# Visualizing Relationships Between Variables: Takeaways



## Syntax

Splitting data into subplots based on values of a variable:

```
data %>%
      ggplot(aes(x = variable_1, y = variable_2)) +
      geom_line() +
      facet_wrap(~variable_3)
```

Creating a line graph with different values of a variable using different styles of lines:

```
data %>%
      ggplot(aes(x = variable_1, y = variable_2, lty = group_variable)) +
      geom_line()
```

Creating a line graph with different values of a variable using different colors:

```
data %>%
      ggplot(aes(x = variable_1, y = variable_2, color = group_variable))
+
      geom_line()
```

Viewing a specific part of a graph:

```
data %>%
      ggplot(aes(x = variable_1, y = variable_2, color = group_variable))
+
      geom_line() +
      xlim(1915, 1920) +
      ylim(35, 60)
```

Changing the color and line types of a line:

```
life_expec_sex_race %>%
      ggplot(aes(x = Year, y = Avg_Life_Expec, color = Sex, lty = Race)) +
      geom_line() +
```

```
      scale_color_manual(values = c("magenta", "orange")) +
      scale_linetype_manual(values = c("longdash", "dotdash"))
```

Creating a scatter plot:

```
data %>%
      ggplot(aes(x = Variable_1, y = Variable_2)) +
      geom_point()
```

## Concepts

- Variable relationships are often the key component of an analysis. Therefore, properly visualizing them for yourself and for reports is crucial.
- Changing the scale limits changes the range of your axes so you can display only a portion of your data.
- The way you choose to graph your data ultimately depends on the question you're trying to answer and requires some trial and error.
- The consistent, systematic syntax of `ggplot2` will allow you to create multiple graphs as part of your workflow without taking too much of your time.

## Resources

- Color names
- Line type names