

Pareto Diagram

The Pareto Diagram

The Pareto diagram is now used all over the world, especially in manufacturing. It is also referred to as the 80 / 20 rule.

Vilfredo Pareto

Pareto was an Italian civil engineer that is known for his study of income distribution. His discovery that 20% of the people earned 80% of the income has been shown to have corollaries in many other fields.

Joseph Juran

Juran was first to point out that Pareto's discovery applied universally. He called it the Pareto Principle, or "The useful few, and trivial many".

Kaoru Ishikawa

Ishikawa may be the first to render the principle as a chart including a histogram and line chart showing the cumulative percentage of categories.

The Data

The data is collected and put in order from largest to smallest. Here you see a description of automotive defects.

With a simple spreadsheet we can convert these numbers to percentages.

Automotive Defects		
Item	Qty 100s	Cumulative Percent
Bad Bearings	22.7	45.77%
Windshield	11.25	68.45%
Faulty Seat	7	82.56%
Engine Block	3.9	90.42%
Turn Signals	3.1	96.67%
Scuffed Tire	1.55	99.80%
Emissions Fail	0.1	100.00%
Total	49.6	

The Diagram

This is two graphs in one. The histogram shows the number of defects and the line chart shows their occurrence as a cumulative percent.

The histogram clearly shows that bad bearings are the largest problem.

The second point in the line reveals that bearings and windshield defects account for 70% of the defects.

Generally we should focus on reducing those major contributors first, and then reanalyze our results.

