Tableau Classroom Training
Visual Analytics
Practice Guide
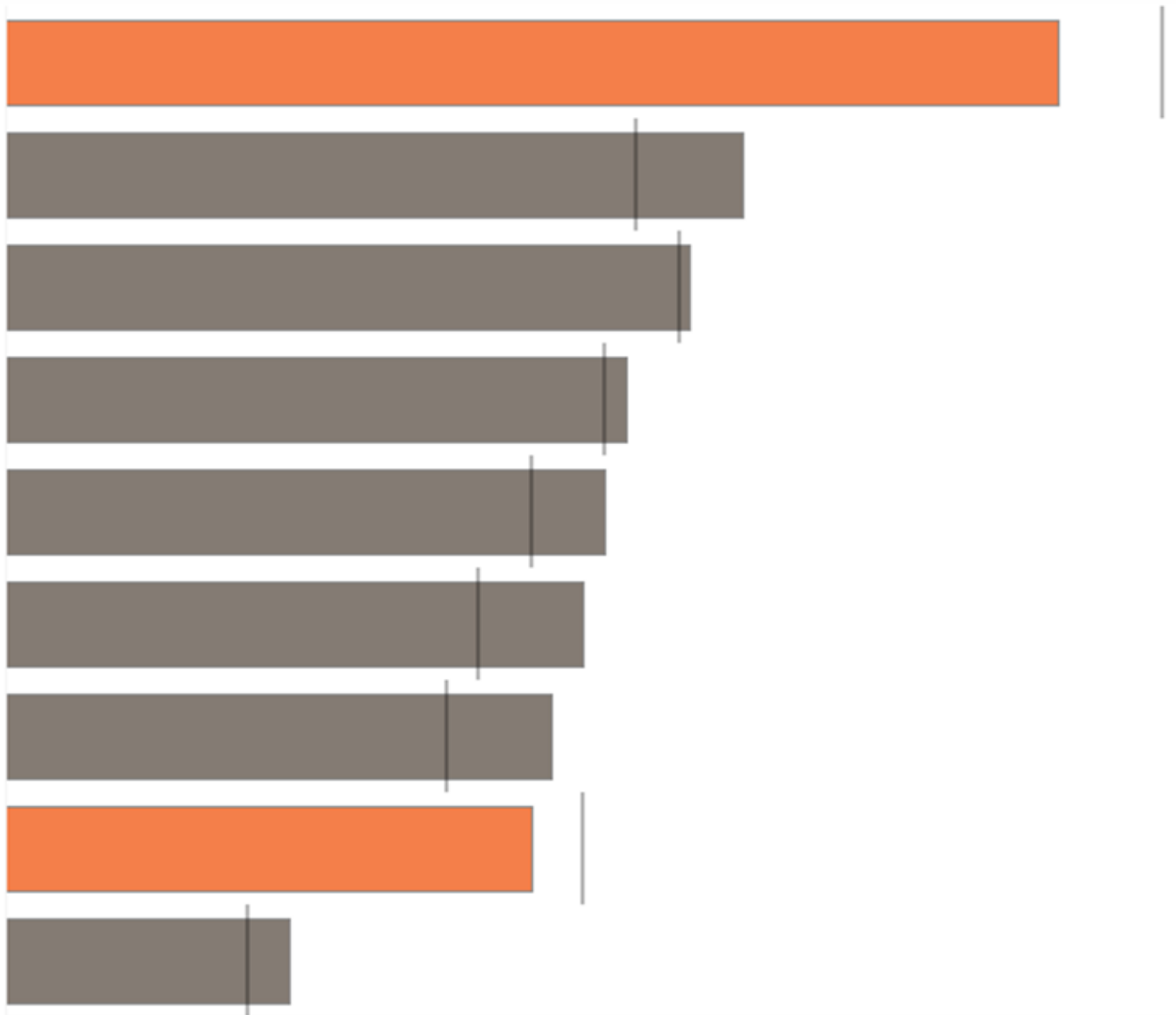
+ tableau®

Contents

1. Memory and Processing

This module contains the following:

Practice: Identifying Types of Processing

Practice: Identifying Types of Processing

In this practice, you'll consider how much preattentive and attentive processing you perform as you interpret visualizations. Open **Identifying Types of Processing.twbx**.

Consider the following as you explore the visualizations:

- Are there any preattentive attributes that are processed by your sensory memory right away?
- How much attentive processing does your short-term memory have to do in order to answer the question?
- Which examples make it easiest to answer the question? Why?

2. Short-Term Memory

This module contains the following:

Practice: Analyzing Cognitive Load

Practice: Reducing Cognitive Load

Practice: Analyzing Cognitive Load

In this practice, you'll identify cognitive load issues in visualizations. Open **Analyzing Cognitive Load.twbx**.

Consider the following as you explore the visualizations:

- Which aspects of the visualization are causing cognitive load?

Practice: Reducing Cognitive Load

In this practice, you'll revise a visualization to reduce the cognitive load. Open **Reducing Cognitive Load.twbx**.

As you revise the visualization, consider the strategies for limiting cognitive load:

Provide a task and instructions for how to use the visualization.
Sequence and guide the user to the insight.
Eliminate unnecessary data ink, including unnecessary labels, headers, and legends, as well as detail that is better provided through interaction.
Eliminate non-data ink, such as tick marks, drop lines, grid lines, and images.
Limit the number of items users must hold in short-term memory (7 items maximum, ideally 2-5 items).
When possible, use intuitive shapes or colors to eliminate or reduce the need for legends.
When legends or labels are necessary, position them near the items they explain.
Limit the overall amount of visual encoding.
Limit the use of redundant encoding.
When possible, organize information into chunks.
When comparison is needed, make those items contiguous to avoid change blindness. (Use caution with filters, parameters, scroll bars, and story points.)

3. Sensory Memory: Overview

This module contains the following:

Practice: Analyzing Preattentive Attributes

Practice: Analyzing Preattentive Attributes

In this practice, you'll analyze the effectiveness of preattentive attributes in visualizations.

Open **Analyzing Preattentive Attributes.twbx**. Which preattentive attributes do you notice? Are they used effectively?

Attribute	Ease of perceiving as quantitative	Ease of perceiving as categorical
Length	Excellent	Poor
Width	Limited	Poor
Size	Limited	Poor
Orientation	Limited	Poor
Shape	Poor	Excellent
Enclosure	Poor	Limited
Color Hue	Poor	Excellent
Color Intensity	Limited	Poor
2-D Position	Excellent	Poor
Spatial Grouping	Poor	Excellent

4. Sensory Memory: Form

This module contains the following:

Practice: Using Form Effectively

Practice: Using Form Effectively

In this practice, you'll improve the use of form in visualizations. Open **Using Form Effectively.twbx**.

As you work, consider the general guidelines you learned earlier for leveraging sensory memory, as well as the guidelines for using form effectively.

Leverage Sensory Memory

Consider length or 2-D position when users need to see small or exact differences between quantitative values.
Consider width, size, orientation, and color intensity for quantitative values only when users don't need to perceive small or exact differences.
Consider shape or color hue first when users need to see categorical differences. (Spatial grouping is perceived effectively but not easy to control, and enclosure works for categorical values in limited circumstances.)

Use Form Effectively

Position objects of similar length near each other, and use a common baseline.
Consider width, size, and enclosure for calling attention to specific items, such as by bolding or enlarging text, or by enclosing outliers.
Limit the number of shapes to a maximum of seven (ideally, fewer).
Review instances of enclosure to make sure it does not create unintended boundaries and groups.
Consider whether mark borders will enhance or distract from your visualization.

5. Sensory Memory: Color

This module contains the following:

   Practice: Using Color Effectively

Practice: Using Color Effectively

In this practice, you'll improve the use of color in visualizations. Open **Using Color Effectively.twbx**.

As you work, consider the general guidelines you learned earlier for leveraging sensory memory, as well as the guidelines for using color effectively.

Leverage Sensory Memory

Consider length or 2-D position when users need to see small or exact differences between quantitative values.
Consider width, size, orientation, and color intensity for quantitative values only when users don't need to perceive small or exact differences.
Consider shape or color hue first when users need to see categorical differences. (Spatial grouping is perceived effectively but not easy to control, and enclosure works for categorical values in limited circumstances.)

Use Color Effectively

Use a neutral and consistent background, without gradients or variations.
Consider color vision deficiency when selecting colors.
Limit the number of color hues to a maximum of seven (ideally, fewer).
When necessary, consider how best to implement a company or organizational color scheme.
If using color intensity, select a diverging palette only when a meaningful threshold exists.
If using color intensity, consider whether to use a continuous or stepped scale.

6. Sensory Memory: Position

This module contains the following:

   Practice: Using Position Effectively

Practice: Using Position Effectively

In this practice, you'll improve the use of position in visualizations. Open **Using Position Effectively.twbx**.

As you work, consider the general guidelines you learned earlier for leveraging sensory memory, as well as the guidelines for using position effectively.

Leverage Sensory Memory

Consider length or 2-D position when users need to see small or exact differences between quantitative values.
Consider width, size, orientation, and color intensity for quantitative values only when users don't need to perceive small or exact differences.
Consider shape or color hue first when users need to see categorical differences. (Spatial grouping is perceived effectively but not easy to control, and enclosure works for categorical values in limited circumstances.)

Use Position Effectively

When it is important for users to compare subtle differences in 2-D position, position the objects near each other.
Consider whether too much 2-D distance separates marks from explanatory information, such as heading or axes.
Consider the language of your users and where they will look first when deciding where to position high-priority information. (For an English-language audience, the high-priority area is top left.)
Consider whether you can reposition information from legends to be nearer the views they explain.
Review the visualization to make sure any instances of spatial grouping reflect groups you actually intend to convey.

7. Informing without Misleading

This module contains the following:

Practice: Informing without Misleading

Practice: Informing without Misleading

In this practice, you'll look at a variety of visualizations and discuss how they might mislead viewers. Open **Informing without Misleading.twbx**.

Analyze the visualizations to identify elements that may mislead viewers. Consider the following guidelines you learned for informing without misleading.

Review the visualization for Gestalt principles to make sure it reflects the groupings and patterns you intend.
Encode length, width, and size so that an increase in visual area reflects an increase in value.
Avoid encoding negative values with visual area.
Avoid truncating axes for mark types that represent entire values (such as bars).
Consider whether to truncate axes for mark types that represent change rather than entire value (such as lines).
Use axes that conform to standard orientation, with X and Y values that increase as you move right and up, and that decrease as you move left and down.
When you have an independent and dependent variable, put the independent variable on the X axis and the dependent variable on the Y axis.
If a dual axis chart includes the same units on each axis, synchronize the axes and hide one of the axes if possible.
When a view changes due to an interaction, such as a filter or parameter, fix the axis to maintain a consistent scale.
Consider meaningful associations your users may already have about the colors in your visualization.
Use colors consistently throughout a visualization, particularly across views on a dashboard.
Consider color hue palettes that give equal weight and independence to all categories.
Make a thoughtful decision about what to include and what to omit from the initial visualization. Consider adding interaction so users can view additional information (for example, visual overview charts, tooltips, filters or parameters, dashboard actions, or additional dashboards).

8. Charts for Viewing Specific Values

This module contains the following:

Practice: Viewing Specific Values

Practice: Viewing Specific Values

In this practice, you'll improve visualizations so that they are better for viewing specific values.

To start this practice, follow these steps:

1. Open the **Viewing Specific Values.twbx** workbook.
2. Open the worksheet that corresponds to the chosen scenario.
3. Use the following checklist to help you improve or replace the visualization:

   - Determine which chart type best answers the scenario's question.
   - Determine which preattentive attributes best support your chosen chart type.
   - Apply the best practices and considerations for your chosen chart type.
   - Determine what additional changes you might make to help reduce the load on short-term memory.

9. Charts for Comparing and Ranking Categories

This module contains the following:

Practice: Comparing and Ranking Categories

Practice: Comparing and Ranking Categories

In this practice, you'll improve visualizations so that they are better at comparing and ranking categories.

To start this practice, follow these steps:

1. Open the **Comparing and Ranking Categories.twbx** workbook.
2. Open the worksheet that corresponds to the chosen scenario.
3. Use the following checklist to help you improve or replace the visualization:

   - Determine which chart type best answers the scenario's question.
   - Determine which preattentive attributes best support your chosen chart type.
   - Apply the best practices and considerations for your chosen chart type.
   - Determine what additional changes you might make to help reduce the load on short-term memory.

10. Charts for Comparing Parts to Whole

This module contains the following:

Practice: Comparing Parts to Whole

Practice: Comparing Parts to Whole

In this practice, you'll improve visualizations so that they are better at comparing parts to the whole.

To start this practice, follow these steps:

1. Open the **Comparing Parts to Whole.twbx** workbook.
2. Open the worksheet that corresponds to the chosen scenario.
3. Use the following checklist to help you improve or replace the visualization:

   - Determine which chart type best answers the scenario's question.
   - Determine which preattentive attributes best support your chosen chart type.
   - Apply the best practices and considerations for your chosen chart type.
   - Determine what additional changes you might make to help reduce the load on short-term memory.

11. Charts for Comparing Measures

This module contains the following:

Practice: Comparing Measures

Practice: Comparing Measures

In this practice, you'll improve visualizations so that they are better at comparing measures.

To start this practice, follow these steps:

1. Open the **Comparing Measures.twbx** workbook.
2. Open the worksheet that corresponds to the chosen scenario.
3. Use the following checklist to help you improve or replace the visualization:

   ■ Determine which chart type best answers the scenario's question.
   ■ Determine which preattentive attributes best support your chosen chart type.
   ■ Apply the best practices and considerations for your chosen chart type.
   ■ Determine what additional changes you might make to help reduce the load on short-term memory.

12. Charts for Viewing Correlation

This module contains the following:

Practice: Viewing Correlation

Practice: Viewing Correlation

In this practice, you'll improve visualizations so that they are better for viewing correlation.

To start this practice, follow these steps:

1. Open the **Viewing Correlation.twbx** workbook.
2. Open the worksheet that corresponds to the chosen scenario.
3. Use the following checklist to help you improve or replace the visualization:

   - Determine which preattentive attributes best support scatter plots.
   - Apply the best practices and considerations for scatter plots.
   - Determine what additional changes you might make to help reduce the load on short-term memory.

13. Charts for Viewing Distributions

This module contains the following:

Practice: Viewing Distributions

Practice: Viewing Distributions

In this practice, you'll improve visualizations so that they are better for viewing distributions.

To start this practice, follow these steps:

1. Open the **Viewing Distributions.twbx** workbook.
2. Open the worksheet that corresponds to the chosen scenario.
3. Use the following checklist to help you improve or replace the visualization:

   - Determine which chart type best answers the scenario's question.
   - Determine which preattentive attributes best support your chosen chart type.
   - Apply the best practices and considerations for your chosen chart type.
   - Determine what additional changes you might make to help reduce the load on short-term memory.

14. Charts for Viewing Data Over Time

This module contains the following:

Practice: Viewing Data Over Time

Practice: Viewing Data Over Time

In this practice, you'll improve visualizations so that they are better for viewing data over time.

To start this practice, follow these steps:

1. Open the **Viewing Data Over Time.twbx** workbook.
2. Open the worksheet that corresponds to the chosen scenario.
3. Use the following checklist to help you improve or replace the visualization:

   ■ Determine which chart type best answers the scenario's question.
   ■ Determine which preattentive attributes best support your chosen chart type.
   ■ Apply the best practices and considerations for your chosen chart type.
   ■ Determine what additional changes you might make to help reduce the load on short-term memory.

15. Charts for Mapping

This module contains the following:

Practice: Mapping

Practice: Mapping

In this practice, you'll improve visualizations so that they are better at mapping.

To start this practice, follow these steps:

1. Open the **Mapping.twbx** workbook.
2. Open the worksheet that corresponds to the chosen scenario.
3. Use the following checklist to help you improve or replace the visualization:

   - Determine which preattentive attributes best support mapping.
   - Apply mapping best practices and considerations.
   - Determine what additional changes you might make to help reduce the load on short-term memory.

16. Dashboards and Stories

This module contains the following:

Practice: Picking the Chart Type

Practice: Brainstorming Visual Best Practices

Practice: Designing Dashboards and Stories

Practice: Picking the Chart Type

In this practice, you will consider some questions and analyze which chart types could work well to answer them. You won't actually build or revise visualizations in this practice.

Consider some or all of the following questions, depending on what you have time for. Which chart types might work well to answer the question?

1. Are museum ticket sales affected by bad weather?
2. Which state has the most farmers markets?
3. What percentage of orders shipped on-time or early versus shipping late?
4. Where are people checking out and returning bikes from the local bike share program?
5. What are the exact sales figures for the past four quarters for each member of my sales team?
6. How do average movie ticket sales for each day of the week compare to the other days and to the overall average?
7. How were the exam results distributed between the various possible grades, on a scale in which A = 90-100%, B = 80-90%, C = 70-80%, and D = below 70%?
8. What does the survey data indicate are the top ten words most often used by our customers to describe our product?
9. How many points did our basketball team score overall, and how many points did each player score?
10. How do this quarter's sales for each of our products compare to the same quarter last year?
11. What is the participation rate for each business group in this year's giving campaign, and which groups are below 60% or above 90%?
12. Does the frequency of bird-and-airplane strikes at various altitudes follow a normal bell curve?

Practice: Brainstorming Visual Best Practices

In this practice, you will brainstorm the most important guidelines for visual best practices that you have learned in this class. These will be guidelines to keep in mind as you design individual views, dashboards, and stories to share with others.

You may use this space to brainstorm guidelines you've learned.

Practice: Designing Dashboards and Stories

In this practice, you will create a dashboard or story to fit a scenario. Select and open one of the starter .twbx files for this module.

The starter file includes a scenario and some views that you may want to consider for your dashboard or story.

Create a dashboard or story to fit the scenario. You can revise the included views or create different views if you prefer.

As you work, consider the purpose and audience of the visualization, and be sure to apply visual best practices.