

Learning Goals

- Identify which visualizations are appropriate for quantitative variables and which are appropriate for qualitative variables.
- Create and interpret common quantitative visualizations such as dot plots, histograms, density plots, boxplots, and QQ plots.
- Create and interpret common qualitative visualizations such as frequency tables, pie charts, barplots, and Pareto charts.
- Use R arguments such as `main`, `xlab`, `ylab`, `col`, `border`, `breaks`, and `freq` to improve graph readability.

Key Functions

For each function below, write down what it does and when you would use it.

- `dotchart()`:
- `hist()`:
- `density()`:
- `boxplot()`:
- `qqnorm()` and `qqline()`:
- `prop.table()`:
- `barplot()`:
- `pie()`:
- `pareto.chart()`:

Key Concepts

1. What is the main purpose of creating visualizations during exploratory data analysis?
2. What does a boxplot help us see that a histogram may not show as clearly?
3. What are we looking for in a QQ plot if we want to decide whether data appear approximately normal?

Practice Problems

1. The variable `mpg` in the `mtcars` dataset is quantitative. Write code to create a histogram of `mpg` with a density line added on top. Make sure there is also a title and x-axis label.
2. Write code to create a boxplot of `mpg`. In one sentence, explain what a boxplot helps us identify.
3. The variable `cyl` in the `mtcars` dataset can be treated as categorical. Write code to create a frequency table and barplot for `cyl`.