Measures of Frequency

Frequency Distribution occurs everywhere in our lives. Meteorological department, Data Scientists, Civil Engineers almost all the professions use frequency distributions in their professions. These distributions allow us to get insights from any data, see the trends, and predict the next values or the direction in which the data will go. There are two types of frequency distributions -grouped and ungrouped. Their usage depends on the data on which we are working. Their analysis is a really important part of probability and statistics. Let's see these concepts in detail.

Frequency Distributions

Frequency distributions tell us how frequencies are distributed over the values. That is how many values lie between different intervals. They give us an idea about the range where most of the values fall and the ranges where values are scarce.

A frequency distribution is an overview of all values of some variable and the number of times they occur.

Frequency distributions are of types:

- **Grouped Frequency Distributions**- Values are divided between different intervals and then their frequencies are counted.
- **Un-Grouped Frequency Distributions**- All distinct values of the variable are mentioned and their frequencies are counted.

Question: Let's say we have data for the goals scored by a team in 10 different matches.

1, 0, 0, 3, 2, 0, 2, 3, 1, 1

Draw a frequency table to represent this data.

Solution: Since there are fewer distinct values. We don't have to group the data. We can just count the distinct values and their frequency.

Number of Goals	Frequency
0	3
1	3
2	2
3	2
Total	10

This frequency table can also be represented in the form of a bar graph.

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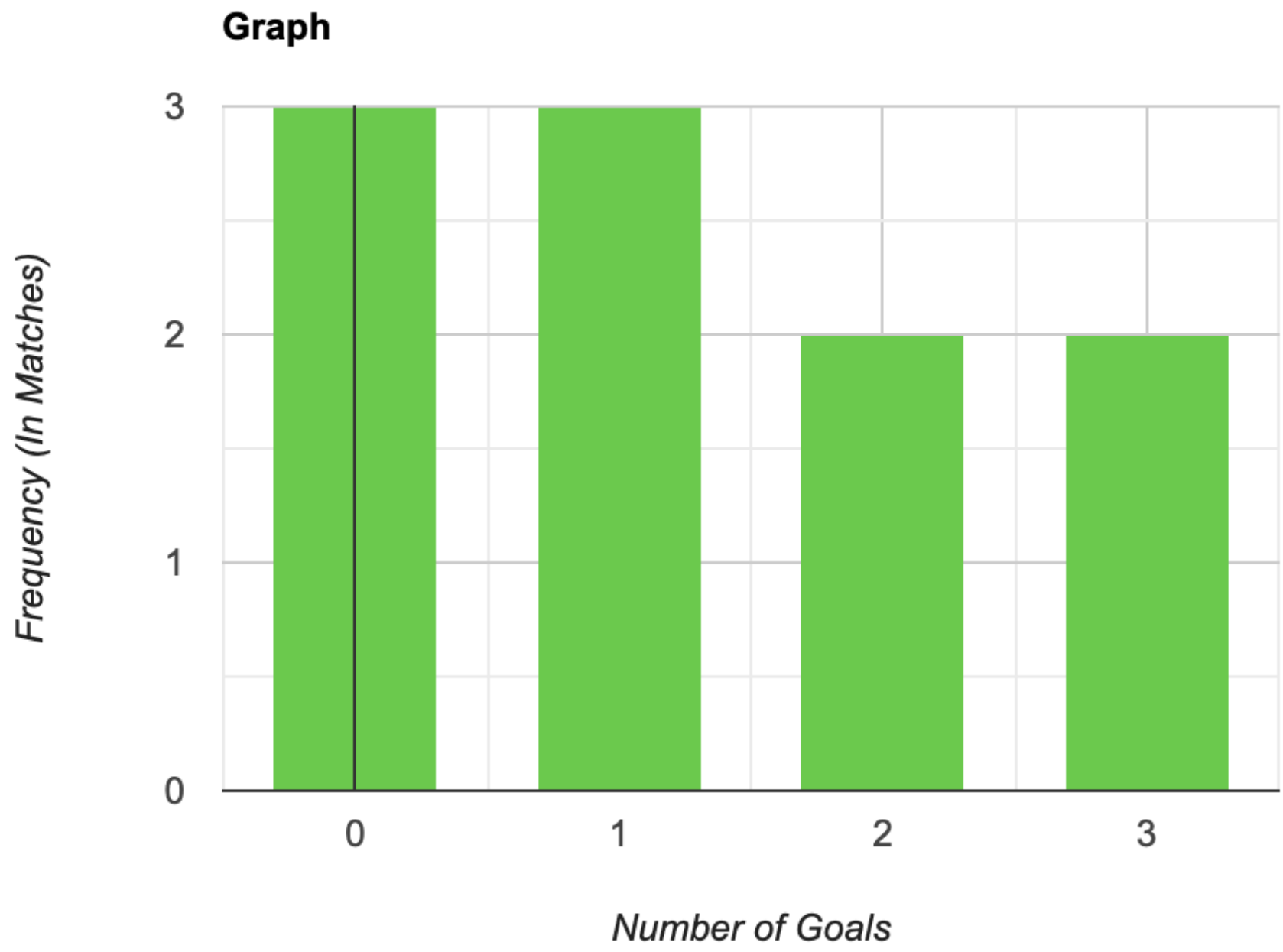
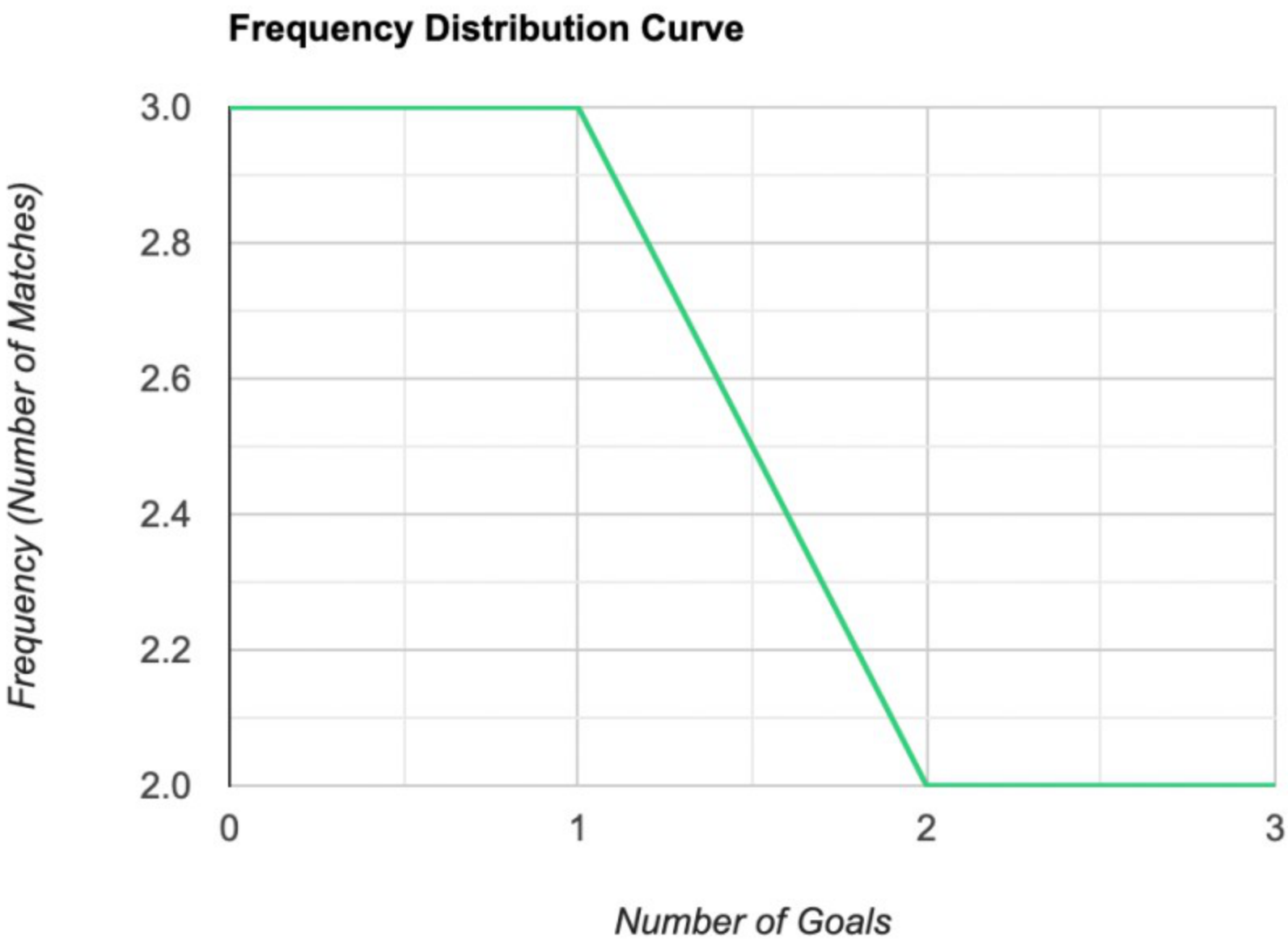


A frequency distribution can also be represented by a line curve. The figure given below represents the line curve for the above problem.



Similarly, if there are a lot of distinct values, then we can group them and make grouped frequency distributions just like the previous case.

Cumulative Frequency Distribution

Cumulative frequency is defined as the sum of all the frequencies in the previous values or intervals up to the current

one. The frequency distributions which represent the frequency distributions using cumulative frequencies are called cumulative frequency distributions. There are two types of cumulative frequency distributions:

Less than type: We sum all the frequencies before the current interval.
More than type: We sum all the frequencies after the current interval.
Let's see how to represent a cumulative frequency distribution through an example,

Question 1: The table below gives the values of runs scored by Virat Kohli in last 25 T-20 matches. Represent the data in the form of less than type cumulative frequency distribution:

45	34	50	75	22
56	63	70	49	33
0	8	14	39	86
92	88	70	56	50
57	45	42	12	39

Solution:

Since there are a lot of distinct values, we'll express this in the form of grouped distributions with intervals like 0-10, 10-20 and so. First let's represent the data in the form of grouped frequency distribution.

Runs	Frequency
0-10	2
10-20	2
20-30	1
30-40	4
40-50	4
50-60	5
60-70	1
70-80	2
80-90	2
90-100	1

Now we will convert this frequency distribution into cumulative frequency distribution by summing up the values of the current interval and all the previous intervals.

Runs	Frequency
0-10	2
10-20	4
20-30	5
30-40	9
40-50	13
50-60	18
60-70	19
70-80	21
80-90	23
90-100	24

This table represents the cumulative frequency distribution.