**Data Visualization Index**

| **Visualization Type** | **Purpose** | **Example Use Case** | **Analysis Type** |
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| --- | --- | --- | --- |
| Histogram | Understanding data distribution | Analyzing customer age distribution in a store | Univariate |

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| Box Plot | Detecting outliers and understanding spread | Identifying income outliers in financial data | Univariate |

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| Scatter Plot | Identifying relationships between variables | Exploring correlation between marketing spend and sales | Bivariate |

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| KDE Plot (Kernel Density) | Visualizing data distribution smoothly | Analyzing product sales frequency over time | Univariate |

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| Violin Plot | Combining distribution and summary statistics | Comparing exam scores across different classes | Univariate |

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| Line Plot | Analyzing trends over time | Tracking monthly sales performance | Univariate or Bivariate |

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| Bar Plot | Comparing categorical data | Comparing revenue by product category | Univariate |

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| Count Plot | Showing frequency of categorical variables | Displaying customer preferences for product colors | Univariate |

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| Pie Chart | Representing proportions or percentages | Visualizing market share of competitors | Univariate |

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| Heatmap | Visualizing correlation between variables | Identifying correlated financial indicators | Bivariate or Multivariate |

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| Pair Plot | Exploring pairwise relationships in data | Diagnosing relationships in medical datasets | Bivariate or Multivariate |

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| Swarm Plot | Showing data distribution with less overlap | Displaying salaries by department | Univariate or Bivariate |

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| Joint Plot | Understanding bivariate distribution | Visualizing height vs. weight relationship | Bivariate |

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| Boxen Plot | Visualizing large datasets with multiple quantiles | Analyzing website traffic across different regions | Univariate |

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| Facet Grid | Comparing multiple plots across categories | Evaluating customer satisfaction across regions | Bivariate or Multivariate |