

Pareto Chart

The Pareto Chart is a combined bar chart and line chart that arranges data in descending order according to magnitude or influence. It is based upon the so-called “80/20 rule” (also known as the Pareto principle). An example of the 80/20 rule is “80% of the wealth is held by 20% of the population.”

In process work, it is used to show the most frequent to least frequent item (bar) and the accumulating percent of those items (line). Pareto charts can be created in Excel.

When do you use it?

- When analyzing data about the frequency or problems or causes in a process.
- When there are many problems or causes and you want to focus on a few.
- When analyzing the components of broad causes.
- When communicating with others about your data.

Procedure:

1. Decide what categories you will use to group items.
2. Decide what measurement is appropriate. Common measurements are frequency, quantity, cost and time.
3. Decide what period of time the Pareto chart will cover: One work cycle? One full day? A week?
4. Collect the data, recording the category each time. (Or assemble data that already exist.)
5. Subtotal the measurements for each category.
6. Determine the appropriate scale for the measurements you have collected. The maximum value will be the largest subtotal from step 5. (If you will do optional steps 8 and 9 below, the maximum value will be the sum of all subtotals from step 5.) Mark the scale on the left side of the chart.
7. Construct and label bars for each category. Place the tallest at the far left, then the next tallest to its right and so on. If there are many categories with small measurements, they can be grouped as “other.”

Steps 8 and 9 are optional but are useful for analysis and communication.

8. Calculate the percentage for each category: the subtotal for that category divided by the total for all categories. Draw a right vertical axis and label it with percentages. Be sure the two scales match: For example, the left measurement that corresponds to one-half should be exactly opposite 50% on the right scale.
9. Calculate and draw cumulative sums: Add the subtotals for the first and second categories, and place a dot above the second bar indicating that sum. To that sum add the subtotal for the third category, and place a dot above the third bar for that new sum. Continue the process for all the bars. Connect the dots, starting at the top of the first bar. The last dot should reach 100 percent on the right scale.

Example:



Information from <http://asq.org/learn-about-quality/cause-analysis-tools/overview/pareto.html>