



Business Intelligence Concepts, Tools, and Applications

Week 3: Data Visualization and Dashboard Design
Lesson 2: Data Visualization Guidelines and Pitfalls



Data Visualizations Guidelines and Pitfalls

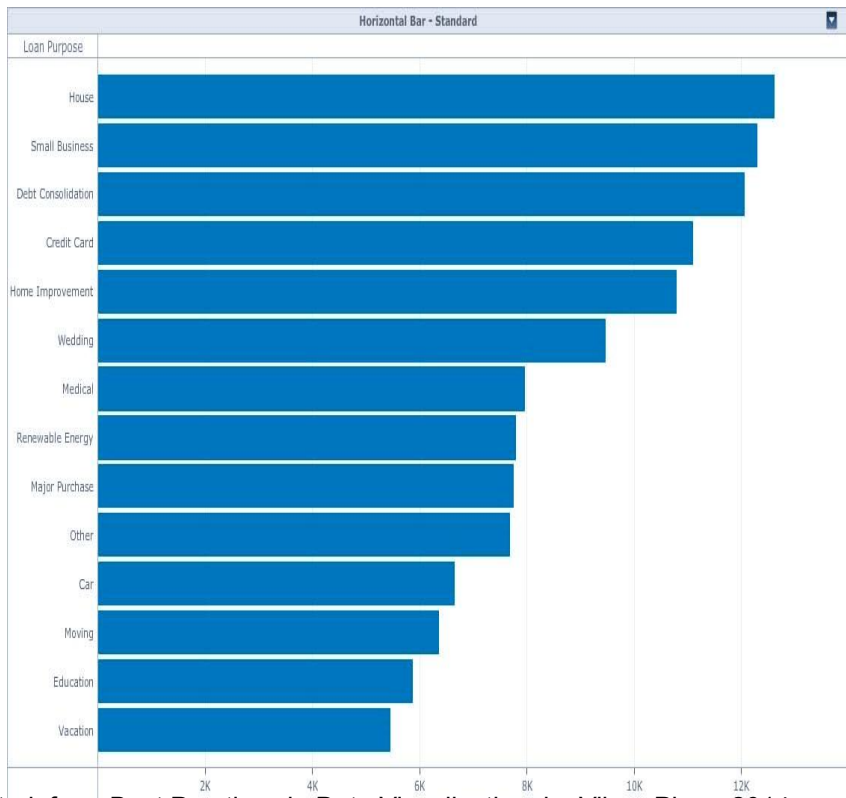
- Learning Objectives
 - Identify best practices for designing data visualizations in preparation for completing the data visualization exercise.



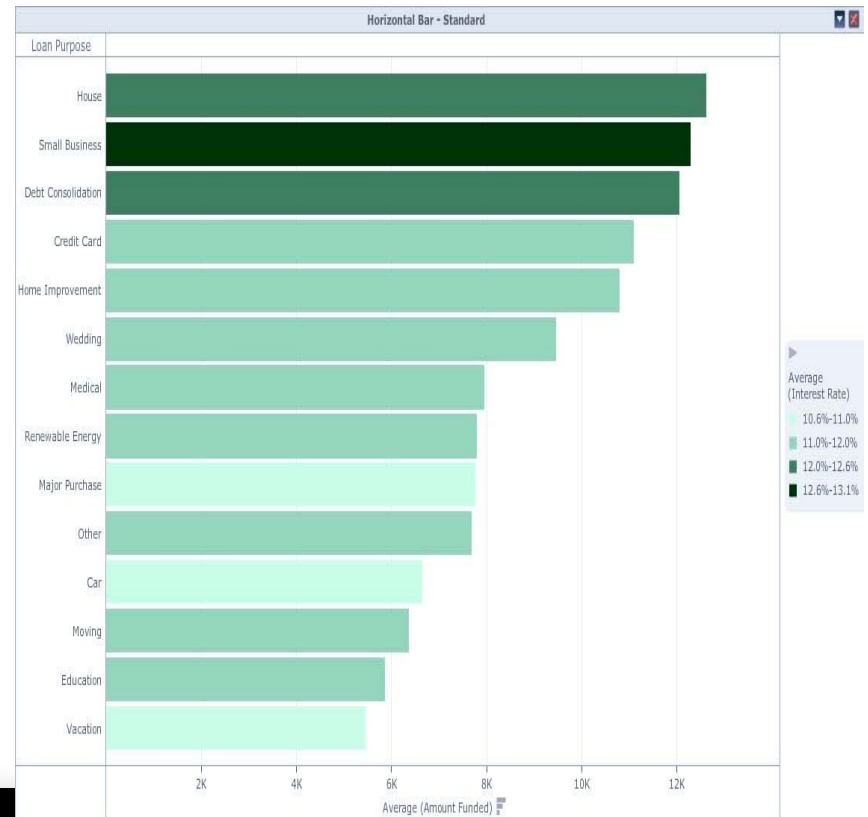
Visualizations

Attribute (nominal) and Metric

Comparative Analysis -Bar Chart Sorted



Comparative analysis- Bar Chart with Color to highlight Metric Patterns

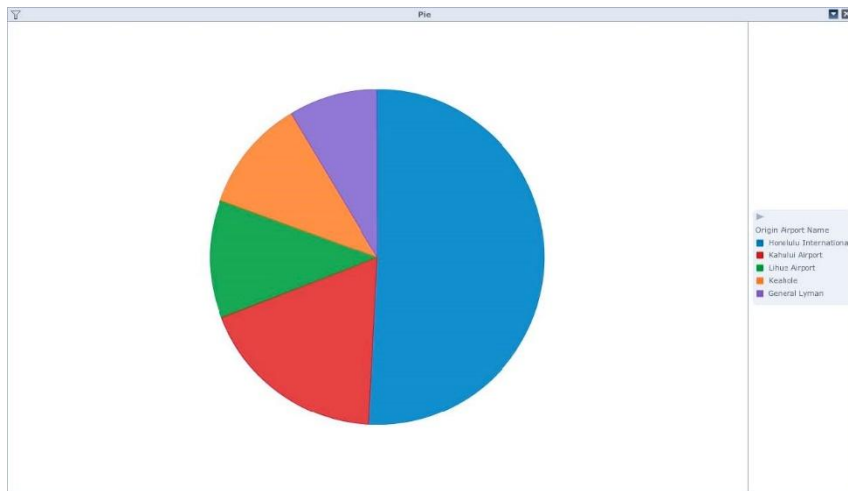


Adapted from Best Practices in Data Visualization, by Vihao Pham 2014

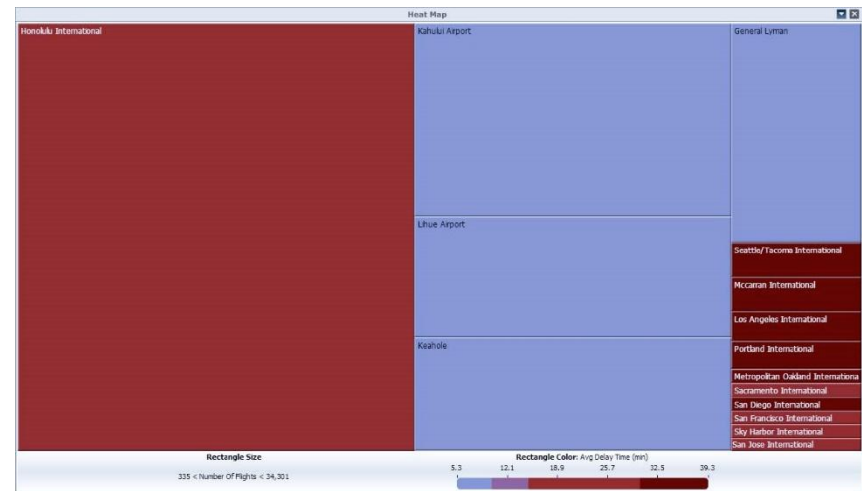
Visualizations

Attribute(nominal) and Metric

Contribution analysis-few elements- Pie Chart



Contribution Analysis-Many Elements- Heat Map



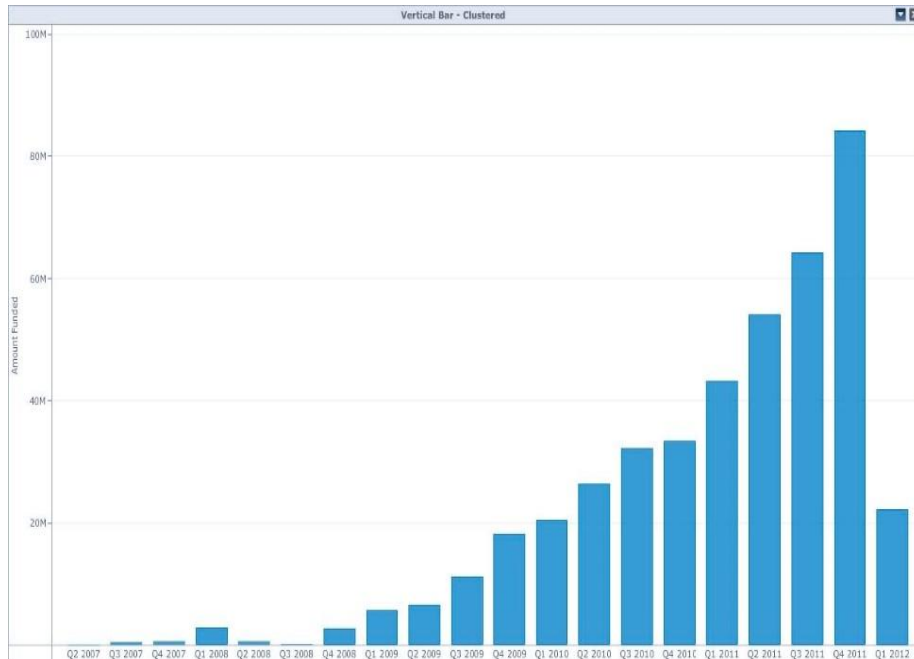
Adapted from [Best Practices in Data Visualization](#), by Vihao Pham 2014



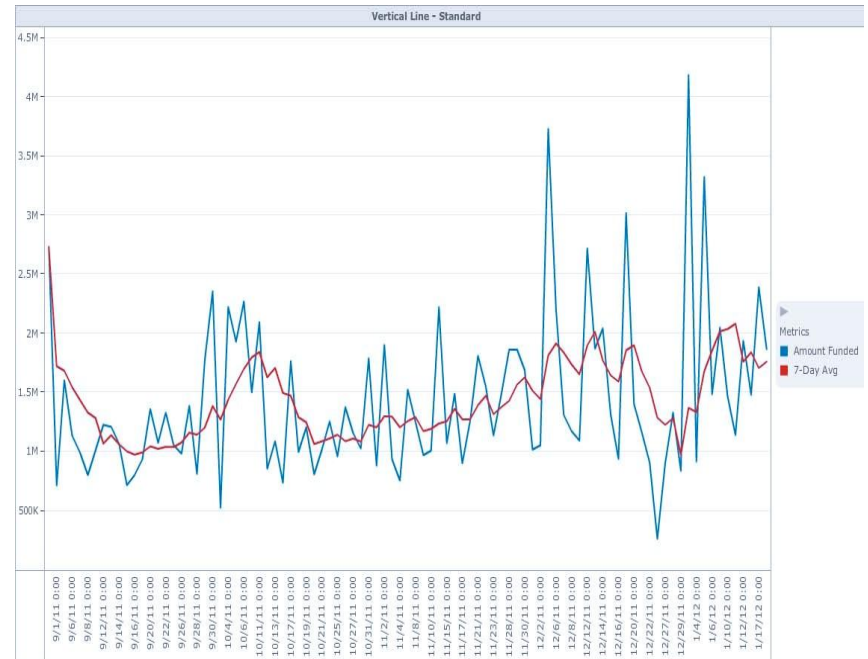
Visualizations

Attribute (ordinal) and Metric

Time-series analysis- Few elements- Column Chart



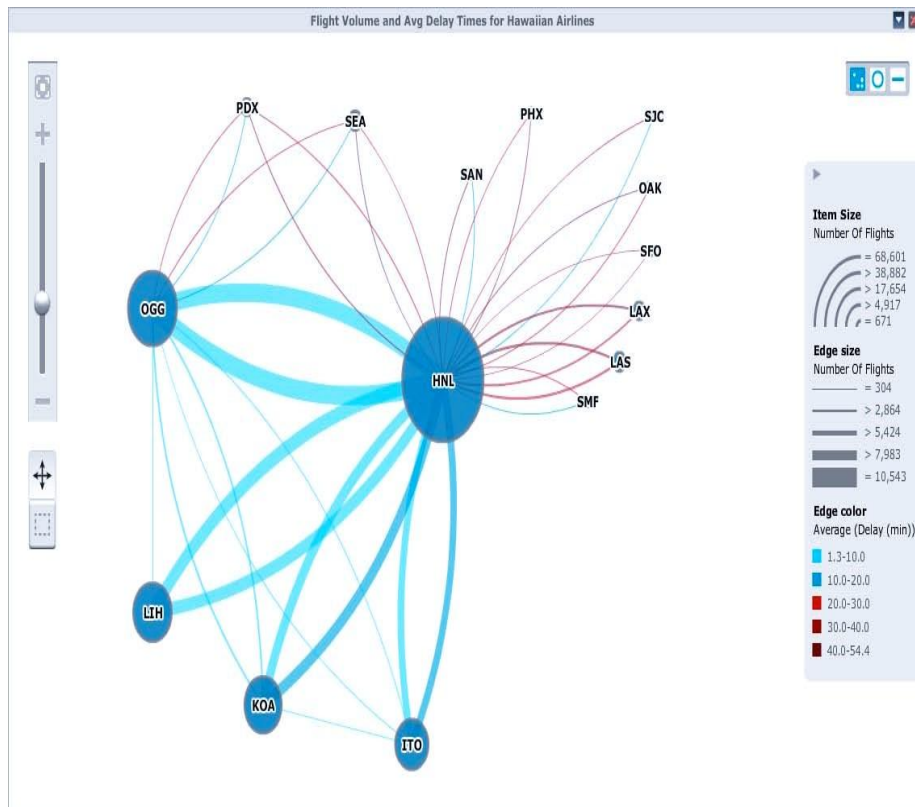
Time-series Analysis- Many Elements- Line chart



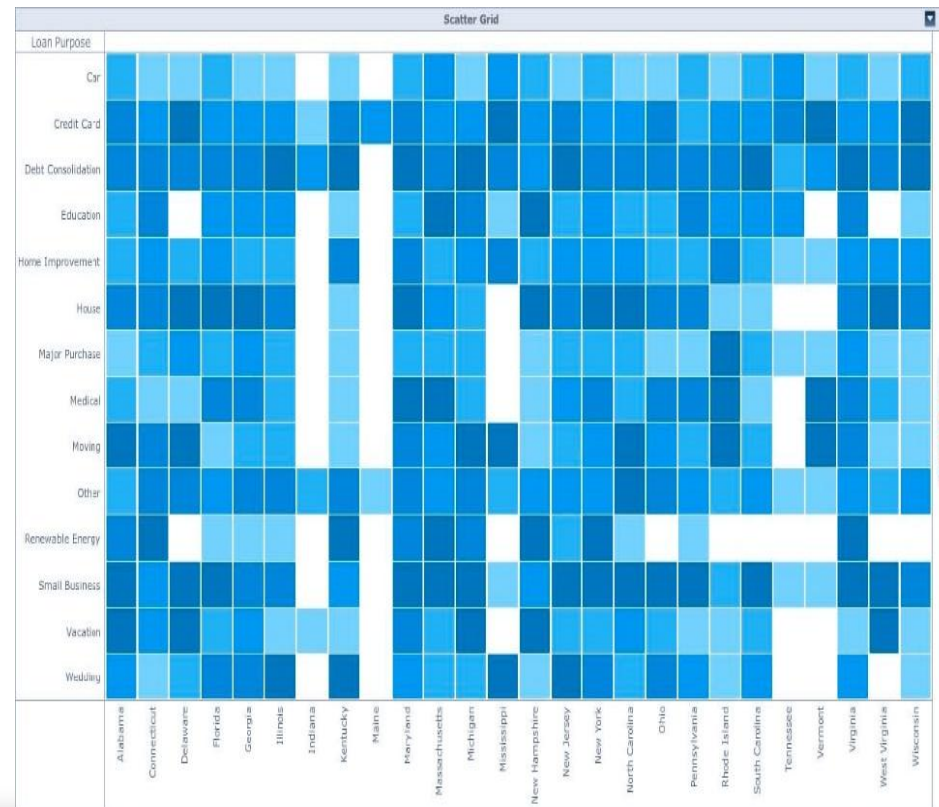
Visualizations

Attribute (Nominal) and Attribute (Nominal)

Market Basket or Network Analysis- Network Visualization



Market Basket or Network Analysis- **Avoid** Scatter Grid- Implied ordinality



Adapted from Best Practices in Data Visualization, by Vihao Pham 2014

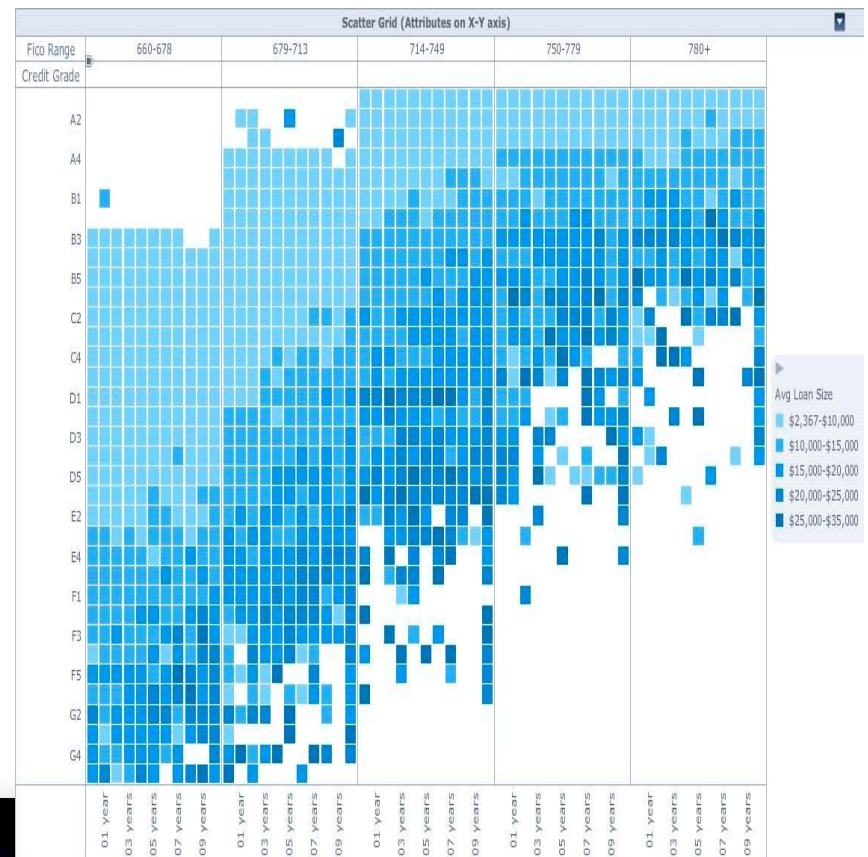
Visualizations

Attribute (nominal) and Attribute (ordinal)

Time-series Comparative Analysis- Line Chart with Break-by



Cluster or Heat map Analysis Scatter Grid



Adapted from Best Practices in Data Visualization, by Vihao Pham 2014

Appropriate Visualizations

| | Metric | Attribute (Nominal) | Attribute (Ordinal) |
|------------------------|----------------|------------------------|-------------------------------------|
| Attribute (Nominal) | Bar Heatmap | Network | Line w/ Break-By Bar w/ Break-By |
| Attribute (Ordinal) | Column Line | | Scatter Grid |
| Metric | Scatter/Bubble | | |

Adopted from [Best Practices in Data Visualization](#), by Vihao Pham 2014

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A Sparkline, Bullet Chart, Column Chart and Bubble Grid Are Used to Analyze Activities in a Customer Support Center

Support Center Operations Dashboard

Overview | Product Adoption | **Regional Performance** | High Priority Customers

Support Regions Overview (Month Ending Dec 2007)

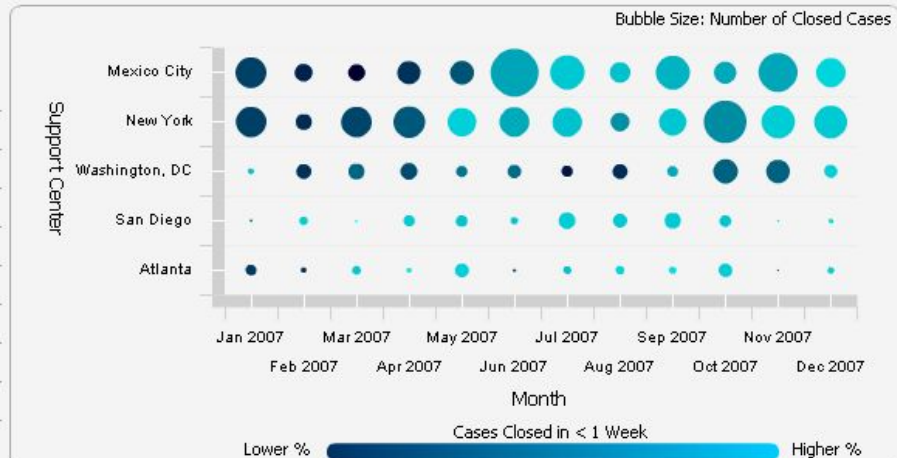
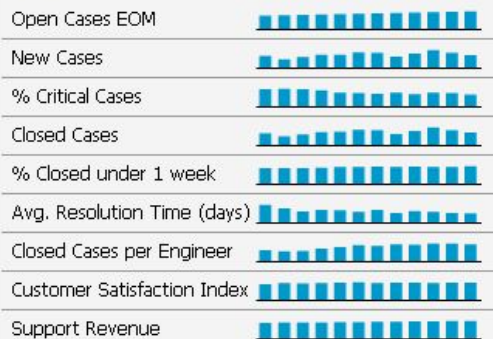
| Support Region | Closed Cases | Closed Cases (12 trailing months) | Avg. Resolution Time (days) | Closed under 1 week | New Cases | % Total |
|----------------|--------------|-----------------------------------|-----------------------------|---------------------|-----------|---------|
| North America | 622 | | 3.8 | | 725 | 26.6% |
| South America | 449 | | 3.2 | | 526 | 19.2% |
| Europe | 683 | | 3.7 | | 798 | 29.2% |
| Asia Pacific | 584 | | 3.8 | | 706 | 25.0% |

Note: Select Support Region to display below a Support Region summary and analyze performance by Support Center.

Support Region Summary - North America

☒ Closed cases vs. % Closed under 1 week ☐ Support Revenue vs. Customer Satisfaction Index

Metric Trailing 12 Months



General Rules for Charts

- Think about which increments are best to use in charts.
- Avoid combining unrelated charts into one.
- Consider the importance of direction when presenting data.
- Avoid cramming too much information into each chart.
- Make sure that any data labels or data legends are legible.
- Think about the order and direction of the slices in a pie chart.
- Avoid using too many effects to differentiate each slice.
- Think about the size of sparklines.
- Ensure they are placed in relevant sections.

Source: Adopted from [Free E-Book: How to Create Compelling Business Dashboards](#): Everything you need to know to design best-practice dashboards and data visualizations. Matillion Business Intelligence.

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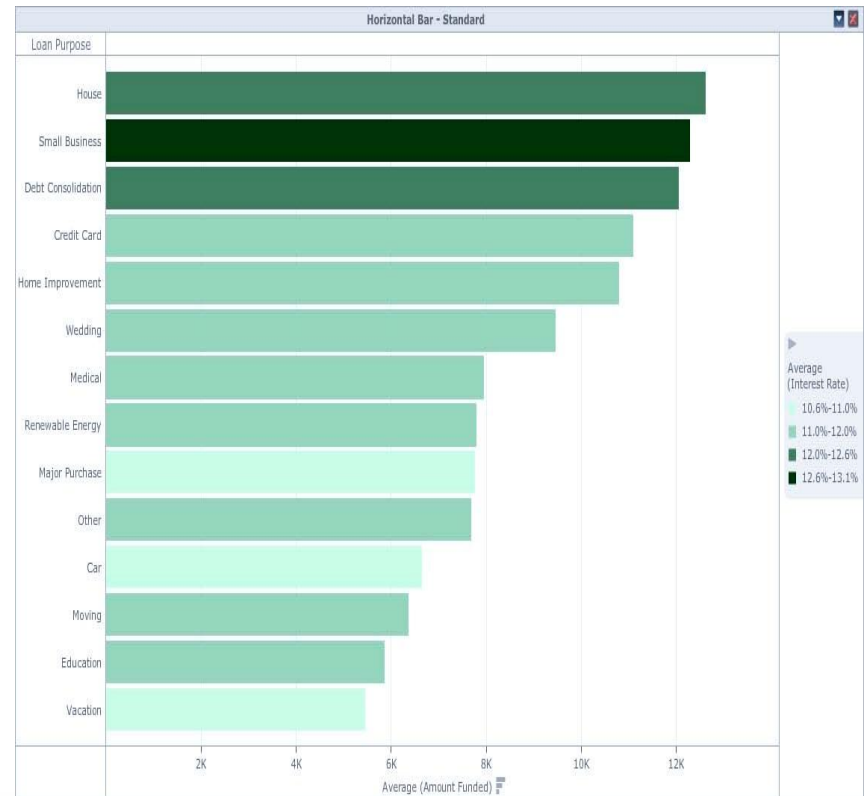
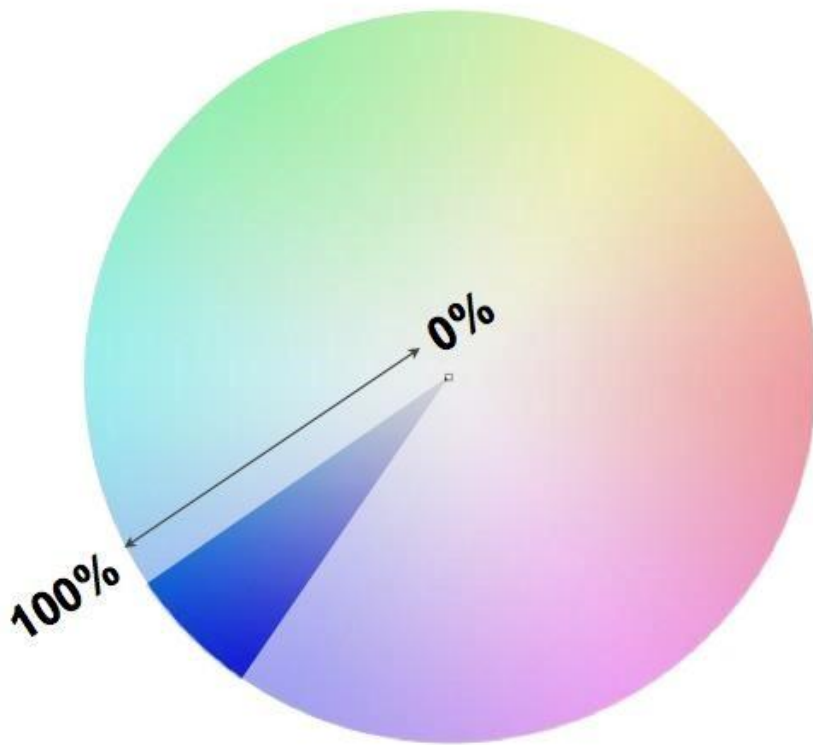


Visualization Considerations

Use Color Saturation Correctly

Less Saturation: Small Values

More Saturation: Greater Values



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Hands-on Exercise #3

Offline/Standalone Dashboards with Advanced Visualizations

Dynamic Dashboards Help Business People Make Better Decisions, Faster

