Descriptive Statistics and Diagrams

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Part I

Descriptive Statistics

OUTLINE

01 Why do we need to learn this?

02 What are these?

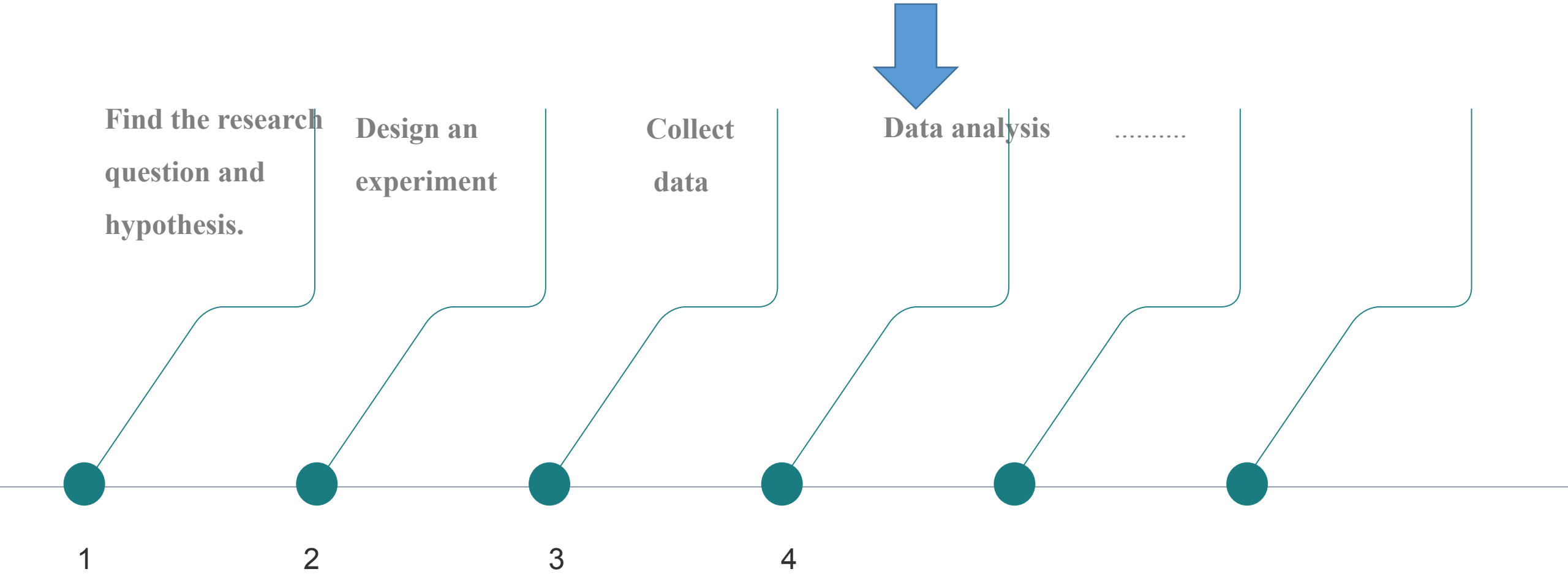
03 How to do it?

0

- Background review:
- what did we learn so far?

Research process

We are here!



Why do we need to learn this?

Statistics

Descriptive Statistics

Presenting, organizing and summarizing data

Inferential Statistics

Run the test and get the conclusion.

What could we do with prescriptive statistics?

What could we do with prescriptive statistics?

01 Summarize, describe, and characterizer the sample.

02 Determine if the sample is normally distributed

03 Determine if the sample could be compared to the larger population.

04 .....

2

What are we trying to describe by using descriptive statistics?

What are they?

Descriptive Statistics

Central Tendency

- Mean
- Median
- Mode

Variability

- Range
- Variance
- Standard Deviation

Skewness

Kurtosis

Shape

3

How to do it?

- Mean (Average)
- Median (Midpoint)
- Mode (Most frequently occurring number)

- Range (the difference between largest and smallest variable)
- Variance(how far the numbers are spread out)
- Standard Deviation (how much variation exists from the mean)

Sample A: 5 6 7 8 9 11 12 13 14 15

Sample B: 0 2 4 6 8 12 14 16 18 20

Mean(A) =10 Median(A) =10

Mean(B) =10 Median(B) =10

Sample A: 5 6 7 8 9 11 12 13 14 15

Sample B: 0 2 4 6 8 12 14 16 18 20

Variance(A) =12.222 Variance(B) =48.888
Standard(A) =3.496 Standard(B) =6.992

Sample A

10

Sample B

10

To what kind of data could we apply all this descriptive statistics method to?

What about nominal data? How to describe it?

Frequency

Absolute frequence can be defined as the number of occurrences of a phenomenon.

$$\text{relative frequency} = \frac{\text{absolute frequency}}{\text{total frequency}}$$

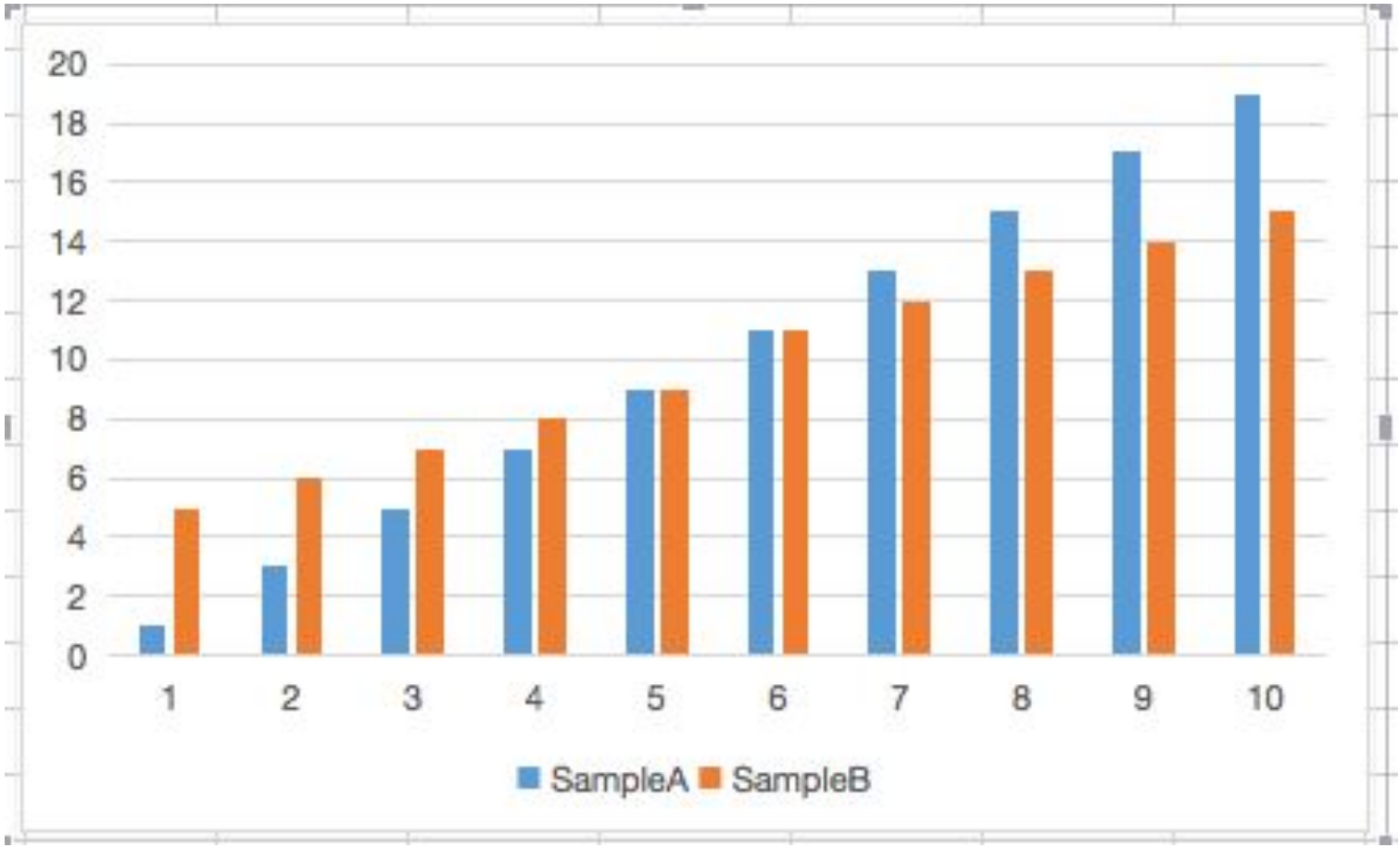
Sample : 1 2 3 4 1 1 2 3 4 3

Item	Absolute Frequency	Relative frequency
1	3	3/10=0.3
2	2	2/10=0.2
3	3	3/10=0.3
4	2	2/10=0.2

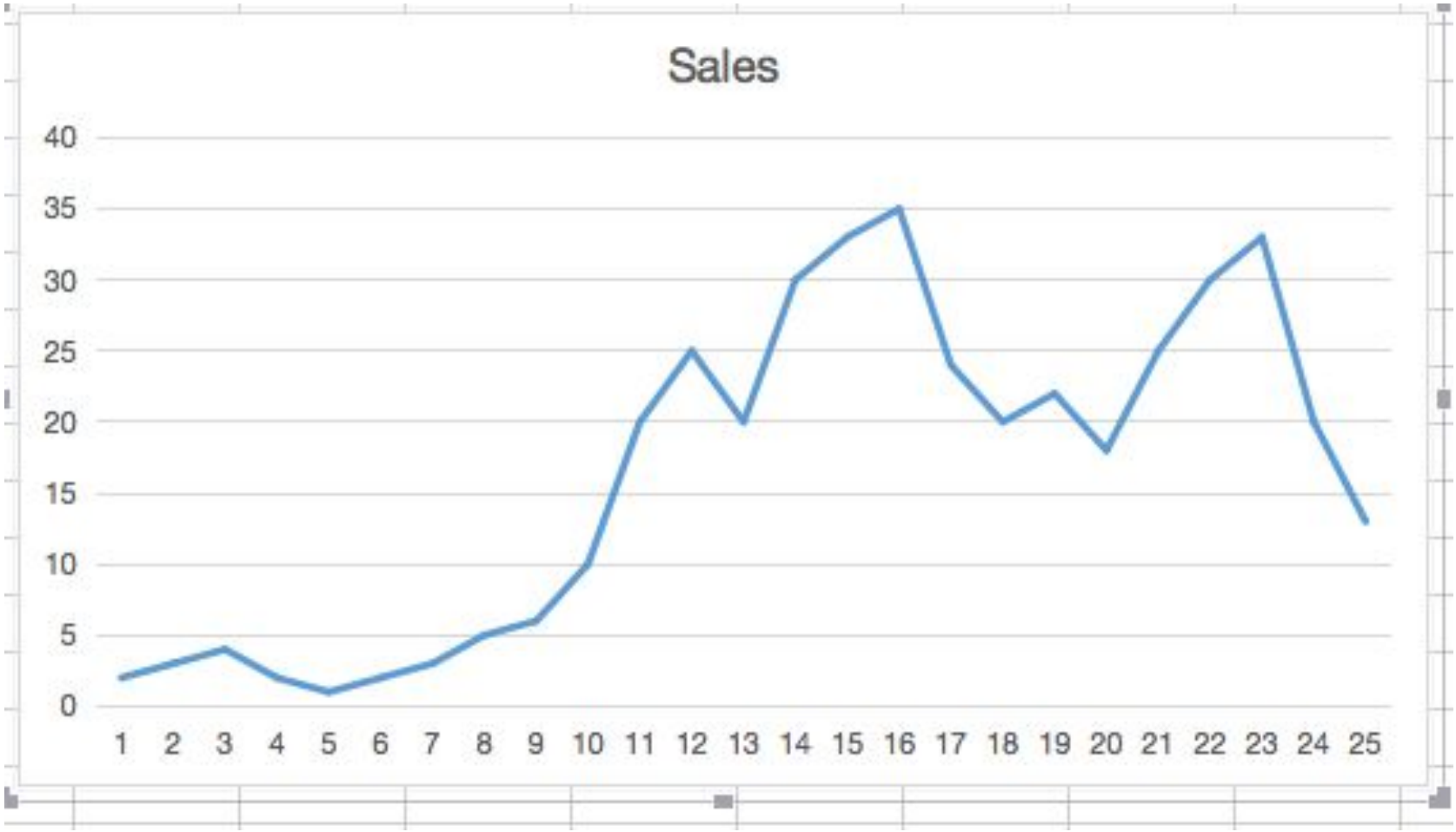
Part II

Diagrams

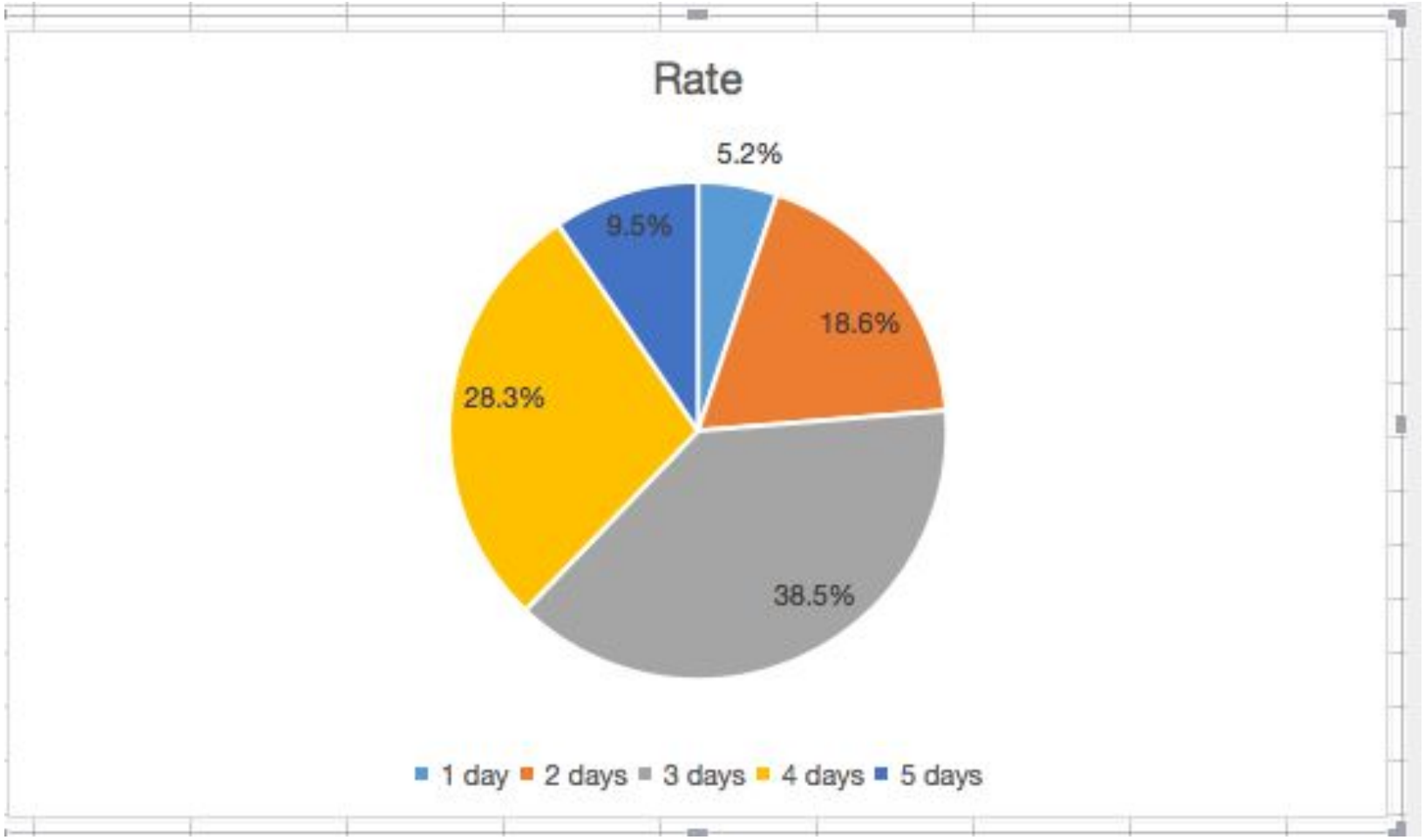
Bar Graphs



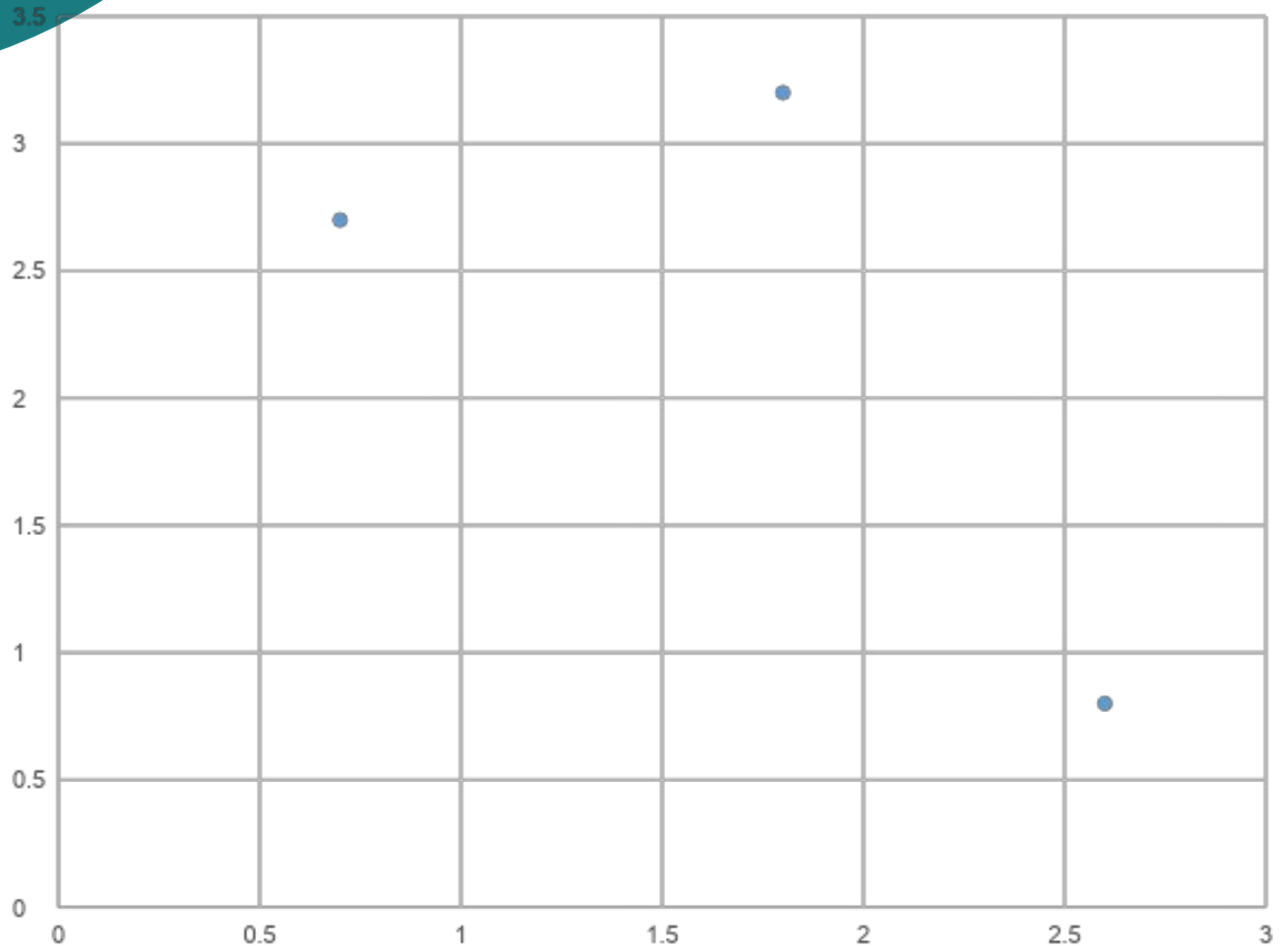
Time-Series Graphs



Pie Graphs

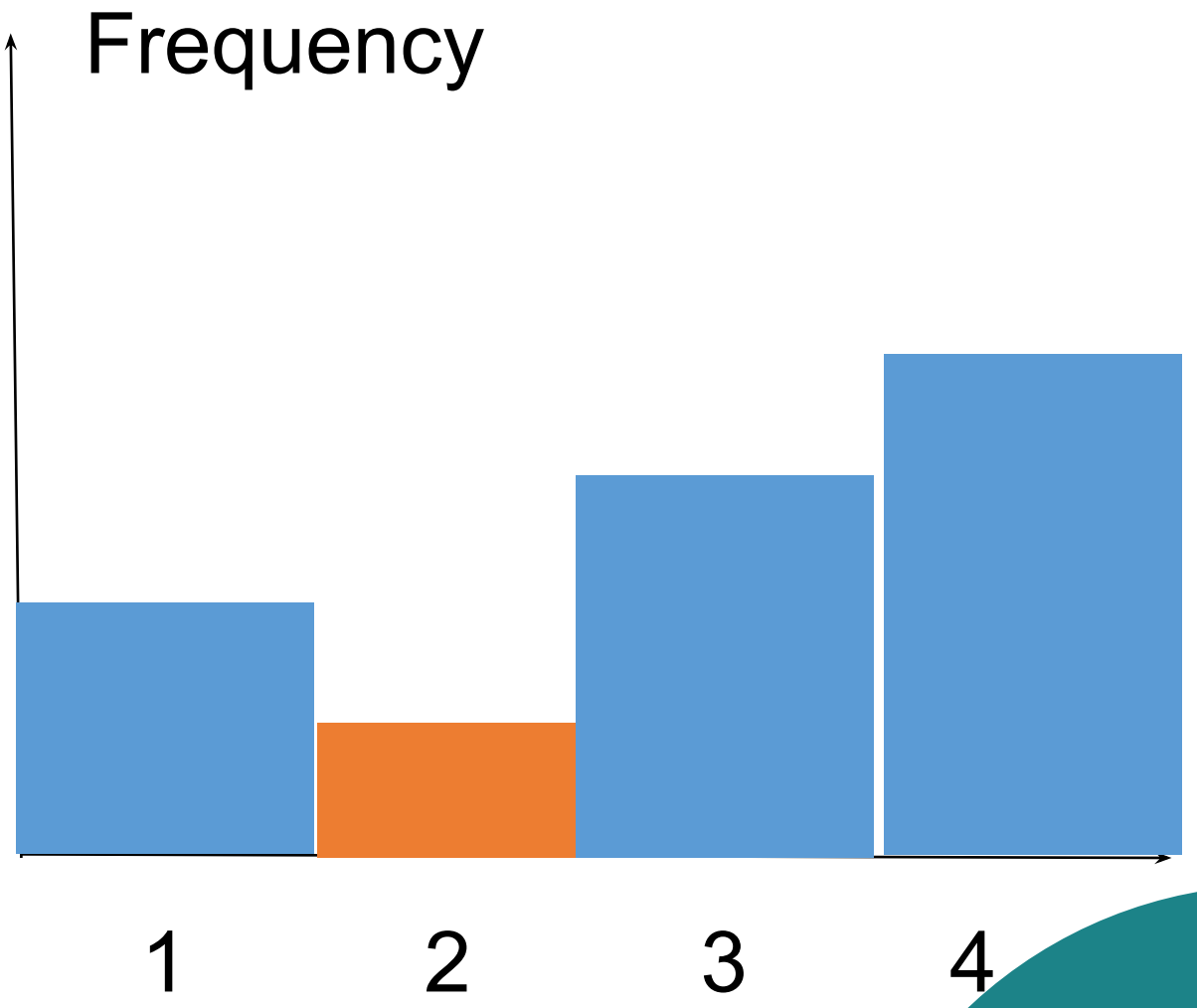


Scatterplots



Histogram

item	frequency
1	2
2	1
3	3
4	4



References

DCN, T. J. (2013, June 13). Introduction to Descriptive Statistics. Retrieved November 20, 2019, from https://www.youtube.com/watch?v=QoQbR4lVLrs.

Taylor, C. (2019, August 1). 7 Graphs Commonly Used in Statistics. Retrieved November 20, 2019, from https://www.thoughtco.com/frequently-used-statistics-graphs-4158380.

THANKS

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