



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 31-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 Prerequisites

- There are no prerequisites for this course, however basic knowledge and skill in the use of Microsoft Excel is **highly** recommended.
- The target audience includes anyone interested in health care data analytics.
- There are no course fees and no tuition requirements for the course.

Course Credits

Students who successfully complete the course will receive a certificate of completion and any approved relevant accreditations. Accreditation of 31 hours offered for the following: Accreditation Council for Continuing Medical Education (ACCME); Accreditation Council for Continuing Medical Education-Non-Physician (ACCME-NP); Accreditation Council for Pharmacy Education (ACPE); American Psychological Association (APA); American Nurses Credentialing Center (ANCC); Association of Social Work Boards (ASWB); and New York State Education Department Social Work (NYSED SW). Also approved for AMA PRA Category 2 Credit (ABPM Clinical Informatics Diplomates may request credit towards ABPM MOC Part 2A (LLSA) requirements).

The Office of the National Coordinator for
Health Information Technology



Course Content and Materials

Module 1: 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



Module 2: 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

Module 3: 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

Course Content and Materials

Module 4: 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



Module 5: 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

Module 6: 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
- Case study



Required Textbook

Trevor L. Strome (2013). *Healthcare Analytics for Quality and Performance Improvement*.

John Wiley & Sons, Inc.

- Available through [Skillsoft Books](#) in TMS at no cost and also 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 <https://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.

Upcoming sessions:

- Upcoming sessions are listed on the [Introduction to Health Care Data Analytics](#) online registration page.

Course Evaluation

The course is evaluated in two ways:

- Students have the opportunity to provide feedback after each of the six modules and the case study.
- Upon successful completion of the course students must complete a course evaluation in order to receive the Certificate of Completion and any relevant accreditations.

Academic Honesty

Students are expected to 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). Students are expected to 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. Students can also use the Technical Support Forum from within the course.

Planning Committee

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