

Statistics

Lecture 13: | Histogram

Prof. Dr. Mostafa Elhosseini

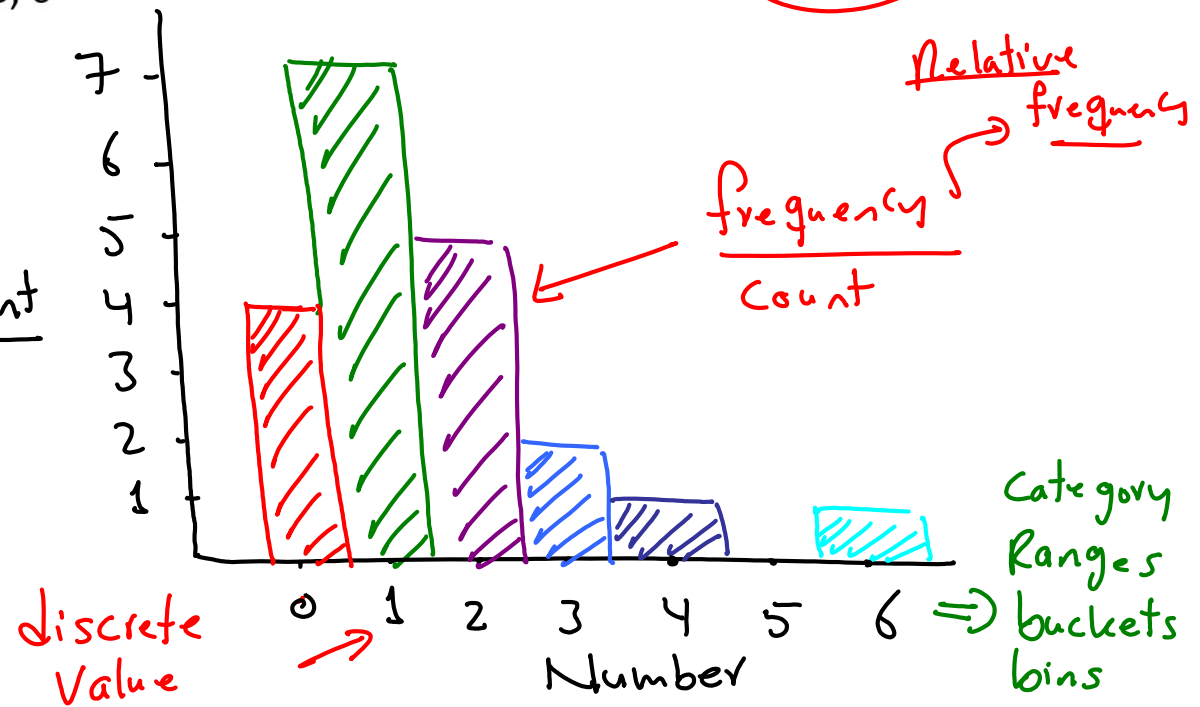
<https://youtube.com/drmelhosseini>

| Histogram for Discrete Data - Example

■ ~~1~~, 4, 2, ~~1~~, ~~0~~, 2, ~~1~~, ~~0~~, ~~1~~, 2, ~~1~~, ~~0~~, ~~0~~, 2, 2, 3, ~~1~~, ~~1~~, 3, 6

Number	frequency	Relative
0	4	$\frac{4}{20}$
1	7	$\frac{7}{20}$
2	5	$\frac{5}{20}$
3	2	$\frac{2}{20}$
4	1	$\frac{1}{20}$
5	0	$\frac{0}{20}$
6	1	$\frac{1}{20}$
	$\frac{20}{20}$	

Count



| Histogram

- Histogram is an accurate graphical representation of the distribution of numerical data
- It is an estimate of the probability distribution of a continuous variable
- It is a kind of bar plot
- Used for visualizing distribution of images

| Histogram for Discrete Data

- A **discrete variable** x almost always results from **counting**, in which case possible values are **0, 1, 2, 3, . . .** or some **subset of these integers**
- The **frequency** of any particular x value is the **number of times that value occurs in the data set**.
- The **relative frequency** of a value is the **fraction or proportion** of times the value occurs

| Histogram for Discrete Data

- First, **determine the frequency and relative frequency** of each x value.
- Then **mark possible x values on a horizontal scale**.
- Above each value, **draw a rectangle** whose **height** is the **relative frequency** (or alternatively, the **frequency**) of that value.