80/20 Rule

A high percentage of effects in any large system are caused by a low percentage of variables.[1]

The 80/20 rule asserts that approximately 80 percent of the effects generated by any large system are caused by 20 percent of the variables in that system. The 80/20 rule is observed in all large systems, including those in economics, management, user interface design, quality control, and engineering, to name a few. The specific percentages are not important, as measures of actual systems indicate that the proportion of critical variables varies between 10 percent and 30 percent. The universality of the 80/20 rule suggests a link to normally distributed systems, which limits its application to variables that are influenced by many small and unrelated effects—e.g., systems that are used by large numbers of people in a variety of ways. A few examples of the 80/20 rule include:[2]

80 percent of a product's usage involves *20* percent of its features.
80 percent of a town's traffic is on *20* percent of its roads.
80 percent of a company's revenue comes from *20* percent of its products.
80 percent of innovation comes from *20* percent of the people.
80 percent of progress comes from *20* percent of the effort.
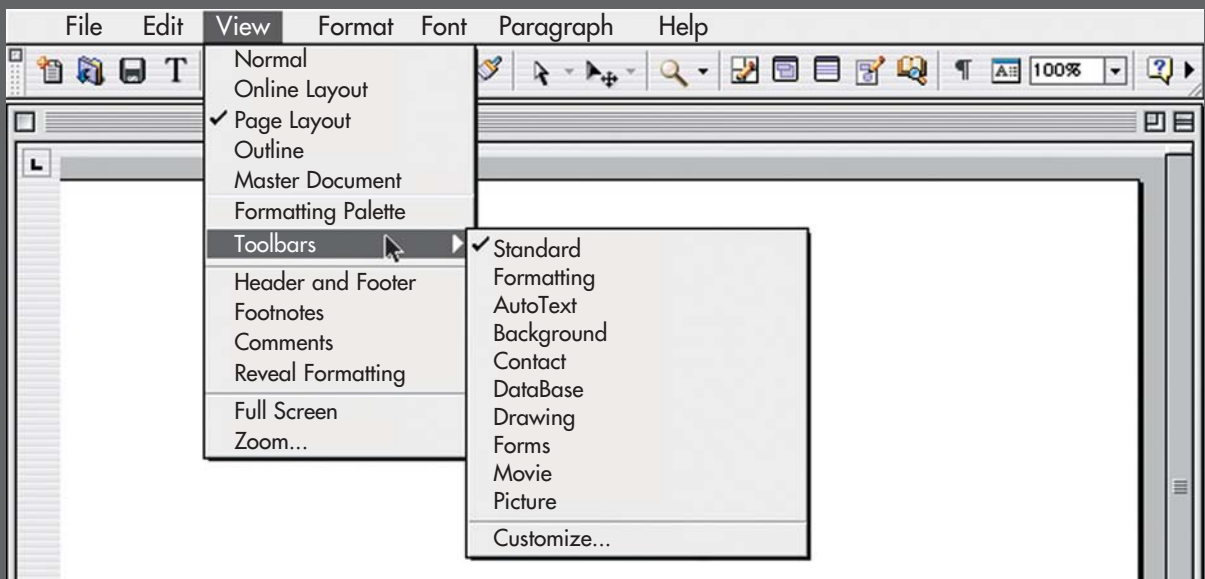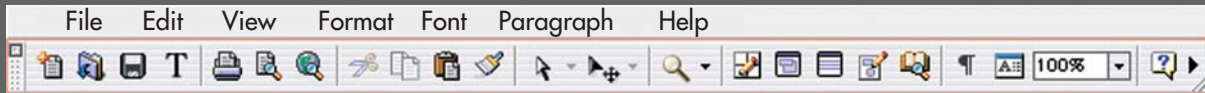*80* percent of errors are caused by *20* percent of the components.

The 80/20 rule is useful for focusing resources and, in turn, realizing greater efficiencies in design. For example, if the critical 20 percent of a product's features are used 80 percent of the time, design and testing resources should focus primarily on those features. The remaining 80 percent of the features should be reevaluated to verify their value in the design. Similarly, when redesigning systems to make them more efficient, focusing on aspects of the system beyond the critical 20 percent quickly yields diminishing returns; improvements beyond the critical 20 percent will result in less substantial gains that are often offset by the introduction of errors or new problems into the system.

All elements in a design are not created equal. Use the 80/20 rule to assess the value of elements, target areas of redesign and optimization, and focus resources in an efficient manner. Noncritical functions that are part of the less-important 80 percent should be minimized or removed altogether from the design. When time and resources are limited, resist efforts to correct and optimize designs beyond the critical 20 percent, as such efforts yield diminishing returns. Generally, limit the application of the 80/20 rule to variables in a system that are influenced by many small and unrelated effects.

See also Cost-Benefit, Form Follows Function, Highlighting, Most Advanced Yet Acceptable, and Normal Distribution.

[1] Also known as *Pareto's Principle*, *Juran's Principle*, and *Vital Few and Trivial Many Rule*.

[2] The first recognition of the 80/20 rule is attributed to Vilfredo Pareto, an Italian economist who observed that 20 percent of the Italian people possessed 80 percent of the wealth. The seminal work on the 80/20 rule is *Quality Control Handbook* by Joseph M. Juran (Ed.), McGraw-Hill, 1951.

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Normal
Online Layout
✓ Page Layout
Outline
Master Document
Formatting Palette
Toolbars   ✓ Standard
                              Formatting
Header and Footer   AutoText
Footnotes   Background
Comments   Contact
Reveal Formatting   DataBase
                              Drawing
Full Screen   Forms
Zoom...   Movie
                              Picture
                            Customize...

Graphical user interfaces conceal
most of their functions in drop-down
menus (bottom image). This reduces
the complexity of the display, but also
makes frequently used functions more
difficult to access. Identifying the critical
20 percent of the functions and making
them readily available in toolbars solves
the problem (top image).