Paper 168-25

SAS Software and the 80/20 Rule
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ABSTRACT
This paper is written for SAS users and programmers who want to learn more about analyzing data using the 80/20 Principle. The principle states that most of your results come from a small proportion of your efforts. This paper will show readers how to look for, identify, and interpret data trends that support application of the 80/20 principle.

INTRODUCTION
The 80/20 principle states that in most systems, there are "trivial many" and "vital few" that affect the overall outcome. Some simple examples are:

Business
♦ 20% of salespeople make 80% of sales
♦ 20% of investments make 80% of return

Sports & Leisure
♦ 20% of at-bats make 80% of the hits
♦ 20% of movies make 80% of profits
♦ 20% of people at a picnic eat 80% of food

Understand that this is rarely a "literal 80/20 split" but is used as a rule of thumb to get the concept across.

The 80/20 rule is valuable in business—more valuable than most people think. This rule has can be applied to quickly and easily make decisions that can have tremendous impact on end results. The 80/20 Principle states that most results come from a small proportion of efforts.

Other common names for the 80/20 rule are:
♦ "The Rule of the Vital Few"
♦ "The Pareto Principle"
♦ "The Peter Principle"

HOW TO APPLY THE 80/20 PRINCIPLE
The SAS/QC product has a nice little procedure called PROC PARETO. This procedure generates what is commonly called a PARETO graph (if you do not have the SAS/QC product at your site, you can get a macro called %PARETO at the SPIKEware, Inc. web site listed at the end of this paper).

THE PARETO GRAPH
A PARETO GRAPH is a two-part graph—it contains a vertical bar chart with an overlaying joined point plot. Figure 1 shows an example of a PARETO GRAPH
1. The horizontal axis contains the category or group (in our example, this variable is called GROUP).
2. The left vertical axis applies to the vertical bar chart, and represents the TOTAL of each group (in this example, PROFIT).
3. The right vertical axis applies to the joined point plot and represents the PERCENT OF TOTAL of each group (in this example, PERCENT OF TOTAL PROFIT).

HOW TO FIND THE VITAL FEW
This process is simple. Simply take these six steps:
1. Draw in several best-fit lines (eyeball method works well)
2. Circle the points of intersection of the best-fit lines
3. Draw vertical lines intersecting each circle to declare the Pareto boundaries
4. Data to the left of the first best-fit line intersection point are the vital few
5. Data to the right of the last best-fit line intersection point are the trivial many
6. Data in between the outer-most best-fit line intersections may be trivial or vital—this is "your call"

CONCLUSION
Remember these points when applying the 80/20 principle:
♦ Not every distribution will fit the model of the vital few
♦ The analysis is only as accurate as your eyeball
♦ A radical change in slope of the cumulative frequency line is a good indicator of the vital few model

REFERENCES
References go at the end of your paper. This section is not required.

CONTACT INFORMATION

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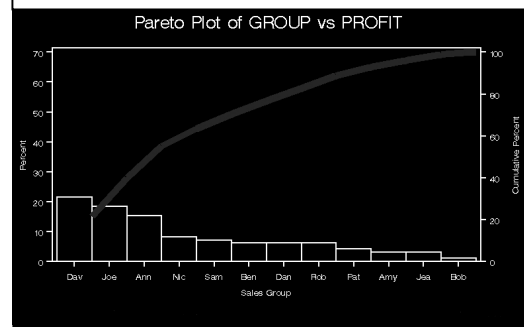The slides used for this presentation are available at no charge on our company website.

Figure 1—Sample Pareto Chart

Figure 2—Sample Pareto Chart Decision