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Class: INFO 250-001

**Assignment 3**

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|  | Scatter plot | Bar Chart | Line Chart | Voronoi Tessellation | Pie Chart |
| System support | - RAW: Scatter plot  - Tableau: Simple and matrix scatter plots  - ggplot: Simple and grouped scatterplots, scatter plots with ellipses  - Google Charts: Basic scatter plots, top-X scatter plots, dual-Y scatter plots, and animated scatter plots | - RAW: Bar chart  - Tableau: Horizontal bars, Stacked bars, and Side-by-side bars  - ggplot: Labeled bars, grouped bars, and basic bars  - Google Charts: coloring bars/columns, stacked bars/columns, labeled bars/columns | - RAW: Not supported  - Tableau: lines (continuous), lines (discrete), dual lines  - ggplot: Basic line plots, line plots with multiple groups, line plots with numeric x-axis, line graph with error bars, customized line graphs  - Google Charts: Basic line charts, dual-Y charts, top-X charts, | - RAW: Voronoi Tessellation  - Tableau: Not supported  - ggplot ( Supported with library ggvoronoi): Voronoi diagrams  - Google Charts: Not supported | - RAW: Pie chart  - Tableau: pie charts  - ggplot: Simple pie charts, customized pie charts  - Google Charts: Basic pie chart, 3D pie chart, Donut chart, Rotating a pie chart, Exploding a slice, Removing slices, Slice visibility threshold |
| Visual patterns | - Size (of data points, i.e. radius)  - Color  - Shape (of data points, i.e. circle, triangle)  - Transparency  - X-axis  - Y-axis | - Size (of bars)  - Color  - Labels  - X-axis  - Y-axis | - Line width  - Line type  - Color  - X-axis  - Y-axis | - Color  - Size (of the colored areas)  - Labels  - X-axis  - Y-axis | - Size (angle) of the circle  - Color  - Labels |
| Data types | - 2-dimensional (numeric x numeric) | - 2-dimensional (numeric x categorical) | - 2-dimensional (datetime/categorical x numeric) | - 2-dimensional (numeric/datetime x numeric/datetime) | - 1-dimensional (numeric) |
| Questions | 1. What is the correlation between two variables described in this graph?  2. Are there any outliers in the sample? | 1. How objects are compared in terms of the number?  2. How different subcategories within a group are different in the number? | 1. What is the movement of the variable compared to the timeline?  2. (Multiple lines in one graph) Compare the ups and downs of the variables in a specific period of time. Do they share any common movement anywhere during this period? | 1. Where are the clusters of data points located with respect to x-axis and y-axis?  2. Where are the outliers of the sample? | 1. What is the percentage represented by each category?  2. What is the ratio of the size of two categories represented in the graph? |