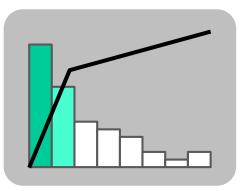
### **Continuous Improvement Toolkit**

### **Pareto Analysis**

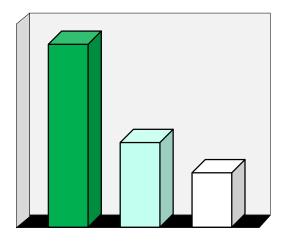


#### The Continuous Improvement Map

Managing	Deciding	& Selecting	Planning & Project Management*
Risk PDPC	Decision Balance Sheet	Importance-Urgency	Mapping Daily Planning PERT/CPM
FMEA RAID Log* Fo	orce Field Analysis	Cost Benefit Analysis	MOST RACI Matrix Activity Networks
Risk Assessment*	eak-even Analysis Vo	oting TPN Analy <mark>sis</mark>	SWOT Analysis Stakeholder Analysis
Fault Tree Analysis Decision	n Tree Pick Chart	Four Field Matri <mark>x</mark>	Project Charter Improvement Roadmaps
Traffic Light Assessment Crit	ical-to Tree QFD	Portfolio Matrix	PDCA Policy Deployment Gantt Charts
Lean Measures Kano Ana	alysis Matrix Diagram	Paired Comparison	DMAIC Kaizen Events Control Planning
Bottleneck Analysis** Cost of	Quality* Pugh Matrix	Prioritization Matrix	A3 Thinking Standard work Document control
OEE Process Yield	KPIs Pareto Analys		rstanding Cross Training Implementing
	ve Statistics ANOVA	Chi-Sauara	e & Effect Value Analysis Solutions**
Probabi	ility Distributions Hypot	hesis Testing Design	of Experiment Mistake Proofing Ergonomics
	s & Boxplots Multi vari	i Studies Confidenc	ce Intervals Simulation TPM Automation
Reliability Analysis Understanding	al Analysis Scatter Plot	<sup>ts</sup> Correlation R	egression Pull Flow Just in Time
Performance MSA R	un Charts 5 Whys <sub>R</sub>	oot Cause Analysis	Data Snooping Visual Management 5S
Benchmarking** Control	Charts Fishbone I	Diagram Tree Diagran	n* SIPOC* Waste Analysis Quick Changeover
Data collection planner* Sampling Morphological Analysis How-How Diagram** Process Redesign Time Value Map			
Check Sheets Interviews E	Brainstorming SCAMP	ER** Attribute Analy	vsis Spaghetti Diagram Value Stream Mapping
Questionnaires Focus Group	Affinity Diagram	Relationship Mappin	g* Flow Process Charts Service Blueprints
Data	Mind Mapping*	Lateral Thinking	Flowcharting IDEF0 Process Mapping
Collection Observations	Suggestion systems	Creating Ideas	<b>Designing &amp; Analyzing Processes</b>

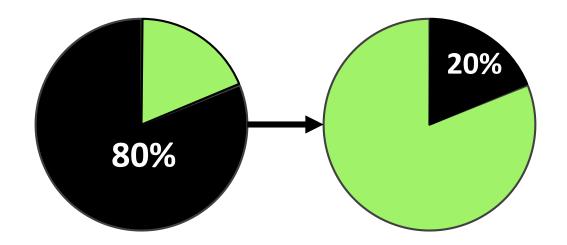
#### The Pareto Principle:

- □ Also referred to as the 80-20 rule.
- States that 80% percent of the problems or effects come from 20% of the causes.
- □ Focuses on identifying the 'vital few' from the 'trivial many'.
- Helps focusing on what really matters.



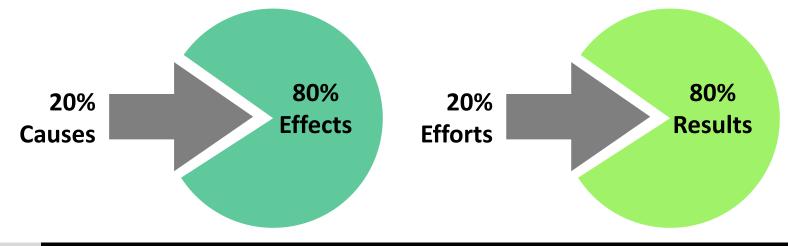
### **The Pareto Principle:**

- □ The exact percentages may vary in each situation.
- However, most of the activity is caused by relatively few of its factors.



#### **Examples:**

- □ 20% of car drivers cause 80% of the accidents.
- □ 20% percent of workers do 80% of the work.
- □ 20% of a company's clients are responsible for 80% of its revenue
- □ 20% of the time spent on a task leads to 80% of the results.
- □ 80% of the customer complaints come from 20% of customers.
- □ 80% of the wealth belongs to 20% of the population.



#### **The Pareto Principle:**

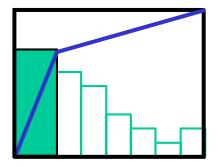
- Used when we have many problems or projects and we want to focus on the most significant ones.
  - Helps prioritize the improvement opportunities that bring the most value to the business.
  - Allows to reach a consensus about what needs to be addressed first.



 Used during improvement projects to focus on the causes that contribute most to a particular effect.

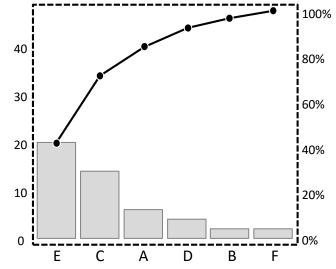
### The Pareto Chart:

- A frequency bar chart.
- The most frequent activities are placed in order from left to right.
- Normally plots the frequencies of categorical data:
  - Such as defects and errors.
- □ The **horizontal axis** represents the types of activities:
  - Such as issues, problems or causes.
- The vertical axis represents the frequencies of those activities.



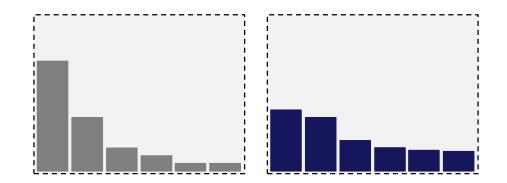
### The Pareto Chart:

- By arranging the bars from largest to smallest, the vital few activities can be easily addressed to have greater attention.
- If there are a lot of small or infrequent factors, consider adding them together into an "other" category.
- You may optionally have a cumulative line above the bars so that the cumulative percentages can be read from the right vertical axis.



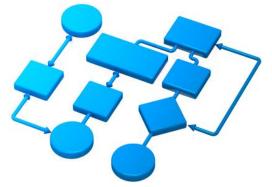
### The Pareto Chart:

- If the resulted Pareto chart clearly illustrates a Pareto pattern, this suggests that only few causes account for about 80% of the problem.
- This means that there is a Pareto effect.
- If no Pareto pattern is found, we cannot say that some factors are more important than others.



### How to Construct a Pareto Chart:

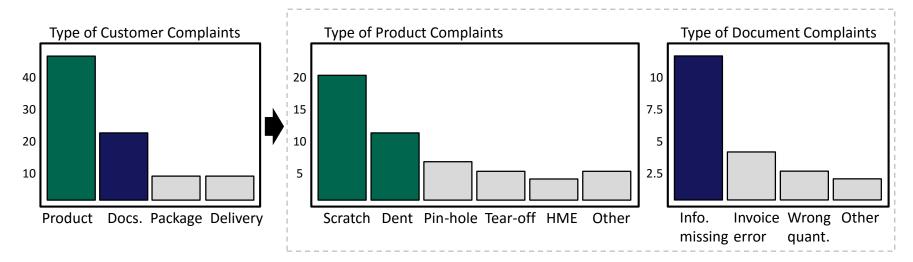
- Define the problem.
- Identify the possible causes of the problem (using brainstorming or similar technique).
- Collect then record the data.



- Calculate the frequencies of the identified causes.
- Draw a vertical bar for each cause or cause group.
- □ Sort them by frequency in descending order.
- Calculate then draw the cumulative percentage line.
- If you observe a Pareto effect, focus your improvement efforts on those few factors.

#### Example:

A factory team has prepared the following Pareto charts to address the rising number of customer complaints in a way management can understand.



The results suggest that they can solve the majority of the problem by concentrating on the vital few.

#### **Further Information:**

- Named after the Italian economist Vilfredo Pareto, who observed that 80% of property in Italy was owned by 20% of the population.
- Someone should be thinking of the Pareto Principle and apply it to his business and life. He should be asking himself questions such as: what are the critical few wants and needs of the consumer, and what are the critical few measures that indicate the true performance.

