# OSD2025 Quarto demo with jupyter notebook

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### Add a heading in your document

This is a sentence with some **bold text**, *italic text*, `code`, and a link.

Figure 1: The Quarto logo

See Figure 1 for the Quarto logo.

Equation 1 gives the formula for the population mean:

$$\mu = \frac{\sum x}{N} \tag{1}$$

Section  shows how to add R or Python code chunks.

The palmerpenguins package was developed by Horst, Hill, and Gorman (2020). We will create a document using Quarto (Allaire et al. 2025) and R (R Core Team 2024) or Python (Van Rossum and Drake 2009).

This sentence ends with a footnote.[1]

### Add R/Python code chunks

### Add R code

R code can be included but will not be evaluated when using a jupyter engine.

[1]This is an example footnote.

```r
#| label: fig-scatterplot-r
#| fig-cap: "Scatterplot of flipper and bill lengths in R"

library(palmerpenguins) # for data
library(tidyverse)      # for data wrangling and visualization
library(knitr)          # for tables

ggplot(data = penguins,
       aes(x = flipper_length_mm,
           y = bill_length_mm)) +
  geom_point(aes(color = species,
                 shape = species))
```

### Add Python code

```python
import numpy as np
import matplotlib.pyplot as plt
from palmerpenguins import load_penguins

penguins = load_penguins()

penguins['species_color'] = penguins['species']
penguins['species_color'].replace(['Adelie', 'Chinstrap', 'Gentoo'],
                        ['red', 'green', 'blue'], inplace=True)

penguins.plot.scatter(x='flipper_length_mm',
                      y='bill_length_mm',
                      c='species_color')
```

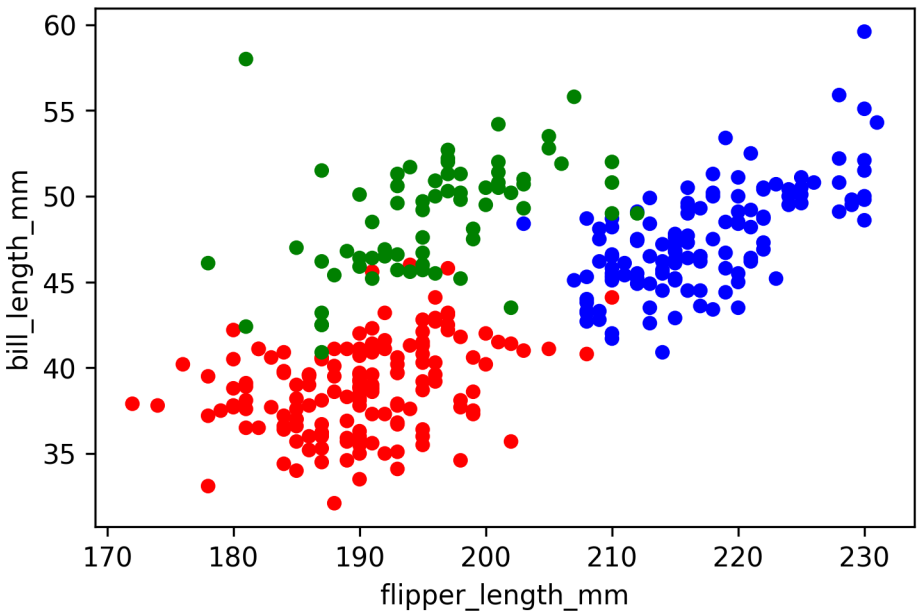


Figure 2: Scatterplot of flipper and bill lengths in Python

### Add inline code

The palmerpenguins package contains data for 344 penguins.

### Add tables

Table 1 and Table 2 show different table options in Quarto.

### Markdown

```
| fruit  | price |
|--------|-------|
| apple  | 2.05  |
| pear   | 1.37  |
| orange | 3.09  |

: Fruit prices {#tbl-md .striped .hover}
```

Table 1: Fruit prices

| fruit | price |
|---|---|
| apple | 2.05 |
| pear | 1.37 |
| orange | 3.09 |

## R

R code can be included but will not be evaluated when using a jupyter engine.

```
#| label: tbl-r
#| tbl-cap: "Summary statistics for flipper and bill lengths"

penguins %>%
  group_by(species) %>%
  summarise(
    `Mean bill length` = mean(bill_length_mm, na.rm = T),
    `Min bill length` = min(bill_length_mm, na.rm = T),
    `Max bill length` = max(bill_length_mm, na.rm = T),
    `Mean flipper length` = mean(flipper_length_mm, na.rm = T),
    `Min flipper length` = min(flipper_length_mm, na.rm = T),
    `Max flipper length` = max(flipper_length_mm, na.rm = T),
    `Correlation, r` = cor(flipper_length_mm, bill_length_mm, use = "complete")
    ) %>%
  kable(digits = c(2, 2, 2, 2, 2))
```

## Python

! Warning: table only properly shows in HTML output !

```
from tabulate import tabulate
from IPython.display import Markdown

# Convert to markdown table
Markdown(tabulate(penguins[["species", "island",
                            "bill_length_mm",
                            "flipper_length_mm"]].head(),
            headers='keys', tablefmt='html'))
```

Table 2: First rows of penguins dataframe

| species | island | bill_length_mm | flipper_length_mm |
|---|---|---|---|
| 0 | | | |
| Adelie | Torgersen | 39.1 | 181 |
| 1 | | | |
| Adelie | Torgersen | 39.5 | 186 |
| 2 | | | |
| Adelie | Torgersen | 40.3 | 195 |
| 3 | | | |
| Adelie | Torgersen | nan | nan |
| 4 | | | |
| Adelie | Torgersen | 36.7 | 193 |

## References


Allaire, J. J., Charles Teague, Carlos Scheidegger, Yihui Xie, Christophe Dervieux, and Gordon Woodhull. 2025. "Quarto." https://doi.org/10.5281/zenodo.5960048.

Horst, Allison M, Alison Presmanes Hill, and Kristen B Gorman. 2020. *Allisonhorst/Palmerpenguins: V0.1.0*. Zenodo. https://doi.org/10.5281/ZENODO.3960218.

R Core Team. 2024. *R: A Language and Environment for Statistical Computing*. Vienna, Austria: R Foundation for Statistical Computing. https://www.R-project.org/.

Van Rossum, Guido, and Fred L. Drake. 2009. *Python 3 Reference Manual*. Scotts Valley, CA: CreateSpace.