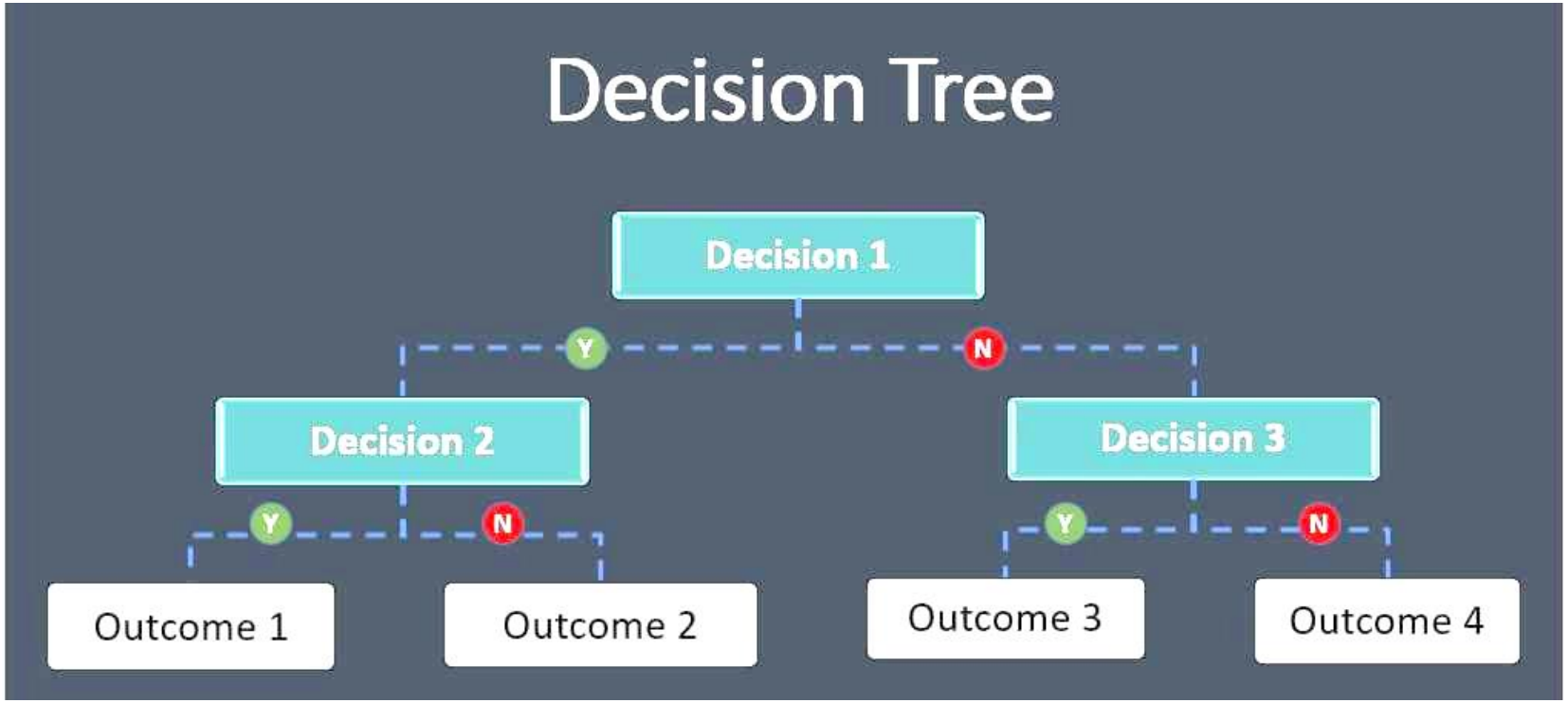
Decision Trees (DTs)

Decision Tree

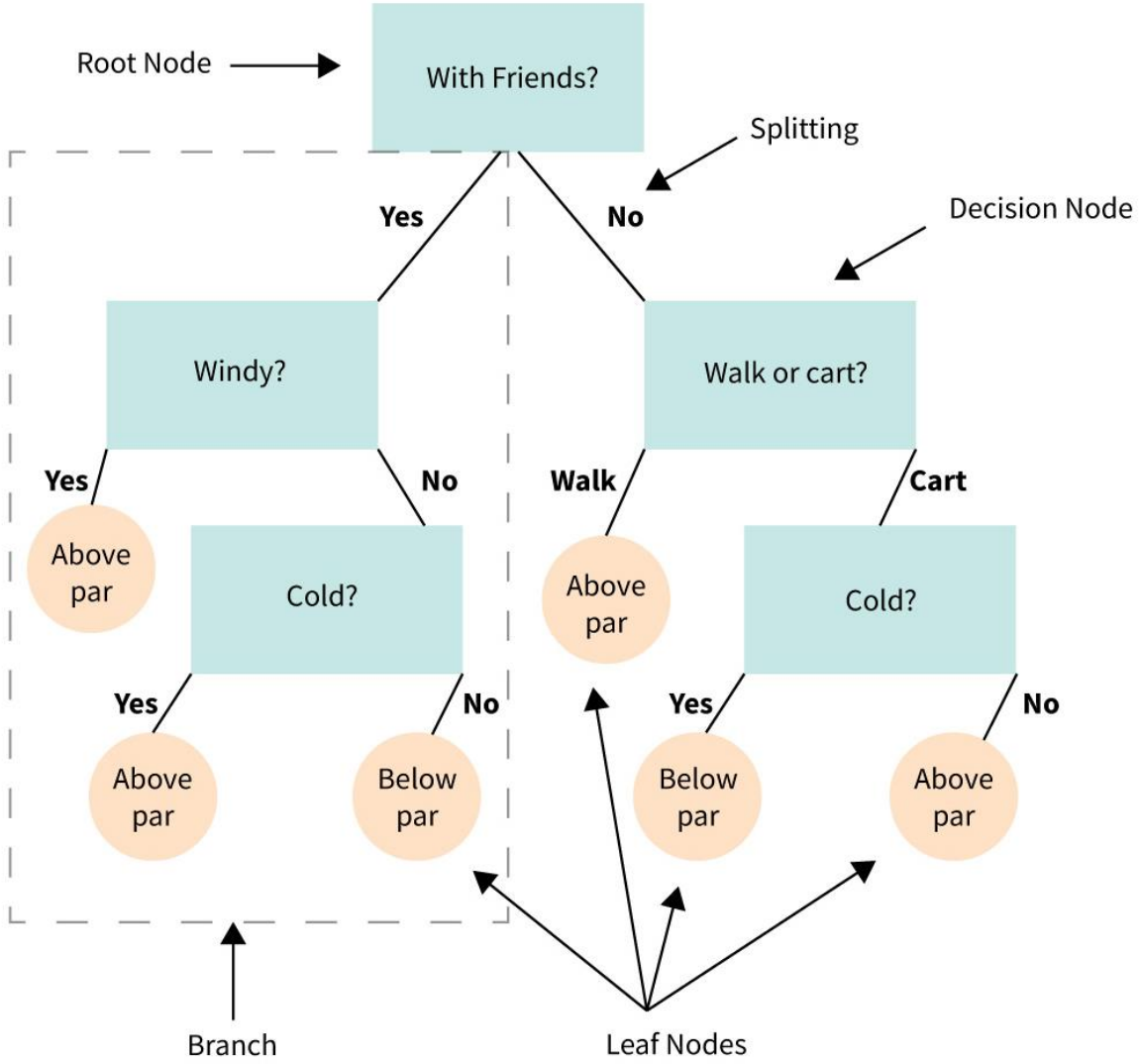
- A **Decision Tree** is a supervised machine learning model that allows us to make predictions by learning simple decision rules that are inferred using available information in the dataset.
- Non-parametric supervised learning method used for classification and regression.
- The goal is to create a model that predicts the value of a target variable by learning simple decision rules inferred from the data features.
- A tree can be seen as a piecewise constant approximation.
- This process is then repeated at every decision until we reach the bottom of the tree, where we end up with a specific prediction.

How Does the Decision Tree Work

- DTs can be pictured as a tree-like flowchart, where we start with a particular criteria and based on whether this is True (Y for Yes) or False (N for No), we chose only one of the branches.



How Does the Decision Tree Work (Cont.)



- **Root node:** The base of the decision tree.
- **Splitting:** The process of dividing a node into multiple sub-nodes.
- **Decision node:** When a sub-node is further split into additional sub-nodes.
- **Leaf node:** When a sub-node does not further split into additional sub-nodes; represents possible outcomes.
- **Pruning:** The process of removing sub-nodes of a decision tree.
- **Branch:** A subsection of the decision tree consisting of multiple nodes.