

# TBD GRM Book

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# Chapter 1

## Introduction

### 1.1 Linear models

### 1.2 Some definitions

Predictor - Explanatory variable

Something that is an estimated quantity will have a hat over it. For example, we might assume that there is some ‘true’ relationship

$$y = \beta_0 + \beta_1 x$$

From our sample data, we use a linear model to make an estimate of  $\beta_0$  and  $\beta_1$ , so our estimate/best guess of this true model relationship is

$$\hat{y} = \hat{\beta}_0 + \hat{\beta}_1 x$$

We of course want our  $\hat{\beta}_0$  and  $\hat{\beta}_1$  to be a ‘good’ and ‘close’ estimate of the unknown quantities  $\beta_0$  and  $\beta_1$ .

### 1.3 Assumptions of linear models

Linear models assume

How can we tell when these assumptions are violated?

- Knowledge of the data.
-



Figure 1.1: put a bird on it

*1.4. WHAT HAPPENS WHEN WE BREAK THE ASSUMPTIONS OF LINEAR MODELS*7

**1.4 What happens when we break the assumptions of linear models**

**1.5 Examples**





## Chapter 2

### GLMs - Kat



## Chapter 3

# Linear Models - Emma



## Chapter 4

# Logistic Regression - Andrew



## Chapter 5

### Poisson GLMs - Leah





## Chapter 6

# LearnR test

Here is an embedded learnR tutorial from a published shiny app.

```
knitr::include_url("https://emilypalmer.shinyapps.io/GRM_LearnR/",  
  height = "600px")
```