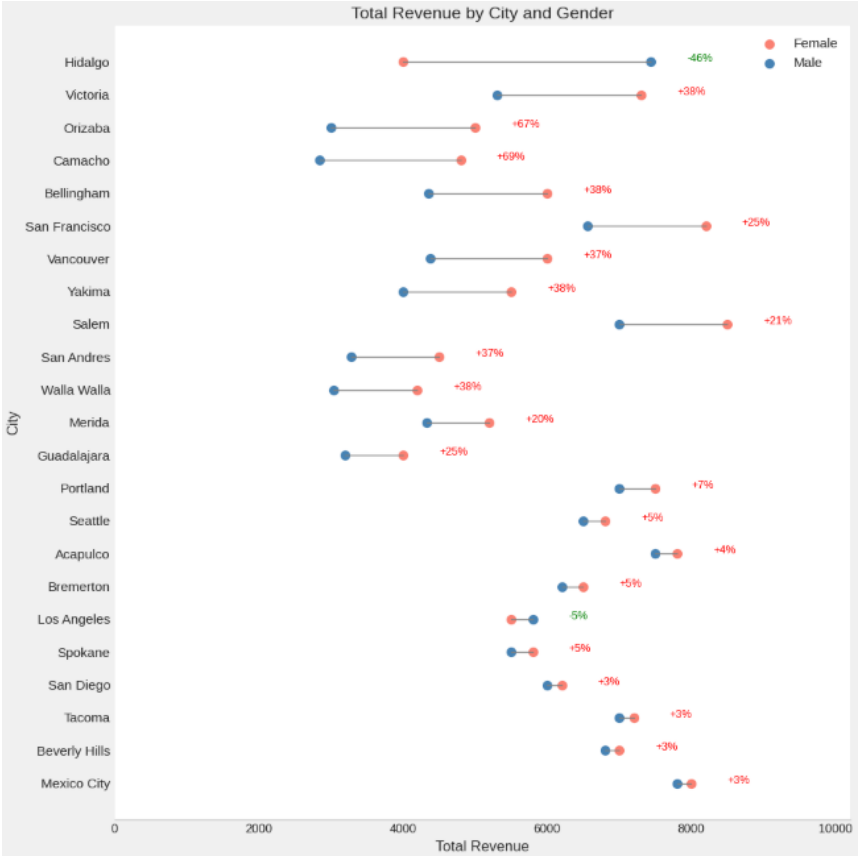
How to interpret lollipop chart for multivariate analysis



A. Interpretation of the Lollipop Chart Components:

- **Vertical Axis (Y-axis):** Represents the categorical variable "City," listing various cities.
- **Horizontal Axis (X-axis):** Represents the numerical variable "Total Revenue," ranging from 0 to 10000.
- **Points:** For each city, there are two points:
    - A **pink circle** representing the "Total Revenue" generated by **females** in that city.
    - A **blue circle** representing the "Total Revenue" generated by **males** in that city.
- **Lines (Stems):** A horizontal line connects the two points (female revenue and male revenue) for each city. This line acts as the "stick" of the lollipop.

- **Labels (Optional):** Some cities also have percentage labels (in pink or blue) indicating the percentage difference in revenue between females and males. A positive percentage in pink suggests female revenue is higher, while a positive percentage in blue suggests male revenue is higher.

B. Interpreting the Revenue by City and Gender:

For each city, we can compare the position of the pink and blue circles to understand the difference in total revenue generated by females and males:

- **Hidalgo:** Female revenue (pink circle around 4000) is significantly higher than male revenue (blue circle around 2000). The "+66%" in pink confirms that female revenue is 66% higher.
- **Victoria:** Male revenue (blue circle around 6000) is higher than female revenue (pink circle around 4000). The "+38%" in blue confirms that male revenue is 38% higher.
- **Orizaba:** Female revenue (pink circle around 6000) is higher than male revenue (blue circle around 3500). The "+69%" in pink confirms that female revenue is 69% higher.
- **Camacho:** Male revenue (blue circle around 6000) is higher than female revenue (pink circle around 4000). The "+38%" in blue confirms that male revenue is 38% higher.
- **Bellingham:** Male revenue (blue circle around 7500) is higher than female revenue (pink circle around 5500). The "+37%" in blue confirms that male revenue is 37% higher.
- **San Francisco:** Female revenue (pink circle around 6500) is higher than male revenue (blue circle around 5000). The "+25%" in pink confirms that female revenue is 25% higher.
- **Vancouver:** Female revenue (pink circle around 6000) is higher than male revenue (blue circle around 4500). The "+37%" in pink confirms that female revenue is 37% higher.
- **Yakima:** Female revenue (pink circle around 6000) is higher than male revenue (blue circle around 4000). The "+38%" in pink confirms that female revenue is 38% higher.

- **Salem:** Male revenue (blue circle around 8000) is higher than female revenue (pink circle around 6500). The "+21%" in blue confirms that male revenue is 21% higher.
- **San Andres:** Male revenue (blue circle around 5500) is higher than female revenue (pink circle around 4000). The "+37%" in blue confirms that male revenue is 37% higher.
- **Walla Walla:** Female revenue (pink circle around 5500) is higher than male revenue (blue circle around 4000). The "+38%" in pink confirms that female revenue is 38% higher.
- **Merida:** Male revenue (blue circle around 6000) is higher than female revenue (pink circle around 5000). The "+20%" in blue confirms that male revenue is 20% higher.
- **Guadalajara:** Male revenue (blue circle around 5000) is higher than female revenue (pink circle around 4000). The "+25%" in blue confirms that male revenue is 25% higher.
- **Portland:** Male revenue (blue circle around 7000) is slightly higher than female revenue (pink circle around 6500). The "+7%" in blue confirms that male revenue is 7% higher.
- **Seattle:** Male revenue (blue circle around 7500) is slightly higher than female revenue (pink circle around 7000). The "+5%" in blue confirms that male revenue is 5% higher.
- **Acapulco:** Male revenue (blue circle around 7500) is slightly higher than female revenue (pink circle around 7000). The "+5%" in blue confirms that male revenue is 5% higher.
- **Bremerton:** Male revenue (blue circle around 7000) is slightly higher than female revenue (pink circle around 6500). The "+5%" in blue confirms that male revenue is 5% higher.
- **Los Angeles:** Female revenue (pink circle around 6500) is slightly higher than male revenue (blue circle around 6000). The "+5%" in pink confirms that female revenue is 5% higher.
- **Spokane:** Male revenue (blue circle around 6500) is slightly higher than female revenue (pink circle around 6000). The "+5%" in blue confirms that male revenue is 5% higher.
- **San Diego:** Male revenue (blue circle around 6500) is slightly higher than female revenue (pink circle around 6000). The "+3%" in blue confirms that male revenue is 3% higher.

- **Tacoma:** Male revenue (blue circle around 7000) is slightly higher than female revenue (pink circle around 6500). The "+3%" in blue confirms that male revenue is 3% higher.
- **Beverly Hills:** Male revenue (blue circle around 7500) is slightly higher than female revenue (pink circle around 7000). The "+3%" in blue confirms that male revenue is 3% higher.
- **Mexico City:** Male revenue (blue circle around 8000) is slightly higher than female revenue (pink circle around 7500). The "+3%" in blue confirms that male revenue is 3% higher.

This specific type of lollipop chart is excellent for:

- **Comparing Two Numerical Values Across Categories:** When you have a categorical variable (like "City") and you want to compare two numerical measures (like revenue for two different groups within that category - "Male" and "Female").
- **Highlighting the Difference or Gap:** The horizontal line connecting the two points clearly visually represents the difference in the numerical values between the two groups within each category. The length of the line directly corresponds to the magnitude of the difference.
- **Improving Readability Compared to Side-by-Side Bars:** When you have many categories, side-by-side bar charts can become wide and cluttered. A lollipop chart can be more compact and easier to read, especially when the category labels are long.
- **Emphasizing the Comparison:** The discrete points for each group and the connecting line draw attention to the comparison between the two values within each category.
- **Adding Percentage Differences:** Including percentage difference labels directly on the chart provides an immediate quantitative measure of the comparison.

In summary, this type of lollipop chart is a clear and effective way to compare two numerical values across different categories, highlighting both the individual values and the magnitude of the difference between them. It's particularly useful when you want a less cluttered alternative to grouped bar charts and want to emphasize the comparison within each category.