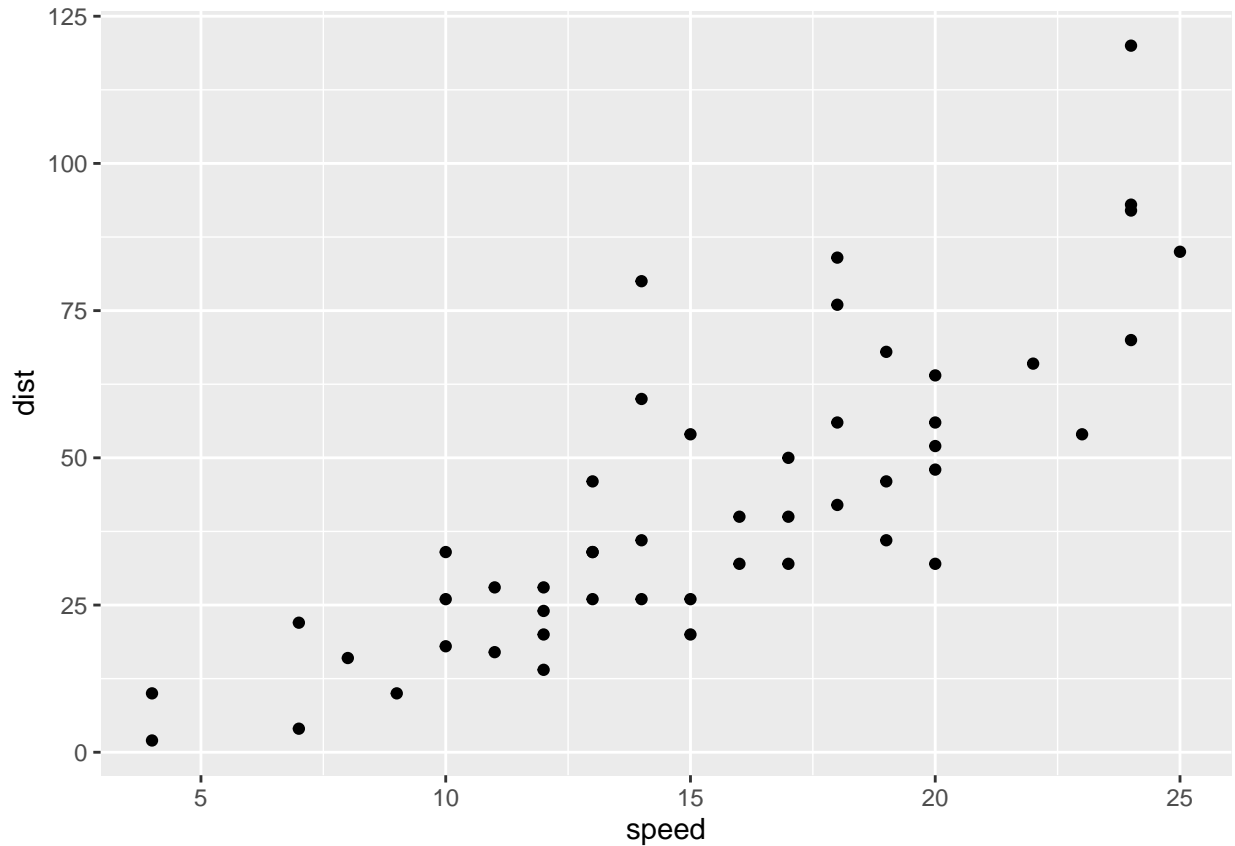


class05.R

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2023-04-19

```
#install.packages("ggplot2")  
library(ggplot2)  
ggplot(cars) +  
  aes(x = speed, y = dist) +  
  geom_point()
```



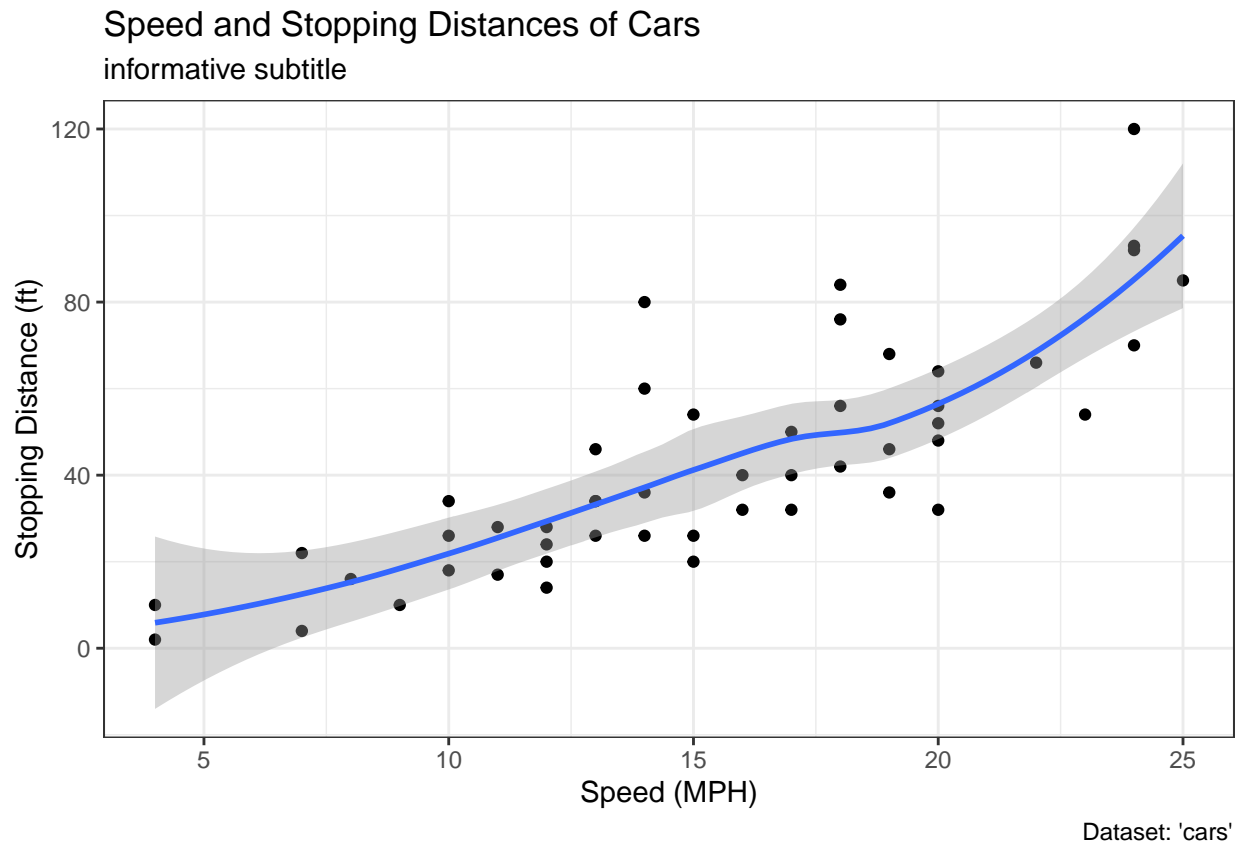
```
ggplot(cars) +  
  aes(x = speed, y = dist) +  
  geom_point() +  
  geom_smooth() + #adds a trend line  
  labs(title = "Speed and Stopping Distances of Cars",  
        x = "Speed (MPH)",  
        y = "Stopping Distance (ft)",
```

```

    subtitle = "informative subtitle",
    caption = "Dataset: 'cars'") +
  theme_bw()

```

```
## 'geom_smooth()' using method = 'loess' and formula = 'y ~ x'
```



```

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

```

```
nrow(genes)
```

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

```
colnames(genes)
```

```
## [1] "Gene"          "Condition1" "Condition2" "State"
```

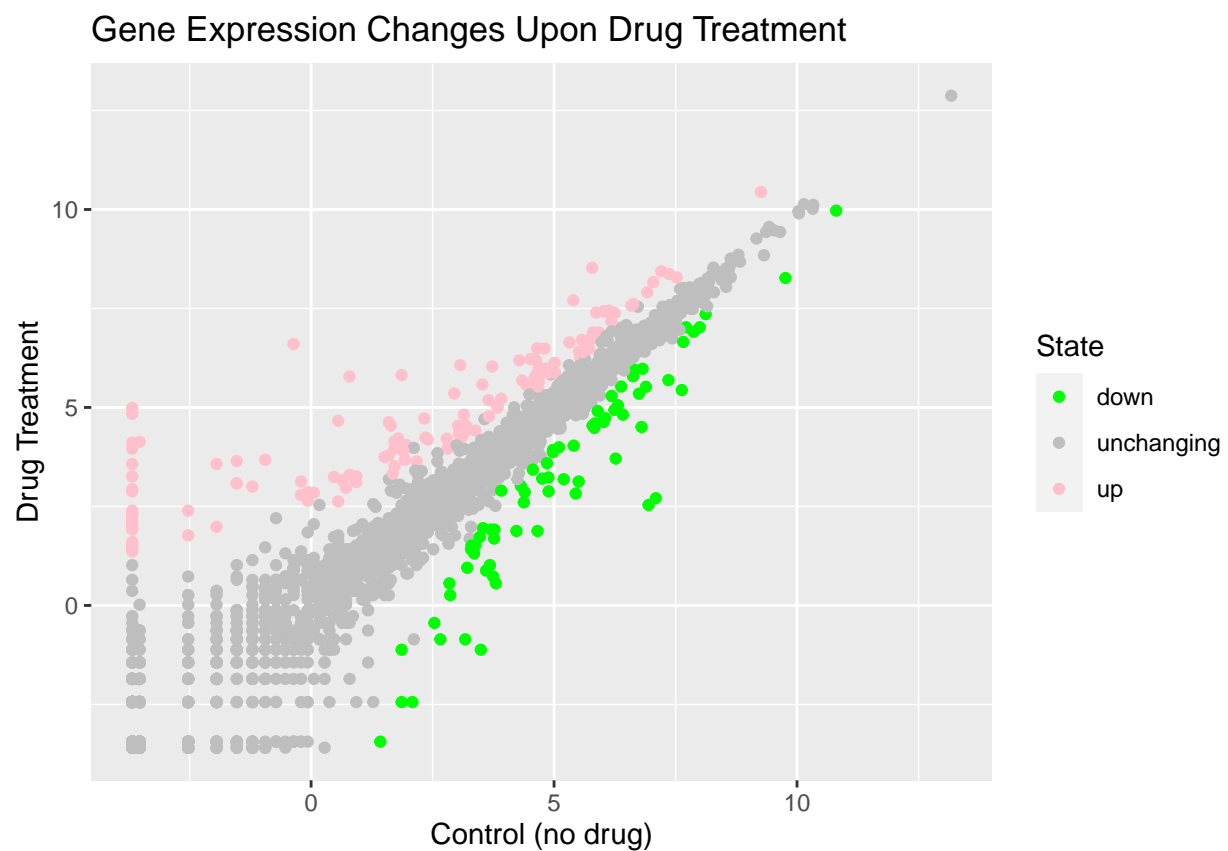
```
ncol(genes)
```

```
## [1] 4
```

```
table(genes$State)
```

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

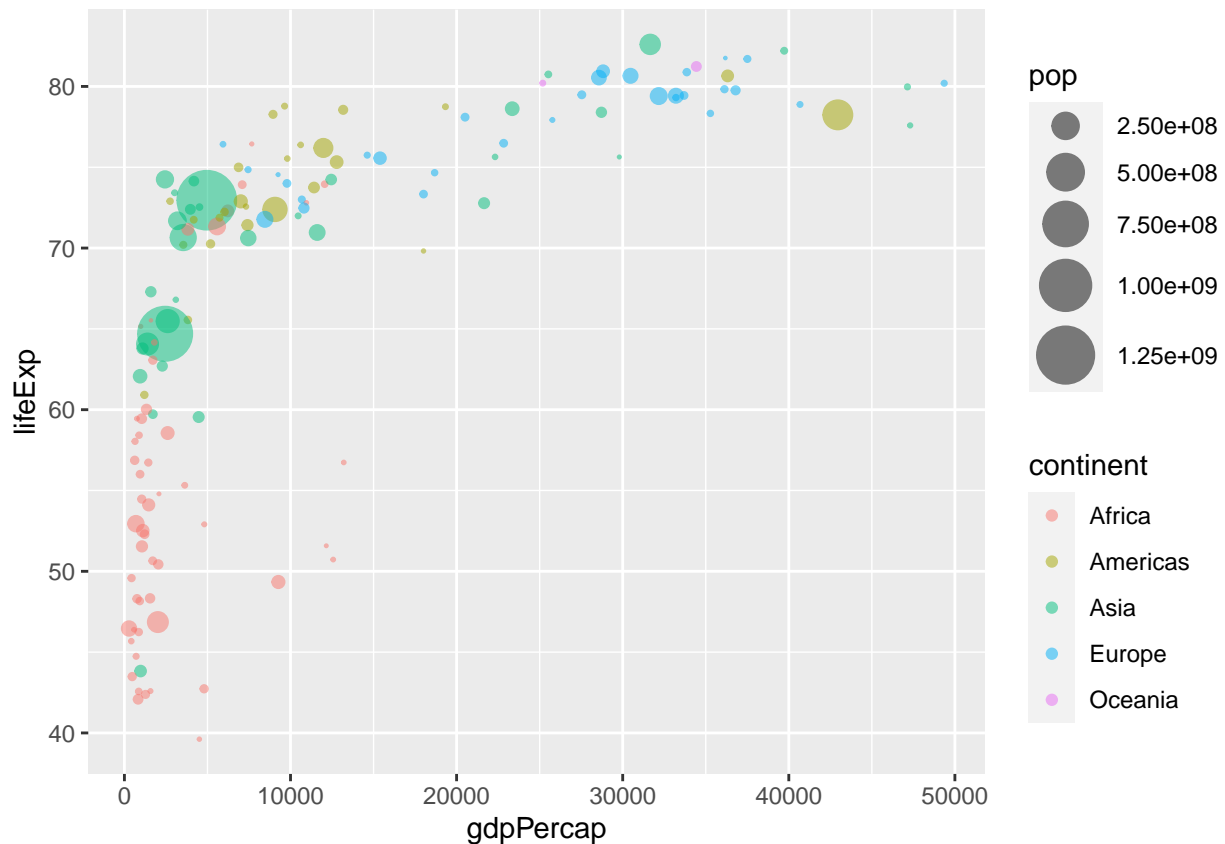
```
p <- ggplot(genes) +  
  aes(x = Condition1, y = Condition2, col = State) +  
  geom_point()  
  
p + scale_color_manual(values = c("green", "grey", "pink")) +  
  labs(title = "Gene Expression Changes Upon Drug Treatment",  
       x = "Control (no drug)", y = "Drug Treatment")
```



```
url2 <- "https://raw.githubusercontent.com/jennybc/gapminder/master/inst/extdata/gapminder.tsv"
gapminder <- read.delim(url2)
#install.packages("dplyr")
library(dplyr)
```

```
##
## Attaching package: 'dplyr'
##
## The following objects are masked from 'package:stats':
##
##   filter, lag
##
## The following objects are masked from 'package:base':
##
##   intersect, setdiff, setequal, union
```

```
gapminder_2007 <- gapminder %>% filter(year==2007)
ggplot(gapminder_2007) +
  aes(x=gdpPercap, y=lifeExp, color = continent, size = pop) +
  geom_point(alpha=0.5) +
  scale_size_area(max_size = 10)
```

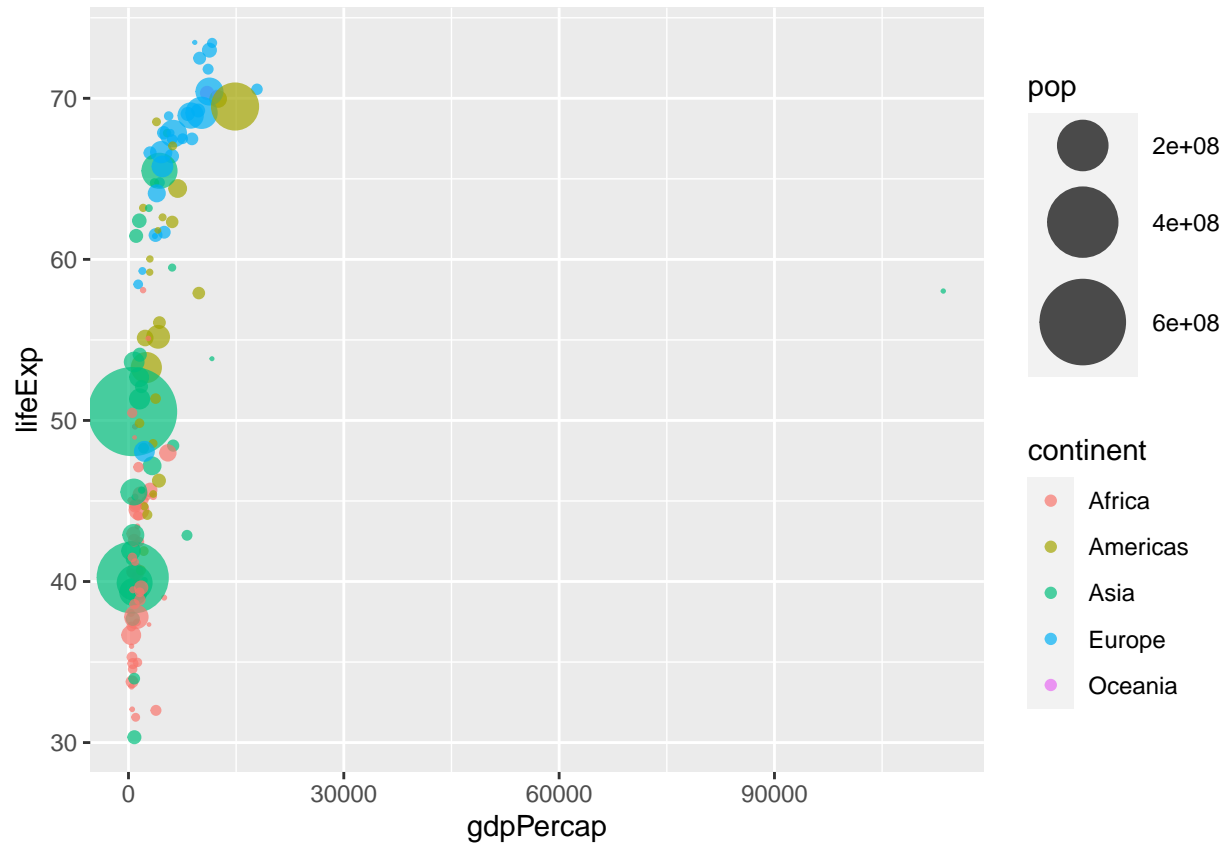


```
gapminder_1957 <- gapminder %>% filter(year == 1957)
ggplot(gapminder_1957) +
```

```

aes(x = gdpPercap, y = lifeExp, color = continent, size = pop) +
geom_point(alpha = 0.7) +
scale_size_area(max_size = 15)

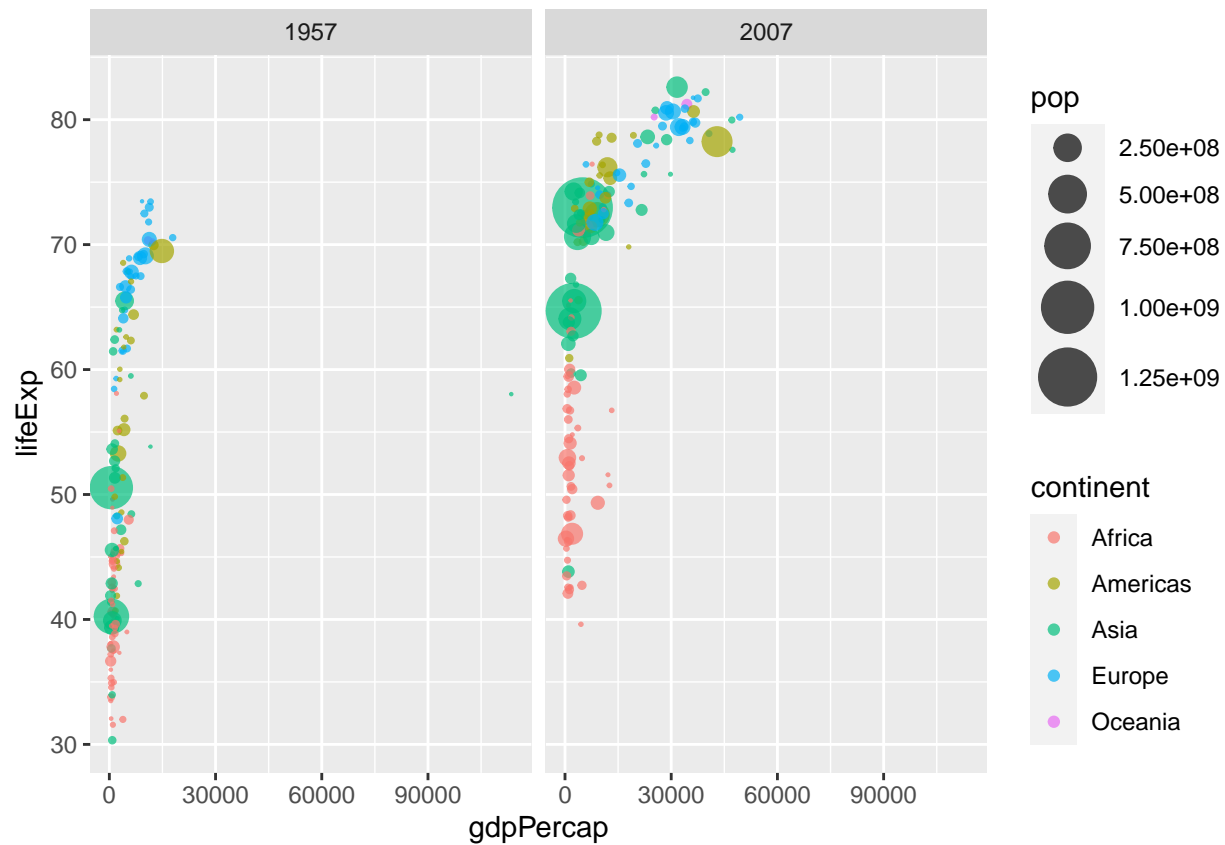
```



```

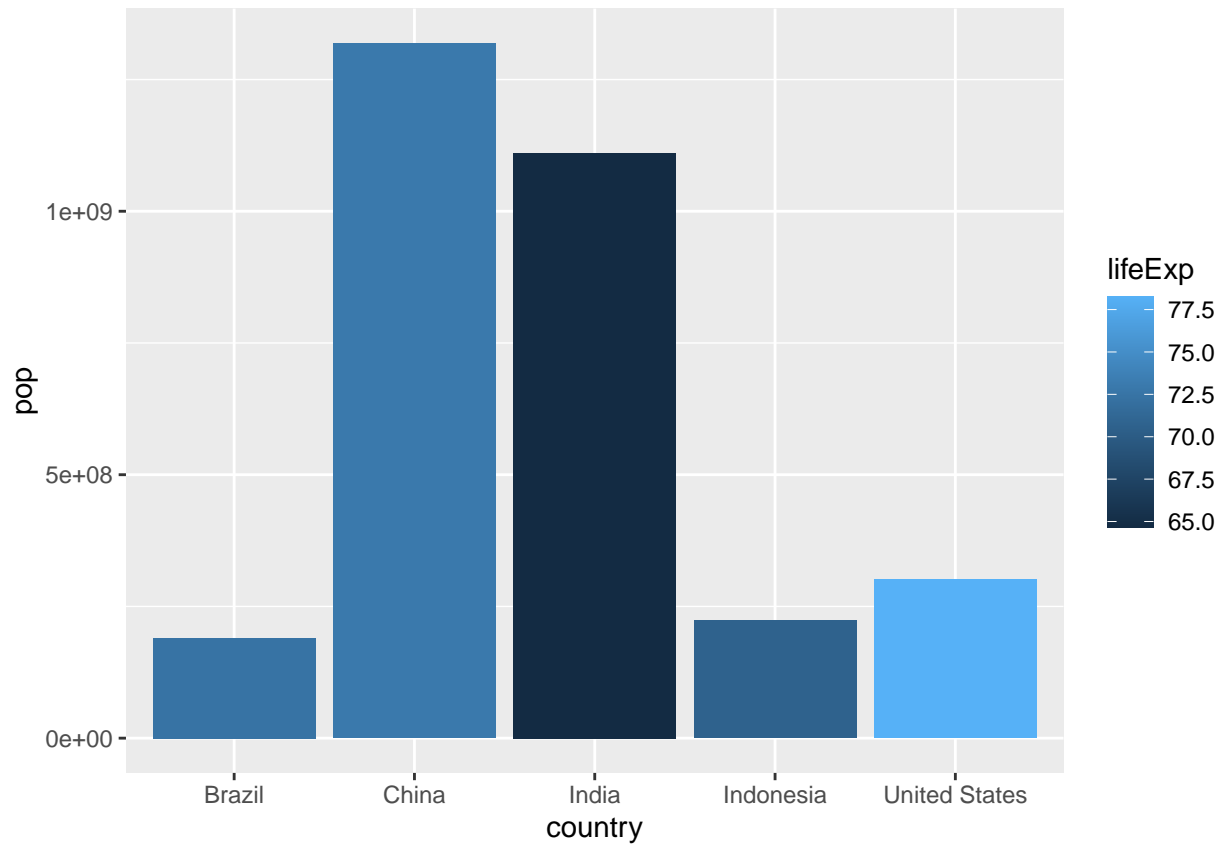
gapminder_comp <- gapminder %>% filter(year == 1957 | year == 2007)
ggplot(gapminder_comp) +
  geom_point(aes(x = gdpPercap, y = lifeExp, color = continent, size = pop),
            alpha = 0.7) +
  scale_size_area(max_size = 10) +
  facet_wrap(~year)

```

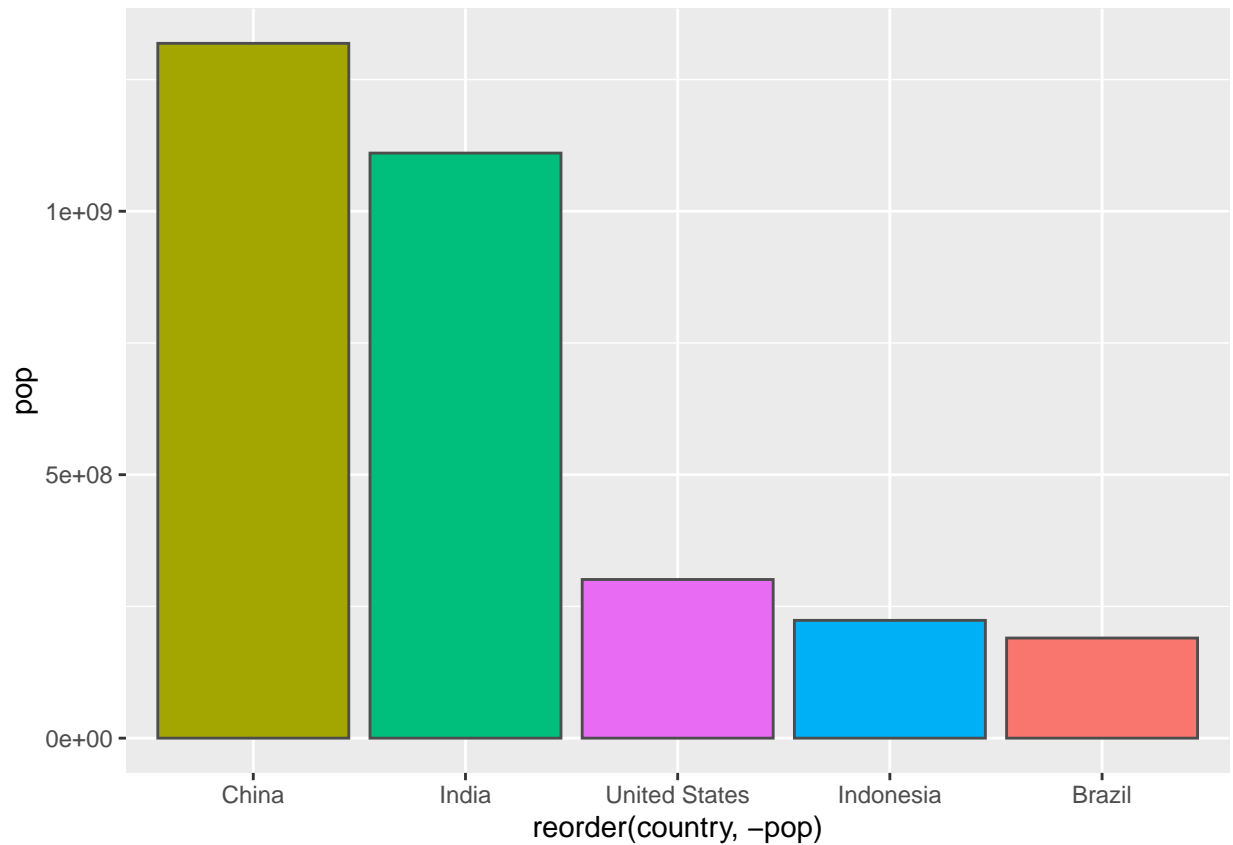


```
#bar charts
gapminder_top_5 <- gapminder %>%
  filter(year == 2007) %>%
  arrange(desc(pop)) %>%
  top_n(5,pop)

ggplot(gapminder_top_5) +
  geom_col(aes(x = country, y = pop, fill = lifeExp))
```



```
#plot pop size by country  
ggplot(gapminder_top_5) +  
  aes(x = reorder(country, -pop), y = pop, fill = country) +  
  geom_col(col = "gray30") +  
  guides(fill = "none")
```



```
#install.packages("patchwork")
library(patchwork)
p1 <- ggplot(mtcars) + geom_point(aes(mpg, disp))
p2 <- ggplot(mtcars) + geom_boxplot(aes(gear, disp, group = gear))
p3 <- ggplot(mtcars) + geom_smooth(aes(disp, qsec))
p4 <- ggplot(mtcars) + geom_bar(aes(carb))

#patchwork
(p1 | p2 | p3) /
  p4
```

```
## 'geom_smooth()' using method = 'loess' and formula = 'y ~ x'
```