



AIDD: Data Visualization & Data Storytelling

Data Visualization is a broad, often misunderstood topic. Countless resources refer to visualizing and communicating data and don't say much about identifying or communicating **Information**. The goal of any data analysis effort is to turn data into information that decision makers can use to act on, quickly, efficiently and with confidence.

A note about **data**: You will notice in our course descriptions the word data is primarily used when relating to the analysis of the data. In many instances you will see words such as information, fact, story, or solution when it comes to visuals or presenting information. The industry umbrella of Data Visualization often ignores the very process of creating information which is why the term Data Visualization is often misunderstood.

The Data Visualization component of our AIDD program includes the following 1-Day components:

- **Envisioning Information & Visualization Principles.** Learn how to identify the information needed to fulfill the objectives of your data analysis effort.
- **Informative Storytelling.** Learn how to identify the story and connect the dots in a way that's actionable and easy to communicate to decision-makers and stakeholders.
- **Visual Data Analysis Techniques.** Learn how quickly and effectively use visuals to help analyze your data.
- **Presenting Solutions & Recommendations.** Learn how to choose the correct visuals and formats for your executive summary or presentation.

Specific information and objectives for each component above can be found on the following pages.

This program uses our exclusive "immersion" method of teaching. Participants are thrust into a simulated "real-life situation" where they can apply the course material directly to real data analytic problems.

Our courses are highly interactive where students learn by doing. There are individual and team activities. Tool training is done in small groups. There is an assortment of demos including visual exploration and analysis of data using a variety of tools and formats. There is a case study used throughout the course where participants "put everything together." There are also skill building activities.

We will employ a variety of teaching methods to keep participants interested, engaged and appeal to different learning styles. These include: a case problem, individual and team activities, role plays, videos, classroom discussion and reading. Students will receive additional resources and technical reference materials to continue self-study at the conclusion of their course.



Envisioning Information & Visualization Principles (1 Day)

The ability to envision information is a cornerstone of the AIDD program. It is a critical skill that helps the data analyst discover the story within the data, analyze the data and prepare to communicate the resulting information and solutions. The ability to identify the required information guides an analyst's efforts through all aspects of their work with data analytics. Because of this, specific elements of envisioning information are built into our courses where these skills are needed.

This course will provide an overview of all the visualization principles taught in our program. We will discuss key aspects of informative storytelling, visual data analysis techniques and presenting solutions and recommendations. We will cover the essential techniques required for successful visualization work and how these techniques build solutions decision makers can act on with confidence.

This course is intended as an overview for those just getting started with envision information and visualization principles and in need of learning the principles, terminology, and techniques available to them.

We also offer a version of this course intended for managers and leadership. By understanding the concepts and techniques being used, they will be able to offer greater insight into the purpose of the project and help better guide their analyst's efforts.

By default, many of the activities are administered using MS Excel because of its vast availability. However, additional tools such as Tableau and Power BI can be included upon request.

Objectives:

Upon completion of the **Envisioning Information & Data Visualization Principles** course, participants will be able to:

- Envision the information required to create a solution for the problem or objective
- Describe the importance of building and maintaining context with visuals
- Describe how to create actionable visuals decision makers will be able to rely on with confidence
- Describe several techniques used to visually analyze data
- Describe the importance of analyzing data visually and how it improves the efficiency of your data analysis
- Explain how to identify the story in the data and use the story to support the resulting solution
- Identify what your audience is looking for from your presentation
- Explain how people process and perceive images
- Make abstract data visible and easier to comprehend



Informative Storytelling (1 Day)

Improving the ability to tell a story is crucial to the success of any data analysis work. **Research shows that people are 20 times more likely to remember information if it's part of a story.** In this course, we layout the basic components of storytelling and use a connect-the-dots approach to help the analyst maintain consistency from the initial problem or question, through the analysis and to the solution.

Participants will learn to use the context to build a framework for their visualization and information building efforts. This will help them to communicate the results of their work and properly show how the data supports their conclusions. They will continue to check their visuals against the contextual framework of their project to maintain consistency and integrity.

By following this process, when it is time to present the solution, participants will be able to identify the visuals that were most effective for them throughout the process and will refine them so they can be effectively communicated to their audience.

The use of informative storytelling will improve the audience's ability to follow the storyline. They will understand logical connections between the information presented. It will be clear how the original data supports the information they are receiving. It will also be clear how the information solves the problem or meets the requirements of their objectives.

This course is a skill-building course intended for anyone who works with data as part of their job. The participants' ability to identify and communicate the storyline found in data is as applicable to their own work. It is also applicable to those needing to communicate information to decision-makers and stakeholders.

By default, many of the activities are administered using MS Excel because of its vast availability. However, additional tools such as Tableau and Power BI can be included upon request.

Objectives:

Upon completion of the **Informative Storytelling** course, participants will be able to:

- Explain what informative storytelling is and why it's an important component of identifying and building information
- Describe how to use visualization to create a contextual framework
- Identify story angles in data
- Differentiate the difference between Data, Information, Stories and Narratives
- Choose the most effective visuals to communicate information
- Improve their ability to be persuasive communicating information, solutions, and recommendations
- Describe the importance of creating conditional visualizations, real-time dashboards, and interactive visuals.
- Communicate information and stories within Big Data concisely and effectively
- Apply critical thinking to visualization work
- Improve the identification of visuals pertaining to Section 508 compliance



Visual Data Analysis Techniques (1 Day)

Many view data visualization simply as a means for displaying information. However, visualizing data is a key part of exploring, transforming, and analyzing data to build actionable information. It is also a key part of displaying information when presenting solutions. **Research shows people make sense of visual information more quickly (than tabular data or narratives).** This fact is true for your audience, but also for you as well.

Participants in this course will be taught several visual analysis techniques. They will be given real data sets and a chance to build skill using these techniques. They will learn to identify trends and patterns in the data and use this information to determine the cause of problems or make predictions about future results. They will learn best practices for showing information visually to their audience.

Participants will be taught to think critically about visuals. They will be able to evaluate visuals created by others and identify strengths and weaknesses in their work. They will learn how to use this evaluation to refine visuals so they can be easily consumed by their audience.

This course is intended for anyone who needs to analyze data as part of their job. Having a basic understanding of statistical and analytical techniques is helpful, but not required.

By default, many of the activities are administered using MS Excel because of its vast availability. However, additional tools such as Tableau and Power BI can be included upon request.

Objectives:

Upon completion of the **Visual Data Analysis Techniques** course, participants will be able to:

- Explain how visualizing data helps in the analysis and understanding of complex data
- Describe and employ several types of visual analysis techniques including Time-Series, Deviation, Distribution and Correlation analysis
- Describe why a visual analysis of data is a necessary step and why statistical analysis isn't sufficient on its own
- Explain the strengths and weaknesses of different visual types such as line graphs, bar charts, tree maps, waterfalls, histograms, and scatterplots
- Analyze business data to identify trends, patterns, proportions, and comparisons
- Predict future trends based on previous results
- Describe how geospatial visualizations can be used to simplify enormous amounts of GIS data.
- Practice reading and interpreting charts and assess the use of chart types
- Apply critical thinking and problem solving to visualization work



Presenting Solutions & Recommendations (1 Day)

Participants in this course will focus on taking the outputs of their data analysis work and craft a presentation that is easy to understand and actionable for decision makers and stakeholders. Participants will focus on translating their analysis into the correct visuals that accurately and effectively communicate the intended information. These visuals can be used in analytical reports, executive summaries, power point presentations and in dashboards

Participants will learn how to tell a complete story and clearly show how the solution is supported by the data in their analysis. We will cover several types of visuals and discuss those most applicable to the data they represent.

Participants will improve their ability to select and apply the most appropriate design choices. They will learn to connect with their audience and provide them with the information they need to take action in the time required.

They will learn the importance of real-time or just-in-time visuals as well as the use of interactive visuals that let their audience explore them in their own way and at their own pace.

We will also focus on pairing the visuals with supporting technical information. We will discuss

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Objectives:

Upon completion of the **Presenting Solutions & Recommendations** course, participants will be able to:

- Translate analytic outputs into meaningful solutions and recommendations
- Describe the cause of a problem and how the solution will address it
- Organize the solution and recommendations in a way that best meets the objective and allows decision makers to act with confidence
- Select the correct visuals to communicate information more quickly and accurately
- Show supporting information for the solution in a concise manner
- Embed their visuals into power point presentations, analytical reports, and dashboards
- Create real-time, just-in-time and interactive visuals to aid in real-time decision making
- Make appropriate design choices
- Practice developing design concept solutions for given situations
- Critique visualizations and identify the design principles used to create them