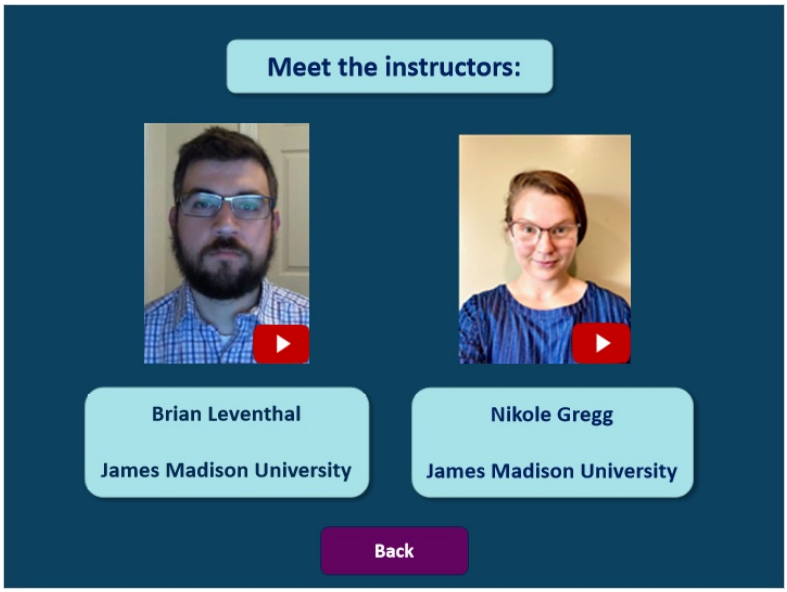
ITEMS: Data Visualizations (DM17, Version 1.0)

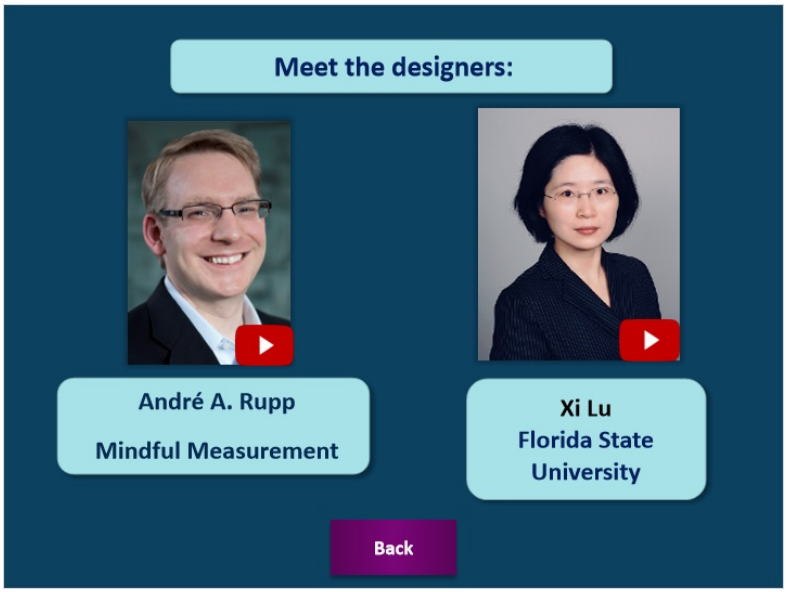
1. Module Overview

1.1 Module Cover (START)

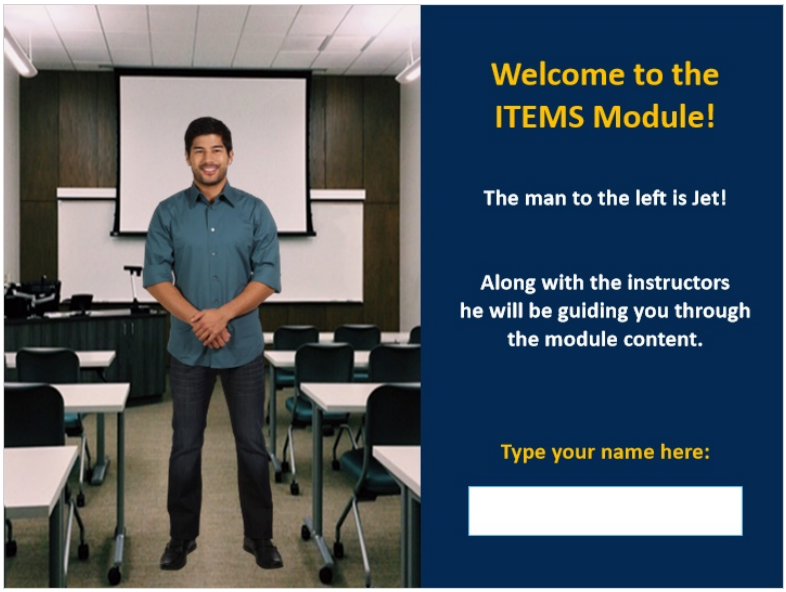
1.2 Instructors



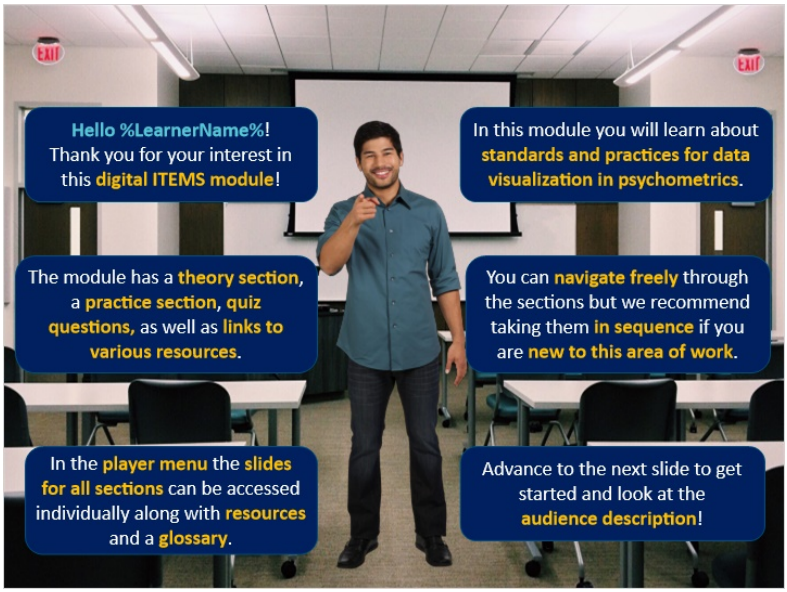
1.3 Designers



1.4 Welcome



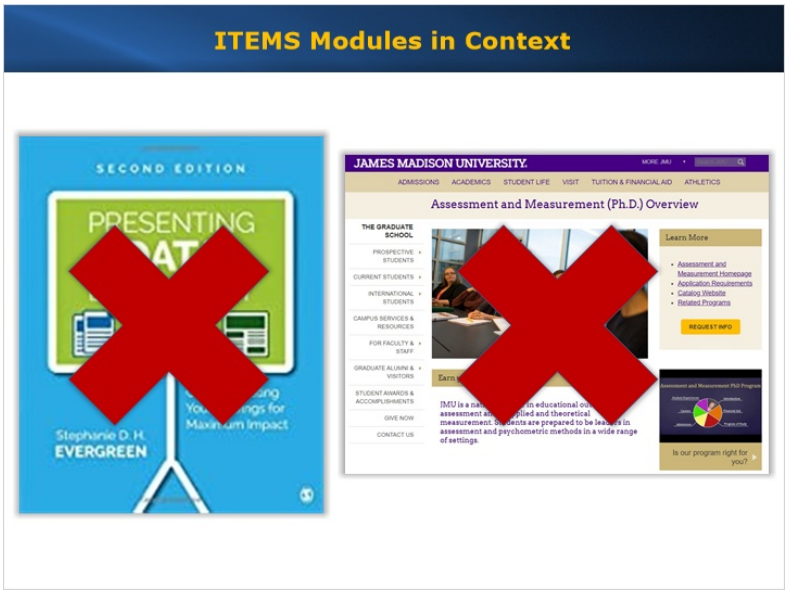
1.5 Overview



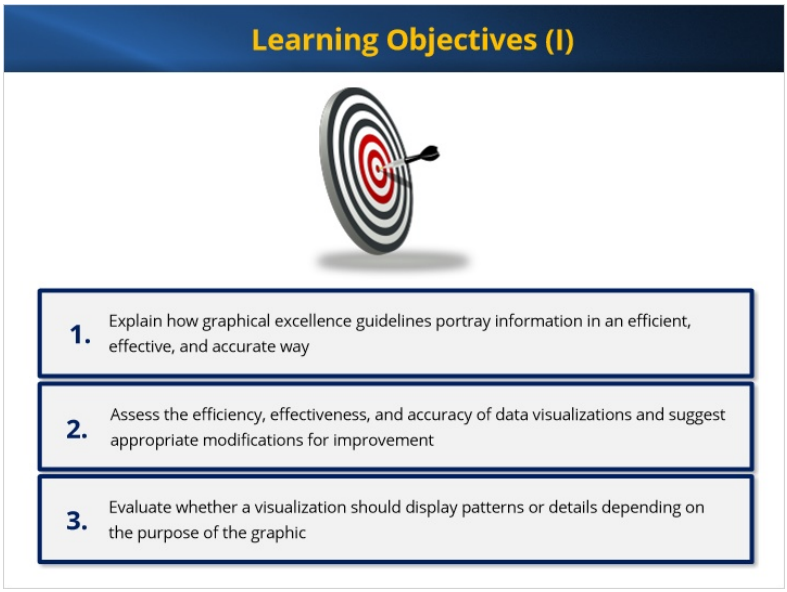
1.6 Target Audience

1.7 Expecations (I)

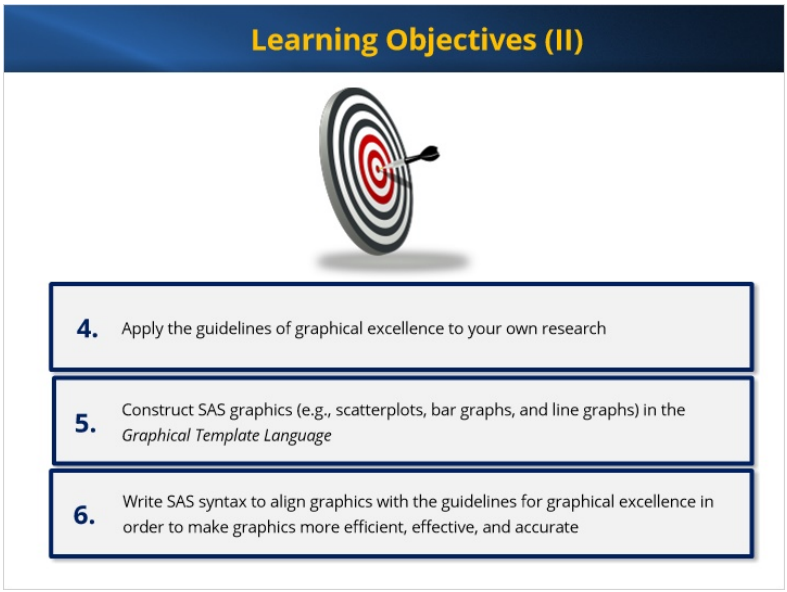
1.8 Expectations (II)



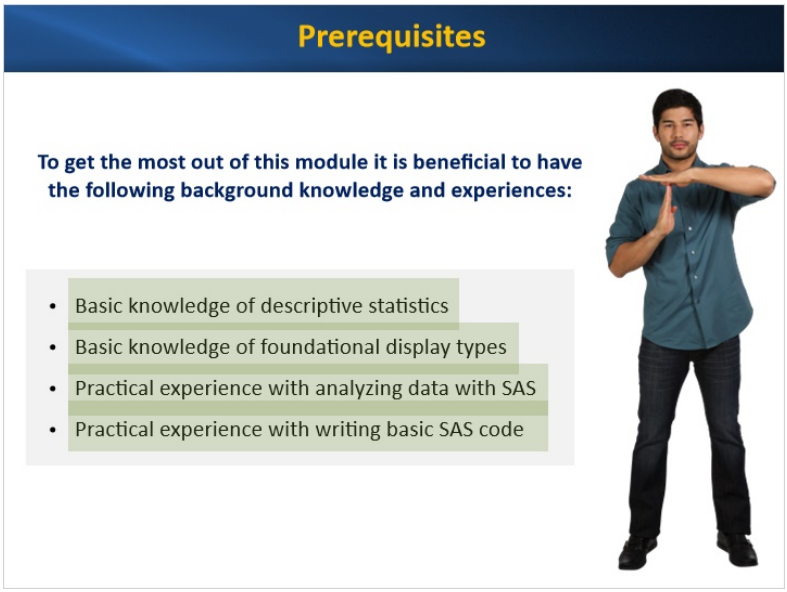
1.9 Learning Objectives (I)



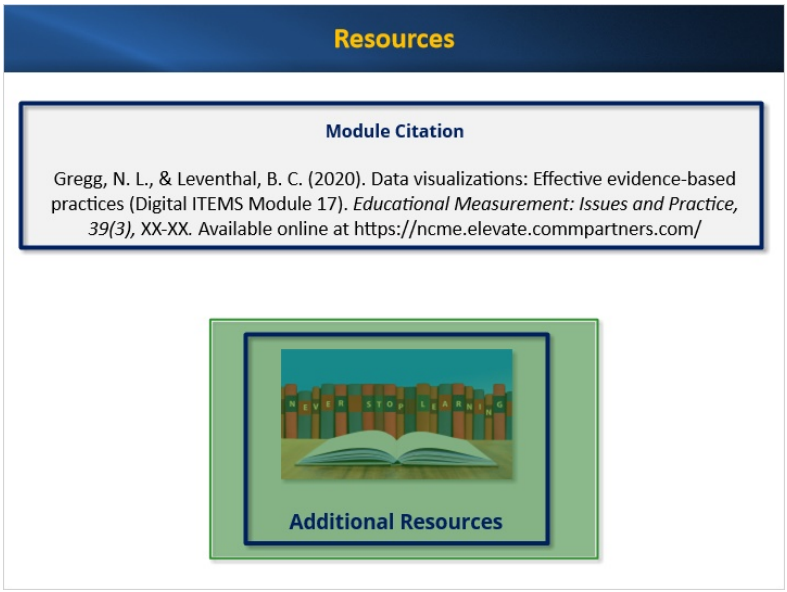
1.10 Learning Objectives (II)



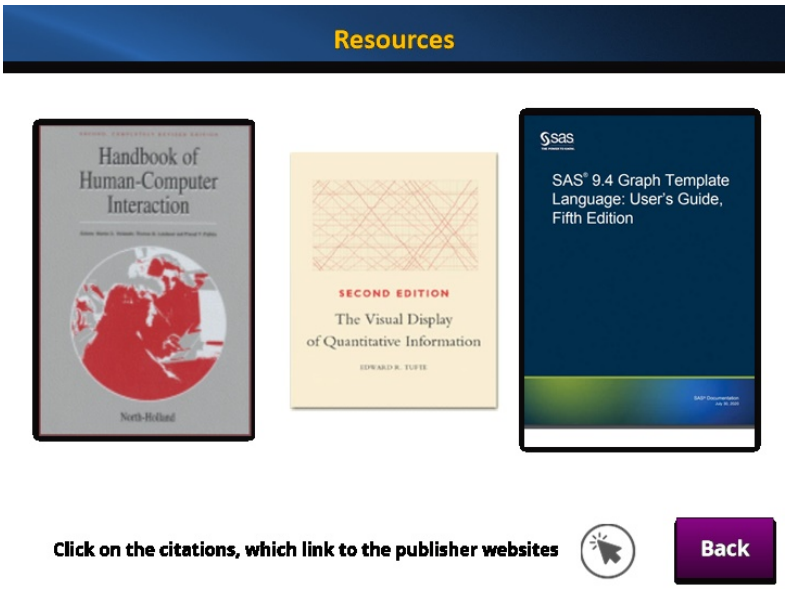
1.11 Prerequisites



1.12 Resources



References (Slide Layer)

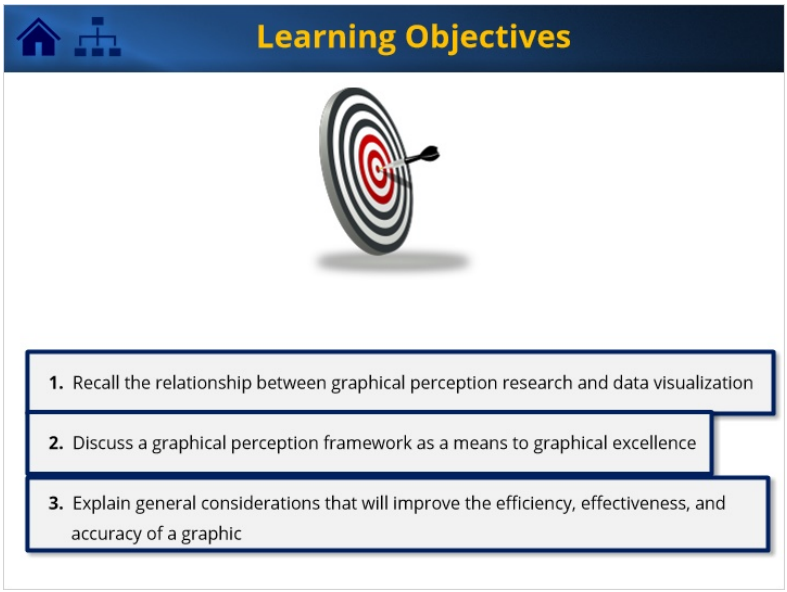


1.13 Main Menu

2. Section 1: Conceptual Foundations

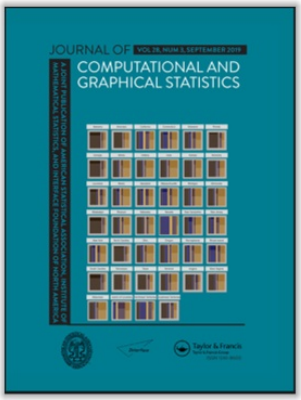
2.1 Cover: Section 1

2.2 Objectives: Section 1



2.3 Historical Note

Historical Note



Graphical Criticism: Some Historical Notes

Hadley Wickham

1. INTRODUCTION

"There is little evidence that the quality of the best graphics has improved over the last 100 years. I wonder if technology serves primarily as a quantity-multiplier, rather than a quality-multiplier" (Wickham, 2013, p. 43).

2.4 Definition

Graphical Perception

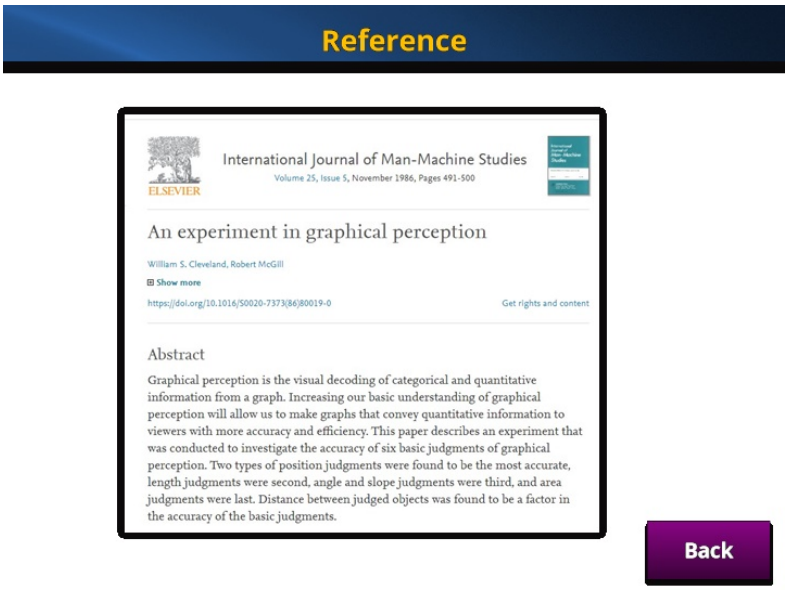
"the visual decoding of categorical and quantitative information from a graph" (Cleveland & McGill, 1986, p. 491)

Graphical perception research can be found across multiple fields:

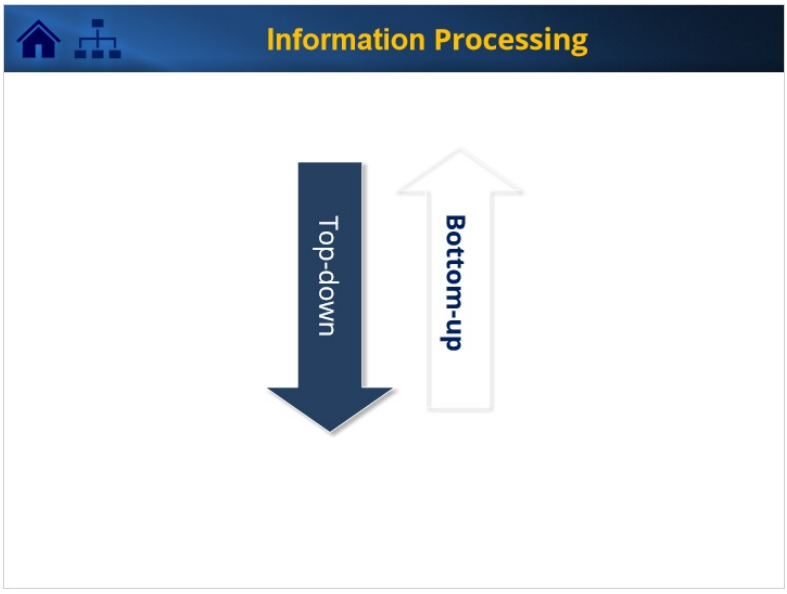
- Psychology
- Statistics
- Computer Programming
- Human Factors

Reference

Reference (Slide Layer)



2.5 Cognitive Foundations



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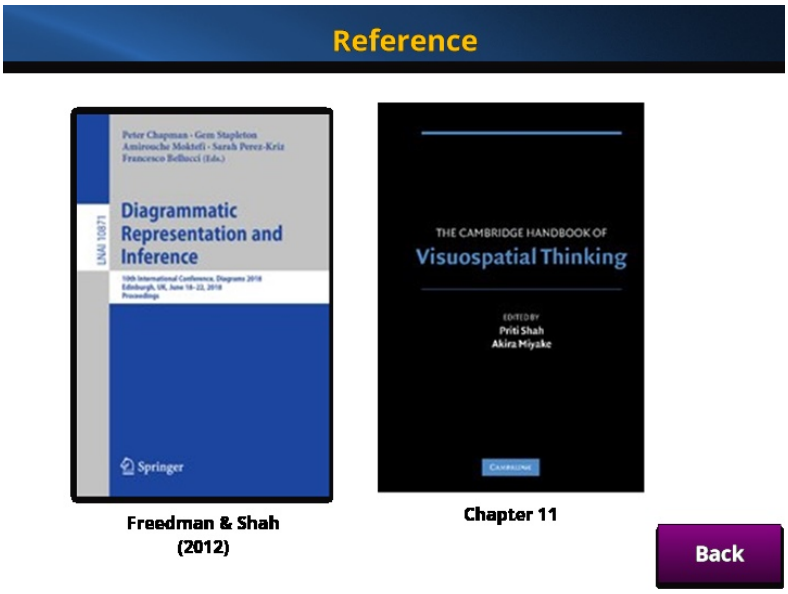
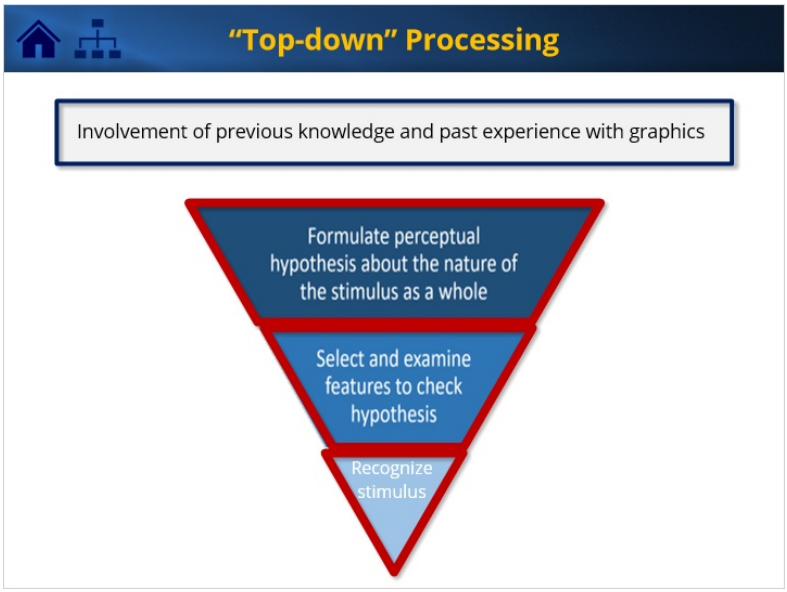
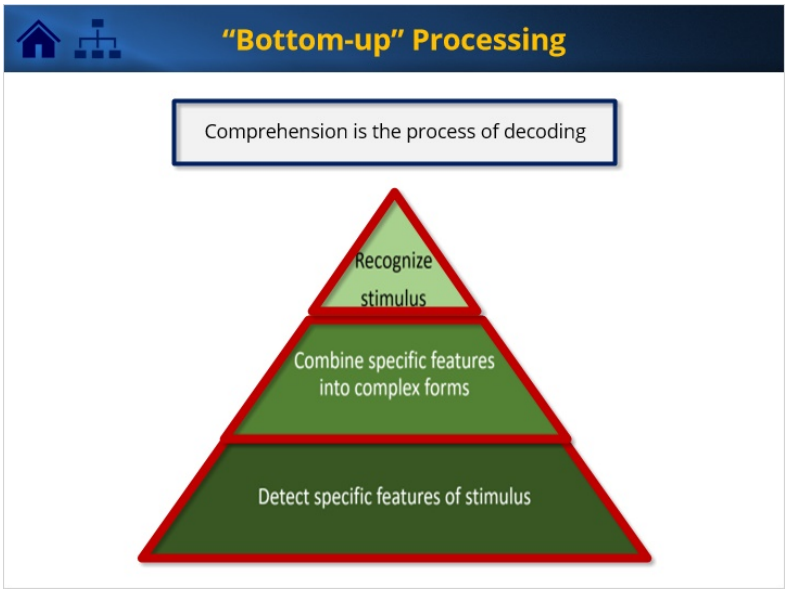


2.6 Top-down Processing



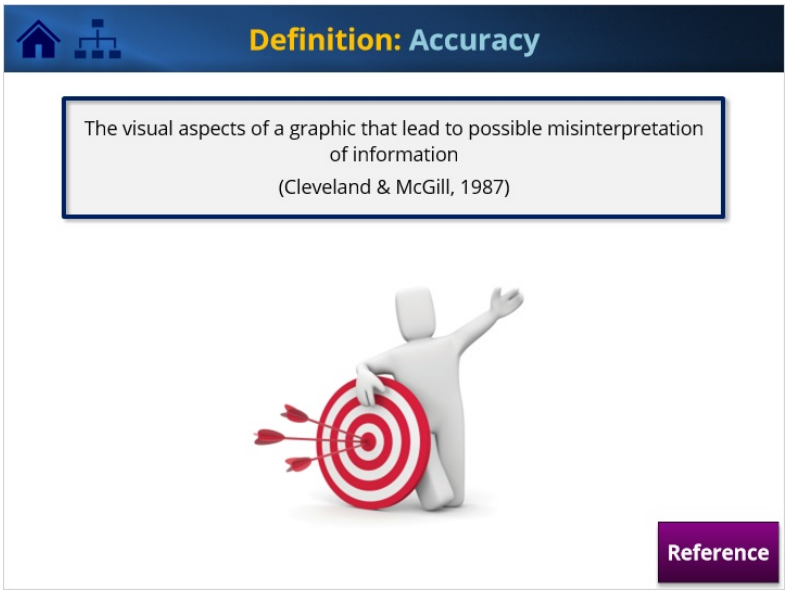
2.7 Bottom-up Processing



2.8 Topic Selection

2.9 Bookmark: Accuracy

2.10 Definition



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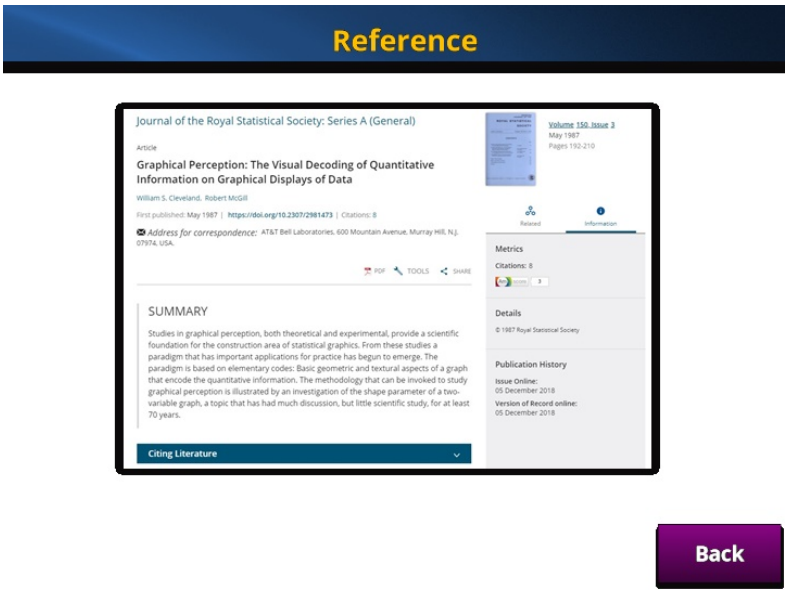
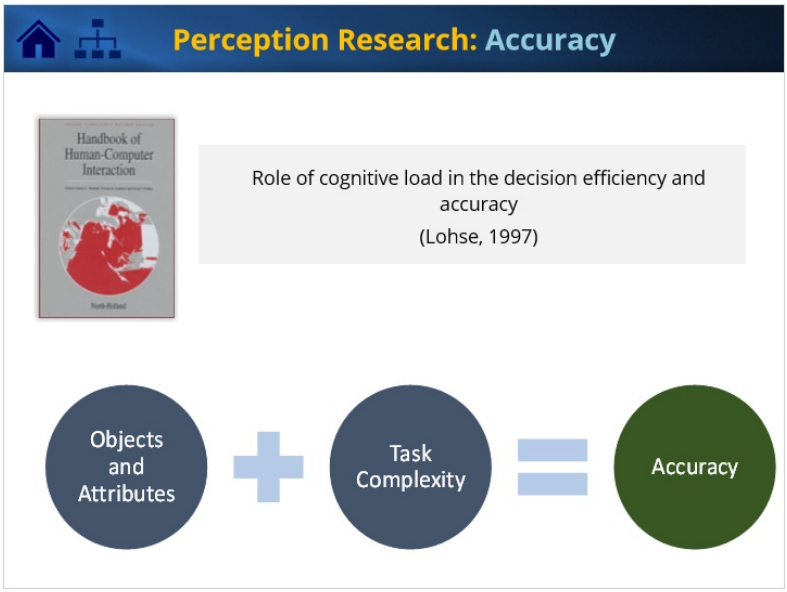
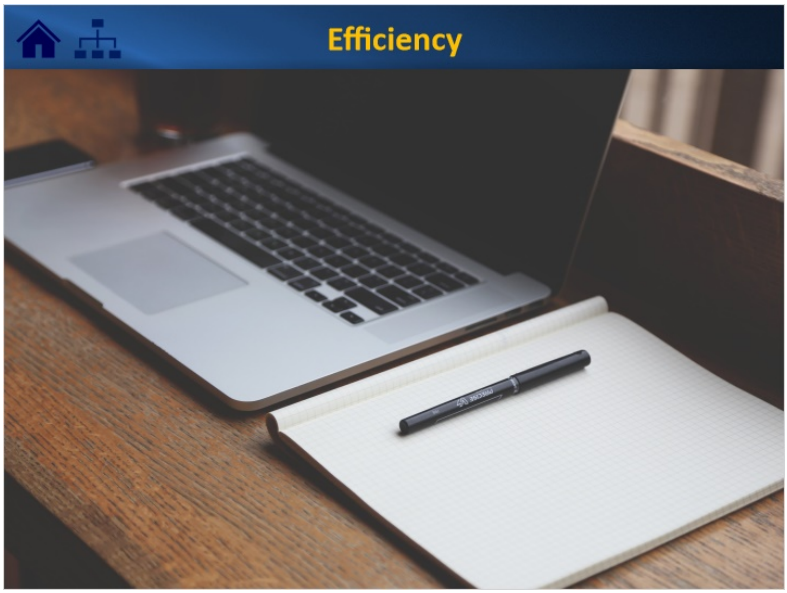


2.11 Research

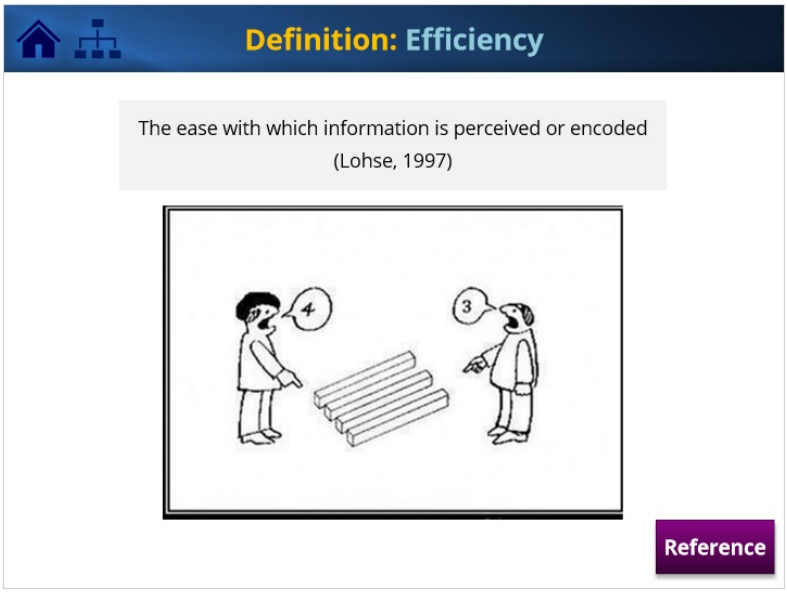


2.12 Bookend: Accuracy

2.13 Bookmark: Efficiency



2.14 Definition



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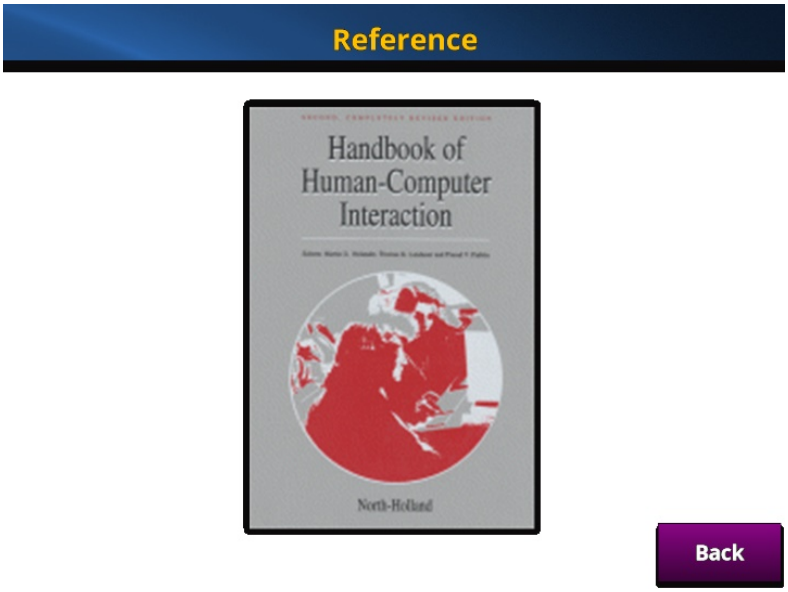
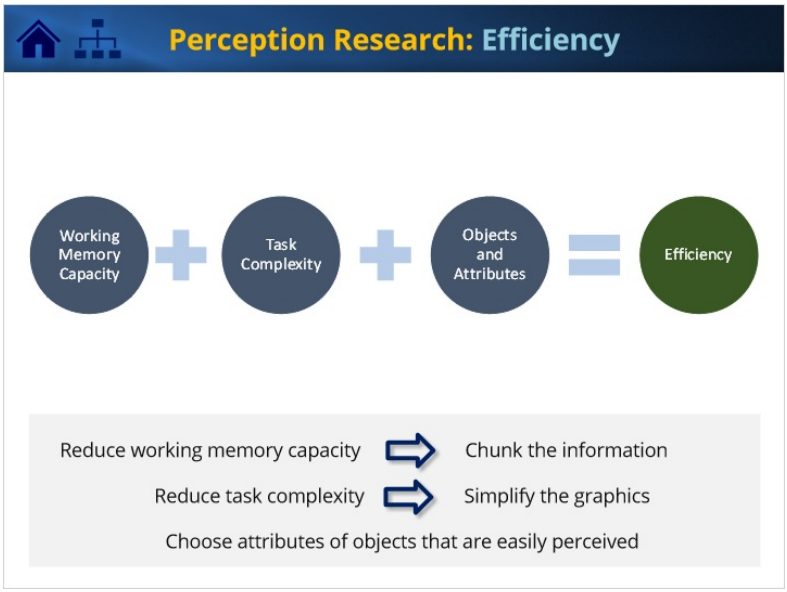
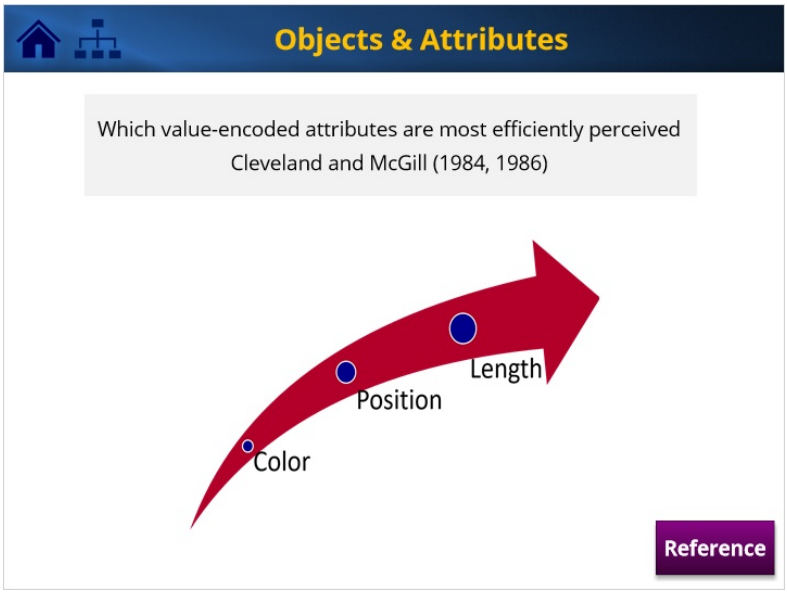


2.15 Research



2.16 Objects and Attributes



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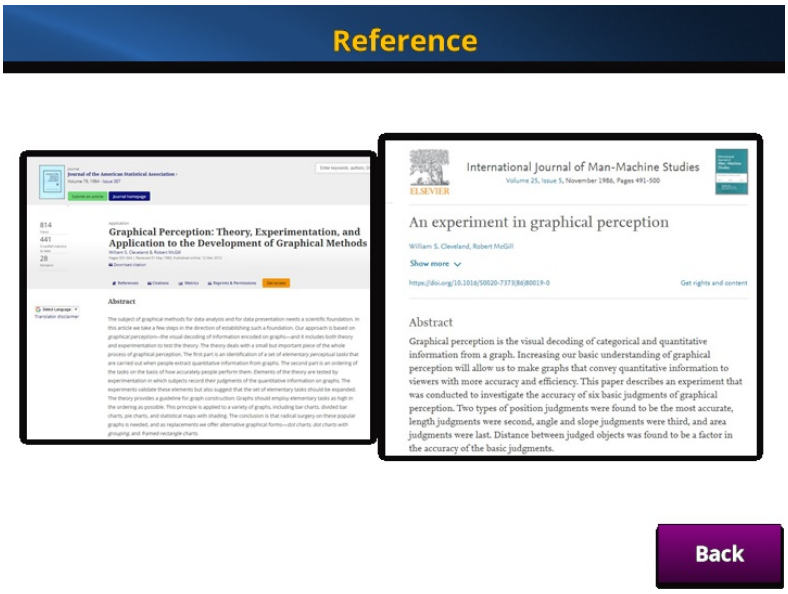
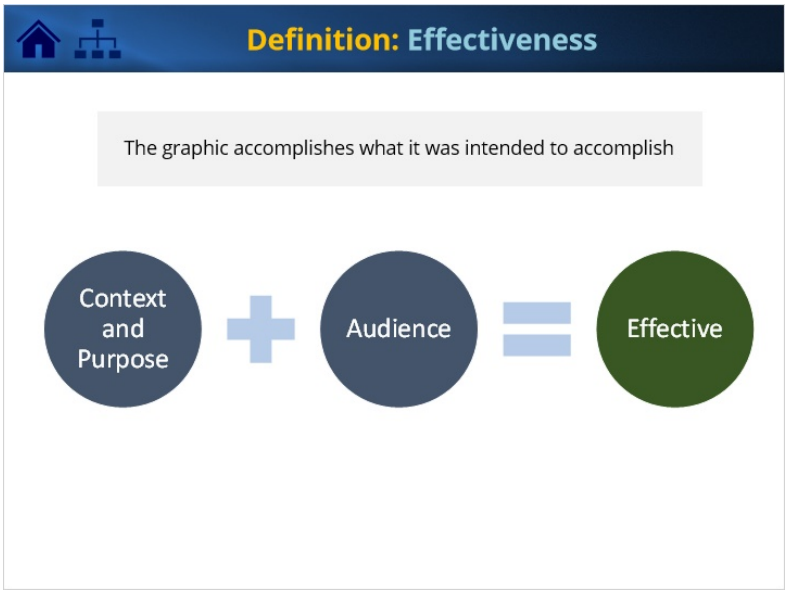


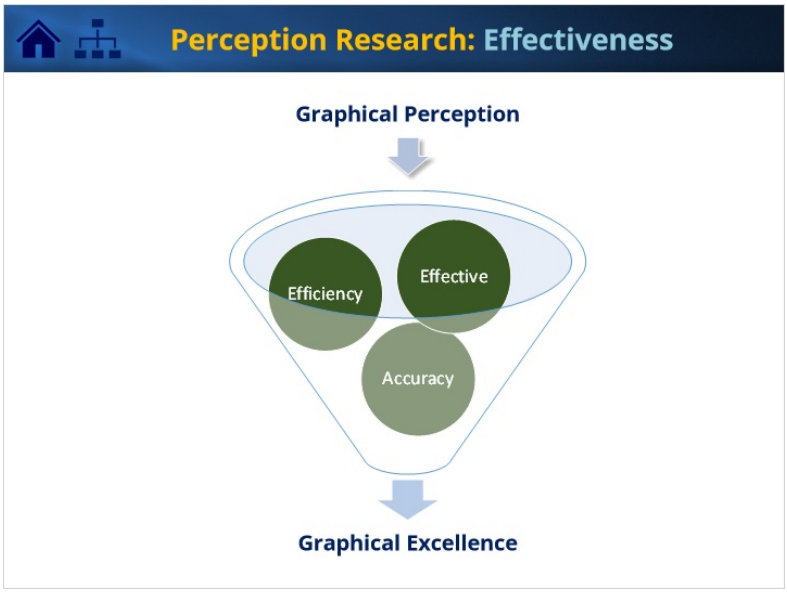
2.17 Bookend: Efficiency

2.18 Bookmark: Effectiveness

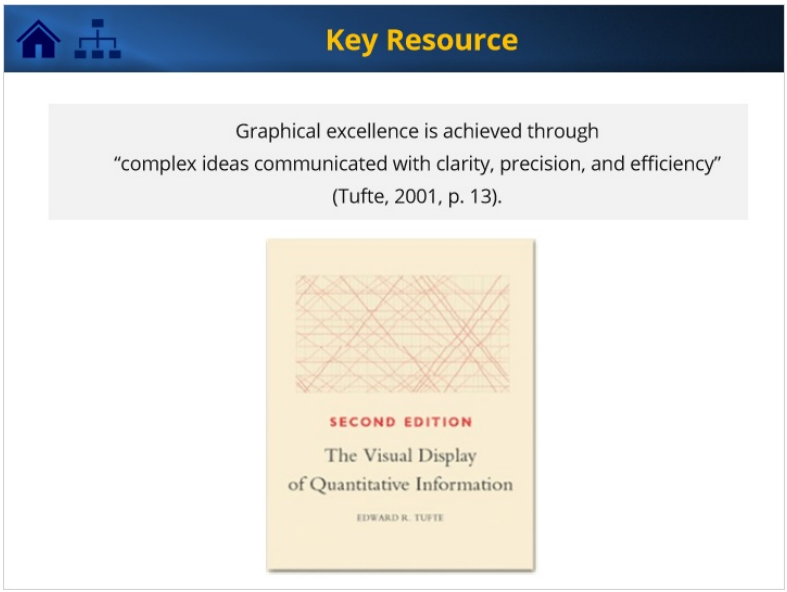
2.19 Definition



2.20 Research



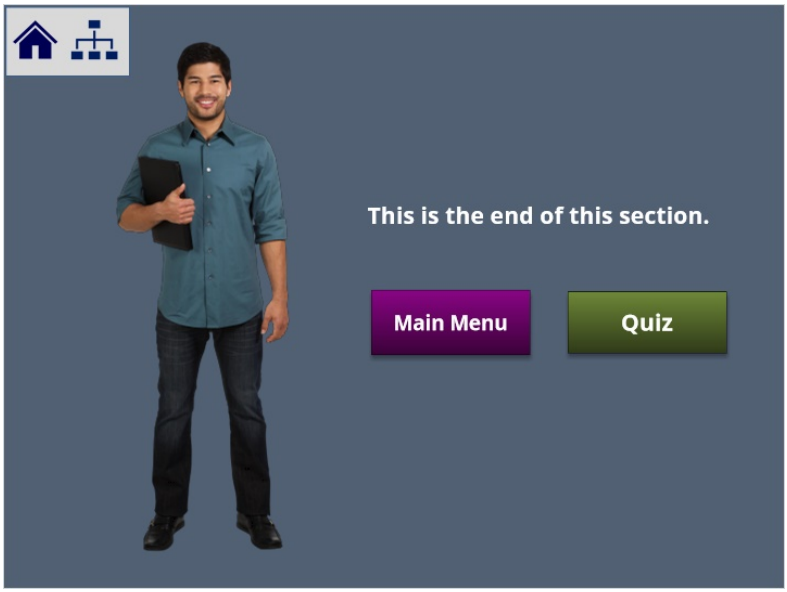
2.21 Resources (I)



2.22 Resources (II)

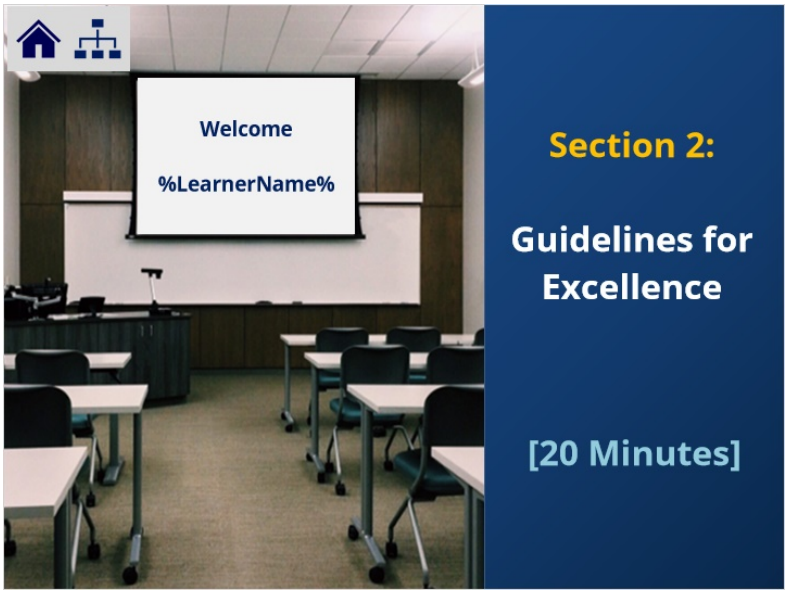
2.23 Bookend: Effectiveness

2.24 Bookend: Section 1

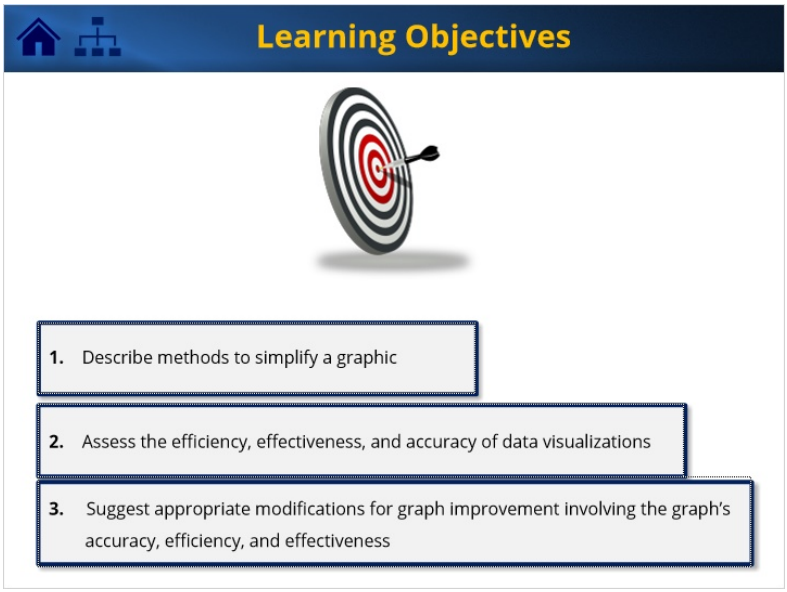


3. Section 2: Guidelines for Excellence

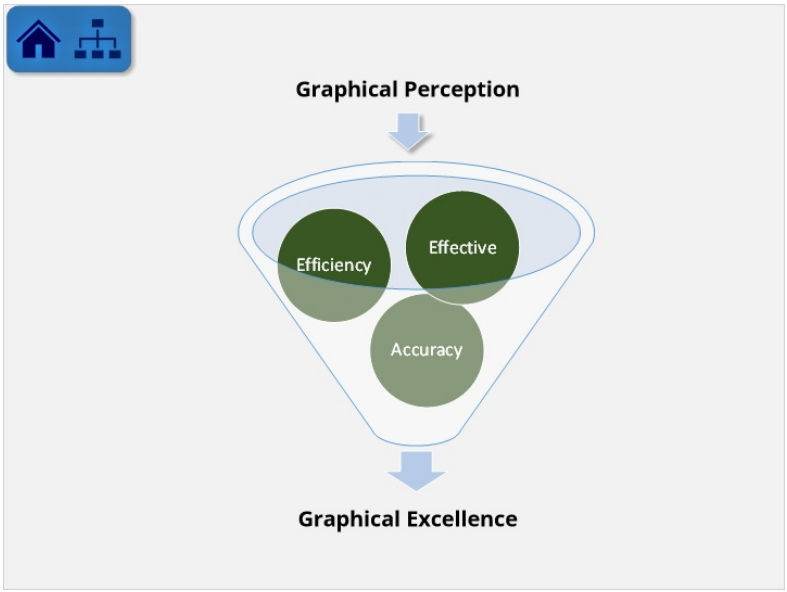
3.1 Cover: Section 2



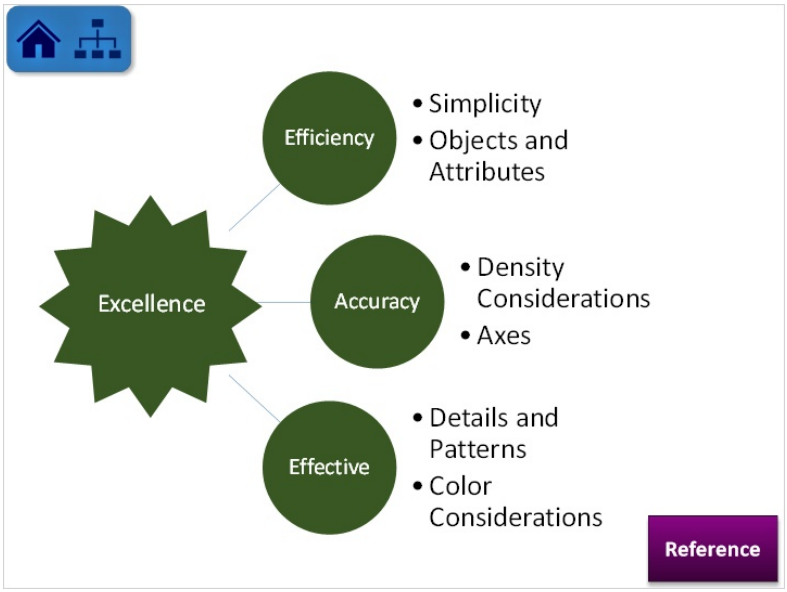
3.2 Objectives: Section 2



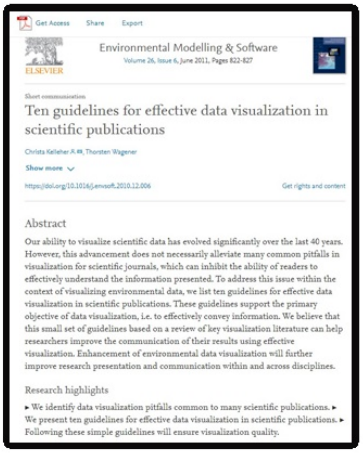
3.3 Integrated Approach (I)



3.4 Integrated Approach (II)

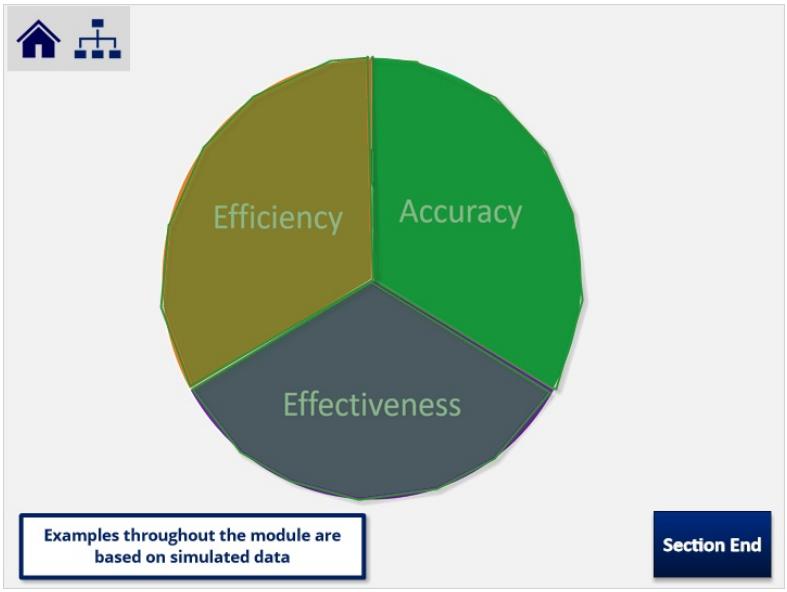


Reference (Slide Layer)

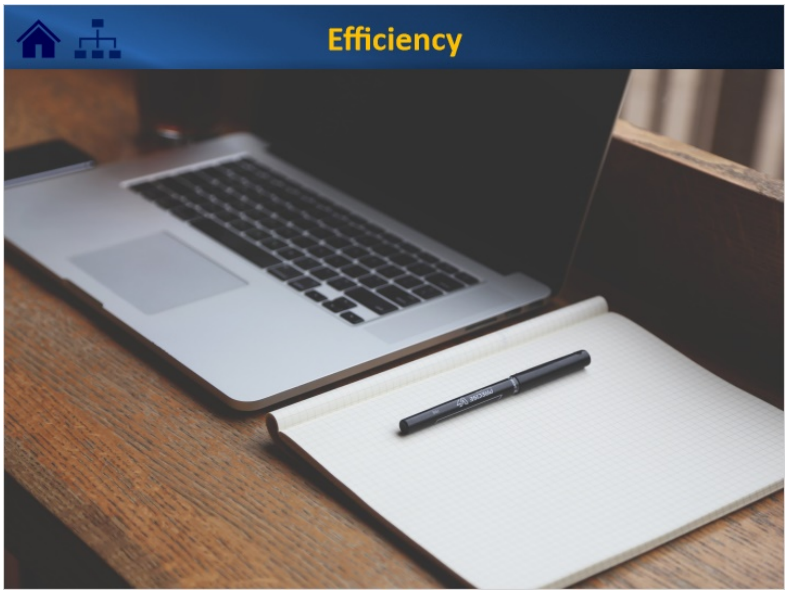


Back

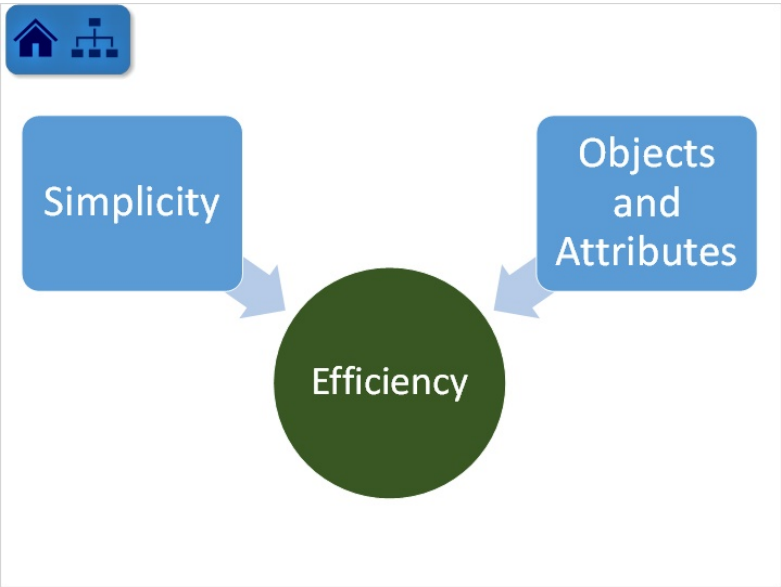
3.5 Topic Selection



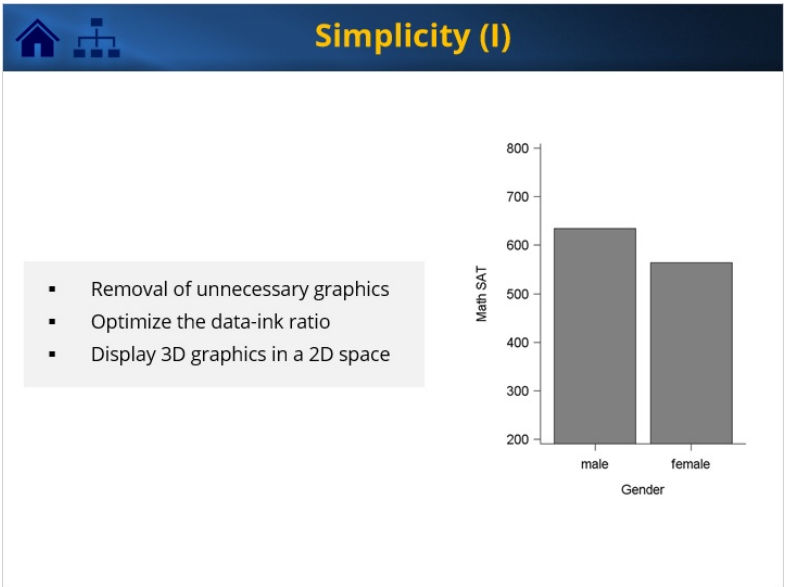
3.6 Bookmark: Efficiency



3.7 Factors



3.8 Simplicity (I)



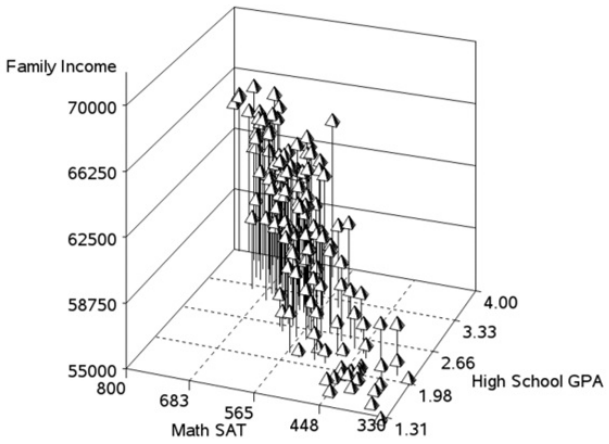
3.9 Simplicity (II)

Simplicity (II)

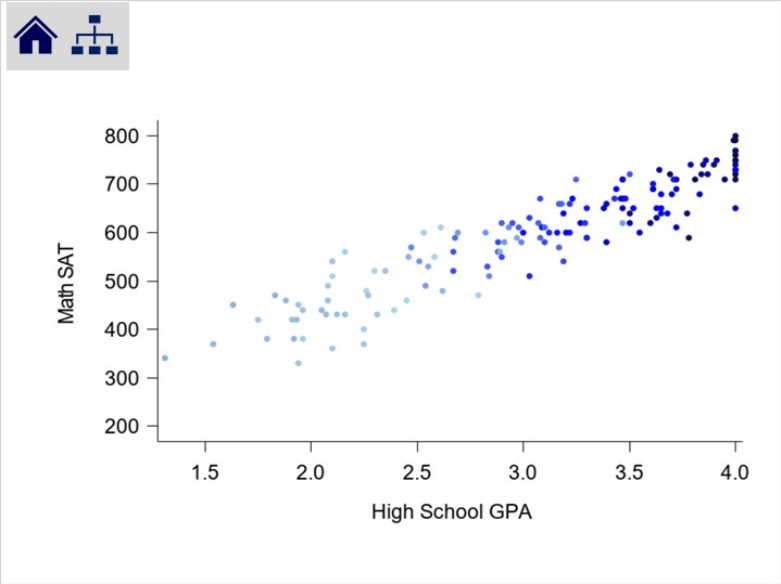
$$Data\ -Ink\ Ratio = \frac{data\ ink}{total\ ink\ used\ to\ print\ the\ graphic}$$

Amount of Redundant Information

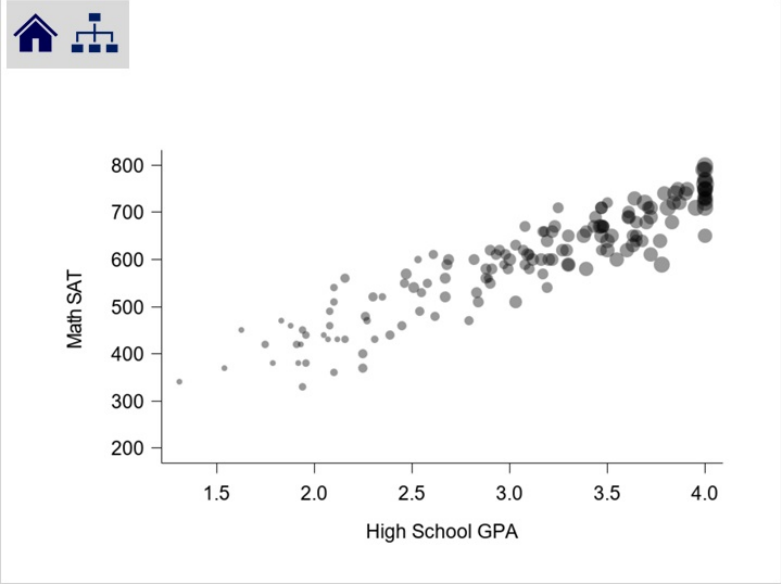
3.10 Example (I)



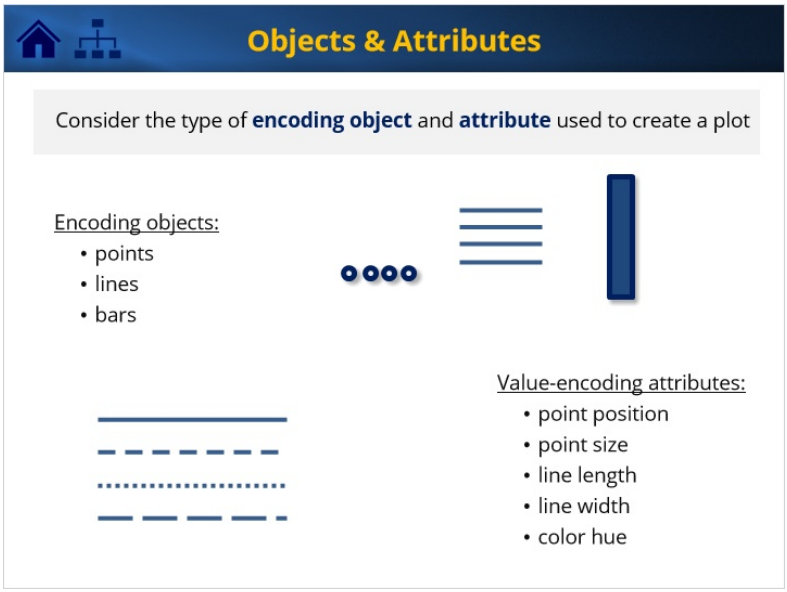
3.11 Example (II)



3.12 Example (III)



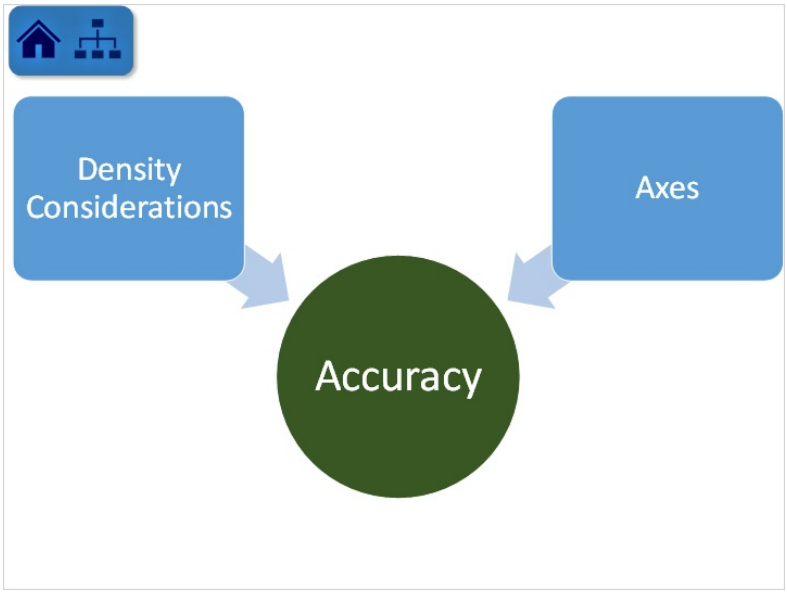
3.13 Objects & Attributes



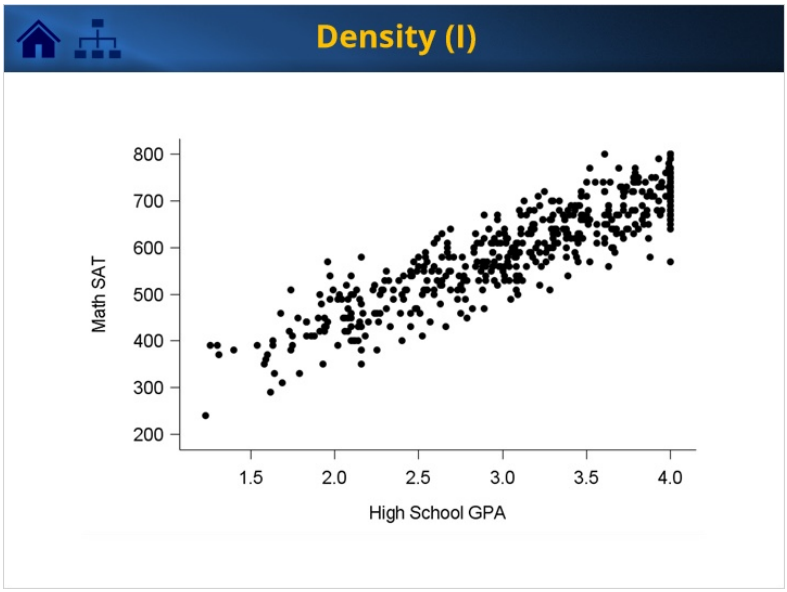
3.14 Bookend: Efficiency

3.15 Bookmark: Accuracy

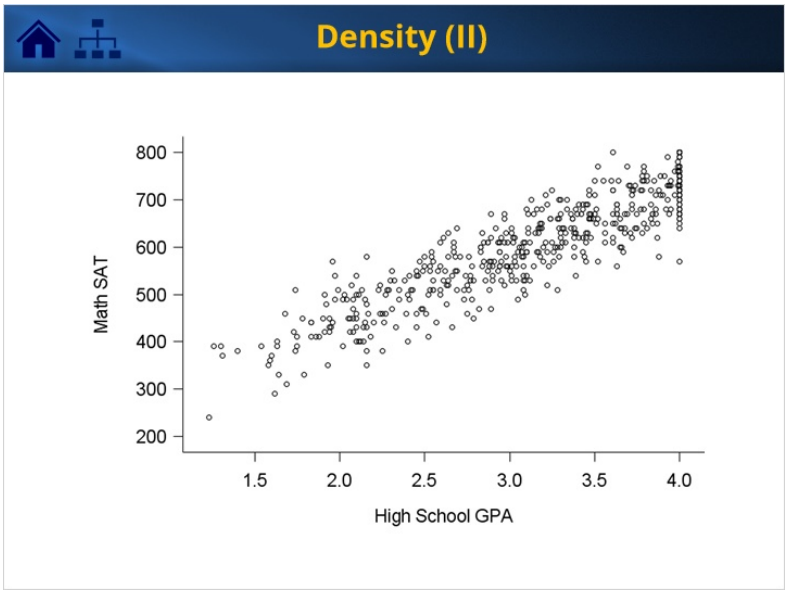
3.16 Factors



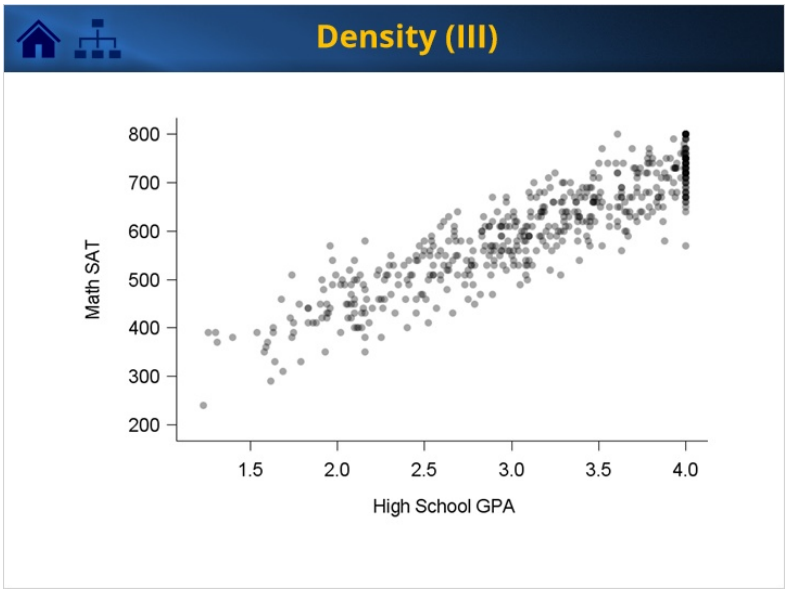
3.17 Density (I)



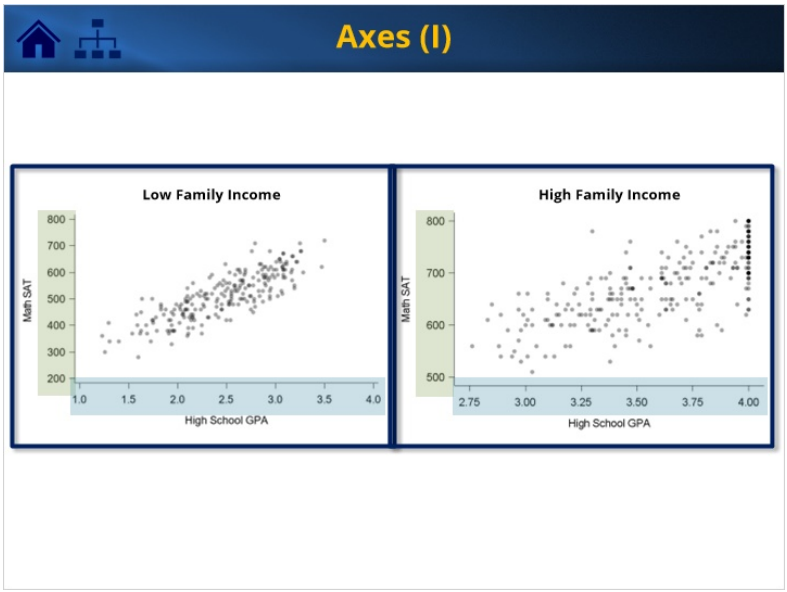
3.18 Density (II)



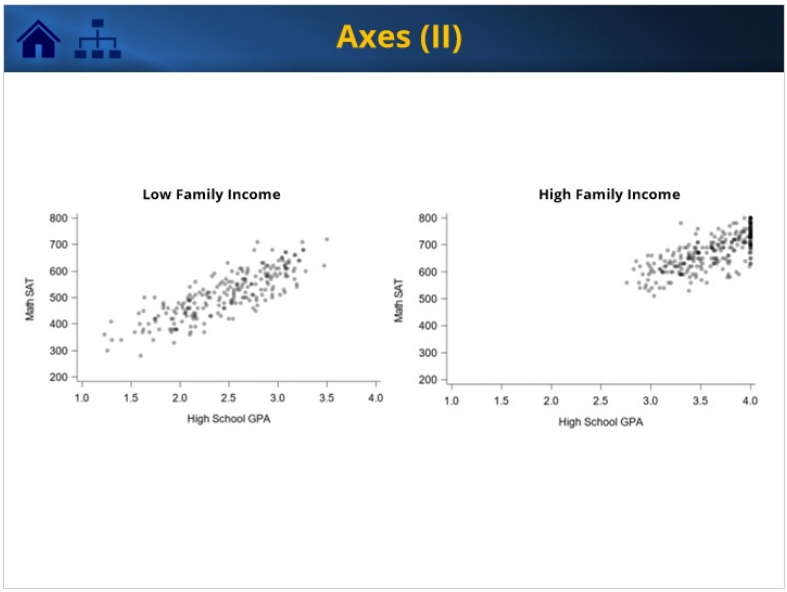
3.19 Density (III)



3.20 Axes (I)

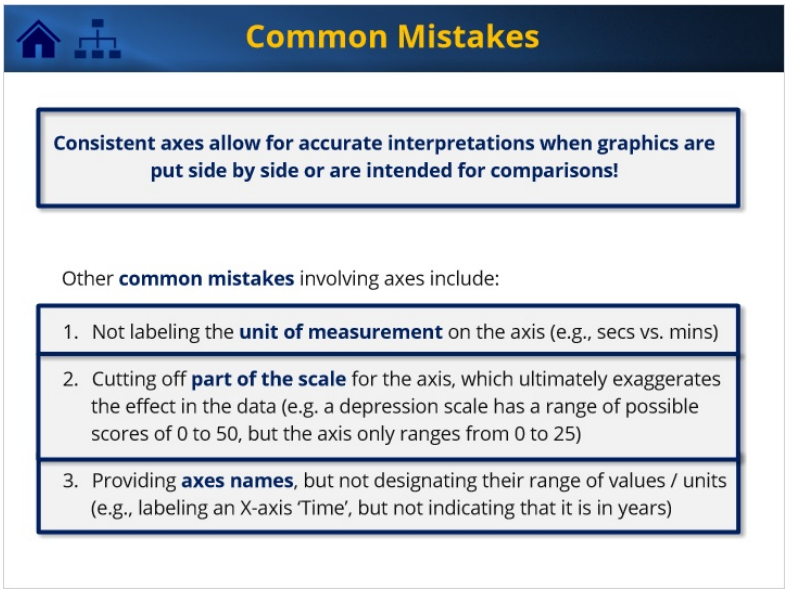


3.21 Axes (II)



3.22 Comparison

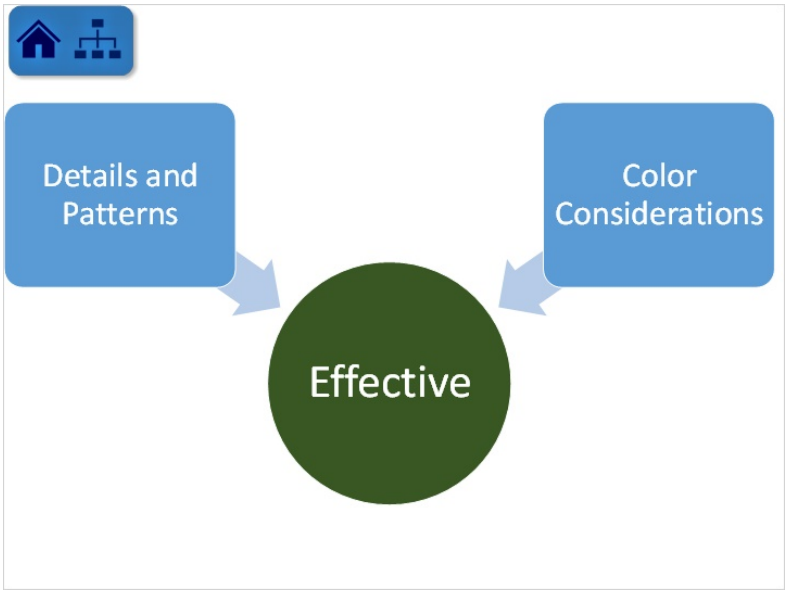
3.23 Common Mistakes



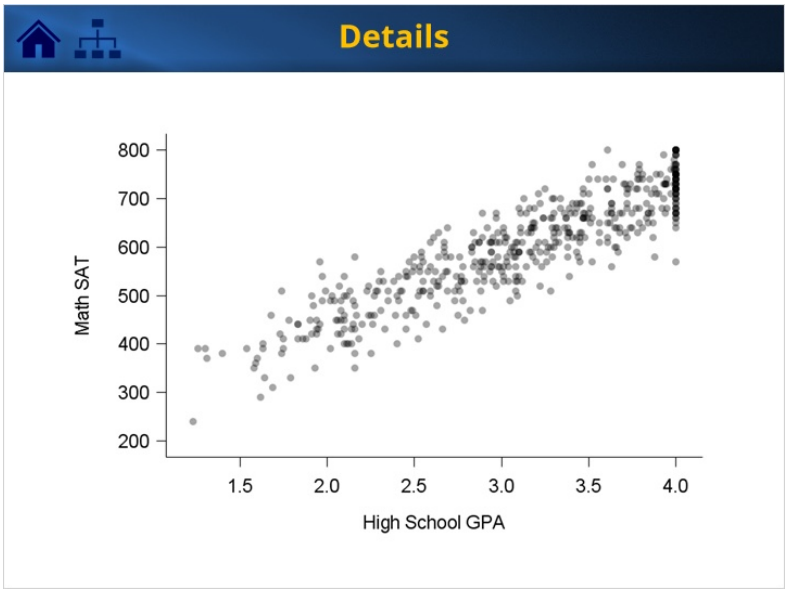
3.24 Bookend: Accuracy

3.25 Bookmark: Effectiveness

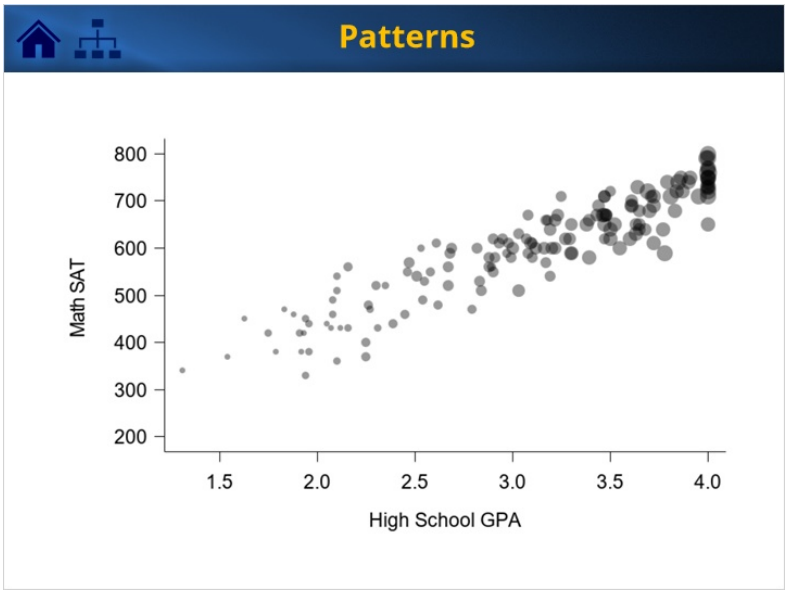
3.26 Factors



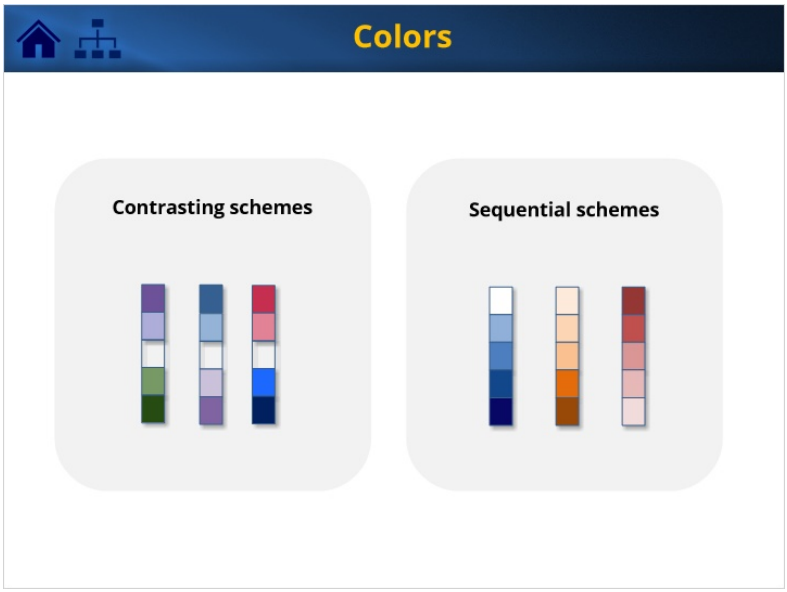
3.27 Details



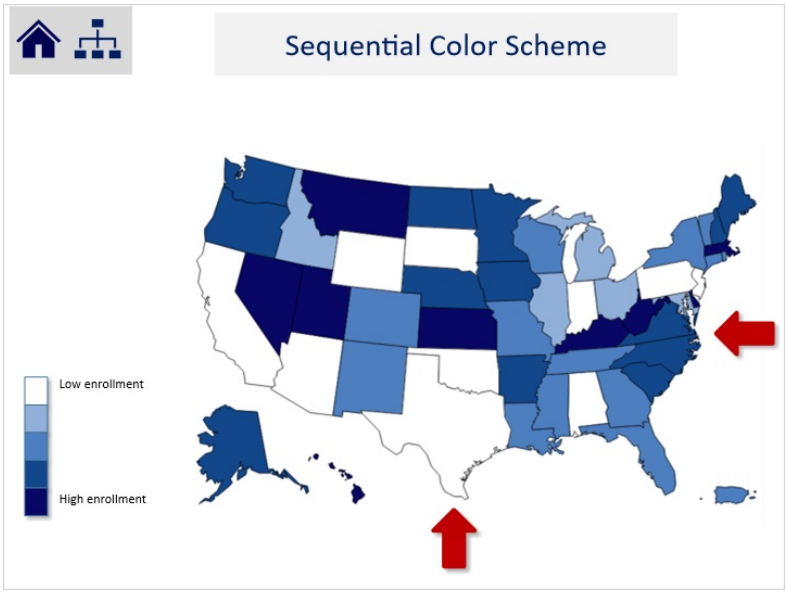
3.28 Patterns



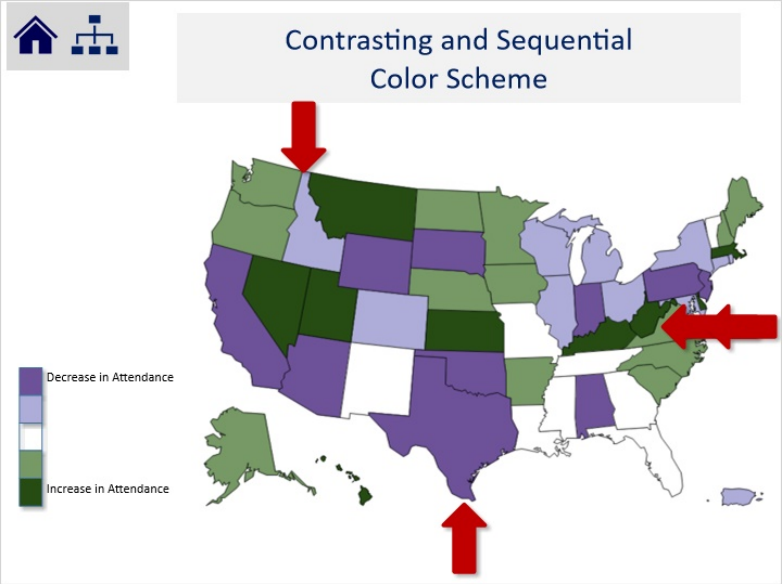
3.29 Colors



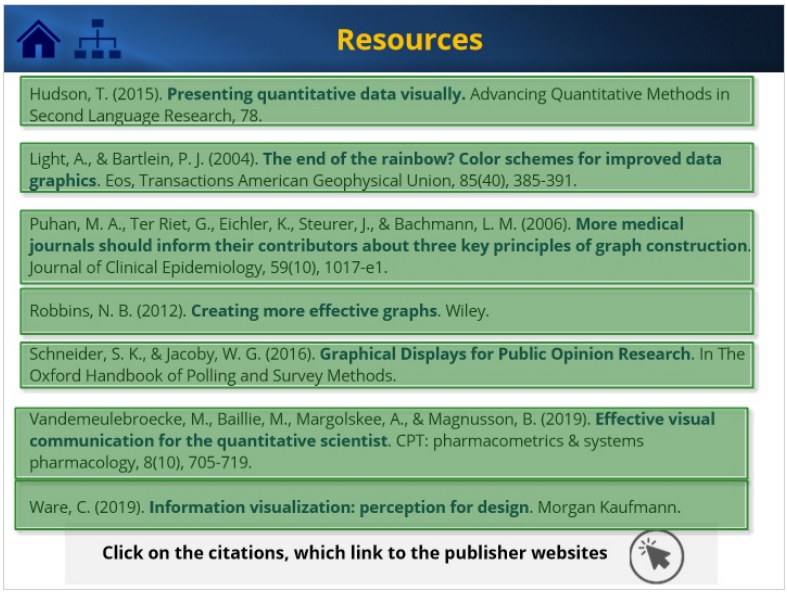
3.30 Example (I)



3.31 Example (II)

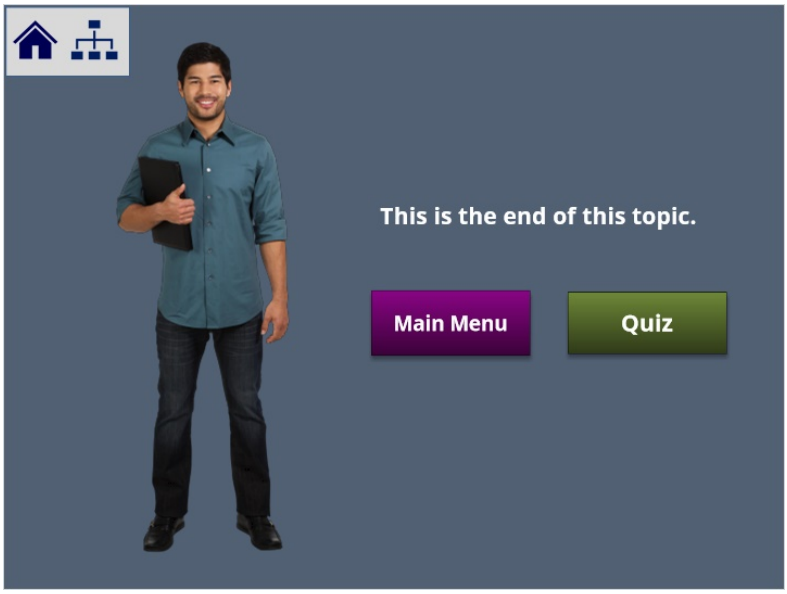


3.32 Resources



3.33 Bookend: Effectiveness

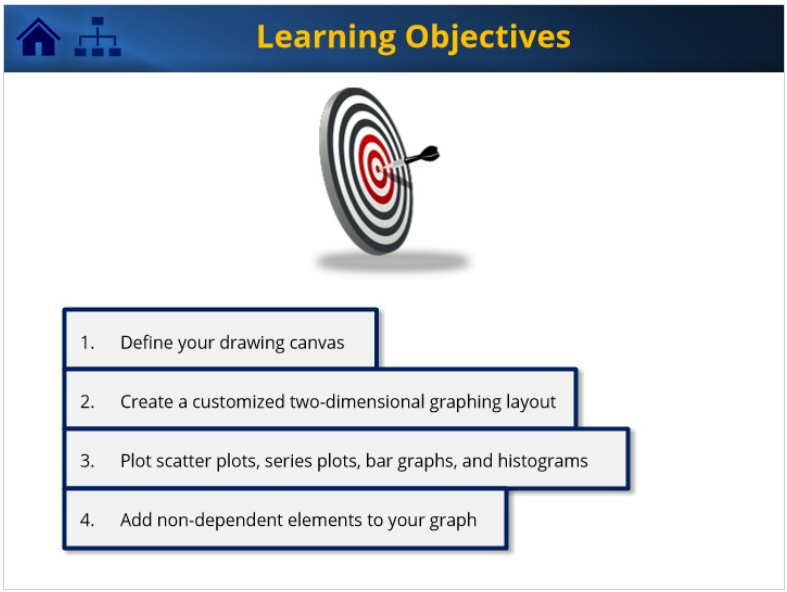
3.34 Bookend: Section 2



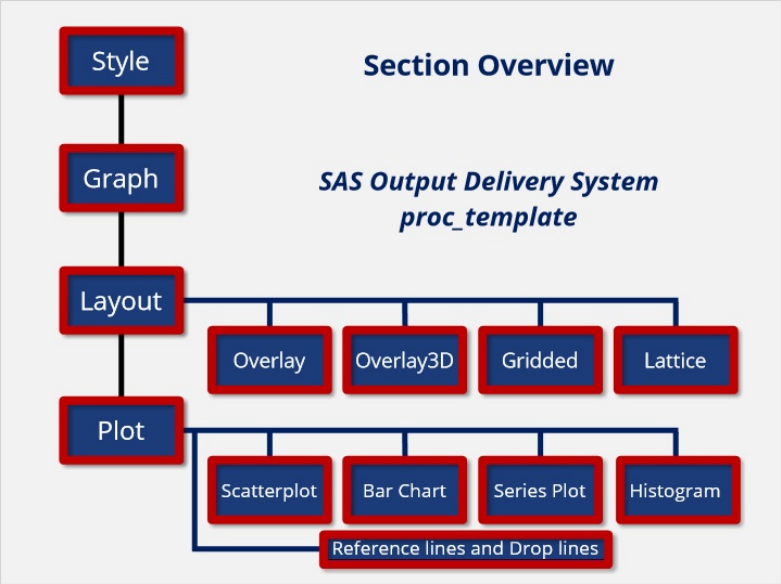
4. Section 3: Template Language in SAS

4.1 Cover: Section 3

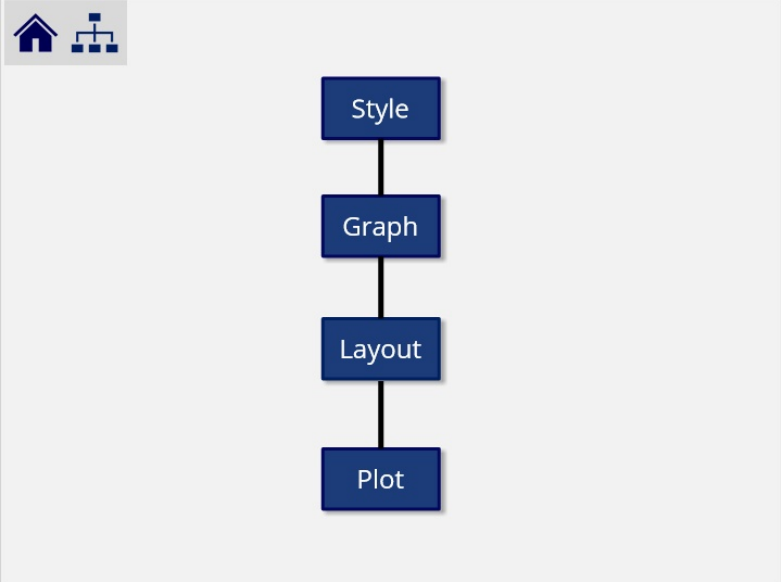
4.2 Objectives: Section 3



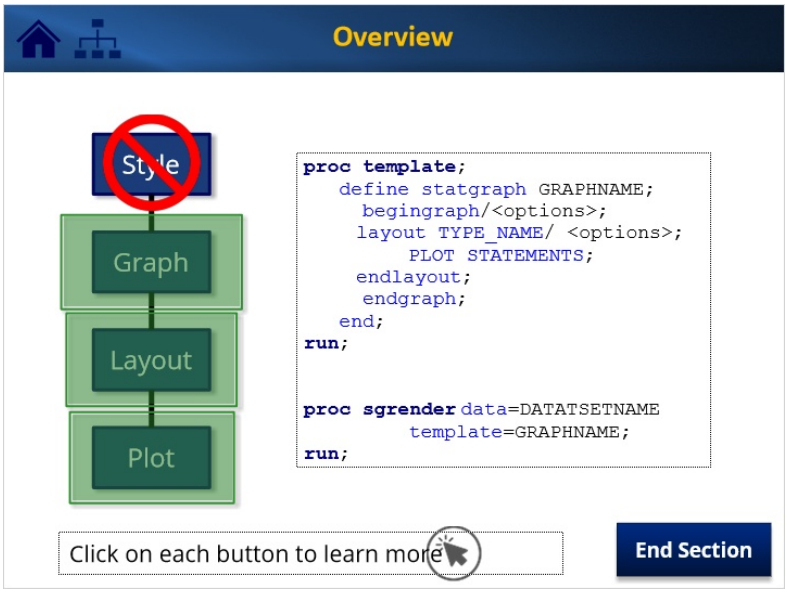
4.3 Section Overview



4.4 Overview

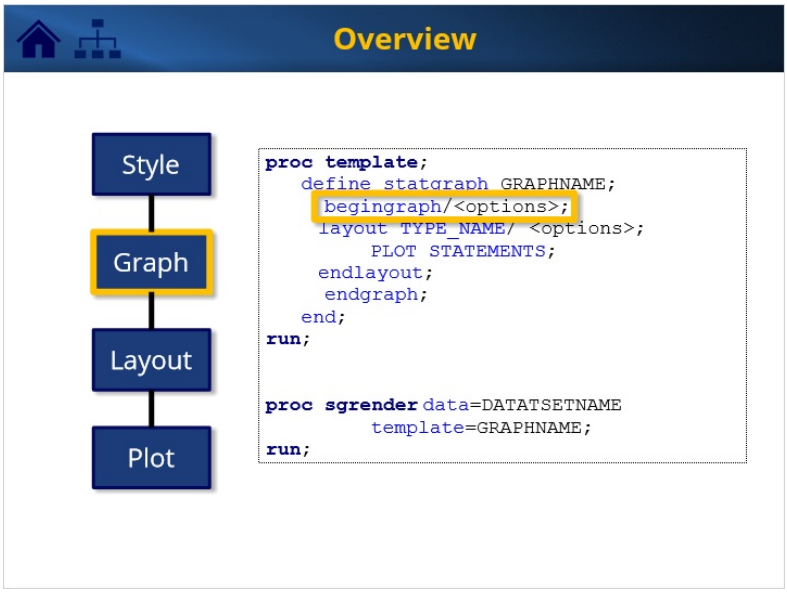


4.5 Topic Selection

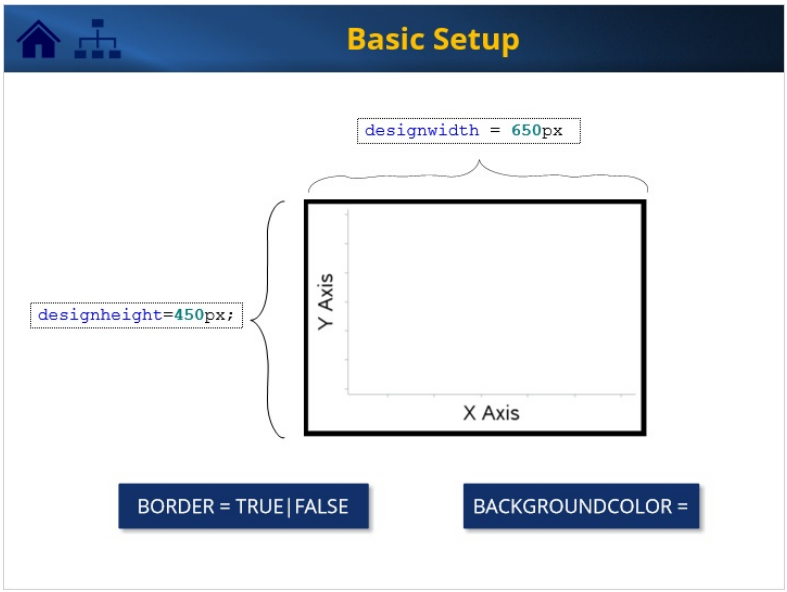


4.6 Bookmark: Graph

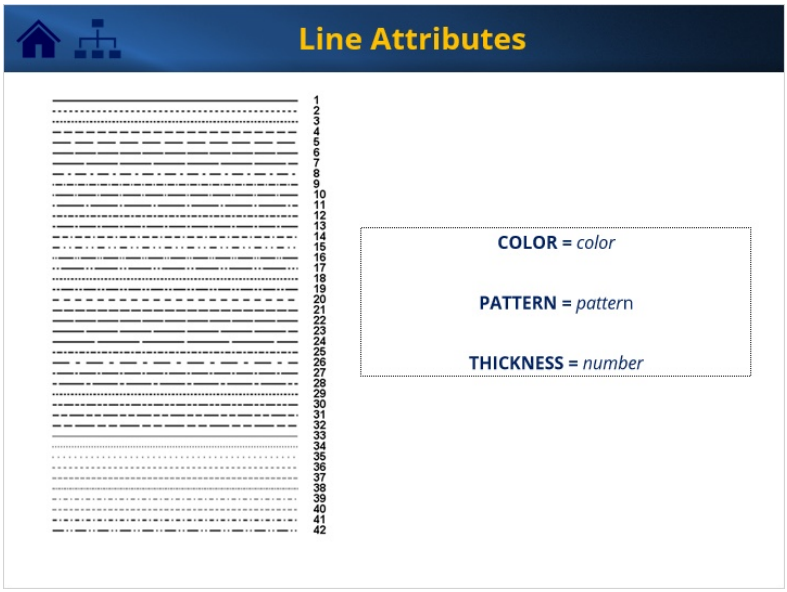
4.7 Overview



4.8 Setup



4.9 Line Attributes

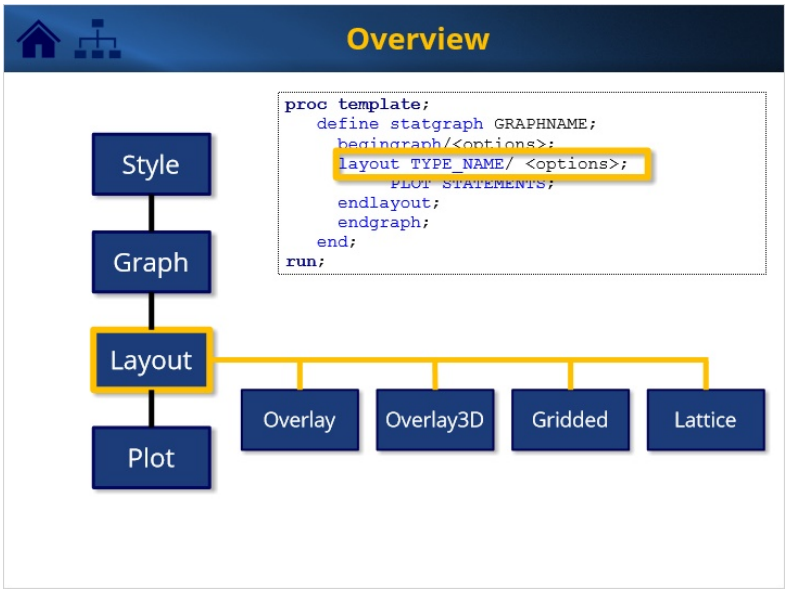


4.10 Colors

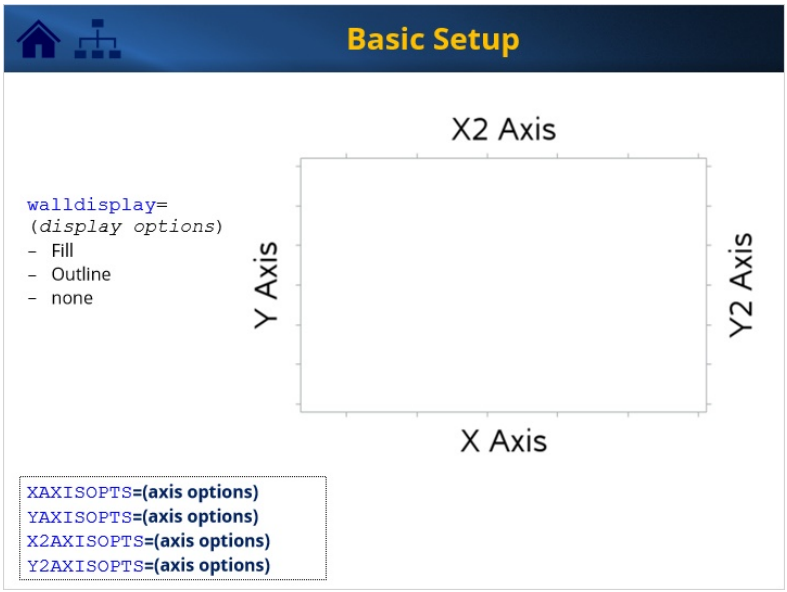
4.11 Bookend: Graph

4.12 Bookmark: Layout

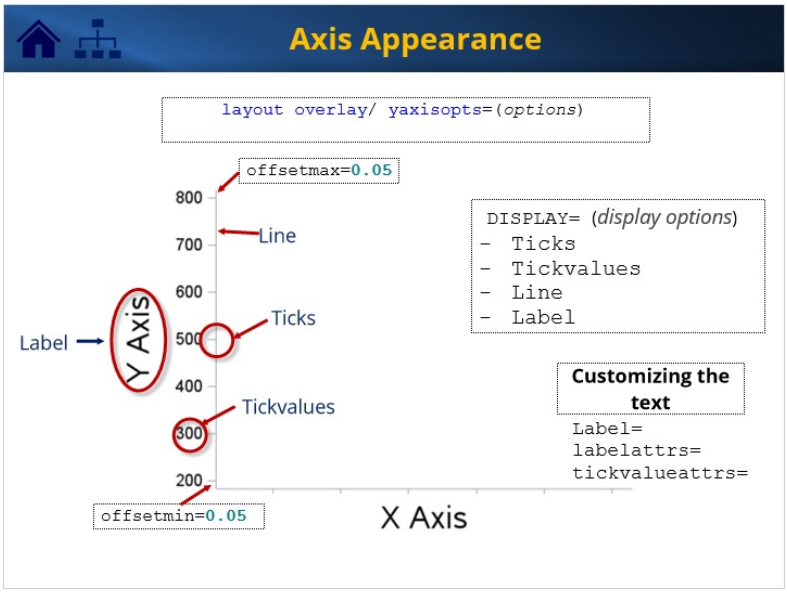
4.13 Overview



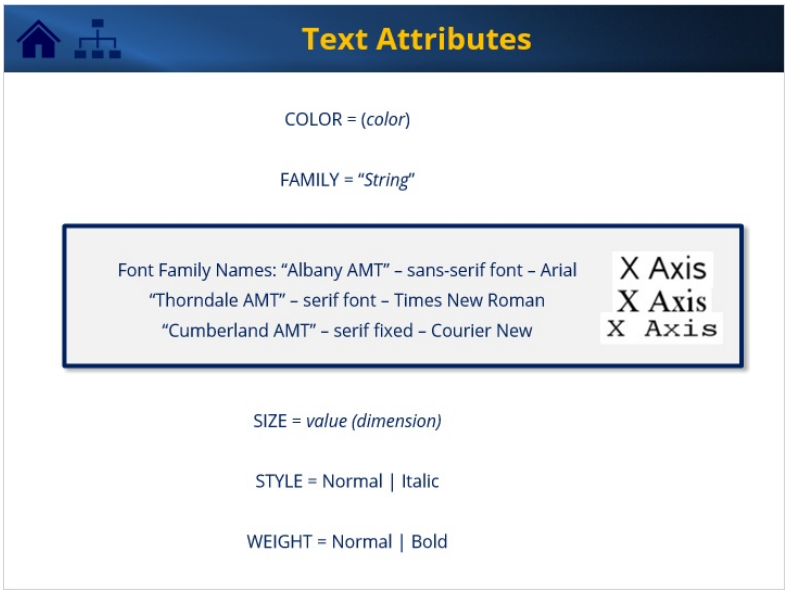
4.14 Setup



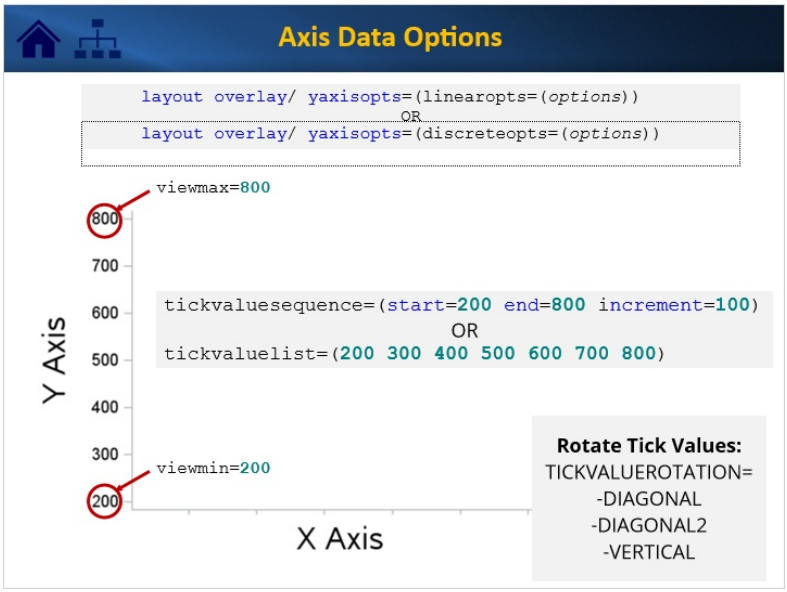
4.15 Axes



4.16 Text Attributes



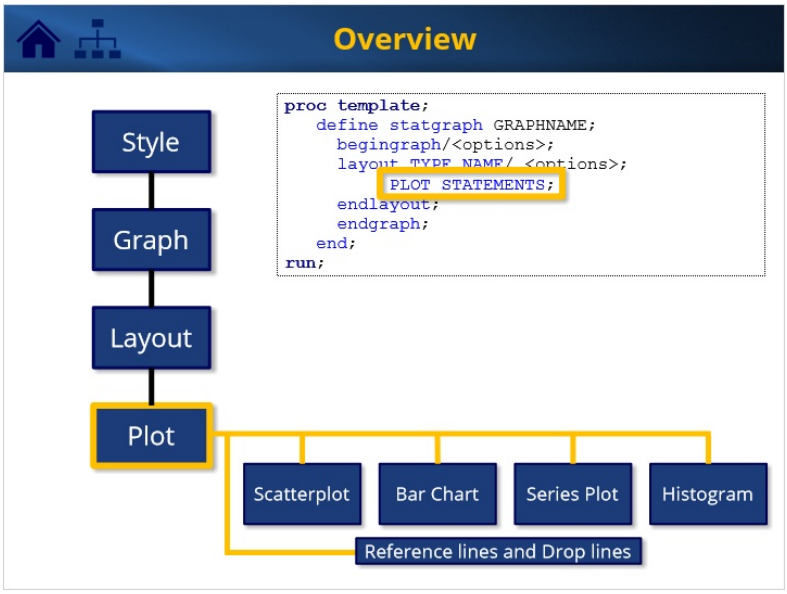
4.17 Axis Data Options



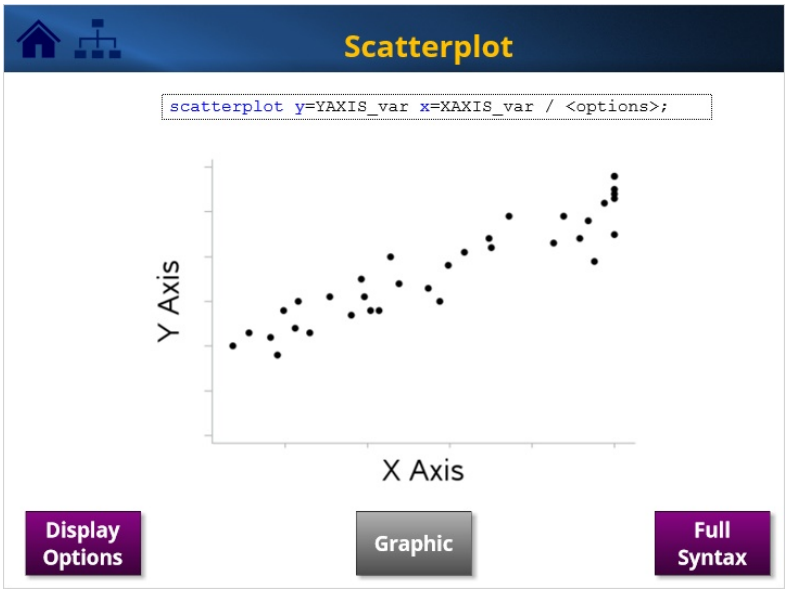
4.18 Bookend: Layout

4.19 Bookmark: Plot

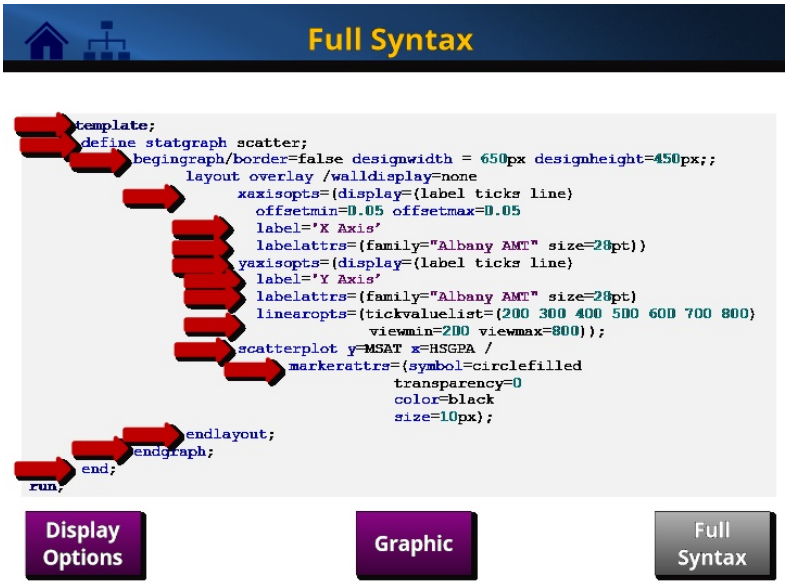
4.20 Overview



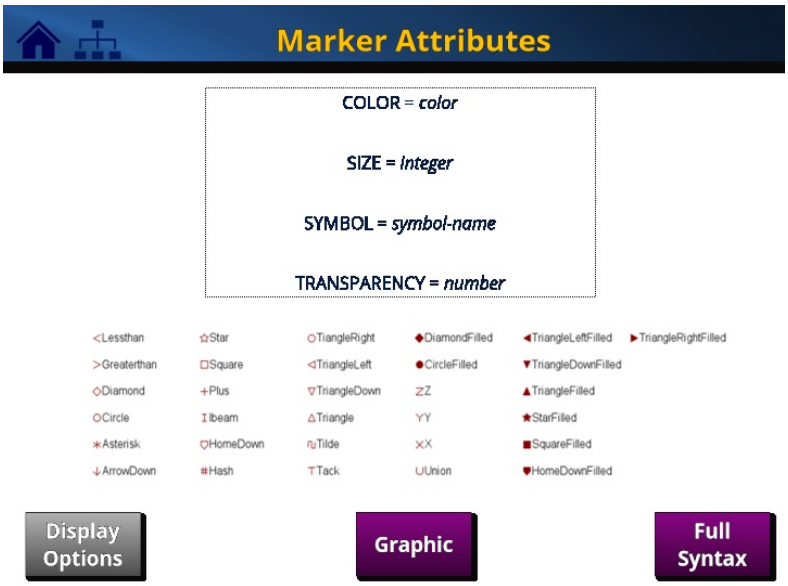
4.21 Scatterplot



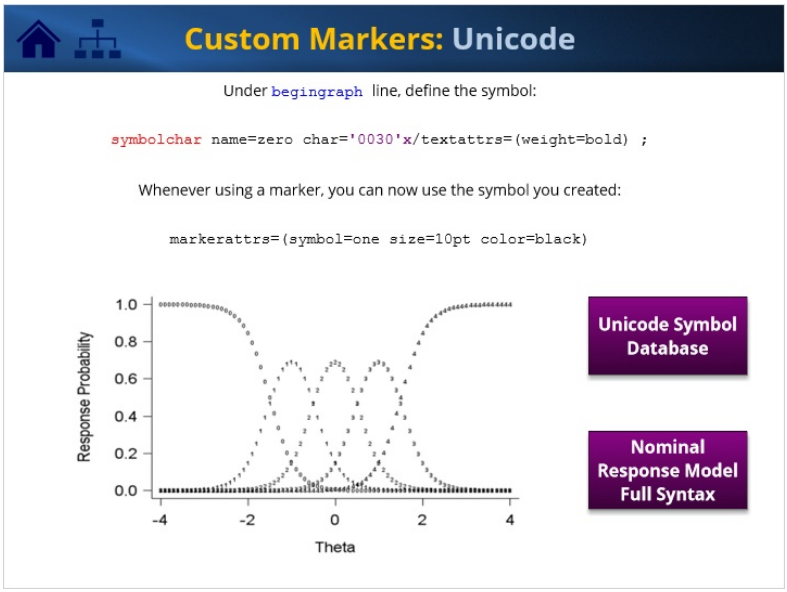
Full Syntax (Slide Layer)



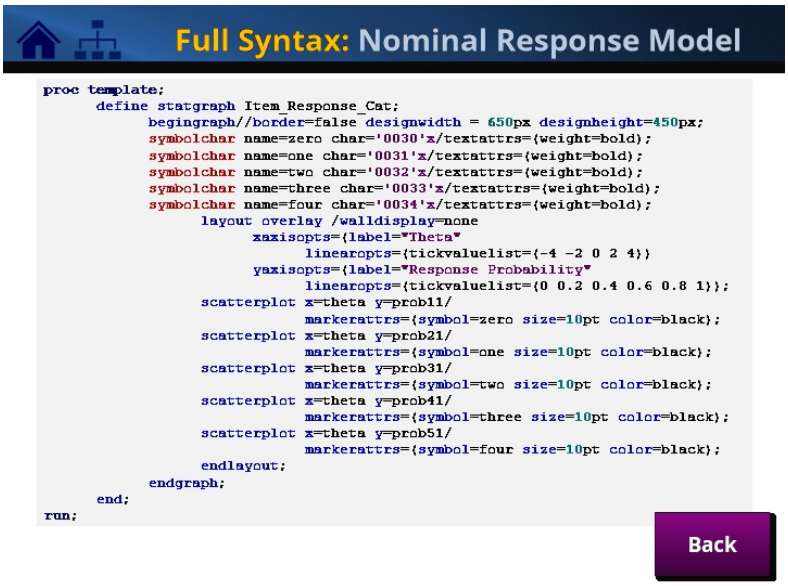
Options (Slide Layer)



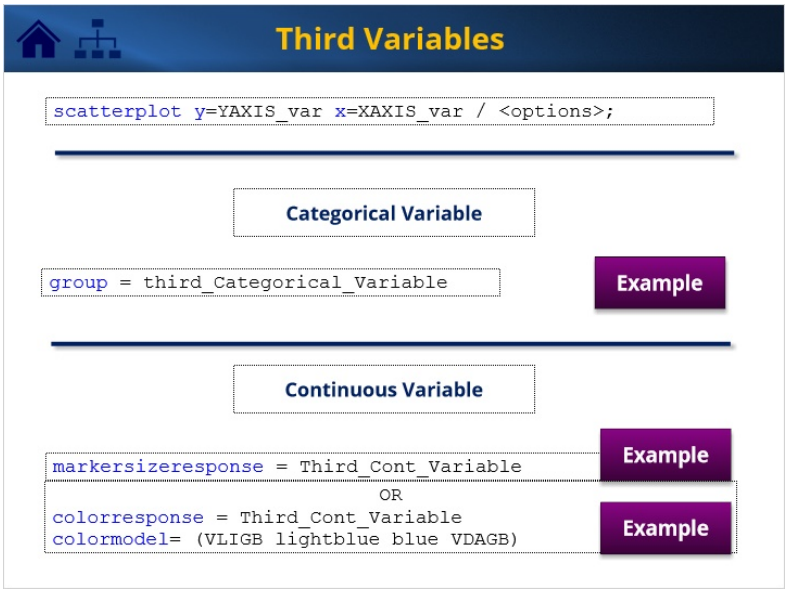
4.22 Custom Markers



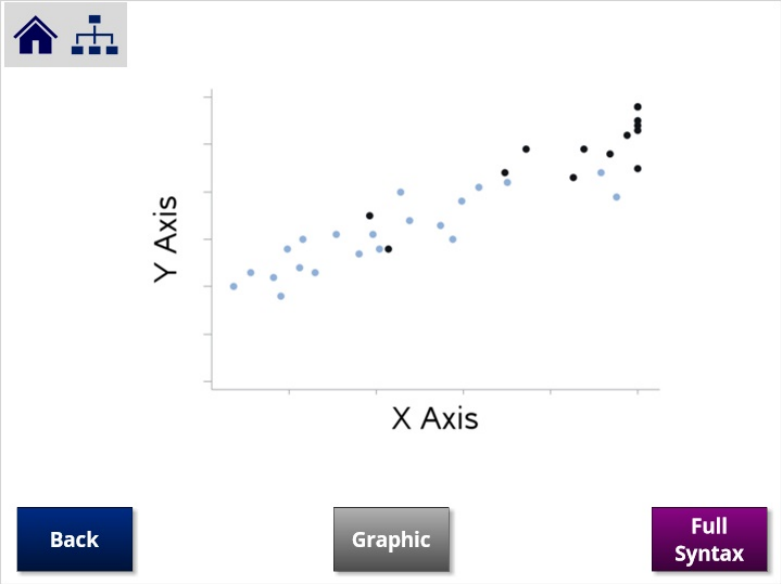
Nominal Response (Slide Layer)



4.23 Third Variables

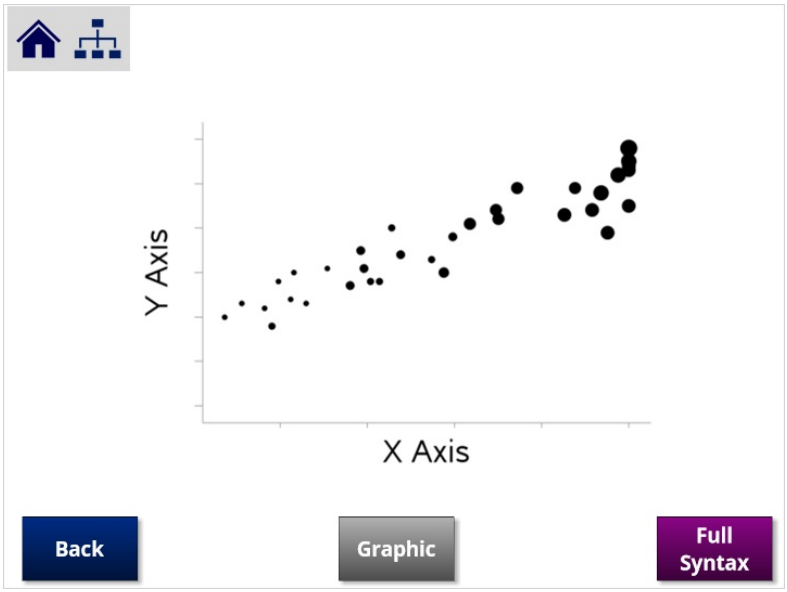


4.24 Grouping Variable I: Graphic

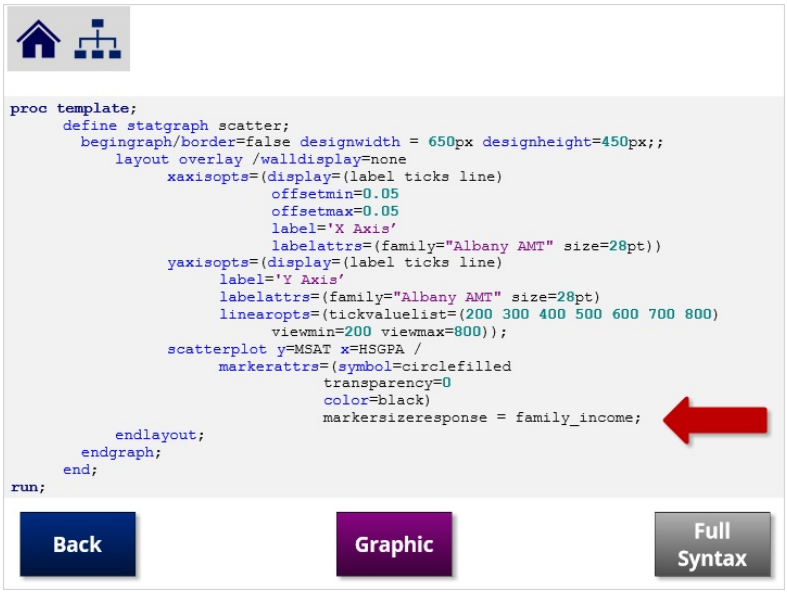


4.25 Grouping Variable II: Full Syntax

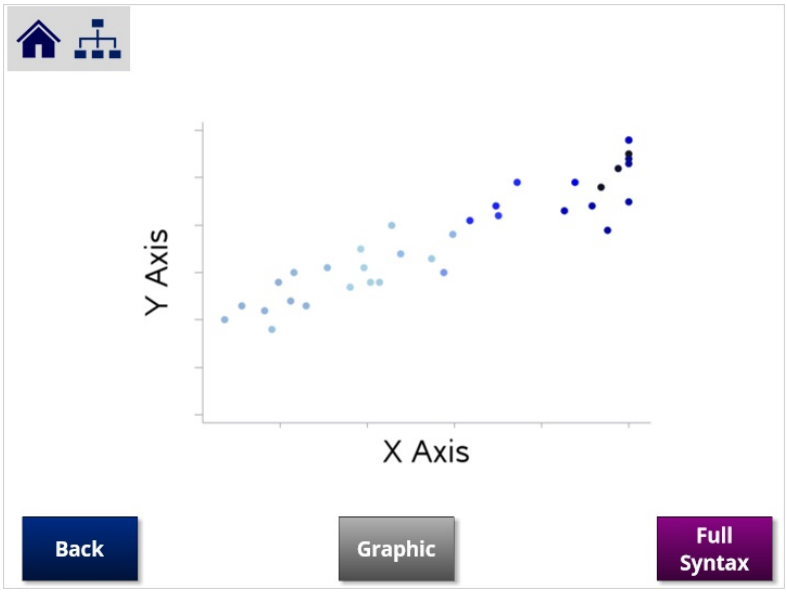
4.26 Marker Size I: Graphic



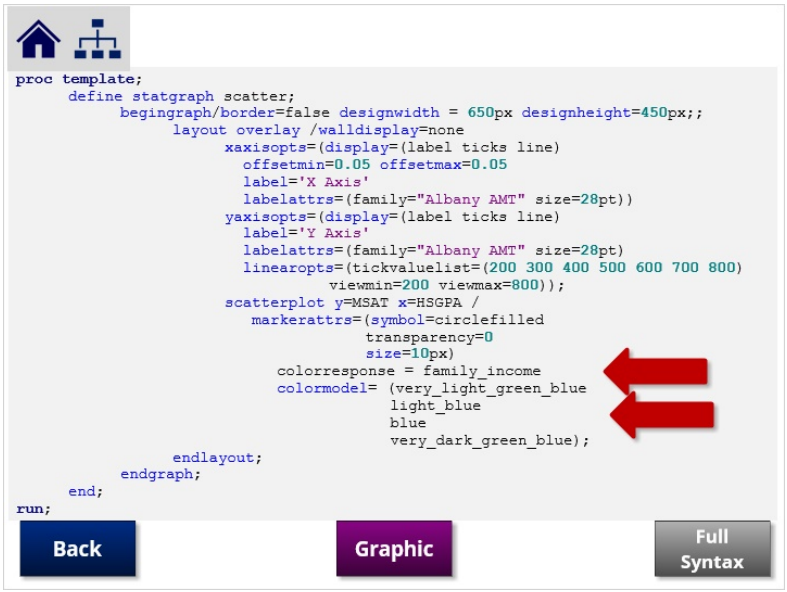
4.27 Marker Size II: Full Syntax



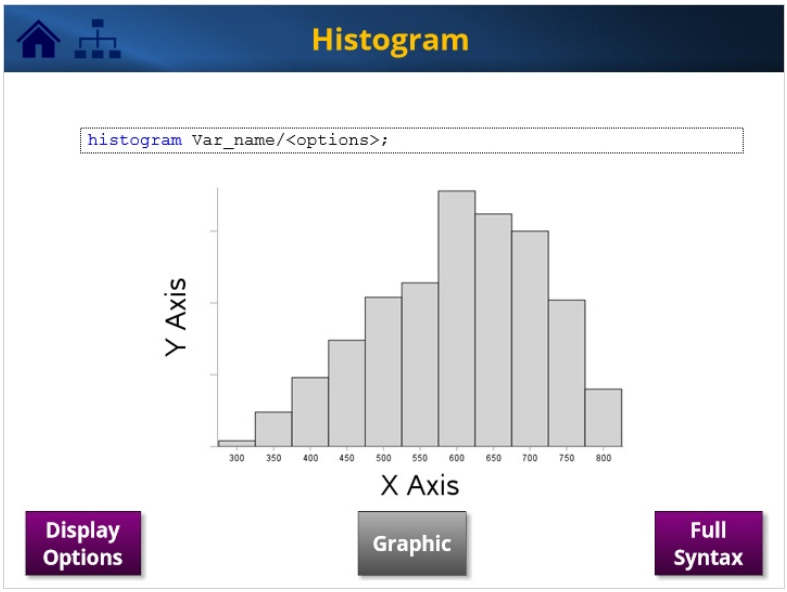
4.28 Color I: Graphic



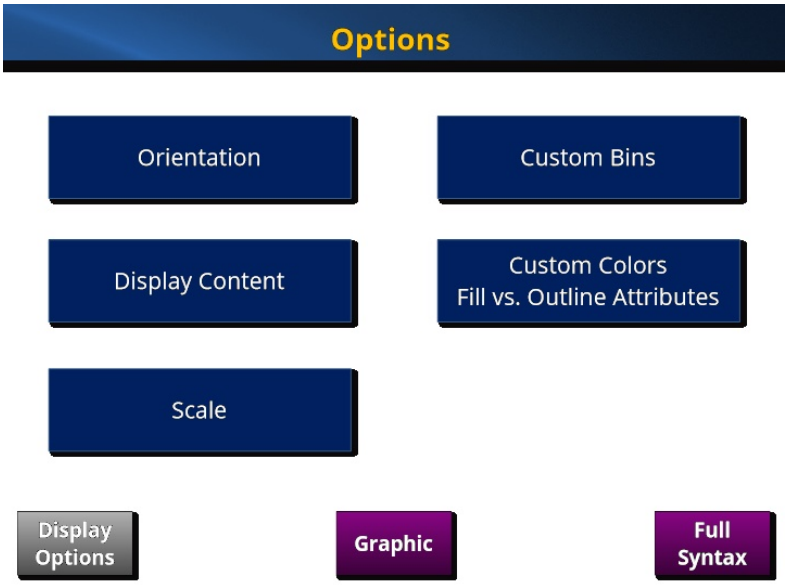
4.29 Color II: Full Syntax



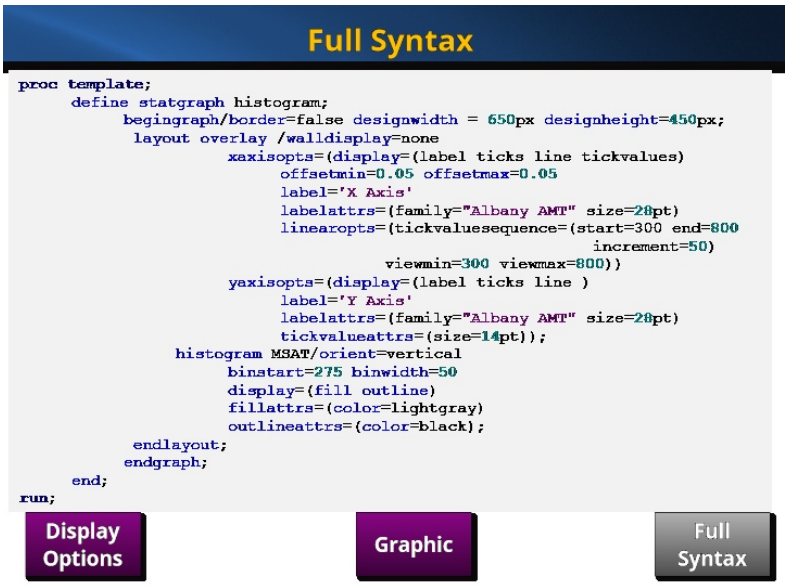
4.30 Histogram



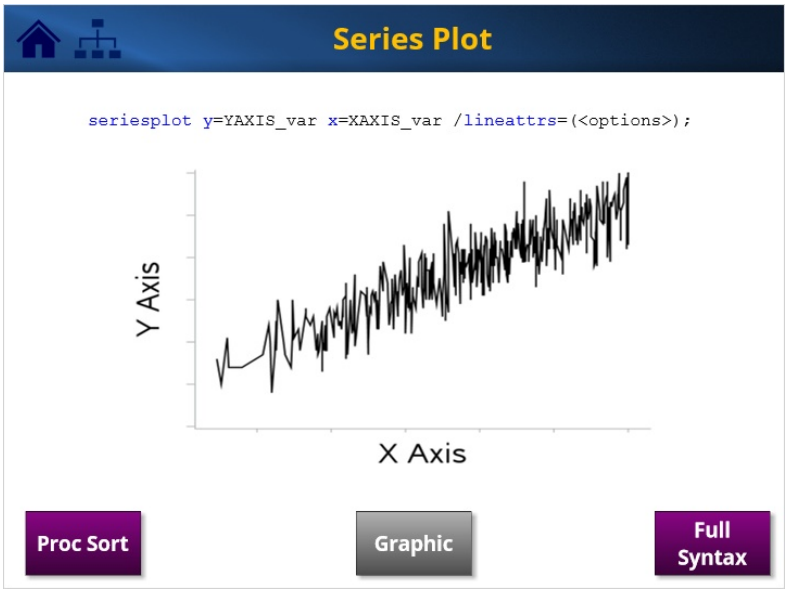
Options (Slide Layer)



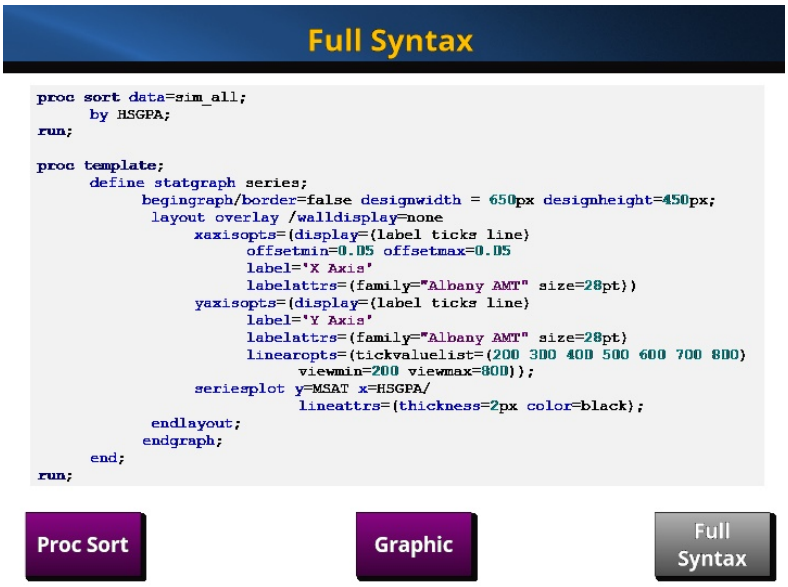
Syntax (Slide Layer)



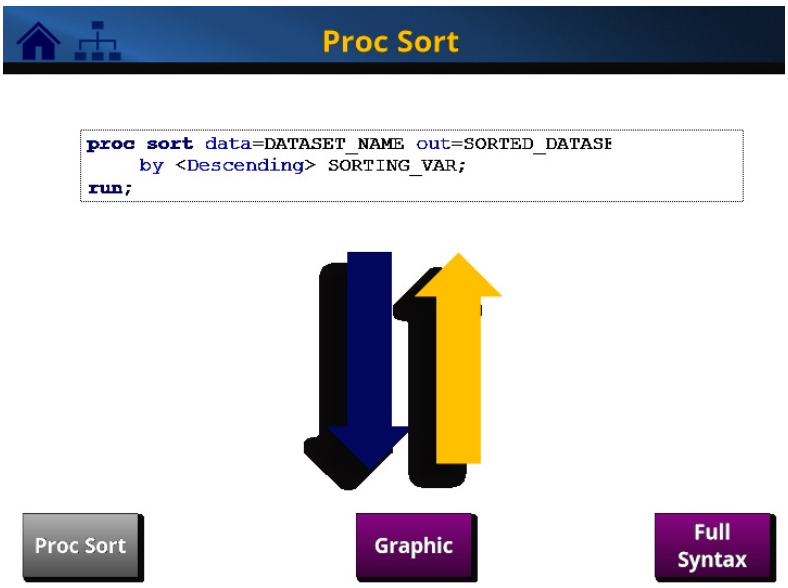
4.31 Series Plot



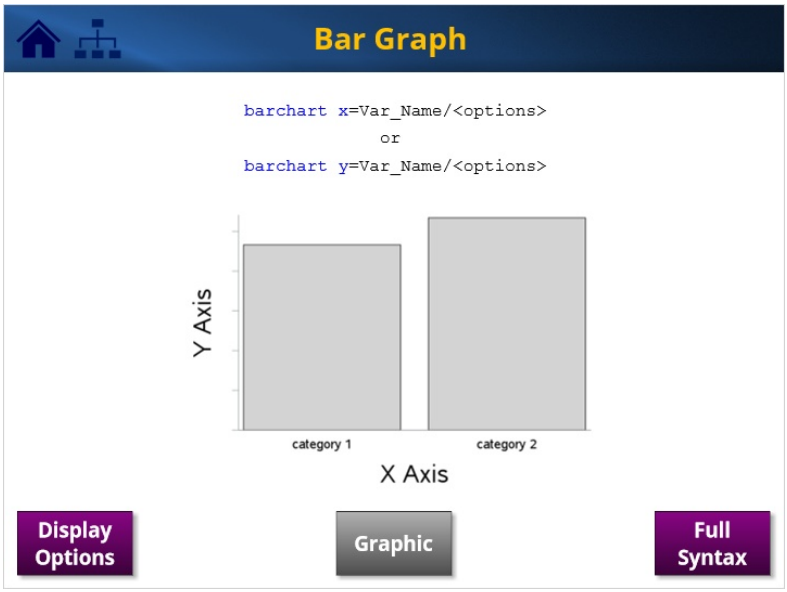
Full Syntax (Slide Layer)



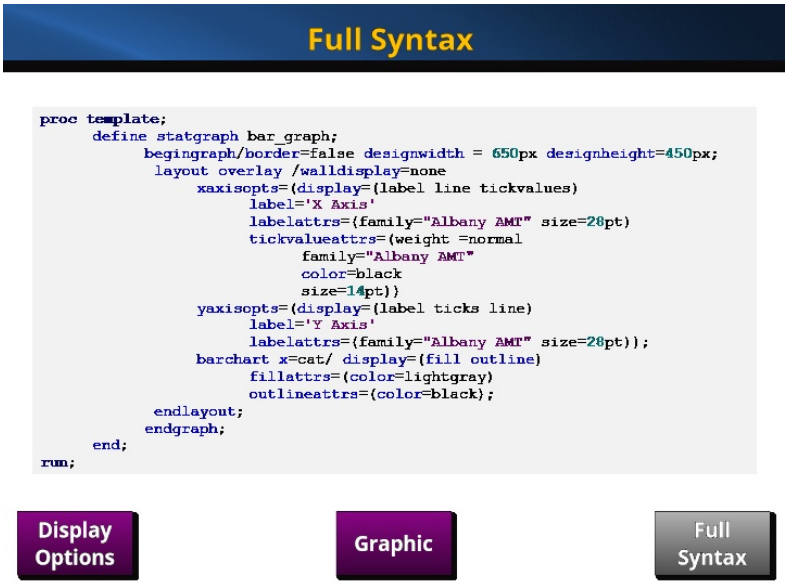
Proc Sort (Slide Layer)



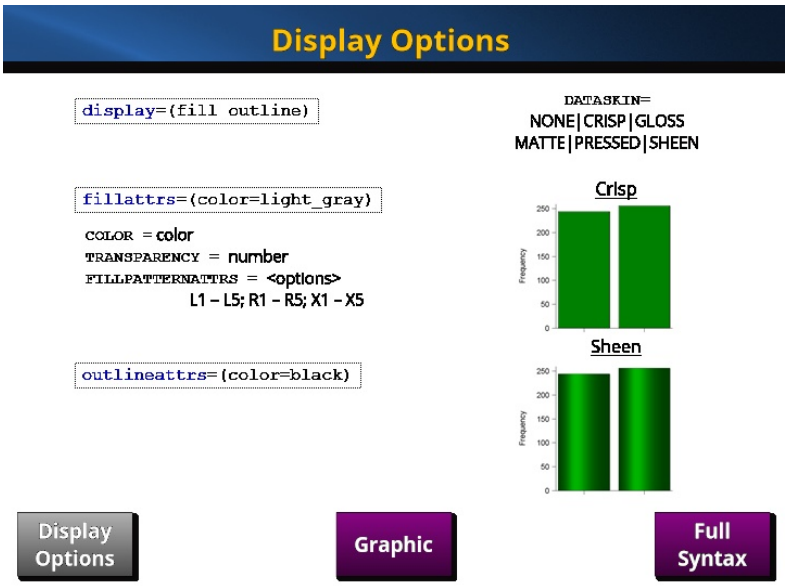
4.32 Bar Graph



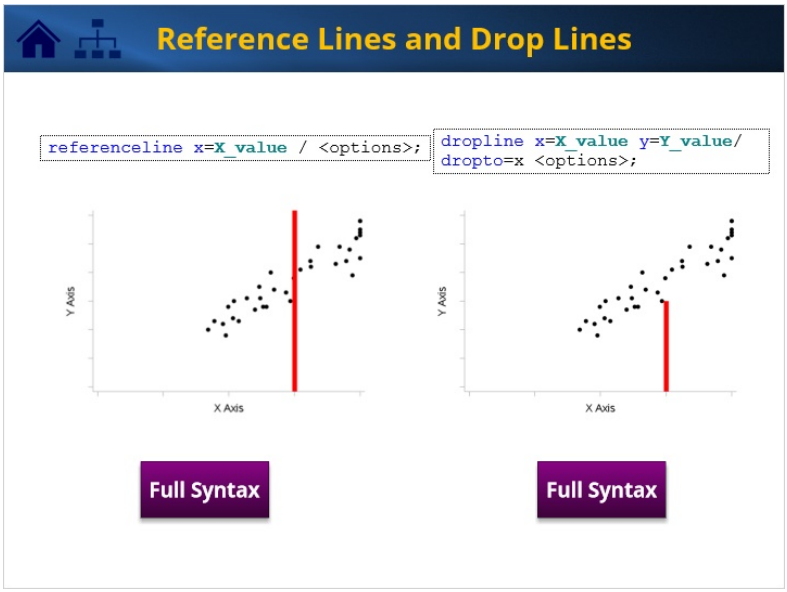
Full Syntax (Slide Layer)



Options (Slide Layer)



4.33 Reference and Drop Lines



Full Syntax (Slide Layer)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proc template;
      define statgraph scatter_ref;
            begingraph/border=false designwidth = 650px designheight=450px;;
             layout overlay /walldisplay=none
                  xaxisopts=(display=(label ticks line)
                        label='X Axis'
                        labelattrs=(family="Albany AMT" size=16pt)
                        linearopts=(tickvaluelist=(0 1 2 3 4)
                                    viewmin=0 viewmax=4))
                  yaxisopts=(display=(label ticks line)
                        label='Y Axis'
                        labelattrs=(family="Albany AMT" size=16pt)
                        linearopts=(tickvaluelist=(200 300 400 500 600 700 800)
                                    viewmin=200 viewmax=800));
                  scatterplot y=MSAT x=HSGPA / markerattrs=(symbol=circlefilled
                                                            transparency=0
                                                            color=black
                                                            size=10px);
                  referenceline x=3/lineattrs=(color=red
                                               thickness=10px);
             endlayout;
            endgraph;
      end;
run;
```

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Full Syntax 2 (Slide Layer)


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proc template;
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             layout overlay /walldisplay=none
                  xaxisopts=(display=(label ticks line)
                        label='X Axis'
                        labelattrs=(family="Albany AMT" size=16pt)
                        linearopts=(tickvaluelist=(0 1 2 3 4)
                                    viewmin=0 viewmax=4))
                  yaxisopts=(display=(label ticks line)
                        label='Y Axis'
                        labelattrs=(family="Albany AMT" size=16pt)
                        linearopts=(tickvaluelist=(200 300 400 500 600 700 800)
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                                                            size=10px);
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                        lineattrs=(color=dark_strong_red thickness=10px);
             endlayout;
            endgraph;
      end;
run;
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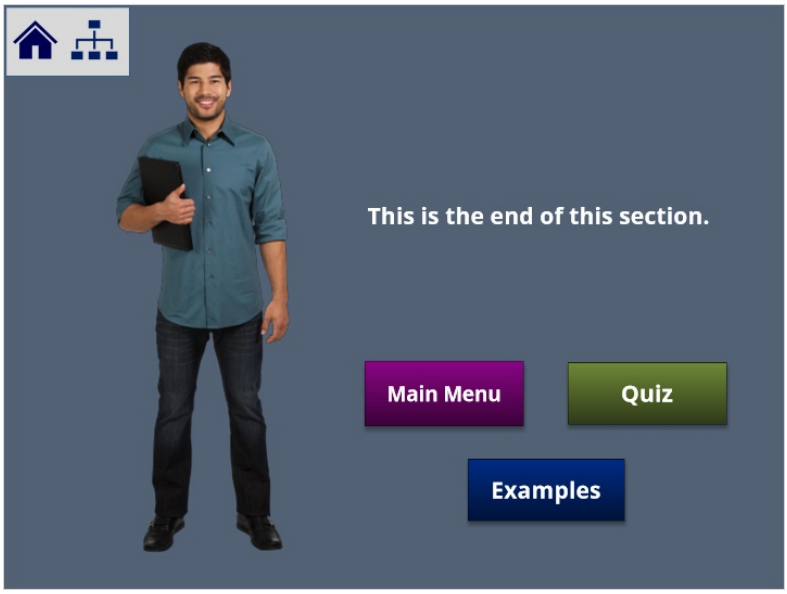
4.34 Bookend: Plot

4.35 Bookend: Section 3



4.36 Module Cover (END)