**Candidate Data Analyst Assignment**

***Finding “Gems” – Mining data from the fire service needs survey***

Materials provided:

1. Survey key/data dictionary
2. Fictitious excel spreadsheet with 5,458 records. Each record represents a sample of fire department in the United States.
3. You can use any visualization or charting tools such as Excel, [*tableau software*](http://www.tableau.com/), [*tibco spotfire*](http://spotfire.tibco.com/) or [*arcgisonline*](https://www.arcgis.com/home/signin.html)(you can register and download a free trial version if needed) look for a pattern or observation based on the main question selected above.

**Your task is to analyze the data and report 3 key findings** (i.e. “Gems” in the data mine). You should aim to produce not **more than 10 charts or tables in total** and a word document of not more than **5 pages** and PPT deck of not more than **10 slides**. It is anticipated that you should spend no more than 3-5 hours on this assignment.

***Feel free to ignore free text fields and columns with large numbers of missing data.***

Specifically, you may:

Suggested Steps:

1. Perform a statistical EDA (Exploratory Data Analysis) of the survey data
2. Develop hypotheses from observations
3. Apply statistics and data analytics to the data.
   1. Start with a high level i.e., total data without pivoting
   2. Based on insights gained from EDA to go deeper “dive” along select variables (hint, pivot using variables like population, square miles, location) to understand the selected statistic above a little deeper.
   3. (optional) Use more advanced techniques to perform even “deeper dive (hint: use either supervised or unsupervised learning to understand the important groups of fire service needs and determine which variables are more important than others.)
4. Evaluate distributions etc. and detect interesting patterns from the above results
5. Create one or more charts that summarize your findings (make sure you choose appropriate table/s, chart/s or map and remember to label them clearly.
6. Report and tell stories based on the insights both written (in Word report format) and verbally (PPT deck)