

PathStone Group



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Histogram Chart

Agenda

1. Histogram Chart: What is it ?
2. Histogram Chart purpose and benefits
3. The Frequency Chart
4. The Histogram
5. Takeaways



Introduction

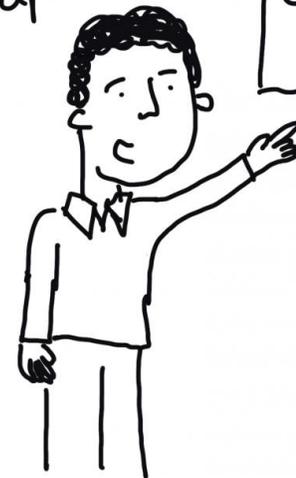
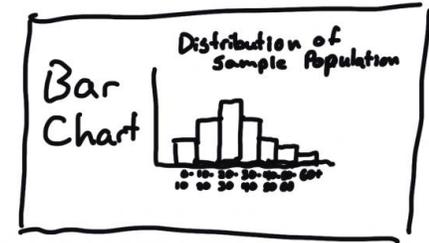
What is it ?

The frequency chart and histogram are pictures of variation.

The frequency chart **displays the variation in a set of count data.**

The data collected from the products/services variation is the **"Voice of the Process."**

As you can see from this bar graph...



That's a Histogram you dummy.



freshspectrum

Introduction

Purpose and Benefits

1. It shows if there is a need of improvement. If the average number of errors is too high, or if the pattern shows some unusual shape, there may be a need to improve the process.
2. Histograms may be prepared for various strata of the process. Different machines, methods, personnel, plants, or departments may be examined.
3. Before and after frequency charts will show the effects of changes made to the process.

Histogram benefits

Patterns that provide clues to certain types of problems

Whether we can apply certain **statistical tests**

Whether variability is within **specification limits**

Whether the process is **capable** or not

Whether there is a **shift** in the process

Histogram

The Frequency Chart



Histogram

The Frequency Chart



COLLECT THE COUNT DATA

At least 25 - 30 data should be available, preferably closer to 50 data.

Confirm that the events recorded are coming from approximately the same area of opportunity.



# Errors	Tally	Frequency
1		13
2		22
3		25
4		18
5		8
6		4
7		2
8		2

Histogram

The Frequency Chart



DETERMINE RANGE OF EVENTS

Record the smallest number to the highest number. Develop a tally sheet to record the number of times each value appears.



# Errors	Tally	Frequency
1		13
2		22
3		25
4		18
5		8
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7		2
8		2

Histogram

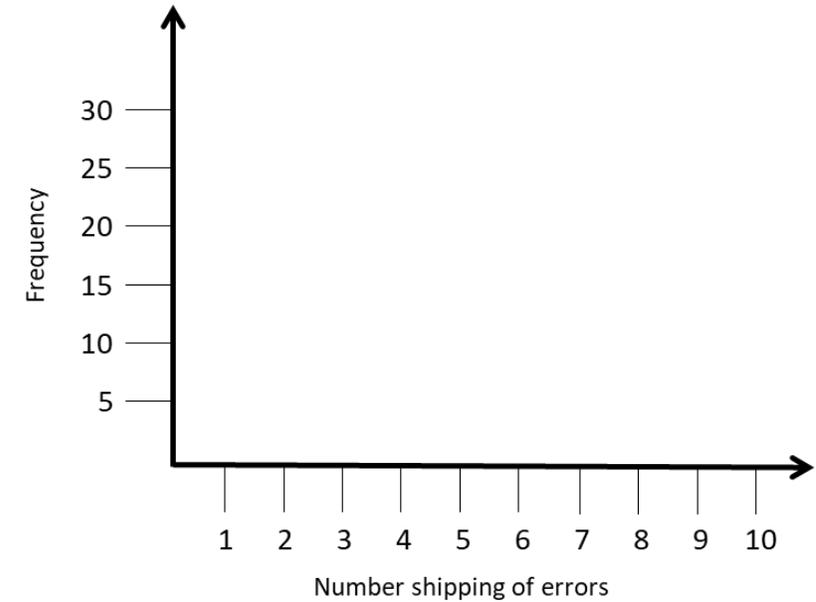
The Frequency Chart



DRAW HORIZONTAL AND VERTICAL AXIS

Label the horizontal axis with the values, for example, the number of errors, and draw the vertical axis with a convenient scale to display the frequencies.

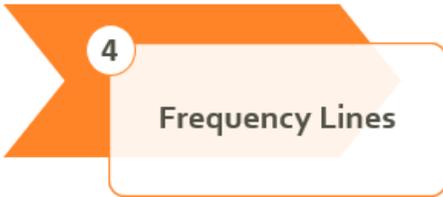
FREQUENCY CHART: Daily shipping errors



# Errors	Frequency	# Errors x Frequency
1	13	1 x 13 = 13
2	22	2 x 22 = 44
3	25	3 x 25 = 75
4	18	4 x 18 = 72
5	8	5 x 8 = 40
6	4	6 x 4 = 24
7	2	7 x 2 = 14
8	2	8 x 2 = 16
Totals	94	298
Average = 298/94 = 3.2 errors/day		

Histogram

The Frequency Chart

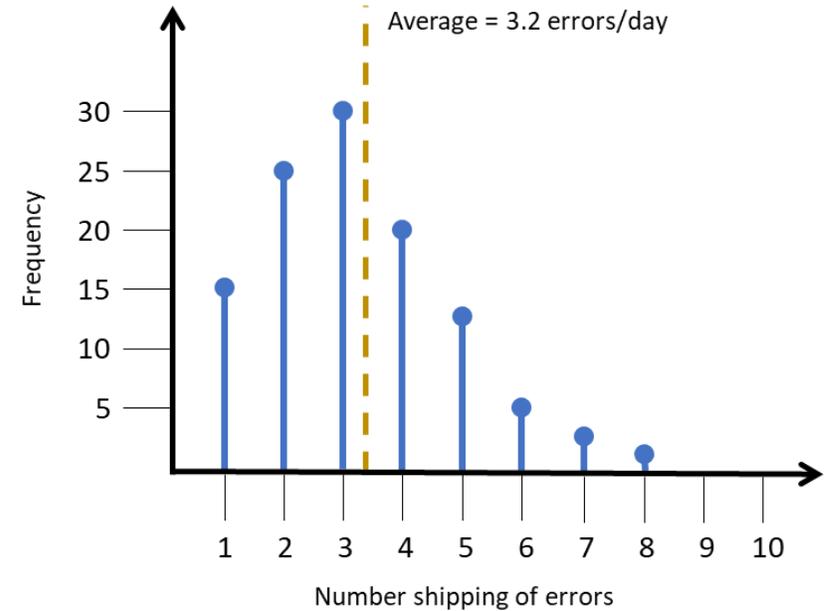


DRAW FREQUENCY LINES

For each value, draw a vertical line from the horizontal axis to the frequency value.

Calculate the average number of events.

FREQUENCY CHART: Daily shipping errors



# Errors	Frequency	# Errors x Frequency
1	13	1 x 13 = 13
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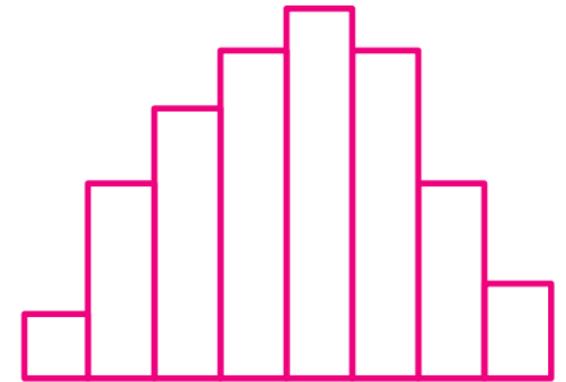
Histogram

The Histogram

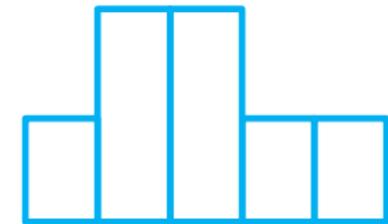
The histogram helps us to **display the variation** in a set of measurement data.

Histograms are mainly used to **explore data as well as to present the data** in an **easy** and **understandable** manner. We often use them as the first step to determine the underlying probability distribution of a data set or a sample.

They allow to assess visually the shape of the distribution, the central tendency, the amount of variation in the data, as well as gaps, outliers, or unusual data points.



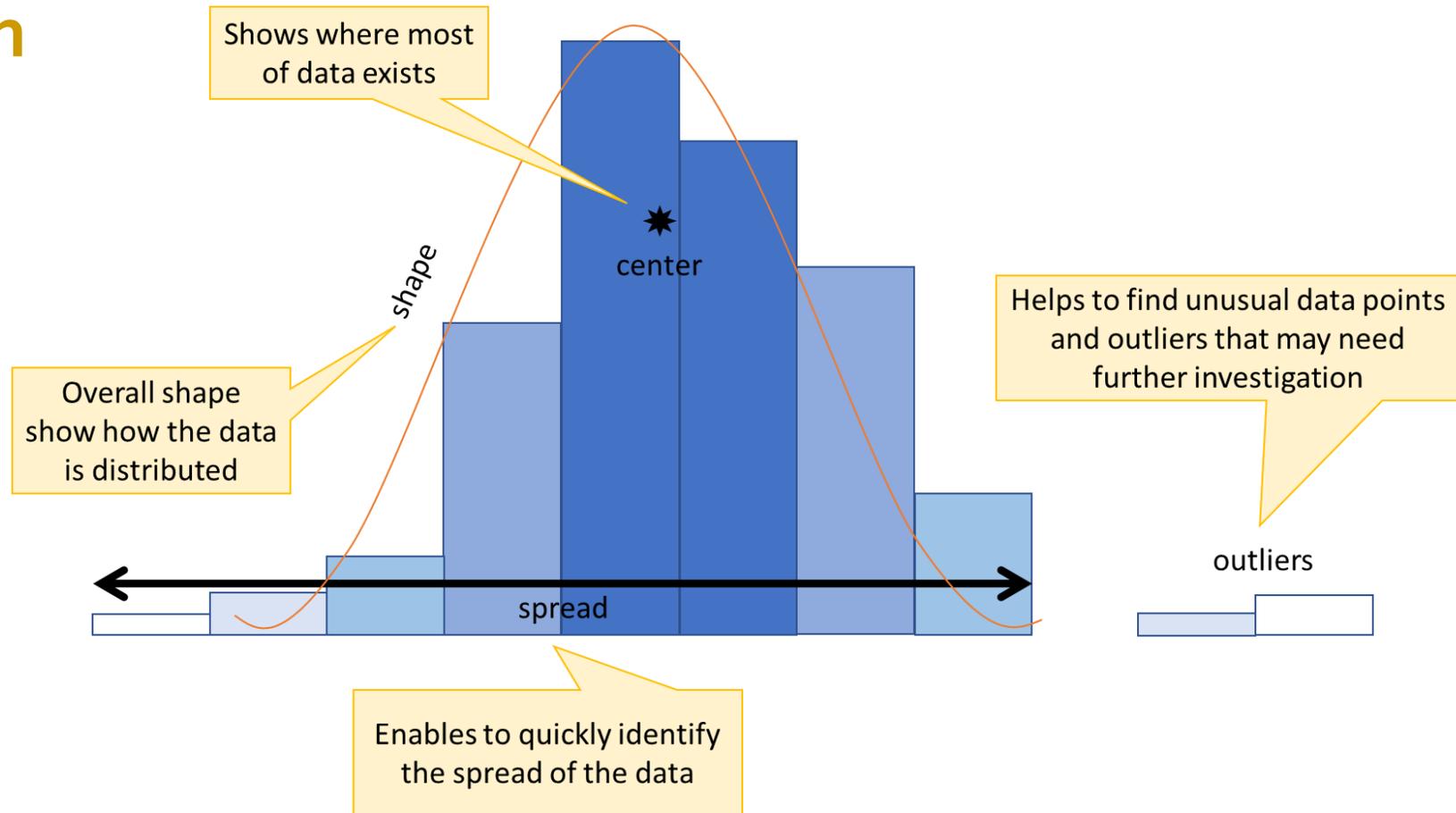
N = 40



N = 14

Histogram

The Histogram



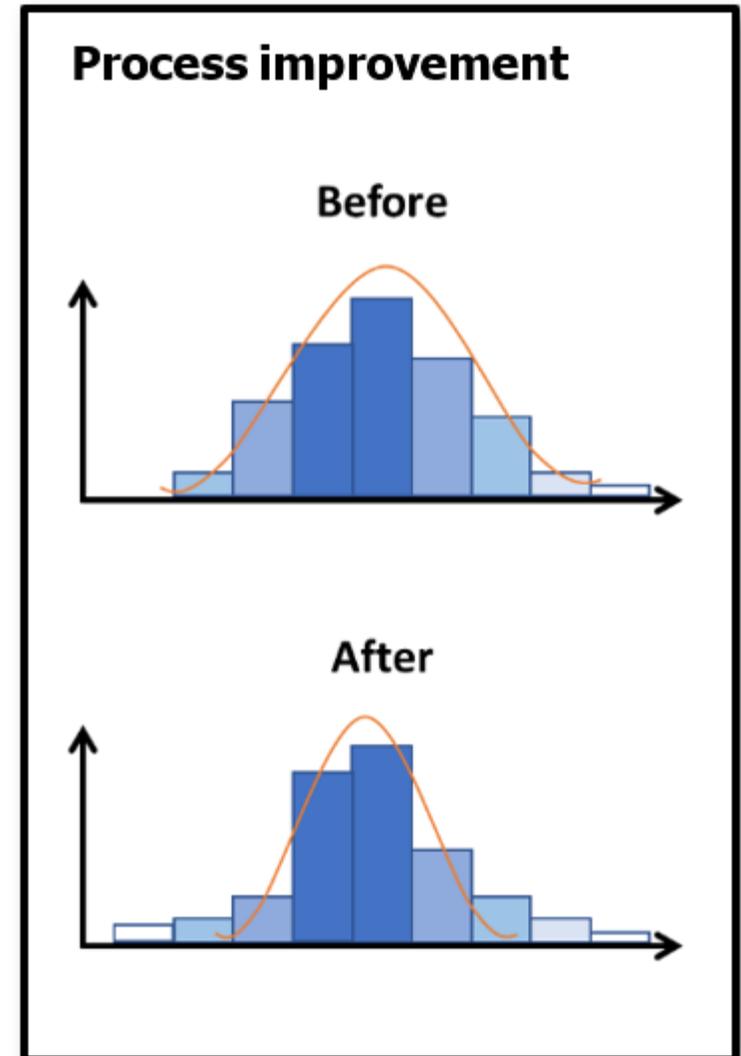
Histogram

The Histogram

The histogram's construction is complicated, because of two important issues that relate to getting the best picture of the data:

- a) Applying the "right" number of cells to the data, and
- b) Ensuring that the data falls into the cells "appropriately."

Is recommended the use of template to save time and get the more relevant plot of the data.



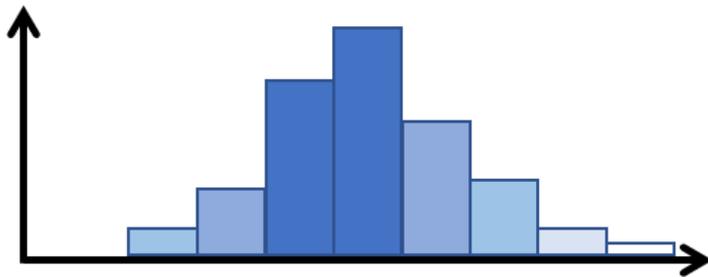
Histogram

Shapes that “appear in nature,”
depending on the type of process
that is at work.

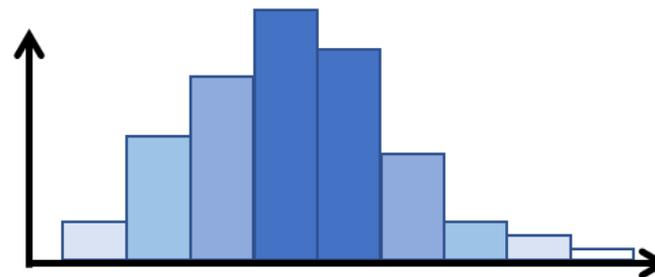
The Histogram

Shapes for clues

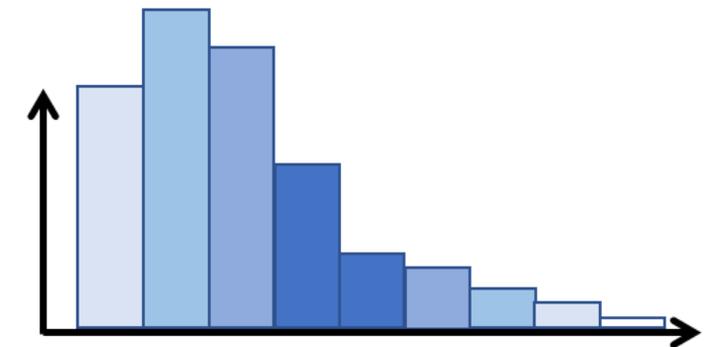
Symmetrical



Skewed



Extreme Skewed

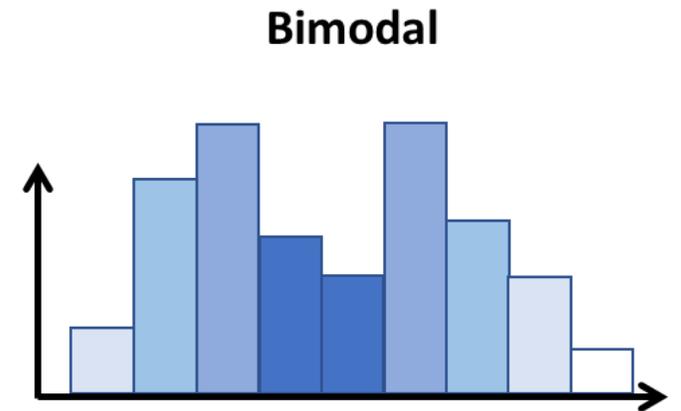
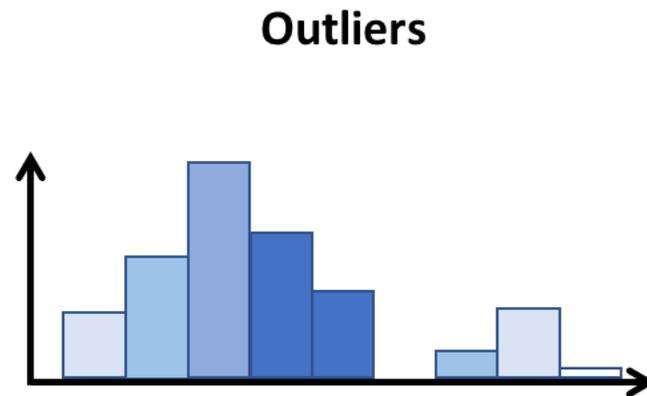
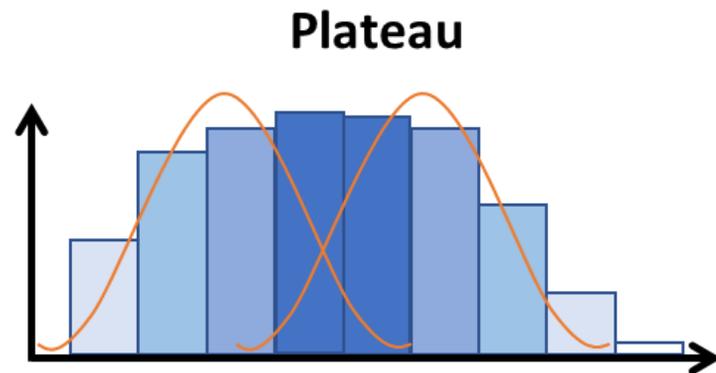


Histogram

Shapes that show indication of something odd in either the data or the process.

The Histogram

Shapes for clues

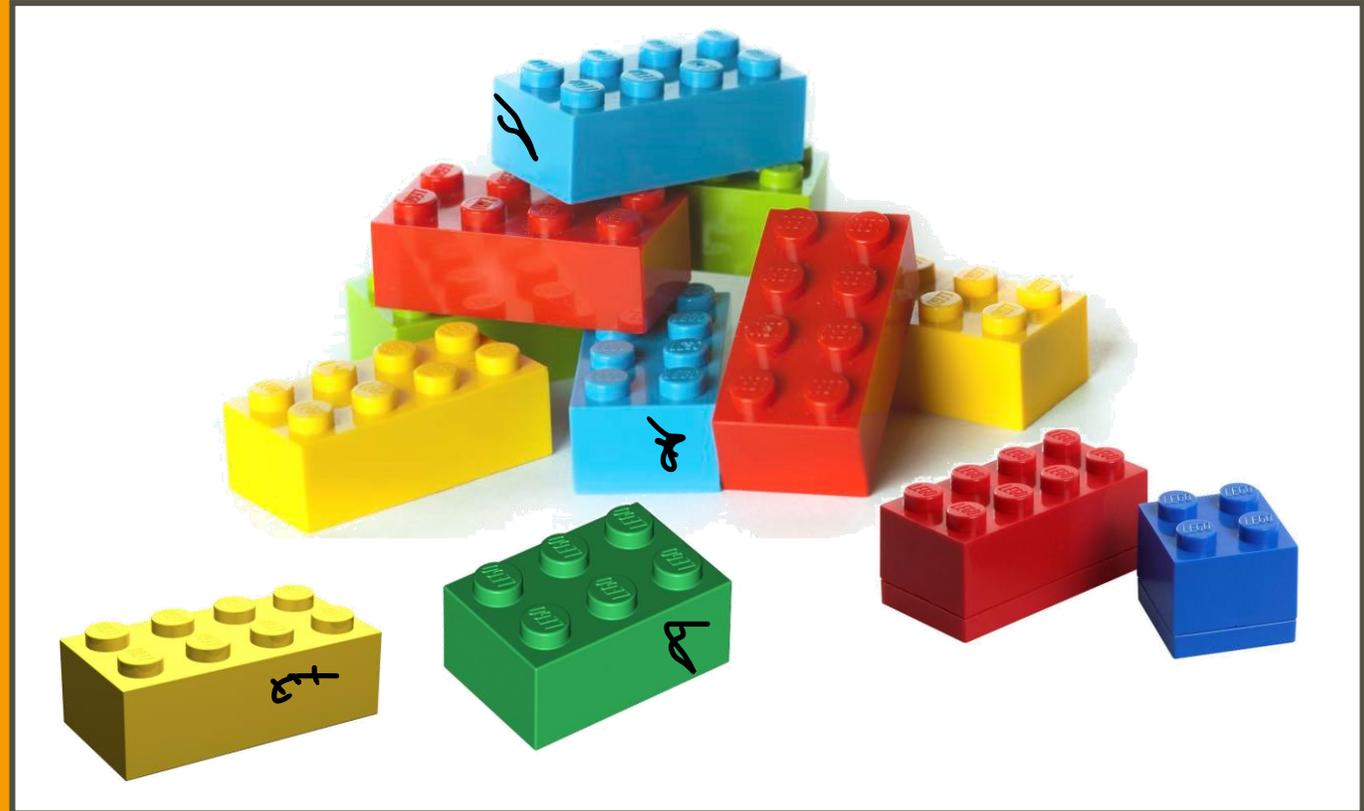


Defective Bricks

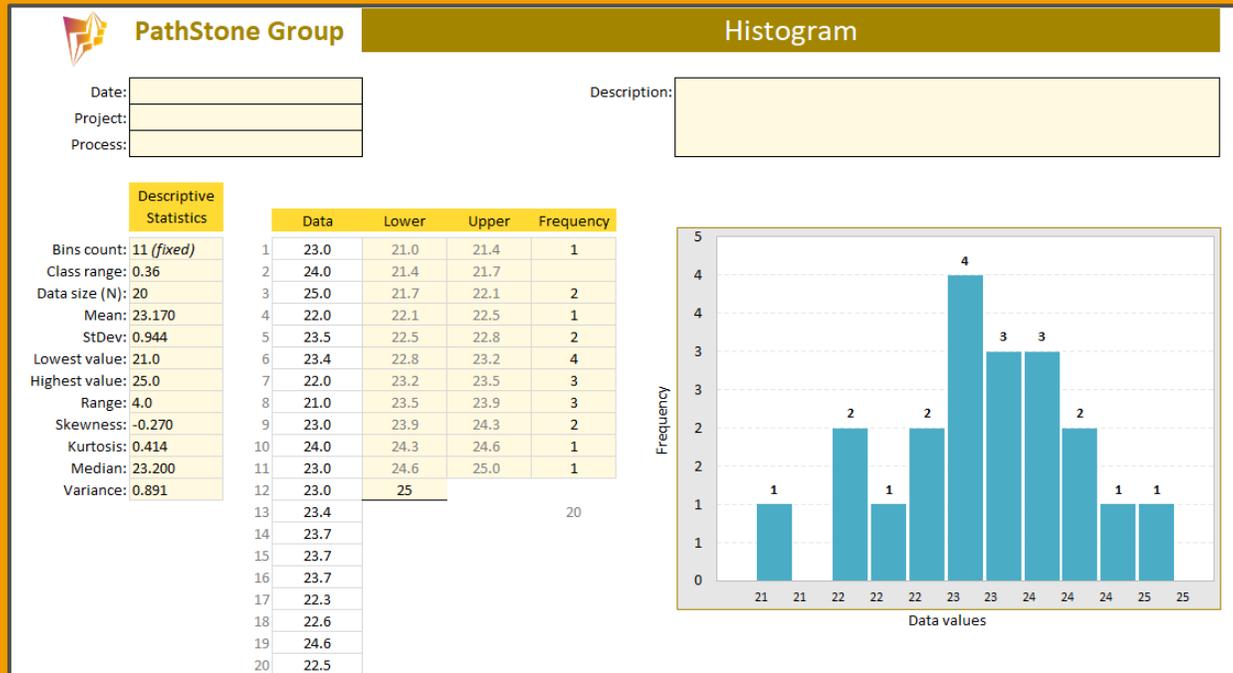
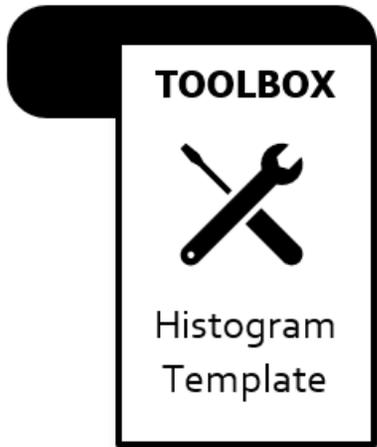
LEARNING HUB



Defective bricks production histogram



Histogram Template



Takeaways

- Histograms are frequently used in **Capability Studies**.
- The graphs are a good **visual tool** to show the **Before** and **After** a process improvement
- Histograms are particularly friendly for the **service** (non-manufacturing) operations.
- There is no need to learn how to construct the ranges, blocks and graph, **use a template to save time**.
- The Histograms provide also **valuable statistics** that help us understand the process.



Thank You



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Histogram Chart

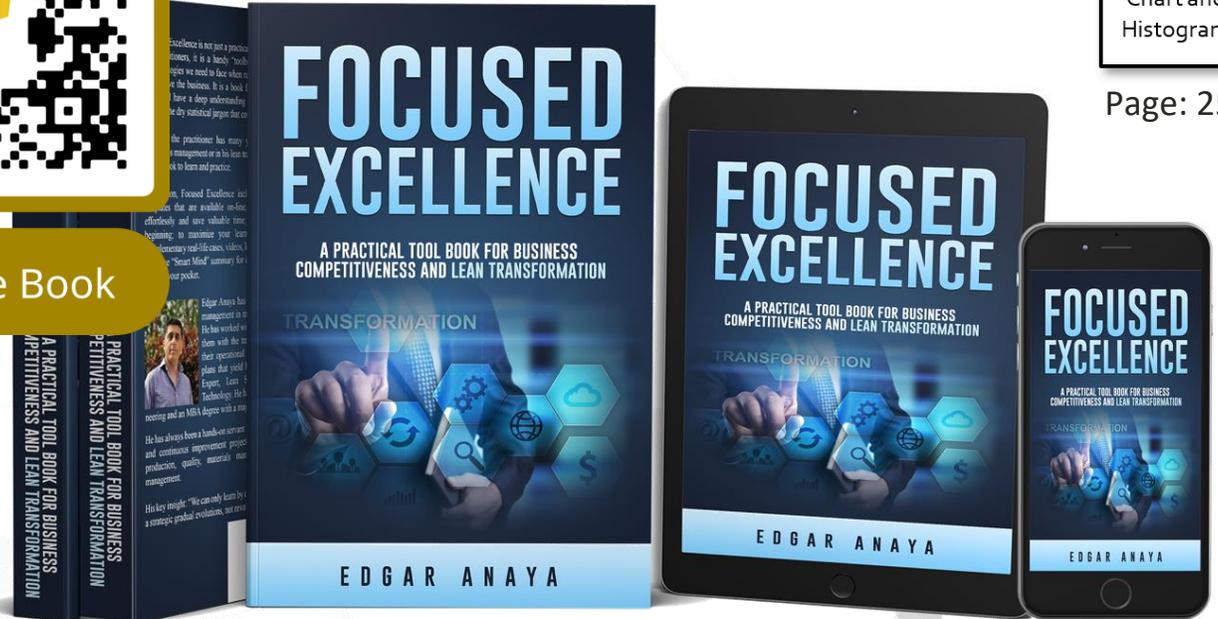
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TOPIC

Frequency Chart and Histogram

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by Edgar Anaya
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Lean Transformation**