

# Farm Store and Penguins

## Get Started with Quarto

### Farm Store

CPP Farm store has a selected assortment of cool fruits and vegetables right from its on-campus farm.

### Featured Products:

Illustration of Multiple columns on a website



Figure 1: A sample of gift-pack prepared from CPP Grown produce



Figure 2: A sample of wine made from grapes grown right here on campus

Great gift for your loved ones. These fruits were raised by students in agriculture majors on CPP campus, processed and packed by student employees at Farm Store.

Fantastic wine produced right here CPP campus by students!

## Web site menu

Use `panel-tabset` to add multiple tabs to your website.

## Fruit gift packs



Figure 3: A Sample of gift-pack prepared from CPP-grown produce

## Rose Wine



Figure 4: A sample of wine made from grapes grown right here on campus

For the beautiful graphic of fruit gift pack, see [Figure 1](#).

## Data Preparation

First, we need to:

1. load **packages**
2. read in **data**
3. check if that data is *in the right format*

By “right format”, we mean that the data is tidy, and ready to be summarized and graphed

## Choosing Data

Penguins are very cute!

... so let's work with penguin data today.

### Source

For this analysis we will use the **penguins** dataset from the [palmerpenguins](#) package (Gorman, Williams, and Fraser 2014).

### Using the data without downloading it

Data were collected and made available by Dr. Kristen Gorman and the Palmer Station, Antarctica LTER, a member of the Long Term Ecological Research Network.

## Loading packages and reading data

### Using the data without downloading it

This same dataset is also available in the **palmerpenguins** package

species	island	bill_length_mm	bill_depth_mm	flipper_length_mm	body_mass_g	sex
Adelie	Torgersen	39.1	18.7	181	3750	male
Adelie	Torgersen	39.5	17.4	186	3800	female
Adelie	Torgersen	40.3	18.0	195	3250	female
Adelie	Torgersen	NA	NA	NA	NA	NA
Adelie	Torgersen	36.7	19.3	193	3450	female
Adelie	Torgersen	39.3	20.6	190	3650	male

## Reading Data

```
head(penguins) |>
  gt()
```

## Cleaning Data

```
glimpse(penguins)
```

```
Rows: 344
Columns: 8
$ species      <fct> Adelie, Adelie, Adelie, Adelie, Adelie, Adelie, Adel~
$ island       <fct> Torgersen, Torgersen, Torgersen, Torgersen, Torgerse~
$ bill_length_mm <dbl> 39.1, 39.5, 40.3, NA, 36.7, 39.3, 38.9, 39.2, 34.1, ~
$ bill_depth_mm <dbl> 18.7, 17.4, 18.0, NA, 19.3, 20.6, 17.8, 19.6, 18.1, ~
$ flipper_length_mm <int> 181, 186, 195, NA, 193, 190, 181, 195, 193, 190, 186~
$ body_mass_g   <int> 3750, 3800, 3250, NA, 3450, 3650, 3625, 4675, 3475, ~
$ sex          <fct> male, female, female, NA, female, male, female, male~
$ year         <int> 2007, 2007, 2007, 2007, 2007, 2007, 2007, 2007, 2007~
```

```
penguins |>
  drop_na() -> penguins_no_na

penguins_no_na |>
  head() |>
  gt() |>
  tab_header(title = "Penguins Data After Removing NA's")
```

## Penguins Data After Removing NA's

species	island	bill_length_mm	bill_depth_mm	flipper_length_mm	body_mass_g	sex
Adelie	Torgersen	39.1	18.7	181	3750	male
Adelie	Torgersen	39.5	17.4	186	3800	female
Adelie	Torgersen	40.3	18.0	195	3250	female
Adelie	Torgersen	36.7	19.3	193	3450	female
Adelie	Torgersen	39.3	20.6	190	3650	male
Adelie	Torgersen	38.9	17.8	181	3625	female

We have removed missing values here, which means that the data has now 333 rows. Note that previously there were 344 rows in the original data.<sup>1</sup>

## Code Annotation

```
library(tidyverse)
library(palmerpenguins)
penguins |>
  mutate(
    bill_ratio = bill_depth_mm / bill_length_mm,
    bill_area  = bill_depth_mm * bill_length_mm
  )
```

- ① Take `penguins`, and then,
- ② add new columns for the bill ratio and bill area.

```
# A tibble: 344 x 10
  species island bill_length_mm bill_depth_mm flipper_length_mm body_mass_g
  <fct>   <fct>         <dbl>         <dbl>         <int>         <int>
1 Adelie Torgersen      39.1           18.7           181           3750
2 Adelie Torgersen      39.5           17.4           186           3800
3 Adelie Torgersen      40.3            18           195           3250
4 Adelie Torgersen      NA             NA             NA             NA
5 Adelie Torgersen      36.7           19.3           193           3450
6 Adelie Torgersen      39.3           20.6           190           3650
```

<sup>1</sup>Note that this removes any rows with missing values!

```

7 Adelie Torgersen      38.9      17.8      181      3625
8 Adelie Torgersen      39.2      19.6      195      4675
9 Adelie Torgersen      34.1      18.1      193      3475
10 Adelie Torgersen      42       20.2      190      4250
# i 334 more rows
# i 4 more variables: sex <fct>, year <int>, bill_ratio <dbl>, bill_area <dbl>

```

## Charts by Species

Figure 5 is a bar plot of species of penguins.

```

penguins |>
  ggplot(aes(bill_length_mm, bill_depth_mm, color = species,
             shape = species))+
  geom_point() +
  theme_minimal() +
  scale_color_colorblind() +
  labs(x = "Bill length (mm)",
       y = "Bill depth (mm)")

```

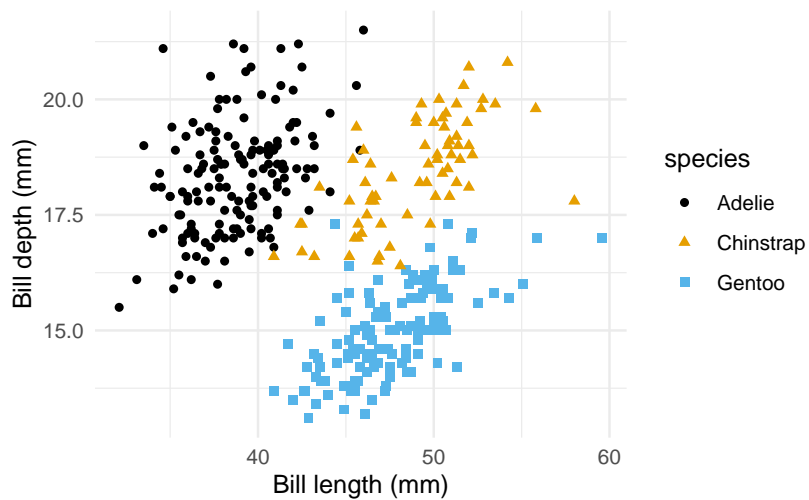


Figure 5: Penguin bill dimensions

Table 1: Top 10 Penguins Sorted by Bill Lengths

species	island	bill_length_mm	bill_depth_mm
Adelie	Torgersen	39.1	18.7
Adelie	Torgersen	39.5	17.4
Adelie	Torgersen	40.3	18.0
Adelie	Torgersen	NA	NA
Adelie	Torgersen	36.7	19.3
Adelie	Torgersen	39.3	20.6
Adelie	Torgersen	38.9	17.8
Adelie	Torgersen	39.2	19.6
Adelie	Torgersen	34.1	18.1
Adelie	Torgersen	42.0	20.2

## Tables

Table 1 shows the first 10 penguins from the dataset.

```
penguins |>
  slice_head(n = 10) |>
  select(species, island, bill_length_mm, bill_depth_mm) |>
  gt()
```

## How to publish online

1. Create your content in Quarto. You need at least three documents
  1. index.qmd
  2. another qmd file
  3. “\_quarto.yml” created in Text File.
2. Reload the4 project from the upper-right-hand corner. After this, you should see the “build” tab appear next to the environment tab.

3. Click “Render website” and confirm that you have a website with all the files combined.
4. Now it is time to publish
  1. Move to the terminal next to “Console” tab.
  2. Type “quarto publish quarto-pub” and follow the instructions on the pane.
  3. Go to your quarto-pub website and find it.

## Resources

- Authoring: <https://quarto.org/docs/authoring/markdown-basics.html>
- Creating a website: <https://quarto.org/docs/websites/>
- [Quarto Gallery](#)
- Get started with Quarto | Mine Cetinkaya-Rundel: [https://www.youtube.com/watch?v=\\_\\_f3latmOhew](https://www.youtube.com/watch?v=__f3latmOhew)
- Quarto for Academics | Mine Cetinkaya-Rundel: <https://www.youtube.com/watch?v=EbAAmrB0luA&t=112s>

## References

Gorman, Kristen B., Tony D. Williams, and William R. Fraser. 2014. “Ecological Sexual Dimorphism and Environmental Variability Within a Community of Antarctic Penguins (Genus *Pygoscelis*).” Edited by André Chiaradia. *PLoS ONE* 9 (3): e90081. <https://doi.org/10.1371/journal.pone.0090081>.