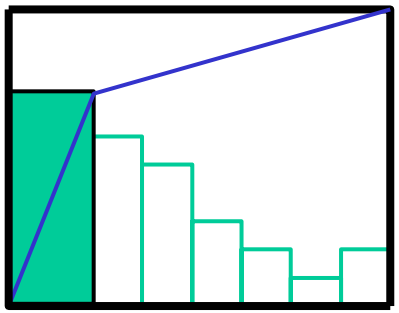
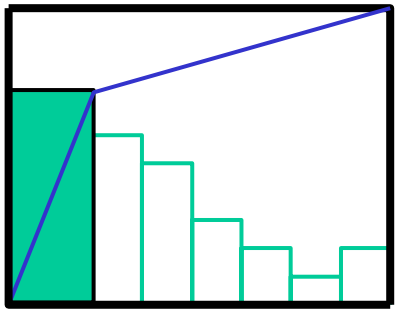
Continuous Improvement Toolkit

Pareto Analysis




Managing Risk
PDPC
FMEA
RAID Logs
Fault Tree Analysis
Risk Assessment*
Traffic Light Assessment
Deciding & Selecting
Pros and Cons
Importance-Urgency Mapping
Break-even Analysis
Cost -Benefit Analysis
Force Field Analysis
Voting
Pugh Matrix
Decision Tree
TPN Analysis
QFD
Matrix Diagram
Kano Analysis
Prioritization Matrix
Critical-to Tree
Paired Comparison
Planning & Project Management*
RACI Matrix
Stakeholders Analysis
PEST
PERT/CPM
Activity Diagram
SWOT
Roadmaps
Project Charter
Gantt Chart
PDCA
Control Planning
Gap Analysis
Hoshin Kanri
Kaizen
How-How Diagram
Tree Diagram**
Standard work
Lean Measures
KPIs
OEE
Capability Indices
MSA
RTY
Descriptive Statistics
Cost of Quality
Reliability Analysis
Graphical Analysis
Cause & Effect Matrix
Pareto Analysis
Confidence Intervals
Understanding Cause & Effect
Probability Distributions
ANOVA
Hypothesis Testing
Design of Experiments
Scatter Plot
Correlation
Regression
5 Whys
Chi-Square Test
Multi-Vari Charts
Relations Mapping*
Identifying & Implementing Solutions***
Simulation
TPM
Mistake Proofing
Pull Systems
JIT
Ergonomics
Work Balancing
Automation
Bottleneck Analysis
Visual Management
Flow
Value Analysis
5S
Understanding Performance
Run Charts
Control Charts
Benchmarking
Sampling
Fishbone Diagram
TRIZ***
Brainstorming
Analogy
SCAMPER***
Nominal Group Technique
Mind Mapping*
Affinity Diagram
Attribute Analysis
Lateral Thinking
Visioning
Creating Ideas**
Wastes Analysis
SMED
Time Value Map
Process Redesign
IDEF0
Value Stream Mapping
SIPOC
Flow Process Chart
Process Mapping
Flowcharting
Service Blueprints
Designing & Analyzing Processes
Focus groups
Interviews
Photography
Check Sheets
Measles Charts
Surveys
Data Collection
Critical Incident Technique
Observations

- Pareto Analysis

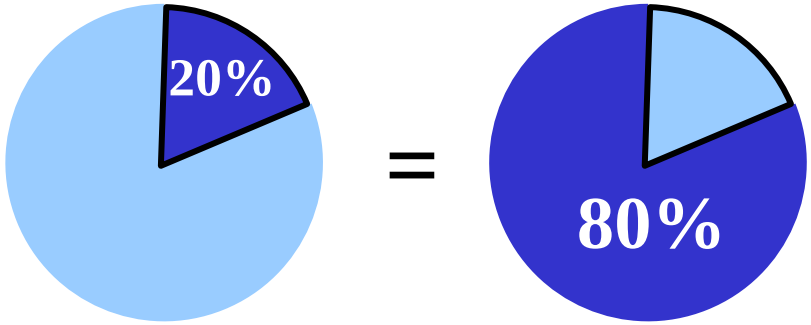


- Used when there are many problems and you want to focus on the most significant.
- Helps to focus efforts on the problems that offer the greatest potential for improvement.
- When managers discover process problems that need to be addressed, they have to decide which should be attacked first.
- Vilfredo Pareto proposed that most of an activity is caused by relatively few of its factors.
- Pareto Principle states that 80% of the issues are the result of 20% percent of the causes.

- Pareto Analysis

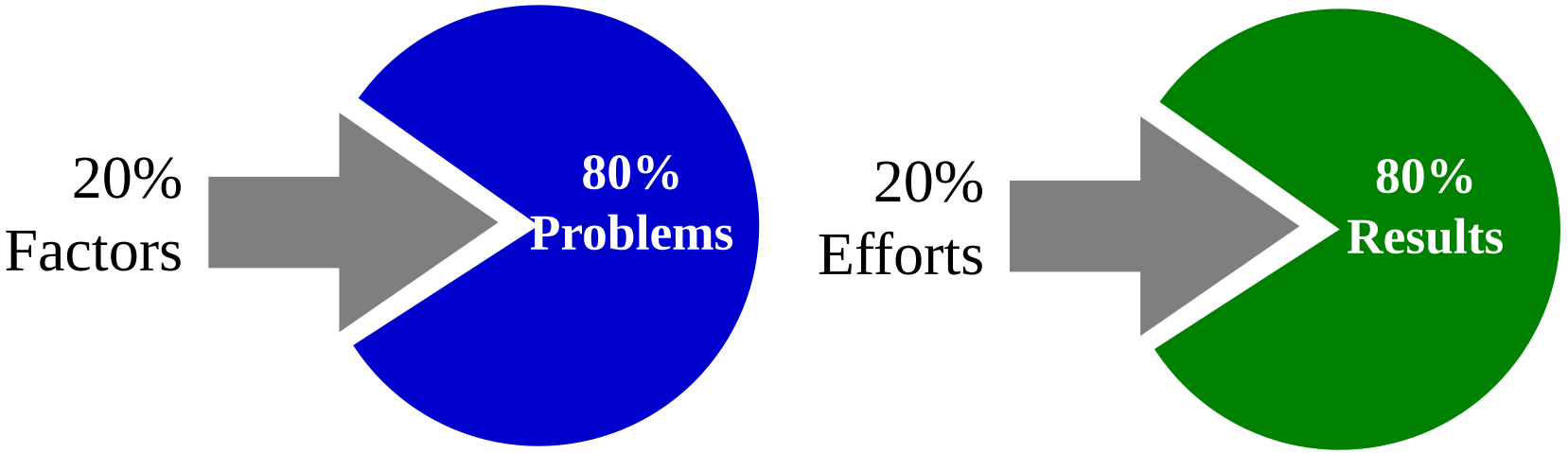
- Pareto's concept, called the 80-20 rule.
- 80% of the problems is caused by 20% of the factors.
- By concentrating on the 20% of the factors, **"the vital few"**, managers can attack 80% of the problem.
- Of course, the exact percentages vary with each situation, but inevitably relatively few factors cause most of the performance shortfall.

A Vital Few and Trivial Many Rule



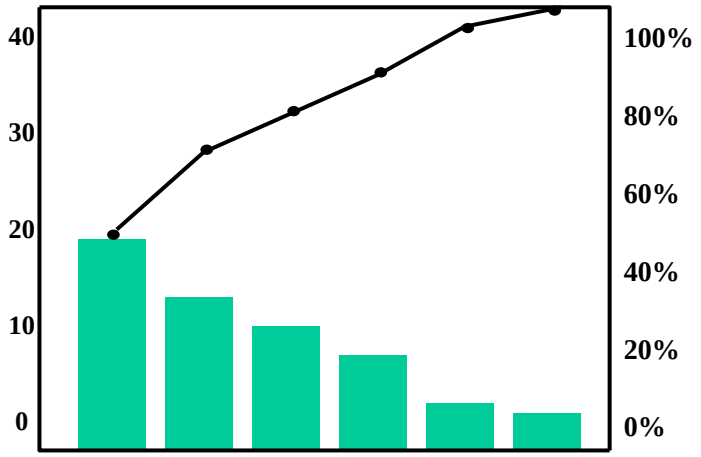
- Pareto Analysis

- In a restaurant, the problem could be customer complaints and the factor could be an impolite waiter.
- For a manufacturer, the problem could be product defects and a factor could be a missing part.



- Pareto Analysis

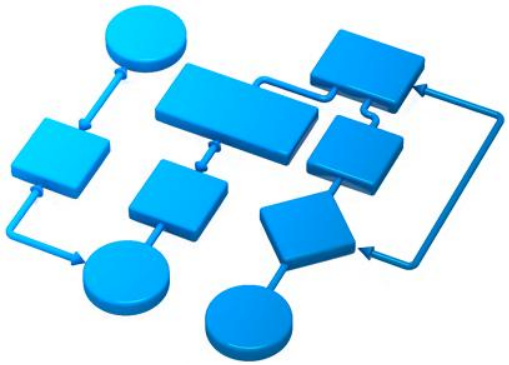
- The few vital factors can be identified with a **Pareto chart**.
- The factors are plotted in decreasing order of frequency along the horizontal axis.
- The chart has two vertical axes, the one on the left showing frequency and the one on the right showing the cumulative percentage of frequency.
- The cumulative frequency curve identifies the vital few factors that deserve immediate attention.



- Pareto Analysis

Approach:

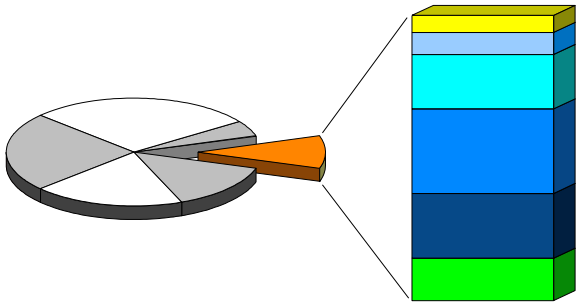
- Define the problem.
- Decide what measurement is appropriate (frequency, quantity, cost, ..).
- Identify the possible factors (e.g. C&E diagram).
- Collect then record the data.
- Construct and label bars for each factor.
- Calculate the percentage for each factor.
- Sort the bars in descending order.
- Draw a right vertical axis & label it with percentages.
- Calculate and draw cumulative sums (using dots).
- Connect the dots (The last dot should reach 100 %).



- Pareto Analysis

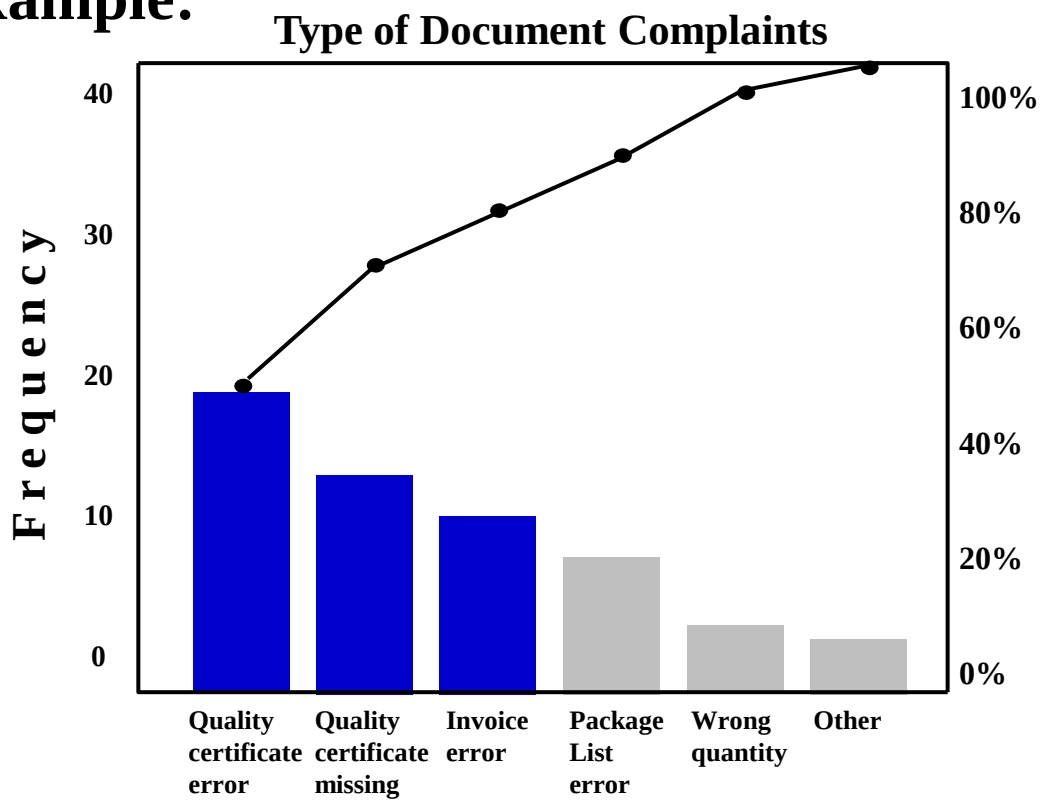
Hints:

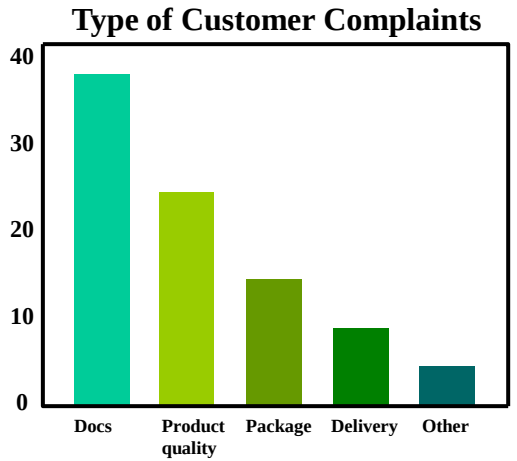
- Pareto charts are frequency plots for categorical data.
- You should be thinking critical few all the time:
  - Which are the critical few customer wants and needs?
  - Which are the critical few measures?
  - Which are the critical causes?
- Use the "**Other category**" when there are lots of very small categories that are not of interest.
- Some applications can produce separate charts for different categories (e.g. different failure types across several location, departments, machines, etc.).



- Pareto Analysis

Example:





The Pareto chart shows that these three problems if rectified will account for almost 80% of the complaints.

- Pareto Analysis

Example: