

## MAIN TITLE

A simple report that shows the capabilities of quarto  
and typst

# Contents

<b>1. Introduction to Quarto with Typst</b>	<b>3</b>
1.1. Basic Markdown Features	3
1.2. Mathematical Expressions	3
<b>2. Code Execution Features</b>	<b>3</b>
2.1. Basic R Code	3
2.2. Data Visualization	4
2.3. Tables	4
<b>3. Typst-Specific Features</b>	<b>5</b>
3.1. Custom Styling with Typst	5
3.2. Font Customization	5
3.3. Advanced Layout with Typst	5
<b>4. Standard Quarto Features</b>	<b>5</b>
4.1. Cross-References	6
4.2. Callouts	6
4.3. Tabsets (HTML only)	6
4.3.1. Tab 1	6
4.3.2. Tab 2	6
4.3.3. Tab 3	7
<b>5. Plots</b>	<b>7</b>
5.1. Plots	7
5.2. Data Tables	8
<b>6. Typst-Specific YAML Options</b>	<b>8</b>
<b>7. Conclusion</b>	<b>8</b>
References	8

# 1. Introduction to Quarto with Typst

This document demonstrates various features of Quarto with R integration, using Typst as the PDF rendering engine. Typst provides a more modern and intuitive alternative to LaTeX for PDF generation.

## 1.1. Basic Markdown Features

Quarto supports all standard markdown formatting:

- **Bold text** and *italic text*
- Lists like this one
- [Hyperlinks](#)
- Images, tables, and more

## 1.2. Mathematical Expressions

You can include inline math like  $E = mc^2$  or display equations:

$$f(x) = \int_{-\infty}^{\infty} \hat{f}(\xi) e^{2\pi i \xi x} d\xi$$

Typst's math syntax is fully compatible with LaTeX math, making the transition seamless.

# 2. Code Execution Features

## 2.1. Basic R Code

```
# Simple calculation  
2 + 2
```

```
[1] 4
```

```
# Creating a vector  
numbers <- c(10, 20, 30, 40, 50)  
mean(numbers)
```

```
[1] 30
```

## 2.2. Data Visualization

```
library(ggplot2)

ggplot(mtcars, aes(x = disp, y = mpg)) +
  geom_point(aes(color = factor(cyl))) +
  geom_smooth(method = "lm") +
  labs(
    title = "Relationship Between Engine Displacement and Fuel Efficiency",
    x = "Displacement (cu.in.)",
    y = "Miles Per Gallon",
    color = "Cylinders"
  ) +
  theme_classic()
```

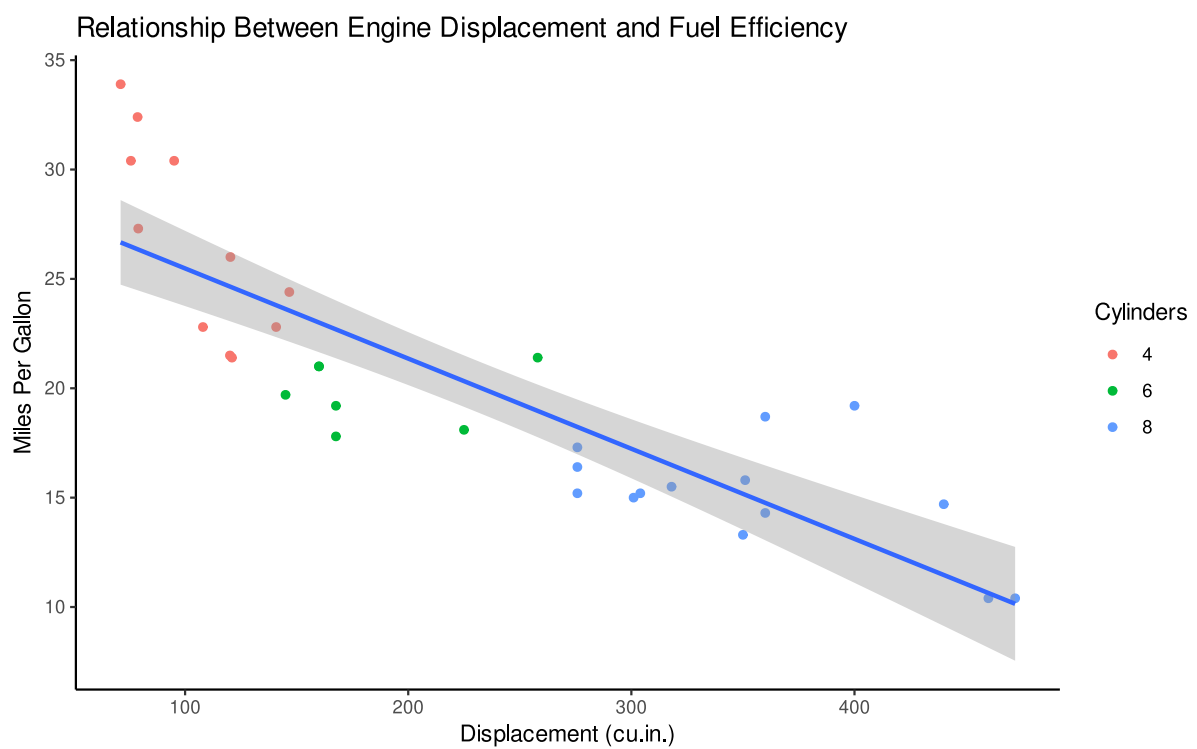


Figure 1: Scatter plot of mpg vs. disp

## 2.3. Tables

```
library(dplyr)
library(knitr)
```

```
mtcars %>%
  group_by(cyl) %>%
  summarize(
    Count = n(),
    `Mean MPG` = mean(mpg),
    `Mean HP` = mean(hp),
    `Mean Weight` = mean(wt)
  ) %>%
  kable()
```

Table 1: Summary statistics by cylinder count

cyl	Count	Mean MPG	Mean HP	Mean Weight
4	11	26.66364	82.63636	2.285727
6	7	19.74286	122.28571	3.117143
8	14	15.10000	209.21429	3.999214

## 3. Typst-Specific Features

### 3.1. Custom Styling with Typst

Quarto with Typst allows for custom styling using Typst syntax. You can include raw Typst commands using the `typst` engine:

This text is highlighted with custom Typst styling!

### 3.2. Font Customization

This paragraph will be rendered with Linux Libertine font in the PDF output.

### 3.3. Advanced Layout with Typst

#### Column 1

This is content in the first column. Typst makes it easy to create multi-column layouts.

#### Column 2

This is content in the second column. You can have different content here.

## 4. Standard Quarto Features

### 4.1. Cross-References

You can reference figures (see Figure 1) and tables (see Table 1) using their labels.

### 4.2. Callouts

**i** Note

This is a note callout block.

**⚠** Warning

This is a warning callout block.

**💡** Tip with a Title

This is a tip with a custom title.

### 4.3. Tabsets (HTML only)

#### 4.3.1. Tab 1

Content for the first tab goes here.

#### 4.3.2. Tab 2

```
ggplot(mtcars, aes(x = mpg)) +  
  geom_histogram(bins = 10, fill = "steelblue") +  
  theme_classic() +  
  labs(title = "Distribution of MPG")
```

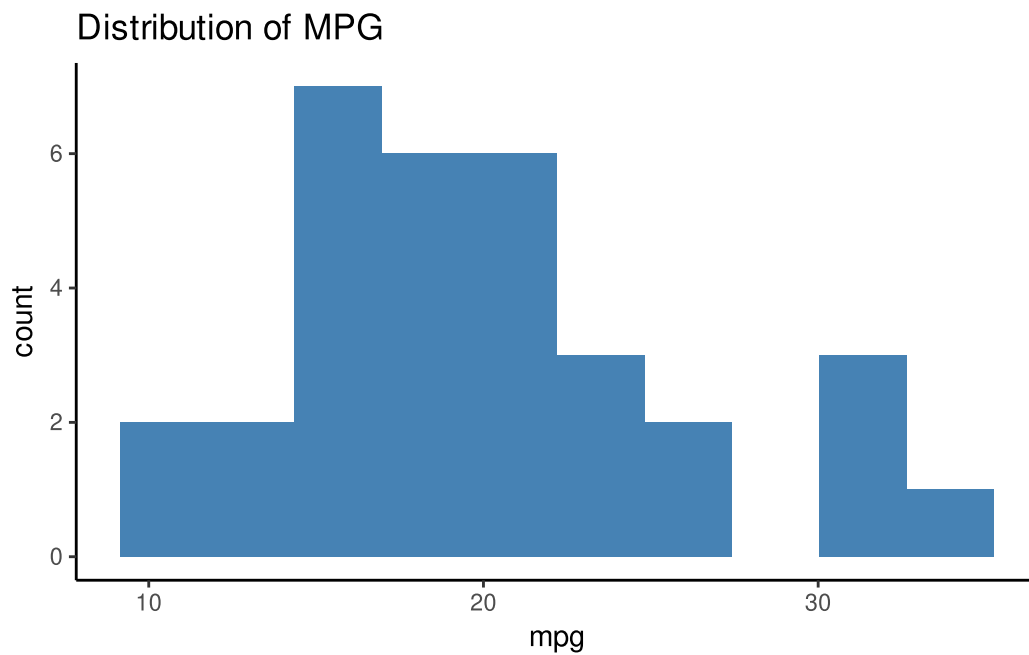


Figure 2: Distribution of MPG

#### 4.3.3. Tab 3

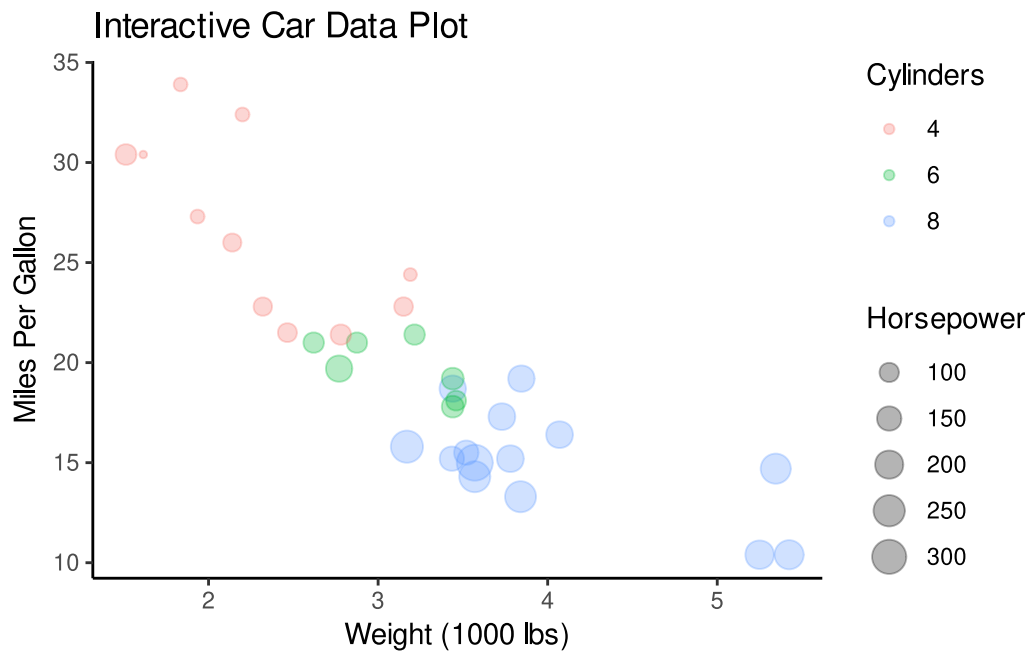
Some additional text content.

Note that tabsets are primarily an HTML feature and may not render the same way in PDF output.

## 5. Plots

### 5.1. Plots

```
p <- ggplot(mtcars, aes(x = wt, y = mpg, color = factor(cyl), size = hp)) +
  geom_point(alpha = 0.3) +
  labs(
    title = "Interactive Car Data Plot",
    x = "Weight (1000 lbs)",
    y = "Miles Per Gallon",
    color = "Cylinders",
    size = "Horsepower"
  ) +
  theme_classic()
p
```



## 5.2. Data Tables

Note that interactive elements will only work in the HTML output.

# 6. Typst-Specific YAML Options

This document demonstrates various Typst-specific YAML header options:

- `engine: typst` - Specifies Typst as the PDF rendering engine
- `typst-template: default` - Uses the default Typst template
- `margin` - Sets custom page margins
- `fontsize` - Sets the base font size

## 7. Conclusion

Quarto with Typst provides a powerful system for creating dynamic documents that combine code, results, and narrative text, with the added benefit of modern PDF typesetting. This example showcases just a few of its many features.



## References

## List of Figures

Figure 1: Scatter plot of mpg vs. disp .....	4
Figure 2: Distribution of MPG .....	7

# List of Tables

Table 1: Summary statistics by cylinder count .....	5
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