

MAIN TITLE

A simple report that shows the capabilities of quarto
and typst

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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()
```

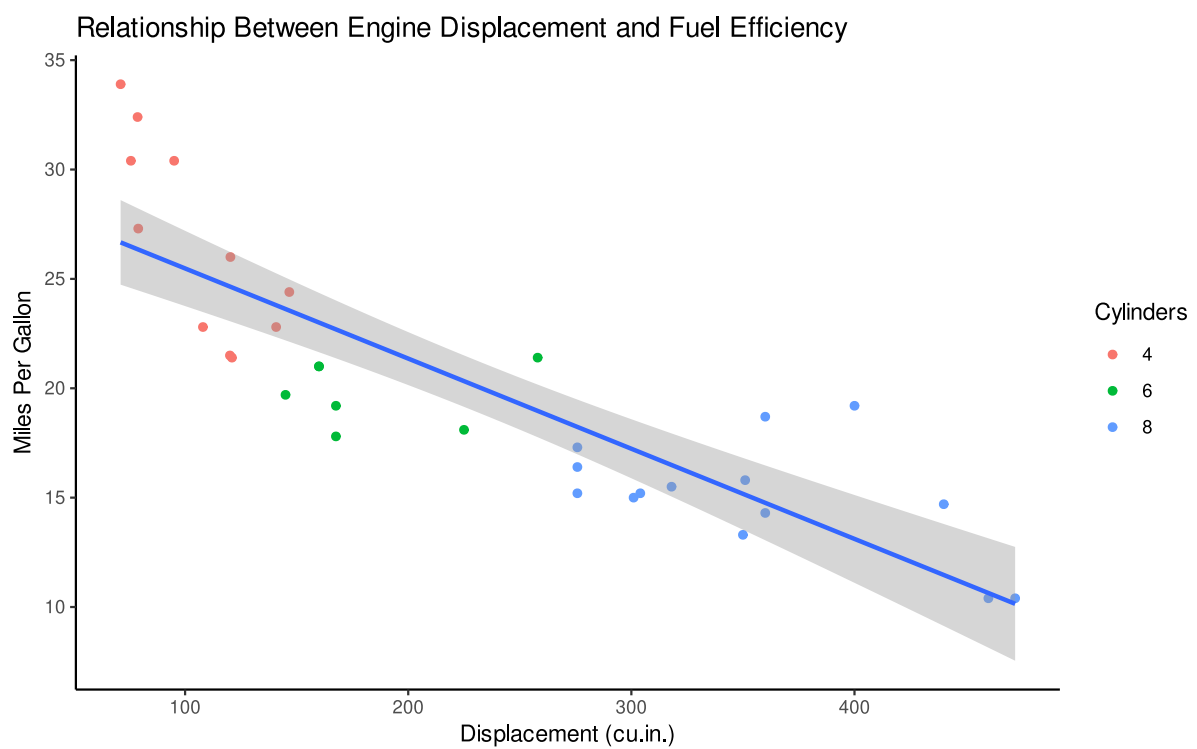


Figure 1: Scatter plot of mpg vs. disp

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")
```

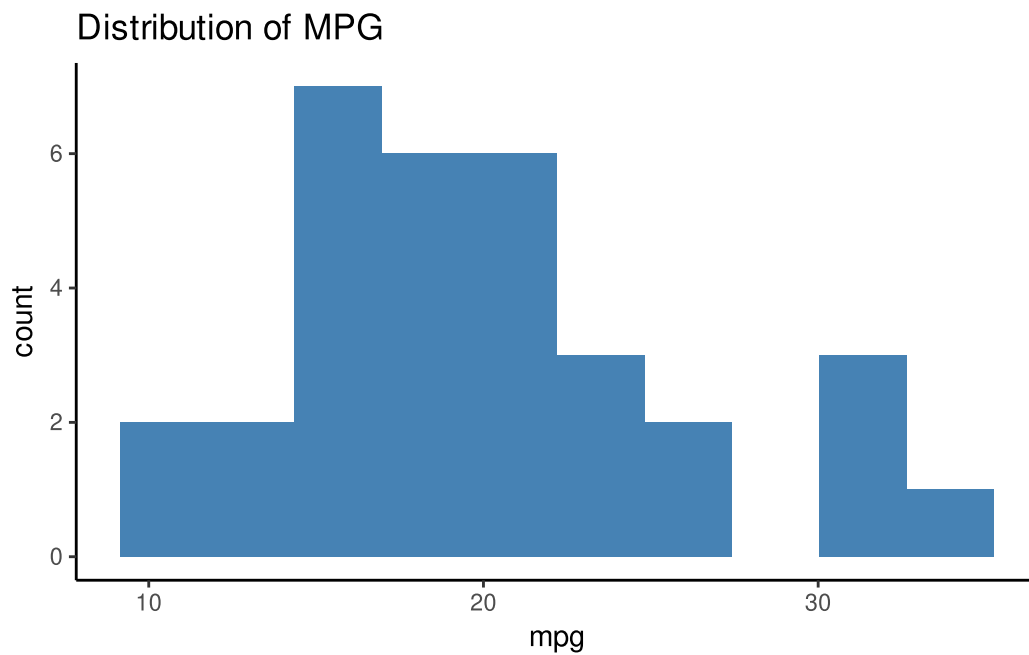


Figure 2: Distribution of MPG

4.3.3. Tab 3

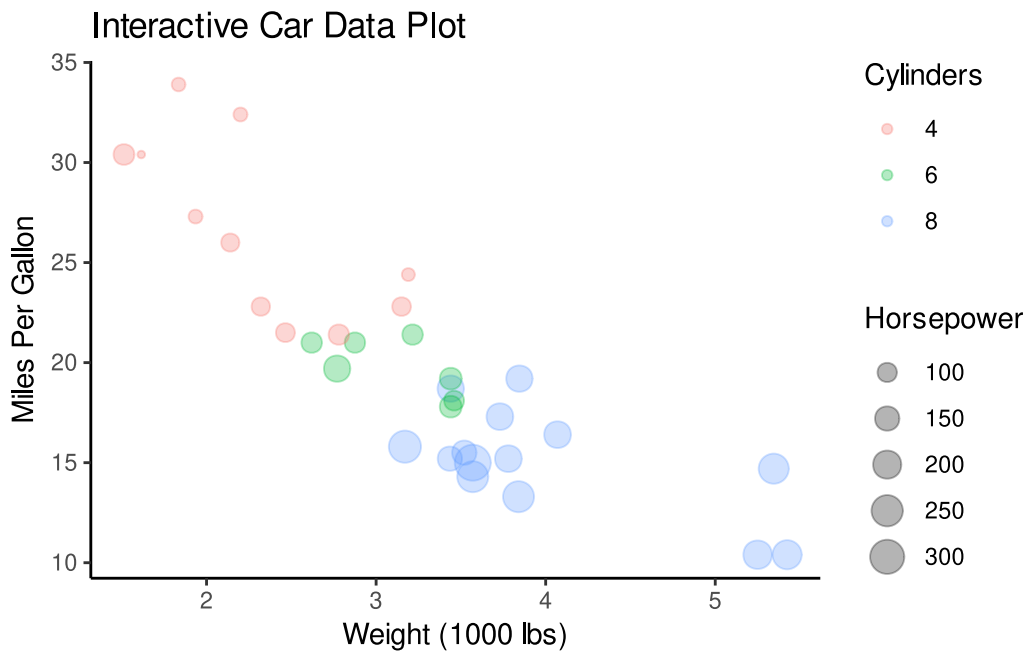
Some additional text content.

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.

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