Aspects	EDA	Classical Analysis	Bayesian Analysis.
what it does	Helps us to explore data visually and see patterns	Tests hypotheses and fits models on Traditional statistics.	updates beliefs about parameters using new data.
How it works.	Looks at data in graphs and charts to understand it better.	Uses pre-set statistical tests and assumptions to draw conclusion.	Adjusts beliefs about data based on new evidence.
what it assumes	Assumes less about the data & focuses on exploring it openly	Assumes specific things about the data's distribution and relationship.	Incorporates prior beliefs into the analysis updating them with new data.
How flexible it is	Its quite flexible, letting us ~~from~~ look at data in different ways without strict rules.	Its more rigid, sticking to specific statistical tests and models.	Its flexible, adjusting beliefs based on new information.
what its good For	Helps us understand data quickly and generate ideas for further investigation.	useful for making decisions based on established statistical methods.	Great for incorporating prior knowledge and dealing with uncertainty.

Classical Data Analysis.

1) Problem Definition

↓

2) Data collection.

↓

3) Model Development

↓

4) Data Analysis.

↓

5) Results communication.

1) goal clearly defined through data analysis.

↓

clear understanding of what question you want the data to answer.

2) problem defined, next gather relevant data that can help address the problem.

↓

collect data from various source such as database, API, surveys etc.

↓

To collect the relevant, accurate and sufficient quality for analysis.

EDA:

1) problem definition → 2) Data collection →
3) Data Analysis → Model 4) Development →
Results communication 5).

(4) data analyst or data scientist develop models.
to analyze the collected data and derive insights.

↓

depending upon the nature of the problem and
the available data some analytical methods are done.
Machine learning, Statistical modeling. DEV
Rules etc.

(3) apply the developed models → to the collected data in
order to extract meaningful insights and patterns.

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↓ includes, EDA, hypothesis testing, regression analysis,
clustering etc..

(5) once analysis is complete, the findings need to
be communicated effectively to stakeholders.

↓

It involves reports, presentation, dashboard or
data visualization. summarizes done.

Bayesian Data Analysis:

Problem Definition → Data collection →
Model development → Prior distribution →
Data Analysis → Results communication.

Prior distribution:

Before observing any data, we need to specify prior distributions for the model parameters, lets assume a weakly informative prior for θ, such as a normal distribution centered at 0 with moderate standard deviation.