

Finding Meaning in Utilities Data: Visualization and Storytelling

Abstract

The Utility Industry continues to adapt to new regulations, changes in public perception and emerging market opportunities. Examples of drivers causing change include modernizing and expanding infrastructure, implementing decarbonization solutions, pursuing sustainability polices, reducing the cyber-security threat and embracing the shift towards green energy. Analytics solutions are key enablers for managing changing and pursuing new opportunities

Analytics effectiveness and impact depends on visualization skills of two kinds – ability to create visuals and ability to understand visuals. The real value of visualization does not come from creating visuals, but from understanding what they tell you. With the language of words, we learn reading and writing as separate but related skills. Similarly, with visual language we need to learn understanding (reading) and creating (writing) as distinct but related skills.

Data analysts at the top of their game go beyond creating data visualizations. They add narratives to interpret the visuals and to explain insights and recommendations. In short, they tell data stories. Stories are powerful things. We've used them throughout history to capture attention, convey ideas, fire the imagination, and stir the soul. Data can be persuasive, but stories are much more. A well-told story is inspirational. The utility industry is rich with opportunities to deliver well crafted stories to all of its stakeholders. As society moves to new energy sources and delivery models, it is essential that data driven stories are presented to educate and guide us through the transition.

On the surface, storytelling appears to be the opposite of analytics: anecdotal instead of quantitative. But quantities aren't the only way, or even necessarily the ideal way to convey information. We know that not everyone is a quant who thinks natively in numbers. Some think in pictures, thus the popularity of data visualization. Still others — a vast portion of business people — would rather not think about data at all, preferring to hear its meaning in anecdotes, metaphors, and examples.

Storytellers are the new generation of business and data analysts. They don't dismiss the value of the quants – quantification is the foundation. They don't devalue the importance of visualization; in fact, they amplify it by scripting a story through visuals to communicate the what, when, where, who, and why of business circumstances and business behaviors.

You Will Learn:

- Ten key concepts of data visualization
- The most important things to look for when reading visualizations
- How to do a “quick read” and a “critical read” of data visualizations
- To see trends, patterns, and outliers in visual presentation of data
- To see ambiguity, distortion, and bias in visual presentation of data
- Four reasons to pursue the art of storytelling
- How to find the stories in data
- How to compose captivating and compelling stories

- Models, frameworks, and patterns for data stories
- How to choose the best media for storytelling

Geared to:

- Business managers, decision makers, analysts and other analytics consumers seeking to refine their skills for understanding data visualizations and delivering data stories to share information
- Energy policy makers, regulatory staff and marketing professionals who need data driven stories to effectively communicate messages to their stakeholders
- Developers of data visualizations who will improve visualization skills by seeing data visualization through the eyes of the readers
- BI and analytics professionals who create dashboards and scorecards for the business
- Data analysts and data scientists who create data visualizations to inform others
- Everyone who needs to explain data visualizations to others, ranging from business managers presenting performance data to data scientists presenting predictions and recommendations
- Everyone who uses data as a tool to inform, influence, and persuade others

Finding Meaning in Utilities Data: Visualization and Storytelling

Detailed Outline

Module 1 – Visual Language

- About Language
 - Words, Numbers and Images
 - Components and Rules
 - Learned Skills
- The Language of Images
 - Language Structure
 - Visual Communication Formats
- Data Visualization Language
 - Purposeful Communication
 - Visual Dialog
 - Ten Key Concepts

Module 2 – Data Visualization Concepts

- Charts and Graphs
- Format
 - Static
 - Interactive
 - Animated
 - Narrated

- Chart Types
 - Line Graph
 - Column Graph
 - Area Graph
 - Scatter Graph
 - Bubble Graph
 - Choropleth Map
 - Dot Map
 - Sankey Diagram
- Patterns and Trends
- Data
 - Data Sets
 - Variables
 - Data Sources and Lineage
- Visual Composition
 - Axes and Scales
 - Cartesian Coordinates
 - Polar Coordinates
 - Geographic Coordinates
 - Linear vs Logarithmic
 - Measurement
 - Legends

Module 3 – Reading Data Visualizations

- Quick Read Process
 - Context
 - First Impression
 - The Title
 - The Axes
 - The Scales
 - The Legend
 - Looking at the Data
 - Variables and Quantities
 - Meaning
- Critical Read Process
 - First Glance Visceral Response
 - Data Source and Data Analysis
 - You and the Chart
 - Format and Interaction
 - Connections
 - Reading the Chart
 - Title

- Type
- Aspect Ratio
- Legend
- Colors and Patterns
- Annotation
- Data
- Axes and Scales
- Outliers
- Meaning and Patterns

Module 4 – Creating Data Visualizations

- Visualization for Data Analysis
 - Data Visualization Step by Step
 - Know the Questions
 - Know the Data
 - Know the Message
 - Choose the Chart Type
 - Compose the Chart
 - Add Context
 - Refine the Visual Cues
 - Interactivity and Navigation
- Visualization for Business Intelligence
 - Dashboards and Scorecards
 - Sparklines
 - Bullet Graphs
 - Dot Plots
 - Small Multiples
- Visualization for Data Exploration
 - Data Exploration Step by Step
 - Variable Identification
 - Univariate Analysis
 - Distribution of Values
 - Distribution Shape
 - Bivariate Analysis
 - Overview
 - Quantitative vs Quantitative
 - Categorical vs Quantitative
 - Categorical vs Categorical
 - Behavior Over Time

Module 5 – Data Storytelling

- Data Storytelling Basics
 - Why Data Storytelling?
 - Presentations vs Stories
 - Example
 - Starbucks vs Dunkin Doughnuts
 - Hans Rosling
 - Statistics vs Stories
- A Data-Driven Business Story
 - Goals and Questions
 - Context for Data Analysis
 - Data Sources
 - Learning from the Data
 - Data Patterns
 - Finding Two Contiguous Patterns
 - Asking Why
 - Recommendations
 - Quantifying and Visualizing
- Story Crafting
 - Dynamics
 - Making a Connection
 - The Storyteller
 - The Audience
 - Shapes of Stories
 - The Narrative
 - Framing
 - The Story Support Structure
 - Connecting Data and Narrative
 - Kinds of Stories
 - Media
 - Images
 - Charts
 - Infographics