DRAFT Data in Animal Welfare

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Preface

This is the Data in Animal Welfare free resource from the Animal Welfare Centre at R(D)SVS

1 Data in Animal Welfare

> About this book
>
> This chapter will explain who this book is for and what it will do!

When you work in animal welfare, you will probably encounter data in some form or another, whether it's talking about the number of animals a charity has supported, or trying to get to grips with the prevalence of an animal welfare concern like tail docking. While many people who work in animal welfare have some background in science, and may feel very comfortable working with data, many of us are not!

This freely available textbook is aimed at people who work in animal welfare to help support them to make better use of data in their role. Whether you're trying to understand a report, or communicate your organisation's work to stakeholders, this book can help.

In this book, we'll look over some examples of why its important to understand data, and where you can go wrong when trying to master it. We'll talk about where data can come from and what it can look like, as well as the important steps of cleaning and tidying data. We'll look at data visualisations, and different types of chart, as well as how to understand relationships between data. Finally, we'll explore places where you might be able to use data yourself. This is a freely available resource, with a Creative Commons license, meaning you will never need to pay for these materials, and you are free to adapt and use them yourself (although we'd appreciate it if you told us when you use it!)

But it's also important to say what this book is **not**. We aren't going to teach you how to run complicated statistics, or how to collect your own data and plan experiments. This isn't a course, and we can't offer you any certificates at the end, or quizzes to demonstrate your knowledge. We're also not going to teach you how to use any specific software in this book, instead we're going to concentrate on simple data explanations, with examples drawn from our work in animal welfare.

1.1 I'd like to go further!

Great! We have a range of undergraduate, postgraduate, and professional development courses at the Royal (Dick) School of Veterinary Studies here on our education page: https://vet.ed.ac.uk/education

We also offer free resources such as:

- Our introduction to excel video course
- Our free textbook on using R for veterinary science, R @ R(D)SVS

2 Bad Science, Part 1

When good data goes bad

3 Sources of Data

(including a bit of ethics and AI - and remember the aim is you the animal welfare worker needing to use data, you're not collecting it, data quality and source quality, quantity vs quality)

4 Data Types

NOIR data

Collecting data from animals

5 Tidy Data

6 Bad Science Part 2

Ooooh

7 Visualising data

```
-- Attaching core tidyverse packages ------------------------ tidyverse 2.0.0 --
v dplyr     1.1.4     v readr     2.1.4
v forcats   1.0.0     v stringr   1.5.0
v ggplot2   3.5.1     v tibble    3.2.1
v lubridate 1.9.2     v tidyr     1.3.1
v purrr     1.0.2
-- Conflicts ------------------------------------------ tidyverse_conflicts() --
x dplyr::filter() masks stats::filter()
x dplyr::lag()    masks stats::lag()
i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to becor
```

Good visualisations are important

```
filtered = transpose(data).filter(function(penguin) {
  return bill_length_min < penguin.bill_length_mm &&
         islands.includes(penguin.island);
})
```

```
viewof bill_length_min = Inputs.range(
  [32, 50],
  {value: 35, step: 1, label: "Bill length (min):"}
)
viewof islands = Inputs.checkbox(
  ["Torgersen", "Biscoe", "Dream"],
  { value: ["Torgersen", "Biscoe"],
    label: "Islands:"
  }
)
```

```
Plot.rectY(filtered,
  Plot.binX(
    {y: "count"},
    {x: "body_mass_g", fill: "species", thresholds: 20}
```

```
  ))
  .plot({
    facet: {
      data: filtered,
      x: "sex",
      y: "species",
      marginRight: 80
    },
    marks: [
      Plot.frame(),
    ]
  }
)
```

8 Describing Data

central tendncies, spread, transparency??

9 Data relationships

more extensive data relationships and visualisations that require central tendency

flow charts what chart to choose for what visualisation?

10 Bad Science Part 3

11 Summary

In summary, this book has no content whatsoever.

About

This book was collaboratively written at the Royal (Dick) School of Veterinary Sciences

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CREDIT Statement

CREDIT

JRDM: Conceptualisation, Software, Supervision, Visualisation, Project Administration, Writing (Original Draft), Writing (Review & Editing)

Licenses

Code

You can find the code used to create this book here: https://github.com/jillymackay/DatainAnimalWelfare

Please feel free to use this code to create your own work, or to add any suggestions with a pull request.

References