

# Pareto Analysis

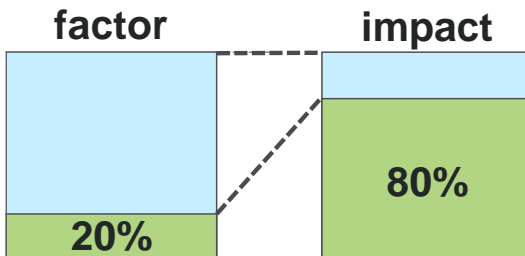
## Problem

How to identify the most important issues?

## Difficulty

Easy to use

- A **Pareto Analysis** identifies the significant aspects of an issue.
- The **Pareto Principle** or the “80/20 rule” is: when several factors affect a situation, a few factors typically account for most of the impact.
  - “80% of the impact is explained by 20% of the factors”
- A **Pareto Diagram** has a bar graph (histogram) and a line graph (cumulative probability).



- List of issues
- Values for each issue

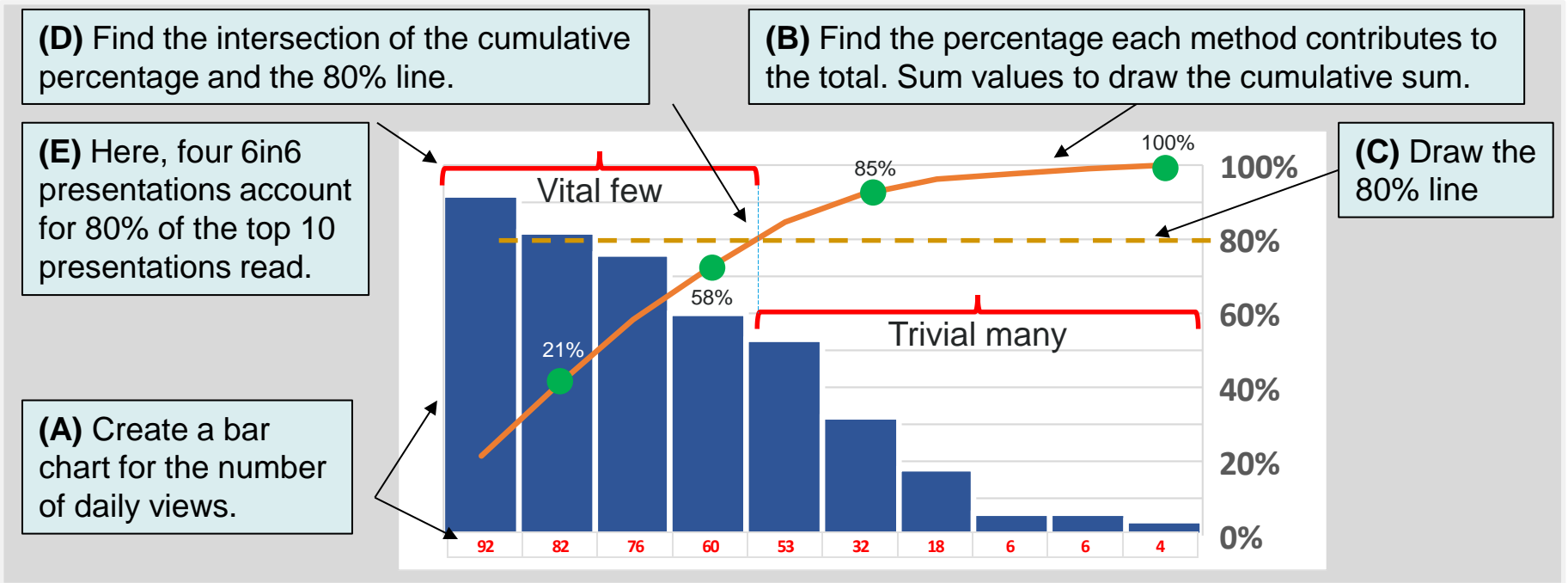
## Creating a Pareto Diagram

- List of the “critical few”

1. Creates a list of problems, items, or causes.
2. Decide how to evaluate each item on the list.
  - For example, by frequency, time, or cost.
3. Collect data on each item.
4. Find the total of the items’ values and use this to find the percentage each item contributes.
5. Create a vertical bar chart of the item’s values, and order from largest to smallest.
6. Overlay on the chart a plot of the cumulative percentage distribution of each item’s value.
7. Draw a line at the 80% cumulative percentage.
8. Identify the (likely) ~20% of the items that account for the 80% percentage.
9. These are the most important items, the “critical few,” that should be investigated.

# Pareto Analysis – Example – 6in6 readership

- The 6in6 team wants to review and update the “most important” 6in6 presentations.
- Which ones are the most important? We use the metric “number of daily views.”
- Yesterday, the most viewed 6in6 presentations were “QFD” and FMEA” (with 92 and 82 views). The number of views for the top 10 were {92, 82, 76, 60, 53, 32, 18, 6, 6, 4}.
- Use a Pareto Chart to determine how many of these to review. Follow the letters below:



- In this case there are 4 “vital few” 6in6 presentations (among the top 10) to review and update.

# Pareto Analysis – Notes

## Slide 1

- Pareto Analysis is named after Vilfredo Pareto, an Italian economist and sociologist. In 1906 Pareto observed that 80% of the land in Italy was owned by 20% of the people.
- The Pareto Principle is a theoretical concept, Pareto Analysis is a practical tool.
- Pareto diagrams are a root cause analysis tool.
- Pareto analysis supports data-driven decision making, increasing the accuracy and reliability of decisions.
- The purpose of a Pareto diagram is to separate the significant aspects of a problem from the trivial ones.
- You analyze a Pareto diagram by identifying those items that appear to account for most of the difficulty.
- Many common SW tools (e.g., Excel, Minitab, SPSS) create Pareto diagrams.
- Pareto Analysis issues: it does not provide solutions to issues and focuses on past data.

## Slide 2

- The data for this example is suggestive; the 6in6 website does not collect information on visits.
- There is often a need to reduce a large number of possibilities – in this case which 6in6 presentations to review – to a more manageable number.
- The most significant values in a Pareto Analysis are called the “vital few” while the rest are referred to as the “trivial many.”
- Pareto charts can help locate the “vital few.”

Recommended web sites for additional information

- <https://www.investopedia.com/terms/p/pareto-analysis.asp>
- <https://www.appinio.com/en/blog/market-research/pareto-analysis>