### Analytic Approach Based on the Question Type

When choosing an analytic approach for a problem, the type of question you’re trying to answer greatly influences the methodology. Here are five common types of questions and corresponding analytic approaches:

### 1. Descriptive Questions: “What is the current status?”

**Approach: Descriptive Analytics**

**Question:** "What is the current status of our sales?"

**Techniques:**

Data aggregation: Combining data from various sources into a unified view.

Data mining: Extracting useful information from large datasets.

Data visualization: Using visual tools to present data in an easily understandable format.

**Examples:**

Summarizing sales data

Creating dashboards

Generating reports

### 2. Diagnostic Questions: “Why did it happen?”

**Approach: Diagnostic Analytics**

**Question:** "Why did our sales decline in the last quarter?"

**Techniques:**

Drill-down: Exploring detailed data to find underlying causes.

Data discovery: Identifying patterns and relationships in data.

Correlation analysis: Assessing the relationship between different variables.

**Examples:**

Identifying root causes of sales decline

Analyzing customer complaints

Understanding failure points in a process

### 3. Predictive Questions: “What is likely to happen?”

**Approach: Predictive Analytics**

**Question:** "What is our sales forecast for the next year?"

**Techniques:**

Regression analysis: Predicting outcomes based on relationships between variables.

Time series forecasting: Predicting future values based on past trends.

Machine learning models: Using algorithms to predict future outcomes based on historical data.

**Examples:**

Forecasting sales

Predicting customer churn

Estimating future demand

### 4. Prescriptive Questions: “What should we do?”

**Approach: Prescriptive Analytics**

**Question:** "What should we do to increase website traffic?"

**Techniques:**

Optimization models: Finding the best solution from a set of alternatives.

Simulation: Modeling scenarios to predict outcomes.

Decision analysis: Evaluating and comparing different decisions.

**Examples:**

Recommending inventory levels

Optimizing marketing campaigns

Determining pricing strategies

### 5. Classification Questions: “Which category does this belong to?”

**Approach: Classification (Supervised Learning)**

**Question:** "Which category does this data point belong to?"

**Techniques:**

Logistic regression: Predicting the probability of a categorical outcome.

Decision trees: Splitting data into branches to classify it.

Support vector machines: Finding the best boundary to separate categories.

Neural networks: Using interconnected nodes to classify data.

**Examples:**

Email spam detection

Image classification

Disease diagnosis

Understanding these different types of questions and the corresponding analytic approaches can help you unlock your data's true potential.