DATA ANALYTICS CHECKLIST

A Comprehensive Guide to Starting, Analyzing, and Presenting Your Data Projects

Phase 1:

Understanding the Problem (Human-Centered Focus)

1. Ask the Right Questions: -

- **Who** is this analysis for, and **what** decisions will be made from it?
- **Who** are my stakeholders/audience?
- Know the context—**what** problem is being solved?
- How will this analysis impact real lives, business outcomes, or decisions?

Tip: Always think of how your data will be used beyond the numbers. What can your data interpret???

2. Frame Your Analysis with Empathy:

- What are the **pain points** or challenges faced by the user/client that this analysis addresses
- Does this analysis answer their core needs or provide actionable insights?

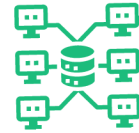**Tip: Frame the problem from a *human perspective*, not just a data one.**

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Phase 2:

Data Collection (Rare but Practical Steps)
1. Identify the Right Data Sources:

- Are you using **first-hand data**, open data, or both?
- Are there **ethical considerations** in the data collection process? (e.g., information privacy, bias)

Tip: Look for rare, overlooked datasets, like government reports, niche databases, or even user feedback surveys.

2. Verify Data Reliability:

- Is the data credible? Cross-check your sources of data.
- Perform a credibility test: **Who published the data? When was it last updated?**

Tip: Ask, "Does this data tell the full story?" Expand/reconsider your sources.

3. Ensure Data Inclusivity:

- Are diverse populations or points **represented** in the dataset?
- Are there any hidden biases in the data?

Tip: Always question whether your data paints an inclusive picture.

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Phase 3:

Data Cleaning (Rare Tips for a Smooth Process)

1. Handle Missing Data:

- Is missing data random, or does it reveal a pattern?
- Instead of just dropping incomplete data points, think of ways to fill gaps (e.g., asking users for updated inputs, imputation methods

Tip: Missing data can reveal weaknesses during data collection

2. Identify and Address Bias:

- Identify biases in data collection or inputs.
- Use statistical techniques to identify and reduce bias.

Tip: Keep a "Bias Watch" note to keep in mind throughout the project.

3. Make Data User-Friendly:

- Remove irrelevant data.
- Rename columns with clear and readable terms.
- Create metadata for future reference (e.g., explaining what each variable means).

Tip: Think of how a non-technical person would read your dataset —simplify accordingly.

Common tools for data cleaning:
1. *Microsoft Excel*
2. *Google sheets*
3. *Structured Query Language (SQL)*
4. *R*
5. *Python*

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Phase 4:

Data Analysis (Insight-Driven Steps)

1. Start with Exploratory Data Analysis (EDA):

- Begin with EDA to uncover trends .
- Use visualizations to spot outliers early that aren't immediately clear from raw numbers.

Tip: Focus on human narratives from the data. Look for impact real-world decisions.

2. Use the Right Tools for the Job:

- Does your analysis align with the problem at hand? Choose tools and techniques that make sense for your project (e.g., regression analysis for trends, clustering for segmenting data).

Tip: Sometimes, simplicity is key — Don't overcomplicate; simple methods can be powerful

3. Find Actionable Insights:

- Are your findings actionable, or just interesting? Push yourself to find insights that lead to tangible next steps.

Tip: Think like the stakeholder—how will these insights change their strategy, decision-making, or approach?

Common tools for EDA:
1. *Microsoft Excel*
2. *Google sheets*
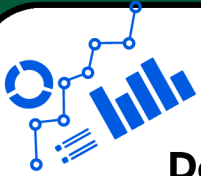3. *Structured Query Language (SQL)*
4. *R*
5. *Python*

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Phase 5:

Data Visualization (Accessible and Impactful)

1. Choose Human-Centered Visuals:

- What's the best way to visualize your data for maximum understanding? Sometimes, a simple bar chart says more than a complex graph..
- Let your visuals speak to your audience's level of data literacy.

Tip: Test your visuals with someone unfamiliar with the data—can they get the key points within seconds?

Common tools for data visualization:
1. *Microsoft Excel*
2. *Google sheets*
3. *Tableau/PowerBI/Looker studio*
4. *R*
5. *Python*

insights
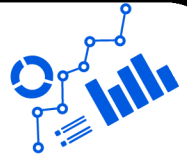
2. Use Colors and Design with Purpose:

- Use contrasting colors **only** to **highlight** important data.
- Avoid overloading with unnecessary labels, grids, or data points.

Tip: Stick to accessibility guidelines for colorblind readers and avoid excessive red/green combinations.

3. Tell a Story:

- Does each visualization tell a coherent story? Are you guiding the audience from problem to solution with your visuals?

Tip: Think of your visualizations as chapters in a story—each should have a clear purpose.

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Phase 6:

Presenting Results (Tips for Engaging Stakeholders)

1. Craft a Human Narrative:

- Present findings as a story: problem, data-driven solution, and actionable recommendations..

Tip: Use metaphors or relatable examples when presenting complex data to non-technical stakeholders.

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2. Be Ready for Questions:

- Anticipate questions from audience and prepare responses ahead of time.
- Offer a deeper dive into certain aspects of the analysis, and have **alternative visuals** or data ready to share.

Tip: Prepare a "Frequently Asked Questions" section or slide.

3. Make Recommendations Clear:

- Provide actionable, clear recommendations based on your findings.
- Use "**if-then**" scenarios to highlight how different decisions will impact the outcomes.

Tip: Show how your insights will improve real-world outcomes — how will your insights improve businesses?

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Bonus Phase

Post-Analysis Reflection
(Rare But Essential)

1. What Did the Data Teach You?:

- Reflect on any underlined unexpected lessons learned during the analysis.
- How could the data or methodology be improved for ***future analyses***?

Tip: Document unexpected lessons for future growth

2. Future-Proof Your Work:

- Are there ways to ***automate*** parts of your analysis or data collection process for next time?
- Can you create a repeatable framework for similar future projects?
- Create a portfolio of your projects as an analytics resumé.
- Share your projects through articles and posts to the data community.

Tip: Consider open-sourcing parts of your workflow or analysis to help the data community.

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