CAMBRIDGE SYSTEMATICS
Think Forward

DATA VISUALIZATION METHODS
for TRANSPORTATION AGENCIES

VISUALIZATION JOB DESCRIPTION

This document describes the requirements for hiring an in-house or contract data visualizer. We developed these recommendations based on our own experiences and using LinkedIn job postings for Data Visualization Analysts and Data Scientists from NAVAIR, Cisco, CALIBRE, the Lewin Group

General Skills

When you are ready to move toward building more advanced, web-based, interactive data visualizations, it probably will require you to build some skills in-house or to hire talent to help build your team. To hire someone to build high-quality static or web-based interactive data visualizations, we suggest that you review the skills described below, consider who within your current team can fill these roles, and develop a job description for someone who can fill these gaps, either permanently (in-house) or temporarily (contract).

When considering growing the skills of your own internal team, consider that you will need staff who are willing to invest their time and effort and get elbow deep building capable, beautiful, and useful visualizations. If you are hiring someone, consider that these people may have sought after skills, so they should be driven by your mission and want to work on innovative transportation problems because they want to make a difference.

Your complete data visualization team needs to have four primary groups of skills, each with a specific set of job requirements:

- *IT and Web Development*: You need to post interactive data visualizations on the web as part of a responsive, well-designed webpage for them to make an impact. You will need to install software libraries, programs, and will need a place to store the visualizations once produced (web-servers, etc.).
  - Familiarity with front-end web developer, including experience with Javascript, HTML5, CSS3, JQuery, JSON, and XML
  - Familiarity with back-end web technologies like Elastic
  - Confer on visualization-related architecture options
  - Ability to integrate results into enterprise, services-driven, products and frameworks
  - Experience with cloud hosting (e.g., Amazon Web Services) or on-premise server
  - Collaborate effectively with software, designers, and data story tellers
- *Software*: You need to understand how to code in Javascript, HTML5, or other software languages to build interactive data visualizations.

  - Mastery of D3 (multiple visualizations, binding, facets/filters, performance), AngularJS, and preferred experience with Google Analytics, Bootstrap, and Google Web Toolkit.
  - Create interactive graphics for transportation data
  - Build graphic tools
  - Develop APIs
  - Collaborate effectively with IT, designers, and data story tellers
- *Aesthetic*: You will need someone with a keen eye for making beautiful graphics, balancing colors, and honing in on the key message.
  - Genuine focus on design
  - Ability to communicate business data through reports and charts
  - Collaborate effectively with software, IT, and data story tellers
- *Data sense and storytelling*: You will need help from folks who understand data, data wrangling, and can develop compelling stories based on the data.
  - Genuine interest in transportation data and analysis
  - Statistical analysis using a statistical software package (e.g., R, SAS)
  - Data visualization using a software package (e.g., Tableau, QLIK, Microsoft PowerBI, Spotfire)
  - Experience with data wrangling software (e.g., Trifacta, OpenRefine) and web scraping software/techniques
  - Ability to mashup and interpret data to find interesting trends, correlations, and patterns in complex data
  - Familiarity with relational databases (e.g., Oracle, SQL)
  - Staying on top of analytical techniques such as machine learning, deep learning and text analytics
  - Ability to communicate business data to a non-technical audience through reports and charts