Lean Poster Series #16
Pareto Chart

Good e-Learning

What is a Pareto Chart?

A Pareto chart, named after the Italian economist Vilfredo Pareto, is a type of chart that contains both bars and a line graph, where individual values are represented in descending order by bars, and the cumulative total is represented by the line. Its purpose is to focus efforts on the problems that offer the greatest potential for improvement by showing their relative frequency or size in a descending bar graph.

Key Concepts in Pull System

• Helps a team to focus on the causes that will have the greatest impact if solved

• Based on the proven Pareto principle: 20% of the sources cause 80% of the problem

• Displays relative importance of problems in a simple, quickly interpreted, visual format

• Helps prevent "shifting the problem" where the solution removes some causes but worsens others

• Measures progress in a highly visible format that provides incentive for further improvement

Creating a Pareto Chart

Step 1| Decide which problem you want to explore.

Step 2| Choose the causes of problems that will be monitored.

Step 3| Choose the unit of measure such as frequency or cost.

Step 4| Choose the time period for the study.

Step 5| Gather data on each problem category (real time or historical).

Step 6| Tabulate the scores. Determine the total number of problems and / or total impact. Also determine the counts or impact for each category.

• If there are a lot of small or infrequent problems , consider adding them together in an 'other' category.

Step 7| Sort the problems by frequency or impact.

Step 8| Draw a vertical axis and divide into increments equal to the total number you observed.

• In the example here, the total number of problems was 146, so the vertical axis on the left goes to 146.

• People often mistakenly make the vertical axis only as tall as the tallest bar, which might overemphasize the importance of the tall bars and lead to false conclusions.

Step 9| Draw bars for each category, starting with the largest and working down.

• The 'other' category always goes list even if it is not the shortest bar.

Step 10| Add in the cumulative percentage line.

Defect Category	# of defects	Cumulative Percentage
Category 1	45	31%
Category 2	34	54%
Category 3	22	69%
Category 4	11	77%
Category 5	8	82%
Category 6	7	87%
Category 7	6	91%
Category 8	5	95%
Category 9	5	98%
All Others	3	100%
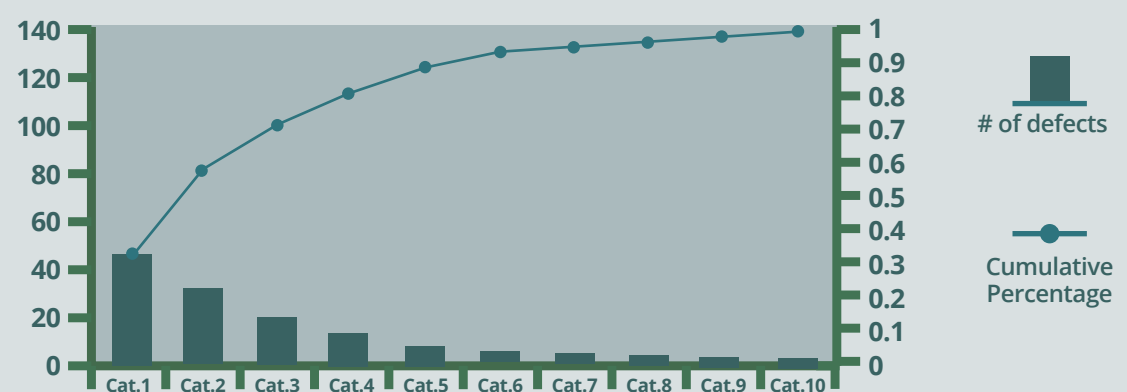
Analyzing a Pareto Chart

Clear Pareto Effect

This pattern shows that just a few categories of the problem account for the most occurrences of impact. Focus your improvement efforts on those categories.
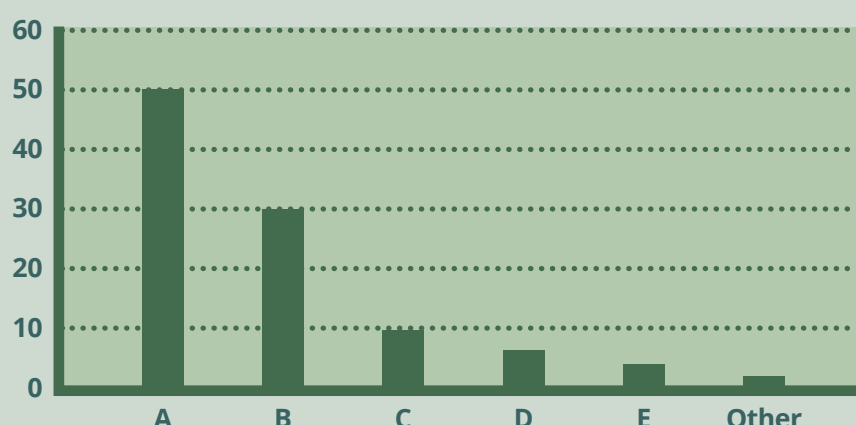
No Pareto Effect

This patterns shows that no cause you've identified is more important than the others. If working with counts you could convert to an 'impact' Pareto by calculating impacts such as cost or time to fix. Alternatively revisit the fishbone diagram or list of potential causes.

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