Data Visualization 01

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2024-05-29

Contents

1 Prepare R Environment

Begin data analysis by creating a new project in RStudio to keep work organized. Steps to create a new project: Click File -> Click New Project -> Set name for the directory -> Click Create Project

2 Load Libraries

Load the necessary libraries for data visualization:

```r
# Load tidyverse for data manipulation and visualization
library(tidyverse)
```

```
-- Attaching core tidyverse packages ------------------------ tidyverse 2.0.0 --
v dplyr     1.1.4     v readr     2.1.5
v forcats   1.0.0     v stringr   1.5.1
v ggplot2   3.5.1     v tibble    3.2.1
v lubridate 1.9.3     v tidyr     1.3.1
v purrr     1.0.2
-- Conflicts ------------------------------------------ tidyverse_conflicts() --
x dplyr::filter() masks stats::filter()
x dplyr::lag()    masks stats::lag()
i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to becor
```

```r
# Load gapminder dataset for practice
library(gapminder)
```

3 Basic Plots

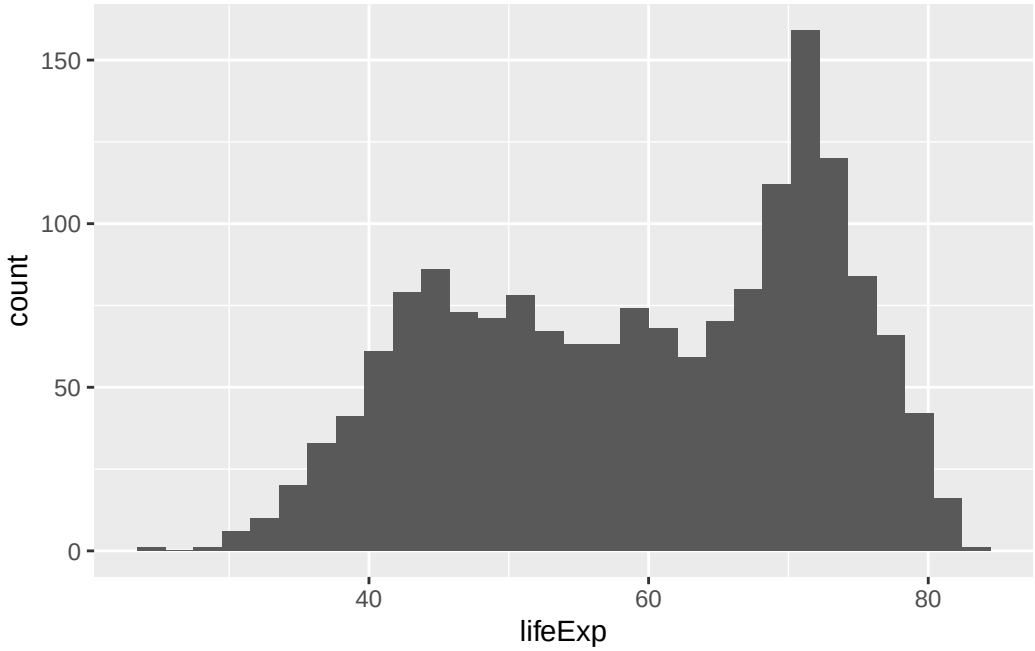
Create different types of basic plots using ggplot2.

3.1 Histogram

Visualize the distribution of life expectancy:

```r
ggplot(gapminder) +
  geom_histogram(aes(lifeExp))
```

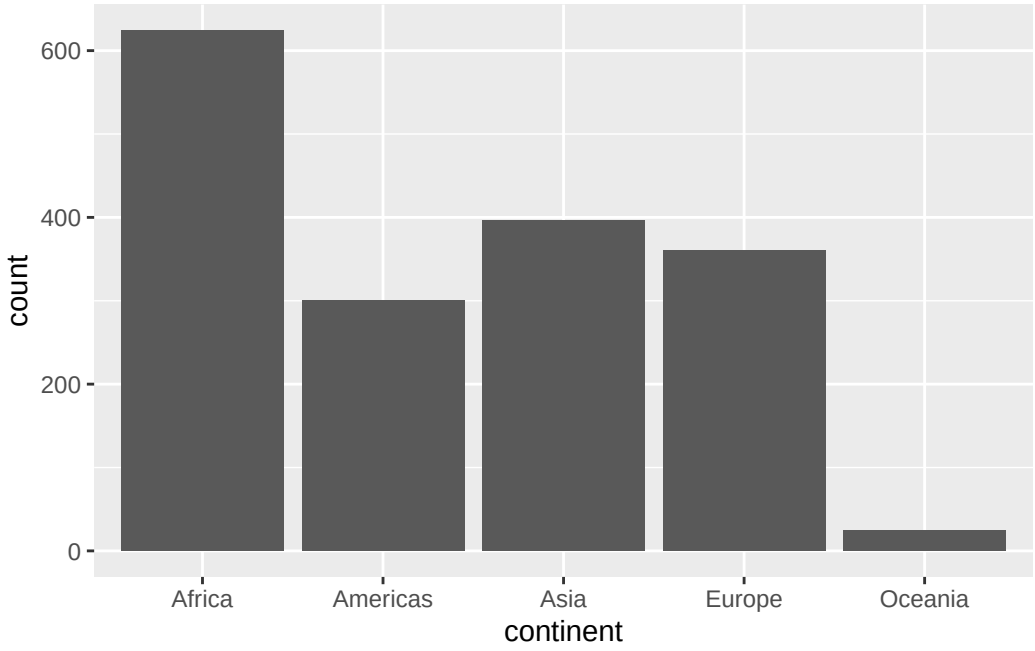
```
`stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
```



3.2 Barchart

Visualize the count of observations for each continent:

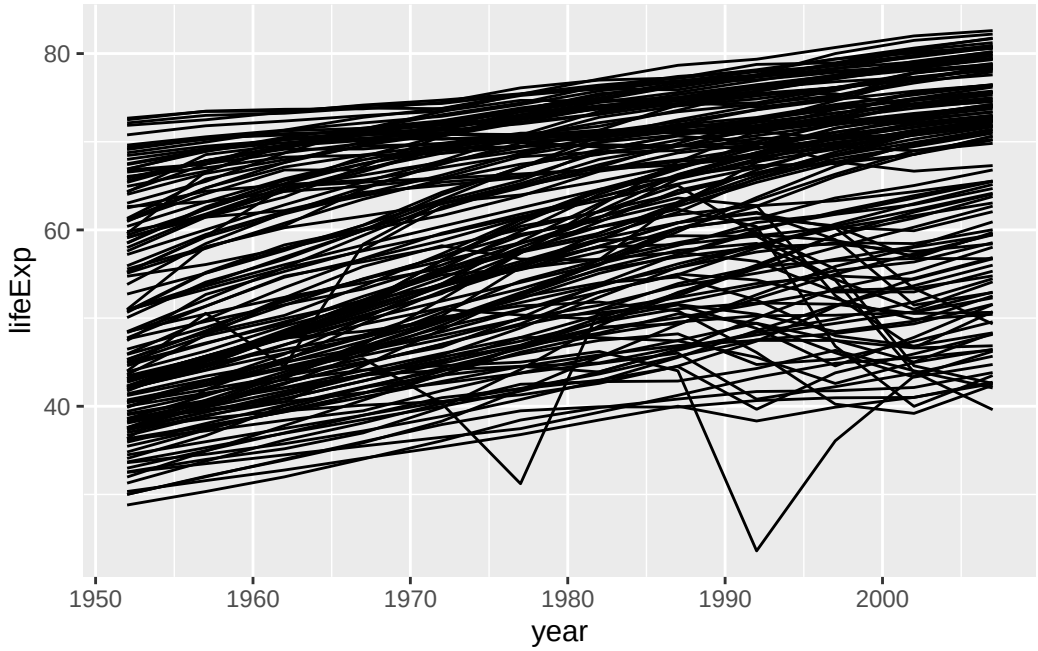
```
ggplot(gapminder) +
  geom_bar(aes(continent))
```



3.3 Line Graph

Visualize the change in life expectancy over time for each country:

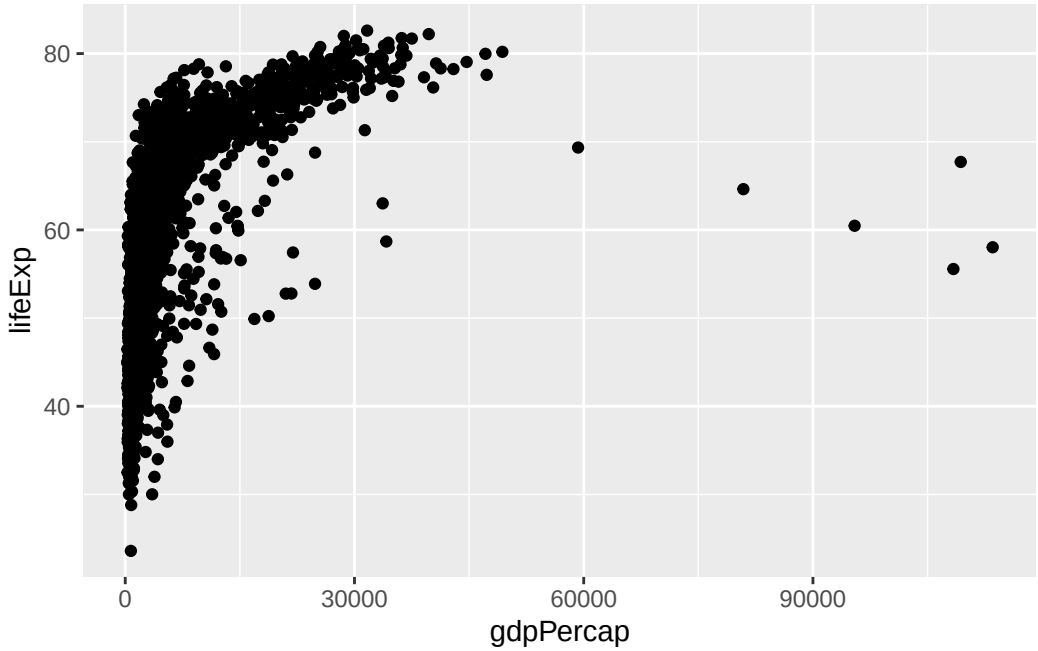
```
ggplot(gapminder) +
  geom_line(aes(x = year, y = lifeExp, group = country))
```



3.4 Scatter Plot

Visualize the relationship between GDP per capita and life expectancy:

```
ggplot(gapminder) +
  geom_point(aes(x = gdpPercap, y = lifeExp))
```

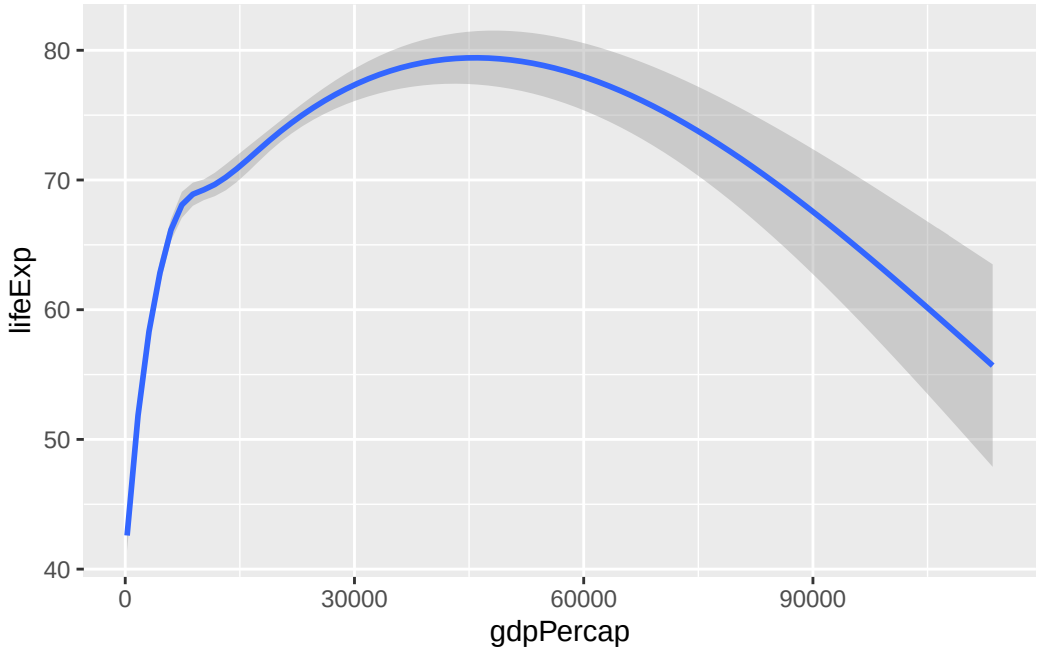


3.5 Smooth Plot

Add a smooth trend line to the scatter plot to better visualize the relationship:

```
ggplot(gapminder) +
  geom_smooth(aes(x = gdpPercap, y = lifeExp))
```

```
`geom_smooth()` using method = 'gam' and formula = 'y ~ s(x, bs = "cs")'
```

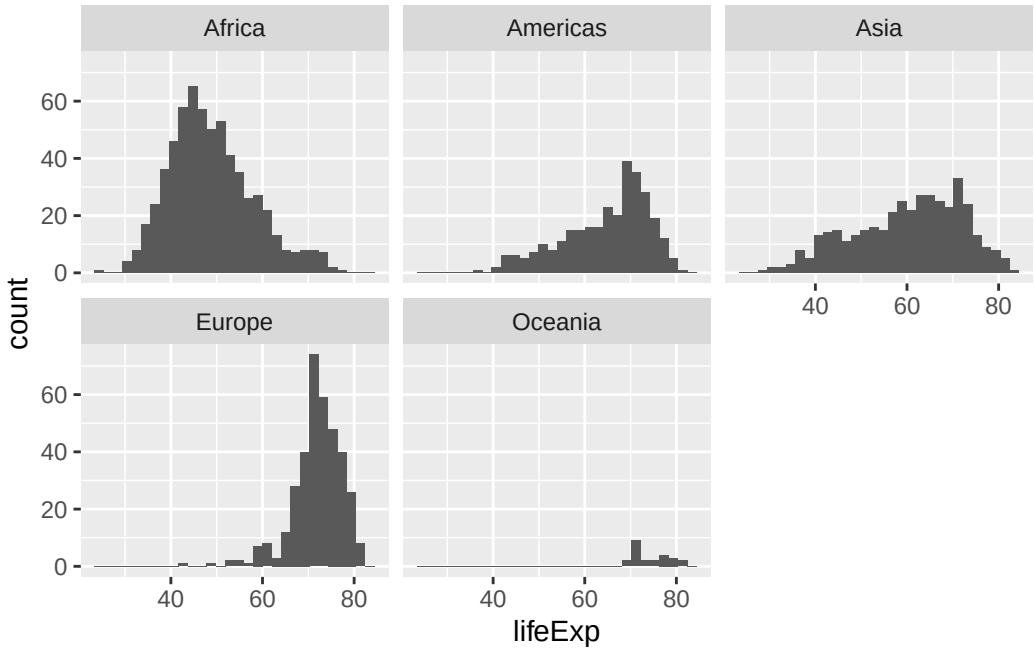


4 Split Your Plots

Create faceted plots to split data visualizations by continent:

```
ggplot(gapminder) +
  geom_histogram(aes(lifeExp)) +
  facet_wrap(~ continent)
```

```
`stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
```



5 Saving Your Plots

Save your plots in different formats (PDF, PNG, JPG):

```
# Save the plot as PDF
ggsave('myplot.pdf')
```

```
Saving 5.5 x 3.5 in image
`stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
```

```
# Save the plot as PNG
ggsave('myplot.png')
```

```
Saving 5.5 x 3.5 in image
`stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
```

```
# Save the plot as JPG
ggsave('myplot.jpg')
```

```
Saving 5.5 x 3.5 in image
`stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
```

6 References

Useful resources for further learning and customization:

- Different types of geom
- Customizing your plots
- More advanced R graphs