

Day 1

Data Visualization Fundamentals

Module 1 - Data Visualization Concepts

- Data Visualization Today
- Data Visualization Components
- Visual Cues
- Coordinate Systems
- Measurement Scales
- Visual Context

Module 2 - Fundamentals of Visualization

- Data Visualization Methods
- Data Visualization Standards
- Visualization with Purpose
- Data Visualization Development

Module 3 - Visualization Techniques

- Visualization Techniques
- Visualizing Comparisons
- Visualizing Proportions
- Visualizing Relationships
- Visualizing Patterns

Module 4 - Visualization and BI

- Visualization and BI
- Analytics
- Visual Reporting
- Infographics
- Data Storytelling

Module 5 - Tools and Resources

- Data Visualization Tools
- Best Practices in Visualization

Day 2

Hands-on: Visual Data Analysis with R or Python**Module 1 – Introduction**

- Course Expectations
- The 4 Levels of Analytics
- Getting to the “Why”
- The Datasets
- Data Types
- Introducing ggplot2

Module 2 – Distribution Analysis

- Example Business Questions
- Frequency Distributions
- Insights using Histograms:
 - Spread
 - Center
 - Shape
- Additional Insights with Histograms
- Medians & Quartiles
- Insights using Box Plots
- Building Histograms and Box Plots with ggplot2
- Hands-on Lab 1

Module 3 – Correlation Analysis

- Correlation vs. Causation
- Example Business Questions
- Correlation Concepts
- Insights with Scatter Plots:
 - Correlation Direction
 - Correlation Strength
 - Correlation Shape
- Additional Insights with Scatter Plots
- Building Scatter Plots with ggplot2
- Hands-on Lab 2

Module 4 – Multivariate Analysis

- What is Multivariate Analysis?

- Example Business Questions
- Bar Charts
- Proportion Bar Charts
- Multivariate Bar Charts
- Multivariate Distribution Analysis
- Creating Multivariate Visualizations with ggplot2
- Hands-on Lab 3

Module 5 – Time Series Analysis

- Example Business Questions
- Analyzing Time Series Patterns
 - Trend
 - Variability
 - Cycles
 - Rate of Change
 - Exceptions
- Line Charts for Time Series Analysis
 - Summary Stats in Excel
 - R's summary Function
- Analyzing Variance over Time with Box Plots
- Additional Time Series Insights
- Building Time Series Visualization with ggplot2

Module 6 – Course Wrap-Up

- Additional Resources

Hands-on Lab 4

Day 3

Data Storytelling for Business Impact

Module 1 - Introduction to Data Storytelling

- Defining Data Storytelling
- Initial Data Analysis
- Drivers for Storytelling

Module 2 - Building the Context

- Identify the Context
- Building Blocks
- Choose What Message to Send
- Assembling the Plan

Module 3 - Craft the Story

- Story Components
- The Storyteller
- Characters and Personas
- The Story Lifecycle
- Kinds of Stories
- Narrative Elements
- Key Elements of a Great Story

Module 4 - Visual Design

- What Needs to Be Visualized?
- Visual Design Best Practices
- Time to Design
- Mapping the Visuals to the Story

Module 5 - Refine the Visual Story

- Refinement
- Cognitive Overload
- Visual Perception
- Visual Order
- Use of Contrast
- Test the Story

Module 6 - The Stakeholders' View

- Final Test
- Look and Feel
- Size, Color, Placement
- Usability
- Aesthetics
- Access

Module 7 - Story Delivery

- Walkthrough
- Acceptance

Module 8 - Putting It All Together

- Review the Process
- Sample Story

Workshop

- Working with Your People, Projects, Processes and Data
- Choose from a provided list of topics for a tailored workshop. Workshop topic selection to be determined during pre-course discussion and planning with instructor.