**Pareto Chart**

**What is a Pareto Chart?**

A Pareto Chart is "a series of bars whose heights reflect the frequency or impact of problems. The bars are arranged in descending order of height from left to right. This means the categories represented by the tall bars on the left are relatively more significant than those on the right". The chart gets its name from the Pareto Principle, which postulates that 80 percent of the trouble comes from 20 percent of the problems.

**Why should teams use Pareto Charts?**

You can think of the benefits of using Pareto Charts in economic terms. A Pareto Chart:

* breaks big problem into smaller pieces;
* identifies most significant factors; and
* helps us get the most improvement with the resources available by showing where to focus efforts in order to maximize achievements.

The Pareto Principle states that a small number of causes accounts for most of the problems. Focusing efforts on the "vital few" causes is usually a better use of valuable resources.

**When should we use a Pareto Chart?**

A Pareto Chart is a good tool to use when the process you are investigating produces data that are broken down into categories and you can count the number of times each category occurs.

No matter where you are in your process improvement efforts, Pareto Charts can be helpful, ".early on to identify which problem should be studied, later to narrow down which causes of the problem to address first. Since they draw everyone's attention to the "vital few" important factors where the payback is likely to be greatest, (they) can be used to build consensus. In general, teams should focus their attention first on the biggest problems-those with the highest bars".

Making problem-solving decisions isn't the only use of the Pareto Principle. Since Pareto Charts convey information in a way that enables you to see clearly the choices that should be made, they can be used to set priorities for many practical applications in your command. Some examples are:

* process improvement efforts for increased unit readiness;
* skills you want your division to have;
* customer needs;
* suppliers; and
* investment opportunities.

To construct a Pareto Chart, you need to start with a meaningful data which you have collected and categorized. You may want to turn to the Data Collection module at this point to review the process of collecting and categorizing data that you can chart. Now you're ready to follow the steps for constructing a Pareto Chart.

**Example Problem:**

Stop 'N Go is a small but recently growing pizza delivery business with six shops. After a period of rapid growth, Stop 'N Go Pizza experienced a six-month decline in volume. Customers were leaving. Top management formed a mixed team of store managers, kitchen staff, and delivery personnel to find out why, and to generate an implementation plan to correct the situation.

|  |  |
| --- | --- |
| Step 1 | **Record the raw data.** List each category and its associated data count. |
| Step 2 | **Order the data.** Prepare an analysis sheet, putting the categories in order and placing the one with the largest count first. |
| Step 3 | **Label the left-hand vertical axis.**Make sure the labels are spaced in equal intervals from 0 to a round number equal to or just larger than the total of all counts. |
| Step 4 | **Label the horizontal axis.** Make the widths of all of the bars the same and label the categories from largest to smallest. An "other" category can be used last to capture several smaller sets of data. Provide a caption to describe them. If the contributor names are long, label the axis A, B, C, etc. and provide a key. |
| Step 5 | **Plot a bar for each category.** The height of each bar should equal the count for that category. The widths of the bars should be identical. |
| Step 6 | **Find the cumulative counts.** Each category's cumulative count is the count for that category added to the counts for all larger categories. |
| Step 7 | **Add a cumulative line.** This is optional. Label the right axis from 0 to 100%, and line up the 100% with the grand total on the left axis. For each category, put a dot as high as the cumulative total and in line with the right edge of that category's bar. Connect all the dots with straight lines. |
| Step 8 | **Add title, legend, and date.** |
| Step 9 | **Analyze the diagram.** Look for the break point on the cumulative percent graph. It can be identified by a marked change in the slope of the graph. This separates the vital few from the trivial many. |











