



**U.S. Department of Veterans Affairs**

Veterans Health Administration

# Introduction to Health Care Data Analytics

## Course Syllabus

### Course Description

This course was developed in conjunction with Bellevue College with funding from the Office of the National Coordinator for Health Information Technology (ONC). This 40-hour, introductory level course provides foundational skills and knowledge in health care data analytics that will equip you to contribute more effectively to local data analytics and performance improvement efforts. The convenient online format allows you to complete weekly assignments on your own schedule. There are no pre-requisites, however basic skills in Microsoft Excel are highly recommended.

### Course Goals & Objectives

1. Discuss the role of data analytics in quality and performance improvement efforts.
2. Describe the tools and techniques used for data analytics in health care organizations.
3. Identify techniques to communicate insights gained from data analysis.

### Course Pre-requisites

- There are no pre-requisites for this course, however basic knowledge and skill in the use of Microsoft Excel is highly recommended.
- It is open to anyone interested in health care data analytics.
- There are no course fees and no tuition requirements for the course.

### Course Credits

General education credit will be offered. Course accreditation is pending for ACCME, ACPE, ACPE-T, ANCC, and APA

Students who successfully complete the course will receive a certificate of completion and any approved relevant accreditations.

The Office of the National Coordinator for  
Health Information Technology



## Course Content and Materials

### Course Content:

#### *Introduction to Quality Improvement and Data Analytics*

1. Discuss the drivers for health care transformation
2. Identify quality initiatives that have shaped the national health care landscape
3. Define health care quality and value
4. Describe the background and evolution of quality and performance improvement
5. Discuss the quality improvement frameworks that utilize analytics
6. Define health care data analytics
7. Discuss how analytics can help transform health care



#### *Health Care Data as an Organizational Asset*

1. Describe the data information, knowledge and wisdom hierarchy
2. Explain how data can be an organizational asset
3. List sources of health care data
4. Describe the challenges HCO's face when using data for quality and performance improvement
5. Describe an organizational approach for effective use of data analytics
6. Describe the role of data governance

#### *Working with Data*

1. Describe the information value chain
2. Discuss the importance of data context and relevance to business processes
3. Define common data types
4. Define basic statistical terms
5. Recognize common patterns or distributions in statistics
6. Describe distributions using numerical measures such as mean, median and standard deviation
7. Identify common graphical representations of data including histograms, bar charts and scatterplots

***Data Analytics Tools and Techniques***

1. Define data analytics terms
2. Describe the process steps of data analytics and the tools used in each step
3. Describe the role of the data analyst
4. Identify tools and techniques used to analyze and interpret healthcare data effectively
5. Describe the various types of databases and how they are structured
6. Describe key data warehouse concepts
7. Describe enterprise data architecture as seen in health care organizations



***Using Data to Solve Problems***

1. Define measures, metrics, and indicators
2. Describe the purpose and use of Key Performance Indicators (KPI's)
3. Describe how health care organizations use the IHI Triple Aim to prioritize performance goals
4. Describe the DMAIC problem-solving model and the tools and techniques used in each step of the process
5. Apply the DMAIC methodology to a health care issue

***Using the Data to Tell the Story***

1. Describe ways to effectively display data for improved comprehension
2. Select appropriate options for displaying information
3. Identify background information that should be included in reports
4. Determine what information stakeholders want and need to know
5. Determine the best ways to communicate information with specific audiences



## Course Material

- Recorded voice-over PowerPoint lectures
- Required readings
- Interactive learning activities, discussion forums, questionnaires, and quizzes
- Supplemental resources
- Final project



## Required Textbook

Trevor L. Strome (2013). *Healthcare Analytics for Quality and Performance Improvement*. John Wiley & Sons, Inc.

Available in [Books 24x7](#) (free for VA employees to view) or available for purchase online.

## Course Timeframes and Format

This program includes a mix of voice over PowerPoint video lectures and online discussion as well as individual activities hosted via a learning management system called Moodle. The course website can be accessed at <http://vatraining.remote-learner.net>. Students can access the course on any PC or mobile device with Internet access.

Course work is primarily asynchronous (independent, self-paced). Periodic synchronous (live, real time activity) instructor-led webinars may be included, and will be recorded for those who cannot attend. Students will be required to access VHA Health Informatics Online Classroom to review the lectures and complete activities, including voice over PowerPoints, quizzes, questionnaires and online discussion forums. An extensive list of optional resources is available in each section.

### Students can choose between one of two sessions:

Fall 2016 Option: October 3 – December 4, 2016

Spring 2017 Option: February 6 – April 9, 2017

## Course Evaluation

There are two ways that the course will be evaluated:

- Immediately after the course you will be asked to complete a course evaluation.
- Between 90-120 days after the course ends, you may be asked to complete a post-course survey.

### Academic Honesty

It is expected that students will complete the required discussion forums, knowledge checks and other assignments as outlined in the lesson in order to demonstrate that they have learned the course material. The Moodle learning management system tracks student activity including visits to each page, quiz attempts, activity completion, etc., which can be used to independently validate course completion. Responses to assignments, quizzes and exams will be based on the student's own work (except for assignments that explicitly include collaboration). It is expected that students will properly cite any references or works that are not their own and honor any intellectual property rights including copyrights and trademarks. For questions about how to cite academic literature, please refer to <http://www.nlm.nih.gov/citingmedicine>.



### Technical Support

For technical issues such as problems with registration, access to course or Moodle issues, there is an email available to students: [vhahi2certhelp@va.gov](mailto:vhahi2certhelp@va.gov). Students also have the option of using the Technical Support Forum from within the course.

### Planning Committee

Department of Veterans Affairs: Katherine Gianola, MD, MS, Diane Bedecarré, RN-BC, MS, CPHIMS, Elizabeth Chapman, MS, CPHIMS, Kathleen Brandt, RN-BC, MS, PMP, Danielle Marano, RN, MSN, Jennifer Kalmann, MBA, CPHIMS, Adelaide Quansah-Arku, BSBA, CPM, Serge LaCerte, MS, CPIM, MLSSBB, Ron Freyberg, MS, Jessica Hill, MHA. Rob Silverman, PharmD, Debra Macdonald, RPh., Kathleen Lysell, Ph.D., Casey Grysen, Patricia Hubbard PhD, ATP

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