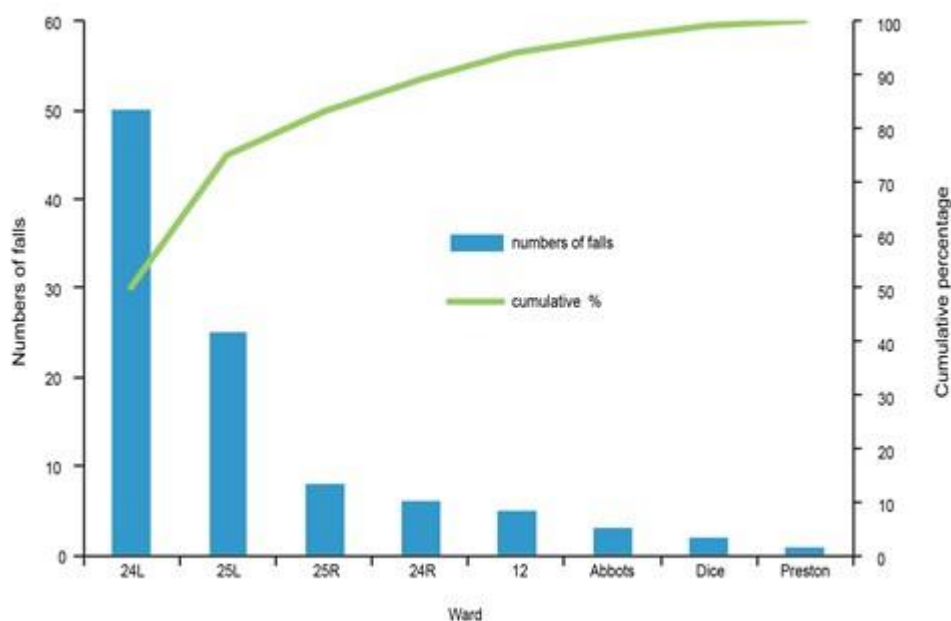# Pareto Chart

Overview

A Pareto chart is a bar chart showing how often different categories of events take place, ordered with the most common to the left, and the least common to the right. It sometimes also includes a line showing the cumulative frequency (adding each column's value to the previous ones in turn). Using a Pareto chart allows us to focus on where improvement efforts will make most impact.

How to use it

80/20 rule

The Pareto chart is an illustration of the 80/20 rule. Vilfredo Pareto was an Italian economist working in the early 20th century. He noted that 80% of the income at that time in Italy went to only 20% of the population. Joseph Juran, a management theorist, adapted this thinking and popularised the notion (the Pareto Principle) that much could be achieved by focusing on the 20% of circumstances in which 80% of problems occur. On a Pareto chart the categories contributing to 80% of the problems are often referred to as the 'vital few' whereas the others are labelled the 'useful many'.

A Pareto chart indicating where falls occur in a fictional hospital

In the example, wards 24L, 25L and 25R together account for more than 80% of the falls, would be regarded as the 'vital few', and might be a good place to

start a falls improvement project.

Things to bear in mind when using Pareto charts

- They work best if you have at least 30 observations across the categories graphed. Smaller numbers can be misleading due to random chance.

- The classification by categories is only a guide to where to focus attention. It does not necessarily tell you that something individual to that category is the cause of the different frequencies seen.

- Identifying categories where 80% of the problems are occurring is not the only thing to consider when deciding where to focus improvement efforts. Attention should also be given to whether there are 'willing workers' in that area who have an interest in improving care in their area.

- It is useful to know if underlying processes are stable (only random variation) across the time frame for the data in the Pareto chart, in order to correctly interpret it. Pareto charts don't explain what sort of variation is being observed. To distinguish random (common cause) and non-random (special cause) variation you need to use SPC charts.

- They are a useful tool not only when identifying opportunities for improvement, but also in drilling down to understand the reasons for special causes on graphs showing counts, percentages and rates.

What next?

Detailed instructions on how to construct Pareto charts are available [from IHI](#) (free registration required)

A tutorial on [how to use Excel to generate a Pareto chart](#) is available at the Health Protection Scotland website.