**Dataset:** iris.csv

**Example:** Visualize the distribution of **Petal Length**.

**Steps:**

* Drag **PetalLengthCm** to **Columns**.
* Drag **PetalLengthCm** again to **Rows**.
* Set the chart type to **Line Chart** or **Histogram**.
* This shows a **linear distribution** of one variable (1D).

**Dataset:** iris.csv

**Example:** Compare **Petal Length** vs **Petal Width**.

**Steps:**

* Drag **PetalLengthCm** to **Columns**.
* Drag **PetalWidthCm** to **Rows**.
* Choose **Scatter Plot**.
* Color by **Species** to add class differentiation.

**Dataset:** iris.csv

**Note:** Tableau doesn't support native 3D, but you can **simulate 3D** using size or color.

**Steps:**

* Drag **PetalLengthCm** to **Columns**.
* Drag **PetalWidthCm** to **Rows**.
* Drag **SepalLengthCm** to **Size** (in Marks card).
* Drag **Species** to **Color**.
* This simulates a 3D volumetric plot using **color** and **size** as the 3rd dimension.

**d. Temporal Data Visualization (Simulated)**

**📝 Objective:**

Simulate changes in flower measurements **over a sequence (like time)** using the Id column (1 to 150).

**📊 Steps in Tableau:**

1. Load iris.csv.
2. Drag Id to **Columns**.
3. Drag PetalLengthCm (or any feature) to **Rows**.
4. Drag Species to **Color**.
5. Change the chart type to **Line**.

This simulates how petal length varies **over observation ID**, as if it were a time series.

**Dataset:** iris.csv

**Steps:**

* Drag **PetalLengthCm** to Columns.
* Drag **PetalWidthCm** to Rows.
* Drag **SepalLengthCm** to Size.
* Drag **SepalWidthCm** to Shape or Tooltip.
* Drag **Species** to Color.

This visualizes **4+ dimensions** using multiple visual encodings (scatter plot enhanced with size, color, shape).

**f. Tree / Hierarchical Data Visualization (Simulated Treemap)**

**📝 Objective:**

Group data into a hierarchy: **Species → PetalLength Range**.

**📊 Steps in Tableau:**

1. Create a **calculated field**:
   * Go to Analysis → Create Calculated Field
   * Name it: Petal Length Group
   * Formula:

IF [PetalLengthCm] < 2 THEN "<2"

ELSEIF [PetalLengthCm] < 5 THEN "2-5"

ELSE ">5"

END

1. Drag **Species** to **Rows** also drag some length to columns
2. Drag **Petal Length Group** to **Color**.
3. Drag Id to **Size** or PetalLengthCm to **Size**.
4. Change **show me** to **Treemap**.

**g. Network Data Visualization (Simulated)**

**📝 Objective:**

Simulate a **network** between Species and Petal Length Group (as created above).

**📊 Steps in Tableau:**

1. Use the same **Petal Length Group** calculated field.
2. Drag **Species** to **Rows**.
3. Drag **Petal Length Group** to **Columns**.
4. Drag Id to **Size** (or COUNT(Id) for connections).
5. Change **Marks** to **Circle** or **Line**.
6. Drag Species or Petal Length Group to **Color**.

✔️ **Interpretation**: This creates a **tree-like view** showing how each species distributes across petal length ranges.

**a. 1D (Linear) Data Visualization**

**🎯 Goal:**

Visualize the distribution of a **single variable** like age.

**📊 Steps:**

1. Drag age to **Columns**.
2. Drag age again to **Rows**.
3. Set **Marks** to **Bar** or **Line**.
4. (Optional) Drag education to **Color** to compare by group.

✔️ Shows how one variable is distributed (age in this case).

**🔷 b. 2D (Planar) Data Visualization**

**🎯 Goal:**

Visualize the relationship between two numerical variables, e.g., age vs hours-per-week.

**📊 Steps:**

1. Drag age to **Columns**.
2. Drag hours-per-week to **Rows**.
3. Change **Marks** to **Circle** or **Scatter Plot**.
4. Drag workclass or education to **Color**.

✔️ Shows correlation or patterns between two variables (like work time vs age).

**🔷 c. 3D (Volumetric) Data Visualization (Simulated)**

**🎯 Goal:**

Simulate a 3D plot using size or color as the third dimension.

**📊 Steps:**

1. Drag age to **Columns**.
2. Drag hours-per-week to **Rows**.
3. Drag education-num to **Size** (simulates 3rd dimension).
4. Drag income to \*\*Color` (for highlighting income groups).

✔️ Simulates a 3D plot using color and size to encode extra dimensions.

**🔷 d. Temporal Data Visualization (Simulated)**

⚠️ The Adult dataset doesn't have a date field, so we simulate using age.

**🎯 Goal:**

Track average work hours across increasing age (as if time passed).

**📊 Steps:**

1. Drag age to **Columns**.
2. Drag hours-per-week to **Rows**.
3. Set **aggregation** to AVG(hours-per-week) (Right-click → Measure → Average).
4. Set chart type to **Line**.
5. Drag income or education to **Color**.

✔️ Simulates a temporal trend (e.g., older people working fewer/more hours).

**🔷 e. Multidimensional Data Visualization**

**🎯 Goal:**

Visualize **4 or more variables** at once.

**📊 Steps:**

1. Drag age to **Columns**.
2. Drag hours-per-week to **Rows**.
3. Drag education to \*\*Shape`.
4. Drag income to \*\*Color`.
5. Drag education-num to \*\*Size`.

✔️ Shows multiple variables in a single view, using color, size, shape, position.

**🔷 f. Tree / Hierarchical Data Visualization (Treemap)**

**🎯 Goal:**

Group and display categories like workclass → occupation.

**📊 Steps:**

1. Create a hierarchy by dragging:
   * workclass above occupation in the **Data pane** → Right-click → **Create Hierarchy**.
2. Drag the **hierarchy** to **Rows**.
3. Drag education-num or age to \*\*Size`.
4. Drag income to \*\*Color`.
5. Open **Show Me**, and select **Treemap**.

✔️ Creates a Treemap showing how occupation is nested within workclass.

**Steps to Create Network-like Visualization:**

**g.**

**🔨 Step-by-step in Tableau:**

1. **Open your adult\_dataset.csv in Tableau Public**.
2. Drag workclass to **Rows**.
3. Drag occupation to **Columns**.
4. Drag Id (or age, or any field) to **Size** – or use CNT(occupation) or CNT(Id).
5. Drag education or income to **Color**.
6. Set **Marks** to **Circle**.
7. Adjust the size and labels for clarity.