

Pareto Analysis Instruction Guide

(Pareto Principle; 80/20 Rule)

Why would I use this tool?

Pareto Analysis is used to categorize and group data so that a team can quickly identify which causes have the most impact on a problem. This is also referred to as “the vital few versus the useful many” and follows the “80/20 rule,” which says that 80 percent of the “effects” in a system are caused by 20 percent of the causes. In instances where there seem to be many causes, it is crucial to be able to invest efforts in those that will have the greatest positive impact. Correct usage of this tool is predicated on collection of data to support the Pareto analysis.

How do I use this tool?

1. Identify an effect (cause or problem), something consistently observed in your system that is not desired.
2. Decide what categories will be used to group terms, based on local process experts, hunches, observations, etc.
3. Decide what measurements are important and relevant to this issue (frequency, time, cost or quantity), where they are best collected or assembled, and who will be accountable.
4. Decide the time frame for collection of measurements. It is advisable to have at least 50 data points, so keep this in mind when determining the time period.
5. Collect or assemble data using an Occurrence Check Sheet.
6. When the measurement period is complete, re-order the data onto the Pareto Analysis Worksheet and total the observed occurrences for each category. (See example)
7. Re-order the categories from most to least prevalent.
8. Create a histogram¹ depicting the most prevalent on the left to the least prevalent on the right. The histogram scale should display the range from 0 to the highest prevalence of occurrence on the left, and a scale of 0% - 100% on the right. (See example)
9. Calculate the percent representation of each item of the total.
10. From the most prevalent to least prevalent, add the percentage of each item (i.e., most prevalent: 23% + next most prevalent: 21% - 44%, + next most prevalent: 19% - 63%).
11. At each bar representing an item, put a dot at the appropriate % point, and then join the dots from right to left. The line should progress from the % of the most prevalent to 100.
12. The Pareto Chart can be created either using pencil to paper or Excel.

How do I analyze a Pareto Chart?

Once the causes have been organized, the key questions for the QI Team to consider are:

- Is there a clear Pareto effect, with the “vital few” causes indicated?
- Is there a need to drill down further on any of these causes?

¹ A histogram is graphical summary data from a process that has been collected over a period of time that shows the frequency distribution in bar form. (Source: IDEAS Online Glossary of Terms)

What do I need to use this tool?

Materials

Electronic Method

- Computer
- Excel software

Manual Method

- Calculator
- Graph Paper
- Pencil
- Ruler
- Occurrence Check Sheet with raw data

Timing

Familiarity with basic Excel software will determine timing. It should only take a few minutes to create a Pareto Chart if the raw data is available and calculations are complete.

Setup

If you are using Excel, you will need basic working knowledge of how to create charts.

What tips and tricks will be useful in facilitating this tool?

Use the Fishbone/Cause and Effects diagram prior to the Pareto to inform you of the categories to collect data on.

To uncover a true Pareto effect, collect as much data as possible. The more data points collected and analyzed, the clearer the effect.

Always use observable, measureable data, rather than opinion. Often, what is perceived as the chief cause actually isn't; it may be that it gets the largest reaction from staff and/or is the "loudest" or most visible.

It is sometimes helpful to record team members' predictions prior to the observation and discuss them afterwards; if observations are the same as predictions, it is positive affirmation. If different, this may be an area for exploration.

Example of a Completed Pareto Worksheet - Occurrences of Interest: Why was blood work not completed?

OCCURRENCE	COUNTS	TOTAL COUNTS	FREQUENCY (%)
A. Requisition not given at last visit – doctor forgot to order		45	48%
B. Requisition not given but patient forgot to get it done		31	33%
C. Requisition given and patient remembered but thinks it is not important		8	9%
D. Requisition given and patient remembered but lab hours inconvenient		3	3%
E. Requisition given and patient remembered but too depressed		3	3%
F. Requisition given and patient remembered but chooses not to have it done for other reasons		2	2%
G. Other: Patient tested but specimen spoiled and test not repeated		1	1%
H. Other: Patient refuses all blood work, so requisition not even given.		1	1%
TOTAL		94	100%

