Activity feedback

- Do not submit last week's activity.
- Some submissions have errors in the YAML header, causing the PDF to not use the correct template.
- We have **two** activities each week, and you need to submit both in each submission.
- You need to submit both PDFs in the **same** submission.

Mathematical Notation remainder

Summation notation ($\sum$):

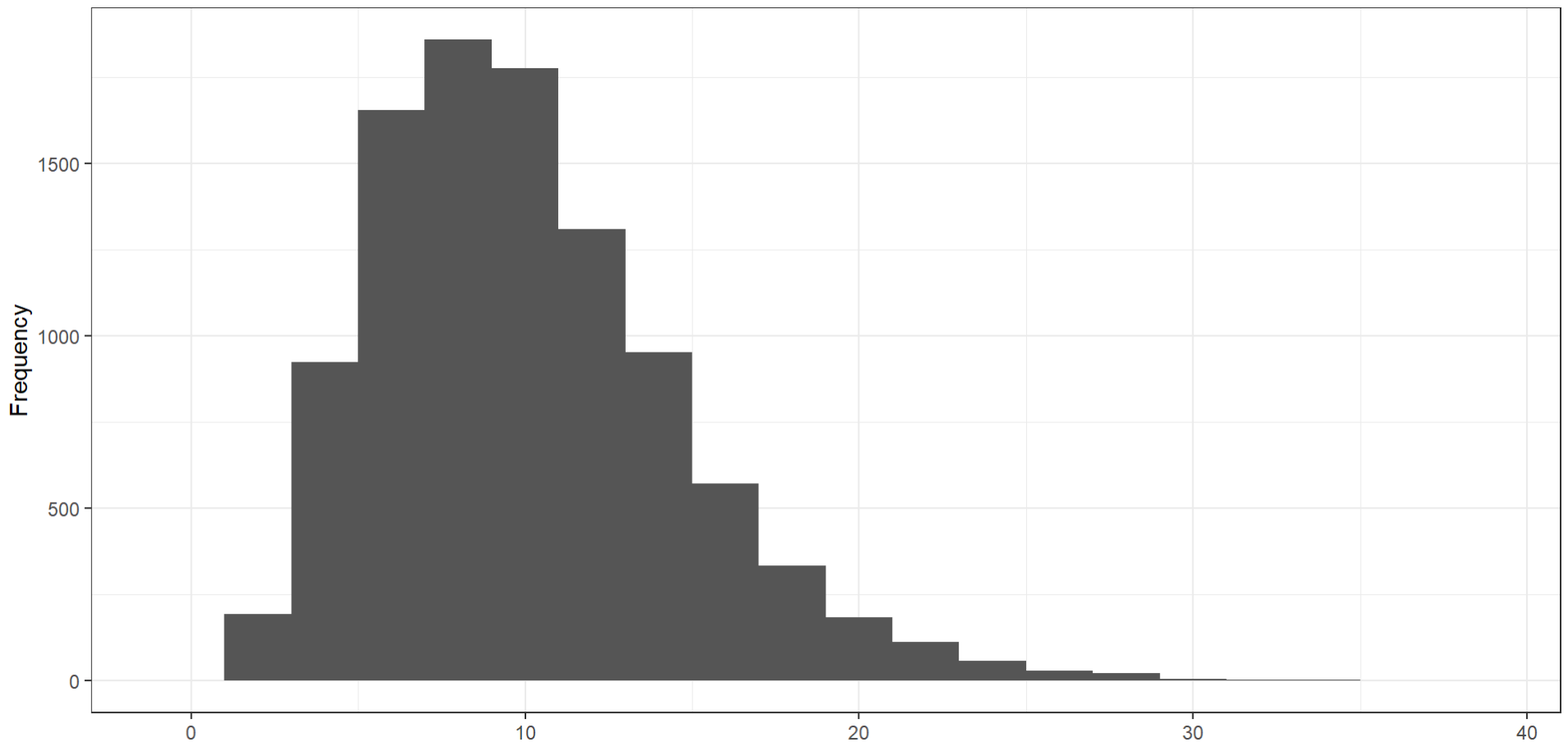
$$\sum_{i=1}^{Q} x_i = x_1 + x_2 + \cdots + x_Q$$

For all notation ($\forall$):

$$x_k = 1 \, \forall k \rightarrow x = 1$$

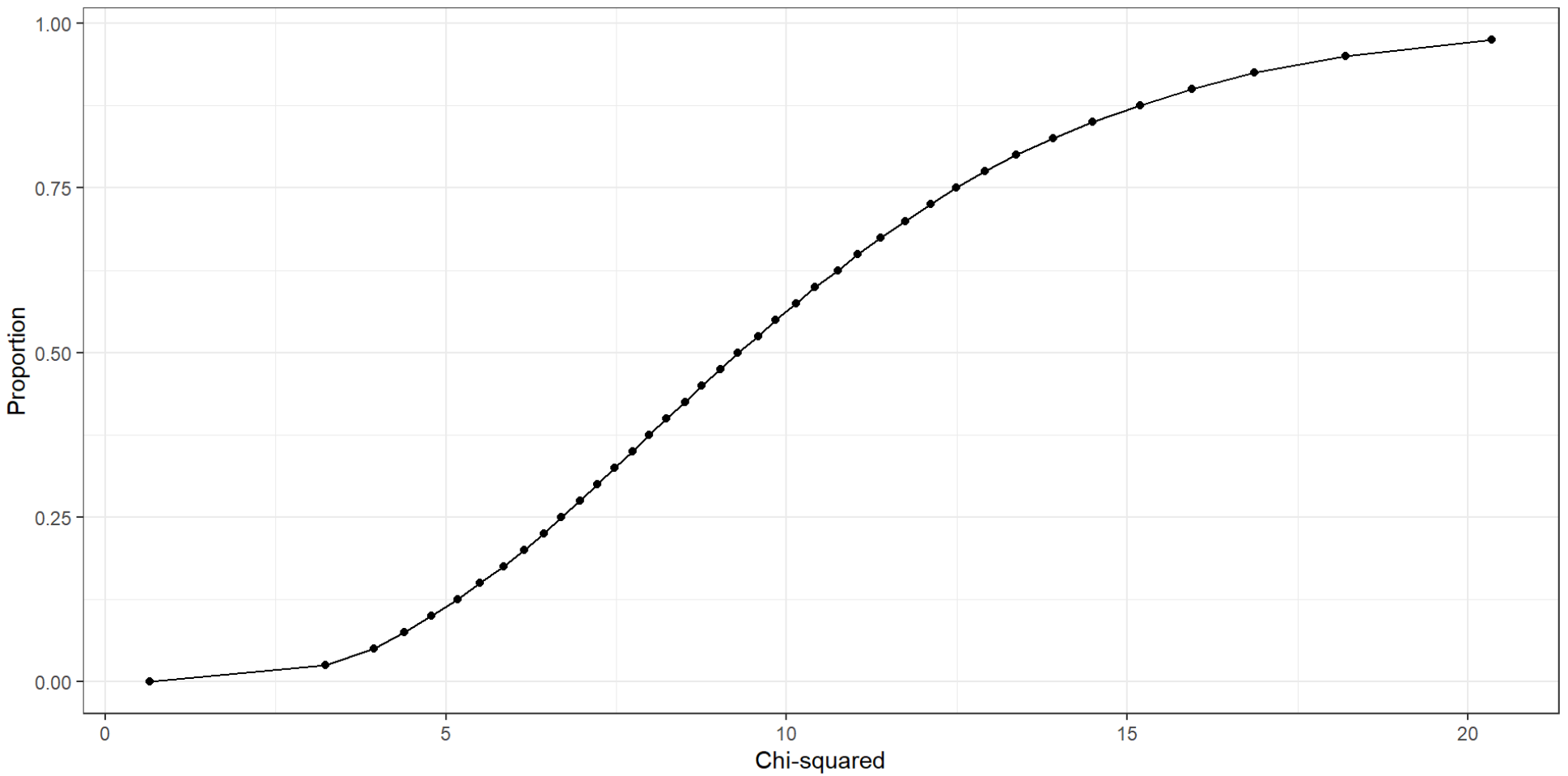
χ^2 distribution

Strictly non-negative, right-skewed, and non-symmetric.



Cumulative distribution function

$$F_X(x) = P(X \leq x)$$



$\hat{G}$-function

$$\hat{G}(r) = \frac{1}{n(\mathbf{x})} \sum_i \mathbf{1}\{d_i \leq r\}$$

The $\hat{G}$ function represents the number of elements in the set of distances up to some threshold r, normalized by the total number of points n in point pattern x.

Packages we use today

Load the following three packages.

```
library(isdas)
library(sf)
library(tidyverse)
library(spatstat)
```

If you have trouble restoring the reproducible environment, you need to manually install the packages first.

```
install.packages("remotes")
remotes::install_github("paezha/isdas")

install.packages("sf")

install.packages("tidyverse")

install.packages("spatstat")
```

Activities for today

- We will work on the following chapter from the textbook:
  - Chapter 12: Activity 5: Point Pattern Analysis II
  - Chapter 14: Activity 6: Point Pattern Analysis III
- The hard deadline is **Friday**, **February 7**.

Reference

- https://www.geo.fu-berlin.de/en/v/soga-r/Advances-statistics/Spatial-Point-Patterns/Analysis-of-Spatial-Point-Patterns/Interactions-in-Point-Pattern-Analysis/index.html