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.