**Part I  
What are the graph types and use cases for visualization of distributions with only one variable? Graph type Uses**

**Histogram or density plot** :

Also known as Kernel density plots and density trace graphs. It visualizes the distribution of data over a continuous interval or time period. It Examines data range, Checks number of modes, Checks if distribution is normal/lognormal and Checks for anomalies and outliers

**Bar chart :**

Compares relative or absolute frequencies of the values of a categorical variable  
It is always represented with two axis. Usually One axis will have numerical values, and the other will describe the types of categories being compared.

**Part II**  
What are the graph types and use cases for visualization of distributions with two variables?

**Line plot** :

To show the relationship between two continuous variables it is the most obvious way (of course, not always the best) . It work best when the relationship between two variables is relatively clean and also it provides a quick and easy way to organize data and are best used when comparing fewer different numbers.

**Scatter Plots and smoothing curves:**

Scatter plots are similar to line graphs in that they use horizontal and vertical axes to plot data points. Its specific purpose is to show how one variable is affected by another. These are useful when the data is not so cleanly related and where line plots aren’t as useful

**Hex bin Plots:**

It is a variation of a traditional scatter plot. It is like a two-dimensional histogram. The data is divided into bins, and the number of data points in each bin is represented by color or shading.

**Bar chart for two categorical variables:**

The most straightforward way to visualize this is with a stacked bar chart, side-by-side bar chart and filled bar chart

**Stacked bar chart**: show a grouped structure, show a hierarchy one level deep and these are good for comparing between each element in the categories, and comparing elements across categories.

**Side-by-side bar chart**:  they are used to display information about the sub-groups that make up the different categories.

**Filled bar chart:** Somewhat similar to side-by-side bar chart and good for comparing relative frequencies of one variable to the second variable within each value of the first variable.