

MASTERING DATA ANALYSIS

FOR QUALITY PROFESSIONALS



UNDERSTAND YOUR DATA, DRIVE BETTER DECISIONS, AND IMPROVE QUALITY WITH DATA ANALYSIS

Data analysis is the process of collecting, organizing, and interpreting data to uncover patterns, trends, and insights that drive better decision-making.

In the world of quality, it's the foundation for understanding process behavior, identifying root causes, and sustaining improvements.

Whether you're using classic tools like Control Charts or exploring modern techniques like machine learning, data analysis empowers you to turn numbers into knowledge.

HOW DATA ANALYSIS WORKS

1. **Define the Question:** Clarify the problem or hypothesis using tools like problem statements, SIPOC diagrams, project charters, KPI dashboards, and AI-assisted planning platforms.
2. **Collect Trusted Data:** Gather reliable, relevant data through check sheets, sampling plans, operational definitions, IoT sensors, and automated data pipelines or profiling tools.
3. **Analyze with Classic & Advanced Tools:** Explore and validate data patterns using histograms, control charts, Pareto charts, regression analysis, hypothesis testing, and modern tools like Python, R, Minitab, or machine learning algorithms.
4. **Visualize & Interpret Results:** Turn data into actionable insights using dashboards, heat maps, storyboards, and advanced visualization platforms like Power BI, Tableau, or real-time monitoring tools.
5. **Take Data Informed Action:** Use PDCA, RCA tools, DOE and automated alerts to implement, verify and standardize improvements.
6. **Monitor & Automate:** Employ SPC software, alerts, and continuous monitoring platforms to sustain quality improvements.



5 WAYS TO LEARN MORE!

1. **Learn the basics with these LAQ overviews** of various [Data Collection & Analysis Tools](#) like Control Chart, Check Sheets, and more.
2. **Go deeper with these articles** that range from the basics to advanced technologies –
 - o [Which Control Chart Do I Use?](#)
 - o [FMEA in the Age of Industry 4.0](#)
 - o [Robust Multivariate Functional Control Chart](#)
3. **Check out this webinar** “[Leveraging Data Analytics, AI, and Automation – Tools for Optimizing QI](#)”
4. **Download these free templates** to put your learning into practice!
 - o [Control chart template](#)
 - o [Box and whisker plot template](#)
 - o [Pareto chart template](#)
5. **E-Learning Course:** ASQ also offers a very popular course, “[Improvement Tools & Techniques: Charts, Controls, Diagrams, Improvement Methods, Sampling and Problem Solving](#)” that provides an understanding of basic quality tools and techniques.

Bonus: Refer to the following page for the [Data Analysis Cycle](#).

ENROLL NOW

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